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Literature review on taxation, entrepreneurship and collaborative economy

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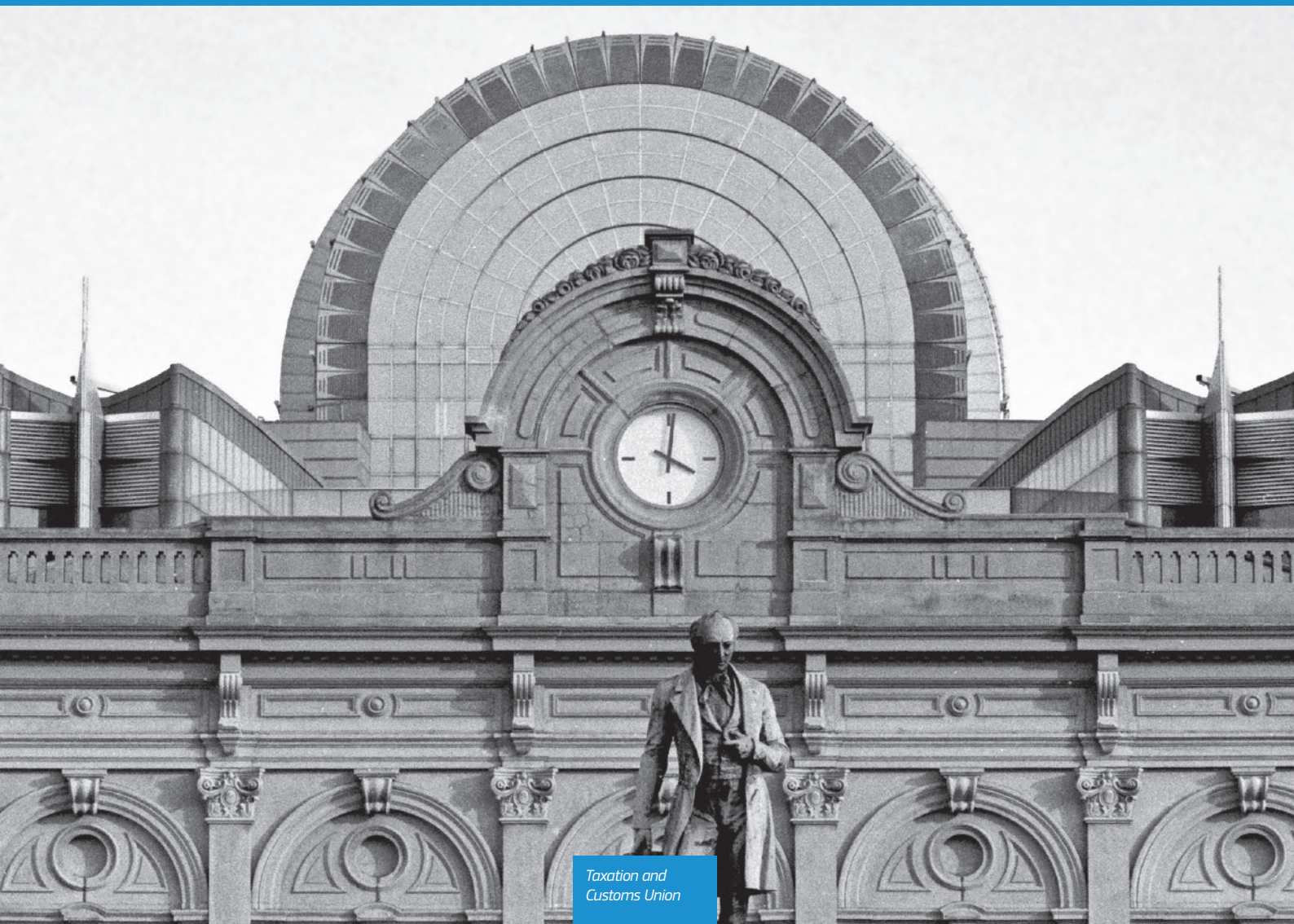

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Literature review on taxation, entrepreneurship and collaborative economy

Final Report

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Preface

This report has been prepared for the project "Taxation, entrepreneurship and collaborative economy", Specific Contract No.4 TAXUD/2016/DE/315 implementing the Framework Service Contract No. TAXUD/2015/CC/131 for the provision of economic analysis in the area of taxation.

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Executive Summary

Background and overview

Entrepreneurship is an engine of economic development. Governments around the world are searching for or implementing policies to stimulate entrepreneurship as a means to create new employment opportunities, reduce poverty and foster innovation and economic growth. Promoting entrepreneurship is also one of the priorities of the European Commission, in line with the objectives of the Single Market. The European Commission supports entrepreneurship through action plans, which include funding for entrepreneurship education, creating opportunities for women through gender-sensitive policies, easing administrative requirements and fostering productive investments.

Taxation is one of the main tools at governments' disposal to affect entrepreneurship in order to maximize its benefits.

The goal of this study is to provide a comprehensive and updated review of the theoretical and empirical economic literature on tax and entrepreneurship, taking also into account a number of open, tax-related questions raised by the changing nature of entrepreneurship, symbolised by the growing importance of the collaborative economy.

Case studies complement the literature review by exemplifying the key relationships between entrepreneurship, the collaborative economy and the tax system.

Based on the literature review and the case studies, the report develops a framework of analysis that allows to highlight the main tax policy options to support entrepreneurship in the traditional and the collaborative economy.

Approach

Entrepreneurship is a multidimensional phenomenon. One fundamental problem faced in the literature on taxation and entrepreneurship is in defining "entrepreneurship." Only a small fraction of firms generates non-trivial effects on economic growth through the development of new products, new technologies, or new internal forms of organization. In trying to judge to what degree the tax system may encourage or discourage entrepreneurship, the challenge is measuring the extent to which any given firm has generated (or will likely generate) such innovative activity.

The literature identifies two key characteristics of entrepreneurship: innovation and uncertainty. These features do not allow to label unambiguously a single category of firms as entrepreneurial, as they can be present at different degrees among the self-employed, and in firms of different dimensions and of different age; however, studies on entrepreneurship tend to focus on:

- start-ups and young firms;
- firms investing in R&D,

but consider in some instances also self-employment and small firms as proxies for entrepreneurship.

Collaborative economy activity can be distinguished as digital platforms that connect spare capacity and demand; use reputational currency mechanisms to underpin consumption; and enable individuals to share "access" to assets rather than own them outright.

The identification of entrepreneurs in the collaborative economy is straightforward with respect to the founders of collaborative economy platforms. They share the two main characteristics of the traditional entrepreneur, as they are creating an innovative new concept that requires an initial investment cost (e.g. to develop the software) and the take up of which is uncertain. The classification of the providers that participate in the platforms is more problematic. Such "micro-entrepreneurs" may use platforms only occasionally, or regularly to "top-up" income from a full-time job, combining them in a "portfolio" of different earning sources or even engage in the activity for non-financial motivations. In this way these individuals often do not exhibit the uncertainty and innovation that define traditional entrepreneurs, and will not behave or respond to incentives in the same way as traditional entrepreneurs. However, it should be noted that this picture is complicated by the multiple variety of individuals that engage with the collaborative economy, often including professional traders using platforms as a new channel to market, and these individuals may respond more in line with the "traditional entrepreneurs" described at length in our review.

To study the link between taxation and entrepreneurship, the report identifies the relevant entrepreneurial choices that may be affected by the tax system. Namely, taxation can influence the choice:

a) to become an entrepreneur
b) of the legal form of business
c) to invest
d) to use internal or external finance
e) where to locate the business
f) to hire employees
g) to comply with taxes or move to the informal sector.

By surveying the literature, the reports points out which type of taxes may be relevant for each choice and describe both the features of the current tax systems that can be an obstacle to entrepreneurship, and the way through which the tax system can be designed to actively encourage it.

"Micro-entrepreneurs" operating within the collaborative economy face the same choices as traditional entrepreneurs over whether (and how/to what extent) to engage in their form of entrepreneurship, and whether to comply with taxes. However, the remaining entrepreneurial choices are less relevant, and our review has identified existing issues in the tax system that the collaborative economy has exacerbated, such as identifying the commercial nature of transactions, as well as new issues that have arose as a result of its emergence, such as the potential for unequal competition between individuals providing similar services.

The survey of the economic literature is complemented by a series of case studies to illustrate how selected countries have tackled relevant aspects of the relationship between taxation and entrepreneurship and what tax policies they have adopted to solve critical aspects emerging in entrepreneurial activities in the traditional and collaborative economy. The countries covered by our case studies on entrepreneurship in the traditional economy are Denmark, Italy and Latvia; those on entrepreneurship in the collaborative economy are Estonia, France and the UK.

The report combines the results of the literature review and of the case studies to deliver a framework of analysis, which illustrates the available policy options to reduce distortions and to enhance the level and quality of entrepreneurial activity.

Key findings

The review of the literature and the case studies cover many tax instruments that could affect entrepreneurship. Here we summarize the policy options, which find stronger support in the theoretical and empirical literature and that are observed in countries covered by the case studies. We group them in three broad sets according to whether they target entrepreneurial risk, costs or returns. We have indicated below where these policies also apply to the collaborative economy – however, we have found that the specific characteristics of the collaborative economy have largely raised distinct challenges for policy makers which require different policy responses, which we discuss separately.

1. Policies which can reduce entrepreneurial risk.

Provision of full offset of business losses may encourage risk taking by reducing the asymmetric treatment between gains and losses that results in a "success tax". In particular, full offset of initial losses in new firms may be beneficial for entrepreneurial start-ups, given potentially large upfront cost to develop new products or business models. However, this may be difficult to implement when firms, at their initial stages, do not have enough income. In these cases, innovative solutions such as the possibility to match losses with taxes other than the income tax, or even to transfer and negotiate tax credits, could be experimented.

2. Policies which can reduce costs of entrepreneurial activity

The Allowance for Corporate Equity (ACE) reduces the cost of financing through equity, by allowing the deduction from the corporate tax base of the imputed cost of equity. This may be particularly relevant for entrepreneurial firms that have usually more limited access to debt financing. Italy offers an interesting example on how to implement an ACE for both incorporated and unincorporated firms in a way that limits the revenue loss and favors new firms.

A tax credit on expenditure in R&D seems to be a very effective way to encourage investments in R&D. There are three main elements that influence the effectiveness of this policy: the design, the complexity of the procedures and targeting. Volume-based R&D tax credits (applied to the total amount of R&D expenditure) are preferred to incremental ones. In addition, refundability should be granted to allow firms to make full use of the incentive. One-stop and on-line application procedures reduce compliance costs; targeting may be achieved by restricting the tax credit to young and small companies and by favouring specific types of R&D. Denmark, Italy, and Latvia offer specific examples of how these policies are implemented and illustrate the choices faced by policy-makers in designing them.

Simplified taxation regimes for small firms may encourage entrepreneurship by reducing compliance costs, since their burden is disproportionately large for small firms. There are two main tools to implement a simplified tax scheme for small entrepreneurial firms: the use of thresholds for income and VAT taxation and the adoption of presumptive taxation. Although simplified systems may have positive effects on compliance, the literature suggests that they should be coupled with incentives for firms to enter the normal system, otherwise they may be an obstacle to firm growth. Examples of adoption of simplified taxation are provided by Italy and Latvia, whereas the United Kingdom has proposed specific allowances for micro-entrepreneurs. Italy, in particular, has long used simplified tax regimes and offers an example of the difficulties in finding the right balance between their pros and cons. A simplified tax system may be particularly encouraging to "micro" entrepreneurs in the collaborative economy, many of whom might be expected to be less experienced at navigating the taxation system than other types of entrepreneur.

A system-wide digitization of the tax system can minimize compliance costs, and facilitate the payment of tax liabilities, particularly for small firms and for providers in the collaborative economy. The collaborative economy in some cases is acting as a catalyst to accelerate digital reforms of the tax system, such as in Estonia where there are emerging signs that a digital-based tax system can encourage an entrepreneurial environment and the collaborative economy alongside increasing tax revenues for the government.

3. Policies which can increase returns to entrepreneurial activity

Tax treatment of capital gains plays a central role in determining the return of the entrepreneurial activity since the latter is mainly remunerated in the form of capital gains. Further, a reduction in capital gains taxation may encourage the provision of capital to small firms with limited access to credit by venture capitalists. There are three features of the tax, which are relevant: the tax rate, the timing of taxation (accrual vs realization) and the treatment of capital losses.

Across-the-board elimination or reduction in capital gains taxation may encourage entrepreneurial firms but it also creates opportunities for eroding the income tax base and may result in low quality investment. For this reason, a more effective policy is to target the reduction of capital gains taxation to new firms. The theoretical literature strongly supports taxation on accrual and full loss offset, but the actual implementation comes at the cost of a rather complex and opaque tax formula (an example is "retrospective taxation" introduced in Italy in the 1990s, which tried to combine taxation at realization with the accrual principle). Consequently, the attempts to apply it in practice have been scarce.

A careful assessment is required to select the best solution for capital gains taxation, as changes in the latter may result in a relevant modification in the design of the overall tax system (e.g. the application of accrual taxation)

Our study also highlights the range of multi-dimensional issues that the collaborative economy is posing to the tax system. These mainly arise with respect to ensuring the neutrality of the tax system in order to create a level playing field between different agents operating in the same market. Neutrality is achieved when taxpayers in similar situations carrying out similar transactions are subject to similar levels of taxation, unless there is objective justification for discriminating.

There are two main challenges that may hinder tax neutrality in the collaborative economy:

Uncertainty in classification: The collaborative economy has increasingly blurred traditional boundaries drawn in the legal and taxation systems. It is uncertain how existing classifications should apply to collaborative economy businesses and this has led to the possibility of situations in which similar activities might be taxed differently. Beside hindering neutrality, uncertainty in classification makes it difficult for governments, platforms and providers to understand which taxes should apply.
Two material classification issues have emerged:

- Employment v self-employment: The growth of the collaborative economy is expected to see self-employment grow relative to employment as platforms currently classify most collaborative economy activity as self-employment, although this is being tested within several high-profile legal challenges on the basis of the applicability of employment protections. Indeed, in highly simplified settings, our illustrative simulation highlights that a large shift from employment to self-employment in the same area of the economy could materially reduce tax revenues. Some have even suggested that such a

situation brings into question whether the distinction between employment and self-employment is still appropriate within the tax system. However, given the wide spectrum of providers operating in the collaborative economy, from informal users to professional traders, and the novelty of the sectors that comprise the collaborative economy, it is difficult to ascertain whether the agents in question are truly analogous and compete in the same market, or not, and further research is required in this area.

- Profit v cost-sharing: At the same time, there is often ambiguity whether income generated from collaborative economy activity should be subject to income taxes or not, as collaborative economy activity often blurs the distinction between on the one hand a commercial transaction that generates income, and on the other hand an efficient way of sharing costs.

Fragmentation of income: The collaborative economy leads to a greater number of smaller transactions. Taxes are either withheld at source (such as taxes on labour income, which are withheld by employers) or collected via self-assessed tax returns. As the collaborative economy is expected to generate more, smaller amounts of income for individual participants, there may be a reduction in the amount of tax that is withheld at source and this may increase the risk of non-compliance in the collaborative economy (and therefore create an unequal playing field with activities in the traditional economy).

Uncertainty in classification and fragmentation of income might lead to higher compliance costs for providers and higher administrative cost for the tax administration. These costs may either deter potential participation in the collaborative economy or induce a move to the shadow economy. At the time of our review roughly half of member states have proposed or developed tax policies or practices aiming at reducing compliance costs and solving classification issues. We have focused our assessment on three of the most relevant case studies – Estonia, France and the UK. The majority of the policies are still being trialled or are in the design and development stage, and as such, substantive evidence for the impact of such reforms is not yet available. However, **three main policy options can be identified, with member states often undertaking a blend of each of these approaches**:

Adjust or clarify existing applicable rules

This has been the most common approach and has involved a variety of tax design and administration measures at the margins. For example, on tax design, France's "Terrasse" reforms have aimed to capture more revenue from the collaborative economy by extending the social security contribution framework to this activity. In contrast, the UK has expanded existing allowances on personal property income to encourage participation in the peer-to-peer accommodation sector. On tax administration, several Governments have run information campaigns to clarify the tax obligations of collaborative economy providers. In the UK, for example, the government has created online video content and is developing an online "tax calculator". Whilst Australia has provided specific guidance on the applicability of the General Sales Tax to those using peer-to-peer transportation platforms.

Use of thresholds and/or simplified tax regimes

These solutions have looked to directly address the question of the level at which collaborative economy earnings should be taxed. For example, Belgium has proposed a new "Customer-to-Customer income" classification for tax purposes and new thresholds and rates of tax. The UK has proposed a new "micro-entrepreneur" tax allowance for property and trading income so that a small amount of additional income can be earned without any interaction with the tax system.

Digitization of tax administration including the involvement of platforms in tax assessement and collection

This is the most radical solution and involves a step change in how the tax system operates through a wholesale use of digitization to reform tax administration, which can be the basis for further policy innovation. For example, France has asked platforms to play a greater role, requiring them to share income data with the tax authorities and inform providers of their tax obligations. France has also struck a partnership with Airbnb to collect occupancy taxes across a number of regions. However, it is Estonia which has made the most significant reforms in this area, becoming the first country in Europe to fully digitise its tax system through its e-Estonia program which the government has now started to apply to the specific challenges posed by the collaborative economy. For example, the tax authority has partnered with local ridesharing platforms to share data to enable the automatic population of online tax returns for drivers. This digital architecture has enabled Estonia to trial innovative new tax policies such as "Individual Entrepreneurial Accounts" that involve a much simplified tax regime.

Lastly, the report discusses the reasons that may justify a departure from the neutrality principle and justify a differential treatment of the collaborative economy. There is an outstanding policy question over whether to favour or penalise collaborative economy activities, and whether to use the tax system to do it. This is complicated by the fact that the wider welfare impacts from collaborative economy activity can be positive (such as environmental improvements from ridesharing or social benefits from P2P rentals) as well as negative (such as stimulating unequal competition within sectors or reducing long-term housing supply for the local market from P2P rentals).

The evaluation of wider effects on the economy is particular salient in the design of excise taxes. The collaborative economy may involve either a positive or negative externality, which can justify respectively the exemption from or application of excises. This should be assessed on a case by case basis. The externalities that excise taxes such as the tourist tax are designed to reflect may be present for some services and within some locations more than others. For example, it may be appropriate to extend the tourist tax to peer-to-peer rentals in cities, where these might be intended to contribute to congestion relief or improved housing availability, but this may be less appropriate in rural areas, where visitors might contribute significantly to the local economy.

General conclusions

It is hard to identify a firm recipe on what a government should do to encourage entrepreneurship and the development of the collaborative economy, because many trade-offs are involved. Moreover, targeting entrepreneurial firms is a particularly demanding task for the legislator. A number of provisions aimed at reducing the cost of exposure to risk (such as a full offset of business losses), at reducing the cost of equity financing (the Allowance for Corporate Equity is a notable example in this regard), and at increasing the return from investment (reducing capital gains taxation for new firms), seem to go in the right direction. In addition, the literature and case studies suggest that some tax incentives, such as R&D tax credits and allowances, can be designed to effectively encourage innovative activity.

Another aspect which has been emphasised by our analysis, both for "traditional" entrepreneurial firms and firms in the collaborative economy, is that they are usually small firms, on which the burden of administrative and compliance costs weighs disproportionally. A reduction in such costs by targeting specific features of the tax

system that disproportionally hurt entrepreneurial activities, has no evident drawbacks and should be part of a reform strategy. Examples are the introduction of simplified taxation regimes and an improved design of thresholds for certain taxes. Tax compliance costs for small firms can be reduced also by a system-wide digitization of the tax system.

We have found that the collaborative economy is challenging the concept of fiscal neutrality in many member states but it is too early to conclude which policy options are the most effective in tackling this challenge, and which will prove most successful over the long-term. This will also largely depend on the objectives of different governments, and to what extent they want to encourage activity in the collaborative economy.

Overall, our review has highlighted the multi-dimensional nature of the challenges posed to the tax system by the collaborative economy. Tax design and administration challenges are inter-linked and in particular, we expect that broad-based reforms to implement "digital tax accounts" can help to reduce costs for all participants in the collaborative economyand this should be viewed as a critical enabler to broader reforms to tax policy that may be required. Whilst the e-Estonia program is in its early stages, we consider that Estonia provides an important model for the mutual gains that can be achieved from such a "system-wide" solution that involves cooperation between all parties on a voluntary basis. Providers stand to gain from eliminating "grey areas" and reducing administrative burdens, whilst the government stands to gain from reduced risk of non-compliance and platforms stand to gain from increased transparency and simplification of procedures.

In particular, our review finds that platforms have a particularly important role to play by collaborating with governments in this area. We have found three key ways in which platforms are supporting governments:

- Provide transparent information/advice to providers or calculate their taxable income for self-reporting
- Report income of users to the tax authorities
- Withhold taxes directly

These approaches can lead to benefits for all key stakeholders – boosting compliance and reducing administration costs for governments whilst leading to a simpler and certain tax framework for providers which could in turn boost participation and also benefit platforms through reputational gains. The example of the partnership between Estonia and local ridesharing companies show that these practices can be successful if they are carefully designed, mitigating substantial additional reporting costs for platforms and finding efficient ways to process payments from individuals that are more likely to have several sources of income.

Lastly, our review has found that it is difficult to disentangle tax questions from questions on the employment classifications that often determine tax treatment. Our review shows the way economic activity is classified can have a material impact on tax revenues and so these questions may need to be tackled together to bring about a holistic, system-wide solution.

Further economic analysis, both theoretical and empirical, is required on a number of aspects to reach sound conclusions on the overall impact of different policy options. Although countries are responding to the new reality of the collaborative economy with

reforms of the tax systems, data on the effects of such reforms are not yet available, and hence the evidence is at best anecdotal.

Finally, it is clear, especially considering case studies, that the policy response is crucially determined by the specific economic and institutional context of each country. This makes general statements or advice extremely difficult, and probably unwarranted. It is clear that no one-size-fits-all solution is available, hence country specific-analyses should be most welcome in this regard.

Résumé

Contexte et vue d'ensemble

L'entrepreneuriat est un moteur du développement économique. Les gouvernements du monde entier cherchent et mettent en place des mesures qui stimulent l'entrepreneuriat afin de créer des emplois, réduire la pauvreté, favoriser l'innovation et soutenir la croissance économique. Promouvoir l'entrepreneuriat est également l'une des priorités de la Commission européenne, conformément aux objectifs du marché unique. La Commission européenne soutient l'entrepreneuriat par des plans d'actions, incluant le financement de l'éducation à l'esprit d'entreprise, la création d'opportunités pour les femmes par la prise en compte du genre dans la définition des politiques, la diminution des besoins administratifs et l'encouragement à des investissements productifs.

La fiscalité est l'un des outils principaux dont disposent les gouvernements pour influencer l'entrepreneuriat et tirer un parti maximal de ses bénéfices.

L'objectif de cette étude est de fournir une analyse complète et à jour de la littérature économique, aussi bien théorique qu'empirique, sur la fiscalité et l'entrepreneuriat. L'analyse prend également en compte un certain nombre de questions ouvertes sur la fiscalité qui sont posées par la nature changeante de l'entrepreneuriat, symbolisée par l'importance croissante de l'économie collaborative.

Des études de cas complètent l'analyse de la littérature, rendant compte par l'exemple des liens cruciaux entre entrepreneuriat, économie collaborative et systèmes fiscaux.

S'appuyant sur l'analyse de la littérature et des études de cas, ce rapport construit un cadre d'analyse qui présente les principales options de politique publique pour soutenir l'entrepreneuriat, aussi bien dans l'économie traditionnelle que dans l'économie collaborative.

Démarche

L'entrepreneuriat est un phénomène multidimensionnel. Un des problèmes fondamentaux que rencontre la littérature sur la fiscalité et l'entrepreneuriat est la définition même de la notion d'«entrepreneuriat». Seule une petite partie des entreprises a un impact non trivial sur la croissance économique à travers le développement de nouveaux produits, de nouvelles technologies ou de nouvelles formes d'organisation interne. En tentant de jauger la contribution du système fiscal à l'encouragement ou au découragement de l'entrepreneuriat, la difficulté est de mesurer l'apport de telle ou telle entreprise dans le développement des nouveautés.

Deux caractéristiques clés de l'entrepreneuriat sont identifiées par la littérature: l'innovation et l'incertitude. Ces deux caractéristiques ne permettent pas de mettre un label d'entrepreneuriat sans ambiguïté sur une catégorie unique d'entreprises, ces deux caractéristiques étant présentes à des degrés divers parmi les travailleurs indépendants ainsi que les entreprises de taille et d'âge différents. Les études sur l'entrepreneuriat ont néanmoins tendance à se focaliser sur certaines catégories :

- les start-ups et les entreprises récentes;
- les entreprises qui investissent dans la recherche et le développement (R&D).

Dans certains cas, les études considèrent les statuts de travailleur indépendant et d'entreprise de petite taille comme des variables de remplacement (proxy) permettant de mesurer l'entrepreneuriat.

L'activité de **l'économie collaborative** peut être distinguée comme plateformes digitales connectant des capacités disponibles avec une demande; utilisation de mécanismes de monnayage basé sur la réputation comme base pour la consommation; et permettre aux individus de partager un "accès" aux biens plutôt que simplement les posséder.

L'identification des entrepreneurs de l'économie collaborative ne présente pas de difficulté en ce qui concerne les fondateurs des plateformes d'économie collaborative. Ils ont en commun les deux principales caractéristiques des entrepreneurs traditionnels, puisqu'ils créent un concept nouveau qui requiert un investissement initial (par exemple pour développer un software), dont le succès est incertain. La classification des micro-entrepreneurs qui agissent sur ces plateformes est plus problématique. Ces micro-entrepreneurs n'utilisent en effet les plateformes collaboratives que de manière occasionnelle, ou alors pour complémenter les revenus qu'ils dérivent d'un emploi à plein temps, pour intégrer cette activité dans un portefeuille de revenus de sources diverses ou simplement pour participer à ces activités sans motivation financière. En ce sens, l'incertitude et l'innovation qui définissent l'entrepreneuriat traditionnel ne sont pas reflétées dans les activités de ces micro-entrepreneurs. Le comportement de ces individus n'est par ailleurs pas influencé de la même manière par les incitations économiques que celui des entrepreneurs traditionnels. Ce tableau est toutefois nuancé par la diversité des personnalités engagées dans l'économie collaborative, qui inclut des acteurs commerciaux faisant usage des plateformes collaboratives comme un autre canal d'accès au marché et dont le comportement est plus conforme au modèle d'entrepreneur traditionnel décrit en détail dans cette étude.

Pour analyser le lien entre fiscalité et entrepreneuriat, le rapport se base sur les choix des entrepreneurs qui peuvent être affectés par le système fiscal, à savoir :

a) la décision de devenir un entrepreneur
b) la forme légale de l'entreprise
c) l'investissement
d) l'usage de financements internes ou externes
e) le lieu d'activité
f) le recrutement d'employés
g) le respect du système fiscal ou l'activité sur le marché noir.

En passant en revue la littérature, le rapport identifie les types d'impôts qui ont un rapport avec chacun des choix à faire par les entrepreneurs, et la façon pour le système fiscal soit de décourager soit d'encourager l'entrepreneuriat.

Les micro-entrepreneurs actifs sur les plateformes collaboratives sont confrontés à une partie des choix que les entrepreneurs traditionnels doivent faire, mais pas tous. Eux aussi doivent décider de devenir un acteur ou non, dans quelle mesure, et de respecter le système fiscal ou non. Le reste des choix à faire par les entrepreneurs traditionnels n'a par contre pas la même importance pour les micro-entrepreneurs. Notre analyse a mis en évidence un certain nombre de problèmes des systèmes fiscaux existants qui sont exacerbés par l'économie collaborative, tels que l'identification de la nature commerciale (ou non) des transactions. Notre analyse a

également mis en évidence de nouveaux problèmes liés à l'émergence de l'économie collaborative, tel qu'un cadre compétitif différent et inégal s'appliquant à des individus proposant pourtant des services similaires.

L'analyse de la littérature économique est complétée par des études de cas dans un certain nombre de pays. Ces études de cas illustrent la façon dont les gouvernements gèrent les aspects critiques, et parfois problématiques, qui gouvernent la relation entre fiscalité et entrepreneuriat, tant dans l'économie traditionnelle que l'économie collaborative. La couverture géographique pour les cas de l'économie traditionnelle est le Danemark, l'Italie et la Lettonie, tandis que les cas de l'économie collaborative proviennent de l'Estonie, la France et le Royaume-Uni.

Le rapport intègre résultats de l'analyse de la littérature et résultats des études de cas, fournissant un cadre d'analyse qui illustre les options de politique publique à disposition, la façon dont ces options réduisent les distorsions et améliorent le niveau et la qualité de l'activité entrepreneuriale.

Principales conclusions

L'analyse de la littérature et des études de cas couvre un grand nombre d'instruments fiscaux qui peuvent affecter l'entrepreneuriat. Nous fournissons ici un résumé des options de politiques publiques les mieux défendues par la littérature théorique et empirique et qui sont présentes dans les pays couverts par notre étude de cas. Les options de politiques publiques sont regroupées dans trois larges ensembles, en fonction de leurs objectifs: risque, coûts et gains de l'activité entrepreneuriale. Nous avons indiqué ci-dessous lorsque l'application de ces options politiques s'étend à l'économie collaborative – nous observons cependant que les caractéristiques spécifiques à l'économie collaborative amènent principalement denouveaux défis, ce quinécessite des réponses politiques différentes que nous discutons séparément.

1. Politiques publiques pouvant réduire le risque entrepreneurial

La **déductibilité complète des pertes d'exploitation** peut encourager la prise de risque, en réduisant l'asymétrie de traitement qui existe entre gains et pertes et qui est une forme de « taxe sur le succès ». En particulier, la déductibilité complète des pertes initiales des nouvelles entreprises peut être bénéfique pour les start-ups, étant donné les coûts initiaux de développement de nouveaux produits ou modèles d'affaire, qui peuvent être élevés. Néanmoins, une telle politique peut être difficile à mettre en place en pratique, les entreprises nouvelles ne générant souvent pas suffisamment de revenus. Dans ces cas précis, des solutions innovantes pourraient être expérimentées, comme la possibilité de déduire les pertes d'autres impôts que les impôts sur le revenu, ou encore la possibilité de transférer et négocier les crédits d'impôts.

2. Politiques publiques pouvant réduire les coûts de l'activité entrepreneuriale

La **déduction pour fonds propres** réduit les coûts de financement par les capitaux propres, en permettant la déduction des coûts imputés des fonds propres de la base de l'impôt sur les sociétés. Cette mesure peut être particulièrement intéressante pour les entreprises qui ont un accès difficile au financement par l'emprunt. L'Italie offre un exemple intéressant, ayant mis en place un système de déduction pour fonds propres qui limite les pertes de gains et favorise les nouvelles entreprises, aussi bien pour les entreprises constituées en société que celles qui ne le sont pas.

Les **crédits d'impôts sur les dépenses de R&D** apparaissent comme une mesure très efficace pour encourager les investissements en R&D. Trois éléments définissent l'efficacité de cette mesure : la conception, la complexité des procédures et le ciblage.

Les crédits d'impôts basés sur le volume (appliqué sur le montant total des dépenses de R&D) sont préférables aux crédits basés sur les augmentations de dépenses. Les remboursements de crédit doivent être accordés pour encourager les entreprises à répondre pleinement aux incitations. La mise en ligne des procédures sur site internet, avec un point d'entrée unique, permet de réduire les coûts de mise en conformité. Restreindre le crédit d'impôts aux entreprises qui sont petites et jeunes est une forme prisée de ciblage, de même que la restriction à certaines activités de R&D. Les cas du Danemark, de l'Italie et de la Lettonie sont des exemples qui illustrent les différents choix que les gouvernements ont dans la conception et la mise en place du crédit d'impôts.

Simplifier les régimes fiscaux pour les petites entreprises permet d'encourager l'entrepreneuriat en réduisant les coûts de mise en conformité, qui sont proportionnellement plus élevés pour les petites que les grandes entreprises. Deux instruments existent pour simplifier les régimes fiscaux des petites entreprises: l'utilisation de seuil pour les impôts sur les revenus et la taxe sur la valeur ajoutée; et le régime forfaitaire. Bien que les régimes simplifiés aient des effets positifs sur le respect du système fiscal, la littérature suggère de les accompagner avec des incitations à l'adoption du régime fiscal normal pour éviter que ces régimes simplifiés ne constituent un obstacle à la croissance des petites entreprises. Des exemples de régimes simplifiés se trouvent en Italie et en Lettonie. Le Royaume-Uni a proposé des abattements fiscaux spéciaux pour les micro-entrepreneurs. L'Italie en particulier a utilisé les régimes simplifiés de longue date et fournit un exemple de la difficulté de trouver un bon équilibre entre les avantages et les inconvénients de ces régimes. Un système fiscal simplifié peut être particulièrement encourageant pour les micro-entrepreneurs de l'économie collaborative, la plupart d'entre eux étant selon toute vraisemblance moins expérimentés dans la navigation du système fiscal que d'autres types d'entrepreneurs.

Une **numérisation complète du système fiscal** peut réduire les coûts de mise en conformité et rendre le paiement de la facture fiscale plus facile, en particulier pour les petites entreprises et les micro-entrepreneurs de l'économie collaborative. Dans certains cas, l'économie collaborative peut agir comme un catalyseur pour accélérer les réformes de numérisation du système fiscal, comme en Estonie, où des signes émergent sur l'encouragement de l'environnement entrepreneurial et de l'économie collaborative, en parallèle de l'augmentation des revenus fiscaux pour le gouvernement.

3. Politiques publiques pouvant augmenter les gains de l'activité entrepreneuriale

Le **traitement fiscal des gains en capital** joue un rôle central dans la définition des gains de l'activité entrepreneuriale, dans la mesure où cette dernière provient en majeure partie des gains en capitaux. De plus, une réduction de l'imposition sur les gains en capitaux peut encourager le financement des petites entreprises qui ont un accès difficile aux emprunts par les investisseurs de capital-risque. Trois aspects de l'impôt sur les gains en capitaux sont pertinents : le taux de l'impôt ; le calendrier de l'imposition (engagement vs réalisation) ; et le traitement des pertes en capitaux.

L'élimination pure et simple, ou la réduction, de la fiscalité des gains en capital peut encourager l'entrepreneuriat, mais cela crée aussi des problèmes d'érosion de la base fiscale et peut amener des investissements de faible qualité. Pour ces raisons, il est plus efficace de restreindre la réduction des impôts sur les gains en capital aux nouvelles entreprises. La littérature théorique recommande fortement l'imposition sur une base d'engagements avec déductibilité intégrale des pertes, mais la mise en pratique de ces recommandations résulte en une formule assez complexe et opaque (la « taxation rétrospective » mise en place par l'Italie dans les années 1990s en

constitue un exemple, essayant d'intégrer l'imposition au moment de la réalisation avec le principe d'engagement). En conséquence, les essais de mise en pratique de ce principe théorique sont rares.

Une évaluation approfondie est nécessaire pour sélectionner/définir la meilleure solution en matière de taxation des gains en capital, dans la mesure où un changement dans ce domaine peut nécessiter un changement dans la totalité du système fiscal (par exemple, mise en place du principe d'engagement).

Notre analyse met par ailleurs en évidence l'étendue des problèmes de nature multidimensionnelle que l'économie collaborative pose au système fiscal. Ces problèmes émanent principalement de l'objectif de neutralité du système fiscal, nécessaire pour assurer des conditions de concurrence égales. La neutralité est atteinte quand des contribuables sont soumis à un niveau d'imposition similaire quand ils sont dans des situations similaires et font des transactions similaires, sauf s'il existe une justification objective pour une discrimination.

Il y a deux problèmes principaux qui peuvent pénaliser la neutralité du système fiscal dans l'économie collaborative:

Incertitudes de classification: L'économie collaborative rend de plus en plus floues les frontières traditionnelles entre système légal et système fiscal. Comment les classifications actuelles s'appliquent aux entreprises de l'économie collaborative est incertain, ce qui a engendré des situations où des activités similaires peuvent être imposées différemment. A part pénaliser la neutralité, les incertitudes de classification font qu'il est plus difficile pour les gouvernements, les plateformes et les micro-entrepreneurs de comprendre quels impôts doivent s'appliquer.

Deux problèmes importants de classification ont émergé:

- Travail salarié v travail indépendant: la croissance de l'économie collaborative doit s'accompagner d'une croissance du travail indépendant par rapport au travail salarié, dans la mesure où les plateformes collaboratives classifient la plupart de l'activité qui s'y déroule comme du travail indépendant, même si plusieurs actions en justice à haute visibilité contestent cette classification sur la base de la législation de protection de l'emploi. En effet, dans un cadre très simplifié, nos simulations illustrent l'importance de la perte de revenus du système fiscal qu'impliquerait un transfert significatif du travail salarié vers le travail indépendant dans le même domaine économique. D'aucuns posent même la question de la pertinence de la distinction du travail indépendant et du travail salarié pour le système fiscal. Cependant, étant donnés la largeur du spectre des opérateurs de l'économie collaborative, des utilisateurs informels aux commerciaux professionnels, et la nouveauté des secteurs que comprennent l'économie collaborative, il est difficile de juger si les agents en question sont vraiment analogues et actifs sur le même marché ou non. Des recherches supplémentaires dans ce domaine sont requises.
- Profit v partage des coûts: Dans le même temps, une ambiguïté se manifeste souvent sur la nécessité de soumettre les revenus issus de l'économie collaborative à l'impôt sur le revenu ou non, l'activité sur les plateformes collaboratives rendant souvent floue la distinction entre, d'une part, transaction commerciale générant un revenu, et, d'autre part, partage efficace des coûts.

Fragmentation du revenu: L'économie collaborative engendre un plus grand nombre de transactions de plus faibles montants. Les impôts sont soit perçus à la source (comme les impôts sur les revenus du travail perçus par les employeurs) ou

recouvrés à travers les déclarations d'impôts. Comme l'économie collaborative doit générer plus de transactions de revenus de plus petits montants pour les individus y participant, il peut y avoir une réduction du total des impôts perçus à la source, ce qui peut accroître le risque de non-conformité au sein de l'économie collaborative (et de cette façon créer un niveau de concurrence inégal avec les activités de l'économie "traditionnelle").

Incertitudes de classification et fragmentation du revenu peuvent mener à des coûts de mise en conformité plus larges pour les micro-entrepreneurs et des coûts administratifs plus larges pour l'administration fiscale. Ces coûts peuvent freiner la participation à l'économie collaborative ou induire une évolution vers l'économie informelle. Au moment de la rédaction de notre étude, près de la moitié des pays membres de l'Union européenne a proposé ou développé des règles ou pratiques fiscales pour réduire les coûts de mise en conformité et résoudre les problèmes de classification. Dans notre évaluation, nous avons mis l'accent sur trois des cas les plus pertinents, Estonie, France et Royaume-Uni. La majorité des mesures en est encore à la phase d'essai ou de développement, ce qui fait que l'impact des réformes ne peut être mesuré de manière définitive. Cependant, trois options majeures de réformes peuvent être identifiées, les États membres pratiquant souvent un mélange de chacune de ces approches :

Ajuster ou clarifier les règles courantes
Il s'agit là de l'approche la plus courante, impliquant un certain nombre d'ajustements marginaux de la conception et de l'implémentation du système fiscal. Par exemple en termes de conception en France, les réformes « Terrasse » ont pour but de capturer plus de revenus de l'économie collaborative en étendant le cadre des charges sociales à cette activité. Par contraste, le Royaume-Uni a étendu les exonérations courantes aux revenus générés par la propriété pour encourager la participation dans le secteur des hébergements de particulier-à-particulier. À propos de l'administration fiscale, plusieurs gouvernements ont lancé des campagnes d'information pour clarifier les obligations fiscales des micro-entrepreneurs de l'économie collaborative. Au Royaume-Uni par exemple, le gouvernement a mis en ligne une vidéo et développe une calculette fiscale en ligne. Pendant ce temps, l'Australie a fourni des instructions spécifiques sur l'applicabilité de sa taxe de consommation « General Sales Tax » pour les utilisateurs de plateformes de transports de particulier-à-particulier.

Utilisation de seuils ou régimes fiscaux simplifiés
Ces solutions cherchent à traiter directement la question du niveau à partir duquel imposer les revenus de l'économie collaborative. Par exemple, la Belgique a proposé une nouvelle classification de revenus de « consommateur-à-consommateur » pour le système fiscal, avec de nouveaux seuils et de nouveaux taux. Le Royaume-Uni a pour sa part proposé une nouvelle déduction pour les revenus de l'immobilier et d'autres transactions pour les micro-entrepreneurs, de telle façon que de petits montants de revenus supplémentaires puissent être perçus sans interaction avec le système fiscal.

Numérisation de l'administration fiscale, y compris la participation des plateformes dans l'évaluation et la perception fiscale
Il s'agit de la solution la plus radicale impliquant un saut qualitatif dans la manière d'opérer du système fiscal, grâce à une réforme faisant un usage industriel de la numérisation, et qui peut servir de tremplin pour d'autres innovations politiques. Par exemple, la France a demandé aux plateformes de jouer un plus grand rôle, leur demandant de partager les informations qu'elles ont sur les revenus et d'informer les micro-entrepreneurs de leurs obligations. La France a également trouvé un accord avec Airbnb pour collecter les taxes de séjours dans plusieurs régions. Cependant, l'Estonie reste le pays qui a mis en œuvre les réformes les plus significatives dans ce

domaine, devenant le premier pays d'Europe à numériser intégralement son système fiscal, à travers son programme e-Estonie et dont le gouvernement commence à faire usage pour gérer les problèmes spécifiques posés par l'économie collaborative. Par exemple, les autorités fiscales ont formé un partenariat avec des plateformes locales de gestion de déplacements pour partager les informations nécessaires à l'alimentation automatique des formulaires en-ligne de déclaration d'impôts des conducteurs. L'architecture digitale a permis à l'Estonie de tester de nouvelles pratiques fiscales, telles que les « comptes individuels d'entrepreneuriat », qui impliquent un régime fiscal très simplifié.

Finalement, le rapport fournit une discussion des raisons qui peuvent justifier un écart du principe de neutralité ainsi qu'un traitement différencié pour l'économie collaborative. Une question de politique publique reste en suspens, celle de savoir si les activités d'économie collaborative doivent être soutenues ou pénalisées, le système fiscal pouvant ou non jouer un rôle à cette fin. Cette question est rendue plus complexe par l'impact de l'économie collaborative sur le bien-être global de la société, cette activité ayant des aspects tant positifs (comme la réduction de la pollution avec le co-voiturage ou les bénéfices sociaux des locations touristiques de particulier à particulier) que négatifs (comme la stimulation d'une compétition inégale ou la réduction de l'offre de logements dûe aux locations touristiques de particulier à particulier).
L'évaluation des impacts globaux de l'économie collaborative est particulièrement frappante dans la conception des droits d'accise. L'économie collaborative peut impliquer une externalité qui soit positive ou négative, ce qui peut justifier respectivement l'exemption ou l'application de l'accise. Cette question doit être évaluée au cas par cas. Les externalités que les accises tels que la taxe de séjour sont censées reflétées peuvent être plus présentes dans certains services et localisations que dans d'autres. Par exemple, il peut être approprié d'étendre la taxe de séjour aux locations de particulier-à-particulier dans les villes, où celle-ci peut contribuer à la réduction des congestions ou l'augmentation de l'offre de logements, mais pas en milieux ruraux, où les touristes peuvent contribuer de manière significative à l'économie locale.

Conclusions générales

Il est difficile d'identifier une recette ferme qui permette au gouvernement d'encourager à la fois l'entrepreneuriat et le développement de l'économie collaborative, en raison de nombreux compromis qui sont nécessaires. Par ailleurs, cibler les sociétés entreprenantes est une tâche particulièrement exigeante pour le législateur. Un certain nombre de mesures cherchant à réduire le coût d'exposition au risque (comme la déductibilité complète des pertes d'exploitation), à réduire le coût des financements par apport de fonds propres (la déduction pour fonds propres en est un exemple notable), ainsi qu'à augmenter le gain des investissements (réduire l'imposition des gains en capitaux), semble aller dans la bonne direction. De plus, la littérature et les études de cas suggèrent que certaines incitations fiscales, comme les crédits d'impôts et les abattements pour les dépenses de R&D, peuvent être conçues de manière à soutenir l'innovation.

Un autre aspect qui a été souligné par notre analyse, autant pour les sociétés entreprenantes « traditionnelles » que pour les entreprises de l'économie collaborative, est qu'il s'agit souvent de petites entreprises, sur lesquelles la charge des coûts administratifs et de mise en conformité pèse disproportionnellement. Une réduction de tels coûts, en ciblant des caractéristiques spécifiques du système fiscal qui pénalisent de manière disproportionnelle l'activité entrepreneuriale, ne présente

pas de désavantage particulier et devrait faire partie d'une stratégie de réforme. Des exemples sont l'introduction de régimes fiscaux simplifiés et l'amélioration de la conception des seuils pour certains impôts. Les coûts de conformité avec le système fiscal pour les petites entreprises peuvent également être réduits avec une numérisation complète du système fiscal.

L'économie collaborative pose des difficultés au concept de neutralité fiscale dans un grand nombre d'États membres mais il est trop tôt pour conclure sur les options de politiques publiques les plus efficaces pour traiter ces difficultés, ainsi que sur les options qui seront le plus efficaces sur le long-terme. Cette question dépendra aussi et dans une large mesure des objectifs des différents gouvernements, et notamment de leur ambition pour promouvoir l'activité dans l'économie collaborative.

Dans l'ensemble notre revue a mis en évidence la nature multi-dimensionnelle des défis posés au système fiscal par l'économie collaborative. Les questions de conception et d'administration du système fiscal sont liées entre elles; nous nous attendons en particulier à ce que des réformes de large ampleur qui mettent en place des "comptes fiscaux numériques" puissent aider à réduire les coûts pour tous les participants de l'économie collaborative et que cela soit perçu comme un catalyseur clef pour les plus amples réformes de politique fiscale qui peuvent être requises. Bien que le projet d'e-Estonie ne soit que dans ces premières étapes, nous considérons que l'Estonie fournit un modèle important impliquant plusieurs parties de manière volontaire. Les micro-entrepreneurs ont tout à gagner à l'élimination des zones grises et la réduction de la charge administrative, tandis que le gouvernement peut gagner par la réduction du risque de non-conformité et les plateformes par les gains de transparence accrue et la simplification des procédures.

Notre revue parvient notamment à la conclusion que les plateformes ont un rôle particulièrement important à jouer dans la collaboration avec les gouvernements dans ce domaine. Nous avons identifié trois approches clefs qui facilitent le travail des gouvernements :

- Fournir des informations ou conseils transparents aux micro-entrepreneurs et calculer les revenus imposables à utiliser dans leurs déclarations
- Transmettre les informations de revenus des utilisateurs aux administrations fiscales
- Percevoir directement les impôts

Ces approches peuvent amener des avantages à toutes les parties prenantes: renforcer le respect de la réglementation et réduire la charge administrative pour les gouvernements; parvenir à un cadre fiscal plus simple et plus certain pour les micro-entrepreneurs, propre à soutenir la participation aux plateformes collaboratives; bénéficier d'une meilleure réputation pour les plateformes collaboratives. L'exemple du partenariat entre le gouvernement d'Estonie et les plateformes locales de trajets partagés montre que ces pratiques peuvent être couronnées de succès si elles sont définies avec soin, amenuisant la surcharge administrative pour les plateformes et trouvant des moyens efficaces de traiter le paiement d'individus qui sont enclins à avoir plusieurs sources de revenus.

Finalement, notre revue a montré qu'il est difficile de séparer les questions de fiscalité des questions de classification de l'activité de travail, qui souvent déterminent le traitement fiscal. Notre analyse montre que la façon dont est codifiée l'activité économique peut avoir un impact matériel sur les revenus fiscaux. Ces deux questions doivent probablement être considérées en même temps pour parvenir à une solution d'ensemble cohérente.

De plus amples études économiques, tant théoriques qu'empiriques, sont nécessaires dans un certain nombre de domaines pour permettre de formuler de saines conclusions sur l'impact général des différentes options de politique publique. Bien que les pays réagissent à la nouvelle réalité de l'économie collaborative avec des réformes fiscales, les données sur l'effet de telles réformes ne sont pas encore disponibles. Les données empiriques qui existent sont donc anecdotiques, dans le meilleur des cas.

Finalement, il est clair que les ajustements de politiques publiques dépendent de manière cruciale du contexte économique et institutionnel de chaque pays, en particulier lorsque les études de cas sont prises en compte. Cette observation rend difficiles, et peut être injustifiées, les conclusions et les recommandations à portée générale. Il est clair qu'il n'existe pas de solution unique et que des analyses spécifiques à chaque pays soient les bienvenues.

Introduction

There are many determinants of entrepreneurship: local and global market opportunities, access to finance, and human capital are just a few examples. Government policy is also considered to be crucial in the development of entrepreneurial activities. Market regulation and competition policy, taxation and public support in the form of direct aid to firms -which could reflect a type of State Aid, and would be ruled out by the EU legislation-, can influence the decision to become an entrepreneur and the very development of entrepreneurial activity. The extent and enforcement of intellectual property rights, as they affect access and incentives to innovate, are another important determinant. Governments across the world have sought to encourage entrepreneurship via a range of policy interventions. This intervention is justified on the basis that entrepreneurial activity generates positive spillovers for the economy through channels such as product and process innovation and on the basis of market failures. Whether such intervention is equally justified for collaborative economy entrepreneurs, or whether they should be treated differently, is up for discussion and different approaches have been taken by governments.

Out of all these factors this study solely focuses on surveying the economic literature, which examines the impact of tax policy on entrepreneurship, both in the traditional and in the collaborative economy. We complement the literature review with practical examples emerging from recent experiences in the fast-evolving environment of the collaborative economy and with a series of detailed case studies on tax policies applied on entrepreneurship in the traditional and collaborative economy. The goal is to illustrate how selected countries have tackled relevant aspects of the relationship between taxation and entrepreneurship and what tax policies they have adopted to solve critical aspects emerging in entrepreneurial activities in the traditional and collaborative economy.

To investigate the link between taxation and entrepreneurship, we identify the relevant entrepreneurial choices that may be affected by the tax system and point out which type of taxes may be relevant for each choice. We describe both the features of the current tax systems that can be an obstacle to entrepreneurship, and the way through which the tax system can be designed to actively encourage it. Some of these entrepreneurial choices are relevant for the collaborative economy, and we indicate where this occurs. However, there are specific issues raised by the collaborative economy which governments need to address by reviewing and adjusting/enforcing both their tax design and tax administration framework.

Starting from the review of the literature and case studies, we build a framework of analysis, which distils the main policy options.

Despite a vast theoretical and empirical literature, the overall impact of the tax system on entrepreneurship remains in many cases ambiguous, as is the effectiveness of the tax instrument in bringing the level of entrepreneurship closer to its socially optimal level. This is particularly true of the collaborative economy, which is still a relatively new conception. There are, however, some tax policy tools, whose adoption finds support in the literature and which have been experienced with some success by some Member States.

In more detail, the report is organized as follows.

The precondition to study the link between taxation and entrepreneurship is the definition of what entrepreneurship is, and what the characteristics of the collaborative economy are. This is done in **Chapter 1**. In **Chapter 2** we provide a review of the economic literature on the impact of taxation on entrepreneurial activity in general, and on collaborative economy in particular. We identify a number of entrepreneurial

decisions, which are relevant to the start-up, consolidation, development and success of an entrepreneurial activity; we single out the relevant dimensions of the tax system affecting each entrepreneurial decision, and summarise the main theoretical and empirical results provided by the relevant economic literature. We focus on the following margins of decision: the choice to become an entrepreneur; the choice of the legal form of the firm; the choice to invest; the choice of the financial structure and the source of financing; the choice of where to locate the business; the hiring choice; the choice of tax compliance (i.e. whether to operate in the formal or informal sector). We indicate the instances where these choices are also relevant for the collaborative economy, but we also highlight some specific aspects of the taxation of the collaborative economy, in terms of tax design and tax administration; namely: the identification and classification of income within the collaborative economy, the scope of application of indirect taxes (VAT and excises), the role of compliance costs and the possibility to reduce them through digitization and collaboration with platforms.

In **Chapter 3** we analyse a number of case studies on countries which adopted specific tax policies to remove the obstacles to entrepreneurship and to actively encourage it: these countries were chosen as they provide a range of policy analysis and differing government approaches reflecting different economic environments and tax structures.
With regard to traditional entrepreneurship, we consider the cases of Denmark, Italy and Latvia. In order to encourage innovation, Denmark has introduced a number of tax provision aimed at reducing the cost of investments and expenditures in R&D. In recent years, Italy has introduced several new measures, aimed at the improvement of business environment and entrepreneurship, and in particular to facilitate access to finance and to target investment in R&D. Besides its tax system particularly favourable to the developing of entrepreneurial activity (e.g. low corporate income tax rate), Latvia has recently taken some steps in supporting entrepreneurship and R&D, for instance by simplifying tax administration and by introducing several reforms including a preferential tax regime for small businesses. Common aspects across the countries are the attempt to simplify the tax system, to reduce administrative and compliance costs, and targeted reduction in tax rates through provisions and preferential regimes for small and very small businesses.

With regard to the collaborative economy, we consider the cases of Estonia, France and the United Kingdom. Estonia has been the first country in Europe to digitse its tax system in response to an increasingly digital economy from which the collaborative economy has grown. This has a dual purpose of reducing administration costs and of making it easier for collaborative economy providers to remain tax compliant, which has led to an increase in government tax receipts. Through the "Terrasse" reforms, France has aimed to create a level playing field between the collaborative and traditional economy, as well as securing government revenue, by extending the tax and social security contribution framework to this activity, enhancing data collection powers, and striking partnerships with platforms to support tax administration. In contrast, the United Kingdom has been one of the first countries to proactively use tax incentives to promote the collaborative economy, establishing a new tax allowance that although accessible to any individual, was predicated on the basis of targeting "micro" entrepreneurs. The government has also run an information campaign, with a strong online and digital presence including YouTube and an online tax calculator.

Chapter 4 contains the framework of analysis, which illustrates the available policy options to reduce distortions and to enhance the level and quality of entrepreneurial activity. We group different policy options according to the tax instrument being used. Namely, we consider income taxes, social security contributions, capital gains taxes, excise taxes and property/wealth taxes; we finally take into account possible policy

options common to several types of taxes (e.g. the use of thresholds) and issues related to tax administration.

For each tax instrument, we analyse different policy options emerging from the theoretical and empirical literature and from the case studies; we point out possible caveats, drawbacks or potential difficulties in their implementation, where these have been highlighted in our research. We finally offer a discussion, in which all the policy options surveyed within each tax instruments are organized according to whether they influence entrepreneurship via a change in the risk, the costs or the returns of entrepreneurial activity, and we highlight the specific issues raised within the collaborative economy. We point out those policy options, which find stronger support in the theoretical or empirical literature or which are discussed in case studies and which, according to our analysis, could be part of an effective strategy to encourage entrepreneurship and a balanced growth of the collaborative economy.

Chapter 1 The definition of entrepreneurship in the traditional and the collaborative economy

1 Introduction

The analysis of the effects of taxation on entrepreneurship in the traditional and collaborative economy requires the preliminary definition of the distinctive features of an entrepreneurial firm in the traditional and the collaborative economy. In this chapter, we will first consider the notion of entrepreneurship as emerging from the economic literature (see section 2). Although scholars in different disciplines have studied entrepreneurship for decades, there is still a lack of consensus on its exact meaning. Second, we will focus on the characteristics and determinants of the collaborative economy (see section 3). Even in this case, a clear definition is still missing, as this relatively new phenomenon takes many different forms. However, some common characteristics can be identified. Finally in section 4 we will analyse the differences between entrepreneurship in the traditional and the collaborative economy.

2 What is entrepreneurship? What are its determinants?

Entrepreneurship is a complex, multidimensional phenomenon analyzed by different fields of study. By focusing on the economic perspective, this section aims to provide a review of the different definitions of entrepreneurship and to present its determinants.

Due to the difficulty of fitting entrepreneurship into its theory, the traditional neoclassical approach does not provide a systematic investigation of the issue and does not pay enough attention to the entrepreneur as a decision maker. Both in general and partial equilibrium models, the entrepreneur is passive and is described merely as a manager whose role is to coordinate scarce resources and calculate the profit maximizing output (Barreto, 1989; Glancey and McQuaid, 2000).

Knight (1921) is probably the first to make a clear distinction between entrepreneurs and managers, giving a distinct content to their respective roles. His approach applies a function-based characterization distinguishing between routine and non-routine decisions, being the former cluster of choices proper of a manager, whereas the latter are the typical ones for an entrepreneur. Entrepreneurs differ from managers in that they are not simply actors of routine administrative tasks, but they are strategic decision-makers who generate profits by optimally employing scarce resources under uncertainty (Glancey and McQuaid, 2000). Thus, **the entrepreneur is a specialist who has the function of coping with uncertainty. In other words, entrepreneurship requires the managerial and organizational skills necessary to face the risk associated with the firm's activity** (Kihlstrom and Laffont, 1979).

If the branch of the literature fostered by Knight's work identifies in the capability of managing uncertainty a necessary determinant of entrepreneurship, alternative approaches recognize others crucial characteristics of the entrepreneur. Kirzner (1983) focuses on **the alertness to unexploited opportunities** of the market as the key determinant of entrepreneurial choice. According to this perspective, the entrepreneur is able to perceive opportunities that may have been available before but that had not been noticed by others. Therefore, entrepreneurs are economic agents with the ability to recognize market opportunities, which are abundant out of equilibrium, and foster a competition process accelerating the equilibrium adjustments.

According to Kirzner (1983), then, entrepreneurship is a stabilizing force. Conversely, in Schumpeter's (1934, 1939, 1936, 1942) view, entrepreneurship is a source of disequilibrium. More precisely, the entrepreneur is defined as an **innovator** with extraordinary skills who overthrows existing conventions and produces novelty. A similar notion is proposed by Shackle (1970), who characterizes the entrepreneur as the agent that has the ability not only to perceive existing opportunities, but particularly to imagine and exploit possible future state of affairs.

More recent contributions have further investigated the nexus between entrepreneurship and valuable opportunities (Venkataraman, 1997). In particular, Casson (2003) argues that entrepreneurs differ not only in their risk aversion, but also in their **access to information** and, particularly, in its interpretation in a volatile environment. The fundamental ingredient here is judgement: an entrepreneur is a person whose **judgement necessarily diverges from other agents**. According to this view, the entrepreneur is able to recognize and evaluate some of the opportunities that emerge as circumstances change.

By focusing on entrepreneur's characteristics, all the approaches presented disregard the **importance of the industry** where the entrepreneurial decision takes place. In this regard, the industrial organization literature offers important contributions to overcome this limit. Indeed, in order to understand the decision to become entrepreneur we cannot disregard the industry characteristics in terms of barriers, technological features, life cycle and the possible distortions in entrant's decision (see e.g. Muller, 1991; Malerba and Orsenigo, 1996; Klepper, 1996; Camerer and Lovallo, 1999).

Given the widespread availability of data on the self-employed, applied studies frequently equate entrepreneurs with the self-employed, although the two notions do not coincide. The labour economics literature, in particular, has devoted a lot of attention to the analysis of the "self-employment" behaviour and its determinants (see e.g. Osborne, 1976; Blau, 1987; Parker, 2004), in order to analyse the motivational mechanism behind entrepreneurial choices.

According to some authors, mainly rooted in the Schumpeterian tradition, **the definition of entrepreneur as self-employed is too broad, as entrepreneurship should be identified primarily with the introduction of innovations by business owners who coordinate factors of production** (Parker, 2004; Baumol, 2005). On the contrary, **others argue that this definition is too narrow because it does not account for entrepreneurship in the corporate and social spheres** (see e.g. Landes et al., 2012). Although the overlap is not perfect (see Schuetze and Bruce, 2004, section 1), a widely-used measure of entrepreneurship is the percentage of self-employed taxpayers (see, for example, Gentry and Hubbard, 2000).

The definition of self-employment itself can however be controversial. In many government surveys, the self-employment status is assessed by respondents and thus is based on their understanding of self-employment rather than on a more objective definition (Parker, 2004). Some authors qualify the definition using a measure of risk-taking: for instance, Cullen and Gordon (2007) focus on the presence of **business losses** (rather than profits) as an indicator of entrepreneurial risk taking. In a more recent contribution, Faggio and Silva (2014) combine different data sources with the aim of investigating the link between self-employment and some of the most relevant aspects of entrepreneurship, namely firm creation and innovation.

It is widely recognized in the literature that innovations are likely to come from start-ups and young entrepreneurial firms. Nevertheless, some studies point out that a small share of rapidly growing entrepreneurial firms contributes significantly to economic growth (see e.g. Acs et al. 2008; Henrekson and Johansson, 2010). Acs (2008) has named these enterprises **high-impact entrepreneurial firms (HIEFs)**. HIEFs **significantly influence the economy by creating key innovations, spurring employment and shifting the**

production possibility frontier outwards. Typically, high-impact entrepreneurial activities are not carried out in start-ups or new and small firms. Thus, HIEFs should be considered, together with young entrepreneurial firms, when identifying the relevant cluster of entrepreneurial firms to be supported through tax incentives. Furthermore, the competence bloc approach (see Eliasson and Eliasson 1996) highlights that firms' growth does not only depend on the entrepreneurial aptitudes of the founder, but increasingly on the functioning of related capital, labour and other markets, and the skills of actors in these markets.
Henrekson et al. (2010) identify four stages of firm's lifecycle: business ideas development, commercialization, rapid growth, stagnation (and eventually decline and exit). According to these authors, therefore, the key players in the initial stage of entrepreneurial activity are entrepreneurs, inventors and venture capitalists, while in the next stages a role is played by skilled labour, actors on secondary markets and industrialists. **In this framework, the government should enable the development of the competence bloc by targeting the relevant actors at any particular stage of the firm life course.** Thus, suppliers of risk capital and inventors should be targeted in the phases of business idea development and commercialization, entrepreneurs and skilled labour in the phases of commercialization and rapid growth, and industrialists and actors on secondary markets during the phases of rapid growth and stagnation (and possibly decline and exit).

In summary, the literature identifies two key determinants of entrepreneurship: innovation and uncertainty. The entrepreneur performs an activity that produces some kind of innovation (e.g. innovation of process, innovation of product) with unpredictable results and consequently a variable income with the possibility of a loss. **Each of these elements can be present independently in a series of activities that are not strictly identifiable under entrepreneurship.** For example, many self-employed (e.g. professionals) perform activities that are characterized by variable income, but are not innovative. As we will describe in section 3 of this chapter, **many of these self-employed individuals are present in the "collaborative economy".** They face risk in the sense that their income can be described by a probability distribution, but it is not necessarily uncertain. Many companies performing research and development produce new products or develop new processes, but their activity can be described as risky and not uncertain. Sometimes the literature investigates the two elements of the variability of income and innovation separately, implicitly analyzing a broader phenomenon than strict entrepreneurship.
Moreover, the literature often describes the variability of income in terms of given risk because this can be modelled more easily. Also in this case, the activity analyzed turns out to be broader than that closely connected to entrepreneurship.

3 What is the collaborative economy? What are its determinants?

It has been argued that **one of the most significant evolutions in entrepreneurship over recent times has been the development of the "collaborative economy".** A number of definitions for the collaborative economy – or sharing economy – exist (see Box 1, below). PwC (2016) described **three core features that the collaborative economy exhibits:**

- ***Digital platforms that match spare capacity and demand***: collaborative economy business models are hosted through digital platforms that enable precise, real-time measurement of spare capacity and the ability to dynamically connect that spare capacity with demand.

- ***"Reputational currency" to underpin consumption***: consumers who use collaborative economy platforms typically engage in peer-to-peer (P2P) transactions that are underpinned by "reputational currency" mechanisms such as online reviews and star ratings (Burrus, Huffington Post, 2017). Whilst peer-to-peer transactions have always occurred, these tended to be within a local community between individuals who know each other. Technology enables peer-to-peer transactions to occur between individuals that do not know each other, but are comfortable trusting each other because they have sourced that trust through a different mechanism – e.g. an online reputational scoring system.
- ***Transactions that offer access over ownership***: Collaborative economy business models enable individuals to share "access" to assets rather than own them outright. This can come in a number of forms (subscribing, rental etc.), but all are rooted in the ability to realise more choice and to mitigate the costs associated with ownership.

Box 1: Existing definitions of the collaborative or sharing economy

"*The 'collaborative economy' refers to business models where activities are facilitated by online platforms that create an open marketplace for the temporary use of goods or services often provided by private individuals*"
European Commission – "A European agenda for the collaborative economy – supporting analysis"

"*The sharing economy involves using internet technologies to connect distributed groups of people and organisations to make better use of goods, skills, services, capital and spaces, sharing access and so reducing the need for ownership*"
Sharing Economy UK (SEUK)

"*What the sharing economy really means is that now people in 60 seconds can be micro-entrepreneurs*"
Brian Chesky, CEO of Airbnb

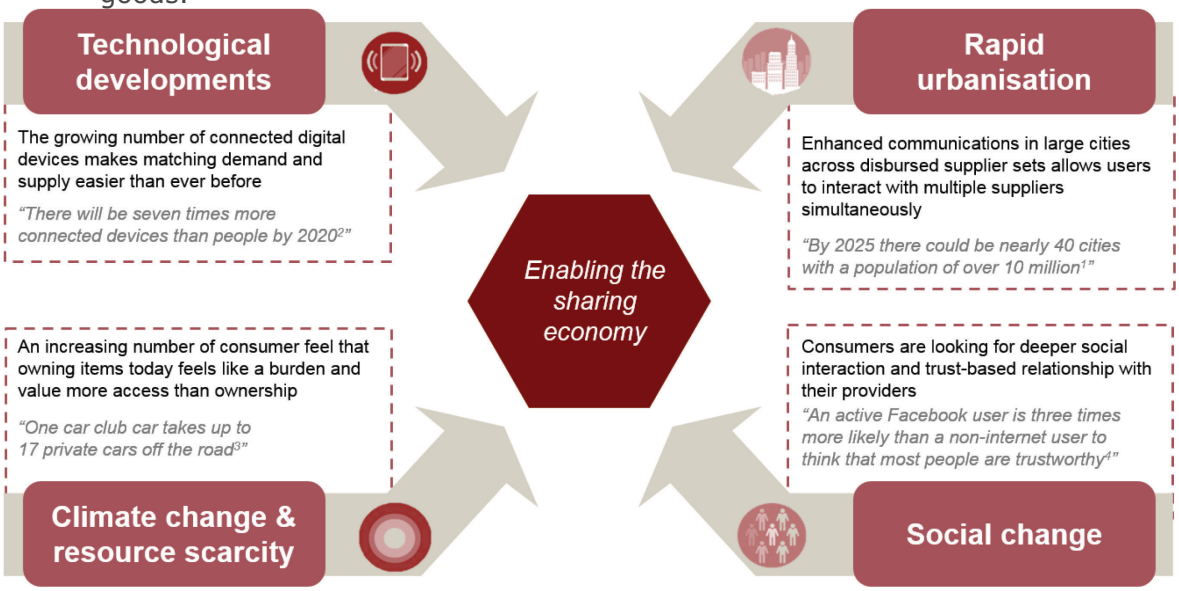
Source: European Commission (2016), SEUK (2015) and McKinsey interview with Brian Chesky (2014)

It is important to note that **collaborative economy activity is not "new", per se, and indeed some of the above features could apply to traditional businesses outside what would be recognised as the collaborative economy.** Individuals have for centuries carried out similar types of transactions within their local communities. However, the evolution of the collaborative economy over the last few years has resulted from the collision of four "megatrends" that has enabled this activity to take place beyond local communities and at a scale that has not previously been possible:

- **Technological breakthroughs** have enabled individuals to transact through online platforms and this has reduced the transaction costs that previously acted as a barrier to widespread collaborative economy activity. Advances in "Big Data" have allowed for more precise measurement of spare capacity and the rising number of connected devices has enabled connections to occur between providers and users.
- **Climate change and resource scarcity** trends have increased the opportunity cost of "owning" versus "accessing" products and services. Users are also becoming more environmentally conscious of the impact of their purchasing decisions and policy makers are increasingly incentivizing less carbon-intensive forms of commerce.

- **Rapid urbanisation** has created the critical mass that collaborative economy platforms require in order to scale their operations and become viable business propositions. For example, car and ride sharing services are likely to be profitable only in urban areas with high population density.
- **Demographic and social change** has encouraged the adoption of peer-review and online reputational scoring mechanisms which replicate, at scale, the trust which enabled individuals to transact with others based on personal relationships in a pre-internet world. Users are becoming more comfortable in sourcing trust from these mechanisms (in the case of P2P lending, users are even willing to lend 'strangers' thousands of pounds). At the same time, the 'Millennial' generation increasingly see ownership as a burden with social status gained through unique experiences rather than simply ownership of tangible goods.

Figure 1: The megatrends driving the growth of the collaborative economy



Source: 1. UN department for Economic and Social Affairs (2012), 2. Cisco Internet Business Solutions group (2011), 3. Zipcar (2014), 4. "Social networking sites and our lives", Pew Research (2011)

In Section 3.1, we describe five sectors that have been identified as exhibiting these characteristics to provide a more detailed understanding of the economic potential of this trend and to provide more specific basis for our literature review. In Section 3.2 we introduce the stakeholders operating within the collaborative economy and in Section 3.3, we further discuss how collaborative economy "providers" can be distinguished within the spectrum of entrepreneurship.

3.1 The economic potential of the collaborative economy

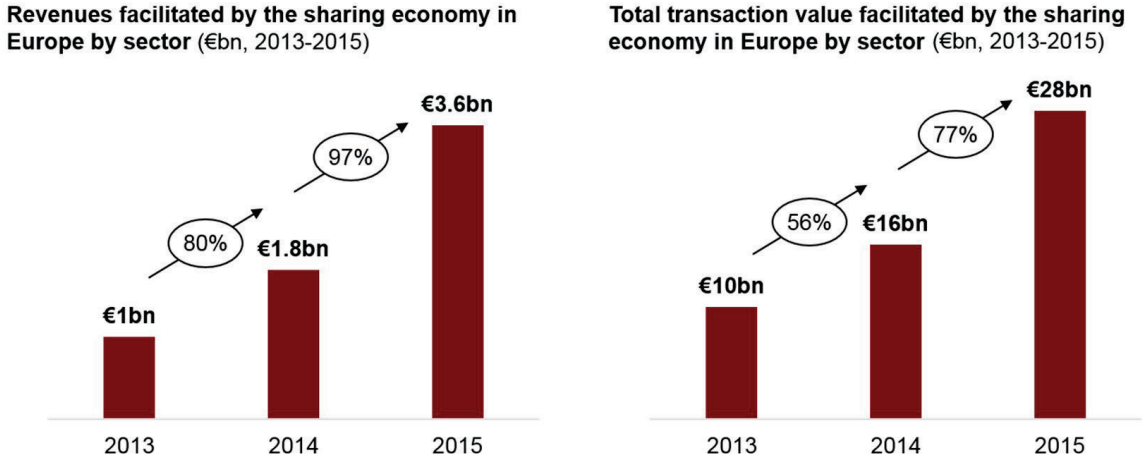
DG GROW recently commissioned PwC to assess the size and presence of the collaborative economy across Europe (PwC, 2016a). The review focused on five key sectors of the collaborative economy:

- **P2P rental of accommodation**: households sharing access to unused space in their home or renting out a holiday home to travellers.
- **P2P transportation**: individuals sharing a ride, car or parking space with others.

- **On-demand household services**: freelancer marketplaces enabling households to access on-demand support with household tasks such as food delivery and DIY.
- **On-demand professional services**: freelancer marketplaces enabling business to access on-demand support from professionals – in fields such as administration, consultancy and accountancy.
- **Collaborative finance**: individuals and businesses, who invest, lend and borrow directly between each other, such as crowd-funding and P2P lending.

The research highlighted that Europe is at the heart of a dynamic, diverse and growing sharing economy ecosystem. Across the region, it is estimated that these five collaborative economy sectors generated revenues of nearly €4bn and facilitated €28bn of transactions in 2015. This activity has accelerated over the past two years (see Figure 2 below).

Figure 2: Estimates for the size of the collaborative economy across Europe



Source: PwC (2016a) "Assessing the size and presence of the collaborative economy across Europe"

Much of this growth has emanated from Europe's thriving start-up ecosystem, with at least 275 collaborative economy platforms founded in the region to date[1].

There is also evidence for a relatively small – but fast growing – participation in the collaborative economy across Europe, for both users and providers. A Eurobarometer survey (2016) indicated that a majority of respondents had either used or were aware of collaborative platforms. And one third of respondents who have used the services of collaborative platforms also provided a service on these types of platform at least once. Survey evidence suggests participants in the collaborative economy are more likely to be young, highly educated and reside in urban areas[2].

Within Europe, the UK's collaborative economy has emerged as a hub which contributed to around a third of Europe's total activity in 2015. In addition, 21% of UK respondents to a survey had used online platforms to seek paid crowd work (equivalent to around nine million people), and 42% had bought services from a

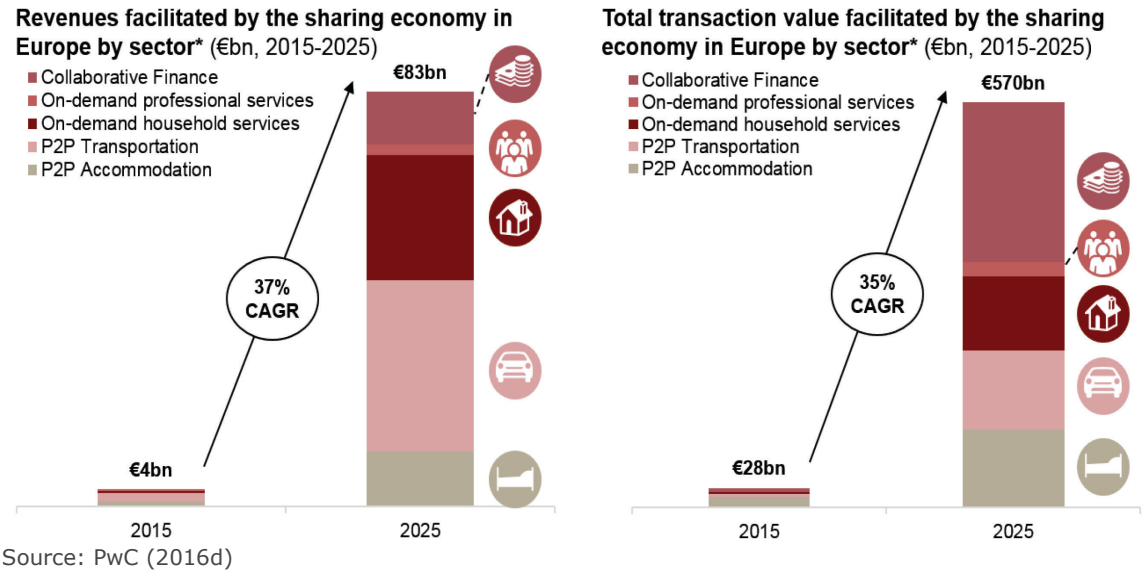
[1] The assessment of European start-ups covered nine member states: France, Belgium, Germany, UK, Poland, Spain, Italy, Sweden, and the Netherlands.
[2] The Eurobarometer survey found this demographic segment was more likely to be aware of the collaborative economy (63%) and to have used a platform (32%).

"crowd-worker" in the last year (equivalent to around 18.5 million people) (Joyce and Huws, 2016).

Despite the significant progress the collaborative economy has made in Europe, the trend has experienced a number of serious headwinds. Reports have emerged of the dangers associated with peer-to-peer transactions, particularly within the peer-to-peer transportation, accommodation and lending sectors. And many of the collaborative economy's leading organisations have come under intense scrutiny from regulators and lawmakers, with a number of legal cases focused on whether collaborative economy providers have been misclassified as self-employed rather than an employee. Legitimizing their business models represents the biggest challenge for collaborative economy platforms if the space is to fully mature and achieve its potential.

If these barriers can indeed be overcome, **future projections highlight that the economic potential of the collaborative economy will be sizeable over the coming years.** Collaborative economy sectors are only in their embryonic stages of development, and as sectors mature, they are likely to follow an S-Curve growth pattern. PwC's projections indicate that Europe's collaborative economy may grow by 35% per year over the next decade, around ten times faster than the region's economy as a whole (PwC, 2016d)[3]. By 2025, these five collaborative economy sectors could generate €0.5tn in total commerce within Europe, rivalling the size of many of 'traditional' sectors today.

Figure 3: Projections for the size of the collaborative economy across Europe



Source: PwC (2016d)

[3] For more details on the methodology adopted to formulate these projections, see PWC (2016e).

3.2 What are the features of the collaborative economy business models?

In its 'Agenda for the Collaborative Economy', the European Commission sets out three broad categories of actors that form the collaborative economy value chain (European Commission, 2016):

- **Providers**: those renting their spare assets, resources, time and skills;
- **Users**: those consuming goods and services from collaborative economy providers; and
- **Platforms**: online intermediaries that connect providers with users and facilitate transactions between them.

These three actors, along with the government and industry, will form the stakeholders that we consider in our analysis of the collaborative economy. However, as the Commission notes, the characteristics of each of these actors' exhibit a significant level of variation and the collaborative economy itself is a fast-evolving concept. Below we describe these sources of variation and use this to provide a focus and scope for our review.

Collaborative economy platforms reflect a number of business models. Collaborative economy platforms most often take the form of facilitating P2P transactions. For example, JustPark allows providers to rent out their spare parking space to motorists in the area. However, business-to-consumer (B2C) concepts, for example car sharing platforms such as Zipcar, are also associated with the collaborative economy. And new concepts are increasingly emerging, such as business-to-business (B2B) concepts such as Yardclub (which facilitates on-demand access to construction equipment), and government-to-government (G2G) concepts such as Cohealo (which facilitates sharing of operating equipment among hospitals). The intention in our review is not to examine the implications of all possible business model permutations. Instead, **we focus on the most frequently-cited collaborative economy business model, P2P**. This is because, while the taxation of B2C and B2B is well understood, P2P transactions are raising some new questions in relation to the tax system. **The P2P model is also the most distinct from "traditional" economic activity and is therefore expected to have the most novel implications for policymakers**.

Secondly, the corporate structures of platforms can differ substantially. Most are run as commercial, profit-seeking enterprises and a few have acquired multi-billion valuations through investors in global financial markets. For example, Uber's implied private valuation in its latest funding round is said to be in the range of $65billion (Spiegel, 2016). Others are driven by a social purpose, are locally-based and structured as not-for-profit enterprises. For example, GoodGym connects joggers with vulnerable and isolated individuals in the local community. Whilst there are a range of motivations for both the platforms and the entrepreneurs within them, in this review we largely focus on the **commercial applications that have the most material impact for aggregate economic activity**.

Collaborative economy involves a number of different modes of transaction – but as the Commission notes these "generally do not involve a change of ownership". The most common is market-price method where prices are set dynamically depending on supply or demand conditions and provider characteristics (for example, Airbnb suggests prices to providers based on a number of factors including booking activity and seasonality). In some instances, transactions can take the form of

participative credit mechanisms, such as Yerdle (where you exchange services for "Yerdle dollars" to acquire other goods in the future) or Echo (where every hour is worth "one Echo" and these are earned through volunteering time). Swapping is also a prevalent mode of transaction in some sectors, such as home swapping, when individuals participate as both a provider and user. Free-to-use models also exist – for example, Peerby where household items are truly shared openly within the local community. Short-term ownership models also provide the basis for some collaborative economy transactions. This model promotes a recirculation of goods in the economy which was first pioneered by Ebay and extended to more niche sectors such as Etsy in the artistic home production sector. In our review, **we focus on collaborative economy transactions which involve the exchange of financial payment, as these are activities most likely to be subject to taxation.**

The type of provider participating in the collaborative economy varies greatly. Not only traders and platforms are very different actors, there is also a large variation among collaborative economy platforms – from professional traders using platforms as a new channel to market to earn their living, to hobbyists using platforms to fulfill a social objective. Many types of providers sit in between these extremes, including casual providers using collaborative economy platforms to occasionally "top-up" a main source of income, and those using several collaborative economy platforms and receiving income from a "portfolio" of different income sources. The literature does not provide an unequivocal answer to the question of which of these groups dominates the collaborative economy provider landscape. Emerging conclusions from survey evidence indicate that the "average" provider is likely to be using platforms to generate occasional or supplementary earnings, rather than as a primary source of income. For example, a 2015 study from ING indicates that the earnings of collaborative economy entrepreneurs averaged €2,500 in the last 12 months, and the median was €3,000 (ING, 2015). Similarly, a 2016 Eurobarometer poll found that almost 20% of respondents who had provided services within the collaborative economy did so occasionally (once every few months) compared to only 5% who offered services regularly (every month). However, the nature of providers varies across countries. Eurofund (2015) suggests that the users of European platforms are in general not interested in making this involvement their primary source of income, while Berg (2016) finds that for 38% of American users and 49% of Indian users of Amazon Mechanical Turk platform involvement constitutes the main source of income.

4 What are the differences between entrepreneurship in the traditional and collaborative economy?

The definition of entrepreneurship as presented in Section 2 centres around two key features: innovation and uncertainty. We discussed why self-employment may be either a too broad or too narrow definition of entrepreneurship. It can be too broad because **many self-employed perform activities characterized by variable income, but not by innovation and uncertainty.** Collaborative economy providers most commonly fit into this grouping – Uber drivers and taxi drivers, for example, both offer a repeatable service with fairly predictable results. And other providers in the collaborative economy may take on even less risk than their counterparts in the traditional economy as the activity is not their main source of income – for example an Airbnb host renting out a spare room takes on less risk than a small B&B owner relying on the rent as her primary source of income.[4] In fact, many

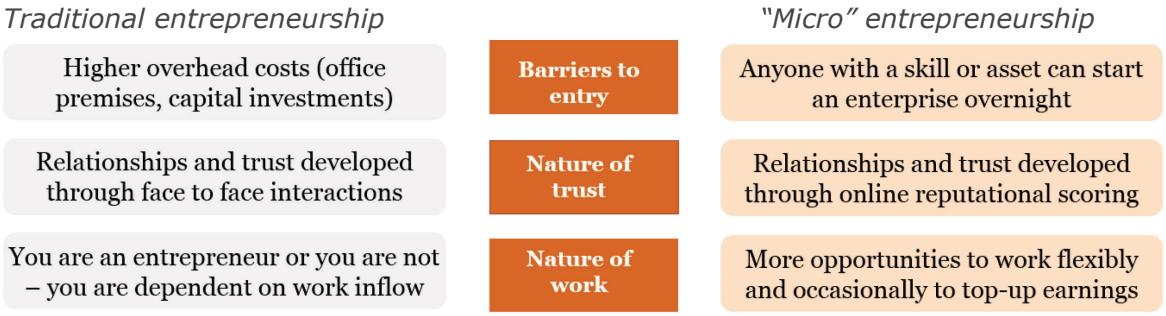
[4] The notion of "risk" we refer to within this discussion reflects financial risk of income falling short of expectations. Collaborative economy platforms may take on other forms of risk – for example, interacting

collaborative economy providers may use the collaborative economy as a means to counteract the variation of their income from the traditional economy.

Therefore, while it is likely that the founders of collaborative economy platforms would be classed as entrepreneurs in the traditional sense, as they are creating an innovative new concept that requires an initial investment cost (e.g. to develop the software) and the take up of which is uncertain, it is unlikely that the providers that participate in the platforms would be. Instead, these providers are increasingly distinguished from traditional entrepreneurs and referred to as "micro-entrepreneurs". Although there is no official, standardized definition for this term across Europe, micro-entrepreneurs tend to be set apart by their ability to exert greater control and autonomy over their life and work, the potential to generate income from a number of sources and the ability to trade immediately, which could be around "gigs" or "tasks". Hence, the term is often used in the context of people selling their goods, skills or time on collaborative economy platforms, for example in the context of the UK 2016 Budget, which introduced tax breaks targeted at this type of worker (noting though, as we will discuss in Chapter 3, that this relief could in fact be accessed by a much broader group).

The micro-entrepreneur diverges from the traditional notion of entrepreneurship across three key lenses, summarised in Figure 4 and explained further below.

Figure 4: Differences between entrepreneurship in the traditional and collaborative economy



Source: PwC analysis

(i) Barriers to entry

Digital platforms lower the barriers to entry for individuals to become entrepreneurs ("providers"), who can do so easily by simply following the online application procedures and listing their goods or services to trade. The capital investment required may often be close to zero. This opens up entrepreneurship opportunities to a much wider group and enables trade to take place over a greater range of goods and services. For example, homeowners with a spare room that were put off by the high costs of advertising it as lodging or becoming a licensed B&B, can now list this on a peer-to-peer accommodation platform within a few hours.

(ii) Nature of trust

The basis for the trust between individuals who transact through the collaborative economy is "reputational currency". This currency is built up using reputational scoring

with individuals they do not know – for which there may be a genuine public policy rationale to encourage (e.g. to deepen community/social interactions). We discuss the public policy rationales for intervening in the collaborative economy in section 2.2 of chapter 2.

systems such as peer reviews and "star" ratings. Providers rely on their rating to promote their assets or services, which incentivizes quality providers and fulfils some characteristics of a self-regulating marketplace. In contrast, traditional entrepreneurs may foster trust more through word-of-mouth recommendations, developed through face to face interactions, and corporate brand strength.
Reputational trust mechanisms are global in nature and enable collaborative economy entrepreneurs to immediately have access to a global marketplace. For example, on professional services platforms such as UpWork, services are delivered without any face-to-face contact required – in contrast to the traditional professional services operating model. It should also be noted that the trust of both providers and users is linked to the reputation of the platforms which can limit to some extent the mobility of providers between platforms.

(iii) Nature of work

The "anytime, anywhere" nature of digital platforms also enables providers to participate on collaborative economy platforms in flexible and sporadic patterns. For example, whilst most taxi drivers work over 35 hours a week, most Uber drivers work under 15 hours (Rawler, 2015). This flexibility has been identified as one of the key drivers of the collaborative economy, as the millennial generation increasingly looks for work opportunities that fit around their lifestyles and households seek flexible work around their schedules, e.g. childcare commitments. The use of collaborative platforms therefore extends choice in terms of time, location, length and type of work. Given that collaborative economy activity can be conducted flexibly and be used to "top-up" earnings from a main source, it can also involve lower risk taking than traditional forms of entrepreneurship where one activity most often generates the sole portion of an individual's income. As we will discuss in Chapter 2, this flexibility can also be a source of uncertainty, and some providers mitigate this through combining their activity with employment in the "traditional economy" or operating across multiple platforms.

These findings are a symptom of a broader set of trends that is being instigated by the collaborative economy – namely, the changing nature of employment and work. A number of sources highlight that the rise of the collaborative economy has gone hand in hand with a shift towards more flexible, and potentially more precarious, employment patterns. Over the last decade the proportion of people who are self-employed or in zero hours or part-time jobs has outgrown full-time employment, a trend likely driven by both economic factors and lifestyle choices.[5] And a recent European Parliament study found that full-time permanent contracts have been falling over the past decade, from 62% to 59% of total employment (European Parliament, 2016). Currently around four in ten persons work in other forms of employment than full-time permanent contracts, largely in permanent part-time work, as freelancers or on the basis of a fixed-term contract. In addition, skilled workers seem to be making up a growing share of this more flexible workforce – self-employed persons with tertiary education have increased from approximately 25% in 2008 to more than 33% in 2015 (European Commission, 2015).

Further, since the recession, during which around seven million people lost their jobs across the EU, there has been a steady rise in the number of "independent professionals" or "iPros". Though this is not an official term, it is used to refer to self-employed people that do not employ anyone and tend to work in service sectors

[5] The UK in particular is ahead of the rest of Europe on this front. IPPR research (IPPR, 2015) shows that since 2010, 40% of the rise in UK jobs has been in self-employment. Although this is an anomaly at present, they suggest this rise is part of a permanent trend in the way UK workers are employed, and this could follow in other European countries.

(IPSE, 2016), excluding employers that tend to work in manual labour sectors. Other sources refer to "independent professionals" as "freelancers", or "highly skilled self-employed professionals who work for themselves but do not employ others" (EFIP, 2013). Therefore, this group overlaps significantly with the on-demand workforce present in the professional services sub-sector of the collaborative economy.

If these patterns of employment continue, Codagnone et al. (2016) note that although collaborative economy platforms are relatively small today, they could rapidly start to rival traditional and long-term forms of employment. However, all statistics on self-employment should be interpreted with caution – in particular, it is difficult to disentangle whether the "push" or "pull" factor into more flexible occupations has been stronger. And these occupational arrangements have been criticized by trade unions for failing to offer sufficient worker protections, wages above legal minimums and sufficient income stability.

Chapter 2 The impact of taxation on entrepreneurship in the traditional and the collaborative economy

1 Introduction

In this chapter we offer an overview of the impact of taxation on entrepreneurial activity in order to provide a background to identify the main elements of the tax system that could be used to encourage entrepreneurship in both the traditional and collaborative economy.

In **Section 2,** we consider the motivations that may justify a reform of the tax system and a preferential tax treatment of entrepreneurial activities. On the one hand, current tax practices may be themselves an obstacle to entrepreneurship when they discriminate innovative and risky activities. On the other hand, specific tax instruments may be employed in order to counteract the inefficient provision of entrepreneurial activity that results from market failures. Here, we briefly review the main market failures that can justify tax policies favouring entrepreneurial activities, that is, externalities and imperfect capital markets. We identify the principle of fiscal neutrality as a key lens through which to analyse the taxation impact of the collaborative economy and identify a number of distinct challenges that are linked to the application of this principle in practice. In Appendix 1, we provide a review of the empirical evidence on the effects of entrepreneurship on various economic outcomes.

In **Section 3** we analyse how taxation affects entrepreneurship in the traditional and the collaborative economy. We first study the effects of taxation on the relevant decisions of entrepreneurs. We identify what we call the "relevant margins" of entrepreneurial decisions, we analyse the effects of the tax system on those selected "margins" and we investigate whether current tax practices can be an obstacle to entrepreneurship. For each margin, we also analyse specific tax provisions aimed at solving market failures to which entrepreneurial firms may be subject, with the goal of promoting entrepreneurship.
In developing our review we will:

- identify which taxes are relevant to a specific margin, and, under each tax, which dimensions of the tax system have been reported by the literature as relevant in impacting entrepreneurship (e.g. the statutory tax rate and the definition of the relevant tax base, the level of progressivity, the tax enforcement strategy), highlighting the role played by each of them;
- describe the assumptions adopted in the theoretical literature and the methodologies employed in the empirical one in order to assess the validity of the findings. We will also highlight the critical points on which there is no consensus in the literature, to identify the key research questions, which remain unanswered.

While considering all the margins of choice and the way they are affected by taxation, we will refer also to the specificity of the collaborative economy. Entrepreneurs in the collaborative economy share many of the characteristics of entrepreneurial agents at large, but they also present some distinguishing features, which we review in **Section 4. Here we discuss the specific issues raised by the collaborative economy,** and how these may be addressed in the design and the administration of taxes. As to tax design, we highlight the difficulty of classifying employment, transactions and income when the difference between cost sharing and remuneration is not entirely clear and the issues related to the design of indirect taxes (such as VAT and excise taxes). Tax administration plays a role in shaping compliance costs. We discuss

whether compliance costs can be a disincentive to participate in the collaborative economy and whether it is possible to reduce them possibly by involving digital platforms in the collection and remittance of taxes.

Finally, in **Section 5** we discuss if tax incentives are used or not. Specifically, we review the literature that highlights information problems and complexity of tax systems as the main obstacles, which limit the ability especially of small firms to fully exploit favourable tax provisions.

2 The rationales for reforming the tax system and providing specific incentives to foster entrepreneurship

There are two main reasons that may justify a tax reform or a special tax treatment to encourage entrepreneurial firms. The first one is that current tax practices may discriminate firms that are more innovative and that face higher risk. For examples, innovative start-ups will probably experience losses at the beginning of their life and will have more limited access to external debt financing. As a consequence, they would be disproportionally harmed by provisions that reduce the tax deductibility of losses or that bring about a higher effective tax burden on equity compared to debt financing.

The second one is that even in an ideal situation in which taxes do not discriminate across different types of firms, entrepreneurship could be under-provided due to **market failures.** In this case, specific tax support to entrepreneurial activity may be called for to restore efficiency in the market. Externalities from innovative activities and credit rationing are the two main market failures cited in the policy arena to support a favourable treatment to entrepreneurial activities (Holtz-Eakin, 2000; Crawford and Freedman, 2010). We review the literature studying these two market failures in the next section. Positive spillovers from innovative activities are at the core of endogenous growth theories (Romer, 1990; Aghion and Howitt, 1992). In particular, these models feature investment-driven innovation, externalities from innovative activities, market power of innovative firms and creative destruction. In Appendix 1 of this chapter, we turn to the positive spillover effects of entrepreneurship on various economic outcomes and we also consider two negative aspects of entrepreneurial activities, namely, its effects on inequality at the individual and regional levels.

2.1 Market failures justifying special tax treatment of entrepreneurship in the traditional economy

We first consider the scope and size of positive externalities from innovative activities undertaken by entrepreneurs and the extent to which credit rationing hampers innovation.

Externalities

In the context of entrepreneurial activities, externalities, mainly refer to the benefits produced by new ideas, new products, new processes and new technologies introduced by entrepreneurs, that are not captured by the private market. In particular, there is a large literature estimating that the marginal social return of R&D investment is higher - between two to three times- than the private return (i.e. Hall et

al., 2010 and Bloom et al., 2013). Moreover, endogenous growth literature (Romer, 1990; Aghion and Howitt, 1992) provides several reasons **why private innovative activities do not take into account externalities producing less than optimal innovations and growth.** In addition, there is also evidence that **these spillovers are partially localized geographically.** Hence, the region/country where the R&D investment is implemented obtains a greater share of the productivity benefits, at least initially (Jaffe et al., 1993). In this set-up, the market equilibrium might not be efficient, opening the door to public policy interventions, at the national and/or the regional level, boosting entrepreneurship, innovation and economic growth. Based on these results, in the last two decades, **most developed countries have increased incentives to R&D investments, especially through taxes** (see Section 3.3)**.**

As we will discuss in more detail in Section 3.3 of this Chapter, most of the empirical literature has found positive effects of tax incentives on R&D expenditures and other economic outcomes (e.g. Einiö, 2014; Moretti et al., 2016; European Commission, 2014b), although the aim of these policies is to stimulate innovation (see Dechezleprêtre et al., 2016).

However, **there are some contributions to the literature that question the rationale for public support to entrepreneurial firms**. Among others, Holtz-Eakin (2000) points out there is no clear empirical evidence that small businesses provide a disproportionate share of innovations, new processes and new products in the economy, generating some doubts about the support for tax incentives towards small firms. In addition, Bloom et al. (2013) estimate that small businesses generate lower social returns to R&D than large firms, arguing that small firms work in very specific technological "niches". In other words, since few other small enterprises operate using the same/similar technologies, their technology spillovers are more limited. These papers challenge policy makers to reconsider generalized support to small firms, e.g. through unselective R&D tax credits, and suggest that targeting is key to maximize the benefits while minimizing the costs of tax incentives.

Credit rationing

Asymmetric information between lenders and borrowers create imperfect capital markets and credit rationing. The economics literature has shown in several convincing ways that capital markets are imperfect, with negative effects on the performance of the economy. First, regional development is partly caused by the development of the financial sector (Guiso et al., 2004; Pascali, 2016). Second, industries that are more capital intensive are underdeveloped in economies with less developed financial sectors (Rajan and Zingales, 1998). Finally, there is evidence that firms are often credit constrained as the level of investment of a firm is not only determined by the costs and benefits of investment, but also by past cash flows (Fazzari et al, 1988). In a careful analysis of the credit constraints faced by SME firms in different countries, López de Silanes et al (2015) conclude that, on average, European SME firms face tighter credit constraints than their US counterparts.

There are several pieces of evidence indicating that **borrowing constraints and imperfect capital markets are particularly important for entrepreneurial firms.** First, individual wealth is an important predictor of whether (or not) an individual will become an entrepreneur (Evans and Jovanovic, 1989). Second, innovative start-ups use very little external financing (Carpenter and Petersen, 2002). Third, Aghion et al. (2007) document for a sample of developed countries that a more developed financial sector is associated with more creative destruction, allowing for higher firm entry and new firm growth. Finally, we know from innovation surveys that

firms consider credit rationing as an important barrier to innovation (Savignac, 2008; Tiwari et al., 2007).

Venture capital firms and business angels can be considered a market solution to overcome credit constraints in innovative activities (Hall, 2002; Kaplan and Strömberg, 2001). Venture capital firms are especially well equipped to deal with the information asymmetries that affect innovative firms, making venture capitalists less reluctant to invest in innovative projects than traditional financial institutions. Moreover, **the performance of innovative firms has been found to improve if a venture capitalist invests in the firm** (Arqué-Castells, 2012). At a more aggregate level, more venture capital in a city leads to more aggregate growth in the more advanced sectors of the economy (Samila and Sorenson, 2011). **All in all, tax policies to promote the development of venture capital firms seem well justified from an economic perspective.** On the one hand, venture capital firms reduce credit rationing problems for innovative firms. On the other hand, they increase innovation, which generates positive external effects to the rest of the economy.

2.2 The rationale for differential tax treatment of entrepreneurship in the collaborative economy

The rationales for special tax treatment just outlined are based on the concept of traditional forms of entrepreneurship. **While some of these characteristics are likely to apply to the entrepreneurs that create the platforms, we must also consider whether the collaborative economy exhibits specific characteristics that might provide a rationale for a different tax treatment.** In particular, we must first consider the necessity of a specific tax regime for the collaborative economy, and then whether such a tax regime should incorporate tax incentives based on a rationale for stimulating collaborative economy activity.

The regulatory, tax and legislative framework has been built up around the traditional categories of self-employment and SMEs, in which economic activity is more easily classified. In contrast, the regulatory and tax architecture specific to the collaborative economy is either emerging or non-existent. Despite this, in the literature there are **two contrasting approaches** to the tax treatment of collaborative economy activity**.**

- **The first approach views the existing body of substantive tax law as already equipped with a conceptual framework sufficient to accommodate for collaborative modalities of business.** According to Oei and Ring (2015), who focus on the US tax regime, regulations that apply to collaborative economy are neither fundamentally unclear, nor particularly novel. However, they also suggest that it is necessary to streamline tax administration practices to address emerging compliance challenges (we discuss this aspect of taxation in Section 4.3).
- **The second approach suggests that the collaborative economy is, to an extent, a novel and distinct phenomenon and as such existing tax law is unable to accommodate it accurately**. Therefore, a new or fundamentally revised tax regime must be created (see Barry and Caron, 2015; Rauch and Schleicher, 2015; Stemler, 2014).

Proponents of a new tax system for the collaborative economy often argue that existing regulations inadequately address the rapidly developing technology and may in effect unduly constrain the economic activity that is based on it. For example, Barry and Carron (2015) posit that new industries are

disadvantaged in relation to established industries in terms of tax treatment. First, existing regulations are ill-suited and adjustments can take years. This is partly because law making takes place under influence from incumbents, while new entrants arrive ex post and hence are denied participation in it. Moreover, because tax exemptions and similar benefits are usually designed narrowly to minimize the potential of unintended use, they address specific transaction structures already in existence.

This view implies a need for a collaborative economy-specific tax regime. The Commission's Agenda is motivated by the need to create a level playing field in order to promote certainty, investment and growth within the collaborative economy, while preserving fiscal neutrality. This in turn raises the question of whether the collaborative economy is "deserving" of specific tax incentives to stimulate its development.

Many experts and stakeholders take a position somewhere between the two archetypal positions, noting that although the collaborative economy does not introduce entirely new notions, the technological turmoil that accompanies it renders some concepts and definitions outdated (PwC, 2016a). For example, the European Parliament (2015) acknowledges that existing tax regimes were not designed for activities or goods such as those provided in the collaborative economy. However, in many countries, the existing tax regime as it stands may be a source of unequal competition between the traditional and collaborative economy.

Existing taxation as a source of distortion of competition

One of the largest causes of concern for governments and traditional entrepreneurs is that the collaborative economy has created an uneven playing field. Many competitors in the traditional economy argue that the fact that regulation and taxation are not being applied in the same way to the collaborative economy is giving platforms and their providers an undue advantage. In the case of taxation, any advantage may be best examined as the "unintentional" result of new business models interacting with a taxation system that was not designed with these types of model in mind, and we have not found evidence platforms have been created in order to "game" grey areas within the tax system.

The impact on competition of the emergence of collaborative economy is nevertheless twofold. **On the one hand, there may be an increase in competition due to the removal of economic barriers to entry**, as predicted by basic industrial organization theory. The arrival of new entrants forces incumbents to improve quality and cut prices, resulting in a positive effect on consumer welfare (OECD 2016). For example, the entry of Uber into the passenger transportation services in New York and Chicago has resulted in a decrease in the amount of complaints filed by passengers about taxi services (Technology Policy Institute, 2015). The emergence of collaborative economy businesses may enhance consumer welfare in two ways: first by offering consumers new and, potentially, superior goods and secondly by pushing the entire market towards increased quality and reduced prices. In addition, gains are captured by the consumers in the entire market, not only within the collaborative economy sector. For instance, the taxi medallions in New York City dropped 25% in value following the arrival of Uber in the city (Barro, 2015). However, these consequences could be seen as a fully lawful outcome of competition; the Chicago antitrust school dictates that competition law should protect the consumer, not the competitor. **On the other hand, if there is unintended differential tax**

treatment of the collaborative economy (i.e. a failure of the "neutrality" principle) this may generate an undue competitive advantage.

For example, where some sectors of the collaborative economy are not automatically subject to the same regulation and taxes as their traditional competitors (e.g. tourist taxes), a lower tax burden may mean that these providers can offer lower prices. Oei and Ring (2015) note that from the perspective of a hotelier, a P2P rental platform is a direct competitor and therefore should be obliged to pay any equivalent taxes. The recent agreement of the Paris city authorities with Airbnb concerning remittance of a tourist tax was justified on the grounds of recapturing lost tax revenue *and* creating a level playing field for all economic actors (OECD 2016). The city's authorities have concluded that the standard reason of charging the tourist tax (compensation of negative externalities such as noise pollution, increased traffic and infrastructure wear) applies to Airbnb in the same way as it applies to traditional hospitality services.

The Working Group on the Collaborative Economy of the University of Groningen (Koolhoven et al., 2016) describes the market for shared accommodation in three European cities – Amsterdam, Barcelona and Paris – and the regulatory challenges that arise with it. Each of these cities suffer with housing shortages, and it is argued that this problem has been exacerbated by the increasing preference of home owners with spare bedrooms or properties to rent out their accommodation to tourists (short term) via the collaborative economy rather than to satisfy (longer term) local demand. The paper suggests that the key motivation is the greater returns offered by tourist accommodation (the report indicates that returns can be "four times" as great as for longer-term rentals) but also identifies the potential for applicable occupancy taxes to go unpaid in cities which have not developed well-functioning reporting mechanisms. The paper identifies the sizeable opportunity on offer for cities to capture this revenue and cite Paris' agreement with Airbnb as one of the most efficient examples of how this can be implemented in practice with the support of platforms – a case we examine in more detail in Box 14, Chapter 2 Section 4.2.3. Overall, the study elaborates on the potential of collaborative economy to operate from the position of unequal advantage as a result of tax and regulatory treatment. **This differential treatment, alongside a number of other factors such as lower cost bases, may allow collaborative economy providers to undercut prices offered in the traditional economy.** Box 1 provides an additional example of this in the context of the transport sector.

Box 1: Taxi drivers strike because Uber is "unfair competition"

In June 2014 taxi drivers across Europe went on strike claiming they were under threat from Uber and other taxi-riding platforms due to lower prices they could offer by not complying with taxi and other regulation. However, Pierre-Dimitri Gore-Coty, Uber's regional general manager for northern Europe, rejected that Uber was breaking local rules or that it did not pay enough tax, but insisted that Uber offered competition where little has been available before (Scott, 2014).

To try and address this Uber have, since 19th February 2016, changed the principles of cooperation with drivers requiring them to quote TIN [Tax Identification Number], the European tax identification number [so called sales tax EU], description of activity and address at which it is registered and to confirm that documents have been filed with the Central Registration and Information on Business (CEiDG) (UCLP, 2016).

To compete against Uber, the London Taxi Drivers Association has started a 'Better for London' campaign, bringing together cab drivers, the company manufacturing black cabs (the London Taxi Company), unions and on-demand black cab app platforms such

as Gett and Hailo with the aim of the black cab to remain "best in class". This includes plans for black cabs to be zero-emissions capable from 2018, emphasising the fact that their drivers have to pass the world-famous "knowledge" test and that they have better facilities such as wheel chair access (Silvera, 2015).

From the other side, Uber wants to effectively end car ownership in London with its new offering of UberPool. This service will pair up passengers travelling in the same direction so they can share a car and reduce costs.

Competition law cases are inherently complex, and require a careful weighing of interests (those of innovators versus those of imitators, short term competition versus long term competition, etc.). In new cases, which involve collaborative economy business models, the long-proven principle established in EU competition law could be applied as in the traditional cases i.e. using consumer welfare as the conclusive criterion. The practice of competition law (in both the EU and overseas) also stipulates that each case should commence with the definition of the relevant market. However, this may be problematic in the case of collaborative economy, as the regulator must face the burden of interpreting this definition. For example, deciding whether services such as Airbnb overnight or an Uber city ride constitute whole new markets or, alternatively, are merely new products within the already existing markets (Bruegel 2016).

It is important to consider other reasons why collaborative economy providers may be able to offer lower prices, such as real lower cost curves or higher productivity. Digital technology typically employed by collaborative economy providers means they have lower overheads, more efficient matching of supply and demand and lower production and transaction costs. For example, the use of apps on phones means that Uber can connect drivers and customers while they are on the move, track the movement of the car, calculate the cost of a ride and then automatically transfer payment electronically from the customer's bank account to the Uber driver.

The economic, social and environmental rationale for collaborative economy tax incentives

Each exercise of regulation should be justified with a need to correct for a market failure. Stemler (2014) claims that the existing laws cannot effectively regulate the collaborative economy as it is uniquely comprised of individuals profiting from their personal excess capacity. He interprets these individuals as operating "microbusinesses", which cannot, without devastating consequences, be regulated like traditional businesses[6]. Rauch and Scheiler (2015) note the once prevalent assumption that the outcome of the battle between the collaborative economy businesses and the government will be one of the two extremes: the collaborative economy will be either stifled and will disappear or it will survive and prosper without any government intervention whatsoever. However, the authors propose instead that the collaborative economy will be regulated by a mixed regulatory regime that will depart from the current solutions. In particular, the collaborative economy businesses might be used by the government in objectives of redistribution, provision of public goods and minimization of regulation in the property market (for example).

[6] We note that this interpretation differs to that used within this study to define the collaborative economy.

Tax incentives are used by governments to stimulate and promote activities that are socially desirable but might be underperformed in absence of external support. This might be due to increased risk, special financial or organizational burden, or a mixture of these factors, when financial markets are not working efficiently. Another example discussed above is the necessity to provide incentives to research and development. To answer the question whether collaborative economy lends itself to special tax treatment through tax incentives, its social, environmental and economic impact must be examined. These effects are not necessarily straightforward to capture, but may prove crucial in the assessment of how to tax the collaborative economy.

Economic and social rationale. There is emerging evidence that the collaborative economy, originally predicated on a changing economic environment, has now in turn started to shape new social trends. **In particular, the collaborative economy could have the potential to stimulate participation of demographic groups that have traditionally been excluded from certain segments of the labour market.** These groups can be defined as based on gender, ethnicity, the level of education, and age.

A recent study (Beaumont, 2016) discusses the potential of collaborative economy in boosting female employment in Europe and in particular in Poland. The study argues that easier access, a lower administrative burden and increased flexibility are substantial advantages of the collaborative economy when compared to the traditional economy. These factors may be particularly important in the context of *gender-specific obstacles such as lack of access to finance, lack of role models, and a fear of failure, which have been shown in previous research to be a crucial determinant of entrepreneurship in women to a far greater extent than in men.* In Poland, formal female employment is below the EU average (Eurostat, 2016), while the proportion of women who are interested in self-employment is above-average (Balcerzak et al, 2011). **This suggests that women may benefit in particular from collaborative economy.** For one, they may use the flexibility that the sector offers to combine work with other duties, such as motherhood. This is especially important in countries where child-care facilities are underdeveloped. Relatedly, available data shows that there is still a substantial divide between household duties division between men and women, putting the former at a disadvantage and often closing professional prospects to them.

Moreover, the collaborative economy may serve to empower women to become entrepreneurs. Beaumont (2016) reviews previous research to argue that the *fear of failure among women is an important socio-cultural factor preventing the development of female entrepreneurship* and conclude that collaborative economy offers the opportunity to have independent professional activity with lower barriers to entry (Cocciotti and Hayton, 2014).

Although the potential benefits to female employment offered by collaborative economy are vast, there are potential downsides. As a recent paper by the European Parliament has found (European Parliament, 2016) discrimination may and still does occur also online. In particular, female workers are less likely to get hired for jobs that are considered typically "male", and many employers resort to stereotypes in a situation of information overload, which is typical to the online environment.

In contrast, a report by Vision Critical and Crowd Companies (2015) looking at collaborative economy participants in the UK, US and Canada found 51% of participants were female. And data compiled by Bloomberg shows that between 15% and 20% of Uber drivers are women, more than double the proportion in the traditional taxi sector (8%). Active participation of women has also been observed in other platforms, such as Etsy. Founded in 2005, Etsy now has 1.5 million active

sellers, 86% of which are women under 39 years old with a college-level degree, including many young mothers. In conclusion, whilst the collaborative economy may provide an important tool in increasing female participation and empowerment on the labour market. Of course, it cannot be confused for a substitute of equal access policies on the traditional labour market. These findings also strongly relate to the issue of self-employment discussed in Section 3.6 of this chapter.

There is much less evidence in the literature on the relationship between ethnicity and collaborative economy. There is a telling anecdotal evidence provided by Charles Mudede, a Zimbabwean movie director who recently faced racism from a number of taxi drivers in a city where Uber or Lyft did not operate (Mudede, 2016). The experience led Mudede to praise Uber and Lyft for effectively helping to mitigate racism in the sector by providing an online app for that displays information only relevant to the transaction. However, there are counter examples of discrimination in online marketplaces, for example the Harvard Business School study (2014) which finds evidence that hosts may exhibit some forms of racial discrimination against travellers on Airbnb. Airbnb consequently responded with a paper (2016) outlining policy changes to respond to these issues.

Other social effects. For example, the introduction of Uber and Blablacar incentivises mobility within and outside of the cities, while at the same time improving environmental sustainability by reducing the number of cars in the streets (cf. Bruegel 2016, PwC 2015b). Similarly, Airbnb reports that their visitors stay almost two times longer and spend close to twice as much as typical visitors do. Furthermore, because 91% of Airbnb users are driven by the motivation to spend their time living like a local rather than a tourist (Airbnb, 2016b), Airbnb argues their spending is better diversified around the city rather than focused on well-established tourist attractions (42% of guest spending takes place within the neighbourhood of residence, which tends to locate further away from central districts).

However, there are potential negative externalities to consider that could counter the policy rationale for favourable tax treatment. In the housing market, for instance, local residents have raised concerns about increased long-term rental rates and reduced accessibility following the emergence of Airbnb (Kuchler, 2015; Oltermann, 2016; Schofield, 2014). This has led to enactment of strict regulations governing short-term rentals in a number of cities. In Paris, for instance, short-term rentals are only possible if the property is the host's primary residence. City authorities in Berlin have implemented a ban on short rentals of more than 50% of one's property (Oltermann, 2016). The authorities motivate the measure, called Zweckentfremdungsverbot ("ban on wrongful use"), with the need to restore real estate to the internal market and thereby make it more accessible and cheaper for the inhabitants of the city.

Environmental rationale. The question whether the collaborative economy has a positive net effect on the environment has not yet been answered unequivocally. Intuitively, borrowing and lending rather than buying and selling may be expected to reduce waste and promote green economy. 76% of American adults recently surveyed by PwC have agreed with the statement that collaborative economy is good for the environment (PwC, 2015). Research on the subject is still preliminary and any potential environmental gains are difficult to quantify due to the complexity of isolating the impact of the collaborative economy and problems with data availability. However, tentative evidence suggests that collaborative economy does offer environmental benefits, mainly through the maximization of resource use. In the words of Nicolas Voisin, founder of TheAssets.co, which enables users to trade or rent

assets online: *80% of the things in our homes are used less than once a month, and self-storage has increased by 1,000% over the past three decades* (Wharton Unviersity of Pennsylvania, 2015). Collaborative economy responds to this challenge by increasing the utilization rate of assets. For example, Fremstad (2015) discusses early evidence that some collaborative economy platforms, among them Craigslist, an American online advert board, have led to substantial reduction of waste. In this context, it is also useful to recall the study by Zipcar (2014), which found that one shared car can remove up to seventeen regular cars from the roads. Another study has yielded a similar result, estimating the number of cars crowded out by a single shared car between five and thirteen.

There are also studies that examine the environmental effect of other sectors of collaborative economy. For example, a Special Report published by Wharton University of Pennsylvania (2015) discusses the case of Airbnb. Airbnb has released several studies, performed by Cleantech Group, that in a very suggestive way highlight energy savings resulting from shared accommodation rental.[7] Among others, Airbnb reports that in one year only, its European guests have spared the equivalent of 1,100 Olympic-standard pools of water and avoided greenhouse gas emissions equivalent to 200,000 cars. Furthermore, Airbnb hosts are reported to use less of disposable toiletry items, and Airbnb guests are estimated to be 10-15% more likely to avoid car travel compared to hotel guests. However, these studies have often failed to prove a causal link between apartment sharing and environmental consciousness, rather than simply the result of auto-selection of environmentally-conscious individuals into collaborative economy. For example, Fremstad (2015) states that the environmental impact of "Coach-surfing"[8] is less clear-cut, but has the potential to reduce waste and environmental degradation.

There are also concerns that the effect of collaborative economy on consumption is not substitutive but complementary. In this scenario, sharing assets would occur not *instead of* buying assets, but next to it. The savings generated from carpooling, accommodation rental, and other collaborative activities would simply be channeled to other uses, putting in doubt the environmental friendliness of collaborative economy. More research is needed to provide clear answers to these questions.

In light of this, governments will need to carefully weigh up the various foundations on which a case for or against tax incentives might be made. An optimal regime is likely to be targeted (for example, in terms of sectors or types of providers). Further, the application of tax incentives should also take into account the country-specific context and the priorities of the government in question. Industry views represented in the European Collaborative Economy Forum survey 2016 highlighted the lack of targeted support and incentives for platforms that deliver social and environmental benefit via taxation. In particular, the group encouraged targeted fiscal support for small platforms looking to scale – tax incentives and/or allocation of tax breaks - to allow them to develop, and taxation measures to encourage platforms that deliver enhanced sustainability, reuse of materials or otherwise deliver a public benefit.

[7] https://www.airbnb.com/press/news/new-study-reveals-a-greener-way-to-travel-airbnb-community-shows-environmental-benefits-of-home-sharing

[8] Couch-surfing refers to platforms such as Couchsurfing.com, derived from the US, where individuals informally sleep on other's spare bed or sofa and may not have their own private space.

3 Interaction of taxation and entrepreneurship

To organize our review, we identify a set of "relevant margins" of decision for entrepreneurs and entrepreneurial firms. We are interested in investigating how taxes might affect:

1. the choice of entry into entrepreneurship;
2. the choice of the legal form of the business;
3. the choice of investing;
4. the choice of the source of financing;
5. the choice of the location of the business;
6. the choice of hiring workers;
7. the choice of complying with the tax system

For each margin of choice, after reviewing the relevant literature, we discuss in a box whether the findings related to entrepreneurship in the traditional economy apply to platforms and/or providers in the collaborative.

3.1 Impact of taxation on the decision to become an entrepreneur

The first margin that we consider is the decision to become an entrepreneur, i.e. to start a new business. A tax system can have complex effects on the level of entrepreneurship.

First of all, entrepreneurship involves risk taking. There is an extensive literature and an open debate on whether the tax system, and, in particular, aspects such as the degree of progressivity or the treatment of losses encourage or discourage risk taking.

A second point is that the decision to become an entrepreneur should be assessed against the main alternatives open to the individual. Given that in many circumstances the choice is between starting a new business as self-employed or working as an employee in an existing firm, we consider the differential tax treatment of employees vis-a-vis self-employed as a relevant determinant of this choice.

One of the main differences between employees and self-employed is the level of social security contributions, which are usually higher for employees, so that self-employment is implicitly encouraged (unless there is a strict link between contributions and benefits and the individual is sufficiently forward-looking).

The effect of the tax system does not operate only through the formal burden of the tax, but also through the degree and costs of tax compliance. Tax compliance can affect small entrepreneurial firms in two ways, with two opposite effects. On the one hand, compliance costs, as they involve fixed costs, may be more burdensome the smaller the firm is; on the other hand, as long as a small firm has more opportunity to carry on informal transactions and evade the tax, they may de facto be at an advantage with respect to larger firms. Indeed, it is important to understand whether and to what extent the attractiveness of self-employment can depend on loopholes or low law enforcement of the tax system, which allows, or implicitly tolerates, tax evasion.

We organize the review of the literature by distinguishing between the income tax, capital gains taxes and social security contributions.

a. Income tax

Taxation and risk taking. Economic theory commonly describes the self-employment sector as riskier than the wage-employment sector. A first relevant channel through which a tax system may affect entrepreneurship is given by its impact on risk-taking.

Since taxation reduces the expected after-tax return of any risky activity, it may be claimed that higher tax rates will discourage risk-taking, and thus entrepreneurship. For example, the theoretical model in Keuschnigg and Nielsen (2003) suggests that higher and progressive taxation delays entrepreneurship and the expansion of innovative industries. However, **the negative link between higher tax rates and entrepreneurship has long been questioned by economic analysis**. Since the seminal contribution by Domar and Musgrave (1944), several studies have pointed out that the effect of higher taxes and progressivity on entry into entrepreneurship could be ambiguous (see e.g. Gentry and Hubbard, 2000) or even positive to the extent that the government shares some of the risk with investors by allowing full offset of losses.

As shown by Domar and Musgrave (1944) **the net effect of a proportional income tax system with full loss offsets is to increase investment in risky assets**. This paper generated a prolific literature (see e.g. Mossin, 1968; Stiglitz, 1969; Sandmo 1977; Kaplow, 1994). A common feature of these contributions is that the analysis is based on a portfolio-choice framework, where economic agents may continuously adjust the proportions of resources to be invested in safe and risky assets.

This approach has been used to analyse the occupational choice framework by Kanbur (1981), who combines (continuous) labour supply adjustments jointly with the (discrete) occupational choice between safety (i.e. wage-employment) and risk (i.e. self-employment). In this context, the author shows that **a higher progressivity in the tax schedule can offer insurance against idiosyncratic shocks and have a positive effect on entry into entrepreneurship**.

Boadway et al. (1991) extend Kanbur's model in two ways. Firstly, the authors allow individuals to be heterogeneous so that distributional considerations become relevant; secondly, they also consider differences in utility associated with different occupations. They show that entry into entrepreneurship may be enhanced to the extent that greater tax progressivity offers insurance against idiosyncratic risk.

Gentry and Hubbard (2000) move a step further and obtain different conclusions by arguing that **actual tax systems do not typically offer full loss offsets for entrepreneurs**[9] and by suggesting that **the effect of progressivity on entrepreneurship is actually twofold**. On the one hand, the already identified insurance effect of higher progressivity can enhance entry in self-employment because usually a progressive tax provides higher marginal tax rates. On the other hand, a greater convexity of the tax schedule (as, for example, with an increase in progressivity which correspond to higher average tax rates for riskier incomes) acts as a "success tax" and reduces the returns of entrepreneurs who succeed disproportionately with respect to those who do not, and reduces average returns. In this framework, **a higher progressivity in the tax schedule discourages entrepreneurial activity when individuals are risk neutral**.

[9] Entrepreneurial start-up firms tend to face upfront costs in developing and marketing a new product/technology, and in the process face substantial risk. Gordon and Sarada (2017) suggest that the use of refundable tax savings from business losses in start-ups together with a compensating surtax on the profits of start-ups should yield efficient entry incentives for entrepreneurial start-ups.

In summary, existing theoretical models present an ambiguous impact of tax rates, and in particular of tax progressivity, on risk-taking and entrepreneurial entry decision. More precisely, there are three main conclusions that can be drawn.

1. For a risk-neutral potential entrepreneur, a proportional income tax with full loss offset has no impact on the decision to become self-employed (Gentry and Hubbard, 2000).
2. For the same individual a "success tax" with imperfect loss offset reduces the propensity to enter self-employment (Gentry and Hubbard, 2000; Wen and Gordon, 2014).
3. Finally, if the potential entrepreneur is risk averse, then a progressive tax schedule might work as an insurance scheme and increase entry into self-employment compared to a proportional tax scheme (Domar and Musgrave, 1944; Kanbur, 1981).

Taxation and the quality of entrepreneurial firms. So far, we have discussed the theoretical impact of tax rates and progressivity on the propensity to enter into entrepreneurship, i.e. on the changes in the "quantity" of entrepreneurship induced by taxation. A recent branch of literature focuses instead on the "quality" of entrepreneurs, and on their allocation between large and small firms (Hvide, 2009; Friebel and Giannetti, 2009). Quality can be thought of as the social value and the wealth created by the firm as a result of entrepreneur's effort and smart vision. An interesting contribution to this literature is provided by Asoni and Sanandaji (2014). Their novel approach develops a dynamic framework and focuses on the impact of taxation on the quality of entrepreneurial firms by examining how progressive taxes affect an entrepreneur's dynamic search for higher-quality projects. In contrast with the predictions of Gentry and Hubbard (2000), this paper indicates that **high progressivity in the tax schedule can increase entry into self-employment, while reducing average quality of the firm**. A similar result is obtained by Baliamoune-Lutz and Garello (2015), who employ data for small and medium-sized firms from the Lombardy region in Italy. Their empirical results suggest that progressive taxation can have a negative effect on the quality of entrepreneurship through its adverse impact on effort of entrepreneurs who have more profitable opportunities. Similarly, Haufler et al. (2014) show that a tax system which systematically favours market entry of entrepreneurs can lead to inefficient quality choices.

The quality of innovation is also somehow related to high-impact entrepreneurship. Henrekson et al. (2010) employ a competence-bloc approach to analyse tax and labour market policies favouring high-impact entrepreneurship. They show that **high and/or distortionary taxes and heavy labour market regulations impinge on the creation and functioning of competence blocs, thereby reducing high-impact entrepreneurship**. These results have important normative implications and call for further research to shed more light on the impact of taxation on quality of entrepreneurial firms.

Empirical evidence. The empirical evidence on the impact of taxation on entry into entrepreneurship reaches mixed conclusions. Papers can be clustered into three generations of analyses.

1. A first generation of time series analyses employed econometric techniques that, afterwards, have been found to be problematic. They were generally based on ordinary least squares regression analyses, with simple corrections for autocorrelation. These papers generally conclude that **higher tax rates go with higher rates of self-employment** (e.g. Long, 1982; Blau, 1987).

2. A second generation of time series studies used more advanced econometric techniques, typically accounting for cointegration. These studies also showed **positive relationships between tax rates and entrepreneurial activity** (e.g. Parker, 1996; Cowling and Mitchell, 1997; Robson, 1998).

3. The last wave of studies relies on cross-sectional or panel data and employs more sophisticated econometric techniques. Their results have been **less conclusive and present mixed evidence calling into question the longstanding consensus** from the earlier time series studies (e.g. Bruce, 2000, 2002; Bruce and Deskins, 2012; Gentry and Hubbard, 2000; Schuetze, 2000; Carroll et al., 2001; Cullen and Gordon, 2002).

In particular, Gentry and Hubbard (2000) corroborate the theoretical prediction of their model on "success tax" through probit models based on US panel data. By obtaining a negative and statistically significant coefficient for the marginal tax spread, they show that a greater convexity in the tax system (e.g. a higher progressivity, and thus higher average tax rates for higher incomes) reduces the probability of entrepreneurial entry. By using Canadian cross-sectional data from 1999 to 2005, Wen and Gordon (2014) estimate a structural probit model where the tax convexity variable is constructed from numerical simulations of self-employment. Their results suggest that progressive income tax systems discourage entrepreneurship in Canada. The negative effect from tax progressivity on the probability to become an entrepreneur is also confirmed by Gentry and Hubbard (2005) They also test whether this effect translates into a reduction of innovation but find mixed evidence.

Bacher and Brülhart (2013) corroborate the existence of a twofold effect of progressivity on entrepreneurship by using micro-level data from Switzerland. Their main contribution is to estimate the separate effects of three components of a progressive income tax: higher average tax rates, the progressivity of the tax schedule, and the complexity of the tax code. On the one hand, they confirm that higher average tax rates and complexity of the tax code tend to discourage entrepreneurship. On the other hand, for given average rate and complexity, an increase in tax progression has a positive impact on firm births. This is the insurance effect that facilitates entrepreneurial risk taking.

A more recent paper by Baliamoune-Lutz and Garello (2014) examines the effects of taxation and progressivity of the tax system on entrepreneurship using European macro-level panel data. The Arellano-Bond dynamic GMM estimation implemented in the paper provides **robust evidence that tax progressivity discourages entry into entrepreneurship among those with high incomes, whereas it seems to encourage entrepreneurship when incomes are low-to-average**. In contrast, **the average and marginal tax rates are reported not to have a robust impact on nascent entrepreneurs**.

b. Capital gain taxes

Taxation and entry into/exit from entrepreneurship. Entry may be discouraged by the asymmetric treatment of gains and losses. **Tax systems typically limit the allowable annual deduction for capital losses in order to mitigate the impact of tax revenue shortfalls and to limit tax avoidance strategies** (Scholes and Wolfson 1992, Stiglitz 1985). Even in the absence of such limitations, loss offset is particularly problematic for start-ups, which have null or very low current profits (Crawford and Friedman, 2010). As previously shown, imperfect loss offset reduces

the implicit insurance provided by the tax and could discourage risk-taking[10] given that individual entrepreneurs might not have a sufficiently diversified portfolio.

Taxation and the timing of selling appreciated assets. Capital gains are usually taxed when they are realized. This creates an incentive (the so-called "lock-in" effect) to defer the sale of an appreciated asset in order to postpone the tax payment. Chari et al. (2005) and Cho (2014) have developed theoretical models stressing the distortions provoked by the "lock-in" effect on entrepreneurship. In Chari et al. (2005), entrepreneurs – who can own only one business at a time – have a comparative advantage in starting new businesses, although there are different levels of ability among them; they are the supply side of the market. The demand side consists of risk-neutral banks, which are intrinsically different from entrepreneurs. This implies that those who are relatively better at starting business enterprises should sell successful start-ups to others and start new enterprises. In Cho (2014), entrepreneurs are allowed to purchase a business as well and they have different abilities at managing a business but they all are equally proficient at starting a business. Hence, entrepreneurs might also be on the demand side of the market.
Both analyses confirm the importance of the "lock-in" effect. Realization-based capital gains taxation introduces a friction that hinders an efficient allocation of entrepreneurial skills. In Chari et al. (2005) some entrepreneurs are "locked-in" managing their enterprises even if it would be more efficient to transfer them to others. By means of a simulation model with US data, in Chari et al. (2005) conclude that the revenue-maximizing capital gains tax rate should be around 15%. In Cho (2014) a variety of situations may arise depending on the abilities of the agents. In particular, this paper shows that **while the capital gains tax reduces the number of businesses that are traded, it encourages new business start-ups.** This is so, since an agent who succeeds in launching a new business will not sell it while unsuccessful agents will sell their business lowering the quality of traded businesses, and so capital gains taxation does not affect the value of launching a new business, while it reduces the value of buying an unsuccessful business. Hence, as the tax rate increases, more workers who want to own a business prefer to launch a new business rather than buying an existing one. However, the survival of new businesses might be reduced due to the combination of low incentives to transfer the business and the presence of bad managers.

In order to overcome the distortions caused by the lock-in effect, economists have proposed two types of solution. The first is to switch from a tax system based on realization towards one based on accruals (Shakow, 1986). Nevertheless, the viability of this option has been largely questioned since it poses problems of liquidity and valuation.[11] For this reason, the attention has been focused on a second best solution based on retrospective capital gains taxation along the lines suggested alternatively by Vickrey (1939), Meade (1978), Auerbach (1991), Bradford (1995), and Auerbach and Bradford (2004). The tax schemes proposed in this literature are mostly based on the idea of imitating accrual taxation on a realization basis[12]. Sham (2009) surveys the different approaches of retrospective taxation proposed by the literature and concludes that even when these schemes succeed in eliminating the lock-in effect, this

[10] By discouraging risk-taking we mean a lower number of entrepreneurs assuming risks. However, Haufler et al. (2014) have also shown that the asymmetry of capital losses and gains makes those entering the market to assume less risk, and so reducing the quality of entrepreneurship.
[11] Alworth (1998) identifies three main problems related with an accrual-based capital gains taxation: it increases compliance costs; "marking to market" is difficult for non–traded assets; unrealized gains may pose problems forcing liquidation at the time of tax payment.
[12] This can be obtained, for instance, by taxing capital gains upon realization but by charging interest on past gains when realization finally occurs (Vickrey, 1939; Auerbach, 1991).

comes at the cost of a rather complex and opaque tax formula that is not very likely to be implemented in practice. The attempts to apply these tax formulas in practice have been scarce indeed and this has opened the issue on whether retrospective taxation is desirable and feasible. Alworth et al. (2003) describe the Italian experience of having experimented with both the accrual-based mark to market approach and introducing retrospective taxation of capital gains. Although retrospective taxation was working rather smoothly, it was abolished after just 7 months mainly due to an increasing hostility in the public opinion nurtured by a number of misperceptions regarding the functioning of the tax. The Italian experience seems to suggest that if politics aims at a successful introducing an efficient retrospective taxation, it would be necessary to improve the social acceptance for ex-ante concepts of fairness as well as for complex tax formulas.

c. Social security contributions

The way social-security schemes are designed may influence in various ways the occupational choices of individuals. The difference in the social security entitlements between self-employed and employees may be of particular relevance in this regard. In particular, a generous social security system may have ambiguous effects on the choice to become an entrepreneur. Indeed, there may be a negative impact on entrepreneurship in so far as **generous social security benefits for employees increase the opportunity costs of being self-employed**. Moreover, in the presence of compulsory social security contributions for self-employed workers, there could be a negative impact on entrepreneurship entry since these contributions represent a substantial **reduction in self-employed disposable income**. On the other hand, compulsory social security may have a positive effect on entrepreneurial activity by creating **a safety net in case of business failure**.

Empirical evidence. **Micro-level.** Only few studies have empirically analysed social security as a factor affecting entrepreneurship. At the micro-level, Bosch et al. (1998) surveyed a group of (former) employees that started their own enterprises, asking them about the barriers they were facing. The results suggest that **the lack of social security coverage played a crucial role** in their occupational choice, representing one of the most important barriers to entry into entrepreneurship perceived by respondents.

Taking advantage of several tax reforms enacted in the US, Bruce (2000) analysed to what extent differential tax treatment between employees and self-employed affected occupational choice using the Panel Study of Income Dynamics. Regarding social security contributions, the relevant fact is that in 1984 there was an increase in contributions on self-employment (phased in till 1990 by means of tax credits), which at the end equalized them to employees' contributions. To identify the effect of differential taxation, the author incorporates payroll tax liability – including social security contributions – in all tax rate calculations and controls for a bunch of socio-economic characteristics. The paper provides evidence that workers are aware of differential tax treatments and partially condition to them their occupational choice. However, the paper documents a **positive correlation between the marginal tax rate of self-employed (with respect to employee) and the probability of transitioning from the employee to the self-employed status**. A possible explanation is that the benefit for self-employed stemming from the deduction of income-related expenses (and also from tax evasion) is higher, the higher is the marginal tax rate they face.
Stabile (2004) considers how the differential taxation between self-employed and employee affects the occupational choice using the Canadian Survey of Consumer Finances. He takes advantage of a (supposedly) unexpected reform enacted in the

Canadian province of Ontario in 1990, which fully exempted self-employed from payroll taxes. This allows performing a difference-in-difference estimator where the treatment group consists of those individuals from Ontario and the control is a selected group of Canadian provinces (all but Newfoundland, Manitoba and Quebec), or alternatively those US States sharing border with Ontario (Ohio, Michigan and New York). Contrary to Bruce (2000), Stabile (2004) finds that **the exemption from payment of social-security contributions promoted self-employment**.

The impact of social security contributions might be particularly relevant in the presence of a fixed minimum level of contributions for the self-employed. A fixed minimum amount would act as an entry fee which may represent a further disincentive to become an entrepreneur. Nevertheless, this issue has not been analysed by the literature yet.

Empirical evidence. Macro-level. Some studies provide evidence of a **negative relationship between generous social security provisions and the amount of self-employment in a country** (see e.g. Parker and Robson, 2004; Wennekers et al., 2005; Steinberger, 2005). However, these studies have some limitations. In particular, they do not consider the existence of differences in the social security entitlements of employees and self-employed, and they generally do not make a distinction between social security contributions paid by the self-employed/employer and the contributions paid by the employee. To the extent that the employer's social security contributions increase the cost of labour, they may represent a further barrier to entry when the new entrepreneur wants to set up a new firm and hire workers.

Hessels et al. (2006) try to overcome these limitations. The authors analyse the relationship between social security arrangements and early-stage entrepreneurial activity across a number of economically developed countries, by exploring in particular the influence of the social security entitlements of the self-employed as compared with those of the employees. Furthermore, they analyse how micro level-based replacement rates for employees in case of unemployment and illness/disability impact on various aggregate measures of early-stage entrepreneurial activity. Their results provide clear evidence of **a significantly negative impact of employer's social security contribution rates on the level of early-stage entrepreneurial activity**. This may imply that a reduction of social security contribution rates targeted to young and innovative firms might be an appropriate policy instrument for stimulating entrepreneurship[13]. They also prove that **social security entitlements of employees have a negative effect on the rate of early-stage entrepreneurship**.

Box 2: Income tax, progressivity, social security and the collaborative economy

The findings in this Section largely focus on the impact of higher taxes on risk-taking, and therefore on entrepreneurship. **We consider that the effects identified will likely hold for the entrepreneurs that found collaborative economy platforms,** who will be influenced in a similar way to entrepreneurs in the traditional economy. However, as we discussed in Section 4 of chapter 1, *providers* within the collaborative economy take on relatively little risk and therefore those findings that rely on the traditional sense of entrepreneurship are less likely to hold.

[13] For example in France young innovative companies may benefit from tax exemptions such as the exemption of social security contributions related to the remuneration of staff involved in R&D projects.

However, income taxes may still play a role in determining the occupational choice for potential collaborative economy providers on a basis other than risk. As discussed in Section 3.2 of chapter 1, there are various types of providers at work within the collaborative economy. Individuals may choose to participate in the collaborative economy full-time, part-time in addition to working in a traditional economy job, or not at all. We discuss the implications of tax for these different forms of employment in the collaborative economy in Section 3.6 of this chapter. However, below we raise some issues in relation to social security.

The treatment of social security in the case of the collaborative economy raises questions for both providers (that may lack rights to access social security benefits) and **governments** (who need to sustain social security systems, such as pensions), and is one of the more significant concerns that come with the growth of the collaborative economy (European Committee of the Regions, 2016). The treatment of social security contributions for the self-employed varies across countries. As noted in the above discussion, self-employed individuals might be fully or partly exempted from social security contributions. However, in some countries, the self-employed may be required to pay the equivalent of both the employer and employee's social security contribution.

Collaborative economy platforms act as intermediaries between users and workers, and therefore do not pay employer social security. There is anecdotal evidence that part of the attraction for investors in the collaborative economy is that companies can avoid huge employee payrolls by effectively functioning as labour brokers. The European Commission's report on the 'Future of Work in the Sharing Economy' notes a number of class actions in the US that relate to the misclassification of employees as contractors, and the implications this has for social protection provisions.

But in many European countries, self-employed individuals are not required to replace these employer social security contributions. In their review of eight Member States, De Groen and Maselli (2016)[14] find that just three required self-employed individuals who perform causal work to contribute to social security, above significant earnings thresholds (these countries were France, Poland, and the United Kingdom). In those that did not require such contributions, social security of the self-employed casual workers can be said to be at risk. The US system also encourages the payment of social security contributions from those who combine employment with an additional self-employed income. US IRS guidelines allow the additional contribution (due on the self-employed portion of earnings) to be withheld by a full-time employer, if they have one, stating it "may be a particularly attractive option if, for example, your sharing economy activity is merely a side job or part-time business". This may help ensure adequate social protection for some collaborative economy providers.

Hence, individuals who operate within contribution-based social security systems, may consider the trade-off between a lower tax burden and a lower level of social protection in future before entering the collaborative economy or another form of self-employment, depending on the jurisdiction. For providers in the collaborative economy who already have a full-time job, they are likely to be contributing to social security already. However, for those that use the collaborative economy as a significant proportion or primary source of income, depending on the jurisdiction, they may be faced with either very high or very low social security contribution payments.

[14] Belgium, Germany, Spain, France, Italy, Netherlands, Portugal and UK.

Some observers have suggested that governments, platforms, and employee organisations should collaborate to ensure social security benefits are available within the collaborative economy, in such a way that they are accessible for all on equitable terms (Brachya and Collins, 2016). In particular, it has been suggested that the social security system should be decoupled from employment contracts. Proposals for "portable" social security benefits in the US recognize this, stating:
"Job-based benefits no longer make sense in an economy where fewer and fewer workers hold onto traditional jobs. This is why these accrued benefits must be fully portable, following the workers from job to job, or contract to contract… Because benefits from multiple employers are pooled into the same account, portability and proration work together to provide workers with the full panoply of benefits, even within the flexible micro-employment environment of the sharing economy" (Democracy Journal).

3.2 Impact of taxation on the legal form of conducting a business (i.e. incorporation)

Entrepreneurial firms can choose among several different organizational forms, and in recent decades the study of the determinants of such a decision has received growing attention in the literature. The analysis should disentangle the effect of non-tax benefits (of incorporation) and of tax differentials between different legal forms. For instance, non-corporate income is subject only to the personal income tax, whereas corporate income is taxed both under the corporate income tax and the income tax that applies either to distributed profits or realized capital gains. Thus, a relatively high corporate tax rate creates a distortion, which discourages incorporation, whereas a relatively low corporate tax rate may incentivize incorporation (see e.g. Feldstein and Slemrod, 1980). This issue is central to standard traditional theory on the topic (see e.g. Harberger, 1966, Shoven, 1976; Gravelle and Kotlikoff, 1989, 1993).

Tax differentials and non-tax benefits of different legal forms. MacKie-Mason and Gordon (1997) and Goolsbee (1998, 2004) provide a theoretical framework to study the choice of an entrepreneur between sole proprietorship and incorporation. Their models stress that the decision on the legal organizational form of a firm is determined by the **net tax loss from incorporation**, compared to its net **non-tax benefits** (e.g. limited liability and access to capital markets). Thus, the degree to which firms respond to tax incentives crucially depends on the importance of these non-tax factors. An entrepreneur will choose incorporation when the non-tax benefits exceed the net tax loss of incorporating.
Cullen and Gordon (2007) provide a survey of previous theoretical models of the impact of taxation on the decision of entry into entrepreneurship by incorporation and they analyse the impact of progressivity on incorporation. They find that the combination of progressive personal income tax rates and flat corporate tax rates encourages incorporation. In particular, they identify three main channels through which corporate income taxation may affect incorporation.

1. Incorporation is encouraged by the possibility to shift income between the personal and the corporate tax bases to take advantage of the **typically positive difference between personal and corporate tax rates**.

2. The possibility to obtain a **"risk subsidy" through incorporation** arises from the contrast between the progressive personal income tax rates and the flat corporate income tax rates.

3. The third channel relates to the impact of taxes on the required risk premium, due to **sharing of risk with the government**. Thus, higher corporate tax rates reduce the costs of risk bearing and favour incorporation.

Early empirical studies. Among early studies, Gravelle and Kotlikoff, (1989, 1993) used simulation models to estimate the impact that differences between corporate tax rate and personal tax rate may have on the firm's decisions of organizational form and forecast that the effect is very large. For instance, the drop in personal relative to corporate tax rates as a result of the 1986 tax reform in the US had the effect to make more attractive for firms with positive income to shift from corporate to noncorporate status. MacKie-Mason and Gordon (1991) empirically estimated the impact of changes in average tax rates faced by corporate and noncorporate income on the fraction of business income or business assets in corporate and noncorporate firms. They prove the existence of a significant but small effect of changes in tax incentives on income and assets. The **limit of these contributions** is that the difference in average tax rates provides an incomplete summary of the tax distortions on the decision related to the organizational form.

Evidence from the US. The role of non-tax factors in determining the legal form of a firm is tested mainly for the US case. A first wave of time series studies (MacKie-Mason and Gordon, 1994, 1997; Goolsbee, 1998) concludes that **non-tax factors are significantly more important than taxes in the choice of organizational form**. In particular, Goolsbee (1998) is the only paper that exploits the rich variation in US federal tax rates during the first two decades of the twentieth century. The author estimates the impact of taxes on the non-corporate share of capital. The empirical results suggest that **taxes do matter for organizational form decisions but the magnitude of the effect is small**. However, Goolsbee (2004) argues that these time-series studies suffer from an identification problem due to limited time series variation in tax rates and thus provides a cross-section analysis as an alternative. The estimates provide a **much larger effect of corporate taxes** on the rate of incorporation. These contributions stimulated a more recent empirical literature on taxation and incorporation.
Further studies include Gordon and Slemrod (2000), that analyses the shifting of income from the corporate to the personal tax base as a result of generally declining difference between personal tax rates and corporation income tax rates, and provide evidence of such shifting in the US since 1965.
Romer and Romer (2014) present some evidence that increases in the after-tax share of income in the interwar era had a positive effect on business incorporations. Finally, Liu (2014) provides evidence that the relative taxation of corporate to personal income has a significant impact on incorporation. By exploiting variation in US state taxes, the paper shows that, on average, a one percent increase in the corporate tax decreases the corporate share of economic activities by 0.2-0.3 percent, whereas a one percent increase in the personal tax increases the corporate share of economic activities by 0.5-0.6 percent.

Evidence from Europe. The evidence provided by studies employing European data, on the other hand, suggests that **corporate tax systems have a much larger impact on the choice of organizational forms**. In presence of a fall in corporate tax rates like the one experienced in Europe during the past decades, the effect of firms switching from unincorporated to incorporated businesses is substantial, raising corporate tax receipts at the expense of personal income tax revenue (de Mooij and Nicodème, 2008). Egger et al. (2009) models and estimates the determinants of incorporation, including taxation. Their empirical results confirm that a higher personal income tax rate favours incorporation, while a higher corporate tax rate reduces the probability that a European manufacturing firm will incorporate.

Freedman and Crawford (2010) study the impact of taxes on the incorporation decisions of small businesses in the United Kingdom. The paper shows that incorporation rates of small businesses increased after the introduction of a lower corporate tax rate for companies with profits of £ 10,000 or less. Moreover, a recent contribution by Da Rin et al. (2011) sheds some more light on the role of corporate taxation in the incorporation process. The authors prove the existence of a significant negative but concave effect of corporate income tax rates on incorporation rates. According to this analysis, corporate tax rate reductions affect incorporation rates only below a certain threshold tax level.

Box 3: Legal forms and the collaborative economy

Founders of collaborative economy platforms may similarly be driven by the relationships we describe above, namely that lower corporation tax rates may encourage incorporation, or that an entrepreneur will choose incorporation where the non-tax benefits exceed the net tax loss of incorporating.

However, **providers within the collaborative economy are not owners and therefore do not play a role in these decisions.** Instead, one of the issues many of these providers face is whether or not their income from the collaborative economy should be subject to taxation at all (in the form of personal income taxes), and if it is subject to taxation, how this income is classified (e.g. in the form of earnings from employment or self-employment). We discuss the implications of this separately in Section 4 of this chapter.

3.3 Impact of taxation on investment

Investment is described in economic theory as an increase in the stock of capital available to a firm. It is associated to the acquisition of physical assets, such as plants or machinery, but intangible assets such as software, and R&D expenditure that may lead to patents and copyrights, have become more and more important, especially in a knowledge-based economy, and they can be particularly relevant in innovative sectors.

From a theoretical point of view, the effect of taxation on investments has been traditionally analysed considering how tax provisions affect the minimum rate of return a firm requires on an investment project to cover its cost, known as the *user cost of capital* (Jorgenson, 1963; Hall and Jorgenson, 1967).

Box 4: Theoretical background

In a world without taxes, which is taken as a benchmark, a unit cost of investment must generate an annual cash flow at least equal to $r + \delta$, where r is the firm's discount rate and δ represents the "true" economic depreciation. When the cash flow is subject to the corporate tax (or the personal tax in case of an individual or a partnership), the required return to make the investment viable must increase to $(r + \delta)/(1 - t)$, where t is the tax rate. An income deduction corresponding to depreciation is usually allowed, as the tax code requires firms to write off the cost of investments over the useful life period of the asset. This amounts to a reduction of the user cost by a proportion $(1 - zt)$, where z is the present value of tax depreciation allowances, which is equal to one in case the cost of the asset can be immediately written off, and it is less than one in all other cases. The formula for the user cost becomes

$$\text{user cost of capital} = \frac{r+\delta}{1-t}(1 - zt)$$

We further note that when deductions correspond, in present value, to the "true" economic depreciation δ, the user cost of capital is reduced to $r/(1 - t) + \delta$; in case the investment is financed at the margin with debt, interest payments on funds borrowed are usually deducted; this implies that the cost of financing – hence the discount rate r – is *de facto* reduced in a proportion $(1 - t)$, and the formula of the user cost of capital reduces to the case of no taxes, i.e. income taxation is neutral to the investment choice.[15]

The user cost of capital well summarises the three channels of influence of taxation on the marginal condition which, according to the neoclassical theory, drives the investment decision (see box):
1) the tax rate on the firm income,
2) the firm's discount rate, which depends on the source of financing, and
3) the deductions related to the asset cost (e.g. depreciation allowances, tax credits etc.).

Some caveats are required when we consider the framework above. **The analyses based on the user cost focus on the investment decision at the margin**, while in some cases the decision may be lumpy, as in the case of where to locate a production plant, whether domestically or abroad. In that case, the total or average after tax return may be relevant, rather than the marginal net of tax return. Second, in many circumstances firms may be credit constrained, and investments with a net-of-taxes positive present value can be foregone because of the imperfection of capital markets.

Many empirical analyses have been carried out to test the theory and use it to predict the effect of tax policies on investments. As summarized by Hasset and Hubbard (2002), early studies do not find a significant effect of the user cost of capital on investment decisions, while more recent ones, using more sophisticated approaches, seem to confirm that the user cost, hence **taxation, is an important determinant of investment policy** (see box for further details).

Box 5: Empirical studies

The first empirical test of the theory of the user cost of capital dates back to the late 1960s. Hall and Jorgenson (1967) claim the validity of their framework to explain the aggregate variations in investments. However, as emphasized by Hasset and Hubbard (2002) in their survey, this early study use a flawed specification of the investment function, which capture the accelerator effect (i.e. the positive effect on investment of demand and output growth) together with the user cost effect. When the two were properly distinguished in subsequent contributions (see for example Chirinko and Eisner, 1983), the user cost is found to have negligible effect on investments. Similar conclusions are common to all empirical implementations of the user cost model which used time-series data, so that many economists are convinced that components of the user cost played limited role in the explanation of investment decisions. One of the problems is the tendency of a number of aggregate variables to move together over the business cycle, making it difficult to isolate single driving variables.
Possible strategies to overcome these limitations are explored in more recent analyses. One route is to consider disaggregated date and cross-sectional variations of investments related to major tax reforms. Using this approach Auerbach and Hassett

[15]In this case, the effect of taxation on corporate income is equivalent to the alternative neutral solution of a cash flow taxation where we allow for an immediate write-off of the cost of investment but do not allow any deduction for the cost of financing.

(1991), Cummins et al. (1994) and Chirinko et al. (1999) find significant and larger effects of the tax variables.
Hassett and Hubbard (2002) conclude their survey saying that the consensus values of the elasticity of investment with respect to the tax adjusted user cost of capital is between -0.5 and -1; these values are high by the standard of early literature, and suggest that tax policy can have "a significant impact on the path of aggregate capital formation".
More recent studies seem to confirm such conclusion. Vartia (2008), using measures of the industry-specific tax-adjusted user cost of capital, finds evidence of a highly statistically significant effect of the user cost, supporting the hypothesis that a high user cost reduces investments. It also provides an idea of how a change in some tax parameters can affect the user cost: a five percentage points of the statutory tax rate (from 35% to 30%) translates into a 2,6% decrease of the user cost, resulting in an increase in the investment to capital ratio by a percentage between 1% and 2.6%. An increase of the same magnitude is obtained by a 5% increase in the net present value of depreciation allowances.

A conclusion which follows from the theory and is emphasised also by empirical studies, is that the user cost of capital, hence the effect of taxation on investment, varies across assets of different nature and economic sectors. Investments in intellectual property usually face lower effective tax rates than structures and equipment because they are immediately written off and are often eligible for tax credits. **These differences, together with heterogeneity in the financial structure and in the legal form, imply that the impact of taxes differ also for firms at various stages of maturity.** This is relevant when we consider how the analysis above can be applied to entrepreneurial firms. Such firms, as we have already emphasised, are characterized by: (1) a high exposure to risk, (2) they are relatively small in size, (3) low levels of income in the first periods of their activity, (4) a particular mix of investments.

Investments aimed at introducing innovations are typically risky. We have already considered in section 3.1 the effect of taxation on risk taking. In particular, we have emphasized the possible **asymmetry in tax treatment between profits and losses**, between good and bad states, in the face of a risky investment (Auerbach, 1986). Losses do not immediately become a subsidy, as the tax liability cannot become negative. Most tax systems allow firms to carry over losses into future tax years, but the asymmetry is only reduced, not eliminated, because of the time deferral of the loss recovery (Gentry, 2004; Crawford and Freedman, 2010). **Small firms can especially suffer from this asymmetry**, as larger firms invest in more projects and activities, and for this reason they have more leeway to compensate profits and losses from different investments within a given fiscal year.

A related but distinct reason why entrepreneurial firms may suffer a higher effective tax rate is that **start-up firms typically have to front-load their costs**, and they have to wait until cash flows materialize in later period to recover the losses suffered in the first periods. This implies that **losses recovery is only partial, while income is taxed at its full statutory rate**.
A further specific aspect which may be important is the presence of explicit or implicit limitations to loss recovery in case of **acquisitions, changes in ownership or mergers**. Once again, this provision can affect particularly small or young firms. Allen (2012) analyzes a sample of venture-backed firms, and finds that more than three quarters reported tax assets reflecting unused net operating losses, with a significant number of them foreseeing they would not be able to realize the whole value of such assets. Of course, failing firms are another case in which there can be substantial losses which are not recovered.

The way the tax system can affect investment by altering the cost of finance will be discussed in the next section. Here we focus on the role of depreciation allowances and tax credits for R&D.

a. Depreciation allowances.

The analytical framework points to depreciation and the possibility to write off expenses as a crucial channel of influence of taxation on investments. We observe that in some cases depreciation allowances can exceed, in present value, the deduction corresponding to the true economic depreciation. This will happen in particular when forms of accelerated depreciation are allowed. Additionally, in certain countries (notably the US), a given percentage of the value can be written off immediately while the rest is deducted according to the normal schedule.
Note that, at least in principle, when depreciation allowances are "faster" than the true economic depreciation, it is possible that the cost of capital is reduced below the level of the no tax benchmark (this may well be the case when investment is financed by debt at the margin), so that investment is actually encouraged by the tax system. This is a circumstance that should be taken into account, as it goes against the common presumption that higher rates result in lower incentives to invest. Note, however, that this will not generally be the case when the marginal source of financing is equity, which normally receives a less favourable tax treatment than debt; in such case, even with accelerated depreciation, the effect of taxation will increase the cost of capital, hence discourage investments.

Another relevant issue relates to the use of investment-type-specific depreciation allowances. Indeed, as we have pointed out in Box 4, the user cost of capital depends on tax depreciation allowances. These can vary depending on different types of investment (machines vs. buildings vs. researcher and technician expenses in R&D, etc.) to the extent that different types of investment can be differently deducted from the tax base in most countries. As a result, since depreciation allowances may be different depending on the type of investment, the tax code can affect firms' investment choices. In this regard, as documented by Egger et al. (2009) and Egger and Loretz (2010), different sectors involve differences in the usage of machinery and buildings, etc., in the production process. In particular, to the extent that machines and buildings are primarily used by innovative start-up firms and that those tangibles benefit from a favorable treatment over other tangibles in terms of deductions, then by using an appropriate deduction scheme, governments might foster investment in innovative sectors.

b. Tax incentives for R&D expenditure.

The provisions recognized to certain types of investment, namely those in research and development (R&D), are particularly relevant for entrepreneurial firms. A large part of R&D expenditure, e.g. salaries of scientists and technicians, is usually treated by the tax code as current expenditure and can be immediately written-off. However, from an economic point of view, such expenditure should be considered as an investment since it will produce effects on several years. As we have already noted above, when the cost of an investment is written-off and the cost of financing is deducted (as in the case of debt financing), the tax entails an implicit incentive to invest.

In addition to the favourable tax treatment of R&D expenditure, many countries provide explicit tax incentives. There are three main schemes that could be used to design R&D tax incentives: accelerated depreciation, tax credits, enhanced allowances.

Accelerated depreciation may be applied when R&D expenditure is capitalized and will encourage investment by reducing the user cost of capital as shown above.
Tax credits and enhanced allowances could be applied to both current and capital expenditure. Tax credits allow a direct deduction from the tax payable, while enhanced allowances provide an additional tax deduction (above the normal deduction rate of 100% for wages, and standard depreciation for capital costs) from corporate taxable income. The main difference between the two mechanisms is that the former directly reduces the tax liability, while in the latter approach the reduction in tax liability depends on corporate income tax rates.

A recent report of the European Commission (2014b) has reviewed for 33 countries - so not only for EU countries - the set of tax incentives put in place. An interesting set of good practices emerges from this study: volume-based R&D tax credits (applied to the total amount of R&D expenditure) are to be preferred to incremental ones; targeting, such that tax incentives focus on young companies rather than on small and medium firms, and within the former, on R&D expenditure that creates real spill-overs (not simple mimicking); refundability; one-stop, on-line application procedure such that compliance costs, which might be especially burdensome for small and medium firms, are minimized.

As the report of the European Commission (2014b) concludes, **tax incentives encourage investment in R&D, although the estimates diverge as to the size of such effect.** The heterogeneity in the estimated effects is mostly due to differences in empirical methodologies for the estimation, to the characteristics of the country under analysis, to the specific design of the tax incentive, and finally to the different time horizon considered (whether the impact of the incentive is estimated in the short run, i.e. one year, or in the long run, i.e. 5 to 15 years).

A priori, the positive impact of tax incentives should be larger for small and medium firms than for the rest of firms as liquidity constraints might be more severe for that type of firms. However, the net impact for small and medium firms could be somehow mitigated as long as we take into account that they might not have enough expertise and time resources to comply with the legal requirements to take advantage of these tax benefits (Crawford and Friedman, 2010). Empirical analyses should shed light on this.

As we said before, in general, estimates point to a positive direct[16] impact of incentives on R&D investment (in particular, see section 2.1. of the report by the European Commission (2014b)). A key issue, though, is to ascertain to what extent the tax credit generates input additionality. Input additionality is defined as the firm's R&D expenditure that can be attributed to the policy intervention relative to the size of the tax credit itself. In this regard, it is difficult to obtain a general result. For example, referring to the two studies identified as more technically robust by European Commission (2014b), Lokshin and Mohnen (2012) obtain evidence of input additionality only for small firms; while Mulkay and Mairesse (2013) obtain input additionality, but do not distinguish between small and large firms. In any case, as expected, **empirical evidence points to a greater impact of R&D incentives on small businesses**. Both empirical analyses estimate **larger impacts of the tax credit in the long run**.

[16] By direct impact we mean the impact without taking into consideration the potential spillovers of the R&D expenditure from the firm taking advantage of the tax credit to the rest of business activities.

However, there is recent empirical evidence that suggests the impact of tax incentives along time differs between small and large firms. In particular, Rao (2016) estimates the user cost[17] elasticity for R&D expenditures using IRS confidential data from corporate tax returns. Estimates imply that a ten percent reduction in the user cost of R&D due to the tax subsidy leads the average firm to increase its research intensity—measured by the ratio of R&D spending to sales—by roughly 20 percent in the short-run. Curiously, long-run estimates are smaller than in the short run only for small firms. This suggests that the tax credit serves as an impetus for small firms, perhaps by providing much needed cash, for a burst of research spending that is not sustained over time. Hence, liquidity constraints seem to be binding for small firms.

The existence of liquidity constraints is also related to the fact that start-ups do not make profits, or not enough. This implies that they cannot fully exploit the possibility to write off R&D costs and the tax credit require as they require the existence of a sufficiently large tax liability. This justifies why R&D tax credits are refundable in some countries (European Commission, 2014b)[18], and it may also explain why some countries consider reduction in payroll taxes or social security contributions related to R&D personnel as an alternative way to encourage investment by firms having low or no profits (Appelt et al., 2016). Baghana and Mohnen (2009) evaluate the effectiveness of R&D tax incentives in Quebec, where there is a refundable tax credit, using manufacturing firm data from 1997 to 2003. Interestingly, this study exploits the actual R&D tax credits received by every firm instead of just relying on statutory tax parameters. In this way, their estimate is not affected by the fact that some small firms might not apply for this incentive due to compliance costs as we suggested above. From their estimates, they conclude it is beneficial to support R&D tax incentives for small firms. Most important, after seven years, the cumulative additional R&D for large firms no longer covers the cumulative government costs to support this R&D, while for small firms more R&D gets created than it costs the government to support it even after 20 years. Hence, again we obtain empirical evidence about the benefits of tax incentives for small firms.

Although most studies measure the effect of tax incentives on R&D expenditure, the ultimate objective of public policy is to generate innovation, for which R&D is a key input. To which extent R&D actually translates into innovation depends on framework conditions and on the firm's ability to invest in projects with high private and social expected return[19]. **The impact of R&D tax incentives on innovation and productivity of firms is more difficult to ascertain and, unsurprisingly, it is less studied**. **The scarce empirical analyses point to a positive impact of R&D tax incentives on innovation** (for example, see section 2.2. of the report by the European Commission (2014b)). Some studies in this direction are Czarnitki et al (2011), Cappelen et al (2012), Bérubé and Mohnen (2009) and Dechezleprêtre et al. (2016), which look at the effects of R&D tax credits on patents and new products. For example, this latter work, applying regression discontinuity analysis to a change in tax regime in the UK, examine the effect of tax incentives on R&D and on patenting. Focusing on small and medium firms, they find a significant and large effect, with a elasticity (of R&D expenditure on the corresponding

[17] See section 3.3 for a definition of the user cost of capital.
[18] The refundable nature of the tax credit makes it relatively similar to a direct grant. In absence of refundability, there is empirical evidence that the latter instrument is more appropriate for small firms liquidity constrained (Busom et al. 2014, and Romero-Jordán, 2014).
[19] Note that, in principle, observed R&D could increase without having much effect on innovation if firms re-label existing activities as R&D to take advantage of the tax credits or invest in R&D projects with low returns. Nevertheless, re-labeling does not seem to be an important issue according to recent research (Guceri and Li, 2015).

user cost) as high as 2.6, and the response is particularly strong for young firms. Moreover, they find a positive causal effect of R&D on innovation, with elasticities higher than those found with the conventional OLS approach, with no evidence that the additional patents are of lower quality. Finally, they find evidence of spillovers from treated firms to the innovation of technologically related firms. This latter result is particularly interesting as also finds empirical evidence on indirect effects, while recall the previous reviewed literature focuses on direct effects.

To summarize, design (volume vs incremental-based or refundability), targeting (innovative young firms) and relatively easy compliance procedures (compatible with targeting) are the three desirable characteristics of R&D tax incentives. While the literature obtains robust empirical evidence of tax incentives – in particular, tax credits – on R&D expenditure, these positive effects are particularly important for small firms. Further research, tough, should be carried out to expand the analysis of the impact of R&D tax incentives on innovation.

Box 6: Innovation and the collaborative economy

We do not expect the findings in Section 3.3 to differ for entrepreneurs in the collaborative economy who create and own the platforms. However, these findings are not relevant for providers in the collaborative economy, who by nature of their involvement do not decide how much and in which projects to invest. Instead, they simply utilize their own skills, time or assets.

3.4 Impact of taxation on access to financing resources and on capital structure

The business financial policy relates to **two key choices that firms make: (1) how much of their investment to finance through internal finance and (2) whether to raise external funds by issuing debt or equity.** The impact of taxation on firms' financial strategy differs substantially whether one assumes that **access to external capital is constrained by market failures or not.** We organize the review of the literature by distinguishing between several tax instruments that may affect the two key choices: taxes on business income, reduced corporate income tax rates on SMEs, allowance for corporate equity, personal taxes on dividends and capital gains, wealth taxes.

a. Taxes on business income

In the absence of market failures, the deductibility of interest payments from taxable income creates an incentive to finance investments through debt rather than equity. However, tax benefits from debt financing may differ across firms depending on their characteristics. In particular, **entrepreneurial firms are likely to experience a lower tax advantage of debt.** When firms have unimpeded access to external capital, we expect that they choose the capital structure that minimizes the cost of capital. Since interest payments can generally be deducted from taxable income, whereas such a deduction is not available in the case of equity financing, firms may reduce the cost of capital by increasing leverage (Modigliani and Miller, 1963). However, the deductibility of interest expenses does not always produce the same

reduction in the tax bill[20]. As a consequence, the tax advantage of debt will vary across firms depending on their past record and future prospects: profitable firms with few non-debt tax shields should use more debt than less profitable firms with a high amount of tax shields.
Furthermore, given the characteristics that determine potential tax savings from interest deduction, the actual reduction in the tax burden that each firm may achieve by optimizing its capital structure will depend on the availability and cost of debt financing.
These considerations are crucial for entrepreneurial firms. On the one hand, **the tax advantage to debt is lower for newer and innovative firms with a higher risk-return profile**. In particular, as discussed by McConnell and Pettit (1984), Pettit and Singer (1985), and Day et al. (1985), **smaller entrepreneurial firms are expected to be less profitable and, therefore, they use tax shields less than large firms**. As a result, the tax incentive to use debt is weaker for entrepreneurial small firms. On the other hand, the same authors highlight that, due to the higher risk to go bankrupt, smaller firms should use less debt than larger companies.
Another important dimension to consider when assessing the impact of taxation on the incentives to use debt as a source of financing **is the legal form of the firm**. Typically, **entrepreneurial firms assume the form of pass-through entities (e.g. sole proprietorship or partnership), at least in their start-up phase**. The income of a pass-through entity is taxed in the hands of the entity's owners. If the owners are individual taxpayers, then the entity's income is taxed only once at the personal income statutory tax rate. Income earned within non-pass through entities, i.e. corporations, is taxed twice: it is subject to corporate taxation when it is earned and it is taxed again when it is distributed as dividend to shareholders. Despite most countries implement various mechanism to mitigate the double taxation of dividends, in many instances the compound effective rate on corporate income is higher than the personal income tax rates applied on income from pass-through entities. As pointed out by Scholes and Wolfson (1992, p. 376), this implies that **corporations may receive a larger tax benefit from debt with respect to pass-through entities, and are expected to use more debt than pass-through entities. Thus, according to the theory, all characteristics of entrepreneurial firms seem to limit their ability to reduce the effective tax burden by increasing debt.**

On the empirical side, there is a vast literature testing the theory (for a survey see e.g. Graham, 2003; Auerbach, 2003). **In particular, a relevant stream of empirical studies tests Scholes and Wolfson's (1992) prediction that taxable corporations will be more highly leveraged than pass-through entities**, by comparing the capital structures of publicly traded corporations to those of publicly traded partnerships. Among others, Guenther (1992) notes that corporations have higher debt-to-asset ratios than publicly traded partnerships due to the tax benefit corporations receive from interest expenses. Similarly, Gentry (1994) shows that corporations have higher debt-to-market value ratios than publicly traded partnerships, supporting the hypothesis that the corporate tax system encourages borrowing. Ayers et al. (2001) move a step further and find that the tax incentives to use debt differ according to the type of debt (loans from owners vs. loans from non-owners) and the type of entity. Their results indicate that the effect of marginal tax rates on the use of loans from non-owners and other non–debt tax shields is similar for both taxable corporations and pass–through entities. In contrast, the authors show that marginal tax rates are unrelated to the use of loans from owners by pass–through

[20] For instance, De Angelo and Masulis (1980) argue that corporate marginal tax benefits on interest deduction decrease in non-debt tax shields (e.g. depreciation and investment tax credits). This reduces the tax incentive to use debt. Similarly, the tax incentive to use debt decreases with the probability that a firm experiences non-taxable states of the world, i.e. when taxable income is negative (Kim 1989).

entities but are positively related to the utilization of inside debt for taxable corporations. This result confirms that the debt-financing benefits reduce for pass-through entities because the interest expense deduction does not generate any tax savings.

So far we have discussed situations in which market failures are absent. However, firms may become credit-rationed as a result of the presence of market failures. In particular, **access to debt financing for newer and innovative entrepreneurial firms is hindered by the existence of information asymmetries and uncertainty** (see also section 2 and section 3.4/b of this chapter). Thus, taxation may have a differential impact on small entrepreneurial firms not only because such firms experience a lower tax advantage of debt but also because **they may find it difficult to raise external funds**. The corporate finance literature provides extensive evidence that the relationship between firms and external investors is subject to information problems that tend to limit the amount of external funds. Therefore, firms with profitable investment opportunities are often subject to financing constraints, which prevent them from investing the desired, optimal amount of capital. R&D intensive firms typically have large investment opportunities compared to own funds, they are more dependent on entrepreneurial inputs and thus, they are more difficult to monitor. In particular, **financing constraints are more relevant for small and medium sized firms**. Schaller (1993) and Chirinko and Schaller (1995) show that the correlation between equipment investment and internal funds is stronger for small entrepreneurial firms with respect to large firms. Thus, **young innovative firms are more likely to become credit-rationed**. As a result of their being constrained in the access to external financing, innovative firms are unable to fully exploit their growth potential (Guiso, 1998). The correlation between investment and own cash-flow is also significantly higher for R&D intensive investments (Brown and Petersen, 2009).

Reduced corporate income tax rates on SMEs are often used in several EU countries as means to compensate them for the difficulty to access external finance (OECD, 2009; European Commission, 2014c). Reduced rates are also advocated as a means to compensate SMEs for **obstacles in achieving economies of scale, difficulties in dealing with the complexities of the tax systems and the lack of expertise to optimize their tax burden**.

In spite of the presence of arguments in favour, and of the widespread use of these policies, **the effectiveness of a reduced corporate income tax rate for SMEs has been questioned by the literature**. The European Commission (European Commission, 2014c) argues that using the tax expenditure system to correct market distortions and the SME-specific disadvantages does not seem to be the first-best solution. These tax incentives for SMEs could also generate other non-intended effects, like encourage entrepreneurs to incorporate for tax purposes (see De Mooij and Nicodeme, 2008) and discourage companies to grow. For these reasons, the IMF (2016) concludes that in order to promote entrepreneurship and innovation a preferential tax treatment should be targeted to new firms instead of to small firms. Moreover, as pointed out by Bergner et al. (2017), the implementation of these kinds of measures favouring SMEs is mostly ineffective since it generates more complex tax systems as well as additional distortions to the investment and financing decisions of these firms with the correspondent average cost increase for SMEs. These authors suggest that European policy-makers should try to remove the existing tax-related obstacles to the growth of businesses instead of designing non-targeted tax reductions for SMEs.

Mirrlees et al. (2011) advocate for specific tax policies, targeted for small entrepreneurs, and considering the entire tax system, instead of a general low tax rate for all profits of all SMEs. They claim that this alternative policy should be more efficient, at least preventing for some distortive activities usually conducted by small firms[21].

An **Allowance for Corporate Equity** may be an alternative way to cope with difficulties in accessing exernal finance. Keuschnigg and Ribi (2013) analyse how profit taxes affect access to external funds, investment and welfare of financially constrained firms. Their results suggest that firms' investments become sensitive to net of tax cash flow. **In particular, taxes reduce a firm's pledgeable income and its ability to raise external funds. This produces a negative impact on firm's level of investment.** Furthermore, the authors prove that, **when banks become active** and provide monitoring services in addition to finance, **the introduction of a tax deduction** from income corresponding to the normal return to capital (a provision known as **Allowance for Corporate Equity** (**ACE**)[22] and recently adopted in Belgium and in Italy, see also Chapter 3), **yields larger investment and welfare than an equal yield cash-flow tax**. These results have important implications for the most dynamic sectors of the economy such as the one of innovative entrepreneurial firms that typically have large growth possibilities relative to own funds and they are most likely to be constrained and in need of more active forms of finance. In this respect, the existence of an efficient venture capital sector may help in broadening the access to finance of small entrepreneurial innovative firms (see following sub-section on the impact of taxation on venture capitals and business angels).

b. Personal taxes on dividends and capital gains

Even the impact of personal taxes on equity income may change when access to external funds is limited. This issue has fuelled a **debate in the literature between the so called "old view" and the "new view"** on dividend taxation (see Auerbach, 2003, for a survey). **The old view states that dividend taxes reduce the net return on investment and hence reduce the supply of savings.** Therefore, in the presence of lower tax on dividends, individuals save more, stimulating business investment, profits, and dividend distributions in the long run. In contrast, **the new view assumes that marginal investments are entirely financed by retained earnings rather than new share issues.** Under this assumption, the tax on dividends does not affect the investment decisions, whereas **capital gains taxes** become relevant. As a corollary, under the new view, profits and dividend payments do not change in the presence of a dividend tax cut, which only gives benefits to individual investors by reducing their tax burden. Black and Scholes (1974) and Kalay and Michaely (2000) support the new view, and conclude that firm value is not related to dividends whereas Litzenberger and Ramaswamy (1979); Fama and French (1998) and Saez and Chetty (2005) find support for the old view.

Inasmuch as entrepreneurial firms are employing mainly retained earnings as source of financing, we expect their behaviour to be consistent with the new view on dividend taxation. In other words, we expect capital gains taxes to be more relevant for entrepreneurs' investment decisions than dividend taxes.

Typically, constrained and unconstrained firms also differ in their banking relationship (see e.g. Petersen and Rajan, 1994; Degryse and Ongena, 2005).

[21] Similar recommendations could be found in Nicodème (2009).

[22] The theoretical foundations of the ACE trace back to the works of Boadway and Bruce (1984) and Wenger (1983).

Indeed, the presence of close ties between firms and banks tends to reduce the informational asymmetry, enhancing firms' likelihood to obtain the required funding. Among other empirical studies, Fukuda and Hirota (1996) employ data on a sample of Japanese firms and show that a close relationship to a bank reduces agency costs and allows firms to raise more debt. **This issue is critical young entrepreneurial firms since, at early stages of business development, banking relationships are likely to be scarce.**

In this context, **alternative sources of finance are particularly important and may play a crucial role in fostering innovation. These external, non-bank sources of financing are typically represented by investments provided by venture capitalists and business angels.** The term venture capital refers to an investment provided through a fund, whilst a business angel is a business-experienced individual - a "natural person" - who typically invests in small entrepreneurial firms. **Apart from financial resources, both venture capitalists and business angels can provide young entrepreneurs also valuable business advice based on their extensive business experience and industry knowledge** (see e.g. Kaplan and Strömberg, 2001). For this reason, venture capitalists and business angels are likely to add value to young companies in terms of faster and larger growth with respect to other sources of funding (i.e. banks or other financial intermediaries). Therefore, **a healthy venture capital sector[23] should be considered an important institutional factor for innovation and growth (European Commission, 2015e).**

Given these premises, a detailed analysis of the potential effects of taxation on the venture capital sector is extremely important. **The impact of taxation on the behaviour of venture capitalists and business angels strictly depends on the nature of the investor and the type of relevant taxes involved.** Concerning the nature of the investor, corporate venture capitalists are subject to the corporate income tax and capital gains taxes, whilst for business angels, personal income tax, wealth and inheritance taxes on investment returns are likely to be important. Nevertheless, individuals investing through a fund will be liable to pay all above-mentioned taxes. **The relevant taxes that are likely to influence the demand or supply of venture capital are also strictly related to the stage of the investment cycle.**

During the **holding period** of the investment cycle**,** investors perceive income on the investment such as dividends or interest income. Thus, **the relevant taxes involved in this phase are personal or corporate income taxes.** However, **taxation seems to be less likely to play a crucial role in the context of venture capital investments in start-up firms, which may not generate any income in their early stages of development.** In contrast, **there is some evidence of the impact of favourable dividend taxation regimes on later phases of the start-up life cycle.** For instance, Jeng and Wells (2000) observe that one of the causes of the growth of Israel's venture capital industry is a favourable tax regime for individual investors. Keuschnigg and Nielsen (2004b) argue that dividend tax is likely to weaken the incentives for entrepreneurial effort and venture capitalists' advice and investment in start-up firms. **The existence of differences in personal income and corporate income taxation may indirectly impact the demand for venture capital and business angel investments.** Indeed, as pointed out by Poterba (1989a), personal income taxation and payroll taxes have an indirect impact on the demand for venture

[23] Henceforth, we refer to venture capitalists or venture capital sector as to include both venture capitalists and business angels. Indeed business angels are often referred to as "informal venture capitalists".

capital. Similarly, when progressivity of the personal income tax weakens the incentive to become entrepreneur (see section 3.1), it is indirectly having a negative impact on the demand for venture capital. The evidence on the impact of corporate taxation on the supply of venture capital is instead scarce and show weak significance (see e.g. Potterie and Romain, 2004a).

Although there are no taxes specifically targeted to the initial investment stage, **there are some examples of tax incentives that may influence the behaviour of venture capitals and business angels** in this phase of their investment decision process. In particular **a proper design of capital gains taxation** - not necessarily through a lower level of taxation only - **can play a role in stimulating the venture capital sector and thus in promoting entrepreneurship** (extensive margin). Regarding this point, Poterba (1989a) investigates the potential effects of capital gain taxes on both the supply-side and the demand-side of the venture capital market. Indeed, on the one hand, capital gain taxes can affect savings and portfolio decisions of potential investors in entrepreneurial firms (supply-side). On the other hand, the author also identifies a demand-side effect, that is, the desire to attract venture capital by entrepreneurs in their investment project. **The conclusion from the empirical evidence is that capital gains tax basically affects the demand-side** (see Poterba, 1989a; Gompers and Lerner, 1999; or very recently, Gentry, 2016). For example, Gentry (2016) examines for the US whether capital gains tax rates affect the disbursements of venture capital funds using state-aggregate data from the 1969-2007 period. Regression analysis suggests that higher capital gains tax rates are associated with a reduction in state-level disbursements from venture capital funds. Since many of the financial sources of venture capital funding are not subject to capital gains taxation (e.g., pension funds), he interprets this as evidence of the relevance of the demand side effect.

Given the empirical evidence, **even under the presence of venture capitalists and business angels – capital gains taxation might disincentivise risk-taking due to a demand-side effect. This would call for a preferential treatment of capital gains taxes. However, this is a point of discussion in the literature.** Poterba (1989a) rejects an across-the-board cut in capital gains taxation, and suggests doing it according to the size of the enterprise, or preferably according to the riskiness of the investment; in the end, this would imply restricting the tax relief on entrepreneurial assets, which implies important administrative challenges for its implementation (Gentry, 2016), including preventing established firms from reconstituting themselves to take advantage of the tax relief (Poterba, 1989b). On the contrary, Holtz-Eakin (1995) is against any favourable treatment for capital gains of small firms because of the difficulties of fine-tuning by the government to insure against unexpected aggregate risks, or most important, he casts doubts about the efficacy of such insurance on the undertaking of risks. In this regard, Cullen and Gordon (2007) formulate a broader model of tax incentives for entrepreneurial risk-taking, including the incentive effects of capital gains taxation. They predict increases, albeit modest, in entrepreneurial risk-taking from cutting the capital gains tax rate in half. From their baseline of the US 1993 tax code, they estimate that cutting the capital gains tax rate would increase entrepreneurial entry by roughly 10 percent. This modest result is probably in accordance with the above Holtz-Eakin's point of view about the difficulties of adjusting capital gains taxation to favour the assumption of risks.

We also have empirical evidence for Europe**.** In particular, **the evidence of the impact of capital gains taxation on the venture capital investments is mixed.** While Da Rin et al. (2011) and Schertler (2007) find a negative impact, Jeng and Wells (2000) fail to find a significant effect. More recently, Achleitner et al. (2012) and Watzinger (2011) find evidence for a twofold impact of capital gain taxes on venture

capital investment. On the one hand, there is a negative impact of this tax on the supply of venture capital. On the other, a higher capital gain tax rate turns out to increase the likelihood of follow-up investments and the success rate. This finding has interesting potential policy implications because it suggests that by **increasing the capital gains taxation it may be possible to induce quality investments** rather than fostering an increase in the overall level of investment.

Leaving aside the extensive margin, and focusing on the level of taxation of capital gains in the corporate income tax, Keuschnigg (2004) and Keuschnigg and Nielsen (2001, 2004a) show that a proper design of the **capital gains tax** [24] **might stimulate venture capitalists' incentive to employ effort in supervising entrepreneurs**, thus enhancing the success rate of venture-funded firms and their expected return. The latter effect is particularly relevant since, according to Keuschnigg and Nielsen (2003), venture capitalists' effort is expected to be under-provided, as all consulting service costs are borne by venture capitalists, while the generated revenue gains are shared with the entrepreneurs. Therefore, **an adequate design of the capital gain tax might have a positive effect on the success of venture-funded firms.** Unfortunately, though, we lack empirical evidence for this hypothesis.

All in all, while there are interesting theoretical papers suggesting that a reduction of capital gains taxation might increase the level of entrepreneurship and its quality, there are not many empirical papers shedding light on the actual magnitude of the effects. There is **some evidence that a favourable tax treatment of capital gains may favour the entry of new entrepreneurs and the assumption of risk**. However, the effects – at least with respect to entry – seem to be modest (Cullen and Gordon, 2007), and in any case **there are administrative challenges in order to avoid an undesirable across-the-board tax cut. In particular, this would call for the identification of which asset investments qualify for a special tax treatment** (see, for example, Guenter and Willenborg, 1999).

c. Wealth taxes

There is a debate in the literature but also in the public opinion about the **justification and general effects of wealth taxes.** Leaving aside the general arguments in favor or against this particular area of taxation (see, for example, Boadway et al., 2009), **with specific regard to entrepreneurship there is the fear that taxation of firms' wealth (either on their possession or on their transfer to heirs) may cause liquidity problems, forcing the owners to dispose of the firm's assets and eventually to close the business.** Note that private arrangements might overcome this problem providing the necessary funds to cover these taxes. In particular, Holtz-Eakin et al. (2001) investigate the extent to which life insurance plays a role in dealing with estate tax burdens with a specific focus on owners of possibly illiquid business assets. Their analysis shows that business owners tend to buy more insurance than other individuals but this tend to be insufficient to cover estate taxes even in presence of liquid assets. **That is why, stocks of corporation might have a favorable treatment, for example, by means of full or partial exemptions in wealth taxes**; that is, in the inheritance or estate tax or in the net wealth tax, although, as we will see below, a larger part of the literature has

[24] In particular, they analyse several designs: a selective reduction of the capital gains tax on entrepreneurs, or differential taxation of the two components of the entrepreneur's overall compensation, i.e. performance-related capital gains and a fixed up-front payment or base salary, – in favor of relatively lower levels taxation on the former component.

focused on the former tax.

Some authors argue and show that this favorable treatment of stocks of corporation (and, in particular, of family businesses) **carries a cost.** On the one hand, it might induce avoidance and evasion such that taxpayers can escape taxation with a proper tax planning (Alvaredo and Saez, 2009), but also inequity as top taxpayers can benefit more from this special treatment (Alvaredo and Saez, 2009; Durán and Esteller, 2010). However, the literature analyzing the effects of these special tax treatments on entrepreneurship is not developed.

The theoretical papers by Cagetti and De Nardi (2009) and Grossmann and Strulik (2010) abstract from tax avoidance or evasion issues to analyze the **impact of estate taxation reforms on entrepreneurship**. The former consists of a life-cycle model with perfect altruism across generations and period-by-period occupational choice, where existing entrepreneurs face borrowing constraints. Within this framework, the authors analyze the impact of abolishing estate taxation on output growth (through benefits on entrepreneurship) and on inequality. In order to compensate for the revenue losses, they simulate several alternatives (adjusting the personal income tax or the consumption tax) that produce particular general equilibrium effects. One of these alternatives consists of reducing (unproductive) government expenditure. It is in this latter case that the **positive effects on output and capital accumulation are maximized**, while the impact on inequality is not too severe, and the expenditure cut does not have to be too large due to spillover effects of output growth on the revenue collected through other taxes[25]. Hence, these authors analyze an extreme case, the abolishment of the estate tax, which in the end has effects on entrepreneurship.

The paper by Grossmann and Strulik (2010) focuses on the analysis of estate tax reliefs for family businesses. These authors identify a reasonable trade-off derived from incentivizing the transfer of businesses within the family through the estate tax. On the one hand, there is the already identified benefit derived from the continuation of the business, which they label "transaction cost channel". As these authors argue, this would imply businesses closures and the subsequent start up of new firms that entail transaction costs. On the other hand, though, continuation might imply businesses are run by entrepreneurs of average skills, who probably underperform with respect to potential new entrants with higher skills. Hence, special provisions in the estate tax for intra-family transfers would create a barrier to the entry of new entrepreneurs with better managing skills ("creative-destruction channel"). This is coherent with the literature that shows that inherited firms tend to underperform (see, for example, Bennedsen et al., 2007). By means of numerical simulations (calibrated with German data), these authors show that **a preferential treatment of continued firms is not welfare-enhancing within a reasonable range of parameters**. In contrast to Cagetti and De Nardi's framework, there are no other taxes, so any reform that implies lower tax revenues causes lower levels of expenditure, in this case, through lower amounts of lump sum transfers to individuals.

With respect to the papers reviewed above, probably the paper by Grossmann and Strulik (2010) provides a richer context to analyze the pros and cons of preferential tax treatment in the estate tax of the transfers of family businesses for continuation of the economic activity. Moreover, as we argued, the model is specifically designed to analyze a tax relief for the transmission of business assets within the family, and so it

[25] In a similar vein, Cagetti and De Nardi (2006), due to the presence of borrowing constrains, also conclude that taxing bequests may decrease inequality, but may affect both the number of entrepreneurs and the total capital of the economy.

is not directly comparable with Cagetti and De Nardi's theoretical framework. In any case, recall in none of those models either evasion or avoidance is taken into consideration. In contrast, Alvaredo and Saez (2009) develop a theoretical model to estimate to what extent business owners reorganize their wealth to benefit from the exemption of family business assets in the (Spanish) net wealth tax. They conclude this is an inefficient way to favor that type of assets because taxpayers dissipate resources to meet the tax exemption criteria, creating a deadweight burden. Hence, both Grossmann and Strulik and Alvaredo and Saez's analyses conclude that **tax reliefs in wealth taxation are not welfare-enhancing when all effects ("creative-destruction channel" and evasion/avoidance) are taken into account**.

From an empirical point of view, the studies have focused on testing to what extent estate tax reliefs help to overcome the liquidity constraints of inheritors of a family business. Brunetti (2006) uses California data (both federal and the state tax) extracted from the probate records of the San Francisco County Superior Court. By means of a probit analysis, this author finds a **positive and significant relationship between the estate tax and business sales** (arguably in order to pay the estate tax). Elasticity estimates of the probability of sale with respect to tax liability range from 0.85 to 1.61. The author also performs a difference-in-difference estimation, controlling for demographic and estate characteristics, which also indicates a positive relationship between the estate tax and business sales. However, despite this estimated positive relationship, the empirical exercise is **not able to provide robust evidence on the importance of liquidity constraints** driving this result. Also for the US, Yakovlev and Davies (2014) estimate the impact of the (federal and state) inheritance tax burden for a longitudinal panel from 1988 to 2006. The results are in the line of those obtained by Brunetti. In particular, they find the total inheritance tax burden decreases the growth of firms during that period, especially for small firms.

Tsoutsoura (2015) analyzes several margins of decision affected by the succession tax (inheritance or estate tax), among them the very decision of continuation or not within the family. She exploits a 2002 tax reform in Greece that reduced succession tax rates for transfers of limited liability companies to family members from 20% to less than 2.4%. She performs a difference-in-difference-in-difference and an instrumental variable analysis. As the analysis performed by Brunetti, she finds that after the reduction in inheritance taxes, family successions increase from 45.2% of all transfers before the reform to 73.9%, a more than 63% increase. As in Brunetti and Yakovlev and Davies, this evidence shows that **succession taxes significantly influence the allocation of firm ownership and thus firm boundaries**. Although it might be compatible with other channels, given that the effects are stronger for firms owned by entrepreneurs with relatively low income from other sources, this provides evidence consistent with the presence of financial constraints.

Hence, according to the above reviewed empirical paper, **the hypothesis of liquidity problems in the transfer of family firms due to wealth taxes seems to be confirmed**. However, as also surveyed by the theoretical papers, this is not enough to support special treatments of family businesses. Further evidence can be found in Hines et al. (2016). These authors suggest that in order to overcome liquidity problems inter vivos giving could be encouraged. However, by definition, inter vivos giving allows planning the succession, which might open the door to tax avoidance. By means of an empirical exercise based on German data, they find that inter vivos giving is more likely when the prospects about the economic situation are good. They interpret that these favorable prospects create a situation where the owner foresees that in the future the firm will perform well. Then, he has an incentive to anticipate the

succession in order to avoid a larger amount of taxes if the succession is delayed, when the value of the firm for tax purposes will be larger. Hence, note that this result implies that **in the future only underperforming firms are transferred because of death, and so the "creative-destruction channel"** identified by Grossmann and Strulik (2010) **is more likely to hold**. Hence, in the end, the empirical result by Hines et al. (2016) indirectly provides further evidence against a special treatment of family business in estate taxation.

Box 7: Access to financing, capital structure and the collaborative economy

The entrepreneurs who create and develop collaborative economy platforms will face the same questions as any business in terms of its optimal capital structure. On the other hand, as set out in Section 3.2 of chapter 1, many types of **provider do not need to source financing to participate in the collaborative economy.** Indeed, one of the distinguishing features of the collaborative economy from the traditional economy is that it lowers the barriers to entry for individuals to provide goods and services through platforms, which typically rely on monetizing existing assets and spare capacity, with the capital investment required often close to zero. In some cases, however, providers may decide to invest in order to participate in the collaborative economy. Whilst these investments would typically be lower in absolute terms than in traditional entrepreneurship (e.g. to finance a car to provide ride-hailing services), the findings set out in this Chapter may be expected to apply to some degree to these types of provider.

However, one of the issues noted above is the impact of interest expense deductions in the context of tax deductibility. In terms of the finances of individual providers, the collaborative economy has amplified the relevance of questions around how to treat cost sharing for the purposes of tax, and whether some activities should actually be classified as profit-making. We discuss this issue in more detail in Section 4 of this chapter.

3.5 Impact of taxation on business location

Entrepreneurial activity entails several location choices that are strictly linked to the business-development stage of the firm. In particular, it is possible to identify three main phases of the location decision process. First, during the business start-up phase, entrepreneurs should decide where to locate their new activity. Second, once the entrepreneurial firm has been launched and it is in the expansion stage, the relevant choice regards where to locate further investments. Last, it is crucial to determine where to locate the assets and profits generated by the entrepreneurial activity. In this respect, the decision on the location of intangible assets, such as patents, is of particular relevance.

The literature does not reach a clearcut conclusion on the **impact of taxation on the choice of the location of entrepreneurial activities during their start-up phase.** On the one hand, the literature highlights that taxes play a minor role **in the presence of agglomeration externalities.** On the other hand, some studies have shown that innovative start-ups do respond to **tax incentives when choosing their location.**

More in detail, the determinants of the initial entrepreneurs' location decision in the start-up phase are largely analysed by the literature. A first branch of literature tries to shed some light on the causes of the persistent differences in the location of

entrepreneurial activities across regions within countries (this issue will be analysed more in detail in appendix 1 to this chapter). The presence of an entrepreneurial culture (see e.g. Guiso et al., 2015) and the development of the financial sector (see e.g. Michelacci and Silva, 2007) have been identified among the main determinants of the location of new entrepreneurial firms in a specific region. Thus, this literature implicitly points out that taxation may play a limited role on location decisions in the start-up phase. A similar insight comes from economic geography models showing that **agglomeration forces lead to spatial concentration of firms that cannot be dislodged by tax differentials** (see e.g. Borck and Pflüger, 2006; Baldwin et. al., 2003). These predictions are confirmed by the empirical literature (see e.g. Brülhart et al., 2012). The most recent literature, though, suggests that tax incentives may affect the location of innovative start-ups. For instance, Moretti and Wilson (2014), prove the existence of a positive impact of State specific R&D tax incentives on the establishment of high-tech firms in the biotechnology sector.

The effects of taxes on the location of entrepreneurial activities in their expansion-of-business phase are clearer. In particular, **the empirical literature tends to suggest that average tax rates negatively impact the location of investments whilst the marginal tax rates seem to be less relevant.** A first wave of empirical studies focuses on the impact of taxation on aggregate measures of foreign direct investment (FDI, henceforth). These papers are relevant for the aim of this study since FDI effectively describes one method of financing expansion of entrepreneurial activity. Among others, Slemrod (1990) investigates the impact of both the US and home country taxation on FDI in the US controlling for macro context variables. The main contributions of his paper with respect to previous studies are that he introduces the use of a forward-looking effective marginal tax rate instead of a backward-looking average tax rate and he looks separately at FDI inflows from seven different countries. The author finds a negative effect of US effective tax rates on total FDI. However, his results generally fail to support the hypothesis that differences in home country taxation affect inflows to the US. A number of papers also examine the impact of various tax measures on bilateral FDI flows data. They find almost all of the measures of taxation to have a significant impact on FDI flows. Buettner (2002) finds a significant impact of the effective corporate marginal tax rate and statutory corporate tax rate. Gorter and Parikh (2003) find a slightly higher elasticity of FDI flows relative to the effective marginal tax rate than to the average tax rate, which is consistent with the meta analysis of De Mooij and Ederveen (2003). Bénassy-Quéré et al (2005) find similar effects for all measures of taxation employed, and Bellak and Leibrecht (2005) find that both the effective average tax rate and the statutory tax rate are significant, although the effective average tax rate generates a higher elasticity with respect to FDI flows.

A second wave of empirical studies tries to disentangle the impact of taxes on different dimensions of the location decision by exploiting micro-data on multinational firms. These contributions are relevant from entrepreneurship perspective when applied to HIEFs. More precisely, Devereux (2007) describes the location decision process that multinational firms face as a decision tree composed by four steps. He identifies two discrete choices. The firm has to decide whether to produce abroad or export, and in the former case where to produce. Then he distinguishes two continuous choices – i.e. how much capital to invest conditional on location, and how to allocate profits among different locations. Kemsley (1998) employs US data to examine the impact of taxes on the first level of decision tree, i.e. the choice to produce abroad or export. He regresses the ratio of exports to foreign production sales on the average foreign tax rate, the US statutory tax rate and a proxy for whether the firm is in a binding foreign tax credit position (i.e. the foreign tax credit eliminates all U.S. taxes but is insufficient to offset all foreign taxes). The results suggest that taxes induce US firms who are in a binding foreign tax credit position to prefer exports to foreign production and that US

firms are more likely to use exports to serve high-tax foreign markets than low-tax ones.
Devereux and Griffith (1998) analyse the impact of the effective average tax rates on the decision on where to produce, conditional on producing abroad. They employ data on US firms that decided to produce in Europe and investigate the choice to locate in UK, France or Germany. **Their results provide strong evidence that the effective average - but not the effective marginal - tax rate is significant in this decision**. Stöwhase (2002) employs a dataset on German multinationals to analyse the effect of taxes on the number of affiliates of German firms in eight host countries. The results report a significant impact of the **average tax rate for firms in production industries, and a significant impact of the statutory tax rate for firms in service, finance and R&D industries**. Buettner and Ruf (2007) examine the location decision of German multinational companies, using a dataset where it is possible to pair head German companies and their affiliates located abroad. Their results show that the statutory tax rate has a stronger impact on the location decision than the effective average tax rate whilst the effective marginal tax rate is reported not to be significant. Barrios et al. (2012) employ data on European multinational companies to analyse the impact of taxes on the location new foreign subsidiaries. Both the host and parent country taxation are estimated to have a negative impact on this decision. Cummins and Hubbard (1995) use data on the investment of foreign affiliates of individual US firms and focus on the decision on the level of capital to invest conditional on location. They conclude that taxes do matter in this decision.

There is also extensive evidence on the **effects of taxes on the location of profits and assets generated by innovative activities.** A **first group of papers** test whether **taxable income is lower in jurisdictions with high tax rates**. Among others, Gruber and Mutti (1991), and Hines and Rice (1994) employ US survey data and provide evidence of very large impact of taxation on the location of profit. **Another approach** is to analyse **the impact of taxes on** two aspects of financial policy: **the use of debt across subsidiaries and whether profits in subsidiaries are repatriated to parent companies**. The literature generally provides evidence that **tax rates positively affect the use of debt by affiliates** (see e.g. Desai et al, 2004; Huizinga et al., 2008; Loretz and Mokkas, 2015). Among others, Desai et al (2001, 2007) investigates the impact of taxes on repatriation of dividends. They find that **dividends from subsidiaries are sensitive to the host country tax rate**, consistent with an implied low tax price of repatriation. **A further dimension**, which is relevant for innovative firms, is the **location of intangible assets** such as intellectual property, and, in particular, the choice of where to legally register ownership of patents. We observe that the location choice determines where the income derived from the patent is taxed, while it might not affect the location of other assets, i.e. where physical production or R&D activities actually take place. The issue has been recently analysed in several studies, which show a **negative relationship between the level of the corporate income tax rate, and both the amount of a firm's immaterial assets and patents** (see e.g. Dischinger and Riedel, 2011; Ernst and Spengel, 2011; Karkinsky and Riedel 2012; Böhm et al., 2014; Ernst et al., 2014; Griffith et al., 2014). Using a panel of European multinational enterprises and data on application to the European Patent Office, Karkinski and Riedel (2012) show that the corporate tax rate exerts a negative effect on the number of patent applications filed by a multinational affiliate in a given state, and the quantitatively effect is large. The same result is confirmed by Griffith et al (2014), using a different methodology. They find that **patent location is indeed affected by corporate tax rates, although other factors influence this decision.** Presumably, there is a preference for **locating patents where innovative activities actually take place.**

Given the evidence on the responsiveness of location decision to taxes we focus on two specific policies that have been extensively analysed in the literature: tax holidays and patent boxes.

a. Tax holidays

Tax holiday regimes provide full or partial exemption from paying profit taxes for a certain period of time, and are particularly used by developing countries to attract foreign direct investment (FDI) (Goodspeed, 2006), because of their easiness of administration and the lack of public resources in those countries to offer subsidies. Therefore, its main justification lies on the compensation for risk-taking of investment in developing countries; so it aims at affecting location. As we will see below, though, there are also examples of this policy in the context of the EU. The important message here is that given the nature of the margin affected - location -, it tends to be a zero-sum game in the aggregate unless it is framed within a sound industrial policy.

Tax holidays certainly have several shortcomings (Tanzi and Zee, 2000; Klemm, 2009). They seem particularly attractive to incentivize short-term and profitable investment. Thus, as long as the investment is profitable, the corresponding investment would have been made even in the absence of the incentive, and so it is useless, while its short-run nature means a priori they are not so beneficial as long-run ones (Mintz, 1990). This tax incentive also lacks transparency, impeding the quantification of the amount of tax revenue losses, as there is no obligation to fill a tax return, and if there is such obligation, there are no incentives to scrutinize it. The incentive is also prone to manipulation: a start-up could close down and start again the same project to take advantage of the tax incentive. And finally, there is some empirical evidence that it is a zero-sum game, since it seems to be an instrument of a tax competition game among countries interested in attracting FDI (Klemm and Van Parys, 2009). **Hence, even for developing countries, there are theoretical arguments against their use.**

As regards their efficacy, Mata and Guimarães (2012) empirically analyse to what extent the investment attracted remains in the country after the incentive is exhausted. In particular, they perform an empirical analysis of the Puerto Rican tax holiday program, in which the overall length of the tax holiday varies between 10 to 25 years, depending on the specific location of the investment within the country. They find that each time the tax exemption changes or terminates, the probability of exit increases by around 3 percentage points for a period of three years. Hence, this shows that **companies** are footloose (Klemm and Van Parys, 2009), that is, they **tend to leave the country once the tax incentive is no longer applicable.** However, **the program could still be worthwhile to pursue as long as there are spillovers from these companies, and, on top of that, if these spillovers are concentrated at the beginning of the period under tax holidays.**

In this regard, **there are several papers that have identified spillovers from FDI attracted through "tax holidays".** For example, Javorcik (2004), for Lithuania, find positive productivity spillovers from FDI taking place through contacts between foreign affiliates and their local suppliers in upstream sectors. Du et al. (2014) also found for the Chinese case evidence of externalities, in particular, regarding backward linkages. In order for this incentive to work, note, though, that taxation must be source-based. Otherwise, in order for the incentive to still work, some developed countries that tax on a worldwide basis grant their multinationals credit for such tax holidays; that is, they grant credit for taxes that have not actually been paid. This is often referred to as

"tax sparing" (see, for example, Goodspeed, 2007). Azémar and Dharmapala (2016) find that tax sparing agreements are associated with 30 percent to 123 percent higher FDI[26].

Tax holidays are commonly used in developing countries. Within that context, **the empirical literature finds this incentive – through FDI attraction – to have indirect effects on an economy through spillovers, even when the fact that firms do not tend to remain in the country once the tax incentive expires is taken into account**. Rather than promoting entrepreneurship as a whole, Aghion et al. (2015) have found more subtle effects by means of enhancing competition in a particular sector through inducing entry or encouraging entrepreneurship. In this way, this industrial policy has a positive and significant impact on productivity.

In developed countries, we have some experiences regarding the use of this mechanism in the EU. For example, tax holidays were granted to firms established in the Basque Country (later on, this was also applied in Navarre) between 1993-94, subject to the creation of employment and to a certain level of capitalization, among others. However, this was considered to be State aid by the Luxembourg Tribunal. Since 2013, Spanish firms set up from January 1st, without any particular condition, can also take advantage of a tax reduction. In particular, for those firms, the first year they have profits and the subsequent one, these profits will be taxed at a reduced tax rate, 15% instead of 25%. **Unfortunately, though, in none of these two cases, there is empirical evidence regarding the effectiveness of this policy at promoting entrepreneurship.**

In the US, the Homeland Investment Act of 2004 provided a one-time tax holiday for the repatriation of foreign earnings by U.S. multinationals. This was analyzed by Dharmapala et al. (2011). Repatriations favoured by this measure did not lead to an increase in domestic investment, employment or R&D. Instead, a $1 increase in repatriations was associated with an increase of almost $1 in payouts to shareholders. This was so, although the U.S. Treasury Department issued explicit guidelines on how earnings returned to the U. S. could be spent. The funds had to be used for "permitted investments," which included hiring U.S. workers, U.S. investment, research and development, and certain acquisitions. Hence, government regulations on how firms used the repatriated funds appear to have been ineffective. Hence, the policy was useful at repatriating earnings, but they did not contribute to the economic activity of the country even after having included regulations as regarding the use of the money.

[26] From a more general point of view, Aghion et al. (2015) develop a theoretical model where industrial policies such as through tax holidays are suitable in inducing innovation and productivity growth. Thus, in this case, the use of this policy is not justified on the grounds of market failures. In particular, without industrial policy, innovative firms may choose to operate in different sectors in order to face lower competition on the product market, leading to high sector concentration and low incentives to innovate because of a "monopoly replacement effect". In such a case, industrial policies as tax holidays that encourage firms to be active in the same sector will decrease concentration in the targeted sector and enhance incentives for firms to innovate. Hence, there can be complementarity between competition and suitably designed industrial policies in inducing innovation and productivity growth. Using a comprehensive dataset of all medium and large enterprises in China between 1998 and 2007, they show that industrial policies (subsidies or tax holidays) that are allocated to competitive sectors or allocated in such a way as to preserve or increase competition (e.g. by inducing entry or encouraging younger enterprises), have a more positive and significant impact on productivity or productivity growth.

b. Patent boxes

Patent boxes grant a preferential tax treatment to corporate revenues from intellectual property. These tax incentives have been criticised because they are likely to distort firms' decision processes on patent registration and they turn out not to be cost-effective in stimulating R&D. In some cases, they are simply part of an aggressive tax competition strategy (IMF, 2016). Moreover, the benefits of patent boxes are likely to accrue mainly to multinational firms, which can exploit this preferential regime to shift profits across jurisdictions by relocating their existing intangibles in countries with patent boxes (Appelt et al., 2016). A relevant empirical contribution on this issue is provided by Alstadsæter et al. (2015), which represents the first contribution analysing the impact of patent boxes on patent location and local innovation. The results of the study suggest that **patent boxes have a strong impact on attracting patents mainly due to their favourable tax treatment**. This effect is particularly relevant for high-quality patents. Patent boxes with a large scope in terms of tax base definition (coverage of intellectual property, pre-existing patents, acquired patents, embedded royalties) are shown to have a stronger impact on the location of patents. The paper also suggests that the tax benefits of patent boxes are likely to **hamper local innovative activities**, given the lack of incentives for companies to develop local research. However, this adverse fiscal effect can be potentially counteracted by imposing **local R&D development conditions in the patent box regime.**

In conclusion, the literature shows that new entrepreneurial firms do not significantly respond to tax differential across jurisdictions. In contrast there is clear evidence that taxes plays a significant role in the location of the business activity and assets of large established firms. As a consequence, in the short-run, start-ups are likely to be at a competitive disadvantage compared to established companies as the latter have more chances to exploit the possibilities to reduce their tax burden by relocating production activities and/or by shifting profits. **It is an open question, not yet addressed by the existing literature, whether the ability to reduce taxation through the relocation of intangible assets may foster entrepreneurial activity in the long-run, as new entrepreneurs foresee that, in case of success, the future income generated by the business activity will benefit from favourable tax regime.**

Box 8: Taxation, business location and the collaborative economy

The entrepreneurs who have created and now run major collaborative economy platforms are likely to face the same kind of considerations discussed above in determining location decisions and their behaviours are likely to closely align with other multinational technology companies.

Collaborative economy platforms are, by nature, digital innovators, and they have leveraged new technological breakthroughs to enable users to connect across national boundaries.

However, Section 3.5 notes that the findings may be less relevant for small entrepreneurial firms. **Given that the collaborative economy involves a many small actors (from individuals and small businesses participating as providers to entrepreneurs who have set up locally-based and small-scale platforms), these entities are less likely to be affected by taxation in relation to location of capital and profits, expansion of business and FDI.**

3.6 The impact of taxes on employment in entrepreneurial firms

Entrepreneurship may have a twofold impact on employment growth. On the one hand, the decision to become entrepreneur might foster the aggregate level of employment by inducing unemployed people to start a business. On the other hand, entrepreneurs are typically employers that play a crucial role in fostering job creation. While the first effect has been largely discussed in section 3.1, **in this section we focus on the second effect.** The role of entrepreneurship in stimulating job creation and employment growth is a matter of much discussion in the academic as well as public debate (see e.g. Acs, 2006). **Small and medium sized enterprises are reported** to account for about 60 to 70 per cent of jobs in most OECD countries (OECD, 1997) and **to contribute to create a disproportionately large share of new jobs** (Birch, 1987). **The importance of new and young firms in generating employment has also been documented by the literature** (e.g. Calvino et al., 2015). One explanation for the positive impact of entrepreneurship on employment growth is provided by Van Stel et al. (2005). These authors suggest that **entrepreneurs are likely to improve innovation and competition in an industry which may drive productivity enhancements leading to a consequent positive effect on employment growth. Many empirical studies have documented the existence of such a positive relationship** either by exploiting cross-country comparisons at the national level (e.g. Van Stel et al., 2005) or at the regional level both within a single country (e.g. Baptista et al., 2008; Braunerhjelm and Borgman, 2004) and across countries (Doran et al., 2016). Despite some papers have questioned the validity of these results (see e.g. Davis et al., 1996) the idea that entrepreneurial firms play a crucial role in stimulating employment and that these entities need to be supported by policymakers through specific targeted tax policies is still prevalent in the literature (see e.g. Careee and Klomp, 1996 for a discussion).
Nevertheless, there is a substantial lack of research on the effects of tax policies on employment by small and new entrepreneurial firms.
A comprehensive **theoretical background** on these issues is provided by Masters (2017). The author presents a framework for simultaneously analyzing the role of the tax code in determining income dispersion and entrepreneurs' job creation by focusing on different taxes and by taking firm size into account. The results show that **a cut in the tax on profits taken in isolation improves job creation** and reduces before-tax income inequality. In the model the government compensate the reduction in the tax on profits by raising the tax on wages in order to balance its budget. **The impact of an increase in the wage-tax depends on the bargaining power of firms. When this is high,** the tax burden is almost entirely borne by firms[27]. In this case, **the wage tax acts as a barrier to entry**: it benefits large firms at the expense of smaller ones. **Net effects are a reduction in job creation** and before-tax income dispersion. **Conversely, when firm bargaining power is low**, workers bear more of the increased wage-tax burden. In **this case the wage tax acts as a subsidy to entrepreneurship reinforcing the impact of the profit tax reduction on job creation and income inequality. Taxes on the returns to capital are found to leave everyone worse off.** Higher taxes on capital income would discourage investment. As a result, productivity, wages, and the level of employment would be lower than otherwise.

[27] To see the intuition behind this result, consider that if firms have all the bargaining power, then, all workers get the same pay that (after tax) will just compensate them for their disutility of work. An increase in the tax on wages is fully absorbed by firms in the form of a wage increase. When firms have lower bargaining power, workers pick up some of the increased tax burden.

Henrekson et al. (2010) analyse how public policies affect in particular **high impact entrepreneurial activity**. Their theoretical analysis suggests that **high payroll taxes and heavy labour market regulation deter entrepreneur from hiring employees.** In particular, high payroll taxes are likely to deter entrepreneurs from hiring employees independently of which agent bears the tax burden. High labour market regulations may reinforce these effects and deter job creation by creating the incentive for the firms to circumvent these regulations. Indeed, compensation and working hours are not regulated under self-employment and no social security is mandated for the self-employed. Thus entrepreneurs have the incentive to substitute employees with dependent self-employed. As already pointed out in section 3.1/c, this may enhance the level of self-employment, but should not be interpreted as a sign of higher level of entrepreneurship.
Carrol et al. (2000) theoretically analyse the impact of entrepreneur's personal income tax rate on his hiring decisions. They suggest that personal taxes are likely to impact entrepreneur's labour demand through two channels. First, the tax influences the amount of effort the entrepreneur supplies to the enterprise, with an ambiguous effect on hiring decisions, which will finally depend on the functional form of entrepreneur's preferences. A second channel through which the entrepreneur's tax rate might affect his hiring decision relates to liquidity constraints. An increase in taxes reduces the entrepreneur's cash flow. To the extent that liquidity constraints are present, this leads to a reduction in the scale of operation of the enterprise, and hence a reduction in the demand for inputs, including labour.

On the empirical side, the literature is limited. Melick and Andersen (2011) analyse the impact of a reduction in the capital gains tax rate on entrepreneurs' job creation by taking Ohio as a case study. They found evidence **of a negative impact of capital gains taxes on job creation.** which is consistent with Munster's theoretical analysis on the effect of taxes on the returns to capital. The main focus of the literature is, however, on the impact of entrepreneurs' personal income taxes on their hiring decision. **The findings suggest that when the entrepreneur's marginal tax rate increases, the probability that she employs labour decreases. Furthermore, conditional on employing labour, an increase in the marginal tax rate also negatively affects the growth rate of such firms' wage bills.** In particular, there is only one paper that has explicitly analysed these issues, although other studies have indirectly contributed to the debate. By examining the tax returns of sole proprietors before and after the U.S. Tax Reform Act of 1986, Carrol et al. (2000) analyse how the hiring decisions of sole proprietors are affected by entrepreneur's personal income tax rates. They found that **a 10 percent increase in the entrepreneur's tax price—defined as one minus the marginal tax rate—increases the average probability of hiring labour by about 12.1 percent, which corresponds to an elasticity of 1.2.** Moreover, the authors show that **the greater the percentage increase in the tax price, the higher the probability of hiring labour.** Additionally, the authors documented an impact of entrepreneur's personal income tax on the total wage payments to workers. More precisely, they find that **a 10 percent increase in the entrepreneur's tax price increases the total wage payments made to workers by about 4.3 percent.** Finally, these results do not vary with industry and the tax price effects do not affect high and low income entrepreneurs differently. As mentioned above, there are some studies that indirectly investigate the impact of taxation on entrepreneurs' hiring decisions. Harju and Kosonen (2013) estimate the effects of Finnish tax reforms on business activities of small non-corporate firms. Although they show that a reduction in taxes on labour enhances entrepreneurship, they fail to document any employment effect of the reform, questioning the results obtained by Carrol et al. (2000).
In conclusion, although the theory suggests that taxes may affect the entrepreneur's hiring decisions, it does not provide clearcut predictions on

the sign and magnitude of the effects, which will depend on the structure of the labour market and entreprenuer's preferences. The empirical literature is still scant and does not help to draw any sound policy recommendation.

Box 9: Taxation, employment and the collaborative economy

The entrepreneurs who have created and now run major collaborative economy platforms are likely to face the same kind of considerations discussed above.

For collaborative economy providers, there is a choice over whether to enter the collaborative economy or whether to pursue traditional employment options – there is also a variety of ways in which providers can participate (discussed in Section 4 of chapter 1) in terms of amount of time they commit (and therefore the proportion of their income it constitutes) and what kind of activities they are involved in.

There is little evidence on whether taxation influences the choice between these options. The literature seeking to understand the motivations behind participation in the collaborative economy identifies **three drivers** at the individual level: societal, technological and economic. The **societal** driver attaches value to rising individual awareness of the green economy, sustainable consumption, and the environment. **Economic** drivers include such factors as the possibility and ease of earning additional income. Hamari et al. (2015) examine motivational factors in the Dutch population. While the societal motivations have a strong positive impact on the attitude of individuals towards the collaborative economy, the economic factors significantly and positively influence intentions to take part in collaborative economy activities. Further survey evidence reinforces this finding and suggests that a primary driver of collaborative economy participation is earning money (European Parliament, 2016), with the flexibility of the working conditions coming in second place (Berg, 2016). **However, the desire of participants to earn money does not automatically necessitate an argument that the tax system facilitates a more favourable outcome within the collaborative economy than other forms of employment.** In theory, the impact of the taxation system (of rules, administration and enforcement) on post-tax earnings could certainly be one factor within this economic rationale. However, in practice, this effect, to the extent that it exists, is likely dwarfed by other economic factors– notably the level of pre-tax earnings that can be generated, as well as the timing of this income and the flexibility in the ability to generate it.

For example, in the US, the evidence suggests that collaborative economy platforms are used by providers of labour mostly to counteract falls in non-platform income, with one cause of this behaviour being the steadily rising income volatility (JP Morgan Chase Institute, 2016). In addition, respondents to a US Economy Workforce Report (2015) cited "finding enough work" as their biggest problem. Other factors cited as motivating the generation of supplementary income were the need to finance a side-business (25%), the impact of a seasonal job (20%), and to generate proceeds for investments (7.5%).

However, it should be noted that there may be some groups that particularly benefit financially from participating in self-employment as a result of tax exemptions. For example, De Groen and Maselli (2016) point out a number of tax exemptions for the unemployed and students. Whilst these tax incentives apply to all forms of self-employment income, inclusive of the collaborative economy, these types of provider may be more likely than others to value the flexible nature of collaborative economy work.

The strength of any tax effect as a determinant of choice to enter the

collaborative economy could vary significantly by jurisdiction, the collaborative economy sector and platform in question and the type of provider. For example, for collaborative economy participants that are hobbyists, the decision to start a hobby is unlikely to be influenced by tax as it is not a substitute for employment. On the other hand, for traders considering using collaborative economy platforms as a new channel to market, any feature of tax system that offers a favourable treatment of self-employment income within the collaborative economy, as opposed to outside it, would act as a stronger determinant of this decision. We explore the features of the tax system and their interaction with the collaborative economy in Section 4.2 and 4.3 of this chapter.

In addition, as we will discuss in Section 4.2 of this chapter, it is the individual platform that interprets whether a participant is employed or self-employed. As such, any tax considerations which vary across these two classifications are largely out of the participant's control. Finally, tax policy may be complex and uncertain for many providers (we discuss the effect of tax administration on participation in Section 4.3 of this chapter). As such, providers may not be able to make these decisions based on the likely tax consequences. In fact, the complexity of the tax system itself has the potential to deter providers, particularly individuals moving from employment to self-employment who may not have had to file tax returns before.

3.7 Tax compliance, tax evasion and the informal economy

In previous sections we have reviewed the literature on the effect of taxation on entrepreneurs' behaviour under the assumption that taxes are perfectly enforced with no costs. However, in practice tax enforcement is far from perfect. In particular the tax law literature (e.g. Surrey 1958; Lederman 2010) as well as tax practitioners (e.g. OECD, 2004, 2006) have long recognized that tax enforcement is excellent whenever taxes are collected through third-party institutions such as employers, banks, investment funds and pension funds. For instance, a recent study on tax compliance performed by the US Internal Revenue Service (2012) shows that the evasion rate for the personal income tax is significantly reduced in presence of substantial information reporting. In particular, the evasion rate is found to be around 56% when information reporting is little or absent, whereas it is less than 5% when information reporting is significant. Kleven et al. (2011) perform a randomized tax enforcement experiment obtaining qualitatively similar results for Denmark. The experiment was implemented on a stratified random sample of about 42,800 individual taxpayers including both employees and self-employed individuals. The results suggest that there is substantially higher tax evasion on purely self-reported income, i.e. income which is not subject to double reporting by third parties. A number of recent empirical studies have provided convincing empirical evidence that tax enforcement in developing countries is affected by third-party information. Pomeranz (2015) considers the case of value-added tax enforcement in Chile and finds that randomized audit threats have much less impact on transactions that are subject to double reporting from both buyers and sellers. This confirms that double reporting has a strong deterrent effect on tax evasion. Carrillo et al. (2014) exploit a natural experiment in Ecuador to prove that the benefits of third-party reporting can be undermined when other aspects of the institutional environment are weak, since taxpayers make offsetting adjustments on margins that are difficult to verify. Best et al. (2015) analyse administrative tax records of corporations in Pakistan and provide evidence that switching from profit to turnover taxation increases tax revenues by 74% without reducing aggregate profits, despite the production inefficiency that it introduces. This result suggests that, since sales are easier to observe than profits, turnover taxes can provide a useful alternative to corporate profit taxes in developing countries. Kumler et al. (2013)

analyze the Mexican framework by focusing on underreporting of wages by formal firms to evade payroll taxes. Their results suggest that in this context third-party enforcement works better with larger firms. Naritomi (2015) analyzes the effects on tax evasion in the state of Sao Paulo, Brazil of an anti tax evasion program that gives monetary rewards to final consumers to ask for receipts. The author show that providing such incentives has large effects on reported value-added. The same literature shows that when such third-party reporting is not in place, as for small businesses and self-employed, enforcement is rather weak. In this cases whether to comply or not should be considered as another matter of choice for entrepreneurs.
The modern theoretical tax compliance literature based on Allingham and Sandmo (1972) suggests that, beside non-pecuniary factors such as moral disposition, norms, social conscience, and attitudes towards government (Andreoni et al., 1998; Slemrod, 2003; Sandmo, 2005, 2012), the choice to comply depends not only on tax rates but also on tax administration policies e.g. audit rates, penalties, compliance costs. Further the empirical literature shows that the effect of taxes on entrepreneurship is mediated by entrepreneurs' knowledge of tax rules (Chetty, et al., 2009; Finkelstein, 2009) and by their ability to process available tax information which may be affected by the participation to informal networks (Alstadsæter et al., 2012; Chetty et al., 2013; Alstadsæter and Jacob, 2013) and by the provision of information and assistance by the administration (see e.g. Alm et al., 2010). The complexity of the tax system can also play a role by inducing unintentional as well as intentional non-compliance (Kopczuk, 2006; Slemrod, 2007). Taxpayers may accidently file erroneous tax returns if they have difficulty in understanding the information provided and asked for in the form. At the same time, taxpayers may deliberately take advantage of complex rules if they perceive a low probability of detection. By analysing the Swedish framework, Alstadsæter and Jacob (2013) provide evidence that **tax awareness decreases and complexity increases the likelihood of misreporting taxes.** More precisely, variables related to awareness and financial literacy, such as higher education, being born in Sweden, and income, reduce the probability of evading taxes. The likelihood of misreporting increases with variables related to compliance complexity, such as the number of owners per firm, the number of firms an individual owns, and the presence of owners that live in different municipalities. The decision to comply or not will affect the effective tax costs faced by the entrepreneurs and will therefore have an impact on all the other relevant choices e.g. entry, investment and location. Kuehn (2014) analyses a model where individuals can become workers or entrepreneurs. Entrepreneurs decide how much to produce formally and to disclose to the tax authorities, and how much to keep informal and hidden. Occupational choices are characterized by a threshold that defines who becomes a worker and who will be an entrepreneur. Both the threshold of occupational choice as well as the extent of the informal production crucially depend on tax rates and governance quality, and they jointly determine the size of the informal economy. The model shows a positive relationship between tax rates and the size of the informal economy and a negative relationship between the informal economy and governance quality. The paper also provides a simulation to quantify the influence of tax rates, audit probability and governance quality on informality. The simulation suggests that **among the three ways to reduce informality**, i.e. higher tax fines, lower tax rates, **stronger tax enforcement**, the latter **is the most effective**.

The interaction between tax compliance and entry decisions are also investigated by Prado (2011) in a model of monopolistic competition where firms can choose to operate in the informal economy by paying an "enforcement cost" (depending on the probability of being caught and the corresponding fine), or to operate in the formal

market by paying taxes and a regulation cost[28]. In other words, **regulation represents an entry barrier for entrepreneurs, and it represents a distortion to the formal sector as it creates incentives to participate in the informal economy.** The author develops a theoretical model to analyse the elasticity of informality with respect to government policies, consisting of tax rates, regulation entry costs to the formal sector, and tax enforcement. By employing cross-country data on the informal sector, government expenditure over GDP (proxying for taxes) and a measure of entry costs (proxying for regulation), Prado (2011) performs a quantitative exercise to determine, country by country, how high the enforcement rates must be to make the theory match the data. The computed enforcement is positively correlated to tax compliance, regulation and government expenditure and it is negatively correlated with the size of the informal sector. The author suggests that there is some scope for policy reform implemented through changes in tax and enforcement rates. **The study suggests that regulation might play a role in determining the welfare implications (measured in terms of private consumption) of a policy reform aimed at reducing informality through changes in tax and enforcement rates. Indeed, if regulation costs are sufficiently low, – as for most of countries – then employing these tax instruments to reduce informality would be welfare enhancing. On the contrary, for countries with regulation costs above a certain threshold, it would be beneficial to decrease tax enforcement and become laxer on informality.** As a corollary the paper seems to suggest that a reduction of regulation costs can potentially be a more effective policy for increasing private consumption and reducing informality.

There is considerable evidence that the costs of compliance, relative to firm size, are greater for smaller firms. This has been widely documented for higher income countries (see e.g. European Commission, 2004) as well as for lower income countries (e.g. Foreign Investment Advisory Service, 2007). These findings are not surprising since compliance is likely to involve significant fixed costs. For instance, the costs of registering for the VAT are likely to be independent of firm size. Also on the side of the tax authorities, the presence of fixed costs in some aspects of administration means that taxing and enforcing smaller enterprises is relatively more costly. Smaller enterprises may thus find paying taxes especially burdensome, while the tax authorities are likely to find it especially unrewarding to collect it from them. All this points to relatively low levels of both compliance and enforcement for smaller enterprises. Thus, since dealing with *small* businesses is not generally cost-efficient, many tax systems partially or entirely exempt small businesses from remittance responsibility. This special tax treatment of small firms introduces a tax-related incentive for firms to be – or stay – small. As a consequence, this creates a trade-off between the possibility to economize on compliance and administrative costs, on the one side, and the creation of production inefficiency, on the other. The literature has analyzed these issues by focusing in particular on VAT and on the consequences of VAT threshold that exempt small businesses from remitting VAT to tax authorities. Keen and Mintz (2004) developed a formal model taking into account the above described trade-off (production inefficiency and foregone tax revenue versus administrative and compliance costs) to obtain the optimal VAT threshold, which they then simulated using Canadian data. Most important for our evaluation of the measure is that their model shows there will be bunching at the threshold due to the incentive to limit business growth. Kanbur and Keen (2014) expanded the model to account for evasion and avoidance. For our interest, though, the basic result does not change, but

[28] Regulation cost is modeled as a lump-sum tax in the formal sector. The author interpret regulation as a red tape cost of complying with the formal sector.

has to acknowledge bunching might be caused either by a behavioral response or by avoidance or evasion.

Several papers – probably due to the development of empirical techniques based on bunching – have recently tested the hypothesis set by Keen and Mintz (2004), or by Kanbur and Keen (2014). Note, though, the empirical interest of that hypothesis is not new, being even previous to the development of the theoretical literature (see, for example, Chittenden et al., 1999). Harju et al. (2016) is a good example of the recent empirical literature based on bunching techniques. These authors employ Finnish data provided by the corresponding tax administration and take advantage of, on the one hand, statutory VAT tax changes (in 2000 and in 2004) to account for the impact of tax incentives on bunching, and on the other hand, of regulatory changes that have reduced compliance costs (in 2010) for firms registered for VAT remitting purposes. The diversity of changes occurred over time allows them to ascertain to what extent bunching is due to tax incentives and/or to compliance costs. There is no doubt that disentangling both potential sources of response is key for assessing the role of tax policies, and in particular, of VAT thresholds.

These authors obtain that **businesses certainly bunch** as expected from the theoretical literature; however, **the nature of the response is only due to the existence of large compliance costs above the threshold**. The identification strategy is the following. During the 2000-2003 period, the tax system created a notch such that being above the threshold was such that firms had to remit VAT for the whole amount of turnover, and not only for the excess above the threshold. During the 2004-2009 period, there is a change such that instead of a notch there is kink (i.e., there is a progressive tax schedule), so the increase in tax liability because of being above the threshold is smaller. The authors, though, obtain the same degree of bunching comparing both periods, while one would have expected it to be smaller in the latter period, when the kink was present. This evidence joint with the fact that there is an important decrease of bunching in the 2010-2013 period, when compliance costs are lower, allows them to infer that the important feature behind bunching is certainly the compliance costs for small firms of having to deal with the administrative requirements of VAT. This is the most important result of the paper. On top of that, they are able to provide empirical evidence on the fact that in order to avoid being above the threshold firms reduce their volume of sales instead of incurring avoidance or evasion strategies.

The implications of this line of research are clear. If we maintain a threshold, we should increase it (recall the impact of compliance and administrative costs is particularly acute for small firms), which is also in accordance with the original numerical simulations of Keen and Mintz. However, **the optimal policy would consist of reducing administrative and compliance costs throughout the distribution of firms**. This is undoubtedly a challenge for the tax administration (see Slemrod and Gillitzer, 2004, Ch. 12).

Recently, Liu and Lockwood (2016) have expanded Keen and Mintz's theoretical model to account for certain regularities observed in the real world. They still predict the existence of bunching at the threshold, but with some important heterogeneity. In particular, those firms with a relatively low amount of sales with respect to input purchases or firms that basically sell their products to other firms (B2B) – for which the input VAT is not a cost – will register and so they will not bunch. The other companies (including B2C) will still have incentives to bunch at the threshold. Note that the former group, that is, those with a high inputs/sales ratio, most likely includes start-up firms (or exporters as the very Keen and Mintz acknowledge in their footnote 4). They test this prediction with 2004-9 UK data, which confirms the hypothesis

about heterogeneity in bunching. That is, bunching is more likely for those firms that sell to consumers (and so, have difficulties to shift the output tax) and for those firms with a relatively large amount of sales with respect to input costs. Finally, in contrast to Harju et al. (2016), these authors find that bunching is driven by evasion, that is, under-reporting of sales.

In summary, both recent empirical studies reviewed (Harju et al., 2016; and Liu and Lockwood, 2016) confirm the existence of bunching as theorized by Keen and Mintz. This is also confirmed by the empirical analysis of Onji (2009) for Japan; in that case bunching occurred through firm splitting into small units in order to be below the VAT threshold. Therefore, these three **studies confirm the existence of bunching, but the nature is different in each one of them: growth-limiting effect through sales (for the Finnish case), evasion (for the US case) and firm splitting (for the Japanese case)**. In any case, all these effects are undesirable and unintended effects of the threshold. However, it is interesting to note the heterogeneity effect theorized and empirically estimated by Liu and Lockwood (2016) such that bunching is not observed for those firms with a high ratio input cost vs. sales; interestingly, we expect this is the case of new companies. The implication of this result should be clear: **the compliance costs might not be an issue for small firms when they are start-ups, but for "old" small firms. If so, a VAT threshold would not be the adequate instrument to promote entrepreneurship, but for the consolidation of small firms**.

Box 10: Tax compliance and the collaborative economy

As noted above, one of the determinants of the size of the informal sector is third-party reporting of income, which is a less common feature of the tax administration system governing self-employment than employment. As such, tax non-compliance tend to be higher in countries where there is higher self-employment. **This finding is therefore likely to hold for providers within the collaborative economy, the majority of which are self-employed not subject to third party reporting**. However, it is important to note that there are some emerging examples of third party reporting practice in the collaborative economy, which we refer to in Section 4.3 of this chapter, and as these become more common place this relationship will become less valid.

Nonetheless, there are a number of tax-related factors that influence behaviour of participants in the collaborative economy and the size of it. The above findings suggest that tax administration is one of these channels, in particular, tax compliance costs and tax enforcement. **As is the case for traditional entrepreneurs, compliance costs may influence individual participation in the collaborative economy.** We discuss this issue in more detail in Section 4.3 of this chapter, where high compliance costs may be partly driven by uncertainty created as a result of tax policy issues discussed in Section 4.2 of this chapter.

4 Additional issues on the interaction between taxation and entrepreneurship in the collaborative economy

In Section 4 of chapter 1, we noted the differences between the collaborative economy and traditional entrepreneurship. In Sections 3.1 to 3.7 of this chapter, we discussed whether, and if so how, findings from the literature on the interaction between taxation and entrepreneurship were relevant for the collaborative economy. In particular, we noted if and how these findings are relevant for i) collaborative

economy platforms (as products of the founding entrepreneurs' innovations) and ii) collaborative economy providers (who may not be traditional entrepreneurs).

As we describe in Section 3 of chapter 1, a major source of differentiation between the traditional economy and the collaborative economy is the nature of providers. As a result, there are some additional tax implications that are specific and either unique to the collaborative economy (e.g. the systematic fragmentation of incomes) or existing issues that are exacerbated by the growth of the collaborative economy (e.g. the uncertainties around classifications used within the collaborative economy).
These issues challenge the ability of the tax system to provide a level playing field between similar activities. In this Section we start by explaining the neutrality concept and its relevance and then discuss these issues from the perspective of two tax lenses:

1. Design of tax policy: This relates to design of taxes applicable to the collaborative economy, and whether/how the application of these taxes differs compared to the traditional economy. In particular, we assess:

- Ambiguity in existing tax law that may affect the successful application of tax law, for example, in relation to:
    a) the identification of taxable income and transactions (commercial versus non-commercial transactions; income or cost-sharing; VAT thresholds).
    b) the classification of income in different categories (employment vs self-employment).
- The role of excise taxes in the collaborative economy and whether these are currently being applied uniformly across collaborative economy sectors that provide similar services to equivalent traditional economy sectors

2. Design of tax administration: This covers how best to design tax administration to reduce the burden of compliance on all relevant stakeholders. We consider whether, all other things equal, tax administration for the collaborative economy costs more than for the traditional economy. In particular, we assess:

- How governments can address the increasing compliance burden as a result of the nature of the collaborative economy
- Whether uncertainties that arise from (1) create an additional compliance burden on providers
- Whether these compliance costs are a disincentive to participate in the collaborative economy

The review discusses the existing academic literature on taxation and the collaborative economy. However, given that the literature specifically addressing this topic is not large, it will draw upon existing analyses of taxation and entrepreneurship surveyed in the first part of the study and single out those aspects and conclusions, which differ for the collaborative economy. Broader literature on taxation and the digital economy (e.g. France Strategie, 2015), or on taxation of sectors with similar characteristics to the collaborative economy, can also provide some potential lessons for policy. These findings are combined with analysis of the practical tax experiences of countries that have engaged on the issue of the collaborative economy and taxation.

4.1 The principle of fiscal neutrality

The principle of fiscal neutrality underlies both tax design and tax administration issues. This states that taxation should seek to be equitable between forms of electronic commerce and between conventional and electronic forms of commerce and that business decisions should be motivated by economic rather than tax

considerations. In other words, taxpayers in similar situations carrying out similar transactions should be subject to similar levels of taxation. Within a neutral tax environment, neither a business operating in the traditional economy nor an analogous provider functioning through a platform in the collaborative economy is able to confer a benefit from their tax treatment, in the absence of an appropriate and balanced policy rationale to discriminate (Rigaux, 2016).

However, even fiscal environments whose guiding principle is the encouragement of entrepreneurial decisions based solely on economic merits of the endeavour rather than on fiscal circumstances often face challenges in upholding perfect fiscal neutrality. As Fuman (2008) notes, in certain settings neutrality is impossible, and policymakers are required to consent to some moderate level of distortion to entrepreneurial behaviour as a result. In some other settings, upholding perfect fiscal neutrality can be counterproductive to certain policy goals, such as health insurance provision or charitable contributions.

Within this context, it is important to gauge the extent to which the collaborative economy has challenged the fiscal neutrality of taxation systems, and if so, whether this has predicated upon a clear policy rationale.

4.2 Design of tax policy

In this section, we consider our first area of research in the context of whether taxes are applied to the collaborative economy in the same way as they are to equivalent services provided in the traditional economy. In the event that this is not the case, this would contradict the principle of neutrality, described above. Conversely, it is important to note that in a number of tax systems there are tax incentives in place to support broader entrepreneurship. This is a move away from neutrality in the tax system more generally, in order to support those economic agents that carry more risk in their productive activities. However, these incentives may not be appropriate for collaborative economy providers or micro-entrepreneurs who, as discussed in Chapter 1 Section 3, carry less risk.

In the absence of a specific regulatory and tax architecture, a number of countries have issued statements to clarify that all tax-related matters which originate within the collaborative economy should be treated analogously as in traditional economy (PwC, 2016a). However, we explore below a number of reasons why this guidance may not be sufficient to guarantee an optimal tax policy design for the collaborative economy.

4.2.1 Identification of taxable income and transactions

Commercial activity versus non-commercial activity

For many providers within the collaborative, there is a lack of certainty when assessing whether income generated from their activity should be subject to income taxes or not. For example, if income is generated as a result of trading (commercial activity) then it will generally be subject to income tax. However, if the income is generated as a result of an occasional hobby (non-commercial activity) it will generally not. The criteria of whether an activity is being carried out with a view to generating profit is relevant to this distinction. Although the application of tax to commercial or non-commercial activities depends on the tax regime within each jurisdiction, most will make this kind of distinction. In addition to income tax, capital gains tax must be paid and applied to any gains on the disposals of an asset.

The Australian Taxation Office states that an activity is a hobby if it is a "spare-time activity or pastime pursued for pleasure or recreation"[29]. Characteristics that define an activity as business include the intention to make a profit, repetition of similar types of activity, the size and scale of activity and the planning or organisation in a business-like manner. For example, in most cases selling a pre-used item on a site such as eBay is not taxable as it is classified as a hobby (the rationale for this being that in general hobbies do not tend to make profits).

However, the collaborative economy blurs the distinctions between a commercial and non-commercial enterprise. In the case of the collaborative economy, transactions might be B2C or P2P transactions. Etsy is an example of a P2P platform that allows people to sell their hand-made or vintage items (jewellery, clothes, accessories, home articles, etc.). Sellers may regard their Etsy shop as a business, creating their own unique products and building their brand as a seller on the website. However, other sellers may regard their Esty shop as a hobby and only sell occasionally. As a result, in the case of P2P transactions in particular, it is less clear whether activities are commercial and therefore taxable. Indeed, Cohen and Sundararajan (2015) note that P2P platforms blur the line between personal and professional in the provision of commercial services.

P2P transactions related to the rental sector are complex in terms of tax treatment, and they strongly depend on the definition of the tax object (i.e. *what* is taxed). Hosts can rent out anything from entire homes to a room in a house to an air mattress in a living room. They decide on the price they will charge and manage their own personal rental calendar. Individuals can decide to use their under-utilized goods, which does not necessarily incur tax liabilities. However, there are individuals who participate in this type of activity for profit-seeking purposes, sharing their properties against rent on a permanent basis or renting out multiple properties akin to traditional "landlords".

The baseline tax treatment of income from home rental is to include the rents under gross income and deduct any qualified expenses to arrive at net taxable income. A potential issue that might arise in this context is the eligibility and scope of deductions in case of a property that is used for both rental and personal use. However, such "mixed use properties" are the backbone of the collaborative economy accommodation sector. Oei and Ring (2015) note that the US federal tax regime accommodates for the varying scopes of personal, as opposed to business, use of property. However, the applicable definitions and concepts are complicated to use in practice (e.g. partial rental use of a dwelling unit that does not rise to the level of a residence, partial rental use of a dwelling unit that is used as a residence, the hotel exception).

In light of these complexities, clarification of the tax object is crucial to tax policy design. Australia has sought to clarify what income can be classified as income from an "enterprise".

Box 11: Australia – clarifying enterprise activities

The Australian Tax Office (ATO) has clarified what it means to be undertaking commercial activity versus non-commercial activity, declaring any regular collaborative economy activity that generates income as an enterprise:

[29] https://www.ato.gov.au/Business/Starting-your-own-business/Business-or-hobby-/

"If you are engaged in sharing economy activities where you let a room, let a car parking space, do odd jobs or other activities for payment or drive passengers in a car for a fare, you may have a GST (Goods and Service Tax) obligation where you have an enterprise. If you rent out property (for example, a car parking space) on a regular basis to make money, this will be an enterprise (even if it is not a business).

If you are already registered for GST for another purpose, your activities in your sharing economy enterprise must be included with your other activities."

Income versus cost-sharing

Related to the above, cost sharing is treated as distinct to income in most tax systems. For example, in car-pooling schemes, payments to the driver to cover petrol money and maintenance would not be treated as income for taxable purposes. **However, through the growth of sectors such as ridesharing, the collaborative economy has amplified the relevance of when cost sharing becomes income generation and vice-versa.**

As discussed in Section 3 of chapter 1, the growth in collaborative economy activity has been driven by resource scarcity, which has increased the opportunity cost of owning versus accessing products and services. This has increased the amount of cost-sharing activity. For example, BlaBlacar enables car drivers who are heading to a certain location to share their car with other people heading in the same direction, and split the cost between them. Confebus, a confederation of bus companies in Spain, has sued Blablacar based on the claim of unfair competition, maintaining that because providers do not need to pay tax they are able to charge lower prices. However, Blablacar defends its platform, emphasising that drivers do not make profits, and are often not even able to cover full travel expenses.

In the context of property, Oei and Ring (2015) suggest that home sharing may be treated in the same way as the ridesharing sector for tax purposes. In this way, home sharing is seen as a method of cost-sharing rather than a profit-generating activity. In fact, some home rental platforms have stipulated maximum prices that home owners are allowed to demand for staying at their property for a given period (e.g. one night). Such maximum prices cannot exceed the cost that the home owners incur for a given period as per their tenancy contract. In the context of cost-sharing, relevant issues concern the doctrinal rules governing income inclusions and deductions; allocation of expenses between business and personal use; and state and local occupancy taxes. While the general rules for income inclusion and cost deduction state that the host has to include rents received in gross income and may deduct qualified costs from his or her taxable income, the sharing elements may give rise to complications not present in traditional real estate rentals.

In the most straightforward case, property used exclusively for business purposes and not for any personal purposes could benefit from a deduction of all costs related to the maintenance of the property. With partial business-private use of the property, the rules on income inclusion and deduction become much more complex, and expenses on the property must often be limited. Therefore, the opposite strand of the literature (Stemler, 2014) argues that the existing tax system is not efficient enough to fairly tax those who decide to share their under-utilised durable goods. Accordingly, it proposes to shift the responsibility of collecting and paying taxes to the platforms themselves.

Consumption taxes – VAT thresholds

One of the differences between the traditional economy and the collaborative economy is that the former is characterised by extensive supply chains involved in the delivery of the final good, while the latter is dominated by intermediaries. Those intermediaries, often described as "marketplaces", are not regarded as suppliers. The income they receive is not derived from the sale of the final product or service, but rather a commission charged for matching supply with demand in every transaction. **Collaborative economy platforms are liable to pay consumption taxes on commission, such as VAT.**

Consumption tax liabilities from the sale of the actual service would in theory have to be withheld by the supplier of the service (e.g. the collaborative economy provider), such as an Uber driver. However, suppliers generally do not have to register if their turnover is below a certain threshold (which varies between jurisdictions). **As the collaborative economy disaggregates economic activity and generates smaller amounts of economic activity from more entities, increasingly more entities are likely to fall below these thresholds.** This is likely to be more acute for economies where thresholds are high. For example, in the UK the threshold is relatively high, at £83,000. In Greece, it is significantly lower, at €10,000.

The rationale behind these thresholds is to ensure the practicability principle, i.e. to avoid the disproportionate administrative burden that collecting tax on these activities would impose. As a result, "recreational" suppliers are not unduly burdened with tax obligations and therefore not discouraged from participating in the collaborative economy. However, it has also been suggested that suppliers that would generate activity above thresholds may use collaborative platforms as a way of avoiding tax. Providers could be incentivised to break up their business to artificially remain below the thresholds. For example, a ride-sharing car that is shared by the family members and although total sales are over the £83,000 VAT threshold, individually their sales are not.

To address this, the Australian Tax Office (ATO) has declared that those who provide "taxi travel" are obliged to register for Goods and Service Tax (GST) regardless of turnover. Other sectors of the collaborative economy only have to register for GST if combined annual turnover from all economic activity is over AUD 75,000.

It should be noted that the use of thresholds is one instrument for simplification of tax collection, but digitization of the tax systems affords new possibilities to collect taxes that are due at lower administrative costs. One method could be to involve platforms, as explored more in Section 4.3 of this chapter, although we have not found any member states that currently practice this for the case of VAT. Another technique could be to develop digital tax accounts, as explored in the case study on Estonia, in Chapter 3.

We discuss VAT thresholds in the context of entrepreneurship further in Section 3.7 of this chapter.

4.2.2 The classification of income

Employment versus self-employment

As we discussed in Section 2 of chapter 1, the growth of the collaborative economy could trigger a rising number of individuals to move from full-time permanent employment to self-employment. The distinction between employment and self-employment is an important policy issue for the collaborative

economy because most tax systems differentiate between the taxation of employees and the self-employed. In the case of employees, the employer collects direct taxes (such as personal income tax) on behalf of the government from employees' income. In contrast, self-employed persons are obliged to submit a tax return form themselves, that summarises the income and tax obligations incurred during the previous tax year.

For example, France taxes employment more heavily than self-employment through applying larger social security contributions on the former (see the French Case Study in chapter 3). In such cases, there are three issues that the growth of the collaborative economy raises: firstly, the shift in the pattern of work from employment to self-employment would lead to a revenue loss; secondly, there may be scope for unequal competition if the collaborative sector is undertaxed compared to the traditional one (see Box 1 in Section 2.2 of this chapter); and thirdly, there is the potential for those that work in the collaborative economy not to receive adequate social protection (see Box 2 in Section 2.3 of this chapter). The experience of countries to date suggests that there are "grey areas" in the application of employment law to the collaborative economy. It is not clear if collaborative economy providers may be being taxed as self-employed persons when they should in fact be taxed as employees and vice versa, depending on the specific circumstances.

The European Commission does not have competences on the regulation of self-employment. Article 153 of the Treaty on the Functioning of the EU is the legal basis for the existing EU legislation in the social field which sets a number of minimum requirements to protect workers and which are binding on all Member States. This Article is aimed at the protection of dependent workers but not of the self-employed. National authorities therefore establish and enforce the criteria for determining the status of an employed person.

Theoretically, providers in the collaborative economy could generally be regarded as self-employed on the basis that the user is purchasing goods and services directly from the provider. As such, there is a contract between the user and the provider, rather than between the platform and the provider.

Most collaborative economy platforms have argued for the status of their providers to be classified as self-employed individuals, such as Uber. Uber's position is that its drivers should be classified as "independent contractors" (in the US, the term independent contract is used to refer to the self-employed)[30] as opposed to employees. Uber states: "*Uber's technology connects people with cars to people who need rides, meaning drivers on the Uber system are independent contractors*" (Kalenda, 2014).

However, applying a broad definition of self-employment is not always suitable. In June 2015 a ruling in California classified Uber drivers as employees, rather than independent contractors. The complexity of aligning collaborative economy providers with current binary definitions has led to a number of other court cases. And though a number of other collaborative economy platforms have begun to redraft their terms of agreement and reclassify individuals (Codagnone et al., 2016), the status of collaborative economy providers as employees or independent contractors remains pending in the US (see Box 3). In October 2016, the GMB union, successfully argued

[30] In the US, the general rule is that an individual is an independent contractor if the payer has the right to control or direct only the result of the work and not what will be done and how it will be done. The earnings of a person who is working as an independent contractor are subject to Self-Employment Tax.

that Uber's drivers should be classified as "workers" under UK employment – the company are currently appealing the ruling. Other taxi unions across Europe have brought similar cases to court to determine whether drivers are employees or self-employed.[31]

It is important to note that, in general, these cases are brought about on a legal basis in relation to employment law, which is distinct from a case brought about for tax reasons. For example, many of these legal cases relate to questions around the entitlement of benefits that a worker would receive as an employee. However, tax and legal positions are not necessarily aligned in every jurisdiction. Therefore, while it is likely that for a case that established a worker as an employee for legal purposes, the presumption would then follow that they are also an employee for tax purposes, this is not necessarily automatic. In the UK, for example, in principle these two aspects are not linked.

Box 12: The employment status of Uber drivers

Hilary Clinton vowed in July 2015 to "crackdown on employers who misclassify employees as independent contractors" in the collaborative economy (Osborne Clarke, 2015).

In June 2015, a ruling by the California Labour Commission between an Uber driver and Uber classified Uber drivers as employees, not independent contractors. The Californian court decided that Uber controlled "every aspect" of the driving experience, controlling the tool (i.e. the platform) that the driver uses; the algorithms behind the pricing; and the right to terminate the driver at will. However, Uber argues that its drivers have huge flexibility and control over their work life, with the ability to choose the time, location, and customer (MacMillan, 2015). Uber has also argued that the driver's autonomy is reflected in many of them earning from multiple sources, including other ride sharing companies (McBride and Levine, 2015). The June 2015 has been appealed by Uber, moving the case to the Californian court.

An Uber spokeswoman commented that: "*We disagree with the decision, but, since it only affects one person, and does not have any wider impact or set any formal or binding precedent, we continue to focus on the bigger picture: the O'Connor case. Labor Departments in thirteen states – including the California Employment Development Department (EDD) itself – have found individual drivers to be independent contractors*" (Kokalitcheva, 2016). Since this ruling, Uber has faced a number of other challenges to the status of its drivers as independent contractor in the Californian courts.

There are also court cases relating to the classification of collaborative economy providers in other sectors. Court cases are being held on behalf of workers against Homejoy, a house-cleaning company, Postmates and Try Caviar, service delivery companies, and grocery-delivery company, Instacart (Steinmetz, 2015).

According to Oei and Ring (2014), existing legal and tax frameworks should be adequately equipped to resolve how to classify collaborative economy workers. **If this is correct, one option is for governments to clarify the definitions and interpretation of employment and self-employment.** Leaving the classification to

[31] http://www.theregister.co.uk/2016/07/20/uber_uk_employment_tribunal/

be defined on a case-by-case basis in court could lead to fragmentation, as in the US (Codagnone et al., 2016). The issue of fragmentation and classification in this context was also raised as a key policy question in the European Commission's 'Future of Work in the Sharing Economy' report (2016).

In its 'Agenda on Collaborative Economy', the European Commission acknowledges that labour law is generally a matter of the respective national legislations, but suggests the following criteria to determine employment status: subordination, remuneration, and the nature of work. The US Internal Revenue Service has developed the so-called 20 Factor Test on Employment Status to distinguish between employees and independent contractors.[32] The test considers factors such as provision of training, fixed hours of work, and the duration of the relationship, and it has been applied within court cases on a number of occasions. In Ireland, authorities may consult the Code of Practice for Determining Employment or Self-Employment Status of Individuals for the purposes related to tax and social security.[33]

However, McCann Fitzgerald (2016) notes that some of the criteria set out in the guidelines may not hold for the collaborative economy. The authors state that in the traditional economy, the provision of equipment and tools generally implies employment. However, this is not necessarily the case in the collaborative economy:

"While criteria such as the "provision of equipment and tools" are readily applicable to the construction industry, this is not necessarily the case for the collaborative economy, where the only "tool" is an online app."

This ambiguity suggests that existing legal and tax regimes may not provide sufficient certainty and clarity to providers in the collaborative economy.

Hence, clarifications of existing law may not be sufficient for all sectors and activities in the collaborative economy. Some authors argue that the distinction itself between employment and self-employment has become blurred with the onset of collaborative economy (McCann FitzGerald, 2016), with some of these proposing the creation of a new, intermediate employment status. Weber (2015) argues that collaborative economy workers need protection just like regular employees and that the digital reality necessitates the definition of a new form of labour provision, which it refers to as the "dependent contractor". In principle, such a provision should capture the specificities of collaborative economy as opposed to traditional economy and adequately address the challenges that arise from it. One conclusion that could be reached from these studies is, therefore, to alter the existing employment framework and create new definitions for collaborative economy providers. As such, these studies suggest that traditional distinctions used for classifying economic activity within the tax system – namely employment and self-employment – may no longer be fit for purpose.

If a new definition of employment that captures collaborative economy's distinct activities can be developed, then it would be possible to design employment tax policy specific to collaborative economy providers. Belgium has introduced a reduced effective tax rate specifically for collaborative economy providers' income up to €5,000. Beyond this, normal tax rules on self-employment income apply.

[32] Cf. https://www.mdc.edu/hr/Operations/AFS/IRSFactorTest.pdf
[33] http://www.revenue.ie/en/practitioner/codes-practice.html

Box 13: Belgium – reducing effective tax rate for providing services in the collaborative economy

The federal government approved draft legislation proposed by the Minister of Digital Agenda and Telecom, Alexander De Croo, in June 2016[34]. The measures consist of:

- **a reduced effective tax rate of 10% for the first €5,000** earned for collaborative economy providers, who would also be exempt from VAT and Social Security. This applies to P2P services between individuals which tackles the "grey space" in current tax policy;
- **providers who earn over €5,000 are considered self-employed** and the normal tax rates apply. Providers using the job in the collaborative economy as a full-time profession must declare themselves "self-employed", to assure more equal competition with classic professionals; and
- **income from the renting of rooms to be treated differently**, with the new 10% tax rate only applicable where income is up to 20% of total rental price and relates to provision of bed linens, reception, changing bedding, breakfast etc.

This measure does not apply to sporadic sales of goods through a digital platform.

However, in practice it is not easy to define the collaborative economy, which is a constantly evolving concept. As such, some governments may avoid these difficulties altogether and offer a blanket income tax relief for individuals earning small amounts of income, regardless of whether it is defined as collaborative economy activity or not.

For example, in 2017 the UK will introduce two £1,000 tax-free allowances on income related to property or trading. Though this policy has been introduced with specific reference to platforms such as Airbnb, it is applicable to everyone and therefore does not attempt to explicitly define eligible collaborative economy activities (we give more detail on this example in Section 3.3 of chapter 3). This can be seen as a novel example of tax policy in the context of tax compliance. The government has chosen to acknowledge small amounts of income (which may previously have gone unmonitored) but apply a tax allowance. This removes the risk of non-compliance, but raises awareness that this is defined as taxable income, with a tax incentive applied.

4.2.3 The role of excise taxes

Excise taxes target specific goods or services, both to reduce/correct negative market externalities and to provide a source of government revenue. For example, in the hotel industry, hotels may apply a "tourist" tax which is transferred to local government. This may contribute towards covering social costs incurred by the local area as a result of additional tourists, such as litter, pollution, crowds etc.

However, the application of these types of taxes differs between Member States. Indeed, some Member States have not imposed a hotel tax, such as the UK. Germany, Italy and Spain have all adopted some form of hotel tax in specific regions.

As a result, it is not clear whether these taxes should necessarily be applied to equivalent collaborative economy services. In France, there is debate around the potential for unequal competition as a result of some non-hotel hosts not being liable to pay tourist taxes. However, in some instances these taxes have been applied

[34] http://www.decroo.belgium.be/en/belgian-government-approves-simple-and-low-tax-rates-sharing-economy

to the P2P rental accommodation sector, usually passed through to users. Some P2P rental platforms have also sought to work with governments to clarify what tax applies to their providers' activities. Airbnb, for example, in many cases collects tourist taxes from users and transfers the revenues to local governments (see Box 14).

Box 14: Airbnb's cooperation with regards to tourist tax

France was one of the first countries to agree a tourist tax with Airbnb, first administered in Paris at a rate of €0.75 per room per night (and an additional district tax of €0.08) in October 2015. As a result, the city has collected more than €1.1 million tax revenue in the last quarter of 2015 (Koolhoven et al., 2016). This tourist tax has now been extended to several other French municipalities.

Other countries have also followed suit and Airbnb collects and remits taxes on behalf of the host in the following countries: other municipalities of France, India, Netherlands, Portugal and across the United States[35].

Airbnb have a dedicated page on their website to inform hosts of occupancy tax, and options they have for collecting and paying the tax. They state that:

"*We want to help hosts follow the laws relevant to them, and we understand that many of these rules are complex and difficult to follow. We're continuing to work with governments across the world to explore ways to help facilitate occupancy tax collection in as many locations as possible[36].*"

Where it has been "clear that these taxes apply to non-professional hosting" Airbnb has decided to voluntarily collect these taxes on behalf of local governments as set out in the Airbnb Briefing for the DG Grow Task Force.

It is important for policymakers to consider whether the equal application of excise taxes is appropriate for the collaborative economy. Some collaborative platforms offer rentals in residential areas not traditionally served by hotels. These areas are less likely to suffer from the same negative externalities - such as overcrowding in city centres – that are the basis for some tourist taxes in the first place. There may even be positive externalities, such as bringing tourists to more remote areas or enabling those who may otherwise be unable to work or earn sufficient income to "top-up" their income. Positive externalities of collaborative economy activity may provide justification for different tax treatments in this space, including a different application of excise taxes from the traditional economy.

In conclusion, our review has found significant uncertainty over the application of common classifications used within the taxation system to the collaborative economy – in particular around defining whether the activity is commercial or non-commercial, whether transactions constitute income or cost sharing and whether providers are employed or self-employed. These classifications influence the treatment of earnings within income, VAT and excise tax regimes and have a material impact on tax liabilities due. This may lead to the possibility that similar activities are being taxed differently. Governments are responding to create a "level playing field" both through adjusting and clarifying the existing policy framework and developing new

[35] https://www.airbnb.co.uk/help/article/653/in-what-areas-is-occupancy-tax-collection-and-remittance-by-airbnb-available

[36] https://www.airbnb.co.uk/help/article/654/what-is-occupancy-tax--do-i-need-to-collect-or-pay-it

policies specific to the collaborative economy. Governments are also making conscious policy choices to depart from the principle of neutrality and to favour particular activities within the collaborative economy through tax incentives and exemptions. We assess these policies further in the Framework of Analysis.

4.3 Design of tax administration

Tax compliance lies at the heart of any discussion on tax regime within collaborative economy (OECD, 2016; Oei and Ring, 2015). **The study of the European Parliament (2015) suggests that tax and other policy choices not intended to affect the collaborative economy might still affect its growth through a number of channels. One of these is high and/or complex taxes, which create compliance burdens and might discourage providers and lead to a reduction in supply.** Oei and Ring (2015), though proponents of the approach that suggests the collaborative economy can be dealt with under existing tax regimes, acknowledge the need to streamline tax administration practices to address emerging compliance challenges.

The literature distinguishes between two areas of tax administration in the context of the collaborative economy. The first relates to **baseline tax compliance of collaborative providers** (for example, the question of who submits relevant tax information). The second area relates to **tax avoidance** (i.e. opportunistic but legal fiscal optimization practices based on current uncertainties and grey areas). In this section, we focus on the former.

4.3.1 The impact of tax administration issues on governments (and platforms)

This section discusses the question of whether collaborative economy activity has led to a greater burden for governments in collecting taxes due. The principles of simplicity (that tax policy should be simple for tax authorities to administer and taxpayers to comply with) and practicability (that the administration burden should be taken into account when contemplating new tax policy) are essential to the design of tax administration.

Tax is either withheld at source (such as taxes on labour income, which are withheld by employers or taxes on consumption, such as VAT, which are withheld by suppliers) or collected via self-assessed tax returns. As noted in Section 3.7, withholding and third-party reporting increase compliance. They also reduce collection costs as governments can collect liabilities from fewer large employers or suppliers, rather than individuals.

As the collaborative economy is expected to generate more, smaller amounts of income for individual participants, there may be a reduction in the amount of tax that is deducted at source. This means the costs of compliance could potentially increase as governments take on the additional burden previously administered by employers.

Governments may choose to mitigate this by applying thresholds, as described in Section 4.2 in the case of consumption taxes, although this could have a negative impact on revenues. An alternative possibility is to involve the platforms themselves in tax administration. Citing their role as intermediaries, some platforms have resisted involvement in tax affairs of their users. Instead, they argue that liability lies with

providers and users (Stemler, 2014), which limits platforms' involvement to submitting tax report forms (e.g. Tuttle, 2013). **However, there are at least four ways in which platforms might assume involvement:**

- Provide transparent information/advice and let users self-report as before
- Calculate taxable income and let users self-report
- Report income of users to the tax authorities
- Withhold taxes

Stemler (2014) proposes that collaborative economy platforms should be responsible for tax collection and payment. Obliging the platforms to withhold taxes would ease the administrative burden on individual providers and the government might be expected to reduce their administration costs by "outsourcing" tax collection to external organisations in a similar way to how the collection of employment taxes by large employers has reduced administrative costs in many member states. Moreover, it would address the issue of non-compliance, which is particularly apparent in taxes which are self-reported. In particular, occupancy taxes are cited as relatively easy to underreport. However, others argue that this would merely transmit the cost onto platforms. And whilst this might be simpler for the provider and reduce uncertainty, the fact that collaborative economy providers are more likely to have more than one source of income compared to employees in the traditional economy, may mean that the taxes withheld may be less accurate, and may realise greater "adjustment costs" for providers and the government downstream through applying and administering refunds and adjustments. Withholding mechanisms may therefore offer a more efficient solution for relatively simple taxes such as occupancy taxes than for taxes where liabilities are more dependent on the personal circumstances of the individual, such as sales and income taxes. Stemler extends his recommendation to involve platforms in compliance to include other areas of regulation as well, such as safety standards, fraud prevention, insurance, and competition issues.

Some governments have indeed required platforms to withhold taxes on behalf of the government, such as Belgium (see Box 15).

Box 15: Platforms withholding taxes in Belgium

The Belgian federal government put into force a tax programme for the collaborative economy in July 2016. This aimed at increasing tax take from the collaborative economy by requiring online platforms to collect tax revenues. Tax authorities have chosen (de Biolley, 2016):

- *to deduct the tax at source* by requiring registered platforms to withhold taxes and send the income information to the tax authorities. This data is then automatically included on tax returns; and
- *for the entrepreneur to not be landed with administrative charges* such as registering with the Belgian Enterprises Register or applying for a VAT number.

As discussed in Section 4.2, Airbnb withholds and remits tourist taxes in Paris. Likewise, Airbnb has been collecting the 14% Transient Occupancy Tax in San Francisco since October 2014 (Stemler, 2014). Similar initiatives were also introduced in Portland (since March 2014), Washington DC, and Amsterdam (Kerr, 2014; Kuchler, 2015). Airbnb state on their website that they are working with governments to increase the number of options for their hosts in terms of collecting and paying relevant tourist taxes. However, such agreements are piecemeal rather than general and remain exceptions rather than a norm (Oei and Ring, 2015).

Generally, Airbnb, or other peer-to-peer accommodation platforms, have not engaged in collecting taxes due on income from accommodation rental. This may be more complex to administer due to the difficulties in collecting the right amount of tax if providers have diverse and complex personal circumstances or have more than one source of income. There are some exceptions, however. For example, Airbnb in the US will withhold 28% of the host's payouts if he or she does not submit the required taxpayer information, and the proceedings will be remitted to the US IRC. Airbnb will also withhold and remit to the IRS 30% of payouts from US accommodations listed by non-US residents.[37] This may be subject to exemption based on any applicable tax treaties.

Requiring platforms to withhold taxes has the potential to simply shift the compliance burden from individuals and governments to platforms. This, in turn, may result in societal costs if more of platforms' economic resources are re-directed from productive, value-adding activity towards tax compliance and administration, and essentially shifts the challenge of practicability onto platforms. However, there are also potential benefits from this approach beyond the ability for governments to reduce their administrative costs. For example, platforms may benefit reputationally, attracting new providers who value the increased clarity and certainty of their tax liabilities.

Given many of these platforms are in the infancy of their development and many are currently making a loss, it is argued by platforms that additional costs they incur performing this role detract from their ability to grow, scale and create jobs. For example, a peer-to-peer lending platform, lending works, described requiring platforms to collect taxes would "inhibit the efficiency of a sector raising the bar on this front"[38]. Given most collaborative economy platforms are "asset-light" organisations with lean administration functions and few central workers, this may impose additional costs compared to traditional organisations with large legacy administration functions. Whilst this would be valid for all start-up companies, there is an argument that this reporting function would need to be more extensive for a collaborative economy platform of the same size or stage of development. This is because the collaborative economy platform is likely to host a greater number of "providers" (which can number hundreds of thousands of individuals for the largest platforms) than the number of workers in a traditional organisation. The strength of this effect will depend on the nature of the tax. For example, withholding income and consumption taxes may require more coordination and administration than, for example, tourist taxes, due to the fact that providers tend to operate across a number of platforms and a number of potential deductions and allowances could apply[39]. For example, the UK government is consulting on whether platforms should withhold tax on interest due from P2P lending; and they have temporarily granted relief to P2P platforms "for which the application of withholding tax has proved a costly and problematic issue" (HMRC 2015).

4.3.2 The role of technology in tax administration

Our review has highlighted the significant costs involved with the application of existing tax administration practices to increasingly disaggregated economic activity. Across most areas of the economy over the last decade, the search for lower-cost

[37] https://www.airbnb.co.uk/help/article/510/why-are-taxes-being-withheld-from-my-payouts https://www.airbnb.co.uk/help/article/481/how-do-taxes-work-for-hosts

[38] https://www.lendingworks.co.uk/blog-post/should-platforms-deduct-tax-p2p-income-source

[39] Although tourist taxes can also be complex – for example, being administered locally, and often varying by rate between local authorities.

processes has often centred on technology. The application of technology within the tax system and the potential application within the collaborative economy is therefore an important and relevant possibility to consider.
A digital solution to tax collection of collaborative economy activity has the potential to bring informal economy activity in countries such as Italy, Greece, and Latin America, into mainstream (Canigueral, Americas Quarterly, 2015). While many governments are looking into digitalizing tax systems, these are not initiatives specific to the collaborative economy. However, the development of the collaborative economy, because of the way it stimulated a debate on the tax issues which result from it, might be seen as a catalyst for a digital solution.

The benefits associated with the use of technology in addressing tax compliance issues are expected to accrue to governments and taxpayers alike, in the form of increased tax collection and better quality information, more efficient, automated procedures, which would translate to real savings in terms of money and time (in particular by removing any need for individuals to make multiple and real-time returns) There is a variety of ways in which this can be done, ranging from digital tax and accounting documentation to e-audits to complete elimination of tax forms (Ernst & Young, 2016). Often such reforms have been implemented gradually, allowing for appropriate timescales for users to get learn new systems and for any unexpected problems in the service to be ironed out.

In Estonia 95% of government services are accessible online, including a digital tax system that allows for automatic calculation and collection of tax. The system has recently been applied by tax authorities to use "big data" to pre-fill out large parts of collaborative economy providers' tax returns. The UK's tax authority, HMRC, released 'Making Tax Digital' in 2015, a proposed road map for the tax administration until 2020, its main areas of focus being tax simplification and digitalisation. The UK Government's chief technology officer, Liam Maxwell, led a tech delegation to Silicon Valley to explore opportunities for collaboration between technology and government, highlighting that as governments need the same sorts of services, innovative solutions could be shared between governments: "Local governments deliver loads of services too and they can base their services on the same platforms" (Curtis, 2015). We discuss Estonia's and the UK's tax policy responses to the collaborative economy in more detail in Chapter 3.

Outside of Europe, Brazil has implemented a comprehensive digital bookkeeping system called SPED (Sistema Público de Escrituração Digital) (Novais, 2013). One of its components is the annual digital tax accounting bookkeeping report that goes by the name of ECD and is used by the tax authorities to determine the liabilities of companies. Since 2010, federal tax revenue has been increasing by the average of 12.5% each year. Although the tax rates remained unchanged throughout the period, there has been a significant increase in the number of registered taxpayers, which has contributed to tax collection.

In this context, the digital nature of the collaborative economy should mean that its taxable activity is easy to trace via the platforms. Oei and Ring (2015) discuss technological solutions as an element of a medium- to long-term strategy aimed at increasing compliance. The authors point to the fact that collaborative platforms make a heavy use of data collection and activity tracking. If collaborative economy platforms draw on data collection and digital payments, making transactions easy to track, this may support the positive effect of the sector on tax revenue (OECD 2016). For example, a ridesharing app could be used to track mileage that is associated with each trip and thus provide important tax information. Uber have agreed with some national governments to exchange income information on their

drivers (for example, in Estonia, which is elaborated further in Chapter 3). Airbnb themselves acknowledge the use of platforms' software in their briefing for the DG Grow Task Force; "this obviates the need for complex registration and administrative requirements, as Airbnb's software is able to automatically calculate the correct level of taxation on every stay". The use of technology to increase compliance has been studied more broadly by tax experts. For example, Alm and Soled (2013) discuss the use of GPS to ensure reliability in automobile tax deductions.

However, there are concerns that the increasing use of digital in tax, where vast amounts of personal data are shared between third parties and governments could lead to data privacy issues. In the UK, the Data Protection Act of 1998 was put in place to safeguard personal data of consumers, though there are exemptions from the Data Protection Act "for purposes relating to criminal justice and taxation".[40] However, if platforms use their own data to collect tax on behalf of governments (as in the case of Airbnb), this may allay concerns around data sharing, as platforms do not need to hand over detailed user data to the government (Sundararajan, 2016).

Blockchain is a promising digital development in the context of the collaborative economy and taxation. Matthew Hancock, of the UK's Cabinet Office has stated: "Blockchain is itself a way of verifying the accuracy of data, and has all sorts of applications that we are only beginning to understand," he said. "In some cases it replaces the need for a central verification. Just because that has been a role for the government in the past, doesn't mean new technology can't do it more efficiently" Blockchain creates records of transactions which can be accessed by tax authorities, as well as the parties involved, and used in tax return information. Each user has a unique copy of the 'blockchain', a secure digital distributed ledger, rendering it impossible to create false transactions. This requires transactions to happen in blockchain and for tax authorities to have access to it. We discuss the UK's taxation policies with respect to the collaborative economy in more detail in Chapter 3.

4.3.3 The impact of tax administration issues on participation

Section 3.7 noted the effects of high tax compliance costs on entrepreneurship. In particular, that the effect of taxes on entrepreneurship is mediated by entrepreneurs' knowledge of tax rules and by the role of administration in providing information and assistance to entrepreneurs.

Similarly, this may be the case for collaborative economy providers. **The nature of tax administration and compliance costs could have an impact on individual participation in the collaborative economy.** In general, the ease of access and flexibility of work in the collaborative economy is encouraging new groups of people to participate. However, many of these people are accustomed to taxes being collected on their behalf by their employers. **As a result, individual compliance burdens may discourage participation in two ways:**

1. **Uncertainty** created as a result of the issues and grey areas outlined in Section 4.2.2 make it difficult for providers to understand their tax liabilities.
2. The **burden of compliance** generally in the context of running a small business acts as a disincentive to participate.

[40] https://ico.org.uk/for-organisations/guide-to-data-protection/exemptions/

Legal uncertainty regarding tax obligations may result in multiple different interpretations, as discussed in the previous section. This uncertainty may be felt more keenly in the collaborative economy than in traditional sectors, both because this activity does not clearly fit in to current definitions within the tax framework, and because potential providers are more likely to be part-time and undertake activity ad-hoc in addition to an employed source of income, and may therefore be less experienced in interpreting tax rules, characteristics that are highlighted in Section 1.2.2. For example, the legality of short-term rentals – such as those facilitated by Airbnb – has been disputed in many cities across the world (Tuttle, 2013). Nathan Blacharczyk, the founder of Airbnb, has noted, many hosts hesitate to pay taxes because of the fear that this would expose their identity and make them liable for the breach of the short rental law (Rosalsky, 2014). Indeed, legal uncertainty regarding tax obligations may be exacerbated in the case of authorities that evade unequivocal interpretations.

Tax authorities may hesitate to issue tax interpretations so as not to prejudice the broader questions regarding the very legality of such activities. **As such, this legal uncertainty may be a source of insecurity for providers.** According to the experience of Greg Kato from the San Francisco treasury, most of the calls that he received for assistance on collaborative economy taxation were anonymous (Tuttle, 2013).

There are two theoretical responses to this uncertainty. First, removing or lowering the compliance burden may increase collaborative economy participation. Second, **providers may respond to uncertainty by entering the sector but avoiding (intentionally or unintentionally) the tax due**. If this happens at a large enough scale, this could confer an undue advantage compared to traditional competitors and reduce government tax take.

There is more anecdotal evidence relating to the first potential response. In 'Unlocking the Sharing Economy: An Independent Review', a report commissioned by the British Ministry for Business, Enterprise and Energy (2014), leading collaborative economy entrepreneur Debbie Wosskow reports that collaborative economy providers often have problems when regulating their tax liabilities. Calculating the right tax amounts due and correctly interpreting any relevant tax benefits turn out to be challenging tasks. Oei and Ring (2015) note that many collaborative economy providers are inexperienced and are often faced with having to report independent contractor business income for the first time in their lives. The industry has called for governments to prioritise easy-to-use tax processes and systems that make it straightforward for individuals to pay their tax (European Collaborative Economy Forum 2016).

As providers are often running small businesses, the costs they bear will be significantly larger than average compliance costs (Sullivan, 2015). Many may not realize the tax deductions they are allowed as an entrepreneur running a small business, or do not have sufficient documentation to support these deductions, as noted by the chairman of the House Small Business Committee in the US (Nasr, 2016). For example, Uber drivers can make deductions for standard mileage and Lyft can deduct expenses such as gas, insurance premiums, repairs and other expenses of keeping a vehicle. The complexity of tax for collaborative economy providers is highlighted by the rapid expansion of popular tutorials and specialized services offering tax advice in the area of collaborative economy (e.g. Cutler, 2014; Goulding et al., 2014; Oei and Ring, 2015).

In addition, providers in the collaborative economy often work across more than one platform, multiplying and potentially duplicating costs, with a much higher risk of applying the tax system incorrectly. This could provide significant disincentives for individuals to participate in the collaborative economy. The European Parliament acknowledged in 'The Cost of Non-Europe in the Sharing Economy' that complex tax administration could discourage participation in the collaborative economy. Willey, vice president of marketing at TaskRabbit believes that "significant numbers" of providers on the platforms "are facing or are simply unaware of the tax compliance providers or the tax benefits that confront them". He believes that this will lead to providers asking for fewer jobs or leaving the network outright (Nasr, 2016). Indeed the demand for guidance on how to stay compliant by collaborative economy providers has led to the creation of an online compliance service, Airtax, which has been set up in Australia[41]. The Danish Business Authority identified lack of transparency in legislation as a current barrier to entry into the sharing economy. They identified raising the minimum income allowed before taxes need to be paid for sharing economy transactions as a potential solution.

Collaborative economy providers also report that the uncertainty about the tax status of their activities is a much heavier burden than the actual financial liability that underlies it. However, it is important to note at this stage the tradeoffs between the best practice principles of the tax system. In particular, replacing uncertainty caused by "grey areas" with more detailed guidance and clarifications (as discussed in Section 4.2.2) may result in greater complexity in the tax system (contravening the simplicity principle). Further, this complexity may be targeted at those least-well equipped to deal with it.

Many countries have also embarked on information campaigns, to raise awareness of tax obligations of those participating in the collaborative economy and increase clarity and transparency in the tax system. Examples of different country practices are provided below in Box 16.

[41] https://www.airtax.io/

Box 16: Information campaigns

The US Internal Revenue Service (IRS) now provide a collaborative economy and tax web page:

- The web page provides guidance to participants of the collaborative economy on how to file tax requirements, how to estimate tax payments and deductions, and the special rules that apply to certain activities

The UK government is looking to increase the resources available for individuals to get help regarding tax obligations and make information easier and faster to access:

- In the independent review of the sharing economy, the HMRC said it plans to produce targeted bespoke guidance for the sharing economy to be published online and it plans to explore developing an interactive tool (e.g. online calculator) to calculate the amount they need to report to HMRC. The HMRC plans to include social media channels e.g. YouTube videos and twitter in this information campaign.
- Expanding HMRC resources with 800 additional employees and seven-day service provision by 2017. Phone helplines will also be open on Sundays, with a dedicated line for new businesses and contractors (Wilkingson, 2016).

The ATO have an online page specifically for 'the sharing economy and tax' after they clarified tax obligations for the collaborative economy.

- The web page provides clarification as to what the collaborative economy is, and under what circumstances you qualify as a participant in the collaborative economy and thus for a tax obligation. There is also an online assistant to help with any questions participants of the collaborative economy may have.

Comparing the US, the UK and Australia's tax authority's Youtube channels may suggest the relative success of their campaigns, as of 25 May 2017:

- The US' IRS has 1,929 subscribers and the video on the collaborative economy has 1,929 views;
- The ATO has 8,454 subscribers, and a video on the collaborative economy has 2,311 views; and
- The HMRC has 13,287 subscribers, and although it lacks videos directly targeted at the collabroative economy, it has a range of videos to help the self-employed and small business. For example, 'Tax facts: working for yourself' has had 4,305 views, 'Am I employed or Self-Employed?' has had 476 views, and 'Your first self-assessment tax return' has had 104,350 views.

Although this may indicate a success at reaching a certain number of people, and thus improving provider awareness of tax obligations, it does not indicate if providers are paying the correct taxes or understand their obligations

Vienna information campaign launch in 'Turning the Sharing Economy into a Fair Economy in Vienna':

- *emphasised that existing regulation also applies to the sharing economy.* This includes local accommodation tax. The providers of short-stay private accommodation in Vienna are required to collect local tax and pay this to the municipal administration. A local tax account has been opened at the Municipal Department to collect these;
- *launches an information campaign*, to inform participants in the collaborative economy of the legal framework[42]; and
- *adjusts individual regulations to new development*. Vienna will amend the Vienna Tourism Promotion Act (WTFG) to introduce a new reporting obligation for platform operators as accommodation agencies.

[42] https://www.wien.info/media/files-b2b/share-economy-in-wien-stadt-wien-en.pdf

There is a general consensus in the literature to keep tax administration as simple as possible. OECD (2016) invokes the general rule that tax administration should not be an obstacle to tax compliance and goes on to discuss the Australian Tax Office as an example a good practice. The ATO operates a website which in simple terms explains any tax obligations that may accrue on income derived via collaborative economy activities. Wosskow (2014) recommends that tax-related matters be kept simple for the users, and that dedicated tax guides be developed to assist collaborative economy providers with their obligations.

Other studies focus on making tax compliance not only easy, but expedient. Oei and Ring (2015) recommend an array of strategies to ease tax compliance for collaborative providers. In the UK, Oei and Ring (2015) makes online taxpayer education one of their short-term strategy recommendations. Online tutorials, it is argued, have a good chance of reaching the target group, since the latter is composed of technologically literate users. Wosskow (2014) calls on the British tax authorities to create an online tax calculator that would enable users' easy calculation of their tax liabilities.

In conclusion, the collaborative economy is expected to generate a greater number of smaller amounts of income from individual participants and this is likely to increase the total costs of administering the tax system without further reforms. Governments are seeking to mitigate these costs both through partnering with platforms, either to remit data on taxable income or collecting the tax directly, and through digital reforms of the tax system, or both. We also find that complex tax administration practices can create uncertainty and a higher burden of compliance that could reduce participation in the collaborative economy. Many countries have also embarked on information campaigns, to raise awareness of tax obligations of those participating in the collaborative economy and increase clarity and transparency in the tax system.

4.4 The impact on government revenue – an illustrative simulation

The interest of the government as a tax collector in transactions between citizens is well documented in the literature on both traditional economy (e.g. Fleischer, 2010) and collaborative economy (e.g. Barry and Caron, 2015). The government, be it on the local or state level, aims to maximize tax revenue whilst minimising enforcement costs and encouraging compliance. In section 4.2 and 4.3 we outlined some of the issues and implications of the growth in the collaborative economy for governments that is seeking to achieve these objectives.

Collaborative economy activity may have two potential effects on tax revenue generated by the government. First, in the most basic scenario, collaborative economy businesses represent the delivery of entirely new products and services (i.e. additional economic activity that is not displaced from other sectors in the traditional economy). This may increase the existing tax base or generate a new tax base, boosting the potential tax yield for government.

However, as a result of the issues outlined in Section 4.2, the nature of the collaborative economy could lead to reduced tax take for the government. Furthermore, if the economic activity generated by the collaborative economy is simply displacing activity from traditional sectors, then the potential negative effect on

tax revenues is even greater. The level of any potential displacement is likely to be specific to each collaborative economy sector.

To summarise, we provide a purely illustrative example of how existing tax policy and administration design could impact on government revenues for a traditional business – in which the business employs drivers - and a collaborative economy business – in which the platform's app connects self-employed drivers with customers who book and pay online. We do this for i) income taxes and social security contributions ("social taxes") and ii) VAT in the case of the transport sector.

First, we outline the following simplifying assumptions for the traditional economy:

- The traditional company employs 100 taxi drivers.
- 50 drivers earn €50k in fares, 50 drivers earn €100k in fares[43].
- The traditional business retains a margin, which equates to 10% of fares. The balance is retained by the driver as earnings.

And the following simplifying assumptions for the collaborative economy:

- There are 100 taxi drivers on the platform.
- 50 drivers earn €50k in fares, 50 drivers earn €100k in fares
- The platform takes a 10% commission from fares earned by drivers. The balance is retained by the driver as earnings.

Earnings refer to salary for the employee, and business profits for the self-employed. For each group, the drivers have no other source of income (we ignore the fact that in reality car costs would fall on the driver in the collaborative economy and on the business in the traditional example, so effectively assume they are zero).

Additionally, we do not take into account the possibility that the income of taxi drivers in the traditional and collaborative case may differ (e.g. because in the latter case there is a number of part-time or occasional drivers), and we do not consider that there might be a different level of tax compliance in the two cases. We also make the following assumptions about the tax system:

- Income tax allowances and rates are the same for employees and the self-employed.
- Employee social security contributions are the same for employees and the self-employed.
- We assume no employer social security contributions.
- Employees' income tax is deducted at source.
- We ignore any impact of VAT on income tax liabilities and vice versa.
- We also ignore corporate income tax on both the taxi company and collaborative economy platform.

In summary, the purpose of this example is to show that for income taxes, even if there is no difference in tax burden between employed and self-employed individuals, there is a higher cost of compliance for the taxpayer and tax authority in the latter case. If platforms were asked to take on the collection role, this would not reduce the overall burden, but shift if from tax payers and tax authorities onto platforms. For VAT, the purpose of this example is to show that there is also an increased compliance cost for the collaborative economy, due to a greater number of small transactions, as

[43] These figures have not been based on any empirical assessment of average earnings for taxi drivers, and are assumed solely for illustrative purposes.

well as a significant loss of tax revenue for the government, depending on the levels of any VAT thresholds.

Income tax

Tax take
Each business earns a total of €7.5m in fares. The traditional business retains a margin of 10% and the collaborative economy platform retains a commission of 10%. Therefore, in both cases each driver retains 90% of their fares as earnings (as demonstrated in Figure 1). Because of our assumption that income and social security contributions are the same for the employed and the self-employed, the amount due is the same. If there was a difference in rates between the two then the amount of tax due would be different.

Tax administration
In the traditional business, one payroll report is filed for all employees and for all income and social security contributions. The employees do not file tax return. As a result, the tax authority reviews one return, probably adopting a risk-based approach i.e. the cost of managing tax collection will be outsourced.

In the collaborative economy, the tax authority must review 100 tax returns, and will probably not be able to adopt the same risk-based approach as it can with a large employer. In addition, the individuals must spend time filling in their tax returns. Therefore, the administrative and compliance costs may exceed that of in the traditional business example. The potential effects of misreporting of income are not taken into account in this example.

Figure 1: Illustrative example of impact on government revenues – income taxes and social security contributions

	• 100 drivers • Group 1: 50 earn €50k fares each • Group 2: 50 earn €100k fares each • Income and social taxes are the same for employed and self-employed.	• Drivers have no other source of income. • Employee income and social taxes deducted at source.
	Tax take*	**Tax administration**
Traditional economy	• Total fares = €2.5m + €5m = €7.5m • Business margin on fares = 10% x €7.5m = €0.75m • Net fares = €7.5m - €0.75m = €6.75m • Group 1: Each driver retains a €45k salary • Group 2: Each driver retains a €90k salary	• Employer: Files one return for all employees, for all income and social taxes. • Employees: File no returns. • Tax authority: Reviews one return.
Collaborative economy	• Total fares = €2.5m + €5m = €7.5m • Platform commission on fares = 10% x €7.5m = €0.75m • Net fares = €7.5m - €0.75m = €6.75m • Group 1: Each driver retains a €45k salary • Group 2: Each driver retains a €90k salary	• Employer: Files no returns. • Employees: File one return each. • Tax authority: Reviews 100 returns.
	The amount of tax due on income is the **same**.	The cost of collection is **higher** in the collaborative economy.

Conclusion
Based on our assumptions, the same amount of income and social security contributions is due for both businesses. However, the cost of collection is higher in the collaborative economy business for the same amount of tax. Currently, this cost is being borne by the tax authority. If this responsibility is shifted onto the platform, then it is likely that the administrative and compliance costs of tax collection will go up. This is because in reality collaborative economy providers may often have another source of income (contrary to our assumption above), and so will still need to file their own tax returns, even if the platform assumes responsibility to report what it pays. Whilst the application of technology in tax collection would reduce all transaction costs involved in taxation as a whole, this example likely reinforces the need for all three parties to play a role in each of these reforms, as shown in the example of Estonia's tax authorities partnership with Uber and Uber drivers in Chapter 3.

VAT
In the previous example we ignored VAT liabilities. We now incorporate this into our illustrative example, in order to demonstrate the potential effects of the collaborative economy on VAT revenues. We make the following additional assumptions about the tax system:

- VAT is charged at a rate of 20% over a threshold of €75,000.
- If the platform service is supplied from abroad, it is treated as a digital service and is subject to domestic VAT.
- The traditional business pays VAT on its revenue from customers.
- The collaborative economy platform pays VAT on its commission, and the drivers pay VAT if they are above the threshold.
- We assume VAT is levied on sales without considering any potential credit for purchases or business expenses.

Tax take
Again, each business earns a total of €7.5m in fares. The traditional business pays €1.25m VAT on this. It then charges a margin of 10%, as before, on fares net of VAT. The drivers then retain the remainder of their fares as earnings, with Group 1 retaining €37.5k each and Group 2 retaining €75k each (i.e. 75% of fares earned).

In the collaborative economy, only drivers that earn above €75k are required to pay VAT. Therefore, these drivers pay a combined total of €0.83m in VAT. The platform then charges a 10% commission, as before, on fares net of VAT. The platform will pay VAT on this commission (equivalent to €0.11m). Therefore total VAT paid in the collaborative economy case is €0.94m, less than the traditional business.

However, because Group 1 in the collaborative economy example are below the VAT threshold, they retain a higher proportion of their fares as earnings.[44] Therefore, although VAT revenue in the collaborative economy is lower, some of this loss will be partially made up for by higher income and social taxes on Group 1's higher earnings (assuming a progressive tax system).

Tax administration
In the traditional economy, as with income tax, the tax authority must review only one VAT return, and again can take a risk-based approach.

[44] This assumes that the platform on deducts commission on fares net of VAT (i.e. Drivers below the VAT threshold keep the entire VAT amount).

In the collaborative economy, 51 small VAT returns are submitted (50 from the drivers and 1 from the platform). Potentially all of these would need to be reviewed due to increased risk of accidental or wilful errors. There is likely to be a higher social cost of preparing the VAT returns, in addition to increased administration costs for the tax authority.

Figure 2: Illustrative example of impact on government revenues – VAT

	• 100 drivers • Group 1: 50 earn €50k fares each • Group 2: 50 earn €100k fares each • Income and social taxes are the same for employed and self-employed. • VAT charged at 20% above €75k	• Drivers have no other source of income. • Employee income and social taxes deducted at source.
	Tax take	**Tax administration**
Traditional economy	• Total fares = €2.5m + €5m = €7.5m • **VAT due from drivers in Group 2 = 20% / 120% x €7.5m = €1.25m** • Fares net of VAT = €6.25m • Business margin on fares net of VAT = 10% x €6.25m = €0.625m • Net fares = €5.625m • Group 1: Each driver retains €37.5k in earnings • Group 2: Each driver retains €75k	• Employer: Files one return for all employees, for all income and social taxes, and one VAT return. • Employees: File no returns for income or VAT taxes. • Tax authority: Reviews one income return and one VAT return.
Collaborative economy	• Total fares = €2.5m + €5m = €7.5m • **VAT due from drivers in Group 2 = 20% / 120% x €5m = €0.83m** • Fares net of VAT = €6.67m • Platform commission on fares net of VAT = 10%* x €6.7m = €0.67m • Net fares = €6m • Group 1: Each driver retains €44k in earnings • Group 2: Each driver retains €75k in earnings • **VAT due on platform commission = 20% x €0.25m =**	• Platform: Files no income returns and one VAT return. • Employees: File one return each. • Tax authority: Reviews 100 returns.
	The amount of VAT due is the **lower** in the collaborative economy, but the amount of income/social taxes may be slightly **higher**.	The cost of collection is **higher** in the collaborative economy.

10% commission has VAT added to it. The traditional economy drivers can set this VAT off against the VAT due on fares and so do not suffer a net cost. The collaborative economy drivers cannot because they are not VAT registered and so this VAT is a cost to them. Thus collaborative economy drivers retain €44k in earnings (this is calculated as commission of €250,000 multiplied by the VAT rate of 20%, giving €50,000 divided by 50 drivers, ie €1,000 each, which leads to earnings of €44,000).

Conclusion
In the case of VAT, if more activity moves to the collaborative economy, then tax take may be reduced and cost of collection may increase. The cost of review will also go up, as a result of smaller returns that are likely to be more prone to accidental or wilful errors. However, in our specific example, some of the VAT loss will be partially made up for with higher income taxes.

5 Effectiveness of tax incentives

In this Section, we analyse if tax incentives are used or not by firms. Since we have found very few academic papers linking specific tax incentives to entrepreneurship and information and knowledge of these incentives, we rely on the literature that highlights the information problems of tax systems as obstacles for economic agents to react optimally.

A necessary condition for the effectiveness of tax incentives is the existence of a positive impact of those incentives on entrepreneurial behaviour. However, as long as not all firms take advantage of these incentives, this is not enough to guarantee their effectiveness, or at least, their expected aggregate impact will not be maximized. Therefore, **the actual knowledge and use of these policies is key to assess their effectiveness**. Interesting questions in this context are: How well known are these tax incentives? How clear/complex is the system of tax incentives?

During the last years a number of studies have documented that lack of information, and understanding of tax systems affect the optimal decision of taxpayers. The existence of nonlinear schedules with notches, kinks, different thresholds, and many exemptions makes much more difficult to taxpayers to use tax incentives. We will review this literature, as long as it can help us to learn about the use and, in particular, the effectiveness of the tax incentives for entrepreneurial firms.

There is a growing literature that provides evidence that individuals are not able to react to taxes because of disinformation or complexity of tax system. Saez (2010) documents that, in general, taxpayers do not bunch at kinks of the tax schedule, as would be expected if marginal incentives were fully understood. Only among self-employed individuals he found bunching at the threshold of the first kink point of the Earned Income Tax Credit (EITC), where the tax liability starts. Among others, this result indicates not only that the knowledge of tax systems is not perfect, but also that learning about the functioning/regulation of the tax systems is costly. In particular, this cost could be larger in proportion for small business/entrepreneurial firms in comparison with large firms. It is in this regard that compliance costs of tax systems are seen as regressive with respect to the size of companies.

Using the same tax credit program, Chetty and Saez (2013) show that individuals who are eligible for the EITC adjust their income after receiving personalized information/advice regarding the specific tax incentives. Thus, the hypothesis of lack of information/knowledge seems to support their results. Using data at local level, Chetty et al. (2013) document an important heterogeneity in the knowledge of the EITC program's marginal incentive structure across regions in the United States. More specifically, they consider these differences in the local knowledge structure of the EITC and changes in EITC eligibility at the birth of a child, to estimate the causal relationship between the EITC and wage earnings. Concretely, they found that individuals in high-knowledge areas change wage earnings sharply to obtain larger EITC refunds relative to those in low-knowledge areas.

Despite expected differences in tax advice expenditures between individuals and firms, we think that, with caution, we can obtain some implications for firms, from the empirical evidence of the individuals' EITC use. Either due to lack of tax information or to lack of knowledge of the tax incentives from the firm's point of view (demand side of information) or to the complexity of tax systems that complicates the understanding of tax incentives (supply side of information), not all firms are able to fully exploit tax incentives. In the end, for our interest, these information problems interfere with the maximization of the effectiveness of the tax incentives originally designed to support entrepreneurship. The United States General Accounting Office documents that disinformation and complexity deter individuals to use tax incentives. In particular, United States General Accounting Office (2002) estimates that, in 1998, 1.8% (around 2.16 million) of tax returns overpaid federal taxes simply by not itemizing deductions. These returns claim the standard deduction, but taxpayers could have reduced their taxes if they had decided to itemize deductions like mortgage interest, mortgage points, state and local income tax payments, charitable contributions and real estate and personal property tax payments that exceed the standard deduction.

Specifically focusing on entrepreneurial incentives, Jacquemin and Janssen (2012), using a qualitative analysis, document that the background of the entrepreneur and the sector of activity matter for the use of the tax incentives to promote entrepreneurship, and, in particular, use the regulation as an opportunity. Moreover, they stress that the large amount of paperwork required to take advantage of the incentives sometimes prevents many entrepreneurs from applying for support. The same authors in a more recent study (Jacquemin and Janssen, 2015) reinforce the previous idea, with some theoretical predictions that claim that public policy interventions targeted to entrepreneurs could be used as an opportunity for entrepreneurs, as long as they are alert to the information regard to the public incentives.

All in all, either by misinformation, complexity or by the costs involved in the use of tax incentives, **the (limited) evidence suggests that entrepreneurs might not benefit from all of the existing tax incentives**.

Appendix 1

Evidence on positive spillovers of entrepreneurship

The market failures we have discussed in the previous section explain why there may be underprovision of entrepreneurship. The importance of such inefficiency is clear once we consider the crucial role played by entrepreneurship for economic growth, which has been emphasized by empirical analyses both at micro and at macro level.

Evidence at the micro level

In this Section we survey the empirical literature that has studied the contribution of small firms to the economy by employing micro data sets at the national level. This literature, which is very descriptive in nature, has been at the center of the policy debate surrounding the importance of small and entrepreneurial firms in advanced economies. We review the strands of the literature quantifying, almost from an accounting perspective, the contribution of small and entrepreneurial firms to aggregate employment growth and innovation.

a. The contribution of small (entrepreneurial) firms to employment growth

Entrepreneurship plays a crucial role in promoting economic development and employment growth. Early studies of Schumpeter (1921, 1942) highlighted the key role of entrepreneurship in fostering economic development and, in particular, employment growth. Based on Schumpeter ideas, and several subsequent empirical studies, a perception that entrepreneurial and small firms create most of the jobs in the private sector was popularly accepted. This rationale is behind policy initiatives that, during the last decades, international organizations and governments around the world have implemented in order to promote entrepreneurship. The Small Business Act (SBA) for Europe and the Small Business Innovation Research (SBIR) in the U.S are two clear policy examples of the promotion of small (entrepreneurial) firms' activity.

The main problem faced by the economic studies that explore the relationship between entrepreneurship and job creation, is **how to define the concept of entrepreneur** (features that ideally characterize it) and also how these characteristics can be identified in the available databases. For example, the size and/or the age of firms are two of the main variables used to identify entrepreneurial firms. But, depending on which of these two dimensions is considered, results can vary considerably. In addition, should innovation be considered in the definition of an entrepreneurial firm? Is innovation the main difference between entrepreneurial and non-entrepreneurial firms? We will return to these questions – which have already been addressed in Chapter 1- later in this Appendix.

In particular, **the negative relationship between firm size (as a proxy of entrepreneurial firms) and job creation has been the subject of many empirical studies in recent years.** Among others, the debate has focused on the following issues: i) suitability of databases used; ii) statistical problems (size classifications and regression to the mean behavior); iii) sectors considered (manufacturing versus the entire economy); iv) problems to distinguish between net and gross job creation; and v) type of jobs created and destroyed (that is, quality of net job created as a measure of benefits of job creation).

This empirical literature begins with the seminal contributions by Birch during the Eighties (i.e. Birch, 1979, 1981 and 1987). In these works he claimed that **small firms were responsible for most of the job creation in the U.S. economy**.

Specifically, Birch (1979) found that, during the first half of the Seventies, about 60 percent of jobs in the US were created by small firms (defined as those with 20 or less employees) and around 50 percent of all jobs were created by small entrepreneurs, while large firms (those with more than 500 employees) generated less than 15 percent of all new jobs in the US. Adopting a regional/urban perspective, Birch (1981) documented, for the 1969-1976 period, which regions create and destroy jobs. He found that the main difference in net job creation came from the creation side, given that the destruction of employment was pretty stable across regions. Despite this general result, Birch also found that the most dynamic cities in terms of net job creation are also the cities in which more firms fail. He interprets this finding saying: "*The more dynamic the local economy (e.g., Houston) the greater the risk-taking and the greater the proportion of firms that fail*" (page 7). Analyzing the first half of the Eighties, Birch (1987) confirms his previous result, that is, **small firms were responsible for more than 88% of the overall employment growth**. However, he also documents that small firms grow more rapidly, show more adaptability and run greater risks of failure, and thus, **job security in small firms is lower** in comparison with jobs created by large firms.

In spite of the impact they had on policy makers, as well as in academic terms, **these studies were subject to criticism.** In particular, Davis et al. (1996) criticize Birch's studies, especially as regards the calculations/methodology. More specifically, they are critical about: i) the size classification (defined by number of employees) at the base year to infer the relationship between firm size and job creation; and ii) the failure to distinguish net and gross job creation that distort the job creation by large employers. At the end, these authors argue that Birch's results upward bias the contribution of small firms to job creation due to the fact that **calculations are subject to a "regression fallacy", because firms can migrate between size categories from one period to the next**. Davis et al. (1996) using Census data from 1972 to 1988 found **that large firms and plants, in the manufacturing sector, led the creation and destruction of jobs in the U.S**. Davis et al. (1996) also develop a very flexible methodology to construct measures of job creation and destruction at plant level, which can be used to account gross and net job creation and destruction at other levels, such as different types of firm (i.e. classified by age or size) or an industry level.

After these conflicting results, an increasing number of papers focused their research on **the relationship between firm size and job creation at establishment/firm/industry level**. In general, most papers corroborate Birch's findings, that is, **small firms tend to contribute more than large firms to job creation** (e.g, Baldwin and Picot, 1995; Boresma and Gautier, 1997; Voulgaris et al., 2005; Hijzen et al., 2010; Neumark et al., 2011 and Muller et al., 2016)[45]. In particular, using the methodological improvements proposed by Davis et al. (1996), to overcome some of the statistical problems present in the seminal Birch's analysis[46], Neumark et al. (2011) find that 1992-2004 net job creation in the U.S. economy is high for the smallest firms and decreases with size, although their results are less striking than those of Birch. Neumark et al. (2011) also show that their results are robust to considering the whole economy or the manufacturing sector only. More concretely, they use a database that includes not only manufacturing sector (as in Davis et al., 1996) but sectors such as ICTs (Information and Communication Technologies), in which entrepreneurial start-up firms could play an important role in

[45] For more detailed survey of this literature see chapter 2 of Muller et al. (2016).
[46] They compute net job creation using base year firm size (as in Birch's studies) and average firm size, as suggested by Davis et al. (1996). In addition, Neumark et al. (2011) also aggregate net job creation at firm level, as well as, at establishment level.

job creation, especially during the internet revolution in the last two decades. Overall, Neumark et al. (2011) corroborate Birch's results, even after acknowledging that Davis et al.'s methodological concerns were well grounded.

A recent study of the OECD-*DynEmp* project (Criscuolo et al., 2014) analyzes the role of size and age distribution of firms into job creation. Using data for 18 countries (17 OECD countries and Brazil) for the 2001-2011 period, they found **a positive contribution of young firms (less than five years) to job creation.** This positive effect is mainly explained by new entries, followed by the expansion of young existing firms (less than three years). These average results hide differences along time and across countries. Cross-country averages show a sharp decrease in the contribution of young firms to job creation with the onset of the international crisis, although their overall contribution is positive. At the same time, **cross-country differences are much more complex to explain.** These authors highlight that productive/industrial structure, key sectors of activity in different countries, as well as institutional and policy settings (such as regulation or employment protection legislation) could play an important role at the time of explaining the job creation process. However, they empirically document, for all countries, that **young firms are more likely to exit but, conditional on survival, they grow more than older firms**.

Haltiwanger et al. (2013) introduce an additional element to the debate challenging the previous empirical results of the relationship between firm size and employment growth/job creation, especially, those presented in Neumark et al. (2011). They highlight the importance of firm age and in particular, firm births. First, their results support Neumark's findings of a negative relationship between firm size and job creation, but these results only hold when there is no control for firm age. However, **when a control for firm age is added, the negative relationship between firm size and net job creation vanishes.** They also stress that the crucial role of firm age is associated with firm births, which is the key element that contributes to gross and net job creation. They argue this is because, in general, new firms are small. Therefore, **the negative link between firm size and net job creation found in previous analyses is fully attributable to the fact that most new firms are classified as small.** Haltiwanger et al. (2013), conclude that **policies that target firms of a certain size, ignoring the age of firms, will likely have limited success** in creating jobs in net terms. These results bring us back to the debate about the definition of entrepreneurial firms.

Decker et al. (2014), based on Haltiwanger et al.'s findings, delve into the relationship between entrepreneurship and job creation. They maintain that age better represents entrepreneurial firms, rather than size. Concretely, they state that "new business" and, in particular, start-ups and new firms (excluding new establishments of existing firms) should be the focus to measure entrepreneurial behavior. In addition, there are differences within this category of start-ups/new firms; Schoar (2010) defines "subsistence" entrepreneurs and "transformational" entrepreneurs. **Subsistence entrepreneurs** are those who create a new business generating employment for the entrepreneur and perhaps few more jobs, and these businesses do not usually grow. On the other hand, **transformational entrepreneurs** create a small business (start-up) with the intention to innovate and grow and, then, create employment and value added for the economy. She argues that the differences between those two types of entrepreneurs must be clearly understood, otherwise many policy interventions may have unintended effects and may even have adverse consequences for the economy. Based on this classification, Decker et al. (2014) highlight that when people argue about the key role of entrepreneurs in job creation and economic growth, they are thinking about transformational rather than subsistence entrepreneurs. Then, focusing on start-ups and young firms they study the link between entrepreneurship and job

creation. They document that these start-ups immediately contribute to job creation. However, a small portion of these start-ups succeeds and grows, such that only a small fraction of young enterprises disproportionately contribute to job creation and economic growth. **This result challenges the common view of politicians and policymakers that the promotion of entrepreneurial firms also encourages job creation.** They conclude that the study of this relationship is a noisy and complex problem, since there is not a good measure of the entrepreneurial activity.

In short, this branch of the literature takes us **back to the discussion about how we can identify in the data entrepreneurial firms** in order to empirically test Schumpeter's ideas about the key role of entrepreneurship in fostering economic development and, in particular, employment growth.

b.The contribution of small (entrepreneurial) firms to innovation

Again we return to Schumpeter's concerns about how capitalist competition influences economic growth and, in particular, how competition could affect economic growth/social welfare through innovation.

In the economics of innovation literature, there is a long tradition of research on the relationship between R&D and firm size. **Most empirical studies support a positive link between R&D and firm (business-unit) size** (Cohen, 2010). The most reliable and widespread explanation for this positive relationship seems to be cost spreading. However, Cohen and Klepper (1996) also suggest that this advantage of cost spreading is not inherent to size, and it arises from two conditions: i) appropriability conditions, that limit firms to profiting from their innovations through their own outcome rather than by, for example, selling/licensing them; and ii) the size of the firm typically limits the firm growth as a consequence of an innovation. If large firms privately benefit from R&D cost spreading, it is interesting to know whether this transforms into a social welfare benefit. As Cohen (2010) suggests, at least there are two reasons why apparently there is no social gain. First, the dynamic effects of R&D cost spreading -as firms grow, firms have more incentives to pursue more innovation, independently of the technological opportunities available at each point in time- then, and depending on the entry conditions, some technological opportunities will not be exploited, implying social welfare losses. Second, as firms grow large in a market, the number of firms in that market declines, *ceteris paribus*. If technological diversity is associated with a larger number of firms within an industry, the decline in the number of firms could negatively influence technological diversity and, then, affect the rate of these industries' technical advance[47].

In short, most of analyses seem to establish **a positive statistical relationship between entrepreneurship (measured in different ways) and innovation**. However, **the empirical literature is not so clear in identifying a causal relationship** between these variables. Hence, as highlighted by Holtz-Eakin (2000), empirical evidence seems not to be sufficient to give support to preferential treatment to entrepreneurs, at least, by the benefits, in terms of innovation, these public policies seem to generate.

[47] For more evidence on technological diversity and technical advance, among others, see Porter (1990) and Scott (1991).

Evidence at the macro level

The literature studying economic growth has emphasized the relevance of investment-driven innovation, externalities from innovative activities and creative destruction (Romer, 1990; Aghion and Howitt, 1992). In this set-up, the market equilibrium might not be efficient, opening the door to welfare enhancing policies that promote entrepreneurship and innovation. In this Section we will first briefly review these theories. Then, we turn to the empirics analyzing the effects of entrepreneurship on growth. Since cross-country regressions are flawed with simultaneity and omitted variables biases, the review will pay special attention to the literature that exploits variation in entrepreneurship across regions and cities within a country. We start by reviewing the literature that has tested and quantified **the effect of entrepreneurship on economic growth.** Then, we look at **innovation**, which is the main channel through which, according to theory, entrepreneurship affects growth.

a. The effect of entrepreneurship on economic growth

Technological change has been a central concept in the literature studying economic growth. In the highly influential Solow's (1956) model, income growth is explained by the accumulation of factors of production (capital and labor) and by (exogenously given) technological change. Solow (1957) shows that a significant portion of economic growth cannot be explained by factor accumulation and attributes this (residual) growth to technological change. Romer (1986) placed knowledge spillovers at the core of the endogenous growth theories. In the model, there are decreasing returns to capital accumulation at the firm level if labor is considered to be a fixed input. However, in Romer's (1986) model, the investment carried out by one firm increases the productivity of all other firms in the economy. This externality is modeled in such a way that there are social constant returns to capital accumulation that cause growth in the long-run. Later on, Romer (1990) considers the production of knowledge more explicitly. Specifically, he considers a two-sector economy where the final output sector uses the R&D sector output as an input. While the final good sector is competitive, each firm in the R&D sector has some market power over its output. Free-entry determines the R&D effort of the economy and long-run growth as a consequence. One message emphasized by the Romer's (1990) model is that economic growth ultimately depends on the size of the R&D sector, and on its ability to increase productivity in the economy. Aghion and Howitt (1992), Aghion et al (1997) and Aghion et al (2001) develop similar ideas in models that formalize the notion of creative destruction of Schumpeter (1921)[48]. In these set-ups, entrepreneurship can be seen as the ability of an economy to create innovative firms that sustain productivity and economic growth in the long-run (Acs and Audretsch, 2003; Michelacci, 2003; Audretsch, 2007).

Despite the huge policy interest in this topic, we still have limited knowledge on the empirics of entrepreneurship and economic growth. The early empirical literature used country-level data to assess the relationship between entrepreneurship and growth (see, e.g., Audretsch and Thurik, 2002). Again, as the awareness within the economics profession that cross-country analyses are plagued with simultaneity and omitted variable biases grew, the most recent literature has turned to subnational data to shed light on this relationship. People are more mobile between cities within one country than between countries. If mobility is not too low, then individual utility should be equalized across space (Roback, 1982; Glaeser, 2008). This spatial

[48] Baumol (1990) emphasizes the selection of high talented individuals into productive entrepreneurship and rent extraction. According to this author, prosperous economies are those in which the most talented individuals are not selected into rent extractive activities.

equilibrium concept implies that more prosperous cities should experience higher population growth rather than higher income per capita growth. Hence, when working with city or regional data, at the empirical level the concept of economic growth is best captured by employment or population growth. By and large, this is the empirical approach adopted by most of the literature studying entrepreneurship and growth using subnational data.

Both Glaeser et al. (1992), Glaeser and Kerr (2009) and Glaeser et al. (2010) document **a very strong and negative correlation between establishment size (a proxy for entrepreneurship) and subsequent employment growth**. This correlation is robust and is obtained using different industry and city definitions and for different time periods. These analyses are thus consistent with the notion that entrepreneurship is a factor that contributes to economic prosperity. However, the correlations reported in Glaeser et al. (1992), Glaeser and Kerr (2009) and Glaeser et al. (2010) lack causal interpretation. The main concern is that entrepreneurship might not be the cause of economic growth, but a consequence of it**.** In a recent and very influential paper, Glaeser et al. (2015) go a step further by documenting that the negative relationship between average establishment size and city level growth is actually a causal one. That is, that **entrepreneurship causes employment growth.**

Chinitz (1961) performs a careful comparison between the characteristics of industries of New York and Pittsburg. In contrast to New York light industries such as garment manufactures, Pittsburg was dominated by the steel industry, with large companies and relatively few entrepreneurs. Following this narrative, Glaeser et al (2015) use the proximity to historical mines to predict current average establishment size for US cities. The rationale is that mines and heavy industries (such as the steel) tend to locate together, creating an environment with large (capital intensive) firms in the mining and manufacturing sectors. This tradition of large companies in town persists today and cities that are close to historical mines are still today characterized by a low presence of small firms (entrepreneurship). The paper follows an instrumental variables' strategy. Specifically, the presence of mineral and coal deposits in 1900 is used to instrument for average firm size and employment share in start-ups in 1982. Interestingly, the positive relationship between deposits in 1900 and firm size in 1982 also holds if one only considers industries that are not directly related to mining and manufacturing industries (e.g. services and finance), suggesting that entrepreneurial culture is a key determinant of regional differences in entrepreneurship. According to the instrumental variables' regressions based on 291 city-level observations, a one standard deviation increase in the city's average establishment size, deters employment growth between 1982 and 2002 by 0.61 to 0.88 standard deviations. Similarly, a one standard deviation increase in the employment in firms with less than 5 years is associated with a 0.25 to 0.35 standard deviation increase in local employment growth in the 1982-2002 period. The paper further documents that this differential employment growth is driven by the up-or-out process described by Haltiwanger et al (2013) by means of which small firms either die or grow. That is, not all small firms grow more in more entrepreneurial cities. Instead, there is more firm-churning and **a few new and successful firms are responsible for the higher employment growth in these cities**.

A similar exercise has been conducted by Fritsch and Wyrwich (2016). The authors study the effect of entrepreneurship on employment growth using data from 71 German local labor markets. The former East Germany is not considered in the analysis given the particular history of the region during the 20th century. The dependent variable in the main analysis is employment growth between 1976 and 2010. The main explanatory variable measures entrepreneurship and is defined as the share of the labor force in self-employment in 1976. To circumvent endogeneity and

omitted variables' concerns, the authors follow Glaeser et al (2015) and make use of an historical instrument. Specifically, the authors instrument entrepreneurship in 1976 with the same entrepreneurship proxy measured in 1925. In terms of instrument validity, the historical setting makes the instrument particularly appealing given the enormous economic shocks experienced by German regions between 1925 and 1975. In terms of instrument relevance, the authors document that a one percent increase in the rate of local entrepreneurship in 1925 increases the rate of entrepreneurship in 1975 by 0.5 percent. Hence, the degree of persistence is quite high given the length of the time window and the economic and social turmoil occurred between 1925 and 1975. This high persistence in entrepreneurship rates between 1925 and 1975 suggests that there is a strong cultural aspect behind regional and local entrepreneurship rates. As for the effect of entrepreneurship on economic growth, the results indicate that **increasing entrepreneurship** by one percent **increases employment growth** over 1976 to 2010 by 0.7-0.9 percent. Hence, the results are quantitatively significant. The results are robust to a large number of robustness checks and alternative variables' definitions. In this paper, estimates are also presented for GDP per capita growth. Here, the results also show that a more entrepreneurial culture also leads to more income per capita growth.

Overall, the results confirm that more entrepreneurial cities and regions grow more in the long-run, suggesting that **entrepreneurship is a key determinant to understand the different fate of cities and regions**, even in areas with integrated legal and fiscal systems.

b. The effect of entrepreneurship on innovation

The literature has shown that entrepreneurship leads to economic growth. However, it is silent about **the exact mechanisms through which entrepreneurship leads to economic growth at the city level.** Despite innovation being the primary suspect, and the underlying cause of economic prosperity in the endogenous growth theory (see Romer, 1990 and Aghion and Howitt, 1992), we do know surprisingly little about the relationship between entrepreneurship and innovation at the city level.

Faggio and Silva (2014) is the only study that we are aware of that directly relates measures of entrepreneurship and innovation at the local level. Specifically, the analysis deals with British Travel-to-work areas that capture economically integrated areas. Among other things, the paper regresses innovation (proxied by the share of firms which engage in innovation) and proxies for entrepreneurship measuring the percentage of self-employment and firm owners in the labor force. The findings of the paper show that once the economic conditions of the area are taken into consideration, **more entrepreneurship is associated to more innovation**. In any case, it has to be kept in mind that this relationship is only a correlation. That is, that innovation could be the cause as well as the consequence of entrepreneurship.

Two important studies analyzing the relationship between entrepreneurship and innovation are Agrawal and Cockburn (2003) and Agrawal et al. (2010). The message conveyed by these papers is that the relationship between entrepreneurship and innovation at the city level is a complex one. One important source of knowledge is **university research**. Hence, one aspect of entrepreneurship is **the ability to convert R&D university spending into innovative start-ups** (Hausmann, 2013). Agrawal and Cockburn (2003) study the conversion of local upstream university research into local downstream industrial R&D activity. They show that having a large "anchor tenant" firm, namely, a large innovative firm in the field(s) in which the university specializes is key to convert university into industrial R&D. Specifically, the anchor tenant firm creates local externalities that benefit small innovative firms

around. Hence, the results of Agrawal and Cockburn (2003) suggest that **a mix of innovative firm sizes is optimal in terms of maximizing the performance of the regional innovation system.** Note that this mix of large and small innovative firm is a defining feature of the Silicon Valley, the most innovative and entrepreneurial location in the world. In a complementary paper, Agrawal et al. (2010) focus on innovation rates in "company towns", that is, a city in which innovation is concentrated in a single large firm. The authors show that the innovation activity of the large firm in this company town is not particularly influential (measured by citation counts). However, there is no evidence that the innovations in small firms in these company towns have smaller impacts.

One last consideration regarding the connection between entrepreneurship and innovation is the (particular) geography of innovation. In fact, **innovation, measured by patents, is far more concentrated than any other economic activity.** In the US, for example, patents are extremely concentrated geographically in specific cities such as San Francisco and Boston (Chatterji et al, 2013). This suggests that knowledge spillovers are particularly important in these activities creating a tendency for them to cluster geographically. Additionally, the literature has shown that high-tech start-ups are disproportionally created in large and diverse cities (Henderson et al., 1995; Duranton and Puga, 2001; and Jofre-Monseny et al., 2014). Hence, given the existing evidence, it seems that innovation at the city level is more tightly connected to city size and the innovation clusters than to entrepreneurship.

Evidence on negative spillovers of entrepreneurship

The evidence reviewed above indicates that entrepreneurship contributes positively to the economy. Nevertheless, its positive effects do not benefit all members of society in the same fashion. Thus, entrepreneurship might have negative effects on inequality. Firstly, we will examine inequality at the individual level and, secondly, will analyze the effects of entrepreneurship on regional inequality.

a. **Effects of entrepreneurship on inequality at an individual level**

Quadrini (1999, 2000) uses household level data to study the relationship between entrepreneurship and income and wealth inequality, as well as the connection between entrepreneurship and income and wealth mobility. Specifically, this author uses two household-level data from the US: The Panel Study of Income Dynamics (PSID) and the Survey of Consumer Finances (SCF). A well-known stylized fact is that wealth is much more concentrated than income. For instance, according to the PSID data for 1984, Quadrini (1999) reports that the top 1% concentrates about 7.5 and 30 percent of income and wealth, respectively. Quadrini shows that taking entrepreneurs into account is key to explain this fact. He first documents that entrepreneurs' households have higher income. While entrepreneurs represent about 14 percent of all families, they accumulate around 25 percent of all income. Remarkably, entrepreneurs' households accumulate 46 percent of all wealth. The underlying explanation for this higher wealth to income ratio for entrepreneurs is the higher tendency to save, which has been interpreted as evidence of borrowing constraints on the part of entrepreneurs (Cagetti and de Nardi, 2006; Fairlie and Krashinsky, 2012).

While these figures suggest that entrepreneurship contributes to income inequality and is the main driver of the enormous existing wealth inequalities among households, the data also points out that entrepreneurship contributes positively to income mobility. That is, entrepreneurship reduces the persistence of economic status over time. Specifically, Quadrini examines 5-year changes in wealth by considering workers and entrepreneurs and three wealth

categories. Four types of households are considered: staying workers and staying entrepreneurs, switching workers (workers than become entrepreneurs) and switching entrepreneurs (entrepreneurs that become workers). Quadrini shows that upward mobility within the wealth distribution is more frequent for stayer entrepreneurs and switching workers than it is for staying workers and switching entrepreneurs. That is, both surviving entrepreneurs and new entrepreneurs are able to increase their relative position within the wealth distribution. **This suggests that being a successful entrepreneur is one important channel by which individuals and households are able to move to the top of the income and wealth distributions as the Forbes list of the richest men evidences.**

b. **Effects of entrepreneurship on inequality at the regional level**

There are significant differences between cities and regions in terms of entrepreneurship both in the US (Glaeser et al., 2010) **and in Europe** (Barreneche García, 2014). Moreover, the identification approach used in Glaeser et al. (2015) and Fritsch and Wyrwich (2016) indicates that **regional differences in entrepreneurship are very persistent over time and are one of the main drivers of spatial income inequality. In terms of policy, this implies that entrepreneurship can have long-lasting effects. On the other hand, it also suggests that it might be hard for a region to become more entrepreneurial.**

What explains the high persistence in entrepreneurship at the local level? The study conducted by Stuerzer et al. (2016) suggests that entrepreneurship culture is a key factor. Using historical data from the UK, this paper assesses the degree of persistence in entrepreneurship in 143 UK regions. Within an instrumental variables' approach, the paper tests the Chinitz (1961) hypothesis by regressing measures of current entrepreneurship on the employment share in large-scale industries in 1891. Similarly to Glaeser et al (2015), distance to coalfields is the variable used to instrument the employment share in large-scale industries in 1891. The most interesting contribution of the paper comes from using different measures of current entrepreneurship. The first two measures are the self-employment rate and the start-up rate in 2011. The third measure is instead a proxy for entrepreneurial culture based on individual level data on personality traits drawn from a large study conducted by the BBC. The personality traits of entrepreneurs are well documented in the literature as particular combinations of the big five (high values in Extroversion, Conscientiousness and Openness to experience and low values in Agreeableness and Neuroticism). The authors compute the prevalence of entrepreneurial types at the regional level to build a measure of entrepreneurship culture at this geographical level. The results indicate that the prevalence of large-scale industries in 1891 impacts negatively the percentage of people with entrepreneurial traits today. This result suggests that being an entrepreneur can be learnt, at least, when it comes to personal traits.

Another important piece of empirical evidence regarding the role of entrepreneurial culture is Guiso et al. (2015). These authors use Italian data both at the province and local labor market levels. One first result they obtain is that the probability of becoming an entrepreneur, conditional on entrepreneurship density in the current location, depends positively on the entrepreneurship density in the location where the individual grew. The effects are substantial. Raising the entrepreneurship density in the area where the individual grew by one standard deviation increases the probability that the individual becomes an entrepreneur by 1.5 percentage points. This effect is large as it amounts to 8% of the sample average. The second result is that entrepreneurs that grew up in areas where entrepreneurship density is high do better as entrepreneurs. Specifically, a one standard deviation increase in entrepreneurship density at the location where the entrepreneurs grew is associated with an 8%

increase in the entrepreneur's income level. Thus, the results of this paper reinforce the notion that culture is an important factor in explaining cross-sectional differences in entrepreneurship density as well as its persistent patterns over time.

Another possibility behind the spatial differences in entrepreneurship density is differences in conditions related to the benefits and costs of entrepreneurship. The analysis for the US and Europe conducted by Glaeser et al. (2010) and by Barreneche García (2014) suggests that not much of the variation can be explained by observables capturing benefits and costs differentials, although socioeconomic characteristics such as education and the industry mix do matter.

Credit rationing is an explanation that is often put forward as a barrier to entrepreneurship. One approach adopted by Michelacci and Silva (2007) consists of examining the local bias in entrepreneurship. First, these authors document that in Italy, the percentage of entrepreneurs that work in the region where they were born clearly exceeds the analogous figure for dependent workers. Specifically, the percentages of local entrepreneurs and dependent workers are 79 and 72%, respectively. The authors show that this pattern is not driven by business passed down from parents to children. The paper also documents that firms owned by local entrepreneurs are larger, more capital-intensive and are more leveraged. These results suggest that local entrepreneurs have better local financial opportunities. One explanation is that local knowledge reduces information asymmetries leading to credit rationing. An alternative explanation is that moral hazard problems are reduced by peer monitoring at the local level. In any case, there are two important conclusions coming out from this study. First, credit-rationing matters for entrepreneurship, implying that policies aimed at reducing moral hazard and asymmetric information can enhance entrepreneurship and welfare. Second, the results of this paper also imply that differences in financial development, as those documented by Guiso et al. (2004) for Italy, can explain differences in entrepreneurship and long-run economic growth.

Samila and Sorenson (2009) also provide (indirect) evidence that access to finance is a factor hampering entrepreneurship in the US, where the level of financial development is often assumed to be the highest. Using data from 329 Metropolitan Statistical Areas, covering the 1993-2002 period, the study documents that venture capital funds promote employment and income (aggregate wage bill) growth. The cross-sectional ordinary least squares estimates indicate that the availability of venture capital has a large effect on employment growth. Specifically, doubling the size of the local venture capital sector, increases employment by 0.09-0.61% and aggregate income (wage bill) by 0.35-2.73%. Consistent with ex-ante expectations, the fact that the estimated effects are larger for income than for employment suggests that venture capital promotes the growth of high-pay firms. Although the qualitative effects are robust to the inclusion of metropolitan areas fixed effects and metropolitan areas specific time trends, the quantitative effects become much smaller in these more complete specifications. Finally, the authors adopt an instrumental variables' approach to deal with the possible simultaneity bias caused by venture capital flowing to cities where future economic growth is expected to be the highest. To instrument for the local availability of venture capital funds, the authors use time variation in the returns of college and university endowments. The results confirm that indeed more available venture capital funds promote employment and income growth at the city level.

To sum up, the literature has identified enormous differences in entrepreneurship rates across regions within countries. Moreover, these differences are very persistent over time. Although we know little about the causes of regional differences in entrepreneurship, two important causes

identified in the literature are the entrepreneurial culture as well as the development of the financial sector. This last point suggests that a market failure, namely credit rationing is one factor hampering entrepreneurship.

Chapter 3 Tax Policy experiences

1 Rationale for selection of case studies and their relevance

In this section, we present six detailed examples of how countries have developed tax design and administrative practices in the area of entrepreneurship and the collaborative economy. We have selected case studies based on their ability to exemplify the key relationships we have uncovered between entrepreneurship, the collaborative economy and key margins of taxation, which were discussed in Chapter 2. To select these cases, we have used a series of criteria, which are described in detail in the Appendix to this Chapter. The most relevant ones are the following:

- Interesting and innovative solutions that address issues or opportunities raised in our literature review;
- Analysis of the tax structures to ensure a range of different tax structures are presented;
- The government's political and economic objectives to present how different governments may wish to respond; and
- These case studies have shown some early signs of success from their respective approaches.

Entrepreneurship case studies

1. Denmark

- Denmark showcases the interdependence between tax design and tax administration. Its key contribution to our study is twofold. First, to highlight the importance of policy continuity. Second, to underscore the benefits of complementing a well-calibrated tax design with tax administration that aids compliance costs.
- Denmark has introduced Skattekreditordningen, a volume-based R&D credit for loss-making firms that aim at innovation in products and services. Its key contribution to our study is to highlight a good practice, the targeting of cost frontloading, a significant inhibitor to growth for innovative start-ups.
- Denmark has consistently sought to support innovation through the use of accelerated capital amortisation, a tax design that according to section 3.3 in Chapter 2 allows for the cost of capital to drop below the no tax benchmark. However, despite the general acceptance of the tax feature as a good practice, its key contribution to our study is to highlight a caveat of the Danish tax system: the neglect limit access to tax credit to young and innovative SMEs.

2. Italy

- The choice of Italy as a case study allows for the investigation of a plethora of features of tax design, including but not limited to the use of tax credit, allowance for corporate equity, presumptive taxation and patent box. Its key contribution to our study is to highlight that an uncertain legal environment significantly impedes on entrepreneurship growth.
- Italy has introduced the use of an allowance for corporate equity, whose structure fits closely to the best practices as described in Chapter 2. Its key characteristics are carry forward flexibility, the option to convert unused allowance into tax credit and anti-avoidance legislation. Empirical evidence

supports the literature review by pointing to the positive effect of the instrument over reduction in firms' leverage.

- Italy has actively sought to boost entrepreneurship through the use of a mix of simplified tax regimes – *studi di settore; regime forfetario*; *regime di vantaggio* – and VAT thresholds. Empirical evidence supports the findings of Chapter 2, underscoring that VAT thresholds are not well-suited to boost entrepreneurship growth. Moreover, legal uncertainty and misperceived estimates of firms' turnover used in *studi di settore* result in high compliance costs that dampen entrepreneurship growth.

3. Latvia

- Latvia provides an interesting case of the use of flat tax, the introduction of which increased the top marginal income tax rate in the country. Its key contribution to our study is to investigate the impact of the flat tax over entrepreneurship and innovation. However, despite suggestive evidence of the Latvian flat tax having a positive effect over the economy, the Latvian case study fails to further the findings of Chapter 2.
- Latvia has introduced its Microenterprise tax, a tax feature that involves simplified accounting requirements and a reduced tax rate for Micro-business aimed at supporting entrepreneurship and fight informality. Investigation of this instrument complements Chapter 2 by highlighting the importance of implementing an anti-abuse framework and restricting the benefits to innovative micro-enterprises.
- Latvia has actively sought to support entrepreneurship via the use of amortisation of expenses linked to R&D practices. Despite limited empirical evidence on the impact of this tax feature on Latvian entrepreneurship, its key contribution is to highlight the centrality of this particular tax design towards supporting innovation (in line with Chapter 2) and its popularity across EU Member States.

Collaborative economy case studies

1. Estonia

- Estonia provides an important model for how the tax administration framework can be streamlined through the application of digital. Its key contribution to our study is to highlight that digitizing tax administration systems can especially help to facilitate the payment of tax liabilities that accrue from collaborative economy activity, and it can help to provide the basis for targeting new tax design approaches at these individuals.
- Estonia has leveraged its "E-Estonia" (the government's program to provide all services and transactions electronically) refoms to trial automated tax payments for transactions in the collaborative economy and to propose new tax policies focussed on "individual entrepreneurs" that are prevalent in the collaborative economy. Estonia's digital approach to tax administration has been complemented by a competitive environment, ranking 1st on the International Tax Competitiveness Index (ITCI), and has helped to secure a flow of tax revenues to the government, with simplicity and flexibility for users.
- Estonia has actively sought to partner with collaborative economy platforms as part of these measures and has encouraged the growth of the collaborative economy beyond the tax system. Estonia's approach has been praised by the European Parliament, and represents a promising model for other member states to follow.

2. France

- The case of France highlights the tax design and administrative tools available to Member States to raise a higher level of tax revenues from the collaborative economy.
- France has taken a more sceptical approach to the collaborative economy, the rationale for its measures has been to create a level playing field with tax liabilities due in the "traditional" economy. On tax design, France has proposed explicit measures to extend the relevant tax code for income tax and social security contributions to providers within the collaborative economy. On tax administration the "Terrasse" reforms mandated collaborative economy platforms to remit income data on their users to the tax authorities, in fact France is the first country to partner with Airbnb to facilitate payment of city occupancy taxes on a nationwide basis.
- The impact of France's more restrictive approach cannot be conclusively assessed yet but early evidence points to mixed success. Initial evidence suggests France's partnership with Airbnb has not come at the expense of hosts' participation. However, many collaborative economy platforms have reacted negatively to wider tax reforms, arguing that new inequalities will be introduced in the tax system, for example with social security reforms failing to distinguish between income and cost sharing.

3. UK

- The UK provides an important model for how encouragement of the collaborative economy can be achieved both through generalised and sector-specific tax policies measures, whilst highlighting that digitization in order to reduce the burden of tax administration can also go hand-in-hand with strengthening tax compliance, which our review has found to be particularly relevant issue for the collaborative economy (see section 4.3, Chapter 2).
- The UK has proposed what has been described as, "the world's first sharing economy tax break" and has introduced sector-specific tax allowances for peer-to-peer accommodation and collaborative finance sectors. The UK is set to roll out individual digital tax accounts, to be implemented by 2020, whilst strengthening tax compliance within the "hidden economy" through "Big Data" analysis and enhanced collection of digital transactions.
- Whilst the majority of these measures are still being introduced, they have supported the UK's broader positive policy stance on the collaborative economy – the government is aiming to become "the global centre" of the movement – that has helped the UK become a major hub of the collaborative economy activity in Europe.

2 Policy experiences and case studies on taxation and entrepreneurship

2.1 The European Commission's Agenda for entrepreneurship

Small and medium enterprises (SMEs) represent the overwhelming majority of European enterprises - 99.8%. In the EU-28 they account for 66.9% share in number of persons employed and 57.8% of total value added produced by the non-financial business sector.
As set out in "Entrepreneurship 2020 Action Plan. Reigniting the entrepreneurial spirit in Europe", Europe needs more entrepreneurs, as a powerful driver of economic growth and job creation. In addition to that the European Commission identifies the six emerging growth sectors in its Industrial Policies update, which require special attention and support (advanced manufacturing technologies and clean production, key enabling technologies, bio-based products, sustainable industrial and construction policy and raw materials, clean vehicles, smart grids).
In order to support entrepreneurship the Commission introduced the Action Plan, which consists of joint elements that are aimed at unleashing Europe's entrepreneurial potential, at removing existing obstacles and changing the culture of entrepreneurship in Europe, and at creating a much more supportive environment for entrepreneurs to thrive and grow.
The following Action Pillars were identified:

1) Entrepreneurial education and training to support growth and business creation. Entrepreneurship is a key competence in the European Framework and an action in the recent Rethinking Education Commission Communication.
2) Create an Environment where Entrepreneurs can flourish and growth. Within this pillar six areas are stressed where the action is needed to remove existing obstacles to the creation and growth of entrepreneurial activity: access to finance, support for entrepreneurs in the crucial phases of the business lifecycle and their growth, unleashing new business opportunities in the digital age, transfer of business, bankruptcy procedures and second chance for honest entrepreneurs and regulatory burden reduction.
3) Role models and targeting specific groups.

Along these lines the Management Plan 2016 and Strategic Plan 2016-2020 published by DG Taxud foresee actions related to boosting entrepreneurship. In June 2017 the Commission presented a study on how national tax incentives for venture capital and business angels can foster investment into SMEs and start-ups ad promote best practice across Member States. Moreover, by the end of 2017, the simplification package for SMEs will be published.

In order to contribute to the Commission's Agenda on boosting entrepreneurship through different channels, this part of the study examines tax policies and incentives that help supporting SMEs in their development, innovation and growth.

2.2 Summary of Member States' engagement with taxation and entrepreneurship

Over the past years an extra constraint has been placed over the European SME sector, as the financial crisis impaired both entrepreneurship and SMEs' capacity to grow (World Economic Forum, 2014). Despite anti-crisis packages combining stimulus of demand, credit enhancement and labour market measures, a gaping difference between entrepreneurship in the US and the EU countries is observed (Szerb, Komlósi

and Páger 2016; Millán et al. 2016). Focusing on the EU, differences in terms of entrepreneurship do not wash away; we observe disparities between old and new members; countries such as Italy and Greece are ranking below a number of developing countries. Scarcity of entrepreneurship and investment in innovation underscores the insufficiency of up to date measures taken across the continent by national governments.

EU countries after the economic crisis started introducing several new measures of tax policies to support entrepreneurship. The way countries address the issue of supporting entrepreneurship differs in magnitude and type from country to country. The table below gives an aggregate overview of the focus of the tax policies supporting entrepreneurship that are being introduced in European countries.

	Tax incentives across the EU supporting entrepreneurship[49]
Austria	Tax incentives for Mid-Sized Business Financing companies; tax credit; R&D tax incentives.
Belgium	Tax credit; accelerated depreciation; patent box; IP income
Bulgaria	Tax credit; accelerated depreciation; IP costs; CIT deduction
Croatia	R&D tax incentives; enhanced allowance
Cyprus	Enhanced allowance; patent box; IP income; IP costs
Czech Rep.	Tax credit; enhanced allowance; R&D tax incentives; investment incentives for technology centers.
Denmark	Forårspakke 2.0 regime; tax freeze on direct and indirect taxes; corporate tax reduction; entrepreneurship tax on taxing portfolio investments; reduction of administrative burdens; the abolition of cash rules; reduction of processing time; redevelopment of the excise duty (Vækstplan DK); online tax system (SKAT); enhanced allowance; accelerated depreciation; IP costs
Estonia	general exemption from taxation of retained corporate earnings, including reinvested income
France	Special regime for investment in young and innovative firms; temporary social tax freeze for start ups; tax credit targeting; R&D tax incentives (see. innovation tax credit & CIT/reduced social contributions); patent Box; favourable tax regimes for expatriate and impatriate specialised workforce; tax credit to young innovative companies (Régime de Base/Micro-Fiscal; IP income
Finland	Enhanced allowance; accelerated depreciation
Greece	Enhanced allowance; patent box; IP income
Hungary	Enhanced allowance; patent box; IP income
Ireland	Employment and investment incentives (EII); Start-up relied for entrepreneurs (SURE); reduced rate on capital gains tax; earned income tax credit; corporation tax relief; CAT Business Assets Relief; carried interest relief.
Italy	R&D tax incentives; tax credit targeting inputs' costs; tax credit for investment in innovation-intensive SMEs (link to: Law No. 221/2012); incentives to boost equity financing; Patent Box.
Latvia	Enhanced allowance; dividend income and capital gains are subject to relatively low taxes in case of individuals and are fully tax exempt in case of companies
Lithuania	Enhanced allowance; accelerated depreciation; R&D tax incentives; reduction of taxable income for investing companies; tax exemption in economic zones.
Luxembourg	SICAR tax regime; patent box; IP income

[49] As of March 2017.

Malta	Tax credit; patent box; IP income; IP costs; tax exemption for investment in innovation
Netherlands	SME private investors tax facility; R&D tax incentives; tax credit; enhanced allowance; patent box; IP income
Poland	Tax credit; enhanced allowance; IP income; incentives for investment in innovation
Portugal	Tax Benefits Law; patent box; IP income
Romania	Accelerated depreciation;
Spain	Tax credit for the investment in start-ups or new SMEs; Patent Box; R&D tax and investment activities incentives; CIT tax credit; tax relief for invested profits; reinvestment of extraordinary income; IP income
Slovakia	R&D tax incentives
Slovenia	
Sweden	Tax deduction for investments by natural persons in small enterprises; special tax regime for individuals qualifying as experts; reduced employer social fee for employees engaged in R&D.
UK	Enterprise Investment Scheme; CGT entrepreneurs relief; CAT Business Property relief; Business Investment Relief; Enterprise Investment Incentive used for senior managers; Seed Enterprise Investment scheme; share loss relief; carried interest relief; accelerated depreciation; enhanced allowance

2.3 Entrepreneurship and taxation case studies

Denmark

In this case study, we review two key practices: *Skattekreditordningen* and Accelerated Capital Amortisation. Both of them are examples of tax provisions aimed at affecting the margin relative to investment choice, analysed in chapter 2, section 3.3.

Skattekreditordningen is a volume-based R&D tax credit, available for loss making firms aiming at innovation in products and services. For 2016, this tax feature offered tax credit worth 22% of the amassed deficit due to R&D spending, allowing for a maximum compensation of DKK 5.5 million. This tax feature is in line with section 3.3 Chapter 2, successfully offsetting some of the costs faced by innovative SMEs due to frontloading. Its efficacy is strongly supported by the Danish tax administration which allows for the use of an online application process.
Accelerated Capital Amortisation in Denmark allows for full-deduction of R&D spending during the year of acquisition, or the use of 25% annual depreciation allowances (starting from the year of acquisition and continuing for the following four years). In line with section 3.3 Chapter 2, the tax feature aims to strengthen investment growth by effectively allowing the cost of capital to drop below the no tax benchmark. Two important features of tax administration contribute to the efficacy of the tax design: the use of online procedures and a one-stop agency; the consistent provision of tax credit for corporations across time.

Instrument: Skattekreditordningen

Skattekreditordningen is a volume-based R&D tax credit that targets loss making firms aiming at innovation in products and services. Since 2012, companies (irrespective of region, firm size and age) and self-employed individuals in Denmark may apply for tax credit linked to the deficit associated with R&D expenses for the current year. Between 2012 and 2014 Danish firms could apply for tax credit worth 25% of the amassed

deficit due to R&D spending. In 2015, the rate decreased to 23.5% and then to 22% in 2016, in line with the CIT rate. Accordingly, the maximum limit for deduction that a firm could claim is at DKK 5.5 million since 2016, down from DKK 5.875 million in 2015.

Companies have to submit requests for tax credit to the Danish tax authorities together with the tax return of the current year. Applications may be submitted online. Companies then have to wait until November of the coming year to receive the tax credit payment from the authorities.

Box 1: Skattekreditordningen – Special provisions

- In the occasion that the period of activity for a firm is smaller than twelve months, the deduction is reduced proportionally.
- In the occasion that the company belongs to a group, then the consolidated taxable income must also be negative. Moreover, the maximum limit for claiming tax credit applies to the consolidated eligible expenditure of the group.
- If the company is involved in oil and gas extraction, spending related to the search and obtainment of raw materials does not qualify for tax credit.

Rationale:

The Danish *skattekreditordningen* is a novel tax feature that aims to support only loss-making firms that perform R&D. The aim of this tax feature is dual. On the one hand, it aims to aid entrepreneurship growth via supporting small firms during the early years of operation, when investments in R&D have yet to yield profit. On the other hand, *skattekreditordningen* functions as a temporary stabiliser of economic volatility, supporting entrepreneurship by providing companies with finance in times of economic distress when access to external finance becomes more difficult.

Assessment:

In 2012, the first year that the *skattekreditordningen* was available, the Danish tax authorities received close to 600 applications, leading to the provision of DKK 300 million in entrepreneurship support through tax credit. *Skattekreditordningen* is generally considered a good practice, as the tax design successfully provides cash-strapped SMEs with financing in times of need, despite imperfections that allow the abuse of the associated benefits (European Commission 2014b).

In terms of tax administration, the *skattekreditordningen* framework presents low compliance costs, allowing firms to access the service online by using a one-stop agency. Moreover, linking the *skattekreditordningen* application to companies' tax returns further reduces red tape, as it streamlines the process. This positive view of the tax feature is also apparent in the study on R&D tax incentives, published by the European Commission (2014b), which ranks the Danish R&D tax credit schemes highly in terms of organisation among tax feautures in other EU member states.

In terms of tax design, the volume-based character of the *skattekreditordningen* is in line with the findings of the literature review in section 3.3 Chapter 2 of the report. *Skattekreditordningen* also successfully supports young SMEs with costs' frontloading,

one of the core challenges of an innovation-intensive business model. However, it fails to distinguish between pioneers and mature firms, or unsuccessful mature firms. This shortcoming does not only dampen the efficacy of the instrument towards boosting entrepreneurship, but it is also the source of substantial moral hazard. If improperly implemented, *skattekreditordningen* creates incentives for firms to manipulate the books so that they present R&D-based deficits. Thus, in line with Chapter 2 section 3.3 of the report, as the Danish economy moves away from the recession, *skattekreditordningen* needs to focus more on its aim to assist young firms and less on functioning as a source of external finance for corporations in times of economic downturn.

The appearance of moral hazard is not the only efficiency caveat that this tax design engenders. Despite alleviating a significant amount of innovative firms' frontloading costs, the effectiveness of the tax feature is hindered by the long period between the spending and reimbursement dates – on average, one to two years (European Commission 2014b).

Instruments: Accelerated Capital Amortisation

Before the introduction of the *skattekreditordningen*, Denmark had already provided firms with the possibility of deducting R&D expenditures. Since 1973, when R&D deductions were first introduced, Denmark has put a number of tax features in place, although their focus has consistently remained broad without placing particular distinctions on the size or age of the firm.

Currently, the Danish tax system offers firms the possibility to apply for accelerated capital amortisation. In particular, the cost of machinery, equipment and ships acquired for R&D purposes can be deducted in full in the year of acquisition. Corporations may also claim full deduction for any type of intangible good that was purchased for R&D purposes. Moreover, again during the year of acquisition, firms can claim full deduction for patents and know-how, irrespective of the economic life-cycle or price of purchase. A novel feature of the Danish tax design is that it allows firms to deduct depreciation on assets acquired for R&D purposes, even before the product produced by the R&D activity comes into use.

Alternatively, firms in Denmark can apply for annual depreciation allowances, starting from the year of acquisition and the subsequent four years on a straight-line basis. In particular, under this diminishing balance method, firms can apply for up to 25% of annual depreciation allowances on machinery and equipment. In order to calculate the depreciation base, firms need to subtract sales proceeds from disposals and depreciation allowances already claimed from the cost of the acquired fixed asset(s).

Rationale:

Even before the Eurozone crisis and the ensuing recession, Denmark placed a strong focus on supporting innovation-led growth. The use of amortisation methods in Denmark is neither linked to the current level of innovation and entrepreneurship in the country nor it strictly associates to the recent recession that plagued a number of European Member States. Instead, this feature of the Danish tax design aims to contribute to the country's consistent efforts in supporting a high level of investment-led growth – comfortably above the per capita average intramural R&D expenditure of the business sector among EU Member States.

Table 1: Per capita intramural R&D expenditure in Denmark – Business Enterprise sector (EUR/inhabitant)

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	276.3	293.1	303.3	292	303.6	326.4	340.7	344.9	359.9	376
DK	668.4	753	855.4	894.6	859.1	875.8	891.8	868.9	864.5	879
SW	967.5	929.5	993	818.6	873.6	965.2	993	1039	946.2	1040
FN	781.6	855.3	962.6	910	907.1	939	869.2	848.1	808.9	739

Source: Eurostat

Assessment:

In line with section 3.3 Chapter 2, Denmark enables companies to write off expenses associated with R&D, either through the use of full-deduction in the year of acquisition, or through a diminishing balance method. This tax feature allows the cost of capital to drop below the no tax benchmark, actively encouraging investment growth – a core function of the high risk SME business model.

However, the recent strong innovation record of Denmark is not only the result of the tax design, but also the administration practices that engulf the provision of tax credit in the country. First, Denmark has consistently supported investment in R&D through the use of tax credit since 1973. This equips SMEs in the country with an unprecedented level of certainty as to the future of the tools available, and the cost of future investments. Second, in addition to the low policy turnover, a significant contributor to the efficacy of the tax feature in translating the provision of tax credit to a sustained high level of investment in the country, is the use of online application procedures and one-stop agency.

The use of accelerated amortisation in Denmark might be a strongly positive feature of the broader Danish tax design, however scrutiny following Chapter 2 section 3.3 reveals some structural shortcomings. Most importantly, for Denmark to further support entrepreneurship under the existing tax feature, it needs to narrow the focus of the instrument to specific groups of firms - young and innovative. Additional reforms according to the European Commission (2014) could include the extension of carry-over provisions and cash refunds.

Italy

In this case study, we review five key tax design practices: allowance for corporate equity; tax credit for R&D; tax relief for investment in R&D intensive start-ups; patent box; and presumptive taxation. The first three, tax credits, tax reliefs for investment in R&D and patent boxes, are examples of tax provisions that reduce the cost of – or increase the returns from – investments and R&D expenditure, thus having an impact on the choice to invest (Chapter 2, section 3.3); allowance for corporate equity is aimed at eliminating distortions induced by taxation on the choice of the financial instrument and the capital structure of the firm (Chapter 2, section 3.4); presumptive taxation is aimed at reducing the cost of tax compliance and encouraging participation (Chapter 2, section 3.7).

Allowance for corporate equity (ACE) aims to encourage entrepreneurship growth by supporting the financing and capital structure of firms. In order to address the tax

design caveat raised in section 3.4 Chapter 2 (i.e. that corporate taxes often support debt over equity financing), ACE reduces debt financing incentives by allowing a deduction for imputed income from equity. The Italian ACE presents three core characteristics that currently establish it as a best practice in the field. More specifically, it offers carry-forward flexibility, the option to convert unused ACE allowance into tax credit, as well as the inclusion of anti-avoidance legislation aimed at halting the abuse of ACE benefits. Empirical evidence suggests that the introduction of the Italian ACE was beneficial for approximately 31% of Italian firms. Notably, estimates suggest that ACE led to a significant drop in the effective corporate income tax rate and a decrease of IRES. Moreover, estimates also suggest that ACE has been successful in reducing leverage across both loss-making (3.2%) and profitable (2.4%) firms.

Incremental R&D tax credit provisions in Italy aim to support investment and R&D practices by targeting input costs, such as: costs for highly qualified personnel; depreciation of laboratory equipment; costs for R&D activities outsourced to universities/research centres; and costs incurred for technical expertise related to industrial or biotech IP. A comparison between the R&D tax credit features and the literature review developed in Chapter 1 underscores two core caveats, the breadth of the entrepreneurial population able to profit from the incentives available and the incremental character of the quotas. Available empirical evidence on Italy shows a positive relationship between the tax feature on R&D and user cost reduction, however the overall empirical literature reveals mixed results in relation to the efficacy of the tax feature.

Tax relief for investment in R&D intensive start-ups aims to support entrepreneurship growth through greater access to financing for innovative firms. By offering tax deduction between 19% and 20% of the invested amount (differs among firms and individuals) Italy targets a core limiting factor for growth in innovation – namely, the financing costs of R&D intensive projects are increased by late commercialisation of the produced good/service. No concrete empirical evidence currently exists in the literature as to its efficacy.

The Patent Box aims to encourage entrepreneurship growth by focusing on a business's location. By offering a lower tax rate on income earned from the intellectual property of domestic businesses, Italy attempts to boost high-tech innovation in the country through protecting Italian intellectual property and enhancing the country's attractiveness for foreign investors. Despite empirical evidence of a very high application rate, and a 19% improvement in the country's license and patent revenues, this feature of the tax design receives high criticism in the literature. Notably critics suggest that patent boxes fail to materialise new investment in R&D and are prone to triggering a zero-sum race to the bottom as countries compete to retain domestically high value jobs.

Presumptive taxation aims to boost entrepreneurship by improving tax compliance. By offering a mix of simplified regimes – *studi di settore; regime forfetario*; *regime di vantaggio* – Italy makes use of presumptive taxation and VAT thresholds to alleviate tax compliance costs for small businesses and to reduce tax evasion. Most notable critiques relate to the *studi di settore* and the VAT thresholds Italy employs. For instance, the structure of *Studi di settore* fails to account for the (high) probability of complying businesses falling below the estimated turnover. This initial misperception may dampen entrepreneurship as it increases compliance costs for a number of complying businesses due to heightened audit frequency. VAT thresholds, according to the literature review in section 3.7 of Chapter 2, appears misplaced given that compliance costs constitute a significant burden for small but old firms, and not start-

ups. Thus, VAT thresholds are more adept in the promotion of consolidation rather than entrepreneurship growth.

Instrument: Allowance for corporate equity (ACE)

The Italian ACE can be used by corporations, sole proprietors and partnerships, excluding firms in bankruptcy, and companies under compulsory liquidation of extraordinary administration. This instrument reduces the tax advantage of debt finance by providing a deduction of the imputed income from equity. The ordinary return, approximating the opportunity cost of new equity capital is exempt, while income that exceeds this threshold is taxed at the corporate level. The allowance consists of an annual deduction from corporate taxable income (after net operating losses) of the notional yield of new equity. This is equal to the increase in equity compared to the value at the end of 2010, multiplied by a fixed rate that is determined annually by Decree of the Minister of Economy and Finance by 31st of January (4.5% for 2015 and 4.75% for 2016).

For 2010, the ACE base is equal to the net positive variation of equity at the end of the year. The net variation of equity stems from the accumulation of (algebraic sums of) specific flows. Contributions in cash and the retained profits that feed reserve provisions (satisfying specific conditions) are the flows which enter with a positive symbol. Profits and reserves' distributions are the flows that enter with a negative symbol. For each year in reference, the ACE base cannot exceed equity accrued from financial statements (Zangari, 2014).

The Italian ACE has three core characteristics. It offers carry-forward flexibility and the option to convert unused ACE allowance into a tax credit. However, its structure is equipped with anti-avoidance legislation that aims to stop the cascade of ACE benefits within groups of companies which are subject to the same unit of control, and the abuses stemming from the transformation of old equity into new equity via asset sales.

According to the *carry forward* flexibility feature, in the case where ACE exceeds the corporate net taxable income of the year, it can be carried forward without a time or quantity limit. Alternatively, the amount in question can be converted (irreversibly) into tax credit. This is calculated by applying the excess ACE to the standard corporate income tax rate, and it can be used to offset IRAP in five instalments of equal amounts. If the credit exceeds the IRAP in the tax year of reference, it may be carried forward without being constrained by time limits.
To address revenue losses coming from an ACE reform as a result of tax planning, the Italian ACE has put in place a set of anti-avoidance provisions. Tax contributions, remunerations stemming from a business sale (in its entirety or in parts), loans or acquirement of control participations (in a group), all lead to reductions in the ACE base for the domestic fiscal entity.[50]

Rationale:

The introduction of an ACE-type feature in the Italian tax design aims to address capital flight, triggered through source-based corporate income tax which is levied

[50] In addition to the provisions for domestic companies, the Italian ACE also includes a set of anti-avoidance rules aimed at non-resident companies – not directly benefiting from ACE but having potential involvement in avoidance schemes. See Zangari 2014.

over returns to capital. In the long-run, the ACE-provided exception to capital return stimulates investment.
Moreover, corporate tax often supports debt over equity financing, as discussed in further detail in section 3.4 of Chapter 2. High reliance on debt finance has been a problem for the Italian economy since the 1980s. In particular, between 1982 and 2012 corporations in Italy faced high levels of statutory tax rate on profits, which enabled large scale deduction of interest rate costs. Changes in the tax treatment of the return to equity and debt at the personal level, furthered the de-facto tax advantage of debt (Zangari 2014). Moreover, significant market failures linked to imperfect information, combined with a strong culture of family-based firms, strongly contributed to the development of heavy reliance on debt finance (Bugamelli et al. 2012)
Socio and Russo (2016) point out that after controlling for firm-specific factors, such as profitability, asset tangibility and liquidity, turnover and age, Italian firms are leveraged by about 10% more than their European counterparts. The gap is more evident among micro and small firms. For corporations with asset values exceeding EUR 300M, the difference becomes weakly significant. Socio and Russo (2016) conclude that bridging the gap between Italy and the euro countries' average would require the transformation of EUR 230b of debt into equity – 18% of firms' outstanding financial debt.
In 2012, the Italian government introduced a tax deduction from income linked to the normal return to capital, as a means of addressing the pressing issues of private sector over-indebtedness and the overbearing cost of high and persisting systemic risk. As Chapter 2 section 3.4 outlines, tax features of this kind aim to boost investment growth through a reduction in firms' tax liabilities. Moreover, by offering a tax deduction for a notional return on additional equity injected into companies, ACE also supports the health of firms' balance sheets by encouraging decreasing dependence on the Italian banking sector.

Assessment:

ACE is an instrument that aims at neutrality of corporate income tax. However, this is not a novel tax feature for Italy. Between 1998 and 2001 Italy had a similar instrument in place that also included a reduced rate on imputed income from the corporate-owned capital income (Dual Income Tax) (Bernardi 2005). The current structure of the Italian ACE effectively offsets distortions created by the gap between depreciation for tax purposes and economic depreciation, by allowing for the full compensation (in future allowances) of the advantage generated by tax depreciation (Broadway and Bruce 1984). Moreover, the incremental component and the anti-avoidance framework included in the Italian ACE, set the tax feature as a good practice by safeguarding both the domestic and international tax base (Zangari 2014).
In terms of empirical data on ACE, Panteghini, Parisi and Pighetti (2012) offer a simulation of its impact on leverage and effective tax rates. They highlight the existence of significant variations in the effects of ACE, depending on the size of the firm, the area and the sector of activity. Findings suggest that the introduction of ACE could have been beneficial for an approximate 31% of firms during 2014. Beneficiary firms would have profited via a drop of the effective corporate income tax rate by an approximate of 2.3 percentage points, landing on an effective rate of 26.2%. Consequently, this would have led to a decrease in IRES by 5.4%. Notably, loss-making firms are predicted to reduce leverage by 3.2% whereas profitable ones by 2.4%. This is in line with the view put forward in section 3.4 of Chapter 2 – that ACE type tax features can be effective instruments in targeting corporate sector debt bias.

Instrument: R&D tax credit

As early as 1997, Italy first introduced a mixed (volume and incremental) tax credit regime, as well as tax credits specifically designed for SMEs (Law 140/1997 – abolished 2014). Between 2006 and 2011, Italy had two other volume-based tax credit regimes in place (aimed at reducing R&D costs) and a volume-based tax credit for R&D *collaboration with universities and public research centres* (The OECD 2015[e]). According to the latter, Italy offered a 40% flat tax credit for collaboration on research contracts with universities or public research centres.
However, in recent years Italy has increased support for investment in R&D by targeting input costs. For instance, the government introduced a number of tax credit instruments, such as an incremental R&D tax credit, a tax credit supporting the employment of highly skilled workforce, and a tax credit on expenses for equipment and machinery.
In particular, the incremental R&D tax credit scheme offers varying rate compensation (annual max. EUR 5M.) for annual incremental R&D expenditure (annual min. EUR 30M.) that exceed the average R&D expenditure incurred during 2012, 2013 and 2014 (Confindustria 2016). The resulting tax credit can be used to offset IRES, IRAP, VAT and withholding tax liabilities without any limitation.

Box 2. Incremental R&D tax credit provisions

R&D expenditure for these purposes include:

(i) Costs for highly qualified personnel;
(ii) Depreciation of laboratory equipment;
(iii) Costs for R&D activities outsources to universities and research centres or to other companies;
(iv) Costs incurred for technical expertise related to industrial or biotech IP.

Spending involving categories ii and iii qualifies for 50% deduction on expenditure; categories i and iv offer 25% deduction.

The tax credit in support of the employment of highly skilled workforce aims to support R&D practices by reducing the labour input costs. According to the legislation, firms can claim a 35% tax credit for amounts paid for qualified researchers that were employed between 2013 and 2014. In 2017, firms may claim a tax credit that can reach up to a rate of 50%. This credit can also be used to offset IRES, IRAP, VAT as well as withholding tax liabilities. Eligible employees are considered individuals with a university degree and employed only in R&D activities or PhD holders. Under this framework, large companies are obliged to employ researchers for at least three years or for two years if the company is an SME.
The tax credit for expenses on equipment was first introduced in Italy on 24 June 2014 and was effective for investments that took place between 25 June 2014 and 30 June 2015. Relevant legislation allowed companies investing in new plants and equipment (given identification by the Decree as qualifying investment targets) to claim a tax credit equal to 15% of the incurred expenses that exceeds an adjusted average of investments in the same kind of assets sustained during the previous five fiscal years.

Rationale:

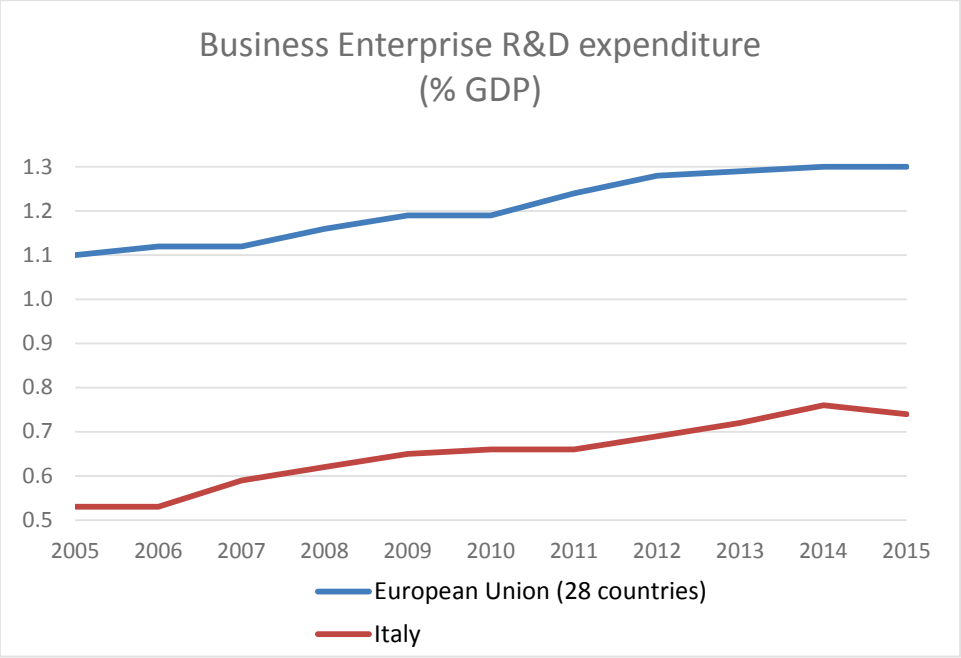
Moncada-Paternò-Castello and Grassano (2014) find that, between 2004 and 2013, the Italian economy exhibited a very low level of new entrants. This low growth rate in

terms of entrepreneurial birth highlights one of Italy's main economic growth shortcomings, high risk associated with innovation-intensive business models in the country. Risk persistence greatly accounts for both the lagging level of entrepreneurial activity in the country and the failure to gear the economy towards a more knowledge-based system. As section 3.3 of Chapter 2 underlines, the under-provision of R&D may occur due to asymmetry in tax treatment between profits and losses, which may be further augmented by cost front-loading performed by start-ups. Such distortions hamper the provision of innovation, warranting market intervention to address the effective mismatch between private and public valuation in the production of the marginal unit of innovation (Hall et al. 2012; Bugamelli et al. 2012).

Over the past years, Italy consistently underperformed its European neighbours in R&D spending (Action Institute 2013), while R&D spending in the country is particularly low in the private sector. Within the private sector, Italian R&D spending only shows high concentration among high-tech firms – a small fraction of Italy's entrepreneurial population. Instead, the industrial core of the country (also underperforming vis-à-vis European counterparts) focuses on low tech sectors (14% of total value added) such as textile and clothing, wood and wooden products and leather and shoes (Cerulli and Potí 2012a; Antonelli and Crespi 2013; Pagano and Schivardi 2003).

Findings of the Community Innovation Survey (CIS), between 2008 and 2012, suggest that a significant constraint on innovation among Italian firms is *firm size*. This is in line with local low-tech industries' underperformance compared to their European counterparts, an observation that further explains the country's rationale behind developing policies aimed at addressing bottlenecks faced by SMEs (Colombo and Grilli 2010; Cerulli and Potí 2012b; Antonelli and Crespi 2013).

Figure 1: Private R&D expenditure in Italy



Source: Eurostat

Assessment:

With the exception of the high skilled workforce tax credit feature, the Italian R&D tax credit policy design departs from the best practices described by the European Commission (2014) study on R&D Tax incentives.
The first major caveat of the tax design is the focus of the instruments deployed. In particular, most instruments extend support to both SMEs and start-ups, failing to distinguish between truly innovative firms and those that capitalise on imitation. According to the European Commission (2014), economies that are close to the technology frontier, such as Italy, should use tax incentives that target R&D activities which contribute to the advancement of the frontier. Notable best practices include the use of a novelty requirement and the targeting of young companies as opposed to SMEs more generally.
When comparing the characteristics of the Italian R&D tax incentives to the ones offered across the EU, two further shortcomings become apparent. First, the use of incremental quotas may affect the timing of R&D investment plans, providing incentives for more sporadic, rather than systematic, investment, or a gradual increase of R&D investment over single large investment (if profits are to materialise later in time). More importantly, incremental quotas are associated with higher administrative and compliance costs which make them inferior to volume-based ones (as section 3.3 Chapter 2 explains in more detail). However, following the implementation of the Industry Plan 4.0 in 2017, Italy is to phase out the incremental component of the tax feature (Pagamici 2016). The government also aims to simplify access to tax credit for R&D by phasing out differentials relating to the type of expenses. Second, the temporary character of most instruments described above, strongly impairs the efficacy of the tax feature. The inherent economic uncertainty involved with the (potentially) high level of legal turnover, impairs investment in R&D by increasing uncertainty over its cost (Czarnitki and Toole 2008).
Empirical evidence on the use of R&D tax incentives in Italy suggests a reduction on R&D user cost reduction (Caiumi 2011, Paris and Sembenelli 2003). However, the literature presents different opinions in terms of target efficacy. Caiumi (2010) favours targeting Italian SMEs, while Cerulli and Potí (2012a) find large firms to be more responsive. The European Innovation Scoreboard (EIS) supports the existence of some positive effects of this tax feature, and provides suggestive evidence of gradual recovery in investment, coupled with improvement in innovation performance between 2010 and 2015. Finally, comparing the pre- and post-crisis environment in the country, Italy's innovation performance improved in relation to the EU average (set at 100%) from 78% in 2008 to 83% in 2015. Nevertheless, EIS indicators that directly relate to R&D, do not echo such an improvement. Instead, Italian performance remains below the EU average in terms of both R&D and non-R&D innovation expenditures throughout the period.

Instrument: tax relief for investment in R&D intensive start-ups

The provision of tax relief for investment in R&D intensive start-ups is not a stand-alone policy. Instead, it follows the broader administrative reform that aims to create a protected environment for initial entrepreneurial growth. Law No. 221/2012 sets a special section of the Business Register of the Italian Chamber of Commerce for innovative start-ups; a set of firms with a high potential for innovation (Russo, Magri and Rampazzi 2016).

Italy offers tax relief for investments to companies that invest in R&D intensive start-up companies (IST) and research-intensive SMEs. From the 2014 to the 2016 fiscal year, corporations investing in an eligible company were entitled to immediate deductions amounting to 20% of the invested amount, while individuals are eligible for a 19% tax credit.

Box 3. Tax Relief for investment in R&D intensive start-ups

Research-intensive SMEs are similar, mostly small or mid-size companies with a research-intensive operation. In order to obtain "IST" or the "R&D-intensive" SME status, a company must meet requirements concerning the following:

i) Amount of R&D expenditure incurred
ii) Number of highly qualified employees
iii) Company's interest in the IP such as a license, patent, or registered software.

Corporations have to comply with an annual maximum eligible investment of EUR 1.8M. Meanwhile, for individuals, annual maximum eligible investment amounts to EUR 500k. Finally, total amount of combined investments received by an eligible corporation cannot exceed EUR 2.5M. While such investments can only be deducted from tax when made as cash contributions. To qualify as an R&D intensive SME, annual employee turnover is limited to EUR 50M, while for an IST the limit is EUR 5M.

Rationale:

A growing array of literature underscores the significance of start-ups in spurring innovation through investment in riskier, more cutting edge projects, compared to incumbent firms with a business orientation geared towards incremental innovation on existing products (Baumol 2004; Kerr et al. 2014; Akcigit and Kerr 2011; Acs and Audretsch 1987). Russo, Magri and Rampazzi (2012) highlight that ISTs present a significantly higher ratio of intangibles on total assets – indicator of innovation – compared to other start-ups.

Magri (2009) points out the low usage of bank loans by SMEs and start-ups. High entrepreneurial uncertainty brings about substantial borrowing costs for SMEs, which explains the importance of initial household wealth in becoming an entrepreneur. Financing costs of R&D intensive projects are increased by the late commercialisation of the produced good or service. The existence of such imperfections lead to market failures, resulting in an under-supply of financing, therefore necessitating intervention.

Assessment:

At present, there is no empirical evidence in the academic literature to support the instrument's effectiveness in spurring a higher level of R&D in Italy through easing access to finance for R&D intensive start-ups.

However, the Italian government moves in the direction set by this tax instrument. Provisions presented in Box 7 may function as suggestive evidence relating to a positive policy assessment of the described instrument.

Box 4. Provisions of Law No. 221/2012[51]

- Simplification and cost reduction of administrative procedures for firms' set up;
- Exceptions to corporate regulations aimed at increasing contribution of equity shareholders;
- Equity-related tax benefits for investors;
- Simplification and costless access to public guarantees provided by the Central Guarantee Fund for SMEs;
- Zero Interest rate borrowing from Invitalia Agency – subject to evaluation of a business plan;
- Permission to gather capital through crowd-funding;
- Increased flexibility in the use of short-term labour;
- Tax credit for hiring a qualified workforce;
- Provision of advisory support through ICE (Italian Institute for Foreign Trade) with the aim of internationalisation of the sector;
- Favourable fiscal treatment in relation to losses and VAT obligations;
- Fail Fast: bankruptcy law exemption

Instrument: Patent box

In a similar manner to other OECD countries – notably Belgium, France, Hungary, Luxembourg, the Netherlands, Portugal, Spain and the UK – Italy offers a lower tax rate on income earned from intellectual property to businesses located domestically (including permanent establishments of foreign entities). Eligible entities are granted a 50% tax exemption that is to be phased-in over a three-year period: (i) a 30% exemption for 2015, (ii) a 40% exemption for 2016, (iii) a 50% exemption for 2017. The patent box applies to income earned from the direct and/or indirect exploitation of IP, patents, trademarks, including commercial IP, industrial designs and models, procedures, formulas and information concerning industrial, business or scientific know-how that will be legally registered and protected, as well as capital gains derived from the intangibles.
Conforming to Article 5 of the OECD's base erosion and profit shifting (BEPS) draft on IP regimes, the exemption is limited to income attributable to R&D activities undertaken in Italy by an eligible person in order to develop income-producing intangibles.
Starting from 2015, the taxpayer has the option to access the incentive. Such an option is binding for five years.

Rationale:

Motivation for action by the Italian government is based on the need to boost high-tech innovation in the country through protecting Italian intellectual property and enhancing the country's attractiveness for foreign investors and R&D activities.

[51] Reforms are to be gradually implemented post-2012, with provision of zero-interest rate loan from Invitalia being enforced as recently as February 2015.

According to the EIS 2016, Italy is the worst performer in *license and patent revenues from abroad*; the country also scores significantly below the EU average in number of *patent applications*. In an attempt to address the country's poor performance, the government introduced the patent box, a tax measure that targets income derived from patented technology. This measure offers revenue-related incentives for firms to engage in R&D. The rationale for this measure can be linked to assisting private firms in capturing profits arising from R&D, furthering incentives to innovative corporations, allowing the retention of high-value jobs in the country, and encouraging the shift towards a knowledge-based economy.

Assessment:

As in many other countries that are using patent box-type tax features, Italian literature presents little conclusive empirical evidence as to the effect of the patent box on the economy (Guenther 2017). During the first fiscal year of implementing the Patent Box, the number of applications exceeded expectations, approximately 4,500 Italian businesses applied for the scheme. An important contributor to the high application rate in Italy was the wide structure of the tax feature, resulting in a significant expression of interest from small firms - 650 firms with a turnover of less than EUR1M (Agenzia Entrate, 2016). According to the EIS, further evidence suggests a 19% improvement in the country's license and patent revenues from abroad, over the year of implementation.
Even though it remains unclear whether improvements in the Italian license and patent revenues are due to profit shifting, literature describing the effects of the patent box over the economy offers support to a profit shifting interpretation. In particular, Zucchetti and Pallotta (2006) suggest that patent boxes fail to motivate new investment that would not have taken place if the patent box did not exist. To this, Griffith et al. (2010) add that benefits linked to seemingly higher R&D in a country will be quickly eroded. The introduction of similar tax regimes in neighbouring countries often signals a race to the bottom, as countries compete to retain domestically, the high value jobs that are associated with the firms making use of the patent box regime.

Instrument: presumptive taxation

Presumptive taxation was first introduced in Italy in 1988 (Arachi and Santoro, 2007) under the title of *studi di settore.* The *studi di settore* provide turnover estimations for each taxpayer, based on a case-specific weighted average of cost-related information and structural variables.[52] Following publication of the estimates, taxpayers may either accept the estimated turn-over, or declare a turn-over which is below the estimated value, expecting heightened risk of an audit taking place.
In addition to the *studi di settore*, since 2008 two more (optional) regimes of simplified taxation have become active in the country: *regime forfetario* and *regime di vantaggio*. The *Regime forfetario* offers simplified accounting rules, a flat-rate that replaces all ordinary taxes on income, an *optional regime for social security contribution and VAT exemption* (Agenzia Entrate 2016). It targets small firms and the self-employed, whose turnover is below a minimum threshold of EUR 25,000 to EUR 50,000 (depending on the sector) (Agenzia Entrate 2016). Taxable income for the qualifying taxpayers is determined as a percentage of turnover. The *regime di vantaggio*, which also entails reduction in compliance costs, is available for young

[52] Weights used in the estimation vary both across business sectors and geographical location, given large differences across Italian regions in terms of economic development (see. Agenzia Entrate 1993).

entrepreneurs. Its core component is the use of reduced flat tax on actual income and VAT exemption (Agenzia Entrate 2011).

Rationale:

Italy presents an economy, whose enterprise size-distribution is strongly skewed towards small, family-owned businesses and microenterprises. As presented in Chapter 2 section 3.7, there is considerable evidence in the literature to suggest that compliance costs affect small firms disproportionately. Italy has used extensive presumptive taxation and VAT thresholds to alleviate small businesses' tax compliance costs and to reduce tax evasion.

Assessment:

Since the late '80s, Italian governments have tested a number of simplified tax systems, targeted at small and young firms.
Despite the centrality of simplified tax schemes in the Italian tax system, there is limited empirical evidence to ascertain their impact. In relation to the ability of presumptive taxation schemes to move firms away from the shadow economy, both Schneider (2006) and Arachi and Santoro (2007) suggest that simplified systems may have positive effects, although no conclusive evidence is presented. Furthermore, they also underscore one significant caveat; Presumptive taxation often provides firms with little benefit in transitioning away from the simplified system itself (Arachi and Santoro, 2007; Schneider, 2006).
Pulina (2011) questions the effectiveness of the *studi di settore.* He finds that taxpayers often prefer to risk being audited, rather than accepting to pay the estimated tax. This suggests that the *studi di settore* has a dual adverse effect on the Italian economy. On the one hand, the rise in the number of audits increases administrative costs incurred by the government. On the other hand, the instrument may dampen entrepreneurship in the economy, as complying businesses which fall under the estimated turnover still have to incur the costs of an audit. In particular, Santoro (2008) notes that the setup of *studi di settore* might suggest misperceptions regarding the probability of complying businesses falling under the estimated turnover, which may account for the heightened number of firms that were declared below the presumed level of turnover during the 1998-2004 period.
In relation to the use of VAT thresholds as a tool for tax simplification, under the *regime forfetario* and *regime di vantaggio*, there is no conclusive empirical evidence on "bunching" or the instrument's impact on entrepreneurship in Italy. However, as Chapter 2 section 3.7 suggests, VAT thresholds in Italy might be misplaced, if their raison d'être is indeed to ignite entrepreneurship. VAT thresholds are more adequate in promoting small firm consolidation than entrepreneurship growth, as compliance costs primarily burden old, small firms, not start-ups.

Latvia

In this case study, we review three key practices: flat tax; features targeting the reduction of the price of inputs; and the Microenterprise tax. The first instrument is expected to affect the decision to become an entrepreneur (Chapter 2, section 3.1), the second should encourage investment and innovation (Chapter 2, section 3.3), while the last (the Microenterprise tax) is aimed at encouraging tax compliance and reduce the risk of tax evasion (Chapter 2, section 3.7).

Flat tax in Latvia aims to create a tax design that requires small administrative costs and accommodates entrepreneurship and compliance through lower complexity. In line with the mixed results from the literature review presented in section 3.1 Chapter

2, the difficulty of isolating the impact of the flat tax regime over the economy from other factors leads to no conclusive evidence on the impact of the Latvia flat-tax regime on entrepreneurship and economic growth. However, available empirical work based on the use of a synthetic counterfactual of no flat-tax regime suggests that, on average, Latvian GDP per capita growth is 3.8 percentage points higher due to the existence of the flat-tax regime.

Features targeting the reduction of the price of inputs aim to correct for asymmetries in tax treatment and costs' frontloading that dampen innovation among SMEs. Such features include the use of depreciation and the amortisation of expenses linked directly, or indirectly, to R&D practices, as well as deferring the payment of tax on profits resulting from the sale of replaced assets. Despite a lack of conclusive empirical evidence on the use of such instruments in the Latvian economy, section 3.3 Chapter 2 underscores that accelerated amortisation and the allowance to write off expenses comprise important channels through which tax design may support investment growth.

The Microenterprise tax (MET) aims to stimulate small private business activity and self-employment through the provision of simplified accounting requirements and a reduced (9%) tax rate for Micro-businesses. Despite the promotion of a tax design that involves a lower level of complexity and tax rate, the MET has done little towards fighting informality in Latvia, while, overall, it demonstrates limited capacity in boosting entrepreneurship. Moreover the MET tax design remains vulnerable to abuse; failure to restrict the dividend amount of companies to micro-enterprises gives rise to tax avoidance and fosters unfair competition through practices of tax optimisation. Prohorovs and Bistrova (2017) suggest that the best way for Latvia to address the shortcomings of the current system is to look at the example set by its Northern neighbour, Estonia, where allowing the deferred payment of corporate income tax until profit distribution has successfully supported entrepreneurship without the adverse side-effects of the MET regime.

Instrument: Flat tax

Latvia's tax system today bears little resemblance to the one put into place during the first years of independence. Prior to 1997 Latvia was operating on an unusual digressive rate structure, where a 25% marginal rate transformed to 10% for the highest incomes (IMF 2006). This system was reformed in 1997, when Latvia first introduced the use of flat tax. Currently, top marginal tax rate on income tax is in par with the (flat) tax rate in the country, at 23% (European Commission 2016i). With a total tax rate of 35.9% – 6.3% tax on corporate income, 26.6% tax on labour and 3% other taxes – Latvia ranked in 2016 12th highest among EU countries in terms of total tax rate (The Baltic Course 2016).

Rationale:

The introduction of the flat-tax regime in Latvia was part of the 1990s wave of transition economies' shift towards a system of taxation that requires smaller administrative costs. Economies in transition are often not equipped with a bureaucracy that allows for the effective implementation of complex tax structures. Moreover, due to its simplicity, flat tax may encourage greater levels of transparency and compliance, two chronic problems faced by the Latvian economy (European Commission 2017)

Assessment:

Along with other Central Eastern European countries, the introduction of the flat tax regime in Latvia coincided with high real GDP growth rates. However, isolating the impact of this specific tax feature remains challenging as it was introduced as part of a set of sweeping fiscal and structural reforms. This is not surprising considering details in Chapter 2 section 3.1 – where theoretical models and empirical evidence show the ambiguous impact of tax progressivity on entrepreneurship.
In terms of empirical work available on the Latvian economy, Greenberg (2009) and Adhikari and Alm (2015) suggest that the flat-tax regime had an initial positive impact over GDP growth in the country (2015). Through the use of synthetic control methods, Adhikari and Alm (2015) find GDP per capita in Latvia to be, on average, higher (compared to the synthetic counterfactual of no flat-tax regime devised through a pool of three countries, Armenia, Hungary and Poland) by US$1526.[53] The study also finds the Latvian GDP per capita growth rate on average 3.8 percentage points higher due to the existence of the flat-tax regime.

Instruments: Features targeting the reduction of the price of inputs (Taxation and R&D)

Latvia offers support to R&D as well as overall entrepreneurship, by targeting inputs' costs, through the use of depreciation and amortisation of expenses linked directly, or indirectly, to R&D practices.

Since 2014, companies have been able to apply accelerated amortization of R&D-related costs. A super deduction is available at 300% of R&D expenses from corporate income tax. The deduction applies to costs linked to employment and R&D service agreements contracted with specific scientific institutions, which are registered in EU/EEA countries or countries where a tax treaty exists.
In Latvia, depreciation and amortization of fixed assets is achieved through the reducing-balance method, by applying specifically prescribed values that vary across types of property from 10% to 70%. High-tech equipment qualifies for 70% effective depreciation rate, computed via the reducing-balance method.[54]
Further depreciation is available for spending on manufactures or acquiring high-tech manufacturing equipment purchased between 1 January 2006 and 31 December 2020.[55]
Latvia also permits the deferral of tax payments on profits that result from selling replaced assets. If a company purchases a functionally similar asset within a 12 month period, whether before or after the disposal of the asset, then any income generated via the disposal of the replaced equipment is overlooked for this tax period (profit is deducted from taxable income) and tax payments are postponed until the newly purchased equipment is sold. It can be postponed further if the equipment is replaced again.

Rationale:

[53] For the development of the pool of representative countries Adhikari and Alm (2015) take 1993 to 2007 as a sample period, omitting countries that implemented a flat tax both before Latvia as well as within 10 years following the implementation of flat tax in Latvia. Here, it is important to underline that two out of the three countries in the panel, Poland and Hungary, consistently present significantly higher marginal income tax rates than Latvia between 1993 and 2007. Armenia remains closest to the Latvian rate, at 20%. This criticism could potentially question the capacity of the synthetic counterfactual to capture the "flat tax" effect. Instead, results might be driven by the difference between the marginal income tax rate between Latvia and synthetic Latvia.

[54] Four other asset types qualify for deduction but are not included in this report as they relate more to equipment that does not relate to the decision to entrepreneur.

[55] Depreciation is subject to recapture if equipment is disposed of within five years since the date of purchase.

Motivation for action by the Latvian government is based on the need to support investment growth in the country. Aggregate investment growth in the country presents high volatility, dropping from a peak of 22.5% in 2007 to -33.3% in 2009, only to climb back up to 24% in 2011. Following this period of high volatility, investment growth plateaued between 1% and 3.5% for the coming years.

In recent years, channelling expenditure towards R&D intensive sectors has remained a challenge for Latvia. Despite a swift recovery from the Eurozone crisis, the country continues to suffer from low levels of innovation. According to the European Innovation Scoreboard, in 2016, Latvia significantly underperformed when compared to fellow EU countries in terms of *R&D expenditure in the public sector, linkages and entrepreneurship* and *innovators.* Latvia scored 63, 22 and 22 respectively, compared to the EU average of 100.

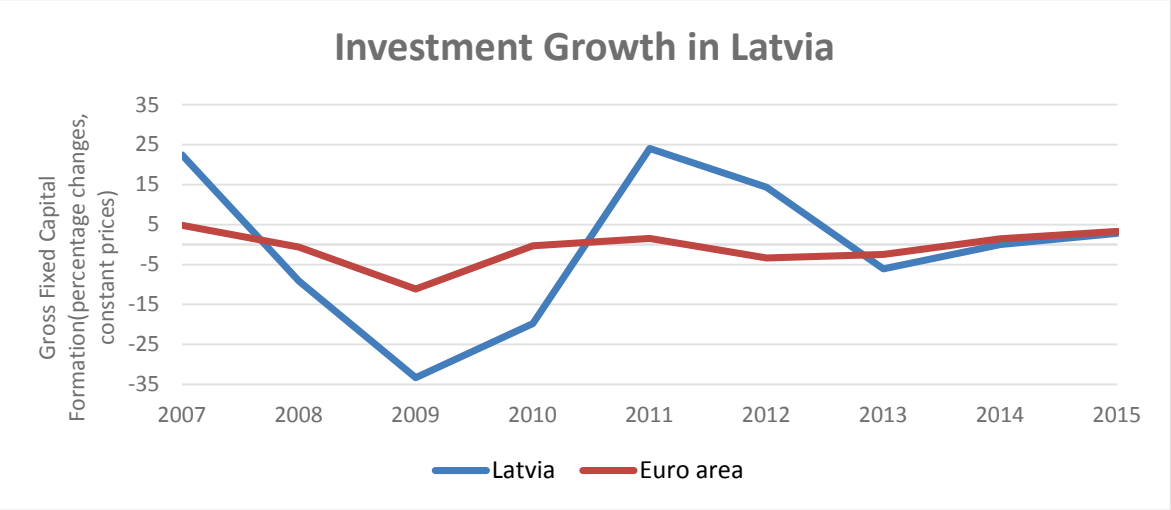
Table 2: Per capita intramural R&D expenditure in Latvia – Business Enterprise sector (EUR/inhabitant)

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU-28	276.3	293.1	303.3	292	303.6	326.4	340.7	344.9	359.9	376
LT	25.4	18.5	16.2	14.3	19	18.8	16.2	19.5	28.9	19

Source: Eurostat

To this end, Latvia employs a set of tax features that reduce the price of inputs for practices that directly, or indirectly, link to R&D. In particular, the Latvia tax structure allows for the depreciation and amortisation of expenses linked to R&D practices, as well as the deferral tax payments on taxed profits accrued via the sale of replaced assets. Through these tax features, Latvia aims to correct asymmetries in tax treatment and costs' frontloading that dampen innovation among SMEs (see. section 3.3, Chapter 2 of the report).

Figure 2: Latvia: A highly volatile Investment-Growth environment



Source: The World Bank

Assessment:

Chapter 2 section 3.3 suggests that depreciation and the ability to write off expenses comprise an important channel through which taxation supports investment. By allowing for accelerated amortisation, the cost of capital falls below the no tax benchmark, in which case the tax system actively encourages investment growth. Despite a lack of hard empirical data to support this theory (mainly due to the recent nature of the reform and the lag associated with the impact of R&D tax incentives), suggestive evidence hints at a positive effect of the tax feature in Latvia, where investment growth jumped from 0.05% in 2014 to 2.8% in 2015.

Instrument: The Micro-enterprise tax (MET)

In 2010, Latvia introduced the Micro-Enterprise Tax (MET) programme. In its initial form, this tax regime aimed to motivate small private business activity and self-employment through the provision of simplified accounting requirements. However, entities that fulfilled the qualification criteria (see. Box 1) could also apply for a 9% reduced tax rate (Ministry of Finance Republic of Latvia 2012).
As of 1 January 2017 the MET regime involves 12% tax rate for micro-enterprises with turnover below EUR 7000 and 15% for turnover greater than EUR 7000.01 but below EUR 100000. The MET regime includes compulsory state social insurance contributions, personal income tax and State fee of the business risk for micro-enterprise employees. If the micro-enterprise qualifies as an enterprise income taxpayer, the MET also includes enterprise income tax. Finally, the MET covers personal income tax for the micro-enterprise revenues created through the economic activity of the microenterprise owner.

Box 5: The Micro-enterprise tax (MET)[56]

Who qualifies?

- Any Limited Liability Company or individual merchant or individual performing economic activity without registration as an individual merchant.
- With:
  - employee's income less than EUR 720 per month
  - turnover less than EUR 100 000 per annum
  - no more than five employees

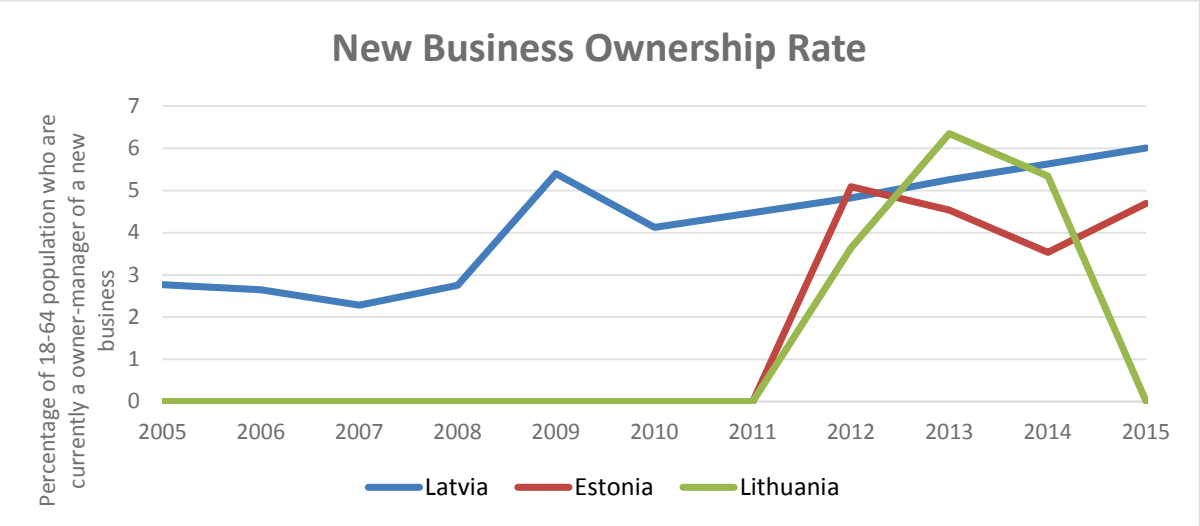
Source: Ministry of Finance Republic of Latvia

Rationale:

The MET regime was introduced in Latvia in 2010, following the outbreak of the Eurozone crisis, as a policy aimed at boosting small private business activity and self-employment.
By focusing on compliance costs, this Latvian preferential tax regime for Micro-businesses has two principal purposes: to boost entrepreneurship and to fight income underreporting – which is the most significant contributor to the size of the Latvian shadow economy (Putnins and Sauka 2016).

56 For an exhaustive account if the qualifying entities please see Ministry of Finance Republic of Latvia, available at: http://www.fm.gov.lv/en/s/taxes/ .

Figure 3: Entrepreneurship in the Baltics[57]



Source: Global Entrepreneurship Monitor

Table 3: Shadow Economy Index – Shadow Economy as a Percentage of GDP

	2009	2010	2011	2012	2013	2014	2015
Latvia	36.6%	38.1%	30.2%	21.1%	23.8%	23.5%	21.3%

Source: Stockholm School of Economics in Riga

Assessment:

Six years since the introduction of the MET, problems associated with the regime outweigh the support it offers to the SME sector in Latvia. According to the recent EC Latvia country reports, the MET is vulnerable to abuse by firms that use the scheme for tax optimisation while its structure provides low social guarantees for employees (EC 2016; EC 2015). The vulnerability of the MET to abuse, alongside its limited capacity to boost entrepreneurship, is evident in the share of self-employed population that functions under the MET.[58] From 24% in 2011, the share of self-employed more than doubled in 2014, up to 54.4%. For 2015, this figure scaled even higher reaching 66.4%. Meanwhile, Limited Liability Companies' shares declined from 70% in 2011 to 32.2% in 2015 (Prohorovs and Bistrova 2017).
Leibus (2014) also finds that the current structure of the MET gives rise to outright tax avoidance and unfair competition. By not restricting the dividend amount of companies to micro-enterprises, the Latvian MET fosters practices of tax optimisation. Moreover, despite government attempts to address the lowering of social welfare

57 No more data-points were made available for Estonia and Lithuania. Moreover, two missing observations for Latvia have been replaced by taking the mean of adjacent observation.

58 The term self-employed aggregates together a number of different economic activities, failing to separate between innovative individuals willing to undertake the risk associated with R&D practices and ones who simply own a small-scale grocery business. Thus, one cannot view entrepreneurship as the core economic activity of self-employed people. Instead, at this level of conceptual aggregation, LLCs are more adept to the task of research and innovation. For more information please see Levine and Rubstein (2013).

coverage through diverting Microenterprise tax revenue to social contributions, the amount remains significantly below the contributions paid under regular tax regime.[59] In an attempt to address the above shortcomings, Prohorovs and Bistrova (2017) suggest that Latvia should look at the example of its neighbour, Estonia. Instead of using an MET-type of tax feature, Estonia supports Micro-businesses by allowing the deferral of corporate income tax payments until profit distribution. In contrast to the MET, this tax design does not discourage the growth and transition of companies away from the simplified regime, but also abstains from providing social security contributions (or personal income tax exemptions), thereby having no impact over future social security.

3 Policy experiences and case studies in the area of taxation of the collaborative economy

3.1 The European Commission's Agenda for the Collaborative economy

The European Commission is proactively seeking to address the legislative and regulatory challenges presented by the collaborative economy, as set out in its "European agenda for the collaborative economy". This is a subset of its agenda towards a Digital Single Market. The Agenda was motivated by the diverging approaches taken towards regulation across Member States that "creates uncertainty for traditional operators, new service providers and consumers alike and may hamper innovation, job creation and growth" (European Commission, 2016). The objective is to encourage Member States to move towards a consistent European framework to ensure a level playing field for users, providers and platforms and in doing so can promote certainty, investment and growth within the sector.

The Agenda identifies emerging challenges in Member States' regulatory frameworks as a result of growth in collaborative economy activity. These issues have important implications for the tax system and are considered in more detail throughout our review. These include:

- **Professional and non-professional providers**: whether collaborative economy platforms are required to adhere to the same regulatory standards as traditional businesses could depend on whether the platform facilitates transactions through professional providers or P2P (private) providers.
- **Consumer and traders**: the collaborative economy blurs the relationship between consumers and traders. The EU's user protection only applies to transactions between a trader and consumer, and not consumer-to-consumer.
- **Employees and the self-employed**: providers within the collaborative economy do not fit into the traditional form of employment, which creates uncertainty around employment rights and social protections[60].
- **Tax compliance and enforcement**: the collaborative economy has potentially made it more difficult to identify taxpayers and taxable income, due

[59] This criticism is confronted by the position of the LCCI (Latvian chamber of commerce and industry) positing that a potential fall in social security budget income will be outweighed by the increase in number of enterprises and taxes paid.

[60] This is part of a longer term structural shift, and how to address this is being looked at by the Commission under the European pillar of social rights.

to the global nature of the platforms and lack of publically available information on their activity.

- **Hosting and active services**: collaborative platforms are exempt from liability for the information they store where they only provide hosting services, rather than an active role, which gives it knowledge of, control over, or awareness of illegal information.

Key recommendations from the Agenda include that outright bans on collaborative economy platforms should only be used as a "measure of last resort" and that collaborative economy platforms should only be obliged to obtain business authorizations or licenses "where strictly necessary to meet relevant public interest objectives". The Commission cited peer-review and rating systems as having the potential to mitigate the need for regulation in some instances.

Specific guidance on tax compliance and enforcement was also issued. The Commission emphasized the importance of mutual cooperation between Member States and collaborative economy platforms. In particular, national governments should:

- attempt to create a level playing field between tax obligations of traditional industries and collaborative platforms;
- exploit the opportunities provided by collaborative platforms in terms of their real-time and automatic tracking of economic activity;
- increase the ease of compliance for participants of the collaborative economy by raising awareness among participants and authorities; and
- improve transparency through online information with specific information directed to participants of the collaborative economy.

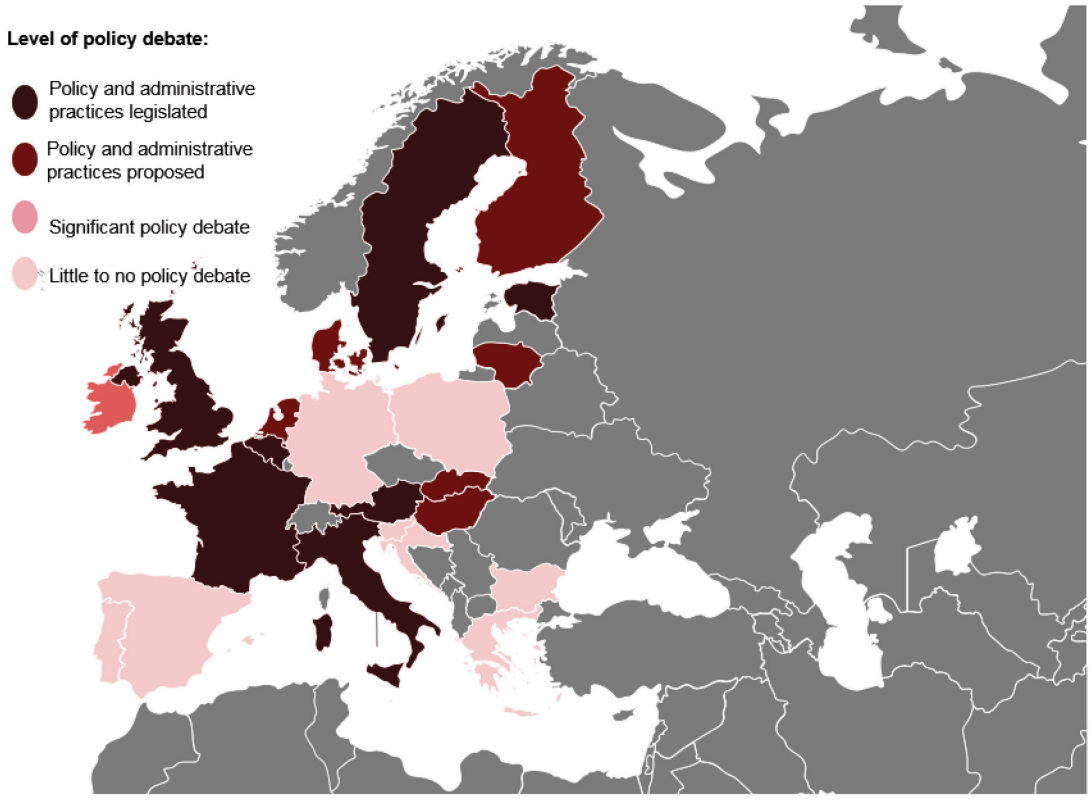
The Commission also encouraged collaborative economy platforms to be proactive in helping governments to track and enforce tax liabilities, through sharing income information with the tax authorities without breaching protection of personal data and directly collect taxes where possible, such as hotel taxes among the accommodation sector.

These guidelines are not legally binding. The intention is to encourage the Member States to review their policy frameworks in light of this guidance, with a view to simplifying and clarifying regulations relating to the collaborative economy.

3.2 Summary of Member States' engagement with taxation and the collaborative economy

We carried out a high level review of Member States to provide an indication of the level of engagement with taxation and the collaborative economy. Figure 4 highlights that there is diversity in the level of engagement across the EU with regard to tax design or administration questions stemming from the collaborative economy, with many countries not currently engaged at all.

Figure 4: Member States' tax policy and administration practices to respond to the collaborative economy



Source: PwC analysis. Note: based on available sources, September 2016.

Figure 4 indicates where we have observed governments proposing or implementing tax policies specific to the unique considerations of the collaborative economy, many of which we have elaborated further on in this Chapter and in Chapter 1. We have not included countries in the table below where little to no significant policy debate was detected.

Of the 28 countries assessed, income taxes have been the area most addressed, reflecting its relative importance in government's taxation revenues, whilst consumption taxes and excise taxes have been sporadically addressed (see Table 4).

Table 4: Member States that have proposed or legislated for tax policy measures specific to the collaborative economy (taxes that have been confirmed by Member States)

EU COUNTRY	INCOME TAXES	CONSUMPTION TAXES	EXCISE TAXES
AUSTRIA			✓
BELGIUM	✓		
ESTONIA	✓		
FINLAND		✓	
FRANCE	✓		✓
HUNGARY			✓
ITALY	✓		
NETHERLANDS			✓
SWEDEN	✓	✓	
UK	✓		

Table 5 below identifies the countries that have proposed or legislated for tax administration measures specific to the unique considerations of the collaborative economy. This suggests that many countries have engaged platforms; ranging from platforms' cooperation in sharing data, to platforms actively withholding taxes for the tax authority. Information campaigns have also been run by some governments, but the effectiveness of the campaigns is hard to measure (see Box 16, Chapter 2, Section 4.3). Digital tax reforms towards fully "Digital Tax Accounts" have only been progressed significantly by a few of the Member States, although many are beginning to discuss their use.

Table 5: Member States that have engaged in tax administration practices specific to the collaborative economy

EU COUNTRY	DIGITISATION OF TAX ADMINISTRATION	INVOLVEMENT OF PLATFORMS	INFORMATION CAMPAIGN
AUSTRIA			✓
BELGIUM		✓	
DENMARK		✓	
ESTONIA	✓	✓	
FINLAND	✓	✓	
FRANCE	✓	✓	✓
IRELAND		✓	
ITALY		✓	✓
LITHUANIA		✓	
NETHERLANDS		✓	
SLOVAKIA			✓
UK	✓	✓	

3.3 Collaborative economy and taxation case studies

Estonia

In this case study, we review three key practices:

Tax design

- Development of *Individual Entrepreneurial Accounts*

This tax policy proposal looks to address some of the uncertainty experienced by providers in interpreting potentially complex tax rules in relation to their earnings, as outlined in Chapter 2, Section 3.1. This policy is still in development, so its impact is uncertain, but the literature indicates that tax simplification should incentivise individuals to engage in entrepreneurship, both in the traditional and collaborative economy.

Tax administration

- The *E-Estonia* Digital Tax Account system
- Partnership with *Uber* to report taxable income

These measures have been pursued to make the most of the opportunities raised by digital: for collaborative economy platforms to help facilitate the exchange of data on taxable income, and for providers to easily measure and pay their tax obligations. This addresses some of the challenges experienced with administering collaborative

economy transactions, which can increase administration costs, reduce compliance and discourage providers.
The application of Estonia's reforms to the collaborative economy are still in their early stages but early evidence suggests that digital tax reforms in general have raised revenues and reduced non-compliance. The literature surveyed in Chapter 2, Section 3.7 suggests that reducing administrative costs should encourage providers to enter the collaborative economy and boost compliance rates.

1. Tax design

Instrument: Individual Entrepreneurial Accounts

Estonia has looked to simplify the tax system by applying a flat rate of tax to the so-called "Individual Entrepreneurial Accounts", which would capture all income for small scale entrepreneurs.
A 20% rate will apply to all income under €25,000 per year, which also corresponds to the threshold of VAT registration. This 20% rate covers all tax liabilities and the full social security contributions, such that these individuals will receive the same level of social security as sole proprietors and salaried employees. Income received into this "digital account" will not qualify for any tax deductions. Micro-entrepreneurs will not need to collect tax receipts, and there will be no accounting for billing obligations as all this will be done automatically and electronically.
For those earning income above this threshold, or from services to legal persons, a rate of 40% will be applied. The rates described roughly corresponds to existing tax obligations, which have nominally higher rates but also allow for tax deductions and credits.

Rationale:

The motivation for the new individual entrepreneurial account is to further reduce administrative costs and simplify starting and conducting a small-scale business, or a side-business. It also helps to deal with the issue of identifying what income is taxable as details such as the source and regularity of income can be identified and taxed accordingly. The Ministry of Finance hopes that it will be particularly attractive to online services, including but not limited to Uber and Airbnb. The Ministry of Finance together with the tax authorities have been working closely with the representatives of Uber and Taxify (the local ridesharing platform) as well as with Airbnb in the design of the entrepreneurial account.

Assessment:

The individual entrepreneurial account is still in development and a draft law is still to be published.
However, the measure may be expected to encourage micro-entrepreneurship within the collaborative economy through the simplification of tax registration and payment process. However, the threshold could create disincentives to generate earnings above this level and may require careful examination following any pilot scheme.

2. Tax administration

Instrument: The *E-Estonia* Digital Tax Account system

The country's "e-Estonia" program aims to facilitate engagement of citizens with the state via electronic solutions, such as the state-issued Estonian ID card. As noted in Chapter 2, Section 4.3, its tax administration system is no exception, with around

95% of tax declarations in Estonia filed electronically. This applies to individuals' taxes, enterprises' taxes, VAT, excise duties and customs declarations.

Rationale:

The rationale behind this is to ease tax compliance for all taxpayers. In particular, the pilot seeks to reduce the burden of paying income taxes, as "it is the tax administrator's duty to device smooth and transparent technical solutions" (ECTB, 2015).

Assessment:

The digital tax system reforms in Estonia have been lauded by commentators as a significant success. In the first nine months of 2015, Estonian companies paid €125m more in VAT than the previous year, a 7% increase, and the employment register collected €11.8m more in tax revenue, a 3% increase (E-Estonia, 2015). Over the same period, the number of visits to the ETCB service bureaus decreased by more than 60% compared to 2009, reducing administrative costs. There is also qualitative evidence that the program has encouraged consumers to become more aware about "cash in hand" practices and the risk that those receiving these payments may not declare the full tax that is due. Other countries such as Finland, Japan and Australia have looked to learn from Estonia and implement similar systems.

Instrument: Partnership with *Uber* to report taxable income

The government has sought to encourage the development of the collaborative economy by making it easier for its providers to remain tax compliant.
In October 2015, the ETCB set up a working group with Uber to "analyse collaboration points between Uber's global cash-free service and the ETCB's contactless reporting scheme in order to offer new ways of paying tax liabilities in transport sector" (ETB, 2015). As a result, a pilot tax declaration platform has been developed, with the objective of simplifying the reporting process for Uber drivers. Since February 2016, Uber drivers have been able to opt-in to a system where Uber will send their income data to the taxation authorities, which then automatically calculates the taxable income on the individual's tax return (Palling, BalticTimes, 2016).
Importantly, Estonia's digital tax reforms emphasise the importance of not just transferring original paper-based processes to digital systems but also holistically reviewing the design of tax administration. For example, the online tax return is not simply a replica of the paper-based return. Crucial is that the online forms are pre-filled so that the taxpayer only has to check the calculations. This removes the vast majority of the compliance burden from providers.

Rationale:

The Estonian government is seeking to transfer the principles of simplicity and practicability, already applied more generally in its taxation system, to the collaborative economy. Digital tax administration was a part of the e-Estonia regime before the collaboration with Uber. However, Estonia is the first country in the world where Uber drivers can now voluntarily opt-in to share their income data and declare their taxes automatically and electronically.
Michal, in a speech to the EU Competitiveness Council, suggested that a simple taxation system is good for business in general: "Uber has been working closely together with the tax authority on the subject of taxes to develop a system for convenient collection of taxes that is as automatic as possible, which could be used by all participants in sharing economy in the future. If reporting related to enterprise is as

minimal, transparent and automated as possible, it's good for starting a business" (The Baltic Course, 2016).

Assessment:

The ECTB stated that the first results from the policy were expected in 2016. Though no formal evaluation has yet been published, it has been suggested that a "respectable amount of their (Uber's) partner-drivers declared their taxes automatically, on volunteer basis" (Palling, 4 Liberty, 2016).
The ETCB hope to replicate this across the collaborative economy. The e-tax authority's environment is continually improving and it is hoped that the new version will enable all individual entrepreneurs to have an overview of their income and costs (and potential tax liability) throughout the year (currently the data is transferred once a year). Collaborative economy platforms would be able to send data to the e-tax authorities and the taxpayer would see the information as pre-filled. This extends the current option available only to Uber drivers and enables them to access this information through an online account.
It is also currently being determined whether the opt-in for transferring data on incomes to the tax authorities should become an obligation. This would guarantee a level playing field in relation to taxes for both the traditional and collaborative economy. At present there are reporting obligations on traditional economy entrepreneurs and employers such as payroll taxes which many Uber or Taxify drivers do not pay (PwC Estonia, 2016). This would be in line with the European Commission's Agenda for the collaborative economy, calling on Member States to create a level playing field between the collaborative and traditional economy.

France

In this case study, we review five key practices:

Tax design

- Applying existing income tax framework to the collaborative economy
- New social security contribution rates for collaborative sectors
- Shifting recovery of VAT to consumer

These measures reflect France's more sceptical approach to the collaborative economy, which is seen by some commentators as being used by providers to avoid tax obligations, and thus undercut those operating in the traditional economy due to the "grey" areas of tax design that currently exist as discussed in Chapter 2 Section 4.2 (FT and Euroactiv). France's tax policies aim to ensure a level playing field, such that all tax paid by traditional economy workers are paid by those in the collaborative economy, and to secure the basis of government's tax revenue as the collaborative economy grows.

The impact of this approach cannot yet be conclusively assessed but early evidence points to mixed success. However, many collaborative economy platforms have reacted negatively to wider tax reforms, arguing that new inequalities will be introduced in the tax system, for example with social security reforms failing to distinguish between income and cost sharing.

Tax administration

- Airbnb collect tourist tax
- Platforms sharing income data

The rationale for these administrative practices have been to reduce potential non-compliance, intended or otherwise, from providers in the collaborative economy. Initial evidence suggests France's partnership with Airbnb has not come at the expense of deterring participation of hosts. Platforms will not be required to share income data until 2019, but evidence from our review (e.g. the discussion in Chapter 2 Section 4.3) suggests that this should assist the government in enforcing tax obligations.

1. Tax design

Instrument: Applying existing income tax framework to collaborative economy

In line with the approach described by Oei and Ring (2015), outlined in Chapter 2 Section 4.3, the Terrasse report recommends incorporating the collaborative economy within existing income tax frameworks.
The French Senate finance committee has proposed a threshold of €5,000 per year, above which all customer to customer ('CtoC') transactions would be considered as taxable income. Above this threshold, collaborative economy users would be treated as an 'auto-entrepreneur' and the appropriate personal income tax and social security contributions would be applied. The Terrasse report suggested a lower threshold between €2,000 and €3,000 a year, above which income should be taxed as normal, regardless of the type of activity (McPartland, 2016).
The French tax administration published in August 2016 a paper, which gives more clarity about how existing exemptions could apply to collaborative economy activities. As an example, incomes that derive from sharing costs with others are not subject to income tax and no declaration is required (which would apply to the case of Blablacar, for example)[61].

Rationale:

The French government is seeking to avoid creating specific rules or statutes, which could breach the principle of equality of tax treatment for the same activities. For example, there are already exemptions in place for small amounts of income earned from occasional activities which apply equally to traditional economy income and collaborative economy income.

Assessment:

The setting of a financial threshold above which all collaborative economy providers will be subject to the same tax law as traditional providers should "provide greater legal certainty" (Rui Cabrita, E-Comlaw, 2015). However, the thresholds proposed have been criticised for not being high enough, with many regarding incomes generated by collaborative activity as "extra" revenues that do not require specific declaration (Les Echos newspaper, 2016).

Instrument: New social security contribution rates for collaborative sectors

The French social security system is largely financed through the payment of social security contributions, rather than through general taxation as with many other European countries, and the overall burden on labour is one of the highest in the

[61] French tax administration documentation http://bofip.impots.gouv.fr/bofip BOI-IR-BASE-10-10-10-10

world. These contributions are treated differently between employed and self-employed individuals in France.
For individuals in employment, they pay over 40% of their gross salary towards social security, including employer and employee contributions, although this varies according to industry, company size, and type and status of workers. Self-employed individuals pay significantly less, depending on the legal and tax status of their business: a "micro-enterprise" pays between 13% and 25% of turnover; "micro-entrepreneurs" pay between 1% to 2.2% every month; and those that operate on the basis of Régime Réel pay social security contributions after deductions for eligible costs, at around 45% of net profits.
The government has introduced social security contributions for participants in the collaborative economy who do not fall under any of these self-employment definitions. Under this measure, passed by the National Assembly on October 27th 2016, collaborative economy participants will contribute if their annual revenue exceeds €23,000 from short-term property rentals such as Airbnb, or €7,720 from car-sharing services such as Drivy.

Rationale:

The government has stated that its goal in introducing this policy is to fight abuses and unfair competition resulting from the growth of the collaborative economy (Sprackland, Tax Analysis, November 2016). This reflects views from many stakeholders in France that the collaborative economy is introducing unfair competition to existing organisations. One of the rationales is also likely to be as a revenue raising measure, given the strain that is being increasingly placed on the social security system in France due to an ageing population (Hampshire, Paris Voice, 2016).
A report "Collaborative Platforms, Labor and Social Protection", released by the Office of the Inspector General for Social Affairs in France (IGAS), October 2016, focussed on social challenges related to the collaborative economy and makes 30 recommendations to harness the growth of the collaborative economy while ensuring better labour conditions and social protection. The report recognizes that the collaborative economy has blurred the boundaries between commercial and non-commercial activity, on which the French social security contribution system is based. They also recommended clarifying the basis of social contributions that are generated by "cost sharing" activities such as BlaBlaCar. Finally, the report also advised the government to create a digital social security branch adapted to self-employed collaborative workers [Amar and Viossat, French Government].

Assessment:

The measure was previously voted down in the National Assembly on October 26, but a second vote was forced using the government's constitutional authority. The measure was approved by the Senate on November 2nd as part of their review of the 2017 budget proposal.
Opponents point out that this measure would force collaborative economy participants to pay into the national social security system's regime for transactions that these individuals have argued are not commercial and do not generate income. The founder of Drivy has expressed his disappointment at the decision to pass the measure, noting it is important to distinguish between participants who are recouping part of their ownership costs, and those who earn income. Cost sharing considerations are applied to the income tax regime (as we discussed in Tax Measure 2 above), which could reduce the coherence of the taxation system.
The measure has the support of the Union des Metiers et des Industried de l'Hotellerie (UMIH), a hospital organization, which has also requested that participant's

information should be automatically passed on from platforms to the tax authorities. The Union has commented that "like any worker, whether independent entrepreneur or employee of the Social Security funding bill does not represent a barrier to collaborative economy; but lifts the veil, in part, on the opacity that reigns on these platforms."

2. Tax administration

Instrument: Airbnb collects tourist tax

France was one of the first countries to introduce the imposition of a tourist tax with Airbnb. The tourist tax was first administered in Paris at a rate of €0.75 per room per night (and an additional district tax of €0.08) in October 2015. As a result, the city has collected more than €1.1 million tax revenue in the last quarter of 2015 (Koolhoven et al., 2016). This tourist tax has now been extended to several other French municipalities. Where it has been "clear that these taxes apply to non-professional hosting" Airbnb has decided to voluntarily collect these taxes on behalf of local governments as set out in its briefing for the DG Grow Task Force.

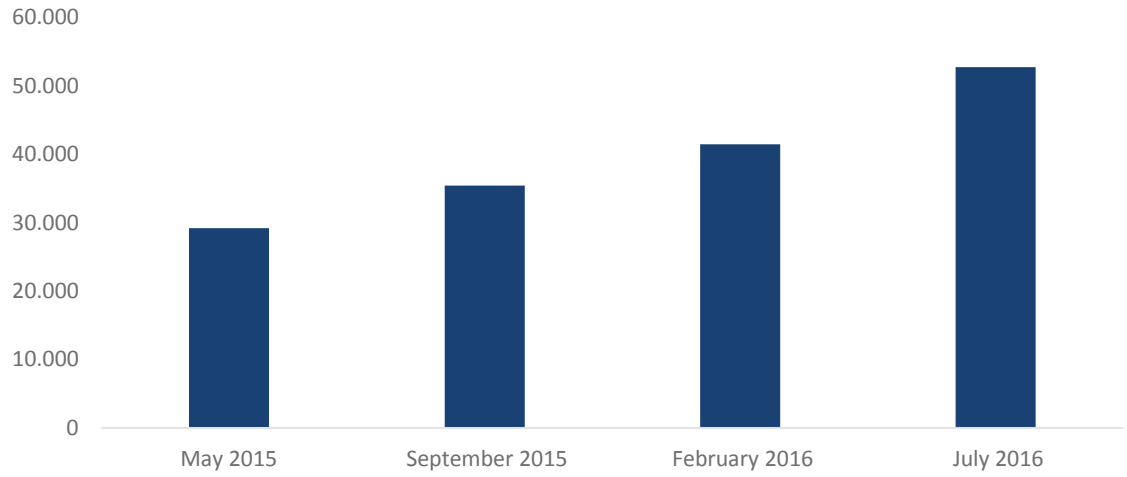
Rationale:

The French government aims to ensure fair competition – in particular, complaints have been raised by French hoteliers that Airbnb is able to undercut them as hosts avoid paying tourist tax. In February 2015 hotels "declared war" on Airbnb in an open letter to the Prime Minister calling on him to level the playing field. Roland Heguy, the president of the French Hotel Union UMIH union, wrote "without respect for the rules, our profession, our values, our jobs, and our investments are in danger" (McPartland, The Local, 2015).

Assessment:

The facilitation of occupancy tax payments does not appear to have discouraged the continued participation of new Airbnb hosts, with the number of listings increasing on average by 4% per month during the period leading up to and after the introduction of the tourist tax, using data from Inside Airbnb.
Airbnb have reported that they remitted €7.3million in Tourist Tax in France in 2016, and will expand the scheme to 31 more cities, suggesting that the scheme has been successful and has not deterred hosts or guests from using the site (Airbnb, 2017).

Figure 5: Reported Airbnb listings in Paris



Source:

Instrument: Shifting recovery of VAT to consumer

In a separate report, the French Finance committee has also focused on improving the collection of VAT from online consumers.
The report suggested shifting the recovery of VAT onto French consumers, for example by withholding VAT on online shopping. This would involve banks mandatorily collecting 20% of the amount paid for online shopping to be transferred to the French Treasury.
Certain exemptions from the VAT were also proposed; and individuals who are exempt from VAT or subject to a lower tax rate would be able to advise the Treasury of their situation (Rui Cabrita, E-Comlaw, 2015).

Rationale:

This policy has been proposed to address the issue that online providers often consist of many small e-merchants, some of which are providers on the collaborative economy, and are thus difficult to identify. In addition, as VAT is declared and collected by the individual on behalf of the tax authorities it relies on the provider having knowledge of the complexities of the VAT system.

Assessment:

This measure is still under discussion, and will need to be developed further from a practical point of view: for example, "management of product returns and refunds, cash impacts for companies and compatibility with banking standards" are the biggest outstanding issues (Rui Cabrita, E-Comlaw, 2015). There are also other issues with this policy that would need to be addressed, particularly around compliance: for example, "legal liability for errors, personal data management in conformity with French law on information technology, data files and civil liberties". France would also need to consider its compliance with the VAT Directive. However, Article 395 provides that exceptions can be made in order to simplify the collection of VAT or to prevent certain forms of tax evasion or avoidance (Rui Cabrita, E-Comlaw, 2015).

Instrument: Platforms sharing income data

France has put into place a system whereby platforms are required to inform their users of their fiscal and social obligations, (new Article 242 bis of the FTC and Article L 114-119 of the New Security Code). Collaborative economy platforms must now provide, for each transaction that occurs, a fair, clear and transparent explanation of the relevant tax and social obligations. This must include an electronic link to the websites of the tax authorities and send users a report of their gross annual transactions at the end of each year. Legislation requiring platforms to send income reports to providers came into effect on July 1 2016, with fiscal penalties of €10,000 applied to those who do not comply.

The Terrasse report also proposed that platforms should send transaction information to the tax authorities. This would enable the tax authority to pre-fill declarations of income on which tax liabilities could be automatically calculated. This requirement has been added to the amended Finance Act for 2016. However, this will only come into effect in 2019.

These new reporting obligations will apply to all "online-platform operators" which are now defined under Article L 111-7 of the French Consumer Code. This broad definition includes all online platforms, whether based in France or abroad and regardless of their business sector (CMS Law-Now, 2017).

Rationale:

Terrasse's proposals were aimed as facilitating smoother tax administration and in particular, compliance measures and in addition would "ensure the contribution of these platforms" to the state (The Local, 2016).

It is hoped that informing collaborative economy providers of their tax obligations will reduce the number of those avoiding taxation. As explained in Chapter 2 Section 4.2 many providers in the collaborative economy are new to and unaware or confused by the tax they are required to pay. In his proposal Terrasse urged company owners to "take on their responsibilities" and said that the collaborative economy "was not a lawless zone" (The Local, 2016).

Assessment:

Although no assessment is yet available, this measure has the potential to reduce non-compliance by facilitating the exchange of existing data. However, the practicality of this measure has been called into question by some, due to the level of information and IT procedure that would be required on the platform. For example, it could be difficult to identify taxpayers as collaborative economy providers due to the large variance in income, type of activity and frequency. In addition, any "automatic" calculation of tax liabilities may be difficult if providers have multiple sources of income.

UK

In this case study, we review five key practices:

Tax design

- New "Micro-Entrepreneurship" tax allowances
- The Rent a Room scheme
- Tax free savings for peer-to-peer lenders

Whilst the majority of these measures are still being introduced, they have supported the UK being seen as a flourishing environment for the collaborative economy. The UK's collaborative economy is expected to grow by over 30% per year over the next decade, generating £18bn of revenue for platforms and facilitating about £140bn worth of transactions, per year, by 2025.

Tax administration

- The UK's agenda for "Tackling the hidden economy"
- Information campaign
- Digitizing the tax system

The tax administration measures introduced by the UK have looked to tackle the potential non-compliance of providers in the sharing economy, and the risk this poses to tax revenue. Central to this is the UK exploring the opportunity raised by technology, such as the online payment systems used within the collaborative economy, and the potential for automatic recording and remitting of income data by platforms, to help facilitate tax payments. The digital tax system is still being tested, and will not be fully implemented until 2022.

1. Tax design

Instrument: New "Micro-Entrepreneurship" tax allowances

The March 2016 Budget proposed two £1,000 tax-free allowances for individuals: one for property income and one for trading income, although implementation of this policy is now postponed until after the June 2017 general election. Both of these allowances are optional and not mutually exclusive. Individuals with income below this level will not need to declare or pay tax on that income. If an individual chooses to use the allowance, they will pay tax on the gross income less the value of the allowance, but will not be able to deduct expenses from that income.
The measure was billed as the "world's first sharing economy tax break" by Sharing Economy UK (SEUK). However, it is applicable to anyone earning small amounts of income from property or trading, whether they earn this through a collaborative economy platform or not. However, in its announcement, the Government acknowledged that this would in particular benefit "the new world of micro-entrepreneurs".
The UK Treasury estimates this could benefit more than 700,000 taxpayers, with a cost of around £235m for the UK government by 2018/19 (HM Treasury, 2016). The estimated cost of the policy by the government is provided below, which includes an adjustment for take-up and compliance.

Table 6:

	2016/17	2017/18	2018/19	2019/20	2020/21
Exchequer impact (£m)	0	-15	-235	-195	-200

Source: HMRC policy costings

Rationale:

The government recognises that the growth of the collaborative economy has encouraged more individuals to become "micro-entrepreneurs". However, they also recognise that for those micro-entrepreneurs earning only small amounts of income, the potential tax compliance burden can seem "daunting or complex". The introduction of the tax allowance is therefore "to help make the tax position more certain and

simple for these individuals" (Budget 2016). We discuss different approaches for taxing income within the collaborative economy in Chapter 2, Section 4.2.
By reducing individual's tax burden, the policy may act as an incentive for potential providers to enter the collaborative economy. It also reduces their administrative burden, which can often be disproportionate for those earning small amounts of income (discussed in Chapter 1, Section 4.3). Debbie Wosskow, referring to her role as Chief Executive of LoveHomeSwap, stated: "a lot of the questions we've dealt with over the last year on the topic of tax has been people unsure of what they're allowed to do, how do they declare tax, and if there's anything they can do tax-free" (Smith, 2016).
Announcing the policy to Parliament, the then-Chancellor of the Exchequer, George Osborne stated that:
"We're going to help the new world of micro-entrepreneurs who sell services online or rent out their homes through the internet. Our tax system should be helping these people so I'm introducing two new tax-free allowances each worth £1,000 a year, for both trading and property income. There will be no forms to fill in, no tax to pay — it's a tax break for the digital age and at least half a million people will benefit."

Assessment:

The UK's policy measures have been welcomed by collaborative economy platforms and industry associations. The tax break will not come into force until Parliament's next session, starting in September 2017, due to the general election, so it is not possible to assess its impact. The fact that the allowance has been set at a low level, below survey estimates for average earnings in the collaborative economy cited in Chapter 1, may constrain the ability for the tax incentive to encourage significant levels of additional take up. The allowance will likely only benefit those earning very small amounts of income in the collaborative economy to "top-up" their earnings. In addition, it may also be able to generate a positive revenue impact through the signalling effect this sends to those who might be considering participating in the collaborative economy.
In assessing the potential transferability of an allowance approach to other Member States, we note that the ability and willingness of governments to implement tax breaks will depend on government finances and whether they identify a specific public policy rationale in support of micro-entrepreneurs.
As noted in Chapter 2 Section 4.2, the fact that the policy was communicated as a tax break for the collaborative economy, but was in fact applicable to traditional activity, may reflect the difficulty in defining collaborative economy activity, particularly to the rigour required by tax law. This makes allowance mechanisms difficult to target towards a specific public policy need.
In addition, HMRC recognised significant uncertainties to its policy costings, relating to the size of the tax base and the behavioural responses of participants. Both of these effects would differ between countries. For example, countries that have higher taxes for micro-entrepreneurs, and thus a high marginal effective tax rate, could see the most significant increase in collaborative economy activity, but likely only driven by those earning small amounts of income below the threshold. At the same time, these countries would also experience the most significant impact on government revenue.

Instrument: Rent a Room scheme

In the 2015 Budget, the "Rent a Room" tax allowance was extended to the first £7,500 of rental income from a room in a primary residence. This allowance could be applied in addition to the new "micro-entrepreneur tax break" described above and it came into effect from April 2016. The estimated cost to the government is provided below.

Table 7:

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Exchequer impact (£m)	0	-5	-10	-10	-10	-15

Source: HMRC policy costings 2015

Rationale:

The Government hoped that the Rent a Room allowance may help to mitigate the lack of affordable housing, particularly in London (Raise the Roof, SpareRoom.co.uk). A higher threshold incentivises individuals with a spare room in their property to enter the rental market, thus increasing supply and limiting upward pressure on price growth.

The increase in the threshold means it now lies above the average lodger rent per year, which means that the majority of rental income from lodgings will not be subject to tax (Goudiaby, EasyRoommate, 2015). This may provide an incentive for households determining whether to top up their income by renting out a spare room, and reduce upward pressure on prices by expanding supply in the rental market. This could also help reduce housing costs for younger members of the workforce, who have increasingly struggled to attain home ownership (Boyce, 2014).

Assessment:

Airbnb commented that the measure "demonstrates the UK government's commitment to being a world leader in the sharing economy and shows their support for local residents across the country who are sharing their homes" (Andrew, 2015).

However, the allowances have raised questions about whether this contributes to an uneven playing field between the collaborative and traditional counterparts. Wosskow stated that the government will need to work further with the industry to define "a clear way of what will qualify and how people will declare this income" in order to attenuate the fear among hoteliers of "individuals flooding the market, resulting in hotels unable to operate on a level playing field".

Although the issue of unequal competition is raised regularly in the context of the collaborative economy (which we discuss in Chapter 2 Section 4.2), the move to increase the Rent a Room allowance adds to the debate around the public policy rationale for intervening in the market. For example, it raises the prospect that the rationale could be better fulfilled by targeting tax incentives at the sector in question, rather than at the individual level or at collaborative economy activity in general. We discuss this further in Chapter 2 Section 4.2.

Instrument: Tax free savings for peer-to-peer lenders

Individual Savings Accounts (ISAs) are tax-free accounts for savings and investments. In 2014, the government announced it would include peer-to-peer (P2P) products within the ISA wrapper, termed an 'innovative finance ISA', which will allow savers to lend money to individuals or businesses through P2P lending platforms and earn tax-free returns. For 2015/16 the tax-free allowance for the ISA is £15,240.

The tax revenue cost to the government is provided in the table below:

Table 8:

	2015-16	2016-17	2017-18	2018-19
Exchequer impact (£m)	Negligible	-10	-20	-35

Source: HMRC policy costings 2014

Rationale:

By allowing returns on P2P investments to be earned tax-free, the government is seeking to encourage P2P lending. The official policy objective is "to increase the choice and flexibility available to ISA investors, encourage the growth of P2P lending and improve competition in the banking sector by diversifying the available sources of finance" (HMRC, 2015).

Assessment:

Christine Farnish, chair of P2PFA, commented that the change would "encourage more people to benefit from the fair deal that P2P lenders offer without getting confused between stocks and shares, P2P lending or cash savings" (Boyce, This is Money, 2015). James Meekings, co-founder of Funding Circle, suggested that the move would not only give "investors a better deal, but it will help even more small businesses access finance they need to grow, which in turn helps the economy" (Boyce, This is Money, 2015).
The government identified "no significant economic impacts, nor any impact on individuals, households or families beyond those who make peer to peer loans". However, the government did identify certain socio-economic impacts, with more of the benefits accruing to males (80% of P2P lenders have been identified as male by peer lending platforms) and basic rate taxpayers. Industry data indicates that most of those who gain from this change could be basic rate taxpayers as they have more room available within their ISA allowance, rather than higher rate taxpayers, who are more likely to have used their tax-free allowance already.
The government also identified benefits for platforms that choose to offer the ISA as it would make this type of lending more attractive and help promote their business models. This could also help micro-entrepreneurs, who would have greater access to alternative finance options. However, there would be set up costs and ongoing costs for platforms in adhering to new regulatory requirements, processing ISA subscriptions, reporting ISA information and staffing costs such as legal specialists.
Some countries run schemes similar to the UK's ISA, such as Canada's Tax-Free Savings Accounts (TFSA), Individual Retirement Account (IRA) in the US and Japan's NiSA accounts. It may be possible to extend such concepts to these systems but lessons from the UK example suggest that if tax incentives are to be implemented in this way, this must be coordinated with other regulatory mechanisms.

2. Tax administration

Instrument: Tackling the hidden economy

In its campaign to "tackle the hidden economy", HMRC has released three proposals which set out different solutions to the problem of tax evasion by small businesses and entrepreneurs, through an extension of data-gathering powers, an increase in sanctions and the introduction of conditionality on access.
The proposals are described in three documents (HMRC, 2016):

1. *Tackling the hidden economy: extension of data-gathering powers* (HMRC, 2015). This document proposes to extend the HMRC's bulk data-gather powers, to reflect the rise of digital record-keeping and "big data". This will enable HMRC to collect data from providers of electronic stored-value payment services (i.e. "digital wallets") and business intermediaries who facilitate transactions between providers and consumers (such as platforms within the collaborative economy).

2. *Tackling the hidden economy: sanctions* (HMRC, 2015). The government is suggesting an introduction of a second "failure to notify" penalty, which is higher than the initial notice, in order to deter repeated non-compliance.
3. *Tackling the hidden economy: conditionality* (HMRC, 2015). The government is suggesting to make the access to some essential business services or licenses dependent on tax registration, in order to normalise the process and make it more difficult for businesses to operate outside of the tax system.

AccountingWeb and the ACCA stated that HMRC are most likely to be targeting online traders through the policy, and in particular, those who rent property online (Badenhorst, AccountingWeb, 2016).
Extensions of data-gathering powers may particularly impact collaborative economy providers, by enabling tax authorities to access information on the income they earn through the platforms. We discuss the ways in which tax authorities are seeking to involve platforms in the tax administration process in Chapter 2 Section 4.3. Conditionality and sanctions could also impact providers, many of whom might be new to generating income in this way and are not fully aware of their tax obligations.

Rationale:

Informal economy activity has been estimated to have deprived the government of £6.2bn in 2013/4. Although this is one of the smallest reported "tax gaps" in the world, HMRC aims to continue to reduce it. They argue this places an unfair tax burden on those who do pay their taxes and places compliant businesses at an unfair disadvantage.
The government hopes the measures outlined above will provide the correct incentives to comply with tax obligations. However, the government also recognises that there are greater number of individuals who have flexible sources of income, supported by technology, such as providers in the collaborative economy, which may also increase the size of the hidden economy. Hence it has increasingly focused on deploying technologically-enabled compliance work to tackle any under-reporting in these areas.

Assessment:

The impact on the Exchequer has not been quantified at this stage, but the measures are not expected to have any significant economic impacts (Government consultations, 2016).
There has been a recent, much publicised, global campaign, led by the OECD, to tackle tax evasion, with the European Parliament looking at how they could "extend the information available to authorities". The policies HMRC are proposing to tackle the informal economy could be easily replicated across member states, as they come with little additional administrative cost. In particular, countries such as Italy, Greece and Spain, which have large reported informal economies, could benefit from improved incentives to report income accurately.

Instrument: Information campaigns

In response to the independent review in March 2015, the UK government announced that it will produce tailored guidance for the collaborative economy, which will be easily accessible online. It will also be consulting with collaborative economy platforms to develop interactive tools, such as an online calculator and mobile app to help providers to understand their tax obligations. HMRC also plans to use social media channels to help communicate this new guidance, through mediums such as Twitter and YouTube (HM Government, 2015).

Rationale:

This is to address the issue raised in the independent review of the UK's collaborative economy which recommended the *"HMRC and HM Treasury should create a guide to tax in the sharing economy, and an online tax calculator to help users of sharing economy services to easily work out how much tax they are liable to pay."*
This may help to reduce confusion over tax obligations within the collaborative economy that may discourage potential providers, as discussed in Box 16, Chapter 2 Section 4.3.
Assessment:
HMRC's Youtube site has a number of videos relevant for collaborative economy participants including ones titled: "Am I Employed or Self Employed?" and "Your Income from property tax return" both of which had over 1,500 views as of December 2016. This response addresses some of the issues outlined in Chapter 2 Section 4.3 on the design of tax administration.

Instrument: Digital tax system

By 2020, HMRC aims to move to a digital tax system whereby all taxpayers will be able to complete online tax returns; the tax system will operate close to 'real time'; and taxpayers will have access to their own digital tax account (HMRC, Making Tax Digital, 2016).
Executive Chair of HMRC Edward Troup, commented on the proposals: "going digital will abolish the annual tax return as we know it by 2020, replacing it with a personalised digital service through which taxpayers will be able to send and receive information to HMRC at the click of a button" (HMRC, 2016).

Rationale:

This tax system reform has four foundations: to simplify the tax system, to allow taxpayers to see their tax obligations in one place, and to make tax compliance digital for businesses and individual taxpayers. It is aimed at reducing compliance burdens for taxpayers and making the tax system more transparent and accessible.
The ability of HMRC to collect data on taxpayers' income and process this in real time will reduce administrative costs, increase compliance and reduce time and money wasted on over- or under-payments. Whilst the measure is not specifically targeted at the collaborative economy or micro-entrepreneurship, it is this group which may observe one of the biggest impacts. If the tax administration system reflects the digitally-enabled nature of the work they participate in, they are less likely to see this as a barrier to enter the collaborative economy.

Assessment:

Testing started in July 2016 for digital reporting of accounts by small businesses and authorised agents have been able to manage their clients' digital tax accounts. At the end of 2016, testing will start on using real-time information to show taxpayers how their personal allowances are shared between jobs and pensions. The results of these tests will be released in early 2017, but the full digital accounts will not be running until 2020.
Though a digital tax system is not an initiative specific to the collaborative economy, the 'Making Tax Digital' programme is expected to particularly benefit the micro-

entrepreneur, for reasons discussed in Chapter 2 Section 4.3 around the disproportionate burden imposed on collaborative economy providers. It will simplify the tax system, and improve accuracy and certainty as micro-entrepreneurs will be able to track how much they have to pay and not over- or under- calculate payments.
HMRC is currently carrying out a consultation on the policy which will run until November 2016. Concerns have been raised over the number of taxpayers categorised as "digitally excluded", which numbers more than 10 million in the UK, and may hold back implementation (Palin, the Financial Times, 2016). An additional challenge is that many users of collaborative economy platforms are international, and many platforms are structured across tax jurisdictions, so coordination between tax authorities may be required to make digital tax accounts a success.

Annex 1 – Additional detail on case studies

We have selected case studies based on their ability to exemplify the key relationships we have uncovered between entrepreneurship, the collaborative economy and key margins of taxation, which were discussed in Chapter 1 and Chapter 2. In Chapter 3 we highlighted the most important criteria, and we present a detailed list below.

Criteria	Assessment	Example	Purpose
Alignment with issues or opportunities raised in our literature review	Qualitative	How tax breaks or thresholds have been used to encourage micro-entrepreneurs and reduce tax administrative costs for the government.	To illustrate the range of tax policies and/or administrative measures that could be employed by Member States to address challenges or opportunities raised by our literature review.
Initial signs of success	Qualitative	Provides evidence of a success of a particular policy stance reviewed as part of the empirical literature, or where robust evidence is unavailable, provides some initial signs of success through anecdotal evidence.	To identify the effectiveness of government policies or administration changes.
Tax system structure	Qualitative	International perception of tax system from businesses, journalists and tax experts.	To assess how responses might vary across tax systems which have different internal characteristics (i.e. breadth of tax base, tax strategy).
	Quantitative	International Tax Competitiveness Index (ITCI), which includes over 40 tax policy variables (Tax Foundation)[62].	To assess how responses might vary across tax systems which have different levels of international competitiveness.
Entrepreneurial environment	Quantitative	Eurostat-OECD entrepreneurship indicator Programme (EIP), include rates of entrepreneurial activity and its impact (Eurostat).	To assess whether the effects of different policies depend on the specific context of the country in which they have been implemented and to evaluate whether success policies can be replicated in other countries with a similar or different entrepreneurial environment, (policy
		Global Entrepreneurship Monitor (GEM), highlights extent to which public policy	

[62] The ITCI is a tax index which rates and ranks countries according to competitiveness in a range of different taxes, source: http://taxfoundation.org/article/2015-international-tax-competitiveness-index

		supports entrepreneurship.	transferability).
Size of the collaborative economy	Quantitative	Take-up of the collaborative economy, including PwC's analysis on adoption rates and platform growth (where available) (PwC, 2016a)	To identify countries where the substantial growth of the collaborative economy has been realized, and to be able to identify the potential role tax policy has played.
Interesting and innovative use of tax policy instruments	Qualitative	The implementation or announcement of tax policy or administration measure in the last two years specifically relating to entrepreneurship or the CE, such as deployment of digital technology or new tax breaks.	To identify recent examples of innovation that are not widespread practice but could be scaled to other Member States.
Public policy rationale	Qualitative	Government statements or policies that clearly articulate a public policy rationale for intervening in the area of entrepreneurship or the CE.	To identify examples where policy makers have clearly targeted the interventions on entrepreneurship or the collaborative economy.
Territorial coverage		Look at countries that cover the broad spectrum of socio-economic and cultural conditions within the EU.	To assess how tax responses to entrepreneurship / CE might vary across countries that have different socio-economic and cultural conditions.

Denmark

Case Study Selection

The entrepreneurship rate in Denmark is largely on par with the EU average. Denmark is a small open economy and Danes are the world's best non-native English speakers (English Proficiency Index, 2016). A great number of Danish entrepreneurs aim at developing international market reach. Denmark currently includes a high number of new (local) start-ups and businesses, while older businesses have already taken the step into turning global, seeking to attract larger investments. However, Danish culture plays a significant role in latent entrepreneurship growth in the country. Danes view positive entrepreneurship (Eurobarometer, 2010) but local investors and entrepreneurs often present high numbers of fear of failure and bankruptcy, preferring to invest in stable business activities than young start-ups (Amway, 2015).

Denmark has been chosen as the object of a case study on taxation and entrepreneurship policies for three main reasons. First, the Danish taxation system is deemed for its efficiency, despite presenting one of the highest globally average income tax rates. Second, Denmark maintains a simple corporate tax system and a low corporate tax rate. Third, in recent years the country has implemented a number of policies focusing on entrepreneurship, most of which had an added focus on the

fiscal side of the economic environment. Discussing these reforms brings to light interesting characteristics of the policy mix implemented by the Scandinavian country with the aim to utilise entrepreneurship as an engine of economic growth that propels the country out of the recession.
The assessment of Denmark's suitability as a case study given our selection criteria is provided below.

Criteria	Assessment
Alignment with issues or opportunities raised in our literature review	The taxation policies implemented in Denmark focus on two dimensions: - Boosting entrepreneurship creation; - Revising the tax structure and tax framework for entrepreneurs.
Tax system structure	Following a series of targeted reforms Denmark has successfully transformed its tax system to one of the most business-friendly in the world. However, the use of very high income tax rate remains an obstacle to entrepreneurship.
Entrepreneurial environment[63]	Taxes and bureaucracy / Total early-stage Entrepreneurial activity / Financing for entrepreneurs Global Rank N/A / N/A / N/A
Size of the SME sector	The SME sector is very dynamic since SMEs and micro enterprises account for 99.4% of businesses in the country. Self-employment (free-lancing) is also very popular among professionals. However, the country's entrepreneurship rate (start-ups) is among the lowest in Europe (8% compared to an EU average of almost 15%).
Interesting and innovative use of tax policy instruments	- Easy access to finance. - Restructuring of taxes for a more business-friendly environment. - Effective online systems.
Public policy rationale	Denmark is seeking to recover the level of business dynamism that the country was experiencing before the crisis, through the use of innovative policies aimed at attracting entrepreneurs.
Territorial coverage	Denmark provides a Northern European perspective on the issue of entrepreneurship since similar points can be observed in other Scandinavian countries such as Sweden and Norway.

[63]The entrepreneurial environment in Denmark is very efficient: business creation is simple and fast, tax enforcement is effective, administrative burdens are very light, and the system is very flexible. Corporate tax is low (22%). Furthermore, as no rank is available, please see. http://www.gemconsortium.org/country-profile/56 for further information.

Overview of Denmark's tax regime

The Danish tax regime ranks 21st, significantly below the other Scandinavian economies, in the International Tax Competitiveness Index. The overall rank of the country has steadily improved in recent years, from 23rd in 2014 to 21st in 2016. To this improvement significantly contributed the gradual reduction of the corporate tax rate, from 24% in 2014 to 22% in 2016. Since the onset of the financial crisis, Denmark has successfully reduced the administrative burden for SMEs, while maintaining a high level of regulatory transparency throughout the period.

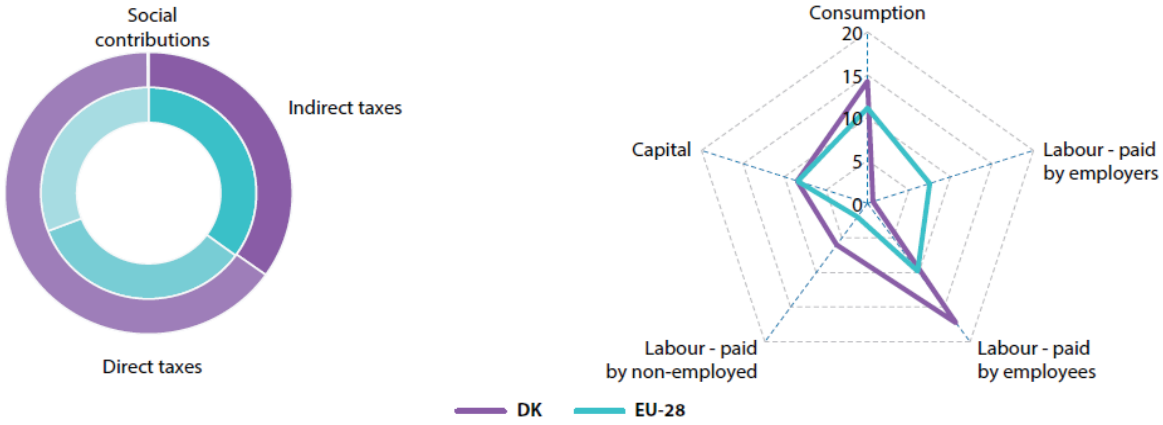
Table 1: ITCI ranking of Denmark tax system, 2016

Overall Rank	Corporate Tax Rank	Consumption Taxes Rank	Property Taxes Rank	Individual Taxes Rank	International Tax Rules Rank
21	23	13	14	32	10

Source: Tax Foundation

Corporate tax in Denmark is on par with the EU average, tax on labour paid by employees is significantly higher, and compulsory social contributions for both households and employers are at zero. This can be linked to the substantially higher share of direct taxes present in the Danish fiscal system. Nevertheless, this does not reveal enough in terms of the burden levied by the tax system over entrepreneurship. For this, one needs to investigate specific tax features such as preferential targeting of taxation for corporations and individuals (see Chapter 3, section 2.3).

Figure 1: Structure of Denmark's taxes compared to EU-28, 2015 (% of total taxation on the left, % of GDP on the right)



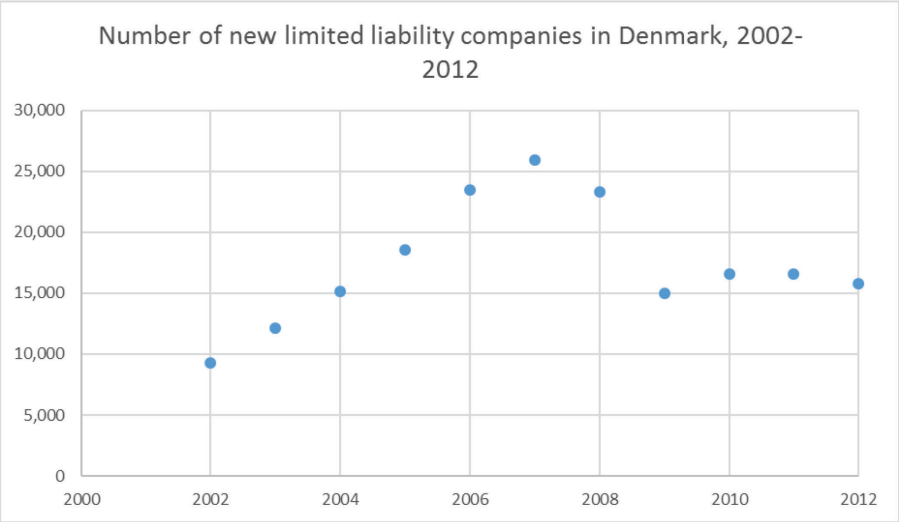
Source: European Commission (2017d)

Overview of entrepreneurship in Denmark

Denmark has a business environment, which presenting conditions highly accommodative to business creation. Since 2008, Denmark has taken significant steps towards fostering a fiscal environment that does not impede on small-firm entrepreneurship and is less burdensome towards successful entrepreneurs (OECD, 2008).

SMEs and micro enterprises account for 99.4% of all enterprises in Denmark (Lynne et al., 2016). Upon the outbreak of the financial crisis, the entrepreneurial birth rate fell drastically (in particular following the fourth quarter of 2008) and it remained at a low level until 2013, when recovery dynamics begun to come into play.

Figure 2: Evolution of Denmark's entrepreneurship level



Source: *Doing Business*, The World Bank.

In 2015, the Danish economy recorded an entrepreneurial population of 20,000 registered individuals, which corresponded to about 5.4% of individuals in a country of 5.6 million inhabitants (compared to a rate of almost 15% in the EU on average, and an entrepreneurship rate of 13.5% in 2006 [Danish Government, 2009]). In 2015, among those entrepreneurs, 24.24% were engaged in innovative activities – the highest score among a sample of 17 EU countries (Darnihamedani et al., 2015).
In 2016, Denmark ranked 3rd in a worldwide comparison of 190 countries in terms of ease of doing business (World Bank, 2016). The country ranks 29th in "ease of starting a business". Denmark is also among the best performers in terms of time needed for the creation of a business – 3 days. Moreover, the country performs well in terms of costs for business creation (0.2% of income per capita), and in terms of ease of registering property (3 procedures, 4 days and a cost of 0.6% of property value, which corresponds to a slight reduction compared to the period 2013/14).

Italy

Case Study Selection

Italy has been chosen as the object of a case study on taxation and entrepreneurship due to the several policies the country has implemented to improve entrepreneurial environment. In fact, Italy is the first Southern European country to have aimed so strongly at addressing the issue of entrepreneurship during the post Eurozone crisis period.

Below is provided an assessment, against our selection criteria, of Italy's suitability as a case study on taxation and entrepreneurship.

Criteria	Assessment
Alignment with issues or opportunities raised in our literature review	Tax measures introduced by Italy have aimed at supporting entrepreneurship both through direct and indirect ways. The principal goal of such policies has been to tackle market failures that constrain financing of small entrepreneurial firms, resulting in R&D under-provision.
Tax system structure	Italy has sought, over the past years, to improve its business environment. However, even though rates faced by start-ups have fallen, the tax code itself remains highly complicated.
Entrepreneurial environment	Taxes and bureaucracy: Global Rank 56; Total early-stage Entrepreneurial activity: 65; Financing for entrepreneurs: 35
Size of the SME sector	The SME sector is the backbone of the national economy, comprised by 99.9% of firms, employing 80% of the country's workforce and creating 67% of the economy's value added.
Interesting and innovative use of tax policy instruments	Italy is the first country from the Eurozone's economic periphery to have introduced a multitude of tax measures in an attempt to address low entrepreneurship within an environment of significant credit constraints for SMEs and muted investment growth.
Public policy rationale	Italy is currently addressing a number of structural hurdles on the way to growth of SMEs, while dealing with the fallout that the financial crisis and consequent years of economic contraction.
Territorial coverage	Italy exemplifies a Southern European experience of entrepreneurship – links can be drawn with the Spanish, Greek and Portuguese economy.

Overview of Italy's tax regime

The Italian tax regime ranks 34th, second to last only to France, in the International Tax Competitiveness Index. The country's position has deteriorated in recent years, largely due to a failure of both tax policy design and tax administration reforms to address the complexity of the Italian tax system and the high compliance costs associated with it.

The OECD (2014) points out that recent administrative reforms contribute to the development of a business environment less hostile to start-ups. However, despite numerous changes, entrepreneurship in Italy is still far from picking up steam. Key contributors to the status quo area complex system of tax provisions, high legal turnover and weak contract enforcement (ItalyEurope24 2016). The existing multitude of tax breaks, tax penalties and deadlines results in high compliance costs for SMEs, while the persistence of uncertainty dampens entrepreneurship by significantly impairing investment decisions, primarily related to R&D spending, a key SME function. Finally, both the Heritage foundation and the Wold Bank point out that entrepreneurship in the country is further held back by corruption, bureaucratic inefficiency, poor access to credit and financing, as well as labour market rigidities.

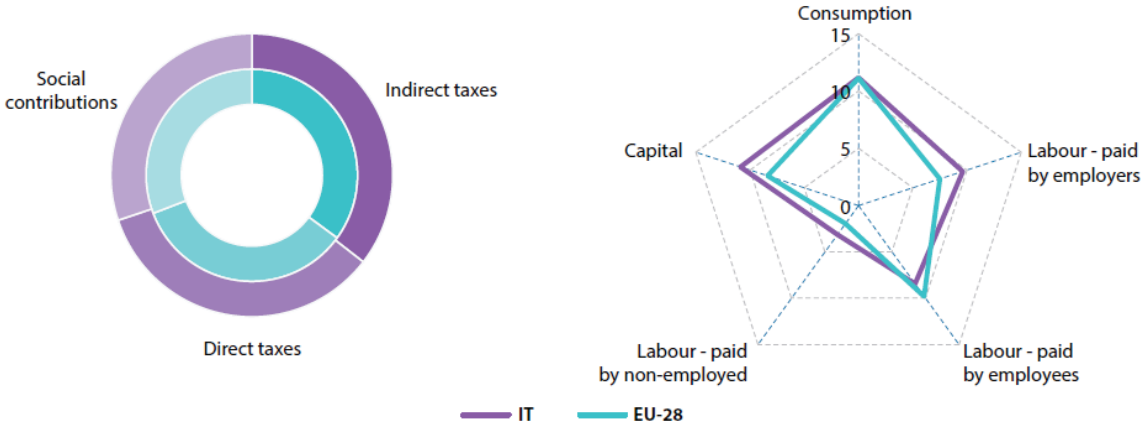
Table 1: ITCI ranking of Italy tax system, 2016

Overall Rank	Corporate Tax Rank	Consumption Taxes Rank	Property Taxes Rank	Individual Taxes Rank	International Tax Rules Rank
34	32	16	35	35	25

Source: Tax Foundation

Corporate tax in Italy is on par with the EU average, but taxes on labour paid by employees and, in particular, by employers are higher. This can be linked to the country's higher share of direct taxes. However, this says little in terms of direct tax burden on entrepreneurship. Instead, one needs to take into account tax features such as preferential corporate and individual taxation targeting.

Figure 3: Structure of Italy's taxes compared to EU-28, 2015 (% of total taxation on the left, % of GDP on the right)



European Commission (2017d)

The mitigation of the Eurozone crisis fallout is centrepiece to the recent Italian tax policy agenda. In line with opinions of local stakeholders that view a more friendly tax system as the single most effective way of boosting Italian entrepreneurship post-2009 tax policy in Italy centred on the use of simplified tax regimes (European Commission 2017). Relevant tax policy design particularly aimed the reduction of the shadow economy (presumptive taxation and increase of VAT thresholds) and the provision of support for innovation (tax credit, and tax relief for investment in innovative firms). In terms of tax administration, most significant reform was the introduction of electronic filing and the use of ICT in civil proceedings. However, these are not considered by this case study due to limited information relating to their impact.

Latvia

Case Study Selection

Latvia has been chosen as the object of a case study on taxation and entrepreneurship due to its outstanding performance in improving the country's entrepreneurial environment and the use of a flat tax system, coupled with one of the lowest corporate income tax rate among OECD countries - 15%. Over recent years, Latvia

has taken steps in supporting entrepreneurship through targeted policies that go beyond the lowering of compliance costs *across the board*. The country's Microenterprise tax scheme, a simple to use preferential tax regime aimed at encouraging small private business activity, is currently the cornerstone of Latvia's pursue towards further improving the country's business environment.

Below is provided an assessment, against our selection criteria, of Latvia's suitability as a case study on taxation and entrepreneurship.

Criteria	Assessment
Alignment with issues or opportunities raised in our literature review	Tax measures introduced by Latvia have aimed at supporting entrepreneurship through decreasing compliance costs for SMEs.
Tax system structure	Latvia has recorded great progress in terms of economic modernisation and provision of support to entrepreneurship. However, despite recent reforms the country has yet to fully free its fiscal system from bottle necks associated with adverse tax externalities, legal instability and a complicated tax code.
Entrepreneurial environment	Taxes and bureaucracy: Global Rank 47; Total early-stage Entrepreneurial activity: 19; Financing for entrepreneurs: 22
Size of the SME sector	The SME sector is the backbone of the national economy, comprised by 99.8% of firms, employing 78.6% of the country's workforce and creating 68.8% of the economy's value added.
Interesting and innovative use of tax policy instruments	Introduction of the Microenterprise tax scheme, a preferential tax regime that is easy to use aimed at encouraging small private business activity.
Public policy rationale	Latvia has been reforming its tax system with the aim to make it more growth-friendly, predictable and equitable.
Territorial coverage	Baltic States – New members of the Eurozone.

Overview of Latvia's tax regime

Comprehensive public policy reforms in coordination with timely adoption of the single currency allowed Latvia to modernise its economy and foster the strongest momentum of economic growth among Baltic members of the single currency. In 2013, Latvia ranked as the fastest EU growing economy, while 2 years after the Eurozone crisis the country was on a robust growth path recording an annual 6.2% GDP growth rate. The wave of modernisation that underpinned this robust economic growth also led to Latvia's accession to the OECD group of countries in June 2016. Meanwhile, over recent years the most noteworthy challenges to economic stability in the country were the expiration of EU funds and the faltering of external demand due to the deterioration of the EU-Russia relations.
According to the International Tax Competitiveness index (2016), in a comparison of 35 OECD countries Latvia ranks 3rd in terms of overall tax regime, below Estonia and New Zealand. In the same index, Latvia also ranks 7th for individual tax, which criteria

are strongly related to compliance costs and the complexity of the tax system. Moreover, according to the *Study of Administrative Procedure Impact Upon Business Environment (2014)* Latvia has been recently recording significant progress towards alleviating administrative burden. Between 2005 and 2014 time spent on administrative requirements by entrepreneurs more than halved, down to 13% of their working time from 37%.

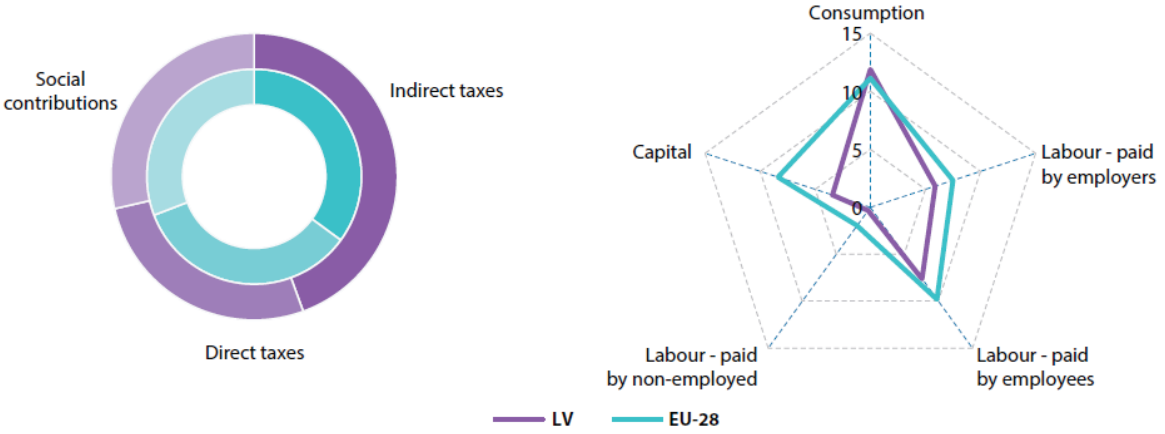
Table 2: ITCI ranking of Latvia tax system, 2016

Overall Rank	Corporate Tax Rank	Consumption Taxes Rank	Property Taxes Rank	Individual Taxes Rank	International Tax Rules Rank
3	2	25	6	7	2

Source: Tax Foundation

In terms of tax system structure Latvia differs significantly to the EU average. While corporate tax is close to the EU average, taxes on labour paid by both employers and employees are below the EU average. Differences that are also present in a higher share of indirect taxes for the country (compared to the EU).

Figure 4: Structure of Latvia's taxes compared to EU-28, 2015 (% of total taxation on the left, % of GDP on the right)



European Commission (2017d)

Despite recent progress in fiscal reform Latvia has still a number of bottlenecks to address on the way to harness the full potential of the economy. In 2015 shadow economy in Latvia accounted for 21.3% of GDP, down from 23.5% in 2014. This was the highest level observed among Baltic countries Lithuania 15% (2015), Estonia 14.9% (2015). According to the Baltic Countries Shadow Economy Index, the principal contributor to the size of the shadow economy in Latvia has been tax policy (Putnins and Sauka 2016). High level of instability, low level of transparency and the widespread perception among businesses that the tax system in the country is unfair contribute to significant business income underreporting, close to 45% of the shadow economy.

The 2015 OECD economic survey highlights another caveat of the Latvian tax system, its relative repressiveness. High taxes on labour income, low taxes on income generated from capital and comparatively high social contributions, given the country's economic development, augment the lack of progressivity introduced by Latvia's flat-tax scheme (The OECD 2015[a]). A significant side-effect of this structure is

its adverse impact over labour demand, where a high tax wedge on low paid jobs, coupled with Latvia's skewed structure of income towards low-paid jobs, supports the rise of informality in the country (The OECD 2015[b]).

In recent years, Latvia has taken a number of steps towards greater simplification of the tax system with the aim of accommodating entrepreneurship growth. Within the realm of tax administration, most notable reforms include: the introduction of one stop shop for company registration and VAT application; the use of VAT cash basis, preferential treatment for annual statement preparation; the launching and continuous development of e-government through instruments such as the electronic system for filling corporate income tax return (despite availability of e-service since 2010[64] usage in the country only surpassed the EU average in 2016 (European Commission 2016)). In terms of tax policy, Latvia launched in 2010 a novel preferential tax regime of high transparency, the Micro-enterprise tax (MET), which aims at encouraging small private business activity through alleviating the administrative burden of SMEs. In addition to this, tax policy in Latvia includes features such as R&D incentives (depreciation and accelerated amortisation) as well as the use of a flat rate regime.

Estonia

Case Study Selection

Estonia leads the way in its use of technology within the tax system. 95% of government services are available online, and the country is responsible for the EU's first digital tax system. This, along with the government's active engagement with collaborative economy platforms as noted by the European Parliament (Valero, EuroActiv.com, 2016), has helped the collaborative economy to flourish in Estonia.
The assessment of Estonia against our selection criteria is outlined below.

Criteria	Assessment
Alignment with issues or opportunities raised in our literature review	The tax measures introduced by Estonia have looked to tackle: • The compliance costs incurred by providers and the government in declaring, collecting and monitoring tax payments on small amounts of income. • The opportunity raised by the potential for collaborative economy platforms to share income data between providers and tax authorities. • The opportunity raised by technology in transforming the taxation system.
Initial signs of success	Estonia's digital approach to taxation has helped to boost its entrepreneurial and competitive environment (see below). Early evidence suggests that digital tax reforms in general have raised revenues and reduced non-compliance. Estonia's proactive collaboration with Uber has been praised by the European Parliament.
Tax system structure	Estonia is ranked 1st out of 34 countries on the ITCI, making it the most competitive tax system according to the OECD. This is driven by its simplicity, with flat rates of taxes, and its digital tax system.

[64] E-government was approved by the Cabinet of Ministers in 2002, though it only began to have an impact in terms of public services available from 2010 onwards. See. Dumpe and Arhipova (2012).

Entrepreneurial environment		Taxes and bureaucracy	Total early-stage Entrepreneurial activity	Financing for entrepreneurs
	Global rank	3	13	11
Size of the collaborative economy	A Eurobarometer survey found that Estonia ranked sixth in the EU for consumer participation in the collaborative economy, with 20% of participants having used a collaborative economy platform. In addition, 9% of survey participants stated they have provided services on collaborative economy platforms.			
Interesting and innovative use of tax policy instruments	Estonia is the first country to implement the automatic transfer of income data between Uber drivers and the tax authority, using pre-filled digital tax forms.			
Public policy rationale	The government has been actively encouraging the growth of the collaborative economy, engaging with collaborative economy platforms, for which it has been praised by the European Parliament.			
Territorial coverage	Estonia provides an example of a Central and Eastern European perspective on the issue of taxation and the collaborative economy.			

Below we provide a high-level assessment of the tax regime and the status of the collaborative economy in Estonia, in order to provide the context for the Government's decision to introduce tax policies specific to the collaborative economy.

Overview of Estonia's tax regime

According to the International Tax Competitiveness Index (ITCI), Estonia has the most competitive tax system in the OECD (Tax Foundation, 2015). This is driven by four key features: a 20% corporate tax rate applied only to distributed profits (hence an S-base cash flow tax, which is an incentive for investment); a flat 20% individual income tax rate that does not apply to personal dividend income; property taxes that are applied based on the value of land rather than property or capital; and a territorial tax system that exempts 100% of foreign profits earned by domestic corporations.

Table 3: ITCI ranking of Estonian tax system, 2015

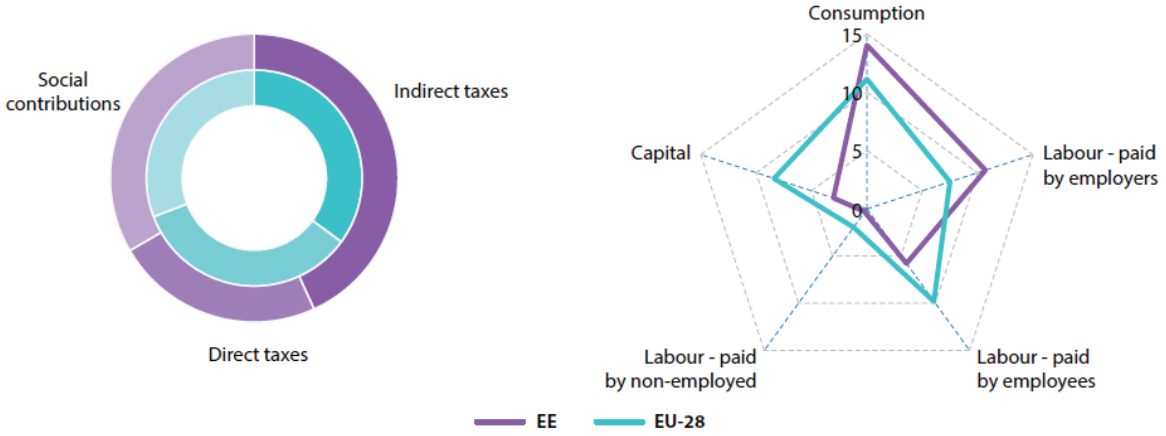
Overall Rank	Corporate tax rank	Consumption taxes rank	Property taxes rank	Individual taxes rank	International tax rules rank
1	1	9	1	2	17

Source: Tax Foundation

The average labour tax burden in Estonia of 39% remains higher than the OECD average of 35.9% (OECD, 2016). Figure shows social security payments make up a bigger proportion of the total tax take than the EU-28 average. In addition, a flat rate of income tax is applied to both employed and self-employed individuals.

However, Estonia saw one of the largest falls among OECD countries in its labour tax burden, compared with 2014.[65] This is a result of from the government reducing direct taxes in favour of higher indirect taxes. In particular, the government has increased excise tax rates, such as on alcohol and tobacco.
This is reflected in Figure 5, which shows that Estonia's tax revenues from indirect taxes are above the EU-28 average (Eurostat).

Figure 5: Structure of Estonia's taxes compared to EU-28, 2015 (% of total taxation on the left, % of GDP on the right)



European Commission (2017d)

Estonia has a strong track record of implementing digital public services, becoming the first country to allow online voting in a general election, in 2007 (The Economist, 2013). The country's "e-Estonia" program aims to facilitate engagement of citizens with the state via electronic solutions, such as the state-issued Estonian ID card. As noted in Chapter 1, Section 4.3, its tax administration system is no exception, with around 95% of tax declarations in Estonia filed electronically. This applies to individuals' taxes, enterprises' taxes, VAT, excise duties and customs declarations.
The digital tax system reforms in Estonia have been lauded by commentators as a significant success. In the first nine months of 2015, Estonian companies paid €125m more in VAT than the previous year and the employment register collected €11.8m more in tax revenue (E-Estonia, 2015). Over the same period, the number of visits to the ETCB service bureaus decreased by more than 60% compared to 2009, reducing administrative costs. There is also qualitative evidence that the program has encouraged consumers to become more aware about "cash in hand" practices and the risk that those receiving these payments may not declare the full tax that is due.
In April 2015, the new coalition government set out its updated tax agenda, which, among other things, prioritises reducing the tax burden on labour and making use of the online economy to enable automatic reporting and monitoring of tax (EY, 2015). For example, the ETCB will expand the practice of pre-filled information on tax returns to other areas, including income from children's summer jobs and Estonian Agricultural Registers and Information Board grants (ETCB, 2016).

Overview of the Collaborative Economy in Estonia

Estonia is regarded as a world leader in technology, with high-tech industries' production value equivalent to 17% of GDP, the highest among the EU-28 (Eurostat).

[65] Defined as total taxes and social security contributions paid by employees and employers, minus family benefits received as a proportion of the total labour costs for employers.

This ecosystem is likely to have helped the collaborative economy to flourish. A Eurobarometer survey found that Estonia ranked sixth in the EU for consumer participation in the collaborative economy, with 20% of participants having used a collaborative economy platform. In addition, 9% of participants claimed to have provided services on collaborative economy platforms (Eurobarometer, 2016).

Estonia has responded quickly to the regulatory challenges brought about by the collaborative economy: it is the first country in Europe to draft new laws specifically tailored to the collaborative economy ridesharing sector. The bill refers to "negotiated passenger carriages" and will provide a legal framework for ridesharing services (such as Uber), including establishing minimum regulatory requirements. For example, that orders should only be electronic and must show the client, the name and registration of the driver, and the method by which the fee is calculated (Pau, Reuters, 2016).
In May 2016, the previous Estonian Minister of Economic Affairs and Infrastructure, Kristen Michal, met with collaborative economy platforms to launch a study into how the state can remove barriers for their business models, and discuss potential forms of cooperation (The Baltic Course, 2016). Ten Estonian collaborative economy platforms have set up the Estonian Sharing Economy Association, which will cooperate with the government on novel solutions. The press release of the association set out that the "Estonian Sharing Economy Association groups together ambitious enterprises with growth potential. The goal of such companies is to offer a better service than available before on international markets."

France

Case Study Selection

France has seen arguably a greater degree of disquiet between the traditional economy and collaborative economy than our other case studies. Its tax system also places a large burden on employment, particularly from high social security payments. In this context, France has focused its tax policy interventions in the collaborative economy on creating a level playing field.
The assessment against our selection criteria is outlined below.

Criteria	Assessment
Alignment with issues or opportunities raised in our literature review	Measures put forward by the French Senate have so far looked to tackle: • The uneven playing field that may be created between individuals providing services in the traditional versus the collaborative economy, due to differences in applying tax policy. • The challenges of applying and collecting VAT on digital transactions. • The opportunity platforms present in collecting accurate income data and reducing tax administration costs.
Initial signs of success	The impact of France's more restrictive approach cannot yet be conclusively assessed but early evidence points to mixed success. Initial evidence suggests France's partnership with Airbnb has not come at the expense of deterring participation of hosts. However, many collaborative economy platforms have reacted negatively to wider tax reforms, arguing that new inequalities will be introduced in the tax system, for example with social security reforms failing to distinguish between income and cost sharing.

Tax system structure	The French tax system is relatively complex with a large tax burden on employers. However, the government has sought to reduce the tax burden on self-employment and on those running a small business. It is also looking specifically at how to tax the digital economy.
Entrepreneurial environment	

	Taxes and bureaucracy	Total early-stage Entrepreneurial activity	Financing for entrepreneurs
Global rank	7	60	29

Size of the collaborative economy	Analysis by PwC (2016) on start-up creation within the collaborative economy in the nine member states ranked France, alongside the United Kingdom, top in terms of the number of collaborative economy organisations that have been founded in the country (over 50).
Interesting and innovative use of tax policy instruments	France has proposed a unique solution to issues raised with collecting VAT on digital transactions, with proposals to charge the consumer at point of purchase.
Public policy rationale	The French government has tried to ensure a level playing field between the traditional and collaborative economy, party a result of pressure from constituents in the traditional economy, particularly taxi drivers and hoteliers.
Territorial coverage	Continental Europe.

Below we provide an assessment of the tax regime and the status of the collaborative economy in France, in order to clarify the context for the Government's decision to introduce tax policies specific to the collaborative economy.

Overview of the French tax regime

The International Tax Competitiveness Index (2015) suggests that the French taxation system is one of the least competitive in the OECD, as a result of high corporate, individual and property taxes (Tax Foundation, 2015). Total receipts from taxes and compulsory social security contributions amounted to around 45.5% of GDP in 2015, a proportion exceeded only by Denmark.

Table 5: ITCI ranking of French tax system, 2015

Overall Rank	Corporate tax rank	Consumption taxes rank	Property taxes rank	Individual taxes rank	International tax rules rank
34	31	17	34	34	24

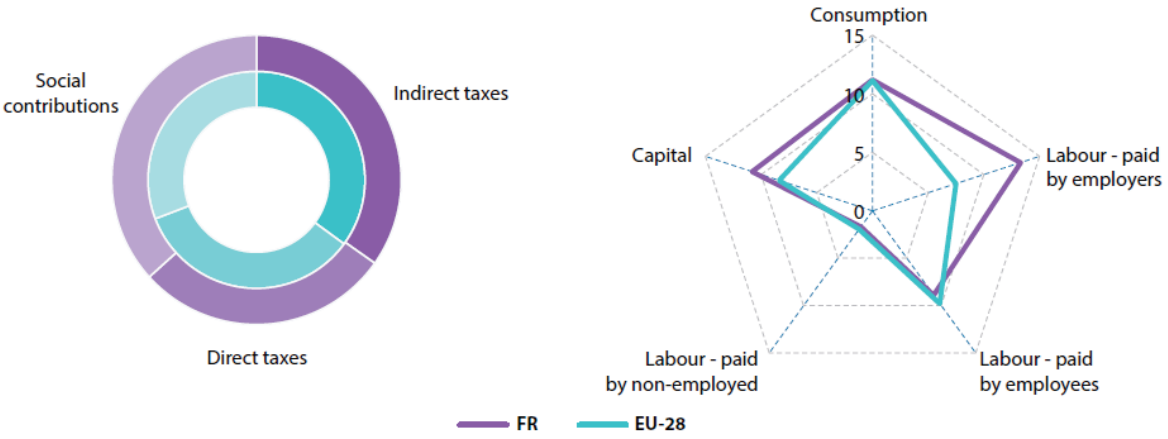
Source: Tax Foundation

Tax burdens on companies are high relative to other countries, with employers' contributions ranging from 11.3% to 40.6% (Eurostat, 2015). This, combined with a

corporate income tax rates of 34.4% makes France one of the most highly taxed countries in the world[66].

High personal income taxes are applied on worldwide income to all French "residents", though tax treaties exist with certain countries to avoid double taxation. According to the OECD's annual 'Taxing Wages' publication (2016), the total tax rate for a single person earning an average wage amounts to 48.5%, significantly higher than the OECD average of 35.9%.

Figure 6: Structure of France's taxes compared to EU-28, 2015 (% of total taxation on the left, % of GDP on the right)



European Commission (2017d)

However, the government has sought to reduce the cost of being self-employed or running a small business in France since 2009, when it introduced the "auto-entrepreneur" status within the tax system. This regime consisted of tax-related concessions, in addition to an easier online registration process. In particular, it enabled entrepreneurs to start a business with minimal administration costs and upfront tax costs. For example, social contributions are calculated according to turnover with no minimum charge, in contrast to the rules applied to larger businesses. As a company reaches a maximum turnover level, it must convert to a more conventional tax set up.

Partly in relation to its favourable auto-entrepreneur regime (which was renamed to "micro-entrepreneur" in 2016), France was ranked among the most attractive countries for start-ups, according to the 2015 Global Start-up Ecosystem (Startup Genome, 2015). However, in recent years the regime has been reformed. For instance, there are now time limits on exemption periods for particular taxes (e.g. micro-entrepreneurs no long have a three-year grace period where they do not pay Cotisation Fanciere des Enterprises – a local tax calculated on the rental value of the property).
More generally, the government is seeking to reform overall tax rates to make the French tax system more competitive. The 2016 budget outlined measures to cut the corporate tax rate from 33% to 28% and reduce income taxation to pre-crisis levels (Deen and Viscusi, 2016). In 2016, these reductions affected 8 million households, with an estimated overall tax cut of €2bn.
Another objective is to reform tax administration, to align with the third-party reporting practices employed by other OECD countries. Specifically, the government is

[66]https://www.french-property.com/guides/france/finance-taxation/taxation/

seeking to withhold income taxes, as opposed to the existing self-declaration system, which both the employed and self-employed are subject to. Minister of Finance, Michael Sapin, declared that this reform will be "irreversibly launched in 2018".
In 2013, the French Government released a report on the 'Task Force on Taxation of the Digital Economy'. This examines the rise of digitalisation and how it has changed the landscape of start-ups and global companies in a way that is depriving the government of tax revenue due to easier tax planning and out-of-date tax law. The Task Force came up with three proposals on this basis, to increase the tax revenues from the digital economy:

1. "Regain the power to tax the profits earned in the country by digital economy companies";
2. "In the meantime, create a tax on the use of data obtained through regular and systematic monitoring of users' activity in the country";
3. "Create a tax environment that favours the emergence of new companies by reforming the tax treatment of R&D and market financing".

These proposals have been reflected in the government's tax design and administration measures put in place for the collaborative economy.

Overview of the Collaborative Economy in France

France has established itself as a hub for innovation in the collaborative economy. PwC analysis shows that the UK and France have led the way with over 50 collaborative economy organisations founded (PwC, 2016). Paris is Airbnb's top city by revenue despite the platform only entering the city in 2012. Globally, France is Airbnb's second biggest market and Paris is Uber's second biggest city by revenue in Europe. France is also the European leader in peer-to-peer carsharing and collaborative finance.
French consumers also report high awareness of collaborative economy businesses: 41% of them report knowing Blablacar and 20% report knowing Airbnb. France was placed ahead of all other EU Member States on the proportion of respondents who had used the collaborative economy (36%) and ranked third on the percentage of individuals who claimed to have provided services on collaborative economy platforms (45%).
However, the growth of the collaborative economy in France has also been a source of tension between the collaborative economy and the traditional economy. The French commonly refer to the collaborative economy as "Uberisation", which "embodies the disdain a cross section of the French population has" towards Uber (Euractive, 2015). Employees in the traditional economy have had a stronger reaction relative to other countries. This was demonstrated by a number of protests by taxi drivers, with the government eventually banning Uber Pop on the grounds of "unfair competition".
In September 2015, the French government asked Pascal Terrasse MP to examine how the collaborative economy should be regulated. This report was presented to parliament in January 2016 and proposed a "soft" regulatory approach to the collaborative economy, along similar lines of the European Commission's Communication (Fusaro, 2016).

UK

Case Study Selection

The UK has been a major regional hub of the collaborative economy, accounting for nearly a third of European activity and founding over 50 collaborative economy platforms [PwC, 2016]. This growth has gone hand-in-hand with a supportive policy stance towards the sector from the UK government, which has actively engaged with

collaborative economy platforms through mediums such as Sharing Economy UK (SEUK), a trade association representing over fifty sharing economy platforms, and aims to become "the global centre" of the movement. The UK is also one of only five Member States identified in our analysis to have developed tax policy or administrative practices tailored towards the collaborative economy.
The assessment of the UK's suitability as a case study against our selection criteria is provided below.

<table>
<tr><th>Criteria</th><th>Assessment</th></tr>
<tr><td>Alignment with issues or opportunities raised in our literature review</td><td>The tax measures introduced by the UK have looked to tackle:
The complexity of the taxation system faced by those declaring small amounts of income earned within the collaborative economy, which may put off potential providers.
The compliance costs incurred by providers and the government in declaring, collecting and monitoring tax on small amounts of income.
The opportunity raised by the potential for collaborative economy platforms to share income data between providers and tax authorities.
The opportunity raised by technology, such as the online payment systems used within the collabroative economy, in transforming the taxation system.</td></tr>
<tr><td>Initial signs of success</td><td>Whilst the majority of these measures are still being introduced, they have supported the UK's broader positive policy stance on the collaborative economy, the government is aiming to become "the global centre" of the movement that has helped the UK become a major hub of the collaborative economy activity in Europe.</td></tr>
<tr><td>Tax system structure</td><td>The UK has continually sought to improve its international competitiveness, having continually cut its corporate tax rates over the last decade. It ranks relatively highly on international tax indexes.</td></tr>
<tr><td>Entrepreneurial environment</td><td><table><tr><th></th><th>Taxes and bureaucracy</th><th>Total early-stage Entrepreneurial activity</th><th>Financing for entrepreneurs</th></tr><tr><td>Global rank</td><td>19</td><td>41</td><td>29</td></tr></table></td></tr>
<tr><td>Size of the collaborative economy</td><td>The UK's collaborative economy has emerged as a hub within Europe, which contributes to around a third of regional activity. The UK is one of two European countries in which over 50 collaborative economy organisations have been founded (PwC, 2016a).</td></tr>
<tr><td>Interesting and innovative use of tax policy instruments</td><td>The UK has introduced, what has been described as, "the world's first sharing economy tax break" and is also among the first countries to clearly set out a timetable for transforming the tax system digitally, with individual digital tax accounts set to be implemented by 2020 (HMRC, 2016).</td></tr>
</table>

Public policy rationale	The UK has actively looked to encourage the growth of the collaborative economy, for example, launching an independent review in 2014 to develop policy recommendations for the challenges and opportunities it presents.
Territorial coverage	The UK provides an example of a Western European perspective on the issue of taxation and the collaborative economy.

Below we provide a high level assessment of the tax regime and the status of the collaborative economy in the UK, in order to provide the context for the Government's decision to introduce tax policies specific to the collaborative economy.

Overview of UK's tax regime

The UK tax regime ranked 11th in the 2015 ITCI. This ranking has continued to improve in recent years, largely due to a cut in the corporate tax rate. The 2010-15 business plan of the UK tax authority, HMRC, stated that: "the main aim of the tax system is to raise revenue, providing the essential stability that businesses need to grow and succeed. At the same time, we believe the tax system can and should be an asset for the UK, improving the business environment and helping to attract multinational businesses and investment to the UK" (HMRC, 2016).
In 2016, the UK ranked 15th in the OECD's Paying Taxes category in the Ease of Doing Business Index, up one place from 2015. In addition, the UK ranks second in the international tax rules category, for which the criteria is primarily related to administration practices.

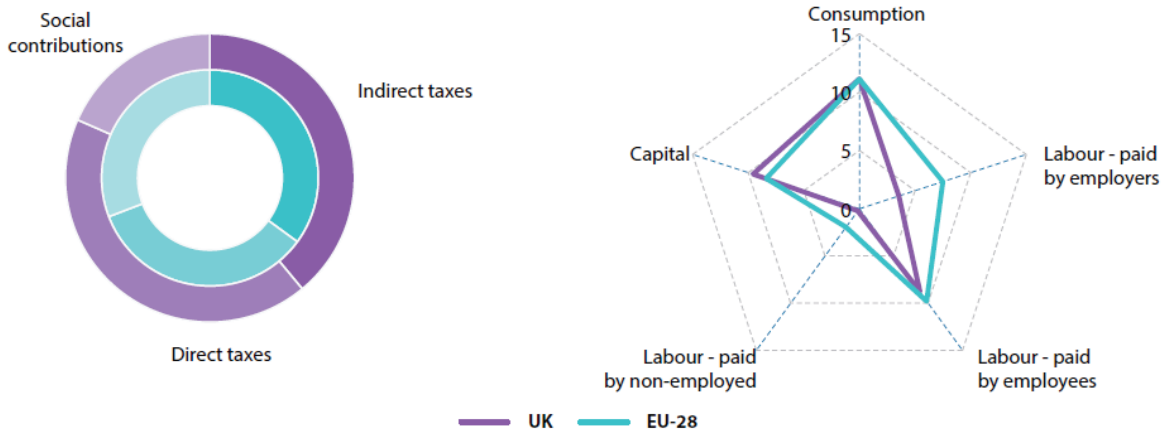
Table 6: ITCI ranking of UK tax system, 2015

Overall Rank	Corporate tax rank	Consumption taxes rank	Property taxes rank	Individual taxes rank	International tax rules rank
11	14	16	30	18	2

Source: Tax Foundation

The average tax rate in the UK for an individual earning the average wage is 30.8% (OECD, 2016), which is below the OECD average. This may be related to the UK's lower than average social security contributions, as shown in Figure 7. However, the proportion of direct taxes is significantly higher than the EU-28 average.

Figure 7: Structure of the UK's taxes compared to EU-28, 2015 (% of total taxation on the left, % of GDP on the right)



European Commission (2017d)

A major feature of the UK's tax policy agenda in recent years has been plans to simplify and digitize the tax system, in order to make it more internationally competitive. In 2010, the UK Government created the Office of Tax Simplification (OTS). In 2016, the OTS published 'Simplifying Tax for the Future', a strategic review of the role of the OTS (OTS, 2016). The government is looking to transform HMRC into one of the most digitally advanced tax administrations in the world, providing digital accounts to all small businesses and individuals by mid-2020. The government has launched six separate consultations on the implementation of its 'Making Tax Digital' programme which is intended to reduce administration costs for over 1.3m small businesses (HMRC, 2016).
At the same time, HMRC has also launched a campaign to address the hidden economy, which it defines as "those businesses who fail to register for tax, and individuals who fail to declare a source of income that should be taxed". Its "Tackling the Hidden Economy" paper set out ways of identifying those in the hidden economy and potential further compliance measures (HMRC, 2016). The relationship between the hidden, or informal, economy and the collaborative economy was discussed briefly in Chapter 2, Section 3.7.

Overview of the Collaborative Economy in the UK

The UK government launched an independent review of the collaborative economy in 2014 with its report "Unlocking the Sharing Economy", led by Debbie Wosskow. This defined the sharing economy as (Wosskow, 2014):
"…online platforms that help people share access to assets, resources, time and skills. It encompasses a broad church of businesses and business models: peer-to-peer marketplaces such as Etsy, which allows anyone to sell their craftware; services like City Car Club, where people can share access to a car without having to own one themselves and time banks like the Economy of Hours which allows you to trade your skills, an hour for an hour."

As described in PwC's research (2016), the UK has emerged as a leading hub for the collaborative economy within the region, with transactions almost doubling to £7.4bn in 2015. It's also become the home to a number of sharing economy success stories which are rapidly expanding outside the UK, such as Lovehomeswap, Justpark and Hassle. Going forward, the UK's collaborative economy is expected to grow by over

30% per year over the next decade, generating £18bn of revenue for platforms and facilitating about £140bn worth of transactions, per year, by 2025.
The UK's strong performance in this area reflects a number of factors, chief amongst them being a digitally literate and entrepreneurial population and the UK's attractiveness as a location to incubate and accelerate digital, and therefore, collaborative economy enterprises. Commentators also describe the UK's supportive regulatory and policy stance towards the collaborative economy as an important factor. The independent review of the UK's collaborative economy provided the following recommendations in relation to the tax system (Wosskow, 2014):

- *"HMRC and HM Treasury should create a guide to tax in the sharing economy, and an online tax calculator to help users of sharing economy services to easily work out how much tax they are liable to pay."*
- *Specific to the peer-to-peer acommodation sector: "Egregious breaches of regulation – for example, letting out a large number of rooms through sharing economy platforms, but not complying with tax and regulatory requirements – must be dealt with firmly. The government, local authorities and sharing economy platforms should work together to ensure that all legal requirements are met."*

In response to the independent review in March 2015, the UK government announced that it will produce tailored guidance for the collaborative economy, which will be easily accessible online. It will also be consulting with collaborative economy platforms to develop interactive tools, such as an online calculator and mobile app to help providers to understand their tax obligations. HMRC also plans to use social media channels to help communicate this new guidance, through mediums such as Twitter and YouTube (HM Government, 2015). HMRC's Youtube site has a number of videos relevant for collaborative economy participants including ones titled: "Am I Employed or Self Employed?" and "Your Income from property tax return" both of which had over 1,500 views as of December 2016. This response addresses some of the issues outlined in Chapter 2, Section 4.3 on the design of tax administration.
In October 2016, the UK's Office for National Statistics (ONS), announced it would start to collect statistics on the size of collaborative economy activity next year and work with other national statistics offices in Eurostat to agree a consistent definition of the sector (ONS, 2016). This may go some way towards tackling issues with the identification of taxable income and transactions within the collaborative economy, which we discuss in Chapter 2, Section 4.2.

Chapter 4 Framework of Analysis

1 Introduction

In what follows we summarise the main policy implications derived from the relevant literature and case studies. Given that further research and analysis are required in many cases, and suitable policies may vary significantly across countries, they should not be considered as fully-fledged policy recommendations, but rather as a starting point for the types of measures policymakers and tax authorities could consider to respond to the issues identified. In addition, tax policy is only one of the determinants of entrepreneurship, the development of which is affected by many other policies, such as market regulation, public support in the form of direct aid to firms, data protection and IP protection. These policies are beyond the scope of our analysis and will not be considered here.

We group different policy options according to the tax instrument being used. Namely, we consider, in this order, income taxes, social security contributions, capital gains taxes, excise taxes and property/wealth taxes; we finally take into account possible policy options common to several taxes (e.g. the use of thresholds) and issues related to tax administration.

For each tax instrument, we develop a number of "fiches" specifying different policy options emerging from the theoretical and empirical literature and from the case studies we have surveyed in the chapters above. For each of them we point out possible caveats, drawbacks or expected difficulties in their implementation. We also specify whether the policy is relevant for entrepreneurship in the traditional (TE) and/or the collaborative economy (CE). Table 1 offers a synopsis of all the tax instruments considered and the main policy indications. We finally offer a discussion, in which all the policy options surveyed within each tax instruments are organized according to whether they influence entrepreneurship via a change in the risk, the costs or the returns of entrepreneurial activity. We point out those policy options, which find stronger support in the theoretical or empirical literature or which are discussed in case studies and which, according to this assessment, could be part of an effective strategy to encourage entrepreneurship and balance competing considerations, particularly prevalent within the collaborative economy.

2 Relevant tax features and available policies

INCOME TAXES

There are a number of features of income tax which could affect entrepreneurial decisions. First, the structure of income tax can influence the risk faced by individuals, hence making the choice to become an entrepreneur more or less attractive compared with occupations involving less income uncertainty. Similarly, possible asymmetries in the treatment of losses can affect the propensity to make risky investment for a firm. Second, income tax can be designed to reduce the cost of investment. Investment decisions are indirectly affected by the choice of financing, and the latter depends on the features of the tax on business income. The debt bias generated by it can be a particularly relevant issue for young and innovative firms, which may have limited access to credit. The reduction in the cost of capital can be achieved using depreciation allowances, or treating R&D expenditure favourably (e.g. granting R&D tax credits). Third, taxation can be designed to increase revenues from

entrepreneurial activities. An example in this respect are the so-called patent boxes, which prescribe reduced taxation of income coming from the exploitation of intellectual property rights. Also "tax holidays" may favour entrepreneurship by reducing the costs associated with it, although their use is more common in less developed countries.

Finally, we consider the issue of income classification in the wake of new activities and organization introduced by the collaborative economy. A payment received for a service provided might be considered as cost reimbursement or income. The lack of clarity in the definition of what is to be considered income, and what kind of income from the point of view of taxation, can generate uncertainty and adverse incentives to participate in the collaborative economy. It could also imply that activities in the collaborative economy generate lower tax payments (lower levels of compliance are associated with all forms of self-employment, but poorly defined tax rules can make the situation even worse in this case) which could confer them an unintended advantage over competing activities in the traditional economy.

We discuss the pros and cons of these policy options, trying to identify the most promising when the government's objective is that of encouraging entrepreneurship.

Relevant feature	**Progressivity of the income tax**
Economic impact	Entrepreneurship involves a higher volatility of income, hence it could be encouraged by tax provisions that reduce the risk borne by the would-be entrepreneur. However, the effect of an increase in the progressivity of the income tax on risk-taking is ambiguous from a theoretical point of view. On the one hand, the income tax reduces the variance of after tax income, making risky activities more attractive for risk-averse individuals. As long as progressivity is associated with a higher rate at the margin, the insurance effect may be enhanced. On the other hand, as the average tax rate is higher with good outcomes than with bad outcomes, a progressive tax may result in a "success tax".
Empirical assessment and relevance	The importance of progressivity, and more in general of a high income tax rate, on self-employment and entrepreneurship are unclear from an empirical point of view. Most recent studies show different effects at different income levels, and the evidence is overall mixed. *This aspect does not seem to be very relevant for providers in the CE*, as their exposure to risk is limited. Progressivity of the personal income tax is also less relevant for larger firms, since large entrepreneurial firms in the traditional economy and in the collaborative economy, such as platforms, are subject to corporate tax.
Margins affected	Decision to become an entrepreneur. Decision to invest.
Policy options	Because the direction of the effect is unclear, there is no straightforward indication on whether stronger or milder (as in the case of the "flat tax" proposal) progressivity are more effective in encouraging entrepreneurship.
Examples / Cases	Latvia introduced a flat income tax in 1997; however, in this case the flat rate replaced a previously regressive tax structure, hence its effects cannot be easily connected to our theoretical analysis. A reform that somehow goes in the direction of a reduction in progressivity is the possibility, introduced in Italy, for unincorporated firms to pay taxes on retained earnings at the same statutory (constant) tax rate as corporate firms. However, its effect is only to delay the full payment of the progressive tax by the entrepreneur.
Discussion	Progressivity of the income tax is a basic feature of a tax system as to its ability to redistribute and guarantee equity. In the face of ambiguous evidence on its effect on risk-taking and entrepreneurship, the case for a change in the degree of progressivity (e.g. adoption of a "flat" rate) appears very weak.

Relevant feature	Treatment of business losses
Economic impact	Asymmetric treatment of gains and losses can make the income tax a "success" tax, and reduce its insurance effect in the presence of risk aversion. This can have an impact on the decision to become an entrepreneur and subsequent investment decisions (in this regard, see the discussion about progressivity).
Empirical assessment and relevance	Studies on the effect of the income tax on risk-taking emphasize the role of loss offsets as an important aspect determining the sign and size of such effect. *This aspect does not seem to be very relevant for providers in the CE*, as their exposure to risk is limited.
Margins affected	Decision to become an entrepreneur. Decision to invest.
Policy options	It is difficult to have full offset of losses, especially when costs are frontloaded, as in new innovative firms. Possible solutions, in addition to the possibility to carry losses on to future periods, include: - the possibility to match the tax credit with other taxes (e.g. the VAT or excises due by the firm); - the possibility to convert them into negotiable tax credits.
Examples / Cases	The more innovative solution to convert losses into negotiable tax credits has not been experimented yet.
Discussion	A full offset of business losses can be difficult to implement with small and new firms (see below the discussion of this aspect with regard to the incentive to invest). Moreover, tax credits are a possible source of tax avoidance, as they can encourage the artificial creation of losses.

Relevant feature	**Differential treatment of debt and equity**
Economic impact	Due to the deductibility of interest payments from taxable income of firms, taxation creates an incentive to finance investment through debt rather than equity or internal financing. Internal or external equity financing result in a higher cost of capital, which in turn discourages investment. This may be particularly relevant for firms having less access to debt financing because of higher exposure to risk, as it is the case for entrepreneurial and newly established firms.
Empirical assessment and relevance	Empirical studies confirm that incorporated firms are more leveraged than pass-through entities (a more commonly used legal form for entrepreneurial firms and start-ups). *The issue is not very relevant for CE providers*, whose investment is very limited.
Margins affected	Decision on the source of financing. Decision to invest.
Policy options	Eliminate the differential treatment of debt and equity by adopting the Allowance for Corporate Equity (ACE), which allows a deduction from taxable income proportional to investment financed through equity (both internal and external).
Examples / Cases	Italy introduced the ACE in 2012, leading to a significant drop in the effective corporate income tax rate.
Discussion	The ACE makes taxation of firms' income more neutral with respect to the decision of the source of financing and to investment decision. Its introduction may be particularly effective for firms relying on their own resources. However, at least in the short term, the ACE is likely to result in a reduction in revenue from profit tax. A partial solution to this problem is to introduce the ACE incrementally, i.e. only for increases in capital from a specified date (this is the solution adopted e.g. in Italy).

Relevant feature	**Tax treatment of investment and current expenditure related to innovation**
Economic impact	Because of the positive externality due to knowledge spillovers, we expect firms will choose a suboptimal level of R&D expenditures. The case for explicit tax incentives to investment in R&D can be further reinforced considering the innovative firms are particularly subject to financial constraints due to the asymmetry of information between the entrepreneur and external providers of capital. With regard to investments, the relevant aspect emphasized by the theoretical literature is whether depreciation allowances are "faster" or "slower" than actual (economic) depreciation of the asset. In the former case, the effect of taxation may, at least in principle, encourage investment. This, however, will not generally be the case as long as the marginal source of financing is equity, since there is no allowance for the cost of capital in this case (an exception is the ACE illustrated above). Although some expenditures on R&D might be considered conceptually as investment (e.g. salaries for researchers), the tax code already allows their immediate write off, and this can be thought of as an extreme case of accelerated depreciation). In addition, many countries provide explicit tax incentives to R&D. Similarly to what we observed for loss offset, it might be difficult in some cases to fully exploit these provisions when the income from investment has not yet materialised (this is common with new, innovative firms).
Empirical assessment and relevance	Evidence confirms that tax incentives encourage investments in R&D, although result of studies differ as to the size of such effect; those differences in results can be explained by differences in the design of the measure and in the methodology used in the estimation. The effect on innovation and productivity, of which R&D expenditure is an input, is more difficult to ascertain; the evidence in this regard, although limited, confirms a positive effect of this incentive. The effect may vary also with the firm size: on the one hand, credits may have a larger impact on small and medium firms, which are more vulnerable to liquidity constraints; on the other, those firms may be less able to exploit the incentives, due to a lack of expertise. Overall, results seem very sensitive to details of the tax design of incentives.
Margins affected	Decision to invest (esp. to innovate).
Policy options	- Accelerated depreciation allowances for capital expenditures in assets specific to entrepreneurial firms; - immediate write-off for particular types of capital expenditures related to R&D and innovation; - tax credits and enhanced allowances on expenditure in R&D (the former are deductions from the tax, the latter are deduction from taxable income in excess to the actual expenditure);

credits may be refundable to cope with cases in which profit is not large enough.

Examples / Cases

In Italy:
- the tax credits for R&D expenditure, for new equipment and machinery, and for high skilled workforce introduced in Italy since 2014;
- tax relief for investment in R&D intensive start-ups, within a broader administrative reform that aims to create a protected environment for initial entrepreneurial growth.

In Denmark:
- the Skattekreditordningen, a R&D tax credit scheme introduced as part of the the Vækstplan DK, which targets firms making losses due to R&D expenditure;
- machinery and equipment acquired for R&D purposes, as well as the cost of intangible good purchased by corporations for R&D purposes, can be deducted in full in the year of acquisition.

In Latvia:
- since 2014, accelerated amortization of R&D-related costs, and a super deduction at 300% of R&D expenses (employment and service agreement with specific scientific institution) from corporate income tax;
- deferral of tax payments on profits that result from selling replaced equipment.

Discussion

Entrepreneurial firms are characterized by a relatively small size and, when they are new, a low level of income expected in the first periods.

Small firms have fewer opportunities to compensate profits and losses from different sources. Additionally, there may be limitations in loss recovery in case of acquisitions, mergers, and changes in ownership, which are quite frequent for small and young firm. The consequence is that loss recovery may be only partial, and the effect of allowances and other cost deduction is very often incomplete. For these reasons, the specific design of the tax incentive is very important, in particular with regard to refundability when profit is insufficient, which is frequent among start-ups and young firms.

Finally, benefits to small firms may be limited due to the lack of expertise in taking advantage of incentives.

R&D expenditure is only an input of innovative activity, the ultimate objective is innovation. In this regard, there is some concern that incentives may involve some risks: they might induce firms to invest in projects with low return or re-label existing expenditures as R&D (although this latter risk seems limited in practice according to available evidence).

Relevant feature	**Tax treatment of revenue from innovation (patent boxes)**
Economic impact	The rationale for incentives to R&D expenditure has already been discussed above with regard to capital and current expenditure. Ex post incentives related to revenue (vis-a-vis incentives related to expenditure) can help overcome the problem of limited cost recovery for firms at initial stages, with low levels of profit. A particular example of this kind of tax incentives are patent boxes, which are expected to encourage R&D by enhancing the value of intellectual property rights.
Margins affected	Decision about the location of assets; decision to invest (esp. to innovate).
Policy options	Patent boxes are a tax deduction calculated on the basis of revenue streams from qualifying patents or other IPR (this may include income from the sale of products incorporating the patent, or royalties or licence fees from the use of qualified IPR, sale of rights or damages/compensation from their infringement).
Examples / Cases	Patent boxes have been introduced in a number of European and non-European countries. We have considered (chapter 3) the case of Italy, where a partial tax exemption was granted since 2015 to the income earned from the direct and indirect exploitation of IP, patents, trademarks, including commercial IP, industrial designs and models, procedures, formulas and information concerning industrial, business or scientific know-how that legally registered and protected, as well as capital gains derived from the intangibles.
Discussion	The empirical analysis confirms that patent boxes have an impact on attracting patents. The effect is particularly relevant for firms operating at a global level, which can locate their assets and investments in response to tax incentives. However, the literature has emphasized that the main effect of patent boxes is to encourage profit shifting by relocating intangible assets, which are extremely mobile, while there seems to be limited or no effect on the overall level of R&D, or even on the location of R&D facilities. Patent boxes do not seem an effective instrument to encourage innovation, as they may result in a zero-sum game among countries. In this regard, their introduction should involve coordination among countries in the tax treatment of patents, and the introduction of conditionality in terms of investment in R&D in the country where the patent is registered in order to avoid that a firm's choice is driven only by tax concern.

Relevant feature	**Tax holidays**
Economic impact	Partial or reduced taxes can be justified to encourage investments in a country and attract FDI when such investments generate positive externalities to other sectors or to the economy as a whole. They may be particularly attractive as an instrument to encourage the start-up of new entrepreneurial activities when there are no alternative instruments of industrial policy at work (e.g. in developing or emerging countries).
Empirical assessment and relevance	Evidence that in some developing and emerging countries this policy is successful in attracting FDI and generating spillover, especially when directed at increasing competition in specific sectors (of particular relevance the case of China between 1998 and 2007). Evidence for developed countries provides less clear conclusions on the effectiveness of this instrument in encouraging entrepreneurship.
Margins affected	Decision to become and entrepreneur.
Policy options	Full or partial exemption from profit taxes of newly established firms for a certain period of time. In order to be effective, taxation must be source based, or alternatively the home country must recognize a tax credit for taxes which have not actually been paid.
Discussion	They may encourage tax competition among countries (esp. developing countries) to attract investments, resulting in a zero-sum game. They may encourage short term and profitable investments, which could have been made even without incentives. There is some evidence that firms exploit the benefit but leave the country when the holiday period is over, or close down and start again to manipulate the incentive. An additional difficulty in the EU is that they may go against the general functioning of the common market.

Relevant feature	**Classification issues: income vs cost reimbursement and employee vs self-employed**
Economic impact	Many models within the collaborative economy challenge current definitions in the tax system. For example, a payment received for a service provided might be considered either as cost reimbursement or as income. Ambiguity in this respect could result in income escaping from income tax, or could result in tax being paid when it should not be. In the former case, this reduces tax revenue and distorts competition between collaborative and traditional activities. In the latter case, this could increase tax revenue but reduce participation in the collaborative economy. A similar ambiguity can arise with regard to the employment status of a provider. Platforms currently classify most collaborative economy activity as self-employment but this is being tested within several high-profile legal cases. Although the question is being examined because of the uncertainty over the applicability of employment regulations, there could be significant tax consequences. For example, under the simplified assumptions of the simulation illustrated in Chapter 1 Section 4.3, highlights that a large shift from employment to self-employment in the same area of the economy could materially reduce tax revenues, particularly from indirect tax receipts, if taxation is applied only above specified thresholds. An ambiguous definition and interpretation of what is income, and of whether someone is employed or self-employed, generates uncertainty and can create adverse incentives regarding participation in the collaborative economy. Other examples of ambiguity within the tax system include the boundary between a hobby and commercial activity.
Empirical assessment and relevance	*Relevant for providers in the collaborative economy* A relevant example of a dispute over the distinction between income and cost involves Blablacar, a French ridesharing platform, and Confebus, a confederation of bus companies in Spain. Drivy, a French ridesharing platform with a similar business model, expressed its disappointment with new rules in France which apply the social security system to the ride-sharing and property rental sector, but do not differentiate between income and cost. A well-known example of a disputed definition of employment status is Uber, which has defended its decision to classify drivers as independent contractors in legal cases in a number of countries (including the US and UK).
Margins affected	Decision to become an entrepreneur (self-employed).
Policy options	Our review indicated a range of alternative policy responses available: - identifying where additional tax guidance is warranted, and providing new guidance for existing definitions and rules, with the aim of helping collaborative economy participants understand their tax obligations within the current system;

- clarifying or increasing the precision of current definitions, so that it is easier to identify and classify activity (e.g. when a certain transaction will be interpreted as income or cost reimbursement);
- introducing new definitions, where the conclusion is reached that the distinctions within the current tax system are not appropriate and new distinctions are required.

Examples / Cases

Examples include:

- multiple member states rolling out information campaigns on existing tax rules, including the UK and Austria.

- France's clarification in August 2016 how existing exemptions could apply to collaborative economy activities (for example, describing that incomes that derives from sharing costs with others, such as ridehsharing, are not subject to income tax)

- Belgium and France have both proposed new classifications within the income tax framework for "customer to customer" transactions, involving new thresholds and tax rates

Discussion

The key rationale for all reforms is to enable more clarity as to whether and how transactions within the CE should be taxed. Current legal cases on employment classifications highlight that it may be difficult to fit the CE within the binary distinction between employment and self-employment: and some commentators have suggested creating a new intermediate definition (e.g. "dependent contractor") and designing a new tax regime specific to these individuals, although there is no consensus on this issue. However, our illustrative simulation in Section 4.3 highlights that the impact on tax revenues is material enough to warrant this being an important consideration.

Although there may be good reasons for tax authorities to identify the CE activity as distinct from other forms of self-employment (e.g. CE providers may take on less risk on average, or their earnings may be more likely to be occasional), there are significant challenges involved in doing so. The notable examples in this regard which have attempted to make this distinction are Belgium and France, although the new definitions created have been centred on "consumer-to-consumer" rather than "collaborative economy" earnings. Given that the collaborative economy itself will continue to evolve, most countries have avoided establishing new worker classifications.

Both the wide spectrum of providers operating in the collaborative economy, from informal users to professional traders, and the novelty of the sectors that comprise the collaborative economy, make it difficult to ascertain whether the agents in question are truly analogous and compete in the same market, or not, and further research is required in this area.

In any case, distributing existing guidance more widely represents an interim "quick win" whilst more fundamental changes to employment classifications are considered.

Social security contributions

In some respects, the effects of social security contributions on the choice to become an entrepreneur are similar to those we have identified for income tax. However, differently from what happens with income taxes, social benefits are often conditional on social contributions paid, so that exemption from their payment or reduced rates are usually associated with reduced access to benefits; a reduced social security safety net can be particularly relevant for individuals undertaking risky activities. For this reason, it is more difficult to identify a clear direction for the effect on entrepreneurship of a reduction or an increase of contributions.

A specific related issue is the treatment of collaborative economy activities, especially when they are secondary activities for an individual who already has access to some social benefit. The expansion of the collaborative economy is introducing new challenges for the design of the system of social security.

Relevant feature	**Differential treatment of employees and self-employed**
Economic impact	A recurrent feature of tax systems is the lower level of social security contributions from self-employed individuals compared to employees. The overall effect of this differential treatment is not clear in theory: on the one hand, lower contributions increases disposable income, and this can be particularly important when the entrepreneur is liquidity constrained; on the other, lower contributions decrease the prospect of future benefits and weaken the safety net in the case of business failure, thus increasing the risks involved in self-employment.
Empirical assessment and relevance	Empirical analyses are not consistent in determining the direction of the effect of social contributions on self-employment. Among studies at a macro level, however, the prevalent conclusion is that social security contributions (especially employer's social security contributions) negatively affect early stage entrepreneurship.
Margins affected	Decision to become and entrepreneur (self-employed).
Policy options	In principle there should be an optimal degree of differentiation in social security contributions between employees and the self-employed. However, no clear policy option can be derived in this regard. Indeed, it is not clear what the optimal trade-off is between the two effects of relaxing the liquidity constraint in the short run and offering a safety net and higher benefit in the future.
Discussion	Although differential treatment can encourage self-employment, the latter does not coincide with entrepreneurship. Indeed, in some cases employees may choose to become self-employed sub-contractors in order to reduce contributions. A reduction in social security contribution can make it more difficult to finance the pension system or social insurance, and it can have adverse long-term effects if workers end their career with insufficient entitlements.

Relevant feature	**Classification of providers in the collaborative economy as self-employed**
Economic impact	Many social security systems have different levels of benefits and contributions depending on whether individuals are employed or self-employed (see previous point on "Differential treatment of employees and self-employed"). As a consequence, very small differences in the nature of underlying activity (e.g. an employed taxi driver versus independent contractor trading through a ride-hailing platform) could drive very big differences in the levels of benefits and contributions. Providers may either pay both the employee and the employer part of the contribution, and so might incur proportionately higher costs, or may not be required to replace the employer part of the contribution, and so may end up with an insufficient level of protection.
Policy options	Potential policy responses include: - clarify how the social security system applies to the collaborative economy; - more radical reforms suggest decoupling of the social security system from the traditional employment contracts (for example, Hanauer and Rolf's proposal of a "Shared Security Account"); In both cases, partnerships with platforms may be needed to collect or withhold social security contributions due on collaborative economy earnings (e.g. which has happened in the US).
Margins affected	Decision to become an entrepreneur; possible distortion of competition between TE and CE.
Examples / Cases	In France in 2016 social security obligations were extended to the collaborative economy: contributions are now due by recipients of incomes from the collaborative economy who did not fall within the traditional definitions of self-employed. Namely, contributions are required when annual income from short-term property rentals exceeds € 23,000 or income from car-sharing exceeds € 7,720.
Discussion	Clarifying the scope of social security contributions to be made by participants in the CE may help ensure better social security protection for collaborative economy workers but the benefits of this should be considered alongside any potential impact on participation. For example, opponents to the new measure adopted in France point out that what is considered as income within the system is in part recouping of ownership costs, and as such it should not be subject to social security contributions. Member states likely need to review their social security systems to assess whether current contribution requirements provide adequate social protection for new types of worker in the economy and consider whether introducing more portability and flexibility is feasible.

Capital gains taxes

The tax treatment of capital gains is particularly important: first, a relevant part of the returns from innovative activities may take the form of capital gains. Second, capital gains taxation can affect access to equity financing by venture capitalists, which can help relax the credit constraint.
Capital gains taxation involves complex aspects, widely discussed in the economic literature; a central aspect is the choice between taxation at accrual and at realization, each of them with pros and cons that should be carefully considered. A number of policy options emerge in this regard.

Relevant feature	**Treatment of capital losses**
Economic impact	Similarly to what we said for income losses, the asymmetric treatment of capital gains and losses (namely, the fact that deductions for losses are limited, especially for firms in the first stages) may reduce the insurance effect of taxation and disincentivise risk-taking by suppliers of equity.
Empirical assessment and relevance	The empirical analysis seems to confirm this effect. We note that risk-taking is less relevant for providers in the collaborative economy than for platform owners and for entrepreneurs in the traditional economy.
Margins affected	Decision to become an entrepreneur. Decision to invest.
Policy options	Provide full-loss offset with accrual taxation.
Discussion	Deductibility of capital losses is limited in order to reduce the scope for tax avoidance (particularly when capital gains are taxed at realization) and revenue shortfalls. Full-loss offset requires accrual taxation, which may be particularly complex to implement as a general principle, and might involve problems of liquidity (the tax is paid even when the asset is not liquidated). Even when fully recognised, loss offset may be difficult for start-ups and innovative firms.

Relevant feature	**Taxation upon accrual vs upon realization**
Economic impact	Taxation upon accrual is difficult to implement, but taxation upon realization creates a "lock-in" effect, as the taxpayer may postpone the payment of the tax by deferring the sale of an asset. The lock-in effect introduces frictions in the change of ownership of existing firms, hence it can determine a mismatch between entrepreneurial ability and the actual control of firms; however, for the same reason it can create an incentive for entrepreneurs to start-up a new business rather than acquiring an existing one (see Ch.1, section 2.1).
Empirical assessment and relevance	No relevant empirical analysis on this aspect. The problem seems relevant for traditional entrepreneurship, less relevant for providers in the collaborative economy.
Margins affected	Allocation of firm ownership.
Policy options	It is possible to eliminate the lock-in effect by implementing accrual taxation of capital gains. However, taxation on accrual is more complicated and can create problems for liquidity constrained taxpayers. A possible solution is "retrospective taxation": capital gains are taxed at realization, but a correction is made so that the fiscal advantage vis-a-vis accrual is eliminated.
Exemples / cases	Retrospective taxation was introduced in Italy in 1997, within a general reform that adopted taxation at accrual as the general principle for capital gains taxation. It remained into force only for a few years.
Discussion	The only drawback can be the complexity of application. Moreover, the accrual principle cannot be adopted selectively, it should be adopted consistently as a general principle for the taxation of capital gains.

Relevant feature	**Capital gains tax rate**
Economic impact	As an alternative to accrual taxation, many systems opt for taxation at realization, introducing preferential treatment of capital gains (reduced tax rate) to compensate for limited loss-offset and liquidity problems. An additional justification for reduced tax rates is that small and newly established firms have limited access to financial resources from banks and other traditional sources of finance due to asymmetric information. Alternative sources of finance, represented by venture capital, should be encouraged. Taxation can play a role in this regard. Because a large part of the returns to investment is obtained by venture capitalists in the form of capital gains, a reduction in capital gains taxation, by increasing the after-tax return, may encourage their involvement as providers of capital.
Empirical assessment and relevance	Some studies show that a reduction in the capital gains tax increases the provision of venture capital, and reinforces the incentive by venture capitalists to supervise entrepreneurs. The issue is not very relevant for CE providers.
Margins affected	Access to financing. Decision to invest.
Policy options	A reduction in capital gains taxation may reduce the cost of capital and encourage investments by venture capitalists. In particular, a reduction limited to newly established firms can be taken into consideration to encourage venture capital.
Discussion	Across-the-board elimination or reduction in capital gains taxation jeopardizes the overall consistency of the tax system with the notion of comprehensive income. Moreover, it involves asymmetries in tax treatment of capital income and capital gains; this may generate distortions by creating opportunities for eroding the income tax base and converting labour and capital income into capital gains. More targeted solution (e.g. towards small firms) may be preferable, but it is not easy to fine-tune this policy. The age of the firm could be another criterion to discriminate (see 'Jeunes Entreprises Innovantes' in France). Finally, some empirical analyses show that higher capital gains taxes increase the quality of the investments when this is measured by the success rate. in this light, a reduction in capital gains taxes may result in low quality investment.

Excise taxes

Excise taxes may be relevant when the terms of their application to the collaborative economy are not clear, so that they can involve a distortion when activities in the collaborative and traditional economy compete in the same market (e.g. tourism).

Relevant feature	Application to collaborative economy services
Economic impact	It is not always clear whether specific excises (e.g. "tourist" or "occupancy" taxes) must be applied also to services of the collaborative economy. The application of such taxes differs between member states. In member states where they are applicable in principle, but there is currently not a system in place to collect them with respect to CE activities, there is the risk of distorting competition between TE and CE, as well as a loss in tax revenue.
Margins affected	Distortion of competition between TE and CE.
Policy options	Better clarification of whether relevant taxes are due on collaborative economy services. There is the potential for governments to create a partnership with platforms to collect taxes automatically as part of online booking and payments systems, which the platforms can remit to the relevant authorities.
Examples / Cases	Airbnb has partnered with the French government to co-operate in the collection of tourist taxes.
Discussion	The collaborative economy may involve either a positive or negative externality, which can justify respectively the exemption from or application of excises. This should be assessed on a case by case basis. The externalities that excise taxes such as the tourist tax are designed to reflect may be present for some services and within some locations more than others. For example, it may be appropriate to extend the tourist tax to peer-to-peer rentals in cities, where these might be intended to contribute to congestion relief or improved housing availability, but this may be less appropriate in rural areas, where visitors might contribute significantly to the local economy.

Property and wealth taxes

Wealth taxes may be relevant in presence of financial constraint, as they may force ownership change or reduce the availability of resources for investments.

Relevant feature	Taxation of transfers to heirs
Economic impact	Heirs may be unable to continue the activity if taxation on bequest is too high, especially if the access to external sources of financing is limited. This may force a change of ownership even when this would not be efficient; alternatively, this reduces financial resources available to the firm for its investments.
Empirical assessment and relevance	This is particularly important for small firms, but it may be not so important for new firms and start-ups.
Margins affected	Access to financing.
Policy options	Reduce wealth taxation on transfer of business, where this is present.
Discussion	This may have adverse effect on distribution, and reduce the perception of equity of the tax system, especially when equality of opportunity is considered important.

Aspects of tax design potentially relevant for all taxes

Many entrepreneurial firms are small firms or start as small firms, and the activities in the collaborative economy are often fragmented. This implies that tax compliance costs may become very relevant, and represent a disproportionally large burden. There are two main tools to implement a simplified tax scheme for small entrepreneurial firms: the use of thresholds (which, however, may have additional policy rationales) and the adoption of presumptive taxation.

Relevant feature	**Application of thresholds**
Economic impact	Administrative costs involve a fixed cost component, and hence their burden on small firms and individuals may be disproportionately large, and they may therefore adversely affect the decision to start a new activity. A typical provision adopted to reduce the cost of administration is the introduction of a threshold below which certain taxes are not applied: firms below a given level of turnover are exempted, for example, from VAT. Thresholds within the income tax system are most often deployed to ensure progressivity and can also be developed to target particular forms of income, for example, the UK's proposal for a general exemption for trading and property income to encourage "micro-entrepreneurship". Although the benefit in terms of reduction of the cost of tax compliance is clear, there are also some potential costs. Since the threshold creates a tax advantage to firms below the threshold, it may discourage their growth. The distortion at the threshold can take different forms: limiting sales, splitting the activity into smaller units, or even tax evasion. Moreover, the impact of thresholds is particularly important to examine in the case of the collaborative economy where a large fraction of providers are likely to fall below the minimum thresholds. It has also been suggested that traditional suppliers might have an incentive to "break up" their business and use collaborative platforms as a way of avoiding tax. Both of these issues may be a problem to governments from the point of view of revenue loss and, inasmuch as providers in the CE are exempt from taxation, it could also generate a distortion to competition.
Margins affected	Decision to comply with taxes or to move to the informal sector, decision to become an entrepreneur.
Empirical assessment and relevance	The relevance of this dimension of tax design is confirmed by evidence on "bunching" of firms near the threshold. This may have different characteristics in different countries: growth-limiting effect through sales in Finland, evasion in the US (where the analysis is on sales taxes rather the VAT) and firm splitting in Japan. Empirical analysis points to compliance costs due to the administrative requirements of VAT rather than the VAT tax rate as the main source of distortion.
Policy options	The complex effects emerging in the literature point to opposing policy options: - an increase in the threshold may be justified if the objective is to reduce the distortions (limit to growth, incentive to split, tax evasion); - a reduction in the threshold may be justified if the objective is to capture more taxable activity, especially in the collaborative economy. Note that the threshold can be modified indirectly: - through allowances targeted to certain types of activity (e.g. micro-entrepreneurship or P2P rentals); - through tax registration requirements for particular activities (possibly conditional on parameters like the frequency of

	participation, profit margins etc.).
Examples / Cases	In the UK: - in 2016, proposed a £ 1,000 tax allowance for individuals, with an eye to micro-entrepreneurs in the collaborative economy. When chosen, it is not possible to deduct expenses from taxable income; - the "Rent a room scheme" extended the tax allowance to the first £ 7,500 rental from a room in a primary residence, with the objective to mitigate the lack of affordable housing. Australia issued GST requirements to all those who offer "taxi services" to ensure commercial drivers within the ridehailing sector fall within the remit of the general sales tax, together with "traditional" taxi drivers regardless of the actual turnover.
Discussion	Thresholds can be used for different purposes dependent on the type of tax, and may involve trade-offs. Altering VAT thresholds can typically be rationalised on the basis of transaction costs. When used for income taxes, thresholds can impact progressivity (this is indeed one of the reasons they may be introduced) whilst thresholds for trading, property or other income can be used to target particular activities, for example "micro-entrepreneurship". A change in the threshold involves a trade-off between reduction in administrative costs on the one hand, and distortion to firms' size (plus foregone tax revenue) on the other. A lower threshold may induce a number of additional distortions: limiting sales, or splitting the activity into smaller units. Lowering thresholds to a level that would impact occasional providers such as in the collaborative economy may also adversely impact participation rates for these groups. The extent of this impact will depend on the threshold that is set and more research is needed to establish the magnitude of these relationships. Clarifying registration requirements around a particular form of activity could be used across different forms of taxes and can be used to reduce distortions between the CE and TE, although unless applied uniformly this may risk increasing distortions between different activities at similar levels of income (e.g. all those involved in taxi travel may be liable for VAT, whilst other occupations may not be).

Relevant feature	**Simplified taxation regimes for small firms**
Economic impact	Reduce administrative costs in order to encourage entrepreneurship and increase tax compliance for small firms (see discussion above under "Thresholds for tax payments").
Margins affected	Decision to comply with taxes or to move to the informal sector, decision to become an entrepreneur.
Policy options	Simplified tax systems with lower tax rate, possibly with presumptive calculation of taxable income.
Examples / Cases	Italy: since 2008, regimes of simplified taxation are active in the country. Two regimes are available: - *regime forfetario*, which can be selected by small firms and self- employed, whose turnover is below a minimum threshold (ranging from EUR 25,000 to EUR 50,000, depending on the sector); taxable income is determined as a percentage of turnover, and a flat-rate that replaces all ordinary taxes on income, an optional regime for social security contribution and VAT exemption; - *regime di vantaggio*. available to young entrepreneurs , with a reduced flat tax on actual income and VAT exemption. Presumptive taxation (*studi di settore*) was first introduced in Italy in 1988. This system provides turnover estimations for each taxpayer, based on a case-specific weighted average of cost-related information and structural variables. After the publication of the estimates, taxpayers may either accept the charge or declare a turnover, which is below the estimated value, assuming heightened risk of an audit taking place. Latvia: in 2010, MicroEnterprise Tax (MET) program, a tax regime with simplified accounting requirements and a reduced tax rate of 9%, replacing state social contributions both for employees and proprietors, business risk state fee as well as personal or corporate income tax, depending on the case.
Discussion	Although simplified systems, such as those applied in Italy, may have positive effects on compliance, the literature suggests that they should be coupled with incentives for firms to enter the normal system; otherwise, they may result in persistent reliance of firms on simplified frameworks.

Tax administration

The collaborative economy leads to a greater number of smaller transactions which would lead to higher costs overall under the current tax administration frameworks. These costs, and the additional uncertainty created by the classification issues previously discussed, may both increase the risk of non-compliance in the collaborative economy and deter potential participation in the collaborative economy.
Digital technology, having been a driver of the collaborative economy, provides an opportunity to reduce these administration and compliance costs, and for smaller taxpayers in general. Indeed, a system-wide digitization of the tax system may be beneficial for all taxpayers, regardless of size. Below we highlight potential options our review has highlighted for the different ways in which governments, platforms and providers are playing a role in a more digitally-focussed tax system.

Specific policy	**Digitise the tax system**
Economic impact	A system-wide digitization of the tax system can minimize compliance costs, particularly for small firms and for providers in the collaborative economy who are already making use of digital platforms within their activity.
Margins affected	Decision to comply with taxes or to move to the informal sector, decision to become an entrepreneur.
Policy options	The digitization of the tax system (e.g through Digital Tax Accounts) may be a long-term solution to reduce administration costs for the economy as a whole. Whilst such a system would have a positive impact on those in the traditional and collaborative economy, the digital nature of collaborative economy transactions suggests the application of these practices within this space could be particularly successful. For example, the collaborative economy could form the basis of the first trials and pilots of such programs in Member states.
Examples / Cases	Estonia: E-Estonia. UK: "Making Tax Digital" reform starting in 2016, whereby all taxpayers will be able to complete online tax returns, allowing "real time" operating of the tax system as a substitute for the annual tax return.
Discussion	The system-wide nature of this policy makes its implementation particularly demanding. The development of digital tax accounts would be highly complementary to other potential reforms described in the tax design tables above, and Estonia shows that significant developments in this area can be made quickly, although a transitional period to phase-in reforms may be warranted. Estonia also highlights that collaboration between Member states and with collaborative economy platforms in this area can be encouraged to facilitate advances.

Specific policy	**Provide and share information on tax obligations**
Economic impact	Enhance transparency and inform taxpayers, who may have little experience with the tax system, about their tax obligations. Awareness and information campaigns can help boost self-reporting.
Margins affected	Decision to comply with taxes or to move to the informal sector, decision to participate in the collaborative economy
Policy options	Preparation of booklets, web pages and online interactive tools. Governments can encourage platforms to provide easy access to this information to their users, for example by providing links to the relevant guidance and on their website.
Examples / Cases	Information campaigns launched in the UK and in Austria, and Airbnb has issued guidance on occupancy taxes on its website.
Discussion	Although increasing information is a win-win strategy, its impact might be expected only to be marginal if not coupled with wider reform of procedures aimed at simplifying the actual calculation and payment of taxes.

Specific policy	**Give digital platforms responsibility for remitting data on transactions or directly collecting the tax**
Economic impact	Third party involvement is expected to increase compliance compare with self-declaration, and economies of scale reduce administration costs, which otherwise would be borne by a single providers in the CE. For example, shifting collection responsibilities onto large employers has proved successful at collecting income tax from employees. For collaborative economy platforms, additional responsibilities in this area could be relatively low-cost if the tax being remitted is simple to administer (e.g. single-rate occupancy taxes within the hospitality sector).
Margins affected	Decision to comply with taxes or to move to the informal sector, decision to participate in the collaborative economy.
Policy options	Platforms may be required to: - transmit to the tax authorities information on transactions made using their system; - to directly collect and remit the tax payments on behalf of service providers.
Examples / Cases	France: Airbnb tax collection of tourist taxes; Terrasse reform requires platforms to remit income data. Italy: proposal that platforms collect taxes at source. Estonia: partnership with Uber to remit data to pre-populate tax filings.
Discussion	With regard to the option of direct collection of taxes, we have not found evidence that platforms which have facilitated "occupancy" tax payments in the peer-to-peer accommodation sector have seen lower rates of participation. However, major tax types such as income taxes and sales taxes could generate disproportionate additional costs for platforms, due to the complexity of applying tax rules for participants who may have several sources of earnings, incur these in a number of taxable jurisdictions and have a range of different personal circumstances. Withholding taxes could solve this problem for platforms but would only shift this burden onto providers, who may need to apply complex tax rules in order to work out whether they have paid the right level of tax. Small-scale, occasional providers would likely be deterred the most from additional tax compliance burdens. It should also be noted that these difficulties could be at least partially overcome in case Digital Tax Accounts (discussed above) are adopted, where Estonia's partnership with Uber shows that effective solutions can result from all stakeholders play a role. With regard to data collection: it will be important to monitor the impact of these practices, such as the Terrasse reforms in France, and attempts to tackle the "Hidden economy" in the UK. In theoretical terms, this data could be remitted at relatively low cost by platforms. However, some stakeholders have voiced data protection and legal concerns and therefore any provisions would need to be designed and implemented in a way that facilitates rather than detracts from trust in the collaborative economy to avoid undermining participation.

3 Discussion

In this chapter, we have distilled the main policy implications that could be drawn from the review of the economic literature and case studies. Rather than a straightforward recipe to encourage entrepreneurship and favour the development of the collaborative economy, our study highlights that each policy option raises trade-offs and that their choice and combination require careful assessment. However, some of these policies find stronger support than others in the theoretical and empirical literature, and they are observed in countries covered by the case studies. We group policies in three broad sets, according to whether they target entrepreneurial risk, costs or returns.

1. Policies which can reduce entrepreneurial risk

Provision of full offset of business losses may encourage risk taking by reducing the asymmetric treatment between gains and losses that results in a "success tax". In particular, full offset of initial losses in new firms may be beneficial for entrepreneurial start-ups given potentially large upfront cost to develop new products or business models. However, this may be difficult to implement when firms, at their initial stages, do not have enough income; in these cases, innovative solutions such as the possibility to match losses with taxes other than the income tax, or even to transfer and negotiate tax credits, could be experimented.

Other policies which might affect the exposure to risk of entrepreneurs, such as a reduction of progressivity, do not find support in our analysis: the effect of reduced progressivity on risk taking is ambiguous from both an empirical and theoretical point of view, and additionally it has an adverse impact on the equity of the tax system.

2. Policies which can reduce costs of entrepreneurial activity

The Allowance for Corporate Equity (ACE) reduces the cost of financing through equity, by allowing the deduction from the corporate tax base of the imputed cost of equity. This may be particularly relevant for entrepreneurial firms that have usually more limited access to debt financing. Italy offers an interesting example on how to implement an ACE for both incorporated and unincorporated firms in a way that limits the revenue loss and favors new firms.

A tax credit on expenditure in R&D seems to be a very effective way to encourage investments in R&D. There are three main elements that influence the effectiveness of this policy: the design, the complexity of the procedures and targeting. Volume-based R&D tax credits (applied to the total amount of R&D expenditure) are preferred to incremental ones. In addition, refundability should be granted to allow firms to make full use of the incentive. One-stop and on-line application procedures reduce compliance costs; targeting may be achieved by restricting the tax credit to young and small companies and by favouring specific types of R&D. Examples of these policies can be found in the case studies we have considered: Italy, Latvia and Denmark.

Simplified taxation regimes for small firms may encourage entrepreneurship by reducing compliance costs, since their burden is disproportionately large for small firms. There are two main tools to implement a simplified tax scheme for small entrepreneurial firms: the use of thresholds for income and VAT taxation and the adoption of presumptive taxation. Although simplified systems may have positive effects on compliance, the literature suggests that they should be coupled with incentives for firms to enter the normal system, otherwise they may be an obstacle to firm growth. Examples of simplified taxation are provided by Italy, Latvia and Denmark, while the United Kingdom introduced specific allowances for micro-entrepreneurs. Italy, in particular, has long used simplified tax regimes and offers an example of the difficulties in finding the right balance between their pros and cons.

A system-wide digitization of the tax system can minimize compliance costs, and facilitate the payment of tax liabilities, particularly for small firms and for providers in the collaborative economy. Denmark, Estonia and the UK provide important examples on how the tax administration framework can be streamlined through the careful introduction of digital practices.

A further policy option, whose effects are less clear and thus does not receive support from our literature review, is a reduction in social security contributions for entrepreneurs and self-employed in general. Although it can reduce short term costs, it may also weaken the safety net and increase exposure to risk.

3. Policies which can increase returns to entrepreneurial activity

Tax treatment of capital gains plays a central role in determining the return of the entrepreneurial activity since the latter is mainly remunerated in the form of capital gains. Further, a reduction in capital gains taxation may encourage the provision of capital to small firms with limited access to credit by venture capitalists. There are three features of the tax, which are relevant: the tax rate, the timing of taxation (accrual vs realization) and the treatment of capital losses.

Across-the-board elimination or reduction in capital gains taxation may encourage entrepreneurial firms but it also creates opportunities for eroding the income tax base and may result in low quality investment. In this regard, targeting to new/entrepreneurial firms should be a crucial condition to make this policy effective.

The theoretical literature strongly supports taxation on accrual and full loss offset, but the actual implementation comes at the cost of a rather complex and opaque tax formula (an example is "retrospective taxation", which tries to combine taxation at realization with the accrual principle). Consequently, the attempts to apply it in practice have been scarce.

A careful assessment is required to select the best solution for capital gains taxation, as changes in the latter may result in a relevant modification in the design of the overall tax system (e.g. the application of accrual taxation)

Among the policies we have considered, which affect entrepreneurship by increasing the net-of-tax returns, some are clearly not supported by the theoretical analysis and by the evidence, namely: patent boxes and tax holidays. The former seems to induce mainly profit shifting, and encourage zero sum tax competition; the latter induce a number of distortions and are not considered an effective tax measure in advanced economies.

4. Proposals specifically aimed at the collaborative economy

Our study also highlights the range of multi-dimensional issues that the collaborative economy is posing to the tax system, which are strongly linked to the principle of **fiscal neutrality**. As set out in Chapter 2 Section 4.1, this principle states that taxpayers in similar situations carrying out similar transactions are subject to similar levels of taxation, unless there is objective justification for discriminating. It is uncertain how existing classifications should apply to collaborative economy (see below) and this has led to the possibility of situations in which similar activities might be taxed differently. Indeed, in highly simplified settings, our illustrative simulation highlights that a large shift from employment to self-employment in the same area of the economy could materially reduce tax revenues. Some have even suggested that such a situation brings into light whether the distinction between employment and self-employment is still appropriate within the tax system. However, both the wide spectrum of providers operating in the collaborative economy, from informal users to

professsional traders, and the novelty of the sectors that comprise the collaborative economy, make it difficult to ascertain whether the agents in question are truly analogous and compete in the same market, or not, and further research is required in this area.

There are two main challenges that may hinder tax neutrality in the collaborative economy:

Uncertainty in classification: The collaborative economy has increasingly blurred traditional boundaries drawn in the legal and taxation systems. It is uncertain how existing classifications should apply to collaborative economy businesses and this has led to the possibility of situations in which similar activities might be taxed differently. Beside hindering neutrality, uncertainty in classification makes it difficult for governments, platforms and providers to understand which taxes should apply.
Two material classification issues have emerged:

- Employment v self-employment: The growth of the collaborative economy is expected to see self-employment grow relative to employment as platforms currently classify most collaborative economy activity as self-employment, although this is being tested within several high-profile legal challenges on the basis of the applicability of employment protections. Indeed, in highly simplified settings, our illustrative simulation highlights that a large shift from employment to self-employment in the same area of the economy could materially reduce tax revenues. Some have even suggested that such a situation brings into question whether the distinction between employment and self-employment is still appropriate within the tax system. However, given the wide spectrum of providers operating in the collaborative economy, from informal users to professional traders, and the novelty of the sectors that comprise the collaborative economy, it is difficult to ascertain whether the agents in question are truly analogous and compete in the same market, or not, and further research is required in this area.
- Profit v cost-sharing: At the same time, there is often ambiguity whether income generated from collaborative economy activity should be subject to income taxes or not, as collaborative economy activity often blurs the distinction between on the one hand a commercial transaction that generates income, and on the other hand an efficient way of sharing costs.

Fragmentation of income: The collaborative economy leads to a greater number of smaller transactions. Taxes are either withheld at source (such as taxes on labour income, which are withheld by employers) or collected via self-assessed tax returns. As the collaborative economy is expected to generate more, smaller amounts of income for individual participants, there may be a reduction in the amount of tax that is withheld at source and this may increase the risk of non-compliance in the collaborative economy (and therefore create an unequal playing field with activities in the "traditional" economy).

Uncertainty in classification and fragmentation of income might lead to higher compliance costs for providers and higher administrative cost for the tax administration. These costs may either deter potential participation in the collaborative economy or induce a move to the shadow economy. At the time of our review roughly half of member states have proposed or developed tax policies or practices aiming at reducing compliance costs and solving classification issues. We have focused our assessment on three of the most relevant case studies – Estonia, France and the UK. The majority of the policies are still being trialled or are in the design and development stage, and as such, substantive evidence for the impact of

such reforms is not yet available. However, **three main policy options can be identified, with member states often undertaking a blend of each of these approaches**:

Adjust or clarify existing applicable rules
This has been the most common approach and has involved a variety of tax design and administration measures at the margins. For example, on tax design, France's "Terrasse" reforms have aimed to capture more revenue from the collaborative economy by extending the social security contribution framework to this activity. In contrast, the UK has expanded existing allowances on personal property income to encourage participation in the peer-to-peer accommodation sector. On tax administration, several Governments have run information campaigns to clarify the tax obligations of collaborative economy providers. In the UK, for example, the government has created online video content and is developing an online "tax calculator". Whilst Australia has provided specific guidance on the applicability of the General Sales Tax to those using peer-to-peer transportation platforms.

Use of thresholds and/or simplified tax regimes
These solutions have looked to directly address the question of the level at which collaborative economy earnings should be taxed. For example, Belgium has proposed a new "Customer-to-Customer income" classification for tax purposes and new thresholds and rates of tax. The UK has proposed a new "micro-entrepreneur" tax allowance for property and trading income so that a small amount of additional income can be earned without any interaction with the tax system.

Digitization of tax administration including the involvement of platforms in tax assessement and collection
This is the most radical solution and involves a step change in how the tax system operates through a wholesale use of digitization to reform tax administration, which can be the basis for further policy innovation. For example, France has asked platforms to play a greater role, requiring them to share income data with the tax authorities and inform providers of their tax obligations. France has also struck a partnership with Airbnb to collect occupancy taxes across a number of regions. However, it is Estonia which has made the most significant reforms in this area, becoming the first country in Europe to fully digitise its tax system through its e-Estonia program which the government has now started to apply to the specific challenges posed by the collaborative economy. For example, the tax authority has partnered with local ridesharing platforms to share data to enable the automatic population of online tax returns for drivers. This digital architecture has enabled Estonia to trial innovative new tax policies such as "Individual Entrepreneurial Accounts" that involve a much simplified tax regime.

Lastly, the report discusses the reasons that may justify a departure from the neutrality principle and justify a differential treatment of the collaborative economy. There is an outstanding policy question over whether to favour or penalise collaborative economy activities, and whether to use the tax system to do it. This is complicated by the fact that the **wider welfare impacts** from collaborative economy activity can be positive (such as environmental improvements from ridesharing or social benefits from P2P rentals) as well as negative (such as stimulating unequal competition within sectors or reducing long-term housing supply for the local market from P2P rentals).

The evaluation of wider effects on the economy is particular salient in the design of excise taxes. The collaborative economy may involve either a positive or negative externality, which can justify respectively the exemption from or application of

excises. This should be assessed on a case by case basis. The externalities that excise taxes such as the tourist tax are designed to reflect may be present for some services and within some locations more than others. For example, it may be appropriate to extend the tourist tax to peer-to-peer rentals in cities, where these might be intended to contribute to congestion relief or improved housing availability, but this may be less appropriate in rural areas, where visitors might contribute significantly to the local economy.

General conclusions

It is hard to identify a firm recipe on what a government should do to encourage entrepreneurship and the development of the collaborative economy, because many trade-offs are involved. Moreover, targeting entrepreneurial firms is a particularly demanding task for the legislator. A number of provisions aimed at reducing the cost of exposure to risk (such as a full offset of business losses), at reducing the cost of equity financing (the Allowance for Corporate Equity is a notable example in this regard), and at increasing the return from investment (reducing capital gains taxation for new firms), seem to go in the right direction. In addition, the literature and case studies suggest that some tax incentives, such as R&D tax credits and allowances, can be designed to effectively encourage innovative activity.

Another aspect which has been emphasised by our analysis, both for "traditional" entrepreneurial firms and firms in the collaborative economy, is that they are usually small firms, on which the burden of administrative and compliance costs weighs disproportionally. A reduction in such costs by targeting specific features of the tax system that disproportionally hurt entrepreneurial activities, has no evident drawbacks and should be part of a reform strategy. Examples are the introduction of simplified taxation regimes and an improved design of thresholds for certain taxes. Tax compliance costs for small firms can be reduced also by a system-wide digitization of the tax system.

We have found that the collaborative economy is challenging the concept of fiscal neutrality in many member states but it is too early to conclude policy options are the most effective in tackling this challenge, and which will prove most successful over the long-term. This will also largely depend on the objectives of different governments, and to what extent they want to encourage activity in the collaborative economy.

Overall, our review has highlighted the multi-dimensional nature of the challenges posed to the tax system by the collaborative economy. Tax design and administration challenges are inter-linked and in particular, we expect that broad-based reforms to implement "digital tax accounts" can help to reduce costs for all participants in the collaborative economy and this should be viewed as a critical enabler to broader reforms to tax policy that may be required. Whilst the e-Estonia program is in its early stages, we consider that Estonia provides an important model for the mutual gains that can be achieved from such a "system-wide" solution that involves cooperation between all parties on a voluntary basis. Providers stand to gain from eliminating "grey areas" and reducing administrative burdens, whilst the government stands to gain from reduced risk of non-compliance and platforms stand to gain from increased transparency and simplification of procedures.

In particular, our review finds that platforms have a particularly important role to play by collaborating with governments in this area. We have found three key ways in which platforms are supporting governments:

- Provide transparent information/advice to providers or calculate their taxable income for self-reporting
- Report income of users to the tax authorities
- Withhold taxes directly

These approaches can lead to benefits for all key stakeholders – boosting compliance and reducing administration costs for governments whilst leading to a simpler and certain tax framework for providers which could in turn boost participation and also benefit platforms through reputational gains. The example of the partnership between Estonia and local ridesharing companies show that these practices can be successful if they are carefully designed, mitigating substantial additional reporting costs for platforms and finding efficient ways to process payments from individuals that are more likely to have several sources of income

Lastly, our review has found that it is difficult to disentangle tax questions from questions on the employment classifications that often determine tax treatment. Our review shows the way economic activity is classified can have a material impact on tax revenues and so these questions may need to be tackled together to bring about a holistic, system-wide solution.

Further economic analysis, both theoretical and empirical, is required on a number of aspects to reach sound conclusions on the overall impact of different policy options. We hope our analysis provides the basis for further academic research and future policy assessments.

Moreover, it is clear, especially considering case studies, that the policy response is crucially determined by the specific economic and institutional context of each country. This makes general statements or advice extremely difficult, and probably inappropriate. It is clear that no one-size-fits-all solution is available, hence country specific-analyses should be most welcome in this regard.

Table 1: tax instruments and main policy options

Aspects of the tax system	Relevant feature	Economic impact (theoretical + empirical) / Margins affected	Relevance	Policy options	Case studies and examples	Discussion
Income tax (personal and corporate)	Progressivity	The impact of progressivity on risk-taking is ambiguous: progressivity increases the expected tax rate for more variable/uncertain incomes, reducing the incentives to become an entrepreneur; however, higher tax rates associated with progressive tax may increase the insurance effect of taxation and thus support entrepreneurship. Evidence is mixed and inconclusive. **Decision to become an entrepreneur. Decision to invest.**	TE	Reduce or increase progressivity.	Latvia: flat income tax. Italy: unincorporated firms to pay taxes on retained earnings at the same statutory (constant) tax rate as corporate firms.	Progressivity is a crucial feature of tax systems, and it is a function of the societal attitude to redistribution. Given the uncertain effect on risk-taking, there is no ground to change the degree of progressivity in order to encourage entrepreneurship
	Treatment of business losses	Asymmetry between gains and losses reduces the insurance effect of taxation. **Decision to become an entrepreneur. Decision to invest.**	TE	**Provide full offset of losses.** Because this is difficult in practice, possible solutions, in addition to the possibility to carry losses on to future periods, include: - matching the tax credit with other taxes (e.g. the VAT or excises due by the firm); - introducing negotiable tax credits.	The more innovative solution to convert losses into negotiable tax credits has not been experimented yet.	Full offset of losses may be difficult to implement, and it may result in avoidance e.g. through the artificial creation of losses.
	Differential tax treatment of debt and equity	Taxation favours debt over equity as a source of financing. Internal or external equity financing result in a higher cost of capital, which in turn discourages investments. **Decision on the source of financing. Decision to invest.**	TE	**Allowance for corporate equity** (ACE) reduces the user cost of capital, esp. for entrepreneurial firms which rely more on own resources	Italy introduced ACE in 2012.	In the short term the ACE is likely to result in a reduction in revenue from profit tax; this problem may be limited introducing ACE incrementally.
	Tax treatment of investment and current expenditure related to innovation	Different tax instruments are employed to influence the level of innovation. Depreciation allowances may affect incentives to invest if they are faster or slower than economic depreciation. Accelerated depreciation may encourage investments. Additionally, implicit incentives derive from the fact that some expenditures with long-term effects are considered as current expenditures and written-off immediately. In addition, many countrie provides explicit tax incentives to R&D. Evidence confirms that tax incentives encourage investments in R&D, although there is no consistent empirical evidence on the exact dimension of such effect. **Decision to invest.**	TE (esp. small and medium firms)	- **Accelerated depreciation allowances** for capital expenditures; - **Immediate write-off** for particular types of capital expenditures related to R&D and innovation; - **Tax credits and enhanced allowances** on expenditure in R&D; credits may be refundable to cope with cases in which profit is not large enough.	In Italy: tax credits for R&D expenditure and tax relief for investment in R&D intensive start-ups. In Denmark: a R&D tax credit scheme and immediate dediction of machinery and equipment acquired for R&D purposes. In Latvia: accelerated amortization of R&D-related costs, tax credits and deferral of tax payments on profits that result from selling replaced equipment.	- The design of the tax incentive is very important, in particular with regard to refundability when profit is insufficient. - Incentives should be targeted to entrepreneurial firms. - Possible risks: incentives can induce firms to invest in projects with low return. - Small firms may receive a lower benefit because they have less expertise, and they may have fewer opportunities to exploit a tax credit due to the lower level of profits.
	Tax treatment of revenue from innovation	The value of intellectual property rights (IPR) can be enhanced by tax incentives aimed at encouraging R&D. The empirical analysis confirms that this kind of incentives (e.g. patent boxes) has a strong impact on relocation of intangible assets, which are extremely mobile. They allow profit shifting, but they do not seem to increase overall R&D or affect the location of R&D facility. **Decision to invest, location of activities.**	TE esp. operating at a global level	**Patent boxes**. A reduced rate of taxation for profits derived from patents or other forms of intellectual property right.	Italy: patent box since 2015.	When assets are mobile (e.g. intangible assets), this kind of incentives creates the possibility of fiscal competition among countries. This may result in a "zero sum game".
	Tax holidays	Partial or reduced taxes can be justified to encourage investments in a country and attract FDI, when such investments generate positive externalities, particularly when there are no alternative instruments of industrial policy at work (e.g. in developing or emerging countries). Evidence that in some developing and emerging countries this policy is successful in attracting FDI and generating spillover, especially when directed at increasing competition in specific sectors (e.g. China between 1998 and 2007). Evidence for developed countries provides less clear conclusions. **Decision to become an entrepreneur.**	TE	Full or partial exemption from profit taxes of newly established firms for a certain period of time. In order to be effective, taxation must be source based, or alternatively the home country must recognize a tax credit for taxes, which have not actually been paid.		It may encourage tax competition among countries (esp. developing countries) to attract investments, resulting in a zero-sum game. It encourages short term and profitable investments, which could have been made even without incentives. There is some evidence that firms exploit the benefit but leave the country (or close down and start again) when the holiday period is ended. In the EU, an additional difficulty is that it may go against the general functioning of the common market.

	Classification issues: income vs cost reimbursement and employee vs self-employed.	Ambiguous definition can generate uncertainty and adverse incentives to participation. Higher levels of self-employment expected to adversely impact tax revenues and distort competition. **Decision to become an entrepreneur.** **Distortion of competition between CE and TE.**	CE	- Distributing guidance more widely about existing rules; - Clarifying or increasing the precision of current definitions; - Introducing new definitions, specific for the activities within the CE.	In the UK and Austria: information campaigns on existing tax rules. In France: in 2016 clarification on how existing exemptions apply to collaborative economy activities. In Belgium and France: new classifications within the income tax framework for "customer to customer" transactions, involving new thresholds and tax rates.	Achieving more clarity may depend more on the result of resolving existing legal cases on employment regulations than any changes within the tax system itself. Distributing existing guidance more widely has represented an interim "quick win" whilst more fundamental changes to employment classifications are being considered. It is still too early to evaluate new classifications developed by France and Belgium, although there has been debate whether new classifications open up new sources of ambiguity.
Social security contributions	Differential treatment of employees and self-employed.	Social security contributions decrease current income, but create a safety net and provide benefits in the long term. Empirical analysis is not consistent in determining the direction of the effect. **Decision to become an entrepreneur (self-employed).**	TE CE	No clear policy option can be derived in this regard, as it is not clear what the optimal trade-off is between the two effects of relaxing the liquidity constraint in the short run and offer a safety net and higher benefit in the future.		Self-employment does not necessarily coincide with entrepreneurship. Reduction of social security can have long term adverse effect in that it leaves the individual with limited social protection.
	Classification of providers in the CE as self-employed.	Small differences in the nature of underlying activity could drive big differences in the levels of benefits and contributions. This could also distort competition between the CE and the TE. **Decision to become an entrepreneur.** **Distortion of competition between CE and TE.**	CE	- Clarify how the social security system to the collaborative economy; - A more radical reforms may involve decoupling of the social security system from the traditional employment contracts; In both cases, platforms may be required to collect/withhold social security contributions due on collaborative economy earnings.	France's 2016 extension of social security obligations to two sectors within the collaborative economy.	French reforms have been criticized by collaborative economy platforms for failing to distinguish between cost sharing and income generation. Likely need for more fundamental reforms – e.g. increasing portability and flexibility within the social security system.

Aspects of the tax system	Relevant feature	Economic impact (theoretical + empirical) / Margin affected	Relevance	Policy options	Case studies or examples	Discussion
Capital gains taxes	Treatment of capital losses.	Asymmetric treatment of gains and losses reduces the insurance effect of taxation and hence risk-taking. The effect is confirmed by empirical analysis. **Decision to become an entrepreneur. Decision to invest.**	TE	Provide full-loss offset with accrual taxation.		Deductibility of capital losses is limited in order to reduce the scope for tax avoidance and revenue shortfalls. Full-loss offset requires accrual taxation, which may be particularly complex to implement as a general principle, and might involve problems of liquidity. Even when fully recognised, loss offset may be difficult for start-ups and innovative firms.
	Taxation upon accrual vs realization.	Taxation upon realization creates a "lock-in" effect, as the taxpayer may postpone the payment of the tax by deferring the sale of an asset. The lock-in effect introduces frictions in the change of ownership of existing firm. No relevant empirical analysis in this regard. **Allocation of firm ownership.**	TE	Taxation upon accrual eliminates the lock-in effect, but is very difficult to implement. "Retrospective taxation": capital gains are taxed at realization, but a correction is made so that the fiscal advantage vis-a-vis accrual is eliminated.	Italy tried accrual taxation and "retrospective taxation" in the past.	Complexity of application. A consistent system-wide application of the principle of accrual taxation is necessary to avoid distortions.
	Tax rate.	As an alternative to accrual taxation, many systems opt for taxation at realization, introducing preferential treatment of capital gains (reduced tax rate) to compensate for limited loss-offset and liquidity problems. Additionally, because a large part of the returns to investment is obtained by venture capitalists and by equity providers in general in the form of capital gains, a reduction in capital gains taxation may encourage the provision of capital to small firms with limited access to credit. Some studies show that a reduction in the capital gains tax increase the provision of venture capital, and increases the incentive by venture capitalists to supervise entrepreneurs. **Access to financing. Decision to invest.**	TE	A reduction in capital gains taxation, particularly if it is limited to newly established firms.		Across-the-board elimination or reduction in capital gains taxation jeopardizes the overall consistency of the tax system with the notion of comprehensive income, and creates opportunities for eroding the income tax base. Moreover, a reduction in capital gains taxes may result in low quality investment.
Excise taxes	Application to collaborative economy services.	I It is not always clear whether specific excises (e.g. "tourist" or "occupancy" taxes) are applicable to the CE – if they are applicable in principle but there is currently not a system in place to collect them, there is the risk of distorting competition between TE and CE, as well as a loss in tax revenue. **Distortion of competition between CE and TE.**	CE	Clearer definition of tax obligations aimed at equal application to activities with the same basis. Partnerships with platforms to collect tax if this basis is established.	France: partnership with Airbnb to collect occupancy taxes.	The collaborative economy may involve a positive or negative externality, which can justify the exemption from or application of existing excise taxes, which should be assessed on a case to case basis. Initial evidence that application of occupancy taxes to Airbnb listings in France has generated additional tax revenues for governments without stemming the growth of participation.
Property and wealth taxes	Taxation of transfers to heirs.	It may reduce resources available to start-up and entrepreneurial activity. **Access to financing.**	TE (less important for startup)	Reduce wealth taxation on transfer of business, where this is present.		This may have adverse effect on distribution, and reduce the perception of equity of the tax system, especially when equality of opportunity is considered important.
All taxes (incl. VAT and income taxes)	Application of thresholds.	The burden of administrative costs is disproportionately large for small firms/individuals, affecting adversely the decision to start a new activity. A typical provision is the adoption of thresholds. Thresholds can also be used to target particular forms of income, and has been applied to services within the collaborative economy. Empirical studies confirm the relevance of this dimension of the tax system, as firms tend to "bunch" near the threshold. **Decision to comply with taxes or to move to the informal sector, decision to become an entrepreneur, Distortion of competition between CE and TE.**	TE (small) CE	Different policy options may point to different directions, depending on the relevant objective: - an increase in the threshold may be justified as a response to distortions (limit to growth, incentive to split, tax evasion); - a reduction of the thresholds may be recommended to capture more taxable activity, especially in the collaborative economy. - introduce allowances to incentivise certain types of activity (e.g. micro-entrepreneurship or P2P rentals); - use tax registration requirements to modify threshold rates for particular activities.	In the UK: - in 2016, proposed a £ 1,000 tax allowance for all earnings from "micro-entrepreneurs"; - the "Rent a room scheme" extended the tax allowance to the first £7,500 rental from a room in a primary residence; Australia issued GST registration requirements to all those who offer taxi travel.	Thresholds can be used for different purposes dependent on the type of tax. Altering tax thresholds typically involves a trade-off between reduction in administrative costs on the one hand, and distortion to firms' size (plus foregone tax revenue) on the other. A lower threshold may induce a number of additional distortions: limiting sales, splitting the activity, etc. Thresholds for trading, property or other income can be used to target particular activities, for example "micro-entrepreneurship". Clarifying registration requirements around a particular form of activity could be used across different forms of taxes and can be used to reduce distortions between the

Aspects of the tax system	Relevant feature	Economic impact (theoretical + empirical) / Margin affected	Relevance	Policy options	Case studies or examples	Discussion
						CE and TE.
	Simplified taxation regimes for small firms.	Tax compliance involves fixed costs whose impact falls disproportionally on small firms (see above "Thresholds for tax payments"). **Decision to comply with taxes or to move to the informal sector, decision to become an entrepreneur.**	TE CE	Simplified tax systems with lower tax rate, possibly with presumptive calculation of taxable income.	Italy: *regime forfetario* and *regime di vantaggio.* See also presumptive taxation (*studi di settore*). Latvia: MicroEnterprise Tax.	Although simplified systems may have positive effects on compliance, the literature suggests that they should be coupled with incentives for firms to enter the normal system, or otherwise they may induce persisting reliance on simplified frameworks.
Tax administration	Digitize the tax system.	A system-wide digitization of the tax system can minimize compliance costs, particularly for small firms and for providers in the collaborative economy, who are already making use of digital platforms within their activity. **Decision to comply with taxes or to move to the informal sector, decision to become an entrepreneur.**	TE CE	The digitization of the tax system (e.g through Digital Tax Accounts) may be a long-term solution to reduce administration costs for the economy as a whole.	Estonia: E-Estonia. UK: "Making Tax Digital" reform starting in 2016, whereby all taxpayers will be able to complete online tax returns.	The system-wide nature of this policy makes this measure particularly effective at reducing transaction costs, but also makes its implementation particularly demanding. The development of Digital Tax Accounts would be highly complementary to other potential reforms to tax policy described above.
	Provide and share information on tax obligations.	Enhance transparency and inform taxpayers, who may have little experience with the tax system, about their tax obligations. Awareness and information campaigns can help boost self-reporting. **Decision to comply with taxes or to move to the informal sector, decision to become an entrepreneur.**	CE	- Preparation of booklets, web pages and online interactive tools; - encourage platforms to make relevant information available to providers and customers.	Information campaigns launched in the UK and in Austria. Voluntary guidance issued by Airbnb on occupancy taxes.	Increasing information is a win-win strategy, but its impact might be marginal if not coupled with wider reform of procedures aimed at simplifying the actual calculation and payment of taxes.
	Give digital platforms responsibility for remitting data on transactions or directly collecting the tax themselves.	Third party involvement in transmitting transaction data or collecting simple excise taxes has the potential to increase compliance and lower administration costs. However, there is the potential for inaccurate tax collection and duplication of costs for more complex taxes. **Decision to comply with taxes or to move to the informal sector, decision to become an entrepreneur.**	CE	Platforms may be required to: - transmit to the tax authorities information on transactions made using their system; - directly collect and remit the tax payments to tax authorities.	France: Airbnb tax collection of tourist taxes; Terrasse reforms mandating sharing of transaction data to tax authority. Italy: proposal that platforms collect taxes at source. Estonia: partnership with Uber to pre-populate digital tax filing.	The option of direct collection of taxes, for major tax types such as income taxes and sales taxes could generate disproportionate additional costs for platforms. Withholding taxes could solve this problem for platforms but would only shift this burden onto providers, who may need to apply complex tax rules in order to work out whether they have paid the right level of tax. Small-scale, occasional providers would likely be deterred the most from additional tax compliance burdens. These difficulties could be at least partially overcome in case Digital Tax Accounts, The remitting of data by platforms could likely be done at low cost, but there are wider trust and data protection concerns that have the potential to undermine participation.

TE = traditional economy, CE = collaborative economy

References

1099.is, (2016). https://1099.is/

Aasmae, M. (2015). "More pre-filled data has been added to income tax returns", Estonia Tax and Customs Board. https://www.emta.ee/eng/more-pre-filled-data-has-been-added-income-tax-returns

Achleitner, A.K., Bock, C. and Watzinger, M. (2011). "The Capital Gains Tax: A Curse but also a Blessing For Venture Capital Investment", Center for Entrepreneurial and Financial Studies, Working Paper 2011-04.

Achleitner, A.K., Braun, R., Hinterramskogler, B. and Tappeiner, F. (2012). "Structure and Determinants of Financial Covenants in Leveraged Buyouts", Review of Finance, 16, 647-684.

Acs, Z.J. (2008). "Foundations of High Impact Entrepreneurship", Foundations and Trends in Entrepreneurship, 4(6), 535-620.

Acs, Z.J. and Audretsch, D. (2003). "Handbook of Entrepreneurship Research", Kluwer Academic Publishers.

Acs, Z.J., Parsons, W. and Tracy, S. (2008). "High Impact Firms: Gazelles Revisited", An Office of Advocacy Working Paper, U.S. Small Business Administration.

Action Institute (2013). L'ecosistema dell'Innovazione in Italia.

Agenzia Entrate (1993). Decreto-legge 30 agosto 1993, n. 331. http://www.agenziaentrate.gov.it/wps/content/Nsilib/Nsi/Documentazione/Archivio/Archivio+studi+di+settore/Normativa+prassi+giurisprudenza+anni+precedenti/Archivio+leggi+provv+Studi+Settore/Anni+precedenti+1999+-+1973/STUDI+DI+SETTORE+-+PRIME+NORME

Agenzia Entrate (2011). Convertito, con modificazioni, dalla legge 15 luglio 2011 n.111. http://www.agenziaentrate.gov.it/wps/wcm/connect/097fe80047ee551694c99c8b3c65cb20/art_27_dl_98.pdf?MOD=AJPERES&CACHEID=097fe80047ee551694c99c8b3c65cb20

Agenzia Entrate (2016a). Regime forfetario – legge 23 dicembre 2014, n. 190, articolo 1, commi da 54 a 89, Stabilita 2015. http://www.agenziaentrate.gov.it/wps/file/Nsilib/Nsi/Home/CosaDeviFare/Richiedere/Regimi+agevolati/Nuovo+regime+forfetario+agevolato/NP+nuovo+regime+forfettario+agevolato/circ+10+del+04042016/Circolare+n.+10_E+del+4+aprile+2016.pdf

Agenzia Entrate (2016b). Informazioni generali – Nuovo regime forfetario agevolato. http://www.agenziaentrate.gov.it/wps/content/Nsilib/Nsi/Home/CosaDeviFare/Richiedere/Regimi+agevolati/Nuovo+regime+forfetario+agevolato/Scheda+nuovo+regime+forfettario+agevolato/

Agenzia Entrate (2016c). Tutti i numeri del Patent box: 4.500 richieste inviante: Lombardia, Veneto ed Emilia al top.

Aghion, P. and Howitt, P. (1992). "A model of growth through creative destruction", Econometrica, 60, 323-51.

Aghion, P., Cai, J., Dewatripont, M., Du, L., Harrison, A. and Legros, P. (2015). "Industrial Policy and Competition", American Economic Journal: Macroeconomics, 7, 1-32.

Aghion, P., Harris, C. and Vickers, J. (1997). "Competition and Growth with Step-by-Step Innovation; An Example", European Economic Review, 41, 771-782.

Aghion, P., Harris, C., Howitt, P. and Vickers, J. (2001). "Competition, Imitation and Growth with Step-by-Step Innovation", Review of Economic Studies, 68, 467-492.

Agrawal, A. and Cockburn, I. (2003). "The anchor tenant hypothesis: exploring the role of large, local, R&D-intensive firms in regional innovation Systems", International Journal of Industrial Organization, 21, 1227-1253.

Agrawal, A., Cockburn, I. and Rosell, C. (2010). "Not Invented Here? Innovation in company towns", Journal of Urban Economics, 67, 78-89.

Agrawal, A., Cockburn, I., Galasso, A. and Oettl, A. (2014). "Why are Some Regions More Innovative than Others? The Role of Firm Size Diversity", Journal of Urban Economics, 81, 149-165.
Agrawal, A., Rosell, C. and Simcoe, T.S. (2014). "Do tax credits affect R&D expenditures by small firms? Evidence from Canada", NBER Working Paper 20615.
Airbnb (2013). https://www.airbnbaction.com/good-news-from-amsterdam
Airbnb (2016a). http://blog.airbnb.com/economic-impact-airbnb/
Airbnb (2016b). https://www.airbnb.co.uk/economic-impact
Airbnb (2016c). https://www.airbnb.com/help/article/318/how-do-taxes-work-for guests
Airbnb (2016d). "How do taxes work for hosts?". https://www.airbnb.co.uk/help/article/481/how-dotaxes-work-for-hosts
Airbnb (2016e). "In What Areas is Occupancy Tax Collection and Remittance by Airbnb Available?" https://www.airbnb.co.uk/help/article/653/in-what-areas-is-occupancy-tax-collection-andremittance- by-airbnb-available
Airbnb (2016f) "What is Occupancy Tax? Do I Need to Collect or Pay it?" https://www.airbnb.co.uk/help/article/654/what-is-occupancy-tax--do-i-need-to collect-orpay-it
Airbnb (2016g). Briefing for DG Grow Task Force.
Airtax (2016). https://www.airtax.io/
Akcigit, U. and Kerr, W. (2011). "Growth through heterogeneous innovations", NBER Working Paper 16443.
Alm, J. and Soled, J.A. (2013). "The Internal Revenue Code and Automobiles: A Case Study of Taxpayer Noncompliance", Florida Tax Review, 14 (10).
Alstadsæter, A. and Jacob, M. (2013). "The Effect of Awareness and Incentives on Tax Evasion", CESifo Working Paper Series 4369.
Alvaredo, F. and Saez, E. (2009). "Income and Wealth Concentration in Spain from a Historical and Fiscal Perspective", Journal of the European Economic Association, 7, 1140-1167.
Alworth, J., Arachi, G. and Hamaui, R. (2003). "Whats come to perfection perishes: adjusting capital gains taxation in Italy", National Tax Journal, 56, 197-219.
Amar, N. and Viossat, L. (2016). "Collaborative Platforms, Labor and Social Protection", Inpection generale des affaies socialies (IGAS). http://www.igas.gouv.fr/IMG/pdf/Executive_summary.pdf
Amway (2016). "Amway Global Entrepreneurship Report – Entrepreneurship in a changing work environment". http://globalnewsassets.amway.com/501484/ager_2016_publication.pdf?r=1600
Andrew, A. (2015). "Major boost for Airbnb hosts as Chancellor announces a new £7,500 tax break for homeowners who want to rent out a room", Thisismoney.co.uk. http://www.thisismoney.co.uk/money/mortgageshome/article-3154851/Boost-Airbnb-thanks-7-500-tax-break-homeowners-want-rent-room.html
Antonelli, C. and Crespi, F. (2013). "The "Matthew effect" in R&D public subsidies: The Italian evidence", Technological Forecasting and Social Change, 80, 1523-1534.
Antunesa, A.R. and Cavalcanti, T.V.V. (2007). "Start up costs, limited enforcement, and the hidden economy", European Economic Review, 51(1), 203-224.
Appelt, K.C., Knoll, M.A.Z., Johnson, E.J. and Westfall, J.E. (2016). "Preference Checklists: Selective and Effective Choice Architecture for Retirement Decisions", TIAA Institute Research Dialogue 127.
Arachi, G. and Santoro, A. (2007). "Tax enforcement for SMEs: Lessons from the Italian Experience?", eJournal of Tax Research, 5(2), 225-243.
Arctic Startup (2012). "Danish startup community unified against the entrepreneur tax". http://arcticstartup.com/article/entrepreneur-tax-denmark/
Arqué-Castells, P. (2012). "How venture capitalists spur invention in Spain: Evidence from patent trajectories", Research Policy, 41, 897-912.

Ashby, C.M. (2000). "IRS' Efforts to Serve Small Business Taxpayers", Testimony of the General Accounting Office before the Senate Committee on Small Business, GAO/T-GGD-00-138.
Asoni, A. and Sanandaji, T. (2014). "Taxation and the quality of entrepreneurship", Journal of Economics, 113(2), 101-123.
Audretsch, D. (2007). "Entrepreneurship capital and economic growth", Oxford Review of Economic Policy, 23, 63-78.
Audretsch, D. and Thurik, R. (2002). "Linking Entrepreneurship to Growth," OECD STI Working Paper, 2081/2.
Auerbach, A.J. (1991). "Retrospective Capital Gains Taxation", American Economic Review, 81, 167-178.
Auerbach, A.J. (2002). "Taxation and Corporate Financial Policy", in Auerbach, A. and Feldstein, M. (eds.), Handbook of Public Economics, 3, 1251, Amsterdam, Elsevier.
Auerbach, A.J. and Bradford, D. (2004). "Generalized cash-flow taxation", Journal of Public Economics, 88(5), 957-980.
Auerbach, A.J. and Hassett, K.A. (1991). "Recent U.S. Investment Behavior and the Tax Reform Act of 1986: A Disaggregate View," Carnegie-Rochester Conference Series on Public Policy, 35, 185-215.
Auerbach, A.J., Burman, L.E. and Siegel, J.M. (2000). "Capital Gains Taxation and Tax Avoidance: New Evidence from Panel Data", in Slemrod, J. (ed.), Does Atlas Shrug? The Economic Consequences of Taxing the Rich, 355-388, Cambridge, Harvard University Press.
Auerbach, E.R. (1986). "Competency-based ESL: One step forward or two steps back?", TESOL Quarterly, 20(3), 411-415.
Australian Tax Office (ATO) (2016). https://www.ato.gov.au/business/starting-your-own-business/business-or-hobby-/
Australian Taxation Office (ATO) (2016). https://www.ato.gov.au/Business/GST/Indetail/ Managing-GST-in-your-business/General-guides/The-sharing-economy-and-tax/
Ayers, B., Cloyd, C.B. and Robinson, J.R. (2001). "The Influence of Income Taxes on the Use of Inside and Outside Debt by Small Business", National Tax Journal, 54, 27-56.
Ayers, B.C., Cloyd, C.B. and Robinson, J.R. (1996). "Organizational Form and Taxes: An Empirical Analysis of Small Businesses", Journal of the American Taxation Association 18, 49-67.
Azémar, C. and Dharmapala, D. (2016). "Tax sparing agreements, territorial tax reforms, and foreign direct investment", Oxford University Centre for Business Taxation Working Paper 15/22.
Bachelor, L. and Jarvis, A. (2015). "Why renting your spare room could be a nice little earner", The Guardian. https://www.theguardian.com/money/2015/jul/13/rent-out-your-spare-room
Bacher, H.U. and Brülhart, M. (2013). "Progressive taxes and firm births", International Tax and Public Finance, 20, 129-168.
Baghana, R. and Mohnen, P. (2009). "Effectiveness of R&D tax incentives in small and large enterprises in Québec", Small Business Economics, 33, 91-107.
Baldwin, J. and Picot, G. (1995). "Employment Generation by Small Producers in the Canadian Manufacturing Sector", Small Business Economics 7(4), 317-331.
Baldwin, R.E., Forslid, R., Martin, P., Ottaviano, G. and Robert-Nicoud, F. (2003). "Economic Geography and Public Policy" Princeton, University Press.
Baliamoune-Lutz, M. and Garello, P. (2014). "Tax structure and entrepreneurship", Small Business Economics, Springer, 42(1), 165-190.
Baliamoune-Lutz, M. and Garello, P. (2015). "The Effect of Tax Progressivity on the Quality of Entrepreneurship: How Significant is the Phenomenon of 'Poor Entrepreneurship'?", IREF Working Paper 201501.

Barreneche García, A. (2014). "Analyzing the determinants of entrepreneurship in European cities", Small Business Economics, 42, 77-98.
Barreto, H. (1989). "The Entrepreneur in Microeconomic Theory: Disappearance and Explanation", London, Routledge.
Barrios, S., Huizinga, H., Laeven, L. and Nicodeme, G. (2012). "International taxation and multinational firm location decisions", Journal of Public Economics, 96 (11): 946-958.
Barro, J. (2015). "New York City Taxi Medallion Prices Keep Falling, Now Down About 25 percent", The New York Times. http://www.nytimes.com/2015/01/08/upshot/new-york-city-taxi-medallion-prices-keep-falling-now-down-about-25-percent.html
Barry, J.M. and Caron, P.L. (2015). "Tax Regulation, Transportation Innovation, and the Sharing Economy". https://lawreview.uchicago.edu/page/tax-regulation-transportation-innovation-andsharing-economy
Bartik, T. J. (1992). "The effects of state and local taxes on economic development: A review of recent research", Economic Development Quarterly, 6(1), 102-111.
Baumol, W.J. (1990). "Entrepreneurship: Productive, Unproductive, and Destructive", Journal of Political Economy, University of Chicago Press, 98(5), 893-921.
Baumol, W.J. (2004). "Education for innovation: entrepreneurial breakthroughs vs. corporate incremental improvements", NBER Working Paper 10578.
Baumol, W.J. (2005). "Entrepreneurship and Innovation: Toward Their Microeconomic Value Theory", AEI-Brookings Joint Centre for Regulatory Study, Publication 05-38.
Beaumont, CASE (2016). "The Collaborative Economy in Poland and Europe: A Tool for Boosting Female Employment?".
http://www.caseresearch.eu/sites/default/files/publications/Collaborative%20Economy_Beaumont_1.pdf
Bellak, C. and Leibrecht, M. (2005). "Do Low Corporate Income Tax Rates Attract FDI? Evidence from Eight Central- and East European Countries", University of Nottingham Research Paper 2005/43.
Bénassy-Quéré, A., Fontagné, L. and Lahrèche-Révil, A. (2005). "How does FDI react to corporate taxation?", International Tax and Public Finance 12, 583-603.
Bennedsen, M., Nielsen, K.M., Perez-Gonzalez, F. and Wolfenzon, D. (2007). "Inside the family firm: The role of families in succession decisions and performance", Quarterly Journal of Economics, 122, 647-691.
Berger, M., Misch, F. and Voget, J. (2016). "Becoming an Entrepreneur - The Role of Profit Taxes", Beiträge zur Jahrestagung des Vereins für Socialpolitik 2016: Demographischer Wandel - Session: Corporate Taxes and Firm Behavior, No. B11-V2.
Berlingste Business (2013). "Politikere vil ruske op i den danske i iværksætterkultur". http://www.business.dk/vaekst/politikere-vil-ruske-op-i-den-danske-i-ivaerksaetterkultur
Bernardi, L. (2005). "Tax reforms in Italy and in Europe: an introduction", Giornale degli Economisti e Annali di Economia, 64, 139-158.
Bérubé, C. and Mohnen, P. (2009). "Are firms that receive R&D subsidies more innovative?", Canadian Journal of Economics, 42 (1), 206-225.
Best, M., Brockmeyer, A., Kleven, H., Spinnewijn, J. and Waseem, M. (2015). "Production vs revenue efficiency with limited tax capacity: theory and evidence from Pakistan", Journal of Political Economy, 123(6), 1311-1355.
Bieńkowska, E. and Katainen, J. (2016). "The collaborative economy."
http://www.timesofmalta.com/articles/view/20160603/opinion/Thecollaborativeeconomy.614148
Birch, D.L. (1979). ''The Job Generation Process'', MIT Program on Neighborhood and Regional Change for the Economic Development Administration, U.S. Department of Commerce, Unpublished Report.
Birch, D.L. (1981). ''Who Creates Jobs?'', Public Interest 65, 3-14.

Birch, D.L. (1987). "Job Creation in America: How Our Smallest Companies Put the Most People to Work", New York, Free Press.
Black, F. and Scholes, M. (1974). "The Effects of Dividend Yield and Dividend Policy on Common Stock Prices and Returns", Journal of Financial Economics, 1, 1-22.
Blau, D.M. (1987). "A time-series analysis of self-employment in the United States.", Journal of Political Economy, 95(3), 445-467.
Boadway, R. and Tremblay, J.F. (2003). "Public Economics and Startup Entrepreneurs", CESifo Working Paper 877.
Boadway, R., Chamberlain, E. and Emmerson, C. (2009). "Taxation of wealth and wealth transfers", Reforming the Tax System for the 21st Century The Mirrlees Review, Oxford University Press.
Boadway, R., Marchand, M. and Pestieau, P. (1991). "Optimal linear income taxation in models with occupational choice", Journal of Public Economics, 46(2), 133-162.
Borck, R. and Pflüger, M. (2006). "Agglomeration and tax competition", European Economic Review, 50, 647-668.
Borrell, L. (2016). "Major peer-to-peer lenders still months off unveiling Innovative Finance ISAs amid approval backlog", Moneysavingexpert.com. http://www.moneysavingexpert.com/news/savings/2016/04/major-peer-to-peer-lenders-still-months-off-unveiling-ifisas-amid-approval-backlog-
Boyce, L. (2014). "As cost of rent rises and housing supply remains stretched should the Government increase frozen rent-a-room tax threshold?", Thisismoney.co.uk. http://www.thisismoney.co.uk/money/mortgageshome/article-2557613/Should-Government-increase-rent-room-threshold.html
Boyce, L. (2015). "New Kind of ISA will accept peer-to-peer investments from next year", Thisismoney.co.uk. http://www.thisismoney.co.uk/money/saving/article-3153630/New-kind-Isa-accept-peer-peer-investments-year.html
Bragadóttir, H., Danielsson, C., Magnusson, R., Seppänen, S., Stefansdotter, A. and Sundén D. (2014). "The Use of Economic Instruments In Nordic Environmental Policy 2010–2013", Norden. https://www.copenhageneconomics.com/dyn/resources/Publication/publicationPDF/2/262/0/The%20Use%20of%20Economics%20Instruments%20in%20Nordic%20Environmental%20Policy%202010-2013.pdf
Brassil, M., McCrann, T. and Nolan, E. (2016). "Uber, Employment Status and the "Collaborative Economy"", Lexology. http://www.lexology.com/library/detail.aspx?g=088d45f0-4fa3-462f-ae4e-931b6112ed9e
Broersma, L. and Gautier, P. (1997). ''Job Creation and Job Destruction by Small Firms: An Empirical Investigation for the Dutch Manufacturing Sector'', Small Business Economics, 9(3), 211-224.
Brown, J.R. and Petersen, B.C. (2009). "Why has the investment-cash flow sensitivity declined so sharply? Rising R&D and equity market developments", Journal of Banking & Finance, 33(5), 971-984.
Bruce, D. (2000). "Effects of the United States Tax System on Transitions Into Self-Employment", Labour Economics, 7(5), 545-574.
Bruce, D. (2002). "Taxes and Entrepreneurial Endurance: Evidence from the Self-Employed", National Tax Journal, 55(1), 5-24.
Bruce, D. and Deskins, J. (2012). "Can state tax policies be used to promote entrepreneurial activity?", Small Business Economics, 38(4), 375-397.
Bruce, D. and Mohsin, M. (2006). "Tax policy and entrepreneurship: New time series evidence", Small Business Economics, 26(5), 409-425.
Bruegel (2016). "The Sharing/Collaborative Economy." http://bruegel.org/events/thesharingcollaborative-economy/
Brunetti, M.J. (2006). "The estate tax and the demise of the family business", Journal of Public Economics, 90, 1975-1993.

Buettner, T. (2002). "The impact of taxes and public spending on the location of FDI: Evidence from FDI-flows within Europe", ZEW Discussion Paper 02-17.
Buettner, T. and Ruf, M. (2007). "Tax incentives and the location of FDI: Evidence from a panel of German multinationals", International Tax and Public Finance, 14(2), 151-164.
Bugamelli, M., Cannari, L., Lotti, F. and Magri, S. (2012). "The Innovation Gap of Italy's production system: roots and possible solutions", Bank of Italy Occasional Paper 121.
Burgess, M. (2016). "Budget 2016: Airbnb 'micro-entrepreneurs' to get tax break", Wired. http://www.wired.co.uk/article/budget-2016-airbnb-micro-entrepreneur-tax-savings
Burke, L. (2015). "Airbnb creating an accommodation grey market? Hoteliers fearmodern competitor", News.com.au.
http://www.news.com.au/finance/business/travel/is-airbnb-creating-an-accommodation-grey-market-hoteliers-fear-modern-competitor/news-story/8a371d98b25d9df955bd6d151c83e822
Burrus, D. (2017). "Why Reputation, Credibility and Trust Are the Currency in the Sharing Economy". http://www.huffingtonpost.com/daniel-burrus/why-reputation-credibilit_b_9857400.html
Business Advice (2016). "The Budget 2016: HMRC to offer pay-as-you-go tax option to self-employed". http://businessadvice.co.uk/tax-admin/the-budget-2016-hmrc-to-offer-pay-as-you-go-tax-option-to-self-employed/
Business", Quarterly Journal of Economics, 109, 149-82.
Busom, I., Corchuelo, B. and Martínez-Ros, I. (2014). "Tax incentives… or subsidies for business R&D?", Small Business Economics, 43, 571-596.
Byers, J.W., Proserpio, D. and Zervas, G. (2016). "The Rise of the Sharing Economy: Estimating the Impact of Airbnbon the Hotel Industry". http://cs-people.bu.edu/dproserp/papers/airbnb.pdf
Cabinet of the Danish Prime Minister (2009). "Forårspakke 2.0, - Vækst, klima, lavere skat", Regeringen.
http://www.stm.dk/publikationer/foraarspakke/forarspakke_2_0.pdf
Cacciotti, G. and Hayton, J.C. (2014). "Fear of Failure and Entrepreneurship: A Review and Direction for Future Research", ERC Research Paper 24. http://www.enterpriseresearch.ac.uk/publications/fear-failure-entrepreneurshipreview-direction-future- research-research-paper-24/
Cagetti, M. and De Nardi, M. (2006). "Entrepreneurship, Frictions, and Wealth", Journal of Political Economy, 114, 835-870.
Cagetti, M. and De Nardi, M. (2009). "Estate Taxation, Entrepreneurship, and Wealth", American Economic Review, 99, 85-111.
Caiumi, A. (2010). "The effectiveness evaluation of selected tax expenditures: a novel approach an application to regional tax incentives for business investment in Italy", ISAE Working Papers.
Caiumi, A. (2011). "The evaluation of the effectiveness of tax expenditures – a novel approach – an application to the regional tax incentives for business investments in Italy", OECD Taxation Working Papers.
Camerer, C.F. and Lovallo, D. (1999). "Overconfidence and excess entry: An experimental approach", American Economic Review, 89(1), 306-318.
Cappelen, A., Raknerud, A. and Rybalka, M. (2012). "The effect of R&D tax credits on patenting and innovations", Research Policy 41, 334-345.
Carpenter, R.E. and Petersen, B.C. (2002). "Capital market imperfections, high-tech investment, and new equity financing", The Economic Journal, 112, 54-72.
Carplus Annual Survey of Car Clubs, Zipcar (2013/4).
http://www.zipcar.co.uk/what-iszipcar
Carrillo, P., Pomeranz, D. and Singhal, M. (2014). "Dodging the taxman: firm misreporting and limits to tax enforcement", NBER Working Paper 20624.

Carroll, R., Holtz-Eakin, D., Rider, M. and Rosen, H.S. (2000a). "Entrepreneurs, Income Taxes, and Investment", in Slemrod, J. (ed.), Does Atlas Shrug? The Economic Consequences of Taxing the Rich, Cambridge, Harvard University Press.
Carroll, R., Holtz-Eakin, D., Rider, M. and Rosen, H.S. (2000b) "Income Taxes and Entrepreneurs' Use of Labor", Journal of Labor Economics, 18, 324-351.
Carroll, R., Holtz-Eakin, D., Rider, M. and Rosen, **H.S.** (2001). "Personal Income Taxes and the Growth of Small Firms", in Poterba, J. (ed.), Tax Policy and the Economy 15, Cambridge, MIT Press.
Casson, M. (2003). "The Entrepreneur. An Economic Theory." Second Edition, Northampton, Edward Elgar Publishing.
Cerulli, G. and Potí, B. (2012a). "The differential impact of privately and publicly funded R&D on R&D investment and innovation: the Italian case", Prometheus, 30(1), 113-149.
Cerulli, G. and Potí, B. (2012b). "Evaluating the robustness of the effect of public subsidies on firms R&D: An application to Italy", Journal of Applied Economics, 15(2), 287-320.
Chari, V.V., Golosov, M. and Tsyvinski, A. (2005). "Business Start-ups, The Lock-in Effect, and Capital Gains Taxation", Unpublished Paper.
Chatterji, A., Glaeser, E. and Kerr, W. (2013). "Clusters of entrepreneurship and innovation", NBER Working Paper 19013.
Chetty, R. and Saez, E. (2005). "Dividend taxes and corporate behavior: evidence from the 2003 dividend tax cut", Quarterly Journal of Economics, 120(3), 791-833.
Chetty, R. and Saez, E. (2013). "Teaching the Tax Code: Earnings Responses to an Experiment with EITC Recipients", American Economic Journal: Applied Economics, 5(1), 1-31.
Chetty, R., Friedman, J. and Saez, E. (2013). "Using Differences in Knowledge Across Neighborhoods to Uncover the Impacts of the EITC on Earnings", American Economic Review, 103(7), 2683-2721.
Chinitz, B. (1961). "Contrasts in agglomeration: New York and Pittsburgh", American Economic Review, 51, 279-289.
Chirinko, R.S. and Eisner, R. (1983). "Tax Policy and Investment in Major U.S. Macroeconomic Econometric Models", Journal of Public Economics, 20(2), 139-166.
Chirinko, R.S. and Schaller, H. (1995). "Why Does Liquidity Matter in Investment Equations?", Journal of Money, Credit and Banking, 27(2), 527-548.
Chirinko, R.S., Fazzari, S.M. and Meyer, A. (1999). "How Responsive Is Business Capital Formation to Its User Cost? An Exploration with Micro Data." Journal of Public Economics, 74(1), 53-80.
Chittenden, F., Poutziouris, P., Michaelas, N. and Watts, T. (1999). "Taxation and small firms: creating incentives for the reinvestment of profits", Environment and Planning C: Government and Policy, 17, 271-286.
Cho, M. (2014). "The effect of capital gains taxation on small business transfers and start-ups", Economic Modelling, 36, 447-454.
Chong, A. and Gradstein, M. (2007). "Inequality and Informality", Journal of Public Economics, 91(1/2), 159-179.
Clampet, J. (2014). "Sharing homes, cars – and lawsuits", BBC. http://www.bbc.com/travel/story/20140501-sharing-homes-cars-and-lawsuits
CMS Law-Now (2017). "Sharing economy: new obligations imposed by France on online platforms". https://www.hoganlovells.com/blogs/data-protection-blog/french-digital-bill-to-be-or-not-to-be-a-platform
Codagnone, C. and Martens, **B.** (2016). "Scoping the Sharing Economy: Origins, Definitions, Impact and Regulatory Issues", Institute for Prospective Technological Studies Digital Economy Working Paper JRC100369. https://ec.europa.eu/jrc/sites/jrcsh/files/JRC100369.pdf
Cohen, W.M. (2010). "Fifty years of empirical studies of innovative activity and performance", Handbook of the Economics of Innovation, 1 (1 C), 129-213.

Cohen, W.M. and Klepper, S. (1996). "A reprise of size and R&D", Economic Journal, 106, 925-951.
Colombo, M.G. and Grilli, L. (2010). "On growth drivers of high-tech start-ups: Exploring the role of founders' human capital and venture capital", Journal of Business Venturing, 25(6), 610-626.
Compass (2015). "The 2015 Global Startup Ecosystem Ranking". http://blog.startupcompass.co/the-2015-global-startup-ecosystem-ranking-is-live/
Corchuelo Martínez-Azúa, B. and Martínez-Ros, E. (2008). "Aplicación de los incentivos fiscales a la inversión I+D en las empresas españolas", Hacienda Pública Española/ Revista de Economía Pública, 187, 9-39.
Cowling, M. and Mitchell, P. (1997). "The Evolution of UK Self-Employment A Study of Government Policy and the Role of the Macroeconomy", The Manchester School, 65(4), 427-442.
Crawford, C. and Freedman, J. (2010). "Small business taxation", in Mirrlees, J., Adam, S., Besley, T., Blundell, R., Bond, S., Chote, R., Gammie, M., Johnson, P., Myles G. and Poterba, J. (eds.), Dimensions of Tax Design, The Mirrlees Review, Oxford, Oxford University Press for IFS.
Cremer, H. and Gahvari, F. (2000). "Tax evasion, fiscal competition and economic integration", European Economic Review, 44, 1633-1657.
Criscuolo, C., Gal, P.N. and Menon, C. (2014). "The Dynamics of Employment Growth: New Evidence from 18 Countries", OECD Science, Technology and Industry Policy Papers 14.
Cullen, J.B. and Gordon, R.H. (2002). "Taxes and Entrepreneurial Activity: Theory and Evidence for the U.S.", NBER Working Paper 9015.
Cullen, J.B. and Gordon, R.H. (2007). "Taxes and entrepreneurial risk-taking: Theory and evidence for the US", Journal of Public Economics, 91, 1479-1505.
Cummins, J.G. and. Hubbard, R.G. (1995). "The tax sensitivity of foreign direct investment: evidence from firm level panel data", in Feldstein, M. (ed.), The Effects of Taxation on Multinational Corporations, 123-147, Chicago, university of Chicago Press.
Cummins, J.G., Hassett, K.A. and Hubbard, R.G. (1994a). "A Reconsideration of Investment Behavior Using Tax Reforms as Natural Experiments", Brookings Papers on Economic Activity, 2, 181-249.
Cummins, J.G., Hassett, K.A. and Hubbard, R.G. (1994b). "Using Tax Reforms to Study Investment Decisions: An International Study", Columbia University, Unpublished Paper.
Curtis, S. (2015). "Bitcoin and sharing economy pave the way for new 'digital state'". http://www.telegraph.co.uk/technology/news/11882732/Bitcoin-and-sharing-economy-pave-the-way-for-new-digital-state.html
Cutler, J.E. (2014). "Cities Grappling with Challenges of How to Tax, Regulate Short-Term Rentals". http://www.bna.com/cities-grappling-challenges-n17179897258/
Czarnitki, D. and Toole, A. (2008). "The R&D Investment-Uncertainty Relationship: Do Competition and Firm Size Matter?", ZEW Centre for European Economic Research Discussion Paper 08-013.
Czarnitzki, D., Hanel, P. and Rosa, J.M. (2011). "Evaluating the impact of R&D tax credits on innovation: A microeconometric study on Canadian firms", Research Policy, 40, 217-229.
D'Este, P., Iammarino, S., Savona, M. and von Tunzelmann, N. (2012). "What hampers innovation? Revealed barriers versus deterring barriers", Research Policy, 41, 482-488.
Da Rin, M., Di Giacomo, M. and Sembenelli, A. (2011). "Entrepreneurship, firm entry, and the taxation of corporate income: Evidence from Europe", Journal of Public Econmics, 95, 1048-1066.
Danish Government (2009a). "Forårspakke 2.0- Vækst, klima, lavere skat". http://www.stm.dk/publikationer/foraarspakke/forarspakke_2_0.pdf

Danish Government (2009b). "Denmark's National reform programme first progress report", Contribution to the EU' Growth and Employment Strategy (The Lisbon Strategy).
Danish Government (2010). "Denmark 2020 – Knowledge, Growth, Prosperity, Welfare".
http://stm.dk/publikationer/arbprog_10_uk/Denmark_2020_knowledge_growth_prosperity_welfare.pdf
Danish Ministry of Finance (2013). "Vækstplan DK, Stærke virksomheder, flere job". https://www.fm.dk/publikationer/2013/vaekstplan-dk-staerke-virksomheder-flere-job/
Danish Ministry of Taxation (2010). "Danish Tax Reform 2010 - Paper to the OECD WP 2 meeting November 2009". http://www.skm.dk/media/139042/danish-tax-reform_2010.pdf
Danish Ministry of Taxation (Skatteministeriet) (2009). "Skattereform 2009 - Forårspakke 2.0 – information". http://www.skm.dk/aktuelt/temaer/foraarspakke-20/skattereform-2009-foraarspakke-20-%E2%80%93-information
Darnihamedani, P., Block, J.H., Hessels, S.J.A. and Simonyan, A. (2015). "Start-up Costs, Taxes and Innovative Entrepreneurship", Tinbergen Institute Discussion Paper Series TI 2015-013/VII. http://hdl.handle.net/1765/77758
Davidson, **L.** (2016). "World's first sharing economy tax breaks unveiled in Budget", The Telegraph. http://www.telegraph.co.uk/business/2016/03/16/worlds-first-sharing-economy-tax-breaks-unveiled-in-budget/
Davis, S.J., Haltiwanger, J. and Schuh, S. (1996). "Job Creation and Destruction", Cambridge, MIT Press.
Day, T., Stoll, H. and Whaley, R. (1985). "Taxes, Financial Policy, and Small Business", Lexington, Lexington Books.
de Angelo, H. and Masulis, R.W. (1980). "Optimal Capital Structure under Corporate and Personal Taxation", Journal of Financial Economics, 8, 3-29.
de Biolley, A. (2016). "Belgium 2nd EU country to set up tax rate for peer-to-peer income", Political Intelligence. http://www.political-intelligence.com/belgium-2d-eu-country-to-set-up-tax-rate-for-peer-to-peer-income/
de Mooij, R.A. and Ederveen, S. (2003). "Taxation and Foreign Direct Investment: A synthesis of empirical research", International Tax and Public Finance, 10(6), 673-693.
de Mooij, R.A. and Nicodème, G. (2008). "Corporate tax policy and incorporation in the EU", International Tax and Public Finance, 15, 478-498.
Dechezleprêtre, A., Einiö, E., Martin, R., Nguyen, K.T. and Van Reenen, J. (2016). "Do tax Incentives for Research Increase Firm Innovation? An RD Design for R&D", NBER Working Paper 22405.
Decker, R.A., Haltiwanger, J., Jarmin, R.S. and Miranda, J. (2014). "The role of entrepreneurship in US job creation and economic dynamism", Journal of Economic Perspectives, 28(3), 3-24.
DeCroo, A. (2016). "Belgian Government Approves Simple and Low Tax Rates for Sharing Economy". http://www.decroo.belgium.be/en/belgian-government-approves-simple-and-low-tax-rates-sharing-economy
Deen, M. and Viscusi, G. (2016). "France to Cut Income Taxes by Further 1 Billion Euros in 2017". https://www.bloomberg.com/news/articles/2016-09-09/france-to-cut-income-taxes-by-further-1-billion-euros-in-2017
Degryse, H. and Ongena, S. (2005). "Distance, lending relationships, and competition", Journal of Finance, 60(1), 231-266.
Deloitte (2015). "Taxation and Investment in Denmark 2015 – Reach, relevance and reliability".
https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-denmarkguide-2015.pdf

Desai, M.A., Foley, C.F. and Hines, J.R. (2001). "Repatriation taxes and dividend distortions", National Tax Journal, 54, 829-851.
Desai, M.A., Foley, C.F. and Hines, J.R. (2004). "Foreign direct investment in a world of multiple taxes", Journal of Public Economics, 88, 2727-2744.
Desai, M.A., Foley, C.F. and Hines, J.R. (2007). "Dividend policy inside the multinational firm", Journal of Financial Management, 36, 5-26.
Devereux, M.P. (2007). "The impact of taxation on the location of capital, firms and profit: a survey of empirical evidence", Oxford University Centre for Business Taxation Working Paper 07/02.
Devereux, M.P. and Griffith, R. (1998). "The taxation of discrete investment choices", IFS Working Paper 98/16.
Devereux, M.P., Lockwood, B. and Redoano, M. (2008). "Do countries compete over corporate tax rates?", Journal of Public Economics, 92, 1210-1235.
Dharmapala, D., Foley, C.F. and Forbes, K.J. (2011). "Watch What I Do, Not What I Say: The Unintended Consequences of the Homeland Investment Act", Journal of Finance, 66, 753-787.
Dharmapala, D., Slemrod, J. and Wilson, J.D. (2011). "Tax policy and the missing middle: optimal tax remittance with firm-level administrative costs", Journal of Public Economics, 95(9-10), 1036-1047.
Domar, E.D. and Musgrave, R.A. (1944). "Proportional income taxation and risk-taking", The Quarterly Journal of Economics, 58(3), 388-422.
Du, L., Harrison, A. and Jefferson, G. (2014). "FDI Spillovers and Industrial Policy: The Role of Tariffs and Tax Holidays", NBER Working Paper 16767.
Dumpe, D. and Arhipova, I. (2012). "E-government readiness in Latvia: past and present", Information Technology and Management Science, 93-98.
Durán, J.M. and Esteller, A. (2010). "Tax Data for Wealth Concentration Analysis: an Application to Spanish Wealth Tax", Review of Income and Wealth, 56, 620-631.
Duranton, G. and Puga, D. (2001). "Nursery cities: urban diversity, process innovation, and the life-cycle of products", American Economic Review, 91(1), 454-1,477.
ECB (2007). Monthly Bulletin – September 2007. https://www.ecb.europa.eu/pub/pdf/other/mb200709_focus10.en.pdf?351786d41c0e897474ce10ce41d12efd
E-Commerce Law & Policy (2015). "Adapting French tax collection for the challenges of the digital economy". http://www.e-comlaw.com/e-commerce-law-and-policy/hottopic.asp?id=1476
Economy Co-Responsibility Learning (ECORL) (2016). "Comparative Study on Sharing Economy in EU and ECORL Consortium Countries". http://www.ecorl.it/documenti/Risultati/comparative-study-on-sharing-economy.pdf
Econpubblica (2011). "The role and impact of labour taxation policies", Report prepared for the European Commission, DG Employment, Social Affairs and Equal Opportunities.
E-Estonia (2015). "E-Services Have Provoked a Huge Increase in Tax Returns". https://e-estonia.com/e-services-have-provoked-a-huge-increase-in-tax-returns/
Egger, P., Keuschnigg, C. and Winner, H. (2009). "Incorporation and Taxation: Theory and Firm-level Evidence", Oxford University Centre for Business Taxation Working Paper 0908.
Egger, P.H. and Loretz, S. (2010). "Homogeneous profit tax effects for heterogeneous firms?", The World Economy, 33(8), 1023-1041.
Egger, P.H., Loretz, S., Pfaffermayr, M. and Winner, H. (2009). "Firm-specific forward-looking effective tax rates", International Tax and Public Finance, 16(6), 850-870.

Eggert W. and Genser, B. (2005). "Dual Income Taxation in EU Member Countries", CESifo DICE Report, Ifo Institute - Leibniz Institute for Economic Research at the University of Munich, 3(1), 41-47.
Einiö, E. (2014). "R&D subsidies and company performance: Evidence from geographic variation in government funding based on the ERDF population-density rule", Review of Economics and Statistics, 96(4), 710-728.
Ekspertvalg (2015). "Iværksætteri stormer frem i dansk politik". http://www.ekspertvalg.dk/blog/2015/04/ivaerksaetteri-stormer-frem-i-dansk-politik
Ellis, R. (2016). "Taxes And The Sharing Economy". http://www.forbes.com/sites/ryanellis/2016/07/05/taxes-and-the-sharing-economy/#2ae17d39afdc
Ellison MP and Her Majesty's Revenue & Customs (2016). "Digital revolution for the tax system to cut red tape for British business", HMRC. https://www.gov.uk/government/news/digital-revolution-for-the-tax-system-to-cut-red-tape-for-british-business
Erhvervsstyrelsen (2014). "Ny pulje skal fremme iværksætteri og innovation i Danmark". https://erhvervsstyrelsen.dk/ny-pulje-skal-fremme-ivaerksaetteri-og-innovation-i-danmark
Ernst & Young (2013). "The power of three. Together, governments, entrepreneurs and corporations can spur growth across the G2", The EY G20 Entrepreneurship Barometer. http://www.ey.com/Publication/vwLUAssets/EY-G20-country-report-2013-Italy/$FILE/EY-G20-country-report-2013-Italy.pdf
Ernst & Young (2015a). "Estonia: Government sets new tax agenda". http://taxinsights.ey.com/archive/archive-news/estonia--government-sets-new-tax-agenda.aspx
Ernst & Young (2015b). "The rise of the sharing economy. The Indian landscape". http://www.ey.com/Publication/vwLUAssets/ey-the-rise-of-the-sharing-economy/$FILE/ey-the-rise-of-the-sharing-economy.pdf
Ernst & Young (2016a). "Tax administration is going digital: Understanding the challenges and opportunities". http://www.ey.com/Publication/vwLUAssets/EY-tax-administration-is-going-digital/$FILE/EY-tax-administration-is-going-digital.pdf
Ernst & Young (2016b). "France introduces new tax and social security changes including mandatory e-filing of tax returns". https://taxinsights.ey-vx.com/archive/archive-news/france-introduces-new-tax-and-social-security-changes.aspx
EurekAlert! (2016). "American University's Tax Center reveals filing loophole for sharing economy entrepreneurs". http://www.eurekalert.org/pub_releases/2016-05/au-aut052416.php
Euroactiv (2015). "'Uberisation' of economies pinching state tax revenues". https://www.euractiv.com/section/transport/news/uberisation-of-economies-pinching-
Eurobarometer (2010). "Entrepreneurship in the EU and beyond - A survey in the EU, EFTA countries, Croatia, Turkey, the US, Japan, South Korea and China", European Commission, Summary report, Eurobarometer Flash EB Series 283. http://ec.europa.eu/public_opinion/flash/fl_283_sum_en.pdf
state-tax-revenues/
Eurobarometer (2016). "The Use of Collaborative Platforms". European Commission. http://ec.europa.eu/COMMFrontOffice/PublicOpinion/index.cfm/Survey/getSurveyDetail/instruments/FLASH/surveyKy/2112
Euromonitor International (2014). "Passport: Travel and the sharing economy". http://www.slovenia.info/pictures/TB_board/atachments_1/2014/Travel_and_the_Sharing_Economy_19148.pdf
European Commission (1998). "Conclusions of the ECOFIN Council meeting on 1 December 1997 concerning taxation policy", Official Journal of the European Communities C2, 6/1/98, 1-6.

European Commission (2001). "Towards and International Market Without Obstacles", European Commission, Brussels.
European Commission (2004). "European Tax Survey," Directorate General Taxation and Customs Union, Working Paper 3.
European Commission (2013). "REDI: The Regional Entrepreneurship and Development Index – Measuring regional entrepreneurship", Final report. http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/regional_entrepreneurship_development_index.pdf
European Commission (2014a). "Report - Statistical Data on Women Entrepreneurs in Europe", Ref. Ares 3740275 - 11/11/2014. http://ec.europa.eu/DocsRoom/documents/7481/attachments/1/translations
European Commission (2014b). "A Study on R&D Tax Incentives", Taxation Papers. Working Paper 52.
European Commission (2014c). "Tax Reforms in EU Member States 2014, Tax policy challenges for economic growth and fiscal sustainability", European Economy 6. http://ec.europa.eu/economy_finance/publications/european_economy/2014/pdf/ee6_en.pdf
European Commission (2015a). "Taxation trends in the EU, Data for the EU Member States, Iceland and Norway", Eurostat Statistical Books. http://ec.europa.eu/eurostat/documents/3217494/7092073/KS-DU-15-001-EN-N.pdf/68116dc2-75bc-4f25-b8a3-ae863ff8dec5
European Commission (University of Surrey) (2015b). "Online Platforms: Contrasting perceptions of European stakeholders. A qualitative analysis of the European Commission's public consultation on the regulatory environment for platforms". https://ec.europa.eu/digital-single-market/en/news/study-online-platforms-contrasting-perceptions-european-stakeholders-qualitative-analysis
European Commission (2015c). 2015 SBA Fact Sheet – Italy.
European Commission (2015d). 2015 SBA Fact Sheet – Latvia.
European Commission (2016a). "Country Report Denmark 1016", Commission Staff Working Document, SWD (2016) 74 final.
European Commission (2016b). "Country Report Italy 2016. Including an In-Depth Review on the prevention and correction of macroeconomic imbalances". http://ec.europa.eu/europe2020/pdf/csr2016/cr2016_italy_en.pdf
European Commission (2016c). "A European agenda for the collaborative economy – supportive analysis". http://ec.europa.eu/DocsRoom/documents/16881
European Commission (2016d). "Analytical paper on liability issues in the professional services sector in Brussels Barcelona and London". http://ec.europa.eu/DocsRoom/documents/16945/attachments/1/translations
European Commission (2016e). "Analytical paper on liability issues in the short-term accommodation rental sector in Barcelona, Paris and Amsterdam". http://ec.europa.eu/DocsRoom/documents/16946/attachments/1/translations
European Commission (2016f). "Synopsis, Report on the public consultation on the regulatory environment for platforms, online intermediaries and the collaborative economy". https://ec.europa.eu/digital-single-market/en/news/full-report-results-public-consultation-regulatory-environment-platforms-online-intermediaries
European Commission (2016g). "Digital single market: digital economy & society – Latvia". https://ec.europa.eu/digital-single-market/en/scoreboard/latvia#5-digital-public-services
European Commission (2016h). "Country Report Latvia 2016".
European Commission (2016i). "Taxation Trends in the European Union". http://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/taxation/gen_info/economic_analysis/tax_structures/2016/econ_analysis_report_2016.pdf
European Commission (2017a). "Country Report Italy 2017".
European Commission (2017b). "Country Report Latvia 2017".

European Commission (2017c). "Effectiveness of tax incentives for venture capital and business angels to foster the investment of SMEs and start-ups"

European Commission (2017d). "Taxation trends in the European Union. Data for the EU Member States, Iceland and Norway". https://ec.europa.eu/taxation_customs/sites/taxation/files/taxation_trends_report_2017.pdf

European Fiscal Studies (EFS) (2015-2016). "Shared economy, collaborative consumption and taxable persons for the VAT". http://www.europesefiscalestudies.nl/upload/Marta%20Urrutia%20Aldama.pdf

European Parliament (2016a). "Precarious Employment in Europe: Patterns, Trends and Policy Strategies". http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/587303/IPOL_BRI(2016)587303_EN.pdf

European Parliament (2016b). "The Cost of Non-Europe in the Sharing Economy". http://www.europarl.europa.eu/RegData/etudes/STUD/2016/558777/EPRS_STU%282016%29558777_EN.pdf

Eurostat (2015a). "High-tech statistics – economics data". http://ec.europa.eu/eurostat/statistics-explained/index.php/High-tech_statistics_-_economic_data

Eurostat (2015b). "Tax revenue statistics". http://ec.europa.eu/eurostat/statistics-explained/index.php/Tax_revenue_statistics

Eurostat (2015c). "Taxation trends in the European Union". http://ec.europa.eu/eurostat/documents/3217494/7092073/KS-DU-15-001-EN-N.pdf/68116dc2-75bc-4f25-b8a3-ae863ff8dec5

Eurostat (2015d). "GDP per capita at current market prices, 2003 and 2013 (¹) (EU-28 = 100; based on PPS per inhabitant) YB15". http://ec.europa.eu/eurostat/statisticsexplained/index.php/File:GDP_per_capita_at_current_market_prices,_2003_and_2013_(%C2%B9)_(EU28_%3D_100;_based_on_PPS_per_inhabitant)_YB15.png

Evans, D. (2011). "The Internet of Things: How the Next Evolution of the Internet is Changing Everything", Cisco Internet Business Solutions Group. https://www.cisco.com/c/dam/en_us/about/ac79/docs/innov/IoT_IBSG_0411FINAL.pdf

Evans, D.S. and Jovanovic, B. (1989). "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints", Journal of Political Economy, 97, 808-827.

Evers, M.T, Meier, I. and Spengel, C. (2014). "Transparency in Financial Reporting: Is country-by-country reporting suitable to combat international profit shifting?", ZEW Working Paper.

Faggio, G. and Silva, O. (2014). "Self-employment and entrepreneurship in urban and rural labour markets", Journal of Urban Economics, 84, 67-85.

Fairlie, R. and Krashinsky, H. (2012). "Liquidity constraints, household wealth, and entrepreneurship revisited", Review of Income and Wealth, 58, 279-306.

Fama, E.F. and French, K.R. (1998). "Taxes, Financing Decisions, and Firm Value", Journal of Finance, 53(3), 819-843.

Fazzari, S., Hubbard, G. and Petersen, B. (1988). "Financing Constraints and Corporate Investment", Brooking Papers on Economic Activity, 1, 141-206.

Feldstein, M. and Slemrod, J. (1980). "Personal Taxation, Portfolio Choice, and the Effect of the Corporate Income Tax.", Journal of Political Economy, 88, 854-866.

Fermstad (2015). "Online Platforms for Exchanging and Sharing Goods". http://futureecon.org/wp-content/uploads/AF_Final_PDF.pdf

Fleischer (2010). "Regulatory Arbitrage", Tex. L. Rev., 89, 227.

FocusEconomics (2016). "Italy economic outlook". http://www.focus-economics.com/countries/italy

Foreign Investment Advisory Service (2007). "South Africa: Tax Compliance Burden for Small Businesses: A Survey of Tax Practitioners".
Fortune (2015). "Uber's Employment Fight Just Got More Complicated". http://fortune.com/2016/03/04/uber-driver-unemployment/
Freedman, J. and Crawford, C. (2010). "Small Business Taxation", in Chote, R., Adam, S., Bond, S. and Myles, G. (eds.), Dimensions of Tax Design, The Mirrlees Review, Oxford, Oxford University Press.
French Government (2015). "The 2016 Budget Bill". http://www.gouvernement.fr/en/the-2016-budget-bill
French-Property.com (2016a). "French Tax System". https://www.french-property.com/guides/france/finance-taxation/taxation/
French-Property.com (2016b). "Social Security Contribution in France". https://www.french-property.com/guides/france/finance-taxation/taxation/
Friebel, G. and Giannetti, M. (2009). "Fighting for talent: risk-taking, corporate volatility and organisation change", The Economic Journal, 119, 1344-1373.
Friedman, E., Simon, J., Kaufmann, D. and Zoido- Lobaton, P. (2000). "Dodging the Grabbing Hand: The Determinants of Unofficial Activity in 69 Countries", Journal of Public Economics, 76(3), 459-493.
Fritsch, M. and Wyrwich, M. (2016). "The effect of entrepreneurship on economic development - an empirical analysis using regional entrepreneurship culture", Journal of Economic Geography, forthcoming.
Fukuda, A. and Hirota, S.I. (1996). "Main bank relationships and capital structure in Japan", Journal of the Japanese and International Economies, 10(3), 250-261.
Fuman, J. (2008). "The Concept of Neutrality in Tax Policy, Testimony Before the U.S. Senate Committee on Finance Hearing on "Tax: Fundamentals in Advance of Reform"".
FundingCircle (2016). https://www.fundingcircle.com/uk/innovative-finance-isa/
Fusaro, M. (2016). "EU: Sharing Economy and Harmonisation of Rules", Alternativa Europea. https://alternativaeuropeablog.wordpress.com/2016/03/09/eu-sharing-economy-and-harmonisation-of-rules/
Gateau, C. (2016). "French Digital Bill: To be or not to be a platform?", Hogan Lovells. https://www.hoganlovells.com/blogs/data-protection-blog/french-digital-bill-to-be-or-not-to-be-a-platform
Gentry, W.M. (1994). "Taxes, Financial Decisions and Organizational Form: Evidence from Publicly Traded Partnerships", Journal of Public Economics, 53 (2), 223–244.
Gentry, W.M. (2016). "Capital Gains Taxation and Entrepreneurship", Unpublished Paper.
Gentry, W.M. and Hubbard, R.G. (2000). "Tax Policy and Entrepreneurial Entry", American Economic Review P & P, 90, 283-287.
Gentry, W.M. and Hubbard, R.G. (2005). "'Success taxes', entrepreneurial entry and innovation", in Jaffe, A.B., Lerner, J. and Stern, S. (eds.), Innovation Policy and the Economy 5, Cambridge, MIT Press.
Giles, D. (1999). "Measuring the hidden economy: Implications for econometric modelling", Economic Journal, 109(456), 370-380.
Glaeser, E. (2008). "Cities, Agglomeration economies and Spatial Equilibrium (The Lindahl Lectures)", Oxford, Oxford University Press.
Glaeser, E. and Kerr, W. (2009). "Local industrial conditions and entrepreneurship: How much of the spatial distribution can we explain?", Journal of Economics and Management Strategy,18, 623-663.
Glaeser, E., Kallal, H.D., Scheinkman, J.A. and Shleifer, A. (1992). "Growth in Cities", Journal of Political Economy, 100(6), 1126-1152.
Glaeser, E., Kerr, W. and Ponzetto, G. (2010). "Clusters of Entrepreneurship", Journal of Urban Economics, 67, 150-168.
Glaeser, E., Kerr, S.P. and Kerr, W. (2015). "Entrepreneurship and urban growth: An empirical assessment with historical mines". Review of Economic and Statistics, 97, 498-520.

Glancey, K.S. and McQuaid, R.W. (2000). "Entrepreneurial Economics", London, Macmillan Press.
Goldman, J., Goulding, C.R. and Kumar, R. (2014). "Fast growth of sharing impacts tax reporting". https://www.aicpastore.com/Content/media/PRODUCER_CONTENT/Newsletters/Articles_2014/Tax/Sharing-Economy-Impact.jsp
Gompers, P.A. (1995). "Optimal investment, monitoring, and the staging of venture capital", Journal of Finance 50, 1461-1489.
Gompers, P.A. and Lerner, J. (1998). "What Drives Venture Capital Fundraising?", Brookings Papers on Economic Activity. Microeconomics, 149-192.
Goodspeed, T. (2006). "Taxation and FDI in developed and developing countries", in Alm, J., Martinez-Vazquez, J. and Rider, M. (eds.), The challenges of tax reform in a global economy, 137-154, New York, Springer-Verlag.
Goolsbee, A. (1998). "Taxes, organizational form and the deadweight loss of the corporate income tax", Journal of Public Economics, 69, 143-152.
Goolsbee, A. (2004). "The impact of the corporate income tax: evidence from state organizational form data", Journal of Public Economics, 88, 2283-2299.
Gordon R.H. and Sarada (2017). "How Should Taxes be Designed to Encourage Entrepreneurship?", Unpublished Paper. https://ssrn.com/abstract=2896431
Gordon, R.H. (1998). "Can high personal tax rates encourage entrepreneurial activity?" Staff Papers-International Monetary Fund, 49-80.
Gordon, R.H. and Lee, Y. (2001). "Do taxes affect corporate debt policy? Evidence from U.S. corporate tax return data", Journal of Public Economics, 82, 195-224.
Gordon, R.H. and Slemrod, J. (2000). "Are "real" responses to taxes simply income shifting between corporate and personal tax bases?", in Slemrod, J. (ed.), Does Atlas Shrug? The economic consequences of taxing the rich, 240-280, Cambridge, Harvard University Press.
Gorter, J. and Parikh, A. (2003). "How sensitive is FDI to differences in corporate income taxation within the EU?", De Economist 151(2), 193-204.
Graham, J.R. (2003). "Taxes and corporate finance: A review", Review of Financial Studies, 16(4), 1075-1129.
Gravelle, J. and Kotlikoff, L. (1989). "The incidence and efficiency costs of corporate taxation when corporate and noncorporate firms produce the same good", Journal of Political Economy, 97(4), 749-780.
Gravelle, J. and Kotlikoff, L. (1993). "Corporate tax incidence and inefficiency when corporate and noncorporate goods are close substitutes", Economic Inquiry, 501-516.
Greek Travel Pages (2015). "The 'Sharing Economy' in Tourism Deprives Greece of Millions of Euros". http://news.gtp.gr/2015/10/08/sharing-economy-tourism-deprives-greece-millions/
Griffith, R., Miller, H. and O'Connel, M. (2010). "The UK will introduce a Patent Box, but to whose benefit?", Institute for Fiscal Studies – Observations.
Griffith, R., Miller, H. and O'Connell M. (2014). "Ownership of intellectual property and corporate taxation", Journal of Public Economics, 112, 12-23.
Grossmann, V. and Strulik, H. (2010). "Should continued family firms face lower taxes than other estates?", Journal of Public Economics, 94, 87-101.
Grubert, H. and Mutti, J. (1991). "Taxes, Tariffs and Transfer Pricing in Multinational Corporate Decision Making", Review of Economics and Statistics, 73, 285-293.
Guceri, I. and Liu, L. (2015). "Effectiveness of fiscal incentives for R&D: quasi-experimental evidence", Oxford University Centre for Business Taxation, Working Paper P15/12.
Guenther, G. (2017). "Patent Boxes: A Primer", CRS Report Prepared for Members and Committees of Congress.
Guiso, L. (1998). "High-tech Firms and Credit Rationing", Journal of Economic Behavior & Organization, 35, 39-59.

Guiso, L., Pistaferri, L. and Schivardi, F. (2015). "Learning Entrepreneurship From Other Entrepreneurs?", NBER Working Paper 21775.
Guiso, L., Sapienza, P. and Zingales, L. (2004). "Does local financial development matter?", Quarterly Journal of Economics, 119, 929-969**.**
Guiso, L., Sapienza, P. and Zingales, L. (2015). "The Value of Corporate Culture", Journal of Financial Economics 117, 60-76.
Hall, B.H. and Lerner, J. (2010). "The Financing of R&D and Innovation", in Hall, B.H. and Rosenberg, N. (eds.), Handbook of the Economics of Innovation, Amsterdam, Elsevier.
Hall, B.H., Lotti, F. and Mairesse, J. (2012). "Evidence on the impact of R&D and ICT investment on innovation and productivity in Italian Firms", NBER Working Paper 18053.
Hall, B.H., Mairesse, J. and Mohnen, P. (2010). "Measuring the returns to R&D." Handbook of the Economics of Innovation, 2, 1033-1082.
Hall, R.E. and Jorgenson, D. (1967). "Tax Policy and Investment Behavior", American Economic Review, 57.
Haltiwanger, J., Jarmin, R. and Miranda, J. (2013). "Who Creates Jobs? Small Versus Large Versus Young", Review of Economics and Statistics, 95(2), 347-361.
Hampshire, D. (2016). "French Social Security System Explained". http://www.parisvoice.com/practical-paris/135-french-social-security-system-explained
Hansford, A. and Hasseldine, J. (2012). "Tax compliance costs for small and medium sized enterprises (SMEs): the case of the UK", eJlTaxR 14, 10(2) eJournal of Tax Research 288.
Harberger, A. (1966). "Efficiency Effects of Taxes on Income from Capital", in Krzyzaniak, M. (ed.), Effects of Corporation Income Tax, Detroit, Wayne State University Press.
Harju, J., Matikka, T. and Rauhanen, T. (2016). "The Effect of size-based regulation on small firms: evidence from VAT Threshold", Unpublished Paper.
Hatfield, I. (2015). "Self-Employment in Europe". Institute for Public Policy Research. http://www.ippr.org/files/publications/pdf/self-employment-Europe_Jan2015.pdf?noredirect=1
Haufler, A., Norbäck, P.J. and Persson, L. (2014). "Entrepreneurial innovations and taxation", Journal of Public Economics, 113(1), 13-31.
Hausman, N. (2013). "University Innovation, Local Economic Growth, and Entrepreneurship", The Hebrew University of Jerusalem, Unpublished Paper.
Henderson, V., Kuncoro, A. and Turner, M. (1995). "Industrial development in cities", Journal of Political Economy, 103, 1,067-1,085.
Henrekson, M. and Johansson, D. (2010). "Gazelles as Job Creators – A Survey and Interpretation of the Evidence", Small Business Economics, 35(2), 227-244.
Henrekson, M., Johansson, D. and Stenkula, M. (2010). "Taxation, Labor Market Policy and High-Impact Entrepreneurship", Journal of Industry, Competition and Trade, 10(3), 275-296.
Her Majesty's (HM) Government (2015). "Independent review of the sharing economy: Government response". https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/414111/bis-15-172-government-response-to-the-independent-review-of-the-sharing-economy.pdf
Her Majesty's Revenue & Customs (HMRC) (2015a). "Making Tax Digital". https://www.gov.uk/government/publications/making-tax-digital
Her Majesty's Revenue & Customs (HMRC) (2015b). "Tackling the hidden economy: Extension of data-gathering powers". https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/4836

01/Tackling_the_hidden_economy_Extension_of_data-gathering_powers_-_summary_of_responses__M5508_.pdf

Her Majesty's Revenue & Customs (HMRC) (2015c). "Tackling the hidden economy: Sanctions". https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/548585/Tackling_the_hidden_economy_Sanctions.pdf

Her Majesty's Revenue & Customs (HMRC) (2015d). "Tackling the hidden economy: Conditionality". https://www.gov.uk/government/consultations/tackling-the-hidden-economy-conditionality

Her Majesty's Revenue & Customs (HMRC) (2015e). "Deductions of income tax from interest: peer-to-peer lending". https://www.gov.uk/government/consultations/deduction-of-income-tax-from-interest-peer-to-peer-lending

Her Majesty's Revenue & Customs (HMRC) (2015f). "Income Tax: Innovative Finance Individual Savings Account and peer to peer loans". https://www.gov.uk/government/publications/income-tax-innovative-finance-individual-savings-account-and-peer-to-peer-loans/income-tax-innovative-finance-individual-savings-account-and-peer-to-peer-loans#policy-objective

Her Majesty's Revenue & Customs (HMRC) (2016). "Making Tax Digital". https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/484668/making-tax-digital.pdf

Her Majesty's Treasury (HMT) (2016). "Budget 2016". https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/508193/HMT_Budget_2016_Web_Accessible.pdf

Hessels, J., van Gelderen, M. and Thurik, R. (2008). "Drivers of entrepreneurial aspirations at the country level: the role of start-up motivations and social security", International Entrepreneurship and Management Journal, 4(4), 401-417.

Hijzen, A., Upward, R. and Wright, P.W. (2010). "Job Creation, Job Destruction and the Role of Small Firms: Firm-Level Evidence for the UK", Oxford Bulletin of Economics and Statistics, 72(5), 621-647.

Hines, J.R. and Rice, E. (1994). "Fiscal Paradise: Foreign Tax Havens and American business", The Quarterly Journal of Economics, 109(1) 149-182.

Hines, J.R., Potrafke, N., Riem, M. and Schinke, C. (2016). "Inter Vivos Transfers of Ownership in Family Firms", CESifo Working Paper 5923.

Holtz-Eakin, D. (1995). "Should Small Businesses Be Tax-Favored?", National Tax Journal, 48, 387-395.

Holtz-Eakin, D. (2000). "Public policy toward entrepreneurship", Small Business Economics, 15, 283-2000.

Holtz-Eakin, D., Phillips, J.W.R. and Rosen, H.S. (2001). "Estate taxes, life insurance, and small business", The Review of Economics and Statistics, 83, 52-63.

Huizinga, H., Laeven, L. and Nicodeme, G. (2008). "Capital structure and international debt shifting", Journal of Financial Economics, 88(1), 80-118.

Hvide, H.K. (2009). "The quality of entrepreneurs", Economic Journal, 119, 1010-1035.

ICAEW (2016). "The sharing, or collaborative, economy". https://ion.icaew.com/taxfaculty/b/weblog/posts/thesharingorcollaborativeeconomy?Redirected=true

IMF (2016). "Fiscal policies for innovation and growth, in fiscal monitor: acting now, acting together".

Information Commissioner's Office (ICO). **"**Exemptions". https://ico.org.uk/for-organisations/guide-to-data-protection/exemptions/

ING (2016). "European Sharing Economy to Grow by a Third in the Next 12 Months". https://www.ing.com/Newsroom/All-news/European-sharing-economy-to-grow-by-a-third-in-the-next-12-months.htm

Institut Économique Molinar (2016). "The Tax Burden of Typical Workers in the EU 28 – 2016". https://www.ing.com/Newsroom/All-news/European-sharing-economy-to-grow-by-a-third-in-the-next-12-months.htm

Institute of Public Affairs (2014). "How over-regulation could destroy an economic revolution".

Irish Tax and Customs (2016). "Code of Practice for Determining Employment or Self-Employment Status of Individuals". http://www.revenue.ie/en/practitioner/codes-practice.html

Istat (2015). "Entrepreneurship in Italy". http://www.istat.it/en/archive/177113

ItalyEurope24 (2016). "Fitch: Italy's reform no quick fix for bank and SME pressures". http://www.italy24.ilsole24ore.com/art/business-and-economy/2016-06-08/fitch-italy-reforms-no-quick-fix-for-bank-and-sme-pressures-191458.php?uuid=ADYOQdY

Ivaerksaetteren (2015). "Nye politiske tiltag for dansk iværksætteri". http://www.ivaerksaetteren.dk/flx/nyheder/nye-politiske-tiltag-for-dansk-ivaerksaetteri/

Jackson, R. (2016). "Have Innovative Finance Isas failed?". Theweek.co.uk http://www.theweek.co.uk/73914/have-innovative-finance-isas-failed

Jacquemin, A. and Janssen, F. (2012). "Entrepreneurs using regulation as a source of opportunity: A study combining quantitative and qualitative approaches", Third International Workshop on Entrepreneurship, Culture, Finance and Economic Development.

Jacquemin, A. and Janssen, F. (2015). "Studying regulation as a source of opportunity rather than as a constraint for entrepreneurs: conceptual map and research propositions", Environment and Planning C: Government and Policy, 33, 846-862.

Jaffe, A., Trajtenberg, M. and Henderson, R. (1993). "Geographic localization of knowledge spillovers as evidenced by patent citations", Quarterly Journal of Economics, 108 (3), 577-598.

Jaffe, E. (2016). "How Estonia became a global model for e-government", Medium.com. https://medium.com/sidewalk-talk/how-estonia-became-a-global-model-for-e-government-c12e5002d818#.f95r1g4tu

Javorcik, B. (2004). "Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers Through Backward Linkages", American Economic Review, 94, 605-627.

Jeng, L.A. and Wells, P.C. (2000). "The determinants of venture capital funding: evidence across countries", J Corp Financ 6(3), 241-289.

Jofre-Monseny, J., Marín-López, R. and Viladecans-Marsal, E. (2014). "The determinants of localization and urbanization economies: Evidence from the location of new firms in Spain", Journal of Regional Science, 54, 313-337.

Johns, A. and Slemrod, J. (2010). "The distribution of income tax noncompliance", National Tax Journal, 63(3), 397-418.

Johnson, S., Kaufmann, D. and Zoido-Lobaton, P. (1998). "Regulatory Discretion and the Unofficial Economy", The American Economic Review, 88(2), 387-92.

Jorgenson, D.W. (1963). "Capital Theory and Investment Behavior", American Economic Review, 53, 247-57.

Joyce, S. and Huws, U. (2016). "Crowd Working Survey". http://www.feps-europe.eu/assets/a82bcd12-fb97-43a6-9346-24242695a183/crowd-working-survey.pdf

Kalay, A. and Michaely, R. (2000). "Dividends and Taxes: A Re-Examination", Financial Management, 29, 55-75.

Kalenda (zdnet.de) (2014). "Gericht erlässt deutschlandweites Verbot von Uber". http://www.zdnet.de/88204461/gericht-erlaesst-deutschlandweit-gueltiges-verbot-von-uber/

Kanbur, R. and Keen, M. (2014). "Thresholds, Informality, and Partitions of Compliance", International Tax and Public Finance, 21, 536-559.
Kanbur, S.M. (1981). "Risk Taking and Taxation: An Alternative Perspective", Journal of Public Economics, 15, 163-184.
Kaplan, S. and Strömberg, P. (2001). "Venture Capitalists as Principals: Contracting, Screening, and Monitoring", American Economic Review Papers and Proceedings, 91(2), 426-430.
Kaplow, L. (1994). "Taxation and Risk Taking: A General Equilibrium Perspective", National Tax Journal, 47(4), 789-98.
Karkinsky, T. and Rieder, N. (2012). "Corporate taxation and the choice of patent location within multinational firms", Journal of International Economics, 88, 176-185.
Keen, M. and King, J. (2002). "The Croatian profit tax: An ACE in practice", Fiscal Studies, 23(3), 401-418.
Keen, M. and Mintz, J. (2004). "The optimal threshold for a valued-added tax", Journal of Public Economics, 88, 559-576.
Keen, M., Kim, Y. and Varsano, R. (2006). "The 'Flat Tax(es)': Principles and Evidence", IMF Working Paper 06/218.
Kemsley, D. (1998). "The effect of taxes on production location", Journal of Accounting Research, 36(2), 321-341.
Kerr, CNET (2014). "Airbnb begins collecting 14% hotel tax in San Francisco". http://www.cnet.com/news/airbnb-begins-collecting-14-hotel-tax-in-san-francisco/
Keszthelyi, Budapest Business Journal (2016). "Report: Hungary eyes new tax on rental market". http://bbj.hu/real-estate/report-hungary-eyes-new-tax-on-rental-market_114450
Keuschnigg, C. (2004). "Taxation of a venture capitalist with a portfolio of firms", Oxford Economic Papers, 56(1), 285-306.
Keuschnigg, C. and Nielsen, S.B. (2001). "Public policy for venture capital", International Tax and Public Finance, 8(4), 557-572.
Keuschnigg, C. and Nielsen, S.B. (2003). "Tax policy, venture capital, and entrepreneurship", Journal of Public Economics, 87, 175-203.
Keuschnigg, C. and Nielsen, S.B. (2004a). "Progressive Taxation, Moral Hazard, and Entrepreneurship", Journal of Public Economic Theory, 6(3), 471-490.
Keuschnigg, C. and Nielsen, S.B. (2004b). "Start-ups, venture capitalists, and the capital gains tax", Journal of Public Economics, 88(5), 1011-1042.
Keuschnigg, C. and Ribi, E. (2013). "Profit taxes and financing constraints", International Tax and Public Finance, 20(5), 808-826.
Kihlstrom, R.E. and Laffont, J.J. (1979). "A general equilibrium entrepreneurial theory of firm formation based on risk aversion", Journal of Political Economy, 87(4), 719-748.
Kim, E.H. (1989). "Optimal Capital Structure in Miller's Equilibrium", in Bhattacharya, S. and Constantinides, G. (eds.), Financial Markets and Incomplete Information, 36-48, Totowa, Rowman and Littlefield.
Kirzner, I.M. (1983). "Entrepreneurship and the future of capitalism", in Bachman, J. (ed.), Entrepreneurship and the Outlook for America, New York, The Free Press.
Klemm, A. (2009). "Causes, Benefits, and Risks of Business Tax Incentives", IMF Working Paper 21.
Klemm, A. and Van Parys, S. (2009). "Empirical Evidence on the Effects of Tax Incentives", IMF Working Paper 136.
Klepper, S. (1996). "Entry, exit, growth and innovation over the product life cycle", American Economic Review, 86, 562-583.
Kleven, H., Knudsen, M., Kreiner, C., Pedersen, S. and Saez, E. (2011). "Unwilling or unable to cheat? Evidence from a randomized tax audit experiment in Denmark", Econometrica, 79(3), 651-92.

Kleven, H.J. (2012). "Estimating taxable income responses using Danish tax reforms". http://eml.berkeley.edu/~saez/course/kleven-schultz_jan2012.pdf
Kleven, H.J. (2014). "How Can Scandinavians Tax So Much?", Journal of Economic Perspective, 28(4), 77-98.
Knight, F.H. (1921). "Risk, Uncertainty and Profit". New York, Harper and Row.
Koolhoven, R., Neppelenbroek, E.D.C., Santamaría Echeverria, O.E. and Verdi P.L. (2016). "Impulse paper on specific liability issues raised by the collaborative economy in the accommodation sector", University of Groningen Faculty of Law.
Krumina, M. and Paalzow, A. (2015). "Global Entrepreneurship Monitor – 2014-2015 Latvia Report".
Kuchler, H. (2015). "Airbnb to collect and remit taxes for hosts in Paris", Financial Times. https://www.ft.com/content/e2ab8028-4b4b-11e5-9b5d-89a026fda5c9
Kuehn, Z. (2014). "Tax rates, governance, and the informal economy in high-income countries", Economic Inquiry, 52(1), 405-430.
Kumler, T.J., Verhoogen, E.A. and Frias, J. (2013). "Enlisting workers in monitoring firms: payroll tax compliance in Mexico", NBER Working Paper 19385.
LaBossiere (2014). "The Sharing Economy II: Taxes". http://blog.talkingphilosophy.com/?p=8067
Lagzdina, L., Oresund Startups (2014). "Denmark proposes generous tax deduction for startup investors". http://oresundstartups.com/denmark-proposes-generous-tax-deduction-startup-investors/
Landes, D., Mokyr, J. and Baumol, W. (2012). "The Invention of Enterprise: Entrepreneurship from Ancient Mesopotamia to Modern Times", Princeton, Princeton Univ Press.
Langenmayr, D. and Lester, R. (2014). "Taxation and Corporate Risk-Taking", Oxford University Centre for Business Taxation Working Paper 13/16.
Lawler, R. (2015). "Uber Study Shows Its Drivers Make More Per Hour and Work Fewer Hours than Taxi Drivers", Tech Crunch.
Lawson, Y. (2015). "Does Uberisation Threaten France's Entire Sharing Economy?", text100.com. https://www.text100.com/articles/technology/uberisation-france-sharing-economy/
Leighton, P. (2013). "Future Working: The Rise of Europe's Independent", Professionals, Centre for Research on Self-Employment. http://www.crse.co.uk/research/future-working-rise-europe%E2%80%99s-independent-professionals
LendingWorks (2015). "Should platforms deduct tax on P2P income at source?". https://www.lendingworks.co.uk/blog-post/should-platforms-deduct-tax-p2p-income-source
Les Echos (2016). "La taxation de l'economie collaborative fait des remous". http://www.lesechos.fr/economie-france/social/0211410805511-la-taxation-de-leconomie-collaborative-fait-des-remous-a-lassemblee-2036314.php
Levine, R. and Rubinstein, Y. (2013). "Does Entrepreneurship Pay? The Michael Bloombergs, the Hot Dog Vendors, and the Returns to Self-Employment".
Litzenberger, R.H. and Ramaswamy, K. (1979). "The Effect of Personal Taxes and Dividends on Capital Asset Prices: Theory and Empirical Evidence", Journal of Financial Economics, 7, 163-195.
Liu, L. (2014). "Income taxation and business incorporation: evidence from the early twentieth century", National Tax Journal, 67(2), 387-418.
Liu, L. and Lockwood, B. (2016). "VAT Notches, Voluntary Registration, and Bunching: Theory and UK Evidence", Unpublished Paper.
Loayza, N. (1996). "The economics of the informal sector: A simple model and some empirical evidence from Latin America," Carnegie-Rochester Conf. Series Public Policy, 45, 129-162.

Long, J.E. (1982). "Income Taxation and the Allocation of Market Labor", Journal of Labor Research, 3(3), 259-276.

Loretz, S. and Mokkas, S. (2015). "Evidence for Profit Shifting with Tax-sensitive Capital Stocks", FinanzArchiv: Public Finance Analysis, 71(1), 1-36.

Lundeen, A. and Pomerleau, K. (2014). "Estonia has the Most Competitive Tax System in the OECD", Tax Foundation. http://taxfoundation.org/blog/estonia-has-most-competitive-tax-system-oecd

Lutz, C.T. (2014). "Reconciling the Tension Between State and Local Policy Concerns and Innovation".
http://www.hmblaw.com/media/92077/bloomberg_law_perspectives_article_-_lutz_12.8.2014.pdf

Lynne, T., Barr, J. and Meghnagi, M. (2016). "Boosting Job Creation in Skive, Denmark", OECD Local Economic and Employment Development (LEED) Working Papers 2016/01. http://dx.doi.org/10.1787/5jm3stcjvfln-en

MacKie-Mason, J.K. and Gordon, R.H. (1991). "Taxes and the choice of organizational form", NBER Working Paper 3781.

MacKie-Mason, J.K. and Gordon, R.H. (1994). "Tax distortions to the choice of organizational form", Journal of Public Economics, 55, 279-306.

MacKie-Mason, J.K. and Gordon, R.H. (1997). "How much do taxes discourage incorporation?", The Journal of Finance, 52(2), 477-505.

Macmillan, D. (2015). "Another Uber Driver in California Ruled an Employee, Not Contractor." The Wall Street Journal. http://blogs.wsj.com/digits/2015/09/10/another-uber-driver-in-california-ruled-an-employee-not-contractor/

Magri, S. (2009). "The financing of small innovative firms: the Italian case, Economics of Innovation and New Technology", Taylor & Francis Journals, 18(2), 181-204.

Magri, S. and Pico, R. (2011). "The rise of risk-based pricing of mortgage interest rates in Italy", Journal of Banking & Finance, 35(5), 1277-1290.

Malerba, F. and Orsenigo, L. (1996). "The dynamics and evolution of industries", Industrial and Corporate Change, 5(1), 51-87.

Marro, E. (2016). "Niente tasse per chi investe nelle piccolo e medie imprese", Corriere della Sera. http://www.corriere.it/economia/16_maggio_07/piccole-imprese-possono-attrarre-fino-10-miliardi-risparmio-privato-7822237e-1481-11e6-b0b7-529290156e84.shtml

Martin, E., Shaheen, S.A. and Lidicker, J. (2010). "Carsharing's impact on hosehold vehicle holdings: results from a North American shared-used vehicle holdings", City of Cambridge, Massachusettes.
https://www.cambridgema.gov/~/media/Files/CDD/Transportation/PTDM/PTDM_Impact_on%20Vehicles.a

Master, A. (2017). "Job creators, job creation, and the tax code", Journal of Public Economic Theory, 19(3), 674–691.

Mata, J. and Guimarães, P. (2012). "Tax Holidays and Foreign Investment", Unpublished Paper.

McConnell, J. and Pettit, R. (1984). "Application of the Modem Theory of Finance to Small Business Firms", in Horvitz, P. and Pettit, R. (eds.), Small Business Finance, Greenwich, JAI Press.

McKinsey (2014). "The Future of Airbnb in Cities".
http://www.mckinsey.com/industries/travel-transport-and-logistics/our-insights/the-future-of-airbnb-in-cities.

Meade, J.E. (1978). "The Structure and Reform of Direct Taxation", London, Allen and Unwin.

Michelacci, C. (2003). "Low returns to R&D Due to the Lack of Entrepreneurial skills?", Economic Journal, 113, 207-225.

Michelacci, C. and Silva, O. (2007). "Why so many local entrepreneurs?", Review of Economics and Statistics, 89, 615-633.
Miller, M.H. (1977). "Debt and Taxes", Journal of Finance, 32, 261-275.
Ministere de L'economie et des Finance (2016). http://bofip.impots.gouv.fr/bofip%20BOI-IR-BASE-10-10-10-10
Ministero Dell'Economia e delle Finanze (2016). "Documento di Economia e Finanza 2016", Sezione III Programma Nazionale di Riforma. http://ec.europa.eu/europe2020/pdf/csr2016/nrp2016_italy_it.pdf
Mintz, J.M. (1990). "Corporate Tax Holidays and Investment", The World Bank Economic Review, 4, 81-102.
Mirrlees, J., Stuart, A., Besley, T., Blundell, R., Bond, S., Chote, R., Gammie, M., Johnson, P., Myles, G. and Poterba, J.M. (2011). "Tax by Design". https://www.ifs.org.uk/publications/5353
Modigliani, F. and Miller, M.H. (1963). "Corporate Income Taxes and the Cost of Capital: A Correction (in Communications)", American Economic Review, 53, 433-443.
Moncada-Paternò-Castello, P. and Grassano, N. (2014). "Innovation, Competitiveness and Growth without R&D? Analysis of corporate R&D investment – A country approach: Italy", Europen Commission. https://www.researchgate.net/publication/308889980_Innovation_Competitiveness_and_Growth_without_RD_Analysis_of_corporate_RD_investment_-_A_country_approach_Italy
Moretti, E. and Wilson, D.J. (2014). "State incentives for innovation, star scientists and jobs: evidence from biotech", Journal of Urban Economics, 79, 20–38.
Moretti, E., Steinwender, C. and Van Reenen, J. (2016). "The Intellectual Spoils of War? Defense R&D, Productivity and International Technology Spillovers", UCBerkeley Unpublished Paper.
Mossin, J. (1968). "Taxation and risk taking: An expected utility approach", Economica, 35(137), 74-82.
Mudede, C. (2016). "How Uber and Lyft Reduce Taxi Cab Racism", The Stranger. http://www.thestranger.com/slog/2016/08/29/24525241/how-uber-and-lyft-reduce-taxi-cab-racism.
Mueller, D. (1991). "Entry, exit and the competitive process", in Geroski, P.A. and Schwalbach, J. (eds.), Entry and Market Contestability: An International Comparison, Oxford, Blackwell.
Muller, P., Caliandro, C., Gagliardi, D. and Marzocchi, C. (2015). "Annual Report on European SMEs 2014/2015", for European Commission. http://ec.europa.eu/DocsRoom/documents/16341/attachments/4/translations
Naritomi, J. (2015). "Consumers as tax auditors", LSE Working Paper.
Nasr, Morning Consult (2016). "The Sharing Economy and the Tax Code Don't Get Along". https://morningconsult.com/2016/05/24/sharing-economy-needs-help-via-tax-reform-tech-argues/
Neumark, D., Wall, B. and Zhang, J. (2011). "'Do Small Businesses Create More Jobs? New Evidence for the United States from the National Establishment Time Series'", Review of Economics and Statistics, 93, 16-29.
Novais, A. (2013). "All about SPED", The Brazil business. http://thebrazilbusiness.com/article/all-about-sped
OECD (2004). "Tax Policy Reforms in Denmark". https://www.oecd.org/tax/tax-policy/37154664.pdf
OECD (2008). "Entrepreneurship Review of Denmark". OECD Directorate for Science, Technology and Industry. http://www.keepeek.com/Digital-Asset-Management/oecd/industry-and-services/entrepreneurship-review-of-denmark_9789264059559-en#.V9jji5iLTIV

OECD (2014). "Italy: Key Issues and Policies, OECD Studies on SMEs and Entrepreneurship", OECD Publishing.
OECD (2015). "Revenue Statistics 2015 – Denmark". OECD Centre for Tax Policy and Administration. http://www.oecd.org/denmark/revenue-statistics-denmark.pdf
OECD (2015b). "Taxation of SMEs in OECD and G20 Countries". OECD Tax Policy Studies 23. http://ifuturo.org/documentacion/taxation%20of%20smes.pdf
OECD (2015c). "OECD economic surveys – Latvia".
OECD (2015d). "Economic policy reforms 2015: going for growth – Latvia", OECD Publishing. https://www.oecd.org/latvia/going-for-growth-latvia-2015.pdf
OECD (2015e). "The new R&D tax credit and patent box proposed in the Legge di Stabilita 2015", OECD Directorate for Science, Technology and Industry. https://www.oecd.org/sti/New%20RD%20Tax%20Credit%20and%20Patent%20Box%20-%20Legge%20di%20Stabilit%C3%A0%202015.pdf
OECD (2016). "Taxing Wages 2016", OECD Publishing. http://www.oecd-ilibrary.org/taxation/taxing-wages-2016_tax_wages-2016-en
OECD (2016a). "Tourism trends and policies", OECD Publishing. http://www.oecd-ilibrary.org/docserver/download/8515041e.pdf?expires=1471732700&id=id&accname=guest&checksum=CB9D800D5AECB7C4767DD5870011833D
OECD (2016b). "Economic Survey of Denmark". http://www.oecd.org/eco/surveys/Denmark-2016-OECD-economic-survey-flyer.pdf
OECD (2016c). "Revenue Statistics 2016 – Denmark", OECD Centre for Tax Policy and Administration, 2016.
Oei, S. and Ring, D.M. (2015). "Can Sharing Be Taxed?", Washington University law Review, 93(4).
Office of Tax Simplification (2016). "Simplifying Tax for the Future". https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/522884/20160512_ots_strategy_stakeholder_consultation_document.pdf
Oltermann, P. (2016). "Berlin ban on Airbnb short-term rentals upheld by city court", The Guardian. https://www.theguardian.com/technology/2016/jun/08/berlin-ban-airbnb-short-term-rentals-upheld-city-court
Omer, T.C. and Terrando, W. (1999). "The Effect of Risk and Tax Differences on Corporate and Limited Partnership Capital Structure", National Tax Journal 52(4), 699-715.
Onji, K. (2009). "The Response of Firms to Eligibility Thresholds: Evidence from the Japanese Value-Added Tax", Journal of Public Economics, 93, 766-775.
ONS (2016). "The feasibility of measuring the sharing economy: progress update". https://www.ons.gov.uk/economy/economicoutputandproductivity/output/articles/thefeasibilityofmeasuringthesharingeconomy/progressupdate
Oresund Startups (2013). "More money for Danish startups with the Vækstplan DK". http://oresundstartups.com/more-money-for-danish-startups-with-vaekstplan-dk/
Osborne Clark (2015). "Sharing economy platforms: current employment law and tax challenges – and a way forward?". http://www.osborneclarke.com/connected-insights/blog/sharing-economy-platforms-current-employment-law-and-tax-challenges-and-way-forward/
Osborne, A.E. (1976). "The welfare effects of black capitalists on the black community", Review of Black Political Economy, 6, 424-432.
Owyang, J. (2013). "The collaborative economy", Altimeter. http://collaborativeeconomy.com/wp/wp-content/uploads/2015/09/Owyang-J.-Tran-C.-Silva-C.2013.The-Collaborative-Economy.Altimeter-pdf.pdf
Pagamici, B. (2016). "Credito d'imposta R&S: quali modifiche in arrivo?", IPSOA. http://www.ipsoa.it/documents/finanziamenti/imprenditoria/quotidiano/2016/09/30/credito-d-imposta-r-s-quali-modifiche-in-arrivo
Pagano, P. and Schivardi, F. (2003). "Firm size distribution and growth", Scandinavian Journal of Economics, 105(2), 255-274.

Palin, A. (2015). "HMRC digital tax plans challenged by access concerns", The Financial Times. https://www.ft.com/content/34f2b59c-560d-11e5-9846-de406ccb37f2

Palling and Academy of Liberalism, 4liberty.eu (2016). "Why Estonia Introduced a Bill on Ridesharing?". http://4liberty.eu/why-estonia-introduced-a-bill-on-ridesharing/

Panteghini, P., Parisi, M.L. and Pighetti, F. (2012). "Italy's ACE Tax and Its Effect on a Firm's Leverage", Economics. The open-access, open Assessment E-Journal, DP 2012-31. http://www.economics-ejournal.org/economics/discussionpapers/2012-31/file

Parisi, L.M. and Sembenelli, A. (2003). "Is private R&D spending sensitive to its price? Empirical evidence on panel data for Italy", Empirica, 30(4), 357-377.

Park, S. (2011). "R&D Intensity and Firm Size Revisited", UCLA, Unpublished Paper.

Parker, S.C. (1996). "A Time Series Model of Self-Employment Under Uncertainty", Economica, 63, 459-475.

Parker, S.C. (2004). "The Economics of Self-Employment and Entrepreneurship", Cambridge, Cambridge University Press.

Parker, S.C. and Robson, M.T. (2004). "Explaining international variations in self-employment: Evidence from a panel of OECD countries", Southern Economic Journal, 71, 287-301.

Parliament of Estonia (2016). "Palling: We cannot allow over-regulation to hold back innovation". http://www.riigikogu.ee/en/press-releases/european-union-affairs-committee-en/palling-we-cannot-allow-over-regulation-to-hold-back-innovation/

Parsons, M. and Phillips, N. (2007). "An evaluation of the Federal tax credit for scientific research and experimental development", Department of Finance, Working Paper 2007-08.

Pascali, L. (2016). "Banks and Development: Jewish Communities in the Italian Renaissance and Current Economic Performance", The Review of Economics and Statistics, 98(1),140-158.

Pau, A. (2016). "Estonia to regulate Uber and Taxify ride-sharers", Postimees. http://news.postimees.ee/3583509/estonia-to-regulate-uber-and-taxify-ride-sharers

Pender, K. (2014). "If you make money in the sharing economy, the IRS will know". http://www.sfgate.com/business/networth/article/If-you-make-money-in-the-sharing-economy-the-IRS-5258941.php

Pestieau, P. and Possen, U.M. (1992). "How Do Taxes Affect Occupational Choice", Public Finance, 47(1), 108-119.

Petersen, M.A. and Rajan, R.G. (1994). "The benefits of lending relationships: Evidence from small business data", Journal of Finance, 49(1), 3-37.

Pettit, R. and Singer, R. (1985). "Small Business Finance: A Research Agenda", Financial Management, 14, 47-60.

Pew Research Center (2011). "Social Networking Sites and Our Lives". http://www.pewinternet.org/files/old-media/Files/Reports/2011/PIP%20-%20Social%20networking%20sites%20and%20our%20lives.pdf

Pomeranz, D. (2015). "No taxation without information: deterrence and self-enforcement in the value added tax", American Economic Review, 105(8), 2539-2569.

Pomerleau, K. (2017). "International Tax Competitiveness index (2016)", Tax Foundation.

Porter, M. (1990). "The Competitive Advantage of Nations", New York, Free Press.

Poterba, J.M. (1989a). "Venture Capital and Capital Gains Taxation", in Summers, L.H. (ed.), Tax Policy and the Economy, 3, 47-67, Cambridge, MIT Press.

Poterba, J.M. (1989b). "Capital Gains Tax Policy toward Entrepreneurship", National Tax Journal, 42(3), 375-389.

Potterie, B. and Romain, A. (2004). "The Economic Impact of Venture Capital", Bundesbank Series 1 Discussion Paper 2004,18.

Prado, M. (2011). "Government policy in the formal and informal sectors", European Economic Review, 55(8), 1120-1136.
Prohorovs, A. and Bistrova, J. (2017). "The evaluation of Microenterprise tax regime efficiency in Latvia", Proceedings of the 2017 International Conference "Economic Science For Rural Development" 46.
Pulina, G. (2011). "Tax evasion and presumptive taxation methods – A case study in Italy: sector studies", CRENoS
Putnins, J.T. and Sauka, A. (2016). "Shadow economy index for the Baltic countries 2009 – 2015", The Centre for Sustainable Business at SSE Riga.
PwC (2015a). "Total Tax Contribution Survey for the 100 Group".
http://www.pwc.co.uk/services/tax/total-tax-contribution-100-group.html
PwC (2015b). "The Sharing Economy".
http://www.pwc.com/us/en/industry/entertainment-media/publications/consumer-intelligence-series/assets/pwc-cis-sharing-economy.pdf
PwC (2015c). "Taxing the sharing economy. Introduction to the tax issues that may arise from the new sharing economy".
http://www.pwc.com/us/en/industry/entertainment-media/publications/assets/pwc-taxing-the-sharing-economy.pdf
PwC (2016a). "Assessing the Size and Presence of the Collaborative Economy Across Europe".
http://ec.europa.eu/DocsRoom/documents/16952/attachments/1/translations/en/renditions/native
PwC (2016b). "Paying Taxes". https://www.pwc.com/gx/en/paying-taxes-2016/paying-taxes-2016.pdf
PwC (2016c). "Wspoł(dziel) i rzadz! Prawno-podatkowe aspekty ekonomii współdzielenia w Polsce". http://www.pwc.pl/pl/publikacje/2016/wspol-dziel-i-rzadz-sharing-economy.html
PwC (2016d). "Sharing economy activity across Europe expanding".
https://www.pwc.co.uk/issues/megatrends/collisions/sharingeconomy/future-of-the-sharing-economy-in-europe-2016.html
PwC (2016e). "How did we develop our sharing economy market sizing findings? A detailed methodology" https://www.pwc.co.uk/issues/megatrends/assets/Megatrends-methodology-2016.pdf
Quadrini, V. (1999). "The importance of entrepreneurship for wealth concentration and mobility", Review of Income and Wealth, 45, 1-19.
Quadrini, V. (2000). "Entrepreneurship, Saving and Social Mobility", Review of Economic Dynamics, 3, 1-40.
Rajan, R.G. and Zingales, L. (1998). "Financial dependence and growth", American Economic Review, 88(3), 559-586.
Ranchordás, S. (2014). "Does Sharing Mean Caring? Regulating Innovation in the Sharing Economy", Minnesota Journal of Law, Science & Technology.
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2492798
Rao, N. (2016). "Do tax credits stimulate R&D spending? The effect of the R&D tax credit in its first decade", Journal of Public Economics, 140, 1-12.
Rauch, D.E. and Schleicher, D. (2015). "Like Uber, But for Local Governmental Policy: The Future of Local Regulation of the 'Sharing Economy'", George Mason Law & Economics Research Paper 15-01.
https://ssrn.com/abstract=2549919 or http://dx.doi.org/10.2139/ssrn.2549919
Republic of Estonia Tax and Customs Board (ETCB) (2015). "ECTB and Uber collaborate in seeking solutions for the development of the sharing economy".
https://www.emta.ee/eng/etcb-and-uber-collaborate-seeking-solutions-development-sharing-economy

Reuters (2015). "In California, Uber driver is employee, not contractor: agency". http://www.reuters.com/article/us-uber-california-idUSKBN0OX1TE20150618

Rigaux, L. (2016). "Sharing Economy: A New Challenge for the Tax Systems in the European States?", Universität Hamburg.

Riis, A. (2016). "Denmark – Government announces long-term tax reform plan", Tax Notes International, 845-846. http://www.accura.eu/media/3828228/Riis-Lytken-09-05-2016-.pdf

Roback, J. (1982). "Wages, Rents, and the Quality of Life", Journal of Political Economy, 90, 1257-1278.

Robson, M.T. (1998). "The Rise in Self-Employment Amongst UK Males", Small Business Economics, 10, 199-212.

Romer, C.D. and Romer, D.H. (2014). "The Effects of Marginal Tax Rates: Evidence from the Interwar Era", American Economic Journal: Economic Policy, 6(3), 242-281.

Romer, P. (1986). "Increasing Returns and Long-Run Growth", Journal of Political Economy, 94, 1002-1037.

Romer, P. (1990). "Endogenous Technological Change", Journal of Political Economy, 98, S71-S102.

Romero-Jordán, D., Delgado-Rodríguez, M.J., Álvarez-Ayuso, I. and de Lucas-Santos, S. (2014). "Assessment of the public tools used to promote R&D investment in Spanish SMEs", Small Business Economics, 43, 959–976.

Roosevelt Institute (2015). "Barriers to growth in the 'sharing economy'". http://rooseveltinstitute.org/wp-content/uploads/2015/10/Cheng-The-Gig-Economy.pdf

Rosalsky, G. (2014). "Regulate This! A New Freakonomics Radio Podcast", FREAKONOMICS.

Ross-Phillips, K. (2001). "The Earned Income Tax Credit: Knowledge Is Money", Political Science Quarterly, 116(3), 413-424.

Russo, P.F., Magri, S. and Rampazzi, C. (2016). "Innovative start-ups in Italy: their special features and the effects of the 2012 law", Banca D'Italia.

Saavedra, P., Marcincin, A. and Valachy, J. (2007). "Flat Income Tax Reforms, in The World Bank, Fiscal policy and economic growth – lessons for Eastern Europe and Central Asia", The World Bank.

Saez, E. (2010). "Do Taxpayers Bunch at Kink Points?", American Economic Journal: Economic Policy, 2(3), 180-212.

Sahm, M. (2009). "Imitating Accrual Taxation On A Realization Basis", Journal of Economic Surveys, 23, 734-761.

Samila, S. and Sorenson, O. (2011). "Venture capital, entrepreneurship, and economic growth", Review of Economics and Statistics, 93, 338-349.

Sandmo, A. (1977). "Portfolio theory, asset demand and taxation: Comparative statics with many assets", Review of Economic Studies.

Santoro, A. (2008). "Taxpayers' choice under studi di settore: what do we know and how can we interpret it?", Giornale degli Economisti e Annali di Economia, 67(2), 161-184.

Savignac, F. (2006). "The Impact of Financial Constraints on Innovation: Evidence from French Manufacturing Firms", Cahiers de la MSE 2006-42, CNRS.

Schaller, H. (1993). "Asymmetric Information, Liquidity Constraints and Canadian Investment", Canadian Journal of Economics, 26(3), 552-574.

Schertler, A. (2007). "Knowledge capital and venture capital investments: new evidence from Europeanpanel data", German Economic Review, 8(1), 64-88.

Schneider, F. (2006). "Shadow Economies and Corruption all over the World: What do we really know?", CESifo Working Paper Series 1806. https://ssrn.com/abstract=938369

Schneider, F. and Enste, D.H. (2000). "Shadow economies: size, causes and consequences", Journal of Economic Literature 38, 77-114.

Schneider, F., Buehn, A. and Montenegro, C.E. (2010). "Shadow Economies all over the World: New Estimates for 162 Countries from 1999 to 2007", World Bank, Policy Research Working Paper 5356.
Schoar, A. (2010). "The divide between subsistence and transformational entrepreneurship", in Lerner, J. and Stern, S. (eds.), Innovation Policy and the Economy 10, National Bureau of Economic Research Innovation Policy and the Economy.

Schofield, H. (2014). "Short-let apartments spark Paris row as Airbnb thrives", BBC http://www.bbc.com/news/world-europe-30580295
Scholes, M.S., Scholes, M.A. and Wolfson, M.A. (1992). "Taxes and business strategy: A planning approach", Englewood Cliffs, Prentice Hall.
Scholes, M.S. and Wolfson, M.A. (1992). "Taxes and Business Strategy", Englewood Cliffs, Prentice Hall.
Schuetze, H.J. and Bruce, D. (2004). "Tax policy and entrepreneurship", Swedish Economic Policy Review, 11, 233-265.
Schumacher, D. and Bierregaard, J. (2010). "Forårspakke 2.0 - De direkte konsekvenser for borgerne", Afhandling, HD-R, Handelshøjskolen i Århus. http://pure.au.dk/portal-asb-student/files/10253/Afhandling_For_rspakke_2.0.pdf
Schumpeter, J.A. (1921). "The Theory of Economic Development", Cambridge, Harvard University Press.
Schumpeter, J.A. (1934). "The Theory of Economic Development", Cambridge, Harvard University Press.
Schumpeter, J.A. (1936). "The Theory of Economic Development". Second edition, Cambridge, Harvard University Press.
Schumpeter, J.A. (1939). "Business Cycles", New York, McGraw-Hill.
Schumpeter, J.A. (1942). "Capitalism, Socialism and Democracy". London, Uniwin.
Schumpeter, J.A. (1947). "The creative response in economic history", Journal of Economic History, 7, 149-59.
Scott, J.T. (1991). "Research diversity and technical change", in Acs, Z. and Audretsch, D. (eds.), Innovation and Technical Change, Ann Arbor, University of Michigan Press.
Scott, M. (2014). "Traffic Snarls in Europe as Taxi Drivers Protest Against", The New York Times. https://bits.blogs.nytimes.com/2014/06/11/taxi-protests-against-uber-in-europe-to-snarl-traffic/
Shackle, G.L.S. (1970). "Expectations, Enterprise and Profit", London, George Allen & Unwin.
Shakow, D.J. (1986). "Taxation without realization: a proposal for accrual taxation", University of Pennsylvania Law Review, 134, 1111-1205.
Shoven, J.B. (1976). "The Incidence and Efficiency Effects of Taxes on Income from Capital", J.P.E., 84(6), 1261-1283.
Shvets, V. (2016). "Taxify in Estonia and Uber in Ukraine: The Rise of Ride-Sharing Services in CEE", 150sec.com. http://150sec.com/taxify-in-estonia-and-uber-in-ukraine-the-rise-of-ride-sharing-services-in-cee/
Silvera, I. (2015). "LTDA launches 'Better for London' campaign as black cab war with Uber continues", International Business Times. http://www.ibtimes.co.uk/ltda-launches-better-london-campaign-black-cab-war-uber-continues-1533461
Slemrod, J. (1990). "Tax effects on Foreign Direct Investment in the United States: evidence from a cross-country comparison", in Razin A. and Slemrod J. (eds.) Taxation in the global economy, 79-122, Chicago, University of Chicago Press.
Slemrod, J. (2004). "Small Business and the Tax System", in Aaron, H.J. and Slemrod, J. (eds.), The Crisis in Tax Administration, 69-101, Washington D.C., Brookings Institution Press.

Slemrod, J. (2007). "Cheating Ourselves: The Economics of Tax Evasion", Journal of Economic Perspectives, 21, 25-48.
Slemrod, J. and Venkatesh, V. (2012). "The income tax compliance cost of large and mid-size businesses", Report Submitted to the IRS LMSB Division, Office of Tax Policy Research, University of Michigan.
Smith, O. (2016). "Brits get world's first sharing economy tax break", Unpublished Paper. http://www.thememo.com/2016/03/17/budget-sharing-economy-tax-break-britain/
Socio, D.A. and Russo, P.F. (2016). "The debt of Italian non-financial firms: an international comparison", Banca D'Italia.
Solow, R. (1956). "A Contribution to the Theory of Economic Growth", Quarterly Journal of Economics, 70(1), 65-94.
Solow, R. (1957). "Technical Change and the Aggregate Production Function", Review of Economics and Statistics, 39, 312-20.
Sørensen, L.M. (2013). "Overblik: Her er detaljerne i vækstplanen", DR. http://www.dr.dk/nyheder/politik/overblik-her-er-detaljerne-i-vaekstplanen
SpareRoom.co.uk. "Raise the Roof".
http://www.spareroom.co.uk/raisetheroof/about/#1
Spiegel, D. (2016). "Uber's books still top secret, but its biggest weakness isn't", CNBC. http://www.cnbc.com/2016/06/08/ubers-66-billion-valuation-may-ride-on-shaky-foundation.html
Stabile, M. (2004). "Payroll Taxes and the Decision to be Self-Employed", International Tax and Public Finance, 11, 31-53.
Stadt Wien (2015). "Turning the Sharing Economy into a Fair Economy in Vienna". https://www.wien.info/media/files-b2b/share-economy-in-wien-stadt-wien-en.pdf
Start Business in France (2015). "Airbnb and Housetrip: What income should you declare in France?". http://www.startbusinessinfrance.com/blog/post/airbnb-housetrip-what-income-should-you-declare-in-france
Statista (2017). "Latvia: distribution of gross domestic product (GDP) across economic sectors from 2004 to 2014".
http://www.statista.com/statistics/375583/latvia-gdp-distribution-across-economic-sectors/
Steinmetz, K. (2015). "Why the California Ruling on Uber Should Frighten the Sharing Economy", Time. http://time.com/3924941/uber-california-labor-commission-ruling/
Stemler A. (2014). "Betwixt and Between: Regulating the Sharing Economy", Fordham Urban Law Journal, 43.
https://ssrn.com/abstract=2535656or http://dx.doi.org/10.2139/ssrn.2535656
Stenkula, M. (2010). "Taxation and entrepreneurship in a welfare state", Small Business Economics, 39(1), 77-97.
Stiglitz, J.E. (1969). "The Effects of Income, Wealth and Capital Gains Taxation on Risk-Taking", Quarterly Journal of Economics, 83, 203-83.
Stiglitz, J.E. (1985). "The General Theory of Tax Avoidance", National Tax Journal 38(3), 325-327.
Stinka, J. and Bonda, D. (2014). "Micro Enterprises tax payers in Latvia", SSE Riga Student Research Papers 8(164).
Stöwhase, S. (2002). "Profit shifting opportunities, multinationals, and the determinants of FDI", Discussion Papers in Economics 29, University of Munich Studies 16, 1075-1129.
Stuetzer, M., Obschonka, M., Audretsch, D., Wyrwich, M., Rentfrow, P., Coombes, M., Shaw-Taylor, L. and Satchell, M. (2016). "Industry structure, entrepreneurship, and culture: An empirical analysis using historical coalfields", European Economic Review, 86, 52-72.

Stulberg, A. (2016). "Airbnb Probably Isn't Driving Rents Up Much, At Least Not Yet", FiveThirtyEight.com. http://fivethirtyeight.com/features/airbnb-probably-isnt-driving-rents-up-much-at-least-not-yet/
Sullivan, M. (2015). "Tax Challenges for the Uber Economy", Forbes.
Tanzi, V. and Zee, H.H. (2000). "Tax Policy for Emerging Markets: Developing Countries", IMF Working Paper 35.
TaxBack.com, (2016). "5 Things you need to know about tax if you're an Airbnb host in Ireland". https://www.taxback.com/blog/5-things-airbnb-hosts-in-ireland
TaylorWessing (2015). "Legal issues facing the collaborative economy in Germany". https://united-kingdom.taylorwessing.com/download/article-legal-germany.html
Tees, P. (2016). "SKAT looking into tax changes for Airbnb, Uber and other sharing economy services", CPH Post Online. http://cphpost.dk/news/business/skat-looking-into-tax-changes-for-airbnb-uber-and-other-sharing-economy-services.html
The Baltic Course (2016a). "Estonia supports expansion of sharing economy". http://www.baltic-course.com/eng/analytics/?doc=115999
The Baltic Course (2016b). "Ministry to look for ways to support sharing economy in Estonia". http://www.baltic-course.com/eng/legislation/?doc=120879&underline=Ministry+to+look+for+ways+to+support+sharing+economy+in+Estonia
The Baltic Course (2016c). "Total tax rate in Latvia the lowest in Baltics". http://www.baltic-course.com/eng/finances/?doc=115312
The Conversation (2015). "What Australia can learn about e-government from Estonia". https://theconversation.com/what-australia-can-learn-about-e-government-from-estonia-35091
The Economist (2013a). "All eyes on the sharing economy". http://www.economist.com/news/technology-quarterly/21572914-collaborative-consumption-technology-makes-it-easier-people-rent-items
The Economist (2013b). "How did Estonia become a leader in technology?". http://www.economist.com/blogs/economist-explains/2013/07/economist-explains-21
The International Tax Competitiveness Index (2015). http://taxfoundation.org/article/2015-international-tax-competitiveness-index
The Local (2016). "France could make Airbnb tell tax man about hosts' earnings". http://www.thelocal.fr/20160208/france-could-force-airbnb-to-tell-tax-man-about
The Register (2016). "GMB tests Uber 'self-employed drivers' claim at London tribunal". http://www.theregister.co.uk/2016/07/20/uber_uk_employment_tribunal/
Thomas, J. (1992). "Informal Economic Activity", LSE Handbooks in Economics, London, Harvester Wheatsheaf.
Thomson, A. (2016). "Airbnb hit by unfair competition complaint from French hotels", Finance Times. https://www.ft.com/content/6ff2b192-3951-11e6-9a05-82a9b15a8ee7
Tiwari, A.K., Mohnen, P., Palm, F.C. and van der Loeff, S.S. (2007). "Financial Constraints and R&D Investment: Evidence from CIS", United Nations University UNU-MERIT Working Paper 2007-011.
Tonning, Internet Week Denmark (2015). "Why buy and own when you can share and rent?". http://internetweekdenmark.com/2016/news/why-buy-and-own-when-you-can-share-and-rent
Tsoutsoura, M. (2015). "The Effect of Succession Taxes on Family Firm Investment: Evidence from a Natural Experiment", The Journal of Finance, 70, 649-688.
Tuttle, B. (2013). "The Other Complication for Airbnb and the Sharing Economy: Taxes", Time. http://business.time.com/2013/06/15/the-other-complication-for-airbnb-and-the-sharing-economy-taxes/
Uber.
Unfair Competition and Compliance Law Portal (UCLP) (2016). "Activities of Uber vs Unfair Competition". http://uclp.eu/dzialalnosc-ubera-a-nieuczciwa-konkurencja/
US Internal Revenue Service (2012). "Tax Gap for Tax Year 2006: Overview", Washington DC, US Internal Revenue Service.

US Internal Revenue Service (IRS) (2016a). "Codes of Practice". http://www.revenue.ie/en/practitioner/codes-practice.html

US Internal Revenue Service (IRS) (2016b). "IRS 20 Factor Test on Employment Status". https://www.mdc.edu/hr/Operations/AFS/IRSFactorTest.pdf

US Internal Revenue Service (IRS) (2016c). "Sharing Economy Tax Center". https://www.irs.gov/businesses/small-businesses-self-employed/sharing-economy-tax-center.

Valero, J. (2016a). "EU makes progress on uniform sharing economy policy", EurActiv.com. https://www.euractiv.com/section/digital/news/eu-makes-progress-on-sharing-economy-policy/

Valero, J. (2016b). "Commission to public guidelines on sharing economy next week", EurActiv.com. http://www.euractiv.com/section/digital/news/commission-to-publish-guidelines-on-sharing-economy-next-week/

Vartia, L. (2008). "How Do Taxes Affect Investment and Productivity? – Industry Level Analysis of OECD Countries", OECD Economics Department Working Papers 656.

Venkataraman, S. (1997). "The distinctive domain of entrepreneurship research: An editor's perspective", in Katz, J. and Brockhaus, R. (eds.), Advances in Entrepreneurship, Firm Emergence and Growth, 3, 119-138, Greenwich, JAI Press.

Vickrey, W. (1939). "Averaging Income for In-come Tax Purposes", Journal of Political Economy, 47, 379-397.

Vision Critical and Crowd Companies (2014). "Sharing is the New Buying". https://www.slideshare.net/slideshow/embed_code/31818007

Voulgaris, F., Papadogonas, T. and Agiomirgianakis, G. (2005). "Job Creation and Job Destruction in Greek Manufacturing", Review of Development Economics 9(2), 289-301.

Wallsten, Technology Policy Institute (2015). "The Competitive Effects of the Sharing Economy: How is Uber Changing Taxis?". https://www.ftc.gov/system/files/documents/public_comments/2015/06/01912-96334.pdf

Weber, L. (2014). "What if There Were a New Type of Worker? Dependent Contractor", The Wall Street Journal. http://www.wsj.com/articles/what-if-there-were-a-new-type-of-worker-dependent-contractor-1422405831

Weed, J. (2015). "Airbnb Grows to a Million Rooms, and Hotel Rivals are Quiet, for Now", The New York Times. http://www.nytimes.com/2015/05/12/business/airbnb-grows-to-a-million-rooms-and-hotel-rivals-are-quiet-for-now.html?_r=0

Wen, J.F. and Gordon, D.V. (2014). "An Empirical Model of Tax Convexity and Self-Employment", Review of Economics and Statistics, 96(3), 471-482.

Wennekers, S., van Stel, A., Thurik, R., and Reynolds, P. (2005). "Nascent entrepreneurship and the level of economic development". Small Business Economics, 24(3), 293-309.

Wharton University of Pennsylvania, Special Report (2015). "The Sharing Economy: Restacking Industry in the 21st Century". http://d1c25a6gwz7q5e.cloudfront.net/reports/2015-12-10-IGEL-The-Sharing-Economy-FINAL.pdf

Wilson, J.D. (1999). "Theories of Tax Competition", National Tax Journal, 52(2), 269-304.

World Bank (2014). "Doing Business 2015 - Going Beyond Efficiency", http://www.doingbusiness.org/~/media/GIAWB/Doing%20Business/Documents/Annual-Reports/English/DB15-Full-Report.pdf

World Bank (2015). "Denmark country Profile". http://www.worldbank.org/en/country/denmark

World Bank (2016). "Doing Business, measuring regulatory quality and efficiency", Regional Profile 2016 – OECD High Income.

http://www.doingbusiness.org/~/media/GIAWB/Doing%20Business/Documents/Profiles/Regional/DB2016/DB16-OECD.pdf

World Bank (2016b). "Doing Business 2016, Economy Profile 2016: Latvia".

World Economic Forum (2014). "The Europe 2020 Competitiveness Report". http://reports.weforum.org/europe-2020-competitiveness-report-2014/

Wosskow, D. (2014). "Unlocking the sharing economy. An independent review". https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/378291/bis-14-1227-unlocking-the-sharing-economy-an-independent-review.pdf

Wosskow, D. (2016). "Budget 2016: George Osborne's digital tax breaks prove Britain's a world leader in the sharing economy", CityA.M. http://www.cityam.com/236952/budget-2016-george-osbornes-digital-tax-breaks-prove-britains-a-world-leader-in-the-sharing-economy

Wosskow, D. (2015). "Sharing Economy: Defining an Industry", Sharing Economy UK (SEUK). http://www.sharingeconomyuk.com/news-and-views/post.php?s=2015-10-22-sharing-economy-defining-an-industry

Yakovlev, P. and Davies, A. (2014). "How does the estate tax affect the number of firms", Journal of Entrepreneurship and Public Policy, 3, 96-117.

Zangari, E. (2014). "Addressing the debt bias: a comparison between the Belgian and the Italian ACE systems", European Commission, Taxation Papers – Working paper 44-2014. https://ec.europa.eu/taxation_customs/sites/taxation/files/docs/body/taxation_paper_44.pdf

Zipkin, A. (2015). "The Sharing Economy Attracts Older Adults", New York Times. https://www.nytimes.com/2015/09/26/your-money/the-sharing-economy-attracts-older-adults.html?mcubz=0

Zucchetti, S. and Pallotta, A. (2006). "Italian Patent Box Regime: thinking outside the box or just more harmful tax competition?", International Transfer Pricing Journal 23(1).

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