



# Reform of rules on EU VAT rates

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## Preface

This report has been prepared for the project “Reform of rules on EU VAT rates”, Specific Contract No. TAXUD/2015/DE/333 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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## List of abbreviations

B2B	Business-to-business
B2C	Business-to-consumer
CASE	Center for Social and Economic Research
CGE	Computable General Equilibrium
CZK	Czech Republic Koruna
DG TAXUD	Directorate-General for Taxation and Customs Union
EC	European Community
ECJ	European Court of Justice
EU	European Union
EUR	Euro
GBP	Pound Sterling
IEB	Institute of Economics, Barcelona
IHS	Institute for Advanced Studies
MOSS	Mini One Stop Shop
MS	Member State
PLN	Polish Zloty
PwC	PricewaterhouseCoopers
TBE	Telephony, Broadcasting and Electronically Supplied Services
TFEU	Treaty on the Functioning of the European Union
TOMS	Tour Operators Margin Scheme
UK	United Kingdom
VAT	Value-Added Tax

## Executive Summary

### Introduction

As stated in its 'Action Plan on VAT', in 2017 the Commission aims to outline the key principles and design features for a simple, efficient and fraud-proof VAT regime based on the country-of-destination principle (European Commission, 2016a). This will include reforms that would allow Member States greater autonomy in the composition of their domestic VAT systems (including rate-setting powers and possibly capacity to define which subsets of goods and services fall under which rate bands). These reforms also aim at abolishing the existing country-specific derogations and replacing them with rules applicable to all Member States.

As part of the preparation for these policy proposals, the Commission has requested that we investigate the impact of such "enhanced flexibility" on the proper functioning of the internal market in a multi-jurisdictional context, including the distortions that may arise, the risk of harmful tax competition, and the ramifications for the simplicity and efficiency of the VAT system as a whole (both in individual jurisdictions and intra-EU).

### Context

Member States' VAT systems are presently regulated by the VAT Directive, agreed on the basis of Article 113 of the Treaty on the Functioning of the European Union (TFEU). The VAT Directive sets out a number of general rules on VAT rates. These include:

- Articles 96 and 97: Member States shall apply a standard rate, which may not be lower than 15%. (The Directive does not specify any maximum limit.)
- Articles 98 and 99: Member States have the option of applying a maximum of two reduced rates, not lower than 5%, to specific categories of goods and services, which are listed in Annex III of the VAT Directive. Examples of these categories include foodstuffs, water supplies, admission to sporting events, and medical care.

These rules were originally conceived as a prelude to the introduction of a definitive VAT system in which a significant proportion of goods and services would be taxable in the country of **origin**, rather than the **destination** country in which goods and services were ultimately to be consumed. While an origin system has a number of advantages, it also creates a risk of economic distortion: an incentive for supplies to originate in lower tax jurisdictions than the pre-tax economic fundamentals would otherwise dictate. Correspondingly, it creates a risk of tax competition: an incentive for states to lower VAT rates to encourage supplies to relocate to these jurisdictions, thereby providing the government with a higher aggregate level of VAT revenues than they would otherwise have received. Such tax competition could lead governments to reduce their VAT rate to prevent the erosion of their VAT base, leading to all Member States charging lower levels of VAT than they would ideally prefer. The constraints on VAT rates contained in the VAT Directive were intended to forestall or mitigate these risks.

In December 2011, with the "Communication on the future of VAT – Towards a simpler, more robust and efficient VAT system tailored to the single market" (COM(2011) 851), the Commission signalled it was abandoning the previous policy objective of introducing a VAT system based on the origin principle, and instead proceeding towards full implementation of the destination principle.

The move towards a definitive VAT regime based on the destination principle means that suppliers can no longer benefit from relocating to a jurisdiction applying low rates as it is the country of the customer and not the country of establishment of the supplier that

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determines the tax rules for most supplies of goods and services. The resulting reduction in the risk of internal market distortion raises the question whether the current rules on VAT rates, requiring a certain degree of alignment in rate levels amongst Member States, are still required, or whether they are unnecessarily restrictive.

### *Options for reform*

The study assesses two reform options, based on the options outlined in the Commission's "Action Plan on VAT" (2016a):

- **Option One: Extension and regular review of the list of goods and services eligible for reduced rates.** The list of goods and services to which reduced rates can apply would be broadened, incorporating all current legally applied reduced rates. As a result, all existing country-specific derogations would be extended to all Member States. The list would be periodically reviewed and updated by the Commission in consultation with the Member States, ensuring that it reflected prevailing political priorities. Other aspects of the regime (such as the minimum standard VAT rate of 15%, the option of applying two reduced rates no lower than 5%, and exemptions without the right to deduct input VAT on certain types of supply) would be maintained. Note that it would be possible to implement Option One with a more selective extension of existing derogations, or with the abolition of existing derogations, though we have not formally assessed these suboptions.
- **Option Two: Abolition of the list.** The list of goods and services to which reduced rates can be applied would be abolished, and Member States would be permitted to decide for themselves which goods and services should be placed within which rate bands. Member States would be free to set standard and reduced rates at whatever levels they see fit, down to and including a zero-rate band. (This flexibility might be supplemented by some targeted restrictions to limit economic distortions.) Within this option, we consider three distinct suboptions, concerning additional flexibility in the number of rate bands that Member States are permitted to deploy:
  - Suboption One: a maximum of three reduced rates allowed, in addition to a standard rate (existing super-reduced and zero rates would count towards this allowance, if maintained; any continuing exemptions would not).<sup>1</sup> This would match the existing level of flexibility enjoyed by all Member States bar one (Ireland).
  - Suboption Two: a maximum of four reduced rates allowed (the current two reduced rates and two additional rates). Existing super-reduced and zero rates would count towards this allowance, if maintained; any continuing exemptions would not. This is the minimum number of additional rate bands required in order to replicate all Member States' existing VAT regimes under a scenario of enhanced flexibility.
  - Suboption Three: no limits on the number of rates. Coupled with flexibility in rate levels and classification of goods and services, this would allow Member States to specify different VAT rates for different products without restriction, and a potentially unlimited degree of change.

Note that, as this study is independent of the formal Impact Assessment that will be prepared by the Commission, the precise definition of these options may differ from the proposals ultimately assessed in that document.

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<sup>1</sup> Throughout this study, we describe as "zero rated" supplies on which no VAT is charged, but for which the supplier has the right to reclaim input VAT, and we describe as "exempt" those supplies on which no VAT is charged but for which the supplier cannot reclaim input VAT. This latter category includes activities in the public interest (such as postal services, health services, and education), as well as other activities as specified in the current VAT Directive (such as financial and insurance services).

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### Objectives of reform

These options for reform of the EU VAT rates regime are assessed by reference to six overarching objectives:

1. **Enhance subsidiarity** by providing Member States with greater policy autonomy in the design of their own VAT regimes;
2. **Promote equal treatment of Member States** by creating a set of rules that applies equally to all jurisdictions, as opposed to the country-specific derogations in the existing system;
3. **Limit economic distortions**, where “economic distortions” are defined as the relocation of economic activity between jurisdictions motivated purely by differences in VAT regimes, thereby undermining the overall neutrality of VAT with respect to business decisions;
4. **Minimise complexity and cost** by keeping the EU-wide VAT system simple for businesses to understand, and governments to enforce;
5. **Prevent litigation between Member States and the EU** arising from uncertainty over or inflexibility of EU-wide rules; and
6. **Protect VAT revenues from domestic pressures** that may result from the removal of EU-wide rules.

Note that, as this study is independent of the formal Impact Assessment that will be prepared by the Commission, the precise definition of these objectives may differ from those ultimately adopted in that document.

### Methodology

This study assesses the potential impact of the aforementioned options for reform of the EU VAT regime, in light of the overarching reform objectives. This analysis has been conducted primarily on the basis of case study research into current instances where there is scope for distortion in the location of economic activity and tax revenues, i.e. cases where

- significant VAT differentials, and/or pricing differentials, exist between Member States on certain categories of goods/services; and
- the origin principle still applies in practice, despite the implementation of the destination principle to date.

These case studies have been supplemented by additional higher-level data analyses, which provide further support to our case study findings.

Instances where the origin principle still applies in practice that are explored in this study include:

- Cross-border shopping;
- Distance sales below certain turnover thresholds (to be analysed also in case of alternative thresholds and in the case of low compliance with the thresholds currently in place);
- Goods and services supplied to tourists (cross-border travel);
- Flat-rate scheme for farmers;
- Intra-Community supplies of second-hand goods and second-hand means of transport, works of art, collectors' items and antiques;
- Intra-Community B2C supplies of services that might still be taxed under the origin-based principle for final consumers;
- Intra-Community B2B supplies of services that might still be taxed under the origin-based principle to public authorities and businesses that carry out activities that are outside the scope of VAT.

### Case study approach

We have selected case studies on a risk-targeted basis. We have formulated three overarching hypotheses about the kinds of goods and services for which pricing differentials are most likely to influence the location of economic activity, and thus where enhanced flexibility of the VAT regime is most likely to lead to economic distortions between Member States. These hypotheses are as follows:

- Higher value goods/services are more likely to be subject to distortionary effects.<sup>2</sup>
- More portable goods/objects of service are more likely to be subject to distortionary effects.
- Homogeneous (in the sense of “easily comparable/substitutable from the consumers' point of view”) goods and services are more likely to be subject to distortionary effects.

While the above hypotheses most obviously apply to cross-border shopping for goods and services, they can also be used to understand the distortionary potential in other cases where the origin principle persists in practice. For example, distance sales below the turnover threshold for VAT are more likely where significant savings can be made per item, where goods are easy to ship, and where products are directly comparable with products that can be purchased domestically. For tourism, the “object of service” is the tourist herself; and the degree to which different destinations are interchangeable from the tourist’s perspective will influence the level of tax competition between them.

The table below ranks the goods and services featured in our case studies along the three dimensions of transaction value, portability, and homogeneity. As can be seen, we have selected our case studies to test all three hypotheses, across a broad range of situations in which the origin principle still persists.

Case study coverage of initial hypotheses

Category	Good/Service	Value*	Portability**	Homogeneity**
<b>Foodstuffs</b>	Basket of fast-moving consumer goods	Low	High	High
<b>Vehicle fuel</b>	1 litre diesel	Low	High	High
<b>Medical equipment</b>	Powered wheelchair	High	Medium	Medium
<b>Jewellery</b>	Luxury wristwatch	High	High	High
<b>Consumer electronics</b>	Notebook computer	Medium/ High	High	High
<b>Medical/dental services</b>	Porcelain crown fitting	High	High	Medium
<b>Hairdressing</b>	Women’s haircut (medium-length hair)	Low	High	Low/Medium
<b>Distance sales</b>	Academic textbooks	Low/ Medium	High	High
<b>Tourism</b>	Beach/winter sport holidays	Medium/ High	High	Medium
<b>Flat-rate scheme for farmers</b>	Agricultural inputs (pesticides, seeds, etc.)	Low/ Medium	Medium	Low/Medium
<b>Second-hand scheme</b>	Works of art Used cars	High	High	Medium

Source: field research and analysis.

\* Value has been coded as low (<EUR 100), medium (EUR 100-EUR 1,000), and high (>EUR 1,000).

\*\* Portability and homogeneity are more judgemental categories than value. These classifications have a more subjective basis and are open to debate.

<sup>2</sup> Note that lower value goods/services may be purchased together, resulting in a higher value “bundle” of products; though “bundling” of physical goods will reduce their portability.

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### Case study findings

The table below summarises our case study findings, showing both the level of evidence we were able to uncover in each case, and the scale of the impacts observed.

Category	Good/Service	Level of evidence	Scale of impact
<b>Foodstuffs</b>	Basket of fast-moving consumer goods	Some	Limited
<b>Vehicle fuel</b>	1 litre diesel	Some	Some
<b>Medical equipment</b>	Powered wheelchair	Limited	None
<b>Jewellery</b>	Luxury wristwatch	Limited	None
<b>Consumer electronics</b>	Notebook computer	Some	Limited
<b>Medical/dental services</b>	Porcelain crown fitting	Some	Some
<b>Hairdressing</b>	Women's haircut (medium-length hair)	Limited	Limited
<b>Distance sales</b>	Academic textbooks	Some	Some
<b>Tourism</b>	Beach/winter sport holidays	Limited	Some/Substantial
<b>Flat-rate scheme for farmers</b>	Agricultural inputs (pesticides, seeds, etc.)	Limited	Limited
<b>Second-hand scheme</b>	Works of art Used cars	Some	Some/Substantial

**Cross-border shopping:** The only cases for which we found more than a limited degree of price-driven cross-border shopping were for vehicle fuel and medical/dental services. In both cases, the price differences on offer were substantially larger than we would expect to see from enhanced flexibility in VAT rates alone (driven by excise duties and labour costs, respectively).

**Distance sales:** There is a concern in high-VAT jurisdictions (such as Hungary and Denmark) about online purchases of goods from other Member States, where suppliers either fall below the distance selling registration threshold, or do not comply with it. Given increasing levels of online shopping, distance sales appear to pose greater risks of economic distortion than physical cross-border shopping. Most obviously, the costs of making a purchase via e-commerce are generally lower than the costs involved in travelling to another jurisdiction, and they generally do not increase with distance from the border (which limits the number of people with a strong incentive to cross-border shop). Effective means of policing distance sales will be necessary to ensure suppliers comply with registration thresholds. The reduction in distance sales registration threshold mooted in the Commission's December 2016 e-commerce proposals should make it easier for tax authorities to detect non-compliant suppliers, and the extension of the MOSS to all online purchases will make it cheaper for businesses to comply with the VAT rules. Nevertheless, proposals for enhanced flexibility should consider (i) the additional incentive that different rates will create for distance buying of goods from other Member States, (ii) Member States' differing abilities to enforce distance selling thresholds, and (iii) Member States' differing cultures of tax compliance.

**Tourism:** Many EU countries apply reduced rates to tourist services, where permitted under the present EU VAT regime. This is in part due to the perceived mobility of the tax base and the elasticity of demand for tourist services, as well as a conscious decision by some Member States to promote this sector. A number of studies identify substantial possible economic and fiscal benefits for individual Member States arising from reductions in VAT rates on tourist services. To the extent that the potential gain from VAT reductions for any individual Member State is high because those reductions help

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take market share from other EU countries, there is an argument for EU-wide action to prevent a “race to the bottom”.

Second-hand scheme: The margin scheme for second-hand goods already creates substantial incentives for dealers to base themselves in low-VAT jurisdictions, and evidence suggests that this incentive is effective. Enhanced flexibility risks magnifying these incentives. Consequently, reform of the margin scheme for second-hand goods should be considered alongside proposals to reform the EU VAT rates regime as a whole. One possible solution would be to introduce a destination principle for the taxation of margins on second-hand goods (both for dealers and their agents), above a certain threshold.

### *Evaluating reform options*

The two options (and three suboptions) for reform of the EU VAT regime outlined above can be broken down into three component variables:

1. Range of rate levels permitted;
2. Number of rate bands permitted; and
3. Goods and services eligible for each rate band.

*Range of rate levels permitted:* Our case studies indicate levels of cross-border shopping are generally limited, in spite of potentially substantial price savings, though impacts do become noticeable on certain categories of goods and service where price savings of circa 20% or above are achievable. As our broader macroeconomic analysis shows, this pattern can be explained by travel costs, which generally outweigh the benefits of cross-border shopping for all but a narrow group of people living in close proximity to a low-cost jurisdiction. Nevertheless, where VAT differences exceed a threshold of circa 20%, VAT-motivated cross-border shopping for smaller purchases (<EUR 100) starts to become rational for the majority of people in border regions, though the effect on the wider population will remain limited. While more affluent households are more likely to make more expensive purchases more often, this sector of the population is also more likely to value its leisure time more highly, which will limit the appetite for travel. This pattern is confirmed by the literature review. However, additional attention needs to be paid to certain categories of goods and services that appear to run a higher risk of cross-border shopping.

*Number of rate bands permitted:* The introduction of new VAT rate bands poses challenges for businesses not just in terms of invoicing, but also in terms of accounting, record-keeping, tracking legislative changes, and so forth. Our literature review and additional analysis indicate that these costs are significant, providing compelling reasons for countries to limit the number of rate bands in their VAT systems. The status quo VAT system in the EU already imposes compliance costs of circa 0.5% of turnover on medium-sized enterprises; and, internationally, systems with more rate bands impose even higher costs. The burden is even greater, in relative terms, for smaller VAT-registered businesses. Our analyses indicate that these costs may increase exponentially as additional VAT bands are introduced, particularly for businesses with supply chains and customers in multiple jurisdictions. Administrative costs to government are similarly substantial (we estimate them at circa 1% of VAT revenue for the existing system). This indicates that the fewer the number of rate bands, the simpler the EU VAT system and the more efficient the single market.

*Goods and services eligible for each rate band:* The evidence from the case studies indicates that there are low levels of cross-border shopping for goods/services where the absolute level of price saving possible is also low (hairdressing). Price differences of circa 20% or more can in some instances drive cross-border shopping, particularly for homogeneous portable everyday goods for which lower price domestic substitutes are not readily available (diesel). Where lower price substitutes are available domestically,



cross-border shopping is less likely (foodstuffs). For higher value goods and services, upon which higher absolute price savings could be achieved, the evidence was mixed. Where the purchase might be described as a necessity and the relative price saving was large – as in the case of dental treatments – we observed some degree of cross-border shopping. By contrast, we observed limited impact where the purchase in question was discretionary, and where the relative price saving was small (consumer electronics and jewellery). It is however possible that the larger absolute and relative price differences that might result from unlimited VAT rate flexibility would lead to higher levels of cross-border shopping for these goods. Moreover, they may be vulnerable to distance sales that do not apply destination VAT rates (whether legally in light of registration thresholds, or otherwise). Tourism may also be vulnerable to economic distortions, which could justify limiting VAT flexibility for tourist services.

### Overall conclusions on reform options

Using the key findings of our case studies, literature reviews, and additional analysis, we assessed the options for reform of the EU VAT rates regime (and associated suboptions) against the six objectives of reform outlined above. For each objective, each option/suboption was allocated a rating between “---” (substantial negative impact on objective) and “+++” (substantial positive impact on objective). Further explanation of each of these ratings is provided below.

Objective	Status quo	Option 1	Option 2.i	Option 2.ii	Option 2.iii
<b>Enhance subsidiarity</b>	--	-	++	++	+++
<b>Promote equal treatment of MSs</b>	--	+++	++	+++	+++
<b>Limit economic distortions</b>	++	++	+ [+]	+ [+]	+ [+]
<b>Minimise complexity and cost</b>	++	+	- [-]	- [-]	---
<b>Prevent litigation between Member States and the EU</b>	--	0	-- [-]	-- [-]	-- [-]
<b>Protect VAT revenues from domestic pressures</b>	++	+	--	--	---

Key to measures of impact on objectives:

+++ Substantial positive impact    ++ Some positive impact    + Limited positive impact  
 --- Substantial negative impact    -- Some negative impact    - Limited negative impact  
 0 Negligible impact

[+] Positive scores in square brackets reflect the fact that risks of economic distortion associated with Option Two depend on whether or not a decision is taken to restrict full flexibility of rates on a small subset of high-risk goods and services. Such restrictions would reduce the risk of economic distortions (and thus an additional “+” would be awarded on this metric).

[-] Negative scores in square brackets reflect the fact that the complexity costs and litigation risks associated with Option Two could be mitigated by limiting flexibility to the choice of rates for *predefined* categories of goods and services (based, for instance, on the Combined Nomenclature), rather than allowing each Member State to create its own taxonomy of goods and services. Without such mitigation, the additional negative score would apply.

### Status quo

- *Enhance subsidiarity* (--): The status quo scores relatively poorly on measures of subsidiarity, as it implies a substantial EU-wide harmonisation of VAT rates, and provides limited flexibility for countries to determine which goods and services receive reduced rates. Note however that it still provides Member States with the option of reducing VAT rates on a wide range of items: existing provisions for reduced rates and exemptions allow Member States to tax a substantial majority of average household final consumption expenditure at levels below the standard rate.

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- *Promote equal treatment of Member States (--)*: Although the status quo provides a single set of rules applicable to all Member States, the universality of these rules is undermined by the persistence of a range of country-specific derogations.
  - *Limit economic distortions (++)*: Under a destination-based regime, the scope for economic distortions under the status quo is extremely limited. Our research suggested that VAT-motivated cross-border shopping was unlikely unless VAT differentials created price differences equivalent to the more extreme price differences for excisable goods currently prevailing between some Member States; such large VAT differentials are unlikely under the existing VAT regime.
  - *Minimise complexity and cost (++)*: While companies operating across borders must still cope with a range of VAT rates (particularly in countries enjoying derogations), the range of different rates and the definition of goods and services eligible for these different rates are substantially harmonised at the EU-level. This leads to lower compliance costs than would be anticipated under options for enhanced flexibility.
  - *Prevent litigation between Member States and the EU (--)*: Harmonised EU-level rules regarding which goods and services are eligible for which kinds of VAT rates has historically led to litigation between Member States and the EU, arising from Member States attempting to apply VAT rates that have not been deemed permissible under the VAT Directive. While many issues are now part of settled EU case law, the risk of litigation persists.
  - *Protect VAT revenues from domestic pressures (++)*: The persistence of a list of goods and services for which reduced rates are possible, coupled with minimum thresholds below which rates cannot fall, offers governments an opportunity to resist calls from narrow pressure groups to reduce VAT rates beyond a certain level. Limitations in the number of VAT rate bands available also reduce the scope for lobbying, as special pleading by a particular interest group will generally require reducing the VAT rate on a range of other goods and services in the same band. This amplifies the fiscal cost, making the request harder to justify.

*Option One: Extension and regular review of the list of goods and services eligible for reduced rates*

- *Enhance subsidiarity (-)*: While an improvement on the status quo, Member States would still find themselves constrained from making a full range of decisions around which goods and services to privilege with reduced rates. Furthermore, the minimum standard/reduced rates of 15%/5% would still apply, restricting the range of different VAT rates that Member States could apply. Nevertheless, the regular review and update of the list, in line with Member States' requests, should mitigate the first of these concerns somewhat, though the impact on subsidiarity would depend on the precise decision-making mechanism introduced.
- *Promote equal treatment of Member States (+++)*: Under this option, a fully harmonised EU-level regime would be introduced, with no exceptions made for individual Member States. Providing all Member States with access to all existing derogations would guarantee equal treatment.
- *Limit economic distortions (++)*: Much like in the status quo, the risk of economic distortions driven by VAT rate differentials is limited. The extension of existing derogations to all Member States appears unlikely to generate differences in VAT treatment between countries sufficient to create economic distortions, given the relatively limited nature of these derogations. While there may be some pressure to lower some rates in light of the changes (e.g. children's clothing, which is currently standard-rated everywhere except Ireland, Luxembourg, and the UK), the aggregate fiscal impact of such changes will likely be small. Even if some tax-motivated economic distortions do occur, the economic impact will be limited to

narrow border regions, given the size of transaction necessary to make cross-border shopping economically rational.

- *Minimise complexity and cost (+)*: Option One constitutes an incremental increase in complexity relative to the status quo. Nevertheless, if all countries took advantage of all derogations permitted, this would lead to all countries operating a standard rate, three reduced and super-reduced rates, an additional zero rate band, and a category of exempt items on which input VAT could not be recovered, which would pose substantial challenges for both businesses and tax administrations. Harmonised definitions of goods and services eligible for reduced, super-reduced and zero-rate treatment would mitigate this complexity somewhat.
- *Prevent litigation between Member States and the EU (0)*: The increase in the range of goods and services for which reduced rates are allowed increases the scope for litigation between Member States and the EU, as Member States test the boundaries and limits of the newly introduced categories. However, regular updating of the list of goods and services eligible for reduced rates provides an opportunity to clarify any ambiguities in this listing, thereby reducing the risk of conflict over the definitions of, and boundaries between, different categories. Moreover, this mechanism should minimise the scope for conflict between the VAT Directive and the policies that Member States want to introduce, which has historically been a source of litigation between Member States and the EU.
- *Protect VAT revenues from domestic pressures (+)*: By increasing the scope of goods and services for which reduced rates are legally permitted, Option One raises the possibility of increased domestic pressure for rate reductions on particular categories of goods and services. This falls short however of the across-the-board pressures that we might anticipate were the list of goods and services eligible for reduced rates were abolished outright.

#### *Option Two: Abolition of the list*

- *Enhance subsidiarity (++)/+++/+++)*: All three Suboptions represent a substantial improvement in subsidiarity, with Member States able to specify what goods and services should be eligible for reduced rates of VAT, and how great those VAT differences should be. The difference between the scores for the Suboptions reflects the level of flexibility in the number of rate bands permitted under each scenario. Note that, in practice, Member States may not wish to create VAT regimes with more than three or four reduced rate levels, in which case Suboptions One and Two may be considered just as advantageous as Suboption Three. Note also that targeted restrictions would limit subsidiarity, but only marginally, assuming the range of goods and services to which restrictions would apply would remain limited.
- *Promote equal treatment of Member States (++)/+++/+++)*: All three Suboptions would treat Member States equally, as the same rules on rate levels, rate bands, and the classification of goods and services would apply to all jurisdictions. Note however that Suboption One would not permit all Member States to implement all existing VAT arrangements, as Ireland currently has four rate bands below the standard rate (including its zero-rate band), and would thus be required to remove one of these rate bands. Suboptions Two and Three, by contrast, allow all Member States to perpetuate all legacy arrangements, should they so wish.
- *Limit economic distortions (+[+]/+[+]/+[+])*: Our research indicates that the risk of economic distortion associated with full flexibility in rate levels is limited to a narrow range of goods and services. Were full flexibility in rate levels and classifications of goods and services to be granted, we anticipate that this would result in competitive considerations playing a larger part in tax policy-making, and more relocation of economic activity across borders for tax reasons, than currently occurs under the existing VAT regime. Nevertheless, our case studies, literature review and additional analyses suggest that this effect would still be of

limited magnitude, as VAT differentials would need to approximate some of the larger excise differentials observable between Member States in order to have a substantial impact. For this reason, we score Option Two (including all three Suboptions) as still having a broadly positive impact on economic distortions (“+” as opposed to “++” for the status quo). Moreover, targeted limitations could be introduced to limit flexibility on a small number of high-risk items. If adequate protections are put in place, then the risks of economic distortion under full flexibility should not be materially greater than under the status quo (“++”).

- *Minimise complexity and cost (-[-]/-[-]/---)*: The major disadvantage of Option Two relative to Option One is the additional complexity it introduces into the EU-wide VAT system. Businesses operating across borders will need to contend, not just with different VAT rates, but potentially very different classification systems, as Member States come to different conclusions about which goods and services should be eligible for which VAT rate bands. Definitions of goods and services, and the particular way in which borderline cases are adjudicated, could conceivably differ in every Member State, and could conceivably vary from year-to-year as well. However, these risks could be mitigated by harmonising definitions of categories of goods and services at the EU-level (for example, by using an existing taxonomy such as the Combined Nomenclature). Suboptions One and Two (reflecting three permitted reduced rate bands and four permitted reduced rate bands, respectively) are both ranked as having “some” negative impact (or “limited” negative impact, if combined with harmonised definitions), though we note that the additional rate band means that costs associated with Suboption Two will be greater than those associated with Suboption One. The costs associated with Suboption Three are likely to be prohibitive, as this could result in different VAT rates for every conceivable good and service (or conceivable category of good and service, if these classifications are harmonised), for each of the EU28. Admittedly, Member States are unlikely to choose such an extreme VAT policy; however, the risk remains that high degrees of divergence in VAT regimes would present barriers to trade between Member States, undermining the proper functioning of the single market.
- *Prevent litigation between Member States and the EU (--[-]/--[-]/--[-])*: Devolving responsibility for decisions on what goods and services are eligible for what VAT rate levels should substantially decrease the scope for conflict between individual Member States’ policy choices and the VAT Directive itself. However, these benefits must be weighed against the risk of Member States deliberately or accidentally contravening TFEU provisions prohibiting state aid and protectionist taxation, as well as the principle of VAT neutrality that has been established in case law on VAT. Indeed, the litigation risk may be greater than for the status quo and Option One, as the rules of the existing VAT Directive are relatively clearly defined in comparison to the higher-level principles articulated in the TFEU. This risk could be reduced by harmonisation of the definitions of categories of goods and services at the EU-level, at a suitable level of abstraction to prevent Member States from arbitrarily discriminating between comparable products. Such harmonisation could reduce the negative impact of this litigation risk from “substantial” to “some”.
- *Protect VAT revenues from domestic pressures (--/--/---)*: The additional flexibility provided by all three Suboptions renders governments more susceptible to lobbying by industry groups, as there is no legal obstacle to reducing any particular rate band, or moving any particular good and service to a lower rate band. While targeted restrictions on high-risk goods and services would provide some legal limits, these are not anticipated to apply to a particularly wide range of products. The vulnerability to domestic pressures would be particularly acute where there are no limitations on the number of rate bands a country could implement: lobbyists could then propose a particular rate for a particular product, or even demand a particular unique trajectory of VAT rates for a particular product over time.

## Résumé

### Introduction

Comme stipulé dans son « Plan d'action sur la TVA », l'objectif de la Commission est de définir en 2017 les principes et les caractéristiques clés d'un système de TVA basé sur le principe de destination qui soit simple, efficace et résistant à la fraude (European Commission, 2016a). Cet objectif inclut des réformes donnant aux États membres une plus grande autonomie dans la composition de leurs systèmes de TVA (y compris le pouvoir de définir des taux, et éventuellement la capacité de définir les catégories de biens et services correspondant à chaque tranche d'imposition). Ces réformes ont également pour objectif d'abolir les dérogations existantes qui sont spécifiques à chaque pays et de les remplacer par des règles applicables à l'ensemble des États membres.

En tant que partie de la préparation de ces propositions de réformes, la Commission a sollicité de notre part une investigation de l'impact d'une telle « flexibilité améliorée » sur le fonctionnement du marché unique dans un contexte pluri-juridictionnel, incluant l'émergence possible de distorsions, le risque de concurrence fiscale néfaste ainsi que les conséquences sur la simplicité et l'efficacité du système de TVA dans son ensemble (aussi bien dans les juridictions individuelles qu'au niveau intracommunautaire).

### Contexte

Les systèmes de TVA des États membres sont actuellement régis par la Directive TVA, acceptée sur la base de l'article 113 du traité sur le fonctionnement de l'Union européenne (TFUE). La Directive TVA définit un certain nombre de règles générales sur les taux de TVA. Celles-ci incluent :

- Articles 96 et 97 : les États membres doivent appliquer un taux standard, qui ne doit pas être inférieur à 15% (la Directive ne spécifie pas de limite maximale).
- Articles 98 et 99 : les États membres ont la possibilité d'appliquer au plus deux taux réduits, pas inférieurs à 5%, à des catégories spécifiques de biens et services qui sont énumérées dans l'annexe III de la Directive TVA. A titre d'exemple, ces catégories incluent produits alimentaires, la fourniture d'eau, les droits d'admissions aux événements sportifs et les soins médicaux.

Ces règles ont été conçues à l'origine comme un prélude à l'introduction d'un système de TVA final dans lequel une proportion significative des biens et services seraient taxables dans le pays d'**origine**, plutôt que dans le pays de **destination** où les biens et services sont finalement consommés. Bien qu'un système basé sur le principe d'origine ait de nombreux avantages, il crée aussi un risque de distorsion économique : une incitation pour les fournisseurs de venir de pays à plus faible imposition que les fondamentaux économiques hors-imposition dicteraient par ailleurs. De manière concordante, ce système crée un risque de concurrence fiscale : une incitation pour les États à baisser leurs taux de TVA afin d'encourager la délocalisation de fournisseurs et générer des revenus fiscaux supplémentaires. Une telle concurrence fiscale peut mener les gouvernements à réduire leurs taux de TVA pour combattre l'érosion de leur base fiscale, poussant tous les États membres à définir des taux de TVA plus bas que ce qu'ils préféreraient dans l'idéal. Les contraintes sur les taux qui font partie de la Directive TVA avaient pour objectif de prévenir et d'atténuer de tels risques.

En décembre 2011 par la « Communication sur l'avenir de la TVA - vers un système de TVA plus simple, plus robuste et plus efficace, adapté au marché unique » (COM(2011) 851), la Commission a signalé son intention d'abandonner l'objectif d'introduire un

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système de TVA basé sur le principe d'origine et, en lieu et place, de poursuivre l'objectif d'une implémentation complète d'un système basé sur le principe de destination.

La transition finale vers un système de TVA basé sur le principe de destination implique la fin des bénéfices de la délocalisation de la production vers des juridictions à faible taux, le pays du consommateur déterminant la TVA pour la plupart des biens et services et non le pays du producteur. La réduction résultante du risque de distorsion du marché unique pose la question de la pertinence des règles actuelles qui requièrent une certaine proximité entre les taux de TVA des différents États membres, ou si ces règles sont restrictives de manière injustifiée.

### *Options de réformes*

L'étude considère deux options de réformes, basées sur les options décrites dans le « Plan d'action sur la TVA » de la Commission (2016a) :

- **Option 1: Extension et révision régulière de la liste des biens et services éligibles aux taux réduits.** La liste des biens et services auxquels les taux réduits peuvent être appliqués serait étendue, incluant tous les taux réduits légalement actuellement appliqués. Le résultat serait une extension de toutes les dérogations spécifiques dont bénéficient certains pays à tous les États membres. La liste serait revue de manière périodique et mise à jour par la Commission en consultation avec les États membres, assurant que la liste reflète les priorités politiques prépondérantes. Les autres aspects du système (tels que le taux TVA minimum standard de 15%, la possibilité d'utiliser deux taux réduits non inférieurs à 5%, et les exemptions sans possibilité de déduction de la TVA en amont sur certains types de fournitures) seraient maintenus. Notons qu'il serait possible d'implémenter l'Option 1 avec une sélection plus restrictive des dérogations existantes à étendre, ou avec une abolition des dérogations existantes, bien que nous n'ayons pas formellement analysés ces deux sous-options.
- **Option 2: Abolition de la liste.** La liste des biens et services auxquels des taux réduits peuvent être appliqués serait abolie, et les États membres libres de décider par eux-mêmes les catégories de biens et services attachées à chaque tranche d'imposition. Les États membres seraient libres de définir des taux standards et réduits aux niveaux qu'ils souhaitent, jusqu'à et incluant un taux nul. (Cette flexibilité pourrait être complétée par des restrictions bien choisies pour limiter les distorsions économiques). Au sein de cette option sont considérées trois sous-options qui concernent la flexibilité supplémentaire sur le choix par les États membres du nombre de tranches d'imposition :
  - Sous-option 1: au maximum trois taux réduits, en plus du taux standard (les taux existants super-réduits et les taux nuls compteraient dans cette règle, s'ils sont maintenus; les exemptions qui demeurent ne compteraient pas).<sup>3</sup> La flexibilité fournie par cette sous-option correspondrait à celle dont bénéficient actuellement tous les États membres sauf un (Irlande).
  - Sous-option 2: au maximum quatre taux réduits (les deux taux réduits actuels et deux nouveaux taux). Les taux existants super-réduits et les taux nuls compteraient dans cette tolérance, s'ils sont maintenus; les exemptions qui demeurent ne compteraient pas. Cette sous-option

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<sup>3</sup> Tout au long de cette étude nous identifions les fournitures « à taux nul » par celles pour lesquelles la TVA n'est pas appliquée mais pour lesquelles le producteur peut réclamer la TVA en amont, et les fournitures « exemptées » pour lesquelles la TVA n'est pas appliquée mais sans possibilité pour le producteur de réclamer la TVA en amont. Cette dernière catégorie comprend des activités à intérêt public (comme les services postaux, les soins médicaux et l'éducation) ainsi que d'autres activités identifiées dans la Directive TVA courante (comme les services financiers et les assurances).

correspond au nombre minimal de tranches d'imposition supplémentaires requises pour reproduire tous les systèmes de TVA des États membres avec un scénario de flexibilité améliorée.

- Sous-option 3: pas de contraintes sur le nombre de taux. Associé à la flexibilité dans les niveaux de taux et la classification des biens et services, cela permettrait aux États membres de définir des taux de TVA différents pour des produits différents sans restriction, menant à un niveau de changement potentiellement illimité.

Notons que, dans la mesure où cette étude est indépendante de l'analyse d'impact qui va être formellement préparée par la Commission, les définitions précises de ces options peuvent être différentes dans cette étude et dans l'analyse d'impact.

### *Objectifs des réformes*

Ces options de réformes des systèmes de TVA de l'Union européenne sont évaluées en référence à six objectifs principaux :

7. **Augmenter la subsidiarité** en fournissant aux États membres une plus grande autonomie dans la définition de leurs systèmes de TVA;
8. **Promouvoir le traitement égalitaire des États membres** en créant un ensemble de règles qui s'appliquent de la même manière dans toutes les juridictions, par opposition aux dérogations spécifiques à chaque pays du système actuel;
9. **Limiter les distorsions économiques**, où « distorsion économique » est défini comme la délocalisation d'une activité économique d'une juridiction à l'autre pour des simples raisons de différence de régime de TVA, pénalisant d'une telle façon la neutralité de la TVA en matière de décisions des entreprises;
10. **Minimiser la complexité et les coûts** en maintenant le système de TVA à travers l'Union européenne simple à comprendre pour les entreprises et simple à appliquer pour les gouvernements;
11. **Éviter les contentieux entre États membres et l'UE** provenant de l'incertitude ou du manque de flexibilité des règles communautaires; et
12. **Protéger les revenus de la TVA de la pression domestique** qui peut résulter d'un retrait de règles communautaires.

Notons que, dans la mesure où cette étude est indépendante de l'analyse d'impact qui va être formellement préparée par la Commission, les définitions précises de ces objectifs peuvent être différentes dans cette étude et dans l'analyse d'impact.

### *Méthodologie*

Cette étude évalue l'impact potentiel des options de réformes du système de TVA de l'UE mentionnées ci-dessus, au regard des objectifs principaux. Cette analyse a été réalisée en premier lieu sur la base d'une étude de cas comportant un potentiel de délocalisation de l'activité économique et des revenus fiscaux, à savoir les cas où

- des différentiels de taux de TVA ou de prix existent entre États membres dans certaines catégories de biens et services; et
- le principe d'origine est toujours appliqué en pratique, malgré l'implémentation du principe de destination à cette date.

Ces études de cas sont complétées par des analyses de données de niveau supérieur, qui fournissent un soutien supplémentaire aux résultats de l'étude de cas.

Les cas où le principe d'origine est toujours mis en pratique et qui sont analysés dans cette étude comportent :

- Achats transfrontaliers;

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- Vente à distance en-dessous de certains seuils de volume d'affaires (à analyser également dans le cas de seuils alternatifs et dans le cas de faible conformité avec les seuils courants);
  - Biens et services fournis aux touristes (voyages transfrontaliers);
  - Régime forfaitaire pour les agriculteurs;
  - Livraison intra-communautaire de biens d'occasion, de moyens de transports d'occasion, d'œuvres d'art, d'objets de collectionneurs et d'antiquités;
  - Livraison intra-communautaire de services d'entreprise à particulier (B2C) qui peuvent encore être imposés selon le principe d'origine aux consommateurs finaux;
  - Livraison intra-communautaire de services d'entreprise à entreprise (B2B) qui peuvent encore être imposés selon le principe d'origine aux autorités publiques et entreprises actives dans un périmètre échappant à la TVA.

### *Approche pour l'étude de cas*

Nous avons sélectionné les cas sur la base d'une analyse de risque. Trois hypothèses fondamentales ont été formulées sur les types de biens et services dont le différentiel de prix est le plus susceptible d'influencer la localisation de l'activité économique, où ainsi une plus grande flexibilité du système de TVA est le plus susceptible de générer des distorsions économiques entre États membres. Ces hypothèses sont les suivantes:

- Les biens et services à plus haute valeur sont plus susceptibles de générer des distorsions.<sup>4</sup>
- Les biens et objets pour un service qui sont plus facilement transportables sont plus susceptibles de générer des distorsions.
- Les biens et services homogènes (dans le sens où ils sont facilement comparables et remplaçables pour le consommateur) sont plus susceptibles de générer des distorsions.

Bien que la pertinence de ces hypothèses soit la plus évidente dans le cas d'achats transfrontaliers, ces hypothèses peuvent aussi être utilisées dans d'autres cas où le principe d'origine persiste en pratique. Par exemple, des ventes à distance pour un volume en dessous du seuil déclenchant la TVA sont plus probables quand des économies significatives par produit sont possibles, quand les biens sont faciles à expédier et quand les produits sont directement comparables avec ceux qui peuvent être achetés localement. Dans le cas du tourisme, l'« objet du service » est le touriste lui-même; et le degré auquel les différentes destinations sont interchangeables, du point de vue du touriste, va influencer le niveau de concurrence fiscale entre ces différentes destinations.

Le tableau ci-dessous fournit une hiérarchisation des biens et services de notre étude de cas selon les trois dimensions que sont valeur de transaction, transportabilité et homogénéité. Comme le tableau en témoigne, nous avons sélectionné des cas couvrants un grand nombre de situations où le principe d'origine persiste encore.

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<sup>4</sup> Notons que des biens ou services de faible valeur peuvent être acquis en même temps, résultant en un produit groupé de plus grande valeur, bien que les groupements de biens physiques réduisent leur facilité de transport.



## Couverture des hypothèses de l'étude de cas

Catégorie	Bien/Service	Valeur*	Portabilité**	Homogénéité**
<b>Produits alimentaires</b>	Panier de biens de consommation courante	Basse	Haute	Haute
<b>Essence véhicule</b>	1 litre de diesel	Basse	Haute	Haute
<b>Equipement médical</b>	Chaise roulante motorisée	Haute	Moyenne	Moyenne
<b>Joallerie</b>	Montre de luxe	Haute	Haute	Haute
<b>Electronique grand public</b>	Ordinateur portable	Moyenne / Haute	Haute	Haute
<b>Services médicaux-dentaires</b>	Couronne en porcelaine	Haute	Haute	Moyenne
<b>Coiffure</b>	Coupe femme (cheveux mi-longs)	Basse	Haute	Basse / Moyenne
<b>Vente à distance</b>	Textbook académique	Basse / Moyenne	Haute	Haute
<b>Tourisme</b>	Vacances plage/sport d'hiver	Moyenne / Haute	Haute	Moyenne
<b>Régime forfaitaire agriculture</b>	Fournitures agricoles (pesticides, semences, etc.)	Basse / Medium	Moyenne	Basse / Moyenne
<b>Biens d'occasions</b>	Œuvres d'art Voitures d'occasion	Haute	Haute	Moyenne

Source: recherche de terrain et analyse

\* Valeur: codé comme basse (<EUR 100), moyenne (EUR 100 – EUR 1000) ou haute (>EUR 1000).

\*\* Portabilité et homogénéité sont des catégories définies par jugement plus que par chiffres; ces classifications ont une base plus subjective et sont sujettes à débat.

## Résultats de l'étude de cas

Le tableau ci-dessous résume les résultats de l'étude de cas, montrant à la fois les éléments de preuve que nous avons découvert dans chaque cas ainsi que le niveau d'impact observé.

Catégorie	Bien/Service	Eléments de preuve	Niveau d'impact
<b>Produits alimentaires</b>	Panier de biens de consommation courante	Un peu	Limité
<b>Essence véhicule</b>	1 litre de diesel	Un peu	Un peu
<b>Equipement médical</b>	Chaise roulante motorisée	Limité	Aucun
<b>Joallerie</b>	Montre de luxe	Limité	Aucun
<b>Electronique grand public</b>	Ordinateur portable	Un peu	Limité
<b>Services médicaux-dentaires</b>	Couronne en porcelaine	Un peu	Un peu
<b>Coiffure</b>	Coupe femme (cheveux mi-longs)	Limité	Limité
<b>Vente à distance</b>	Textbook académique	Un peu	Un peu
<b>Tourisme</b>	Vacances plage/sport d'hiver	Limité	Un peu / Substantiel
<b>Régime forfaitaire agriculture</b>	Fournitures agricoles (pesticides, semences, etc.)	Limité	Limité
<b>Biens d'occasions</b>	Œuvres d'art Voitures d'occasion	Un peu	Un peu / Substantiel

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Achats transfrontaliers : les seuls cas que nous avons observé qui démontrent un degré plus important que « limité » d'achats transfrontaliers pour raison de prix sont l'essence pour véhicules et les services médicaux-dentaires. Dans les deux cas, les différences de prix de l'offre sont plus larges que ce que nous pourrions attendre de la seule augmentation de la flexibilité des taux de TVA (tiré par les droits d'accise et le coût du travail, respectivement), de manière significative.

Vente à distance : Il y a une préoccupation dans les juridictions à haute TVA (comme la Hongrie et le Danemark) sur les achats à distance dans les autres États membres, où les vendeurs tombent sous le seuil d'enregistrement pour les ventes à distance, ou simplement ne le respecte pas. Étant donnée la croissance de la vente en ligne, la vente à distance semble poser un plus grand risque de distorsion économique que les achats transfrontaliers physiques. De la manière la plus évidente, les coûts de réalisation des achats par vente en ligne sont généralement plus bas que ceux de déplacements vers une autre juridiction, et ces coûts n'augmentent généralement pas avec la distance jusqu'à la frontière (ce qui limite le nombre de personnes qui ont une incitation forte aux achats transfrontaliers physiques). Des moyens efficaces pour faire respecter les règles d'enregistrement par les vendeurs en ligne seront nécessaires. La réduction du seuil d'enregistrement pour la vente à distance évoquée par les propositions de la Commission en décembre 2016 devrait faciliter la détection des vendeurs non conformes par les autorités fiscales, et l'extension du mini-guichet unique (MOSS) à tous les achats en ligne va diminuer les coûts de mise en conformité avec les règles de TVA pour les entreprises. Néanmoins, les propositions pour une plus grande flexibilité devraient considérer (i) les incitations supplémentaires aux achats en ligne dans d'autres États membres que va créer la différence de taux d'impositions, (ii) la différence parmi les États membres dans la capacité à faire respecter les seuils d'enregistrement, et (iii) les différences de culture de conformité avec les règles fiscales entre les États membres.

Tourisme : Un grand nombre de pays de l'UE appliquent des taux réduits pour les services aux touristes, dans la mesure où cela est permis par le système TVA de l'UE. Cet état de fait est en partie dû à la base fiscale et l'élasticité de la demande pour les services touristiques, qui sont respectivement perçus comme étant mobile et large, ainsi que par une décision réfléchie de certains États membres de promouvoir le secteur touristique. Un certain nombre d'études identifie de possibles gains économiques et fiscaux substantiels pour chaque État membre baissant individuellement son taux de TVA sur les services aux touristes. Dans la mesure où les gains potentiels d'une réduction de la TVA dans un pays donné sont élevés parce ces réductions permettent à ce pays de prendre des parts de marché d'autres pays de l'UE, une raison est présente pour une action de l'UE prévenant un nivellement par le bas.

Biens d'occasion : Le régime de la marge bénéficiaire pour les biens d'occasion crée déjà des incitations pour les vendeurs à se baser dans les juridictions à faible TVA. Les données empiriques suggèrent que ces incitations sont efficaces. Une augmentation de la flexibilité du système de TVA risque d'accroître ces incitations. Ainsi, une réforme du régime de la marge bénéficiaire pour les biens d'occasions devrait être considérée en même temps que les propositions de réformes du système de TVA de l'UE dans son ensemble. Une solution possible serait d'introduire un principe de destination pour la taxation des marges sur les ventes d'objets usagés (aussi bien pour les vendeurs que leurs agents), au-dessus d'un certain seuil.

#### *Evaluer les options de réformes*

Les deux options (et trois sous-options) de réformes du système de TVA de l'UE décrites plus haut peuvent être décomposées en trois éléments :

1. Niveaux d'imposition tolérés;
2. Nombre de tranches d'imposition tolérées; et
3. Biens et services éligibles pour chaque tranche d'imposition.

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*Niveaux d'imposition tolérés:* Notre étude de cas indique que le volume d'achats transfrontaliers est en général limité, malgré des économies potentielles substantielles, sauf pour certaines catégories de biens et services où des économies sur le prix de 20% ou plus sont possibles. Comme le montre notre analyse macroéconomique plus large, ce phénomène peut s'expliquer par les coûts de déplacement, qui en général sont plus grands que les gains liés aux achats transfrontaliers, sauf pour un groupe restreint de personnes vivant à grande proximité d'une juridiction à bas prix. Néanmoins, les achats transfrontaliers de petits montants (<EUR 100) motivés par des différences de TVA commencent à devenir rationnels pour la majorité de la population vivant près des frontières dès que les taux de TVA diffèrent de 20% ou plus, bien que l'effet reste limité pour la population dans son ensemble. Tandis que les ménages à plus fort pouvoir d'achat sont plus susceptibles de faire souvent des achats onéreux, ce secteur de la population est également moins enclin à faire des déplacements pour des achats, parce qu'il attribue souvent plus de valeur aux temps pour les loisirs. Ce phénomène est confirmé par la revue de la littérature. Cependant, une plus grande attention est requise sur certaines catégories de biens et services qui sont plus exposées au risque d'achat transfrontaliers.

*Nombre de tranches d'imposition tolérées:* L'introduction de tranches d'impositions de TVA supplémentaires amène des difficultés pour les entreprises non seulement en termes de facturation, mais également en termes de comptabilité, archivage, suivi des évolutions de la législation, et ainsi de suite. Notre revue de la littérature et des analyses additionnelles indiquent que les coûts générés par ces difficultés sont significatifs, ce qui fournit des bonnes raisons aux gouvernements pour limiter le nombre de tranches d'imposition dans leurs systèmes de TVA. Le système courant de TVA de l'UE impose déjà des coûts de conformité d'environ 0.5% du chiffre d'affaire des entreprises de taille moyenne; et les systèmes qui internationalement ont un nombre plus grand de tranches d'imposition imposent des coûts encore plus larges. La charge est encore plus lourde pour les petites entreprises qui sont soumises à la TVA. Notre analyse indique que ces coûts peuvent croître de manière exponentielle avec le nombre de tranches d'imposition, en particulier pour les entreprises avec des chaînes logistiques et commerciales dans plusieurs juridictions. Les coûts administratifs pour les gouvernements sont eux aussi substantiels (nous estimons ces coûts pour le système à environ 1% des revenus de la TVA). Ces considérations indiquent que plus le nombre de tranches d'imposition est faible, plus le système de TVA est simple et plus le marché unique est efficace.

*Biens et services éligibles pour chaque tranche d'imposition:* Les données des études de cas montrent un faible volume d'achats transfrontaliers de biens et services où le montant des économies nettes sur le prix est bas (coiffure). Des différences de prix d'environ 20% ou plus peuvent dans certains cas stimuler les achats transfrontaliers, en particulier pour les biens quotidiens homogènes facilement transportables pour lesquels des substituts à plus bas prix ne sont pas disponibles facilement dans son propre pays (diesel). Là où des substituts à plus bas prix sont disponibles localement, les achats transfrontaliers sont moins probables (produits alimentaires). Pour les biens et services de plus grande valeur, où les économies potentielles sont plus larges, les observations sont mitigées. Quand l'achat peut se voir comme une nécessité et le différentiel de prix net large – comme dans le cas des traitements dentaires – un certain degré d'achats transfrontaliers s'observe. Par contre, un impact limité s'observe quand l'achat est discrétionnaire et le différentiel de prix net faible (électronique grand public et joaillerie). Il est toutefois possible qu'un différentiel de prix plus large, résultant d'une flexibilité illimitée dans la définition des taux de TVA, mènerait à un volume d'achats transfrontaliers plus large pour ces catégories de biens. De plus, ces biens pourraient être vulnérables aux ventes à distance où la TVA du pays de destination ne serait pas appliquée (soit légalement de par les seuils d'enregistrement, soit illégalement). Le tourisme est également vulnérable aux distorsions économiques, ce qui pourrait justifier une limite dans la flexibilité sur les taux de TVA pour les services aux touristes.

### Conclusion générale sur les options de réformes

En se basant sur les résultats de l'étude de cas, les revues de la littérature et des analyses supplémentaires, nous avons évalué les options de réformes du système de TVA de l'UE (et sous-options associées) en les confrontant aux six objectifs principaux décrits ci-dessus. Pour chaque objectif, une cotation a été attribuée à chacune des options et sous-options, comprise entre « --- » (impact négatif substantiel sur l'objectif) et « +++ » (impact positif substantiel sur l'objectif). De plus amples explications de la cotation sont fournies plus bas.

Objectif	Status quo	Option 1	Option 2.i	Option 2.ii	Option 2.iii
<b>Augmenter la subsidiarité</b>	--	-	++	++	+++
<b>Promouvoir le traitement égalitaire des EMs</b>	--	+++	++	+++	+++
<b>Limiter les distorsions économiques</b>	++	++	+[[+]	+[[+]	+[[+]
<b>Minimiser complexité et coûts</b>	++	+	-[-]	-[-]	---
<b>Eviter les contentieux entre EMs et l'UE</b>	--	0	--[-]	--[-]	--[-]
<b>Protéger revenus TVA des pressions domestiques</b>	++	+	--	--	---

#### Clés des mesures d'impact sur les objectifs:

+++ Impact positif substantiel    ++ Quelque impact positif    + Impact positif limité  
 --- Impact négatif substantiel    -- Quelque impact négatif    - Impact négatif limité  
 0 Impact négligeable

[+] Une cotation positive entre crochets reflète le fait que les risques de distorsions économiques associés à l'Option 2 dépendent d'une décision ou non de restreindre la flexibilité des taux d'imposition sur un petit sous-ensemble de biens et services à haut risque. De telles restrictions réduiraient le risque de distorsion économique (expliquant la cotation supplémentaire « + » dans ce cas)

[-] Une cotation négative entre crochets reflète le fait que les coûts de conformité et les risques de contentieux associés à l'Option 2 pourraient être atténués en limitant la flexibilité dans le choix des taux pour des catégories *prédéfinies* de biens et services (basées, par exemple, sur la Nomenclature combinée), plutôt que laisser chacun des États membres la possibilité de créer sa propre taxonomie de biens et services. Sans une telle mesure, une cotation négative supplémentaire s'appliquerait.

#### Status quo :

- *Augmenter la subsidiarité* (--): Le scénario de status quo obtient une cotation relativement faible sur les mesures de subsidiarité, parce qu'il implique une harmonisation substantielle des taux de TVA au sein de l'UE et ne permet qu'une flexibilité limitée pour les pays dans le choix des biens et services à taux réduit. Notons cependant que le scénario donne quand même la possibilité aux États membres de réduire les taux de TVA pour une large gamme de produits : les arrangements existants pour les taux réduits et les exemptions permettent aux États membres d'imposer la consommation moyenne finale d'une majorité substantielle de ménages à des niveaux plus bas que le taux standard.
- *Promouvoir le traitement égalitaire des États membres* (--): Bien que le scénario de status quo fournisse un jeu unique de règles applicables à tous les États membres, l'universalité de ces règles est pénalisée par la persistance de toute une série de dérogations propres à chaque pays.
- *Limiter les distorsions économiques* (++) : Avec un principe de destination, l'espace pour les distorsions économiques générées par le scénario de status quo est extrêmement limité. Notre recherche suggère que les achats transfrontaliers

motivés par un différentiel de TVA sont peu probables, sauf dans les cas où les différences de taux de TVA créent des différences de prix équivalentes aux différences de prix les plus extrêmes pour les produits soumis à accises qui prévalent entre certains États membres; de tels écarts de TVA sont peu probables avec le régime de TVA courant.

- *Minimiser la complexité et les coûts* (++) : Bien que les entreprises actives par-delà les frontières doivent encore supporter toute une gamme de taux de TVA (en particulier dans les pays qui bénéficient de dérogations), cette gamme et la définition des biens et services éligibles aux différents taux sont harmonisées de manière substantielle au niveau de l'UE. Cela mène à des coûts de conformité qui sont plus bas que ce qu'il est possible d'attendre avec des options augmentant la flexibilité.
- *Éviter les contentieux entre États membres et l'UE* (--): Les règles fiscales harmonisées au niveau de l'UE qui définissent les biens et services éligibles pour chaque taux de TVA ont souvent mené à des contentieux entre États membres et UE, venant du fait que les États membres ont cherché à appliquer des taux de TVA qui ne sont pas permis par la Directive TVA. Bien que nombre de problèmes aient été réglés et fassent partie de la jurisprudence de l'UE, le risque de contentieux persiste.
- *Protéger les revenus de la TVA de la pression domestique* (++) : La persistance d'une liste de biens et services pour lesquels des taux réduits sont possibles, associé à des seuils en-deçà desquels les taux ne peuvent pas descendre, offrent aux gouvernements une opportunité de résister à certains groupes de pression qui cherchent une baisse de la TVA qui dépasse certains niveaux. La limitation du nombre de tranches d'imposition réduit également la possibilité de lobbying, dans la mesure où les requêtes spéciales de groupes d'intérêts particuliers requièrent généralement la baisse du taux de TVA pour d'autres biens et services qui font partie de la même tranche d'imposition. Cela amplifierait le coût fiscal d'une telle mesure, rendant la requête plus difficile à justifier.

*Option 1 : Extension et révision régulière de la liste des biens et services éligibles aux taux réduits*

- *Augmenter la subsidiarité* (-) : Bien qu'une amélioration par rapport au status quo, les États membres se verraient encore contraints dans les choix des biens et services pouvant bénéficier des taux réduits. De plus, les minimas de 15%/5% pour les taux standards/réduits continueraient d'être appliqués, restreignant les niveaux de TVA que les États membres pourraient définir. Néanmoins, la revue et la mise à jour régulière de la liste, conformément aux requêtes des États membres, devraient atténuer dans une certaine mesure l'importance de la première de ces préoccupations, bien que l'impact sur la subsidiarité dépende au final du détail du processus de décision à introduire.
- *Promouvoir le traitement égalitaire des États membres* (+++) : Sous cette option, une harmonisation complète du système de TVA au niveau de l'UE serait effectuée, sans aucune exception pour un État membre. Fournir à tous les États membres un accès à toutes les dérogations existerait garantirait un traitement égal.
- *Limiter les distorsions économiques* (++) : De manière similaire au status quo, le risque de distorsions économiques générées par des différences de taux de TVA est limité. L'extension des dérogations existantes à tous les États membres ne devrait pas générer des différences de traitement de la TVA d'un État membre à l'autre suffisantes pour créer des distorsions économiques, étant donnée la nature relativement limitée de ces dérogations. Bien qu'une certaine pression pour baisser quelques taux au regard des changements soit possible (par exemple sur les vêtements pour enfants, pour lesquels s'appliquent un taux standard partout sauf en Irlande, au Luxembourg et au Royaume-Uni), l'impact global sur les revenus fiscaux de tels changements sera selon toute vraisemblance faible. Même

si des distorsions économiques pour motifs de fiscalité se manifestent, l'impact économique sera limité aux régions étroitement proches des frontières, étant donné le montant de la transaction nécessaire pour qu'un achat transfrontalier soit économiquement rationnel.

- *Minimiser la complexité et les coûts (+)*: L'Option 1 constitue une augmentation graduelle de la complexité, comparé au status quo. Néanmoins, si tous les pays prenaient avantage de toutes les dérogations permises, cela mènerait à une situation où tous les pays gèrent un taux standard, trois taux réduits et super-réduits, une tranche supplémentaire à taux zéro, ainsi qu'une catégorie de produits sur lesquelles la TVA en amont ne peut pas être réclamée, ce qui poserait des défis substantiels pour les entreprises et les administrations fiscales. Des définitions harmonisées de biens et services éligibles aux taux réduits, super-réduits et nuls atténueraient quelque peu cette complexité.
- *Éviter les contentieux entre États membres et l'UE (0)*: L'extension de la gamme de biens et services pour lesquels des taux réduits sont permis augmenterait le risque de contentieux entre États membres et UE, les premiers cherchant à tester les limites des nouvelles catégories introduites. Cependant, une mise à jour régulière de la liste des biens et services éligibles aux taux réduits donne une possibilité de clarifier les ambiguïtés présentes dans la liste, réduisant de telle façon le risque de conflit sur les définitions et les limites des différentes catégories. Par ailleurs, ce mécanisme devrait minimiser l'étendue de la zone de conflit entre Directive TVA et règles que les États membres veulent introduire, ce qui a historiquement été une source de contentieux entre États membres et UE.
- *Protéger les revenus de la TVA de la pression domestique (+)*: En augmentant le nombre de biens et services pour lesquels des taux réduits sont permis, l'Option 1 ouvre la porte à une plus grande pression domestique de réduction des taux sur des catégories particulières de biens et services. Ces effets seraient cependant bien loin des pressions à tous les niveaux qu'il est possible d'anticiper si la liste des biens et services éligibles aux taux réduits était tout simplement abolie.

#### *Option 2 : Abolition de la liste*

- *Augmenter la subsidiarité (++/++/+++)*: Les trois sous-options représentent un progrès substantiel en subsidiarité, les États membres étant libres de spécifier quels biens et services sont éligibles aux taux réduits et la différence de taux de TVA. La différence de cotation pour les sous-options reflète le niveau de flexibilité sur le nombre de tranches d'imposition permises dans chaque scénario. Notons en pratique que les États membres pourraient ne pas vouloir créer de systèmes de TVA avec plus de trois ou quatre taux réduits, les sous-options 1 et 2 pouvant alors être considérées aussi avantageuses que la sous-option 3. Notons également que des restrictions ciblées pourraient limiter la subsidiarité mais seulement de manière marginale, sous l'hypothèse que la gamme de biens et services soumises à restriction reste limitée.
- *Promouvoir le traitement égalitaire des États membres (++/+++/+++)*: Toutes les trois sous-options traitent les États membres de manière identique, puisque les mêmes règles sur les taux, tranches d'imposition et classification des biens et services s'appliqueraient dans toutes les juridictions. Notons cependant que la sous-option 1 ne permettrait pas aux États membres une implémentation de tous les arrangements existants sur la TVA, l'Irlande ayant actuellement quatre tranches d'imposition sous le taux standard (y compris sa tranche à taux nul), et devant par conséquent éliminer une de ses tranches. Les sous-options 2 et 3, par contraste, permettent à tous les États membres de perpétuer leurs arrangements du passé, s'ils le souhaitent.
- *Limiter les distorsions économiques (+[+]/+[+]/+[+])*: Notre recherche indique que les risques de distorsions économiques associés à une flexibilité totale des taux d'imposition se limitent à une gamme étroite de biens et services. Dans le cas d'une flexibilité totale sur les taux et dans la classification des biens et

services, nous nous attendons à ce que les questions de concurrence jouent un plus grand rôle dans les choix politiques et à ce que les délocalisations pour motifs fiscaux soient plus nombreuses qu'avec le régime actuel de TVA. Néanmoins, nos études de cas, revue de la littérature et analyses complémentaires suggèrent que ces effets resteraient à un niveau limité, dans la mesure où des différentiels de TVA proches des écarts d'accises courants les plus larges entre États membres sont nécessaires pour que les impacts soient substantiels. Pour cette raison, la cotation de l'Option 2 (comprenant ses trois sous-options) est un impact généralement positif sur les distorsions économiques (« + » par opposition au « ++ » du status quo). De plus, des limitations ciblées pourraient être introduites pour encadrer la flexibilité sur un petit nombre de produits à haut risque. Si des protections adéquates sont mises en place, le risque de distorsions économiques dans le cas d'une flexibilité totale ne devraient pas être matériellement plus grande que le status quo (« ++ »).

- *Minimiser la complexité et les coûts (-[-]/-[-]/---)*: Le désavantage principal de l'Option 2 par rapport à l'Option 1 est la complexité additionnelle qui est introduite dans le système de TVA à l'échelle de l'UE. Les entreprises actives par-delà les frontières devront s'affairer avec non seulement des taux de TVA différents, mais également des systèmes de classifications potentiellement très différents, les États membres pouvant parvenir à des conclusions différentes sur la question de quels biens et services doivent être éligibles pour quelles tranches d'imposition à la TVA. Il apparaît concevable que la définition des biens et services, et la manière particulière de trancher les questions de chevauchement, diffèrent dans chaque États membre, avec des variations d'une année à l'autre. Cependant, ces risques pourraient être atténués avec une harmonisation des définitions des catégories de biens et services au niveau de l'UE (par exemple en utilisant une taxonomie existante, telle que la Nomenclature combinée). Les sous-options 1 et 2 (qui permettent respectivement trois et quatre tranches d'impositions à taux réduit) reçoivent toutes les deux une cote de « quelques » impacts négatifs (ou impacts « limités » en cas de définitions harmonisées), bien que nous devons relever que la tranche d'imposition supplémentaire signifie des coûts plus large avec la sous-option 2 qu'avec la sous-option 1. Les coûts associés à la sous-option 3 seraient probablement prohibitifs, car ce scénario peut impliquer des taux de TVA différent pour chaque bien et chaque service (ou chaque catégorie de biens et services, si les classifications sont harmonisées) dans chacun des pays membres de l'UE-28. Certes, il est peu probable que les États membres choisissent un tel système extrême de TVA; cependant, le risque reste que des grands degrés de divergence dans les systèmes de TVA présente une barrière au commerce intra-communautaire, pénalisant le bon fonctionnement du marché unique.
- *Eviter les contentieux entre États membres et l'UE (--[-]/--[-]/--[-])*: Placer la responsabilité des décisions des taux et de classification de biens et services au niveau des États membres devrait réduire de manière substantielle le risque de conflit entre choix politique des États membres et la Directive TVA elle-même. Cependant, ces bénéfices doivent être évalués au regard du risque d'États membres délibérément ou accidentellement contrevenant aux dispositions du TFUE visant à empêcher les aides d'états et le protectionnisme, ainsi qu'au principe de neutralité de la TVA qui a été établi dans la jurisprudence sur la TVA. Ainsi, le risque de contentieux peut être plus grand qu'avec le scénario de status quo et celui de l'Option 1, dans la mesure où les règles de la Directive TVA sont relativement clairement définies en comparaison des principes généraux présentés dans le TFUE. Ce risque pourrait être réduit avec une harmonisation des définitions des catégories de biens et services au niveau de l'UE, à un niveau d'abstraction approprié pour empêcher les États membres de faire une discrimination arbitraire entre produits comparables. Une telle harmonisation

pourrait réduire l'impact négatif sur le risque de contentieux de « substantiel » à « quelque ».

- *Protéger les revenus de la TVA de la pression domestique (--/--/---)*: La flexibilité supplémentaire qu'amènent chacune des trois sous-options expose les gouvernements à de plus amples efforts de lobbying par les groupes industriels, puisque les obstacles légaux intracommunautaires aux changements de taux ou de classification disparaissent. Bien que des restrictions ciblées sur les produits à haut risque puissent fournir quelques limites légales intracommunautaires, celles-ci ne sont pas attendues pour une gamme particulièrement large de produits. La vulnérabilité aux pressions domestiques serait particulièrement forte sans limites sur le nombre de tranches d'imposition qu'un pays peut mettre en place : les lobbyistes pourraient alors proposer un taux particulier pour un produit particulier, ou même exiger une trajectoire particulière du taux pour un produit donné à travers le temps.



## 1. Introduction

### 1.1 Context of the study

As stated in its 'Action Plan on VAT', in 2017 the Commission aims to outline the key principles and design features for a simple, efficient and fraud-proof VAT regime based on the country-of-destination principle (European Commission, 2016a). This will include reforms that would allow Member States greater autonomy in the composition of their domestic VAT systems (including rate-setting powers and possibly capacity to define which subsets of goods and services fall under which rate bands). These reforms also aim at abolishing the existing country-specific derogations and replacing them with rules applicable to all Member States.

As part of the preparation for these policy proposals, the Commission has requested that we investigate the impact of such "enhanced flexibility" on the proper functioning of the internal market in a multi-jurisdictional context, including the distortions that may arise, the risk of harmful tax competition, and the ramifications for the simplicity and efficiency of the VAT system as a whole (both in individual jurisdictions and intra-EU).

#### 1.1.1 Existing EU VAT system and rationale

Member States' VAT systems are presently regulated by the VAT Directive, agreed on the basis of Article 113 of the Treaty on the Functioning of the European Union (TFEU). The VAT Directive sets out a number of general rules on VAT rates. These include:

- Articles 96 and 97: Member States shall apply a standard rate, which may not be lower than 15%. (The Directive does not specify any maximum limit.)
- Articles 98 and 99: Member States have the option of applying a maximum of two reduced rates, not lower than 5%, to specific categories of goods and services, which are listed in Annex III of the VAT Directive. Examples of these categories include foodstuffs, water supplies, admission to sporting events, and medical care.

These rules were originally conceived as a prelude to the introduction of a definitive VAT system in which a significant proportion of goods and services would be taxable in the country of **origin**, rather than the **destination** country in which goods and services were ultimately to be consumed. While an origin system has a number of advantages, it also creates a risk of economic distortion: an incentive for supplies to originate in lower tax jurisdictions than the pre-tax economic fundamentals would otherwise dictate. Correspondingly, it creates a risk of tax competition: an incentive for states to lower VAT rates to encourage supplies to relocate to these jurisdictions, thereby providing the government with a higher aggregate level of VAT revenues than they would otherwise have received. Such tax competition could lead governments to reduce their VAT rate to prevent the erosion of their VAT base, leading to all Member States charging lower levels of VAT than they would ideally prefer. The constraints on VAT rates contained in the VAT Directive were intended to forestall or mitigate these risks.

#### 1.1.2 Derogations

In addition to the simple rules outlined above, the EU VAT system contains a large number of derogations. Some of these were granted to certain Member States (for example, reflecting legacy arrangements); others were granted to all Member States.

- Particular provisions (Articles 102 to 105 of the VAT Directive): These articles include a variety of provisions allowing some or all Member States to apply a reduced rate to supplies of goods and services other than those of Annex III (supply of natural gas, electricity and district heating; imports of works of art,

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collectors' items and antiques) or to apply lower rates to some remote geographical areas (such as the Azores and Madeira).

- Special provisions (Articles 109 to 122 of the VAT Directive): These provisions are similar in structure to the aforementioned derogations, albeit time-bound in nature. The special provisions remain in force until the adoption of the definitive VAT regime, and they include measures to allow Member States to keep legacy arrangements such as zero rates and super-reduced rates (Article 110).<sup>5</sup> The main objective of these derogations was to facilitate the transition towards a uniform EU-wide VAT regime.
- Temporary provisions (Articles 123 to 130 of the VAT Directive): These articles gave particular named new Member States the right to certain time-bound exceptions to the rules of the EU VAT regime, though these have now all expired.

These derogations are legislatively complex. In several cases they refer to status quo situations prevailing in Member States at the point at which they joined the European Union, rather than spelling out precisely what arrangements are permissible for which countries in the text of the VAT Directive itself. For example, Article 110 states that "Member States which, at 1 January 1991, were granting exemptions with deductibility of the VAT paid at the preceding stage or applying reduced rates lower than the minimum laid down in Article 99 may continue to grant those exemptions or apply those reduced rates". Moreover, these derogations have been further refined and re-specified by case law, both at the level of individual Member States and at the level of the EU.

Overall, such derogations undermine the simplicity and coherence of the EU VAT system and contradict the principle of equal treatment of Member States. Where particular Member States have been granted individual derogations, this introduces the possibility of economic distortions that undermine the proper functioning of the internal market. As a result, there has been pressure from some Member States to grant further, matching derogations from the regime.

Even leaving aside these problems, however, the majority of derogations that remain in force are due to expire upon the adoption of a definitive EU VAT regime, currently scheduled for 2022. A modernised VAT rates policy is an essential component of that definitive regime. Consequently, the EU's reformed VAT policy must either allow sufficient flexibility to enable Member States to maintain their existing derogations, or face the political obstacles associated with prohibiting what are in many instances long-standing policy practices.

### **1.1.3 Recent developments in the EU VAT system and the rationale for change**

In December 2011, with the "Communication on the future of VAT – Towards a simpler, more robust and efficient VAT system tailored to the single market" (COM(2011) 851), the Commission signalled it was abandoning the previous policy objective of introducing a VAT system based on the origin principle, and instead proceeding towards full implementation of the destination principle. The European Commission's April 2016 adoption of an "Action Plan on VAT" reconfirmed the Commission's intention to put in place a definitive VAT system based on the destination principle, and to review the rules

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<sup>5</sup> Throughout this study, we describe as "zero rated" supplies on which no VAT is charged, but for which the supplier has the right to reclaim input VAT, and we describe as "exempt" those supplies on which no VAT is charged but for which the supplier cannot reclaim input VAT. This latter category includes activities in the public interest (such as postal services, health services, and education), as well as other activities as specified in the current VAT Directive (such as financial and insurance services).

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framing Member States' freedom to set VAT rates in light of the shift from an origin-based system to a destination-based system (European Commission, 2016a).

The phasing-in of the country-of-destination principle has taken place progressively over the last decade. Although some exceptions and anomalies persist, recent policy announcements by the Commission are intended to finalise the design of a destination-based regime, and strengthen its integrity. These developments include:

- the Commission's December 2016 e-commerce proposals, which feature an EU-wide threshold above which businesses making cross-border sales to final consumers must charge VAT on a destination basis, extension of the existing "One Stop Shop" mechanisms to facilitate compliance, and a single audit rule to ensure cross-border businesses are not subject to the cost of multiple tax audits by different tax authorities;
- the recent consultation (closed in March 2017) on the definitive VAT system for B2B supplies of goods, which aims to improve transitional arrangements to the definitive destination-based EU VAT regime, and finalise details of how the definitive VAT system will operate; and
- the recent consultation (closed in March 2017) on the special scheme for small enterprises under the VAT Directive, aimed at reducing the compliance costs of the definitive destination-based VAT regime for SMEs.

The move towards a definitive VAT regime based on the destination principle means that suppliers can no longer benefit from relocating to a jurisdiction applying low rates as it is the country of the customer and not the country of establishment of the supplier that determines the tax rules for most supplies of goods and services. The resulting reduction in the risk of internal market distortion raises the question whether the current rules on VAT rates, requiring a certain degree of alignment in rate levels amongst Member States, are still required, or whether they are unnecessarily restrictive. Indeed, the Treaty on the Functioning of the European Union (TFEU) stipulates that EU-level harmonisation of indirect tax legislation should only occur "to the extent that such harmonisation is necessary to ensure the establishment and the functioning of the internal market and to avoid distortion of competition" (Article 113).

Improving Member State fiscal autonomy in line with the principle of subsidiarity, without sacrificing the proper functioning of the internal market, is not the only potential benefit of enhanced flexibility under a destination-based regime. It would also remove the need for Member States to request changes in the VAT directive on an *ad hoc* basis, for example, by requesting continual expansions to the list of products and services that qualify for reduced rates. Furthermore, it may also reduce the need for time-consuming and expensive infringement proceedings where Member States introduce changes in national VAT legislation that are not compatible with EU law.

## 1.2 Aims of the study

This study assesses the potential impact of various **options for reform** of the EU VAT regime, in light of a series of overarching **reform objectives**. Note that, as this study is independent of the formal Impact Assessment that will be prepared by the Commission, the options and objectives considered here may differ from the proposals ultimately assessed in that document. Our analysis has been conducted primarily on the basis of case study research into current instances where there is scope for distortion in the location of economic activity and tax revenues, i.e. cases where

- significant VAT differentials, and/or pricing differentials, exist between Member States on certain categories of goods/services; and
- the **origin principle still applies in practice**, despite the implementation of the destination principle to date.

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These case studies have been supplemented by additional higher-level data analyses, which provide further support to our case study findings.

### 1.2.1 Options for reform

In the 'Action Plan on VAT', the Commission specified two overarching options for modernising VAT rates policy:

**Option One: Extension and regular review of the list of goods and services eligible for reduced rates.** The list of goods and services to which reduced rates can apply would be broadened, incorporating all current legally applied reduced rates. As a result, all existing country-specific derogations would be extended to all Member States. The list would be periodically reviewed and updated by the Commission in consultation with the Member States, ensuring that it reflected prevailing political priorities.

Other aspects of the regime (such as the minimum standard VAT rate of 15%, the option of applying two reduced rates no lower than 5%, and exemptions without the right to deduct input VAT on certain types of supply) would be maintained. Nevertheless, note that in practice the extension of all existing derogations to all Member States may complicate this structure (for instance, extension of existing "zero-rate" derogations, such as the zero-rate on children's clothing and footwear currently applied in Ireland and the UK, would necessitate a sub-5% reduced rate, and may also necessitate an additional rate band).

Note that it would be possible to implement Option One with a more selective extension of existing derogations, or with the abolition of existing derogations. While we have not formally assessed these suboptions, they would involve a somewhat different trade-off between the various reform objectives.

**Option Two: Abolition of the list.** The list of goods and services to which reduced rates can be applied would be abolished, and Member States would be permitted to decide for themselves which goods and services should be placed within which rate bands. Member States would be free to set standard and reduced rates at whatever levels they see fit, down to and including a zero-rate band. (This flexibility might be supplemented by some targeted restrictions to limit economic distortions.)

Such reforms may or may not be accompanied by additional flexibility in the *number* of rate bands that Member States are permitted to deploy. To match existing derogations, a minimum of four additional rate bands would be necessary (as well as a category of exempt supplies upon which VAT is not charged, but with respect to which input VAT cannot be recovered). Conceivably, a reformed VAT regime may involve fewer bands or more bands – even, at the limit, no limit on the number of rate bands that countries are permitted to set, leading to the possibility of different rates for every type of good and service sold.

### 1.2.2 Objectives of reform

We will assess the reform options outlined in section 1.2.1 above, as well as the current VAT regime, in terms of six overarching reform objectives:

1. Enhance subsidiarity;
2. Promote equal treatment of Member States;
3. Limit economic distortions;
4. Minimise complexity and cost;
5. Prevent litigation between Member States and the EU; and
6. Protect VAT revenues from domestic pressures.

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### 1.2.2.1 Enhance subsidiarity

The reform of the EU VAT regime is intended to bring the existing system in-line with the principle of subsidiarity: the requirement that action at the EU level be taken only if, and in so far as, objectives cannot be achieved by Member States acting themselves. VAT policy offers Member States an effective tool for shaping the revenues necessary to fund public spending. It can also act as a broader instrument for economic, cultural and social change, both by altering incentives for certain types of consumption, as well as expressing a collective view on what kinds of goods and services should be privileged by the tax system.<sup>6</sup>

The current VAT rules prevent Member States from adapting their VAT systems easily. Restrictions on the level of rate reductions possible, and the kinds of goods that are eligible for reduced rates, limit Member State autonomy. Granting exceptions to these rules is slow and difficult, as all such exceptions require unanimity among the EU28. Reform of these rules should thus allow Member States greater autonomy.

### 1.2.2.2 Promote equal treatment of Member States

At present, some Member States enjoy a number of derogations from the EU VAT regime, enabling them to apply rates below those in the EU-wide rules on a number of goods and services. This unequal treatment has seen other Member States call for matching or additional derogations. A new system of EU VAT rates could remove or minimise the need for such derogations, leading to fair treatment of all Member States.

### 1.2.2.3 Limit economic distortions

For the purposes of this study, we define “**economic distortion**” as **the relocation of economic activity between jurisdictions, motivated purely by differences in VAT regimes**, as opposed to other factors, such as lower costs or higher demand. This definition therefore includes responses to tax regimes by both consumers and businesses, and a wide range of possible activities such as cross-border shopping, distance sales, and tourism. The relocation of economic activity is broadly beneficial to the country to which activity relocates, bringing with it both economic advantages (increases in employment, salaries, investment and growth) and fiscal advantages (increases in VAT receipts; increases in other revenues derived from the increase in economic activity, such as payroll and corporation taxes).

Under a destination-based VAT regime, the scope for economic distortion is limited, as consumers make purchases from domestic and international suppliers using the same (domestic) rate of VAT, and any VAT incurred by these suppliers is recoverable so VAT does not affect their commercial decisions either. However, scope for distortion of economic decisions through differences in VAT rates does arise through opportunities to engage in cross-border shopping, and other similar situations where the origin principle persists in practice. In these circumstances, the neutrality of VAT (when it comes to business decisions about where to locate and how to structure supply chains) can be compromised. This is not to say that all differences in VAT rates are illegitimate, or even that all differences in VAT rates are illegitimate to the extent that they distort the pattern of economic activity between jurisdictions. Leaving aside entirely closed economies, governments properly consider the need to attract investment and encourage economic activity when setting their tax policies, and may use tax policies to compensate for other aspects of their situation (such as lack of natural resources or lack of a sizable internal

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<sup>6</sup> See, for example, UK debates around the so-called “tampon tax”: <http://www.independent.co.uk/news/uk/politics/axe-tampon-tax-protesters-gather-outside-parliament-to-push-for-government-pledges-to-cut-vat-on-a7041516.html>.

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market). For the purposes of this study, we remain agnostic as to what level of distortion might be considered legitimate; we only note that limiting the scope for such distortions is a legitimate objective of VAT policy within the EU single market.

#### **1.2.2.4 Minimise complexity and cost**

Enhanced flexibility for Member States could mean greater complexity in the EU VAT system, particularly for businesses needing to operate across multiple jurisdictions. Understanding and applying a range of new VAT bands to calculations of both input and output VAT in all EU28 countries could significantly increase VAT compliance costs for businesses, and administrative costs for governments.

This is particularly true should there cease to be a single unified list of goods and services eligible for different rates at an EU-wide level, and these classifications instead become a matter for individual national governments to define, and individual national legal systems to interpret. Simply staying up-to-date with existing VAT rules and rates could become increasingly onerous. The potential for litigation and associated legal costs will be vastly increased, both by the existence of different national taxonomies, and the fact that those taxonomies might be changed much more frequently than the relatively stable listing of goods and services in Annex III of the EU VAT Directive (and the interpretation of Annex III's contents through the accumulated clarifications of years of EU case law). Similar costs may be incurred by tax authorities, to the extent that Member States become responsible for collecting revenues on each other's behalf, and in accordance with each other's rules and rates.

This means that there may be a trade-off between subsidiarity and simplicity, although additional measures could be taken alongside changes in rates policy to mitigate increases in compliance costs. These might include live, centralised data regarding what rates apply to what items in each Member State, and an extension of the Mini One-Stop Shop ("MOSS") to all goods and services.

#### **1.2.2.5 Prevent litigation between Member States and the EU**

Differences in interpretation of the existing EU VAT rules (most notably, the question of whether particular goods and services should be considered eligible for reduced rates) has historically been a source of litigation between Member States and the EU. Added to this, the difficulty of updating the existing rules has meant that Member States have frequently found themselves in breach of the rules. To date, the Commission has opened more than 40 infringement proceedings, involving over two-thirds of the EU28.

Reforming the rules governing EU VAT rates would reduce the need for costly litigation between Member States and the EU. Note that any impacts on litigation at the domestic level is captured under the heading of "minimise complexity and cost", and these two criteria may pull in opposite directions: a scheme in which more details are left to Member States may reduce the scope for EU-level litigation, but may introduce additional complexity and compliance costs for businesses at the national level.

#### **1.2.2.6 Protect VAT revenues from domestic pressures**

The main threat to VAT revenues under enhanced flexibility arises from economic distortion, discussed in section 1.2.2.3 above: the threat of economic activity relocating to another jurisdiction can exert a downward pressure on VAT rates, resulting in reduced tax yields. However, enhanced flexibility does give rise to a further possible source of downward pressure, namely domestic factors. Currently, the restrictions on the products to which reduced rates can be applied, the lower thresholds for both standard and

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reduced rates, and the number of rate bands available, limit the scope for lobbying by any particular special interest group or industry sector. A special interest group cannot currently demand rate levels lower than the standard rate, unless its goods and services are eligible for reduced rates. Even representatives of retailers of reduced rate products are unable to demand a rate reduction for their specific goods and services without demanding a rate reduction for other goods and services within the same rate band – which increases the fiscal cost of any such reduction, and thereby provides governments with stronger arguments for rejecting the request.

As with all of the objectives of reform, different Member States may give different weight to this dimension of enhanced flexibility. The impact of these domestic pressures might not be seen as a negative at all, governments may feel sufficiently confident in their ability to reject such requests without recourse to an EU-level commitment mechanism, and/or subsidiarity may be thought to override any such considerations. Nevertheless, it is a factor of which policy-makers should be aware.

### 1.2.3 Origin principle

The move towards a definitive European VAT regime based around the destination principle has significantly limited the range of situations in which taxation is based on the VAT rules in the country of a supply's origin, as opposed to the final destination of goods and services. Instances where the origin principle still applies in practice that are explored in this study include:

- Cross-border shopping;
- Distance sales below certain turnover thresholds (to be analysed also in case of alternative thresholds and in the case of low compliance with the thresholds currently in place);
- Goods and services supplied to tourists (cross-border travel);
- Flat-rate scheme for farmers;
- Intra-Community supplies of second-hand goods and second-hand means of transport, works of art, collectors' items and antiques;
- Intra-Community B2C supplies of services that might still be taxed under the origin-based principle for final consumers;
- Intra-Community B2B supplies of services that might still be taxed under the origin-based principle to public authorities and businesses that carry out activities that are outside the scope of VAT.

Note that the origin principle also continues to apply in the case of services supplied by travel agents and tour operators under the tour operator margin scheme (TOMS). This is the subject of a separate study that is being conducted in parallel to the present project. The findings of that study, and of the Commission's wider consultation activities, should be factored into the assessment of options for reforming the EU VAT rates regime.

## 1.3 Structure of the report

This report presents the detailed findings of our case study research, as well as the rationale and methodology underpinning our approach. These case studies are then used alongside additional analysis as an evidence base for the assessment of options for reform of the EU VAT rates regime, as well as the possible risks associated with enhanced flexibility.

The remainder of the report is structured as follows:

Section 2 on "Case study approach" outlines both the rationale for and limitations of case study analysis as a means of investigating the distortionary potential of enhanced flexibility. It also discusses high-level hypotheses for the study as a whole, which has guided the selection of case studies.

Section 3 on “Case studies” explores the various scenarios in which the origin principle could still apply, through examining particular goods and services in particular country contexts. The subdivisions of this section include an explanation of the particular distortionary risk examined, an outline of the countries/goods/services examined and the rationale for selecting them, as well as the methodology adopted and the results of our research.

Section 4 on “Assessment of reform options” provides a detailed impact assessment for the key options for reform of the EU VAT rates regime currently under consideration. Our analysis focuses around the impacts of three key variables: the variation in rate levels permitted, the variation in the number of rates permitted, and the variation in which goods/services are eligible for which rate bands. Risks are assessed from the perspective of economic distortion and systemic complexity, drawing both on the case study results and broader macro-level data.



## 2. Case study approach

To provide an evidence base for assessing the impact of enhanced flexibility, we undertook case study analysis of current instances where there is scope for distortion in the location of economic activity and tax revenues, i.e. cases where

- significant VAT differentials, and/or pricing differentials, exist between Member States on certain categories of goods/services; and
- the origin principle still applies in practice, despite the implementation of the destination principle to date.

### 2.1 Pricing differentials

Our decision to focus on VAT differentials *and/or* pricing differentials between Member States in conducting our case study research, rather than focusing exclusively on VAT rates, is both deliberate and significant. In order to assess the impact of enhanced VAT rate flexibility on the proper functioning of the single market, we would ideally focus only on case studies involving large price differences driven by VAT rate differentials, or other similar tax mechanisms such as excise duties. However, because the existing VAT directive limits intra-Community differences in VAT rates for the vast majority of goods and services, this approach would result in testing either (i) small differences in price (relative to the differences that could occur under enhanced flexibility) or (ii) a limited range of goods and services (relative to some possible forms of enhanced flexibility), namely those that are currently subject to reduced, super-reduced or zero-ratings as a result of universally permitted discretion or individually negotiated derogations, or those which are subject to excise duties.

Therefore, to ensure that our case studies provide a more rigorous investigation of the implications of enhanced flexibility, we have broadened the remit of the study to include pricing differentials more broadly. The logic for this approach is as follows:

- we are seeking to explore the impact of enhanced flexibility in VAT rates on the functioning of the single market;
- the primary mechanism by which enhanced flexibility could conceivably undermine the functioning of the single market is by VAT differences leading to significant price differentials, which would then lead businesses and consumers to alter the location of particular transactions in order to capitalise on those VAT-driven price differentials;
- if we can find evidence that existing price differentials (whether VAT-driven or not) lead businesses and consumers to relocate economic activity in situations under which the origin principle still applies in practice, this would indicate that enhanced flexibility would offer Member States an incentive to distort the functioning of the single market under similar circumstances by lowering prices through reduced VAT rates;
- this could potentially result in harmful tax competition and increased complexity for both taxpayers and tax authorities;
- equally, if we can find evidence that existing price differentials lead to an immaterial level of relocation of economic activity in situations under which the origin principle still applies in practice, this may be understood as evidence<sup>7</sup> to support the hypothesis that enhanced flexibility could be introduced without disrupting the proper functioning of the single market.

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<sup>7</sup> Albeit not in itself conclusive evidence: see discussion in section 2.3 below.

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Note that pricing differentials that determine the location of economic activity are not necessarily indicative of distortion. Recall that we have defined economic distortion for the purposes of this study as “the relocation of economic activity between jurisdictions, motivated purely by differences in tax regimes”. Pricing differentials may be driven by factors such as availability of labour and skills, availability of labour-saving capital, economies of scale, etc., all of which would not distort the proper functioning of the single market. Indeed, the single market is intended to capitalise on such comparative advantages between Member States, and the EU has in the past endeavoured to encourage cross-border consumer activity for precisely this reason (European Commission, 2012).

It should also be noted that not all relocation of economic activity across borders is necessarily driven by price considerations. A range of other factors, including quality, availability, convenience, and language, may also influence consumer decisions. Further discussion of these factors can be found in section 3.1.1 below.

## 2.2 Rationale for a case study approach

The case studies in this project are designed to provide a concrete evidence base for future policy assessment by the Commission and individual Member States, by exploring real-world instances where distortions in the location of sales and tax revenues might be expected.

This approach contrasts with recent studies for the Commission where Computable General Equilibrium (CGE) models have been used to address questions such as the distributional implications of VAT reform (European Commission, 2013), or previous work on the reform of VAT rates (Copenhagen Economics, 2007).

There are four main reasons for eschewing a modelling approach in favour of case study research:

*Data availability.* Cases in which the origin principle still applies in practice are relatively limited, and will consequently be difficult to isolate and assess within nationwide and EU-wide macroeconomic models. By the same token, the data available for the construction of new models to assess these questions will also be limited, meaning that the results of any modelling exercise will depend heavily on the assumptions made. While some national authorities have attempted to collect data on issues such as cross-border shopping in the past, usually in response to specific problems (for example, the data on cross-border shopping with Germany historically collected by the Danish Ministry of Taxation), no systematic data exists at the EU level.

By contrast, a case study approach enables us to use whatever official data is available, while also factoring in other quantitative and qualitative research methods such as interviews with officials and experts, novel techniques such as analysis of business prevalence in border regions, and literature reviews embracing a diverse range of governmental, academic, and journalistic sources.

*Risk-targeting:* Limited data availability is related to another feature of our approach: namely, the limited and specific nature of the risks that we are assessing. The introduction of an EU-wide regime based on the destination principle restricts the risk of economic distortion to a particular set of scenarios. Nevertheless, the Commission has an obligation to look at the specific sectoral impacts of proposed reforms, as the costs that they impose on individuals and businesses working in particular industries in particular regions might be unacceptably high, even if such costs are negligible from an aggregate economic or fiscal perspective. A case study approach is a better tool for assessing such micro-level impacts, in situations which are small scale but high-risk for the parties involved, which may not be visible in macro-level models. This targeted

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approach permits an assessment of scenarios that present the highest risks, allowing us to evaluate the maximum distortions possible from a liberalisation of the VAT regime.

*Indeterminacy:* Enhanced flexibility has the potential to generate very diverse policy responses among Member States, dictated by domestic political considerations and perspectives, as much as by purely economic factors. This indeterminacy weakens the 'usability' and relevance of model-based simulations.

*Real-world impacts:* The case study approach allows us to focus on the real-world impact of pricing differentials, which (as discussed in section 2.1 above) enables us to assess the likely consequences of enhanced flexibility. By contrast, economic models necessarily simplify reality, and risk downplaying a range of experiential and difficult-to-quantify factors that may prove equally if not more decisive than cost considerations – such as customer experience, service quality, and consumer habit.

## 2.3 Challenges of a case study approach

### *Data availability and evidencing the null hypothesis*

Preliminary investigations indicated that there was extremely limited information available in the public domain for many of the cases under consideration. While this may in itself be evidence that the pricing differentials in question are unproblematic, we have sought to gather additional evidence to test this hypothesis. In addition to public domain searches, therefore, we requested additional information on the cases selected from competent authorities in individual Member States by means of questionnaires, and also consulted with tax experts and other relevant stakeholders.

Nevertheless, in most cases under consideration we discovered little or no additional evidence of any effect. This was in part due to limited response rates to questionnaires and interviews with stakeholders, but also because the majority of stakeholders that did respond – though aware of the issues – were not aware of any assessments of the magnitude of the effects.

*Governments and public officials:* While representatives of Member States were in general very cooperative, it was clear that in general they did not compile (or were unwilling to share) detailed data concerning cross-border shopping patterns and other possible distortions under consideration in this study. This may be indicative of the perceived difficulty of obtaining such data, as well as the relative significance of the problem. Interestingly, some Member States indicated that they were reviewing this situation, with a view to monitoring such activity more closely in future (this was particularly notable with regard to distance sales).

*Trade associations and businesses:* We received very low response rates from trade associations and businesses, and those responses we did receive lacked much in the way of hard data. Generally speaking, we would expect trade associations to produce reports and commission studies into situations where price or VAT differences were causing distress to their members, and the relative lack of such material (either direct from source, or identified through online searches, or through tax experts in other countries) provides some assurance as to the limited economic impact of the scenarios under consideration. Nevertheless, we recognise that this may also reflect difficulties in trade associations being able to collect relevant data, limited resources, or simple lack of awareness on the part of trade associations of the full range of challenges affecting their members.

In short, the lack of evidence of material impact in many of the cases studied may simply be because there is no material effect to be detected. To provide an evidence base for this conclusion, we have recorded the procedures conducted to collect data. This list of procedures can be considered as *provisional* evidence of the null hypothesis: namely, that pricing differentials do not materially impact on the location of economic

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activity in the cases examined. Admittedly, there is still a residual risk that additional investigations or alternative procedures would result in different conclusions, though this risk is limited by the range of qualitative and quantitative measures used, and the range of cases considered.

### *Inference from case studies*

Caution should also be exercised when drawing inferences from the particular case studies examined in our research to the wider categories of situation in which the origin principle persists. The coverage of the case studies we have selected is inevitably partial, and it may be that a different selection of cases would reveal different dynamics. While we have made our best efforts to select a range of cases that reflect the range of factors that we believe may be relevant – for example, in the category of cross-border shopping, differences in price, portability, and homogeneity of the goods and services in question – we cannot guarantee that these cases are reflective of the broader population of goods, services and industries that might be affected by enhanced flexibility. For example, it may be that the goods and services we have selected are subject to a particular set of non-price related drivers of consumer behaviour that render them atypical of the wider range of goods and services to which enhanced flexibility would apply; it may be that it is misleading to think in terms of a “typical” good or service altogether. Nevertheless, we have attempted to pick the hardest cases available to us, in particular addressing any cases where we are aware that there have been problems in the past. This is consistent with a risk-based approach, whereby the options for liberalising rate rules are evaluated on the basis of a reasonable assessment of potential outcomes rather than the (practically unachievable) complete certainty of the non-existence of any risk. As mentioned above, the aggregate-level risks of economic distortion resulting from any such liberalisation have already been reduced by the move to a destination-based VAT regime; our focus here is on the relatively limited set of situations in which the origin principle persists in practice.

A further important caveat is that our case studies focus on individual goods and services. It is conceivable, perhaps even probable, that pricing differentials across a range of goods and services, such as would arise under certain forms of enhanced flexibility, would have a greater aggregate impact on the location of economic activity than would be suggested by an examination of each of these goods and services in isolation. To give a concrete example, one might not cross the border simply in order to purchase a computer, get a haircut, or refuel one’s car. However, when enhanced flexibility offers the opportunity to do all three at once at a significant price reduction, and when retail outlets have arisen to capitalise on this demand and provide a convenient, attractive shopping experience, the “pull” factors may be much greater than the analysis of each of these three cases in isolation would suggest. We have attempted to explore this “bundling effect” by reference to studies conducted outside the EU, where we can evaluate the possibilities of indirect tax competition unconstrained by the VAT Directive’s overarching rules (see section 3.1.1 below). Moreover, we have conducted additional analysis of the overall VAT savings (whether through bundling or through purchase of individual high-value items) that would be necessary to incentivise cross-border shopping under enhanced flexibility (see section 4.3.1.3).

### *Analysis of control group*

In social scientific research, when seeking to quantify the impact of a particular “treatment” (for example, pricing differentials which could arise under enhanced flexibility) we would generally want to compare these cases with a “control” set of cases (for example, instances where there is little or no pricing differential on a particular good or service between countries). This would enable us to compare the impact of the treatment to a baseline, which could potentially show that a significant amount of variability in the location of transactions is driven by factors other than price.

However, given the expectation that the effects observed in both treatment and control cases will be limited, the difficulties in evidencing a lack of distortion (discussed above), and the need to provide enhanced flexibility with the most comprehensive scrutiny possible, we will instead focus on “difficult cases”: cases where preliminary research and theory indicate that distortion is most likely to arise. This is consistent with the Commission’s objective of evaluating the maximum distortions possible from a liberalisation of the VAT regime.

#### *Partiality of case study selection*

One of the most common weaknesses of a case study-based research method is that it can contain a bias toward verification rather than falsification, i.e. it can have a tendency to confirm, rather than refute, a researcher’s perceived notions (Flyvbjerg, 2006). We intend to overcome this weakness with a methodology for case study selection that explicitly attempts to identify potentially challenging cases for the claim that enhanced flexibility would have no material impact on the proper functioning of the single market.

## **2.4 Initial hypotheses informing case study selection**

We have selected case studies on a risk-targeted basis. We have formulated three overarching hypotheses about the kinds of goods and services for which pricing differentials are most likely to influence the location of economic activity, and thus where enhanced flexibility of the VAT regime is most likely to lead to economic distortions (in the sense of tax-motivated relocation of economic activity between jurisdictions) between Member States. These hypotheses are as follows:

*Higher value goods/services are more likely to be subject to distortionary effects.* The higher the value of the good or service in question, the greater the potential for tax-related savings, and thus the greater the incentive to “shop around” internationally. Note that not all high-value goods and services will be subject to pricing differentials within the EU at present, as the current harmonisation of the VAT regime limits the extent to which such differentials might arise. Consequently, we will try to select higher-value examples where pricing differentials currently exist (which may be driven by both tax and non-tax factors).

Note also that lower value goods/services may be purchased together, resulting in a higher value “bundle” of products, and thus a higher potential for distortionary effects (albeit mitigated by reduced portability). The existing EU VAT regime limits the scope for such bundling effects, as the most extreme VAT differences between countries are limited to the subset of goods and services eligible for reduced, super-reduced and zero rates. Nevertheless, certain of our procedures will be sensitive to bundling effects – for example, measures of business prevalence for supermarkets could indicate cross-border shopping for a range of foodstuffs, rather than any one specific item.

*More portable goods/objects of service are more likely to be subject to distortionary effects.* The cost (construed broadly, in terms of the money, time and inconvenience involved) of transporting goods and objects of service across borders will discourage businesses and consumers from relocating economic activity in order to benefit from pricing differentials. Ease of transportation is a function not just of the weight and size of the good/object of service (the approach taken in a 2007 study conducted by Copenhagen Economics for the Commission), but other factors such as the transportation infrastructure in border regions, availability and frequency of public transportation, proximity to border of existing areas of population density/retail facilities, traffic patterns, commuter trends, and so forth.

In the case of services, instances where the object of service is the individual consumer (for example, in the case of haircuts or dental treatment) are more likely to be subject to cross-border effects than where the object of service is harder to transport (such as a damaged bicycle, or faulty piece of consumer electronics, or broken sofa). Note also that vehicles might be easier to transport to a service location than a desktop computer, provided they are at least partially functional.

*Homogeneous (in the sense of "easily comparable") goods and services are more likely to be subject to distortionary effects.* Economic theory indicates that homogeneous goods and services, for which there is little or no differentiation in terms of features, benefits, and quality, will necessarily compete on price to a greater extent than non-homogeneous goods and services. This means that the location of their provision will be more sensitive to pricing differentials.

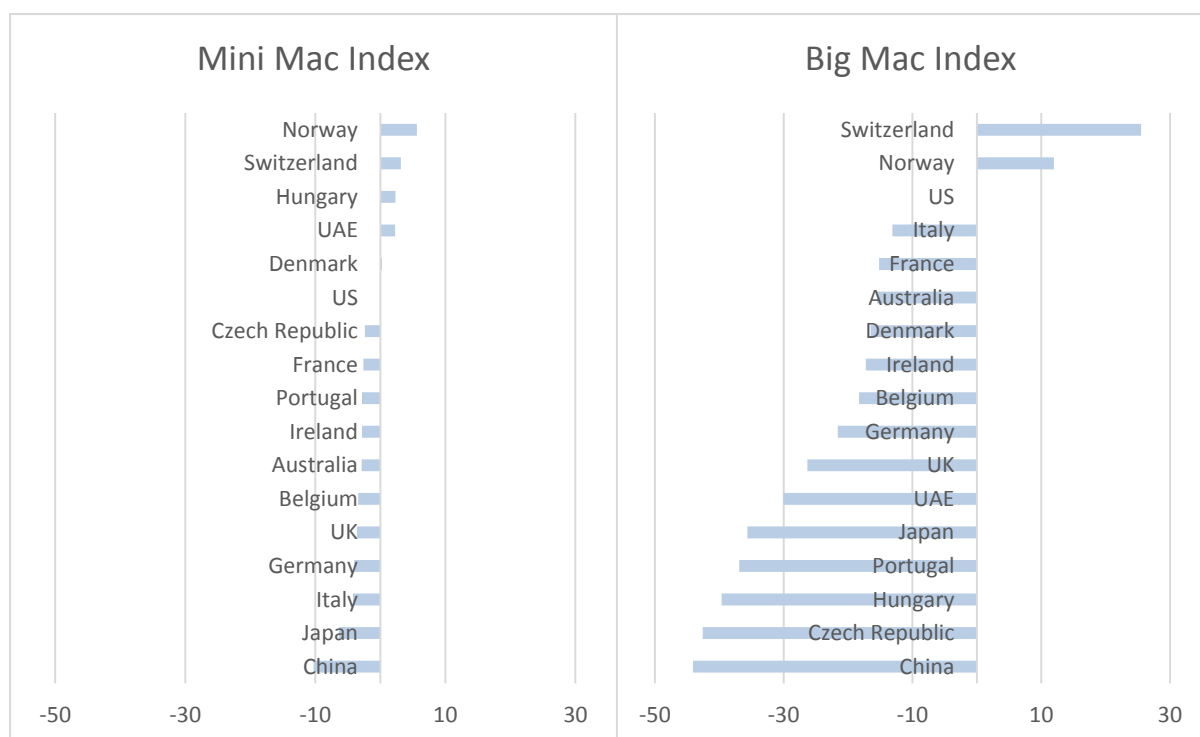


Figure 1: Mini Mac Index and Big Mac Index (price differences as a percentage, relative to US)

Source: Geo-Graphics, Council on Foreign Relations, 2017.<sup>8</sup>

Price, homogeneity and portability are all linked through the concept of *tradability*, a measure of the extent to which goods and services can be consumed in locations distant from where they were produced. A perfectly tradeable good has no associated transport or transaction costs, and should thus fetch the same price everywhere it is sold; a perfectly non-tradeable good could have wildly different prices in different locations, as goods in one location cannot be used as a substitute for the same goods in another location. While in reality, almost all goods and services exist on a continuum of tradability – for durable light goods, transportation costs will be minimal, whereas heavy perishable goods cannot economically be transported very far. The contrast can be seen between the Economist's "Big Mac Index", which compares the price of a McDonald's Big Mac in different jurisdictions, and Geo-Graphics' "Mini Mac Index", which compares the prices of an Apple iPad Mini. Burgers need to be consumed close to where they are cooked, limiting their tradability, whereas iPads can easily be transported and sold

<sup>8</sup> <http://blogs.cfr.org/geographics/2017/01/19/minimactrumpsbigmacindex/>. Prices are ex-VAT (see <http://blogs.cfr.org/geographics/2013/06/27/ipadminiindex/> for methodological discussion).

elsewhere. The comparison between prices of these two homogeneous products in different jurisdictions shows the impact of tradability on price convergence.

While our hypotheses regarding value, portability and homogeneity most obviously apply to cross-border shopping for goods and services, they can also be used to understand distortionary potential in other cases where the origin principle persists in practice. For example, distance sales below the turnover threshold for VAT are more likely where significant savings can be made per item, where goods are easy to ship, and where products are directly comparable with products that can be purchased domestically. For tourism, the “object of service” is the tourist herself, and the degree to which different destinations are interchangeable from the tourist’s perspective will influence the level of tax competition between them.

The table below ranks the goods and services featured in our case studies along the three dimensions of transaction value, portability, and homogeneity. As can be seen, we have selected our case studies to test all three hypotheses,<sup>9</sup> across a broad range of situations in which the origin principle still persists. The sample is however weighted towards (hypothetically) riskier products. In almost all instances, our focus is on VAT rates and pricing differentials on goods and services supplied to final consumers, as businesses and tradespeople can usually reclaim any VAT incurred in the normal course of their commercial operations.

**Table 1: Case study coverage of initial hypotheses**

Category	Good/Service	Value*	Portability**	Homogeneity**
<b>Foodstuffs</b>	Basket of fast-moving consumer goods	Low	High	High
<b>Vehicle fuel</b>	1 litre diesel	Low	High	High
<b>Medical equipment</b>	Powered wheelchair	High	Medium	Medium
<b>Jewellery</b>	Luxury wristwatch	High	High	High
<b>Consumer electronics</b>	Notebook computer	Medium/High	High	High
<b>Medical/dental services</b>	Porcelain crown fitting	High	High	Medium
<b>Hairdressing</b>	Women’s haircut (medium-length hair)	Low	High	Low/Medium
<b>Pharmaceuticals***</b>	Oral contraception	Low	High	High
<b>Boat wintering***</b>	Package of services	High	Low/ Medium	Medium
<b>Distance sales</b>	Academic textbooks	Low/ Medium	High	High
<b>Tourism</b>	Beach/winter sport holidays	Medium/High	High	Medium
<b>Flat-rate scheme for farmers</b>	Agricultural inputs (pesticides, seeds, etc.)	Low/ Medium	Medium	Low/Medium
<b>Second-hand scheme</b>	Works of art Used cars	High	High	Medium

Source: field research and analysis.

\* Value has been coded as low (<EUR 100), medium (EUR 100-EUR 1,000), and high (>EUR 1,000).

\*\* Portability and homogeneity are more judgemental categories than value. These classifications have a more subjective basis and are open to debate.

\*\*\* Case studies for pharmaceuticals and boat wintering services were only subject to preliminary analysis. See section 3.1.9 for further discussion.

<sup>9</sup> We also considered issues of durability, as highlighted by the economic literature on tradable and non-tradable goods. Theoretically, perishable goods are less likely to be purchased cross-border as consumers cannot benefit from bulk purchases of such goods. However, consumers could still benefit from pricing differentials on perishable items by bulk-buying multiple different categories of good, such as in a large weekly grocery shop.

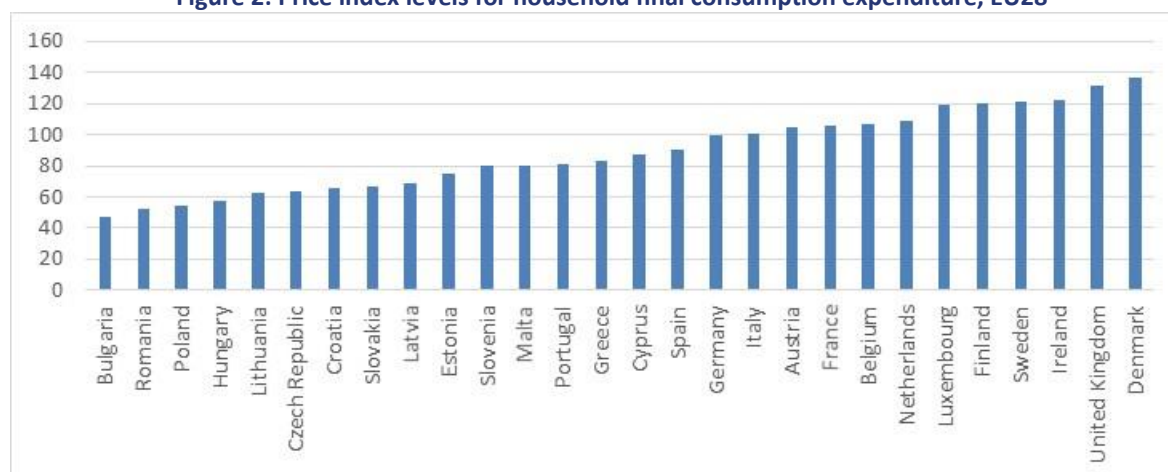
## 2.5 Selection of case study countries

The selection of country pairs and groups for case studies has been conducted using a risk-based approach: we have selected countries where there appears to be a high potential for pricing differences that could influence the location of economic activity. In the majority of cases (cross-border shopping, distance sales, second-hand goods and tourism) this will be the location of economic activity by final consumers.

We have targeted country pairs on the basis of risk using the following three metrics:

- **Pricing differences:** Gathering average pricing information for specific goods and services for all EU28 countries would be an extremely time-consuming task, and not necessarily help us identify pricing differences of most relevance for the purposes of the present study (e.g. pricing information in neighbouring border areas). Consequently, we used an aggregate-level index of the cost of living to identify likely price differences between EU member states, and risk-targeted country pairs where these differences are largest (see Figure 2 below).
- **VAT differences:** The European Commission regularly publishes information on VAT rates, including the application of reduced and super-reduced rates, in the EU28 (see Table 2 below). We targeted country pairs where VAT differences on the particular categories of goods and services in question are largest, both because these VAT differences could influence pricing, and because it would be an interesting finding in itself if these VAT differences fail to influence pricing. This includes both situations where there is a significant difference in standard VAT rates, and situations where one country has elected to apply reduced, super-reduced and/or zero rates whereas another has not.
- **Known issues:** Our preliminary investigations of sources (including previous studies performed by the Commission, conversations with stakeholders, and high-level internet searches) identified some cases where there were known issues with pricing differences influencing the location of economic activity across borders. Where possible, we sought to include these cases in our country selections.

Figure 2: Price index levels for household final consumption expenditure, EU28



Source: Eurostat, 2016.<sup>10</sup> EU28 average=100.

<sup>10</sup> [http://ec.europa.eu/eurostat/statistics-explained/index.php/Comparative\\_price\\_levels\\_of\\_consumer\\_goods\\_and\\_services](http://ec.europa.eu/eurostat/statistics-explained/index.php/Comparative_price_levels_of_consumer_goods_and_services)



Table 2: VAT rates in the EU28

Country	Standard rate	Reduced rate	Super-reduced rate	Parking rate
<b>Austria</b>	20	10/13		13
<b>Belgium</b>	21	6/12		12
<b>Bulgaria</b>	20	9		
<b>Croatia</b>	25	5/13		
<b>Cyprus</b>	19	5/9		
<b>Czech Republic</b>	21	10/15		
<b>Denmark</b>	25			
<b>Estonia</b>	20	9		
<b>Finland</b>	24	10/14		
<b>France</b>	20	5.5/10	2.1	
<b>Germany</b>	19	7		
<b>Greece</b>	24	6/13		
<b>Hungary</b>	27	5/18		
<b>Ireland</b>	23	9/13.5	4.8	13.5
<b>Italy</b>	22	5/10	4	
<b>Latvia</b>	21	12		
<b>Lithuania</b>	21	5/9		
<b>Luxembourg</b>	17	8	3	14
<b>Malta</b>	18	5/7		
<b>Netherlands</b>	21	6		
<b>Poland</b>	23	5/8		
<b>Portugal</b>	23	6/13		13
<b>Romania</b>	20	5/9		
<b>Slovakia</b>	20	10		
<b>Slovenia</b>	22	9.5		
<b>Spain</b>	21	10	4	
<b>Sweden</b>	25	6/12		
<b>UK</b>	20	5		

Source: European Commission, 2016. Rates as at 1 August 2016.<sup>11</sup> Note that Belgium, Denmark, Ireland, Malta, Finland, Sweden and the UK all also operate zero-rate bands on certain goods/services.

Additional factors have been considered for specific case studies. For example, for cross-border shopping for final consumers, or cross-border purchases of agricultural inputs by farmers using the flat-rate scheme, proximity is a key factor, as people must physically travel to a different jurisdiction in order to obtain the saving. These additional considerations are explained in more detail in the relevant subdivisions of section 3.

Having identified candidate countries using a risk-based approach, we sought to validate our selections with preliminary research into pricing differentials for the goods and services in question. Given our main interest is in whether pricing differentials influence the location of economic activity (as this is the means by which enhanced flexibility in the VAT regime could cause economic distortion in those few instances where the origin principle still persists in practice), we focused on cases where such pricing differentials exist. Nevertheless, as the question of whether or not (and to what degree) VAT changes are passed through to the final consumer is also relevant to assessing the impact of enhanced flexibility, we also considered some cases where there is little or no pricing difference, but where there was a substantial difference in VAT rates.

This risk-based approach has led us to focus on certain sets of countries to the exclusion of others. Notably:

<sup>11</sup> Note that these rates applied during the bulk of the data collection phase of this study (case study research was conducted between August 2016 and January 2017).

- **EU15 countries bordering new Member States** are emphasised in our case study selections, given the difference in cost of living between the two groups of countries.
- **Hungary and Luxembourg** feature prominently, as their standard VAT rates differ substantially from those levied in neighbouring countries.
- **Pairs of Scandinavian countries** are largely excluded, given similarity in both VAT rates and cost of living.
- **Member States joining the European Union from 2004 onwards** are generally not compared against each other, due to similarities in VAT rates and cost of living. The exception to this is Hungary, which has a notably higher VAT rate than its neighbours.

To provide a broader geographical spread, we have in some instances replaced first-choice country pairs (e.g. those with largest VAT or pricing differences, or with known issues) with alternatives.

Our selection of case study countries is as follows:

Table 3: Case study countries

Category				
<b>Foodstuffs</b>	Hungary – Romania	France – Spain	Austria – Slovakia	Austria – Czech Republic
<b>Vehicle fuel</b>	France – Luxembourg	Belgium – Luxembourg	Bulgaria – Greece	Italy – Slovenia
<b>Medical equipment</b>	Denmark – Sweden	Czech Republic – Poland	Germany – Poland	Germany – Denmark
<b>Jewellery</b>	Germany – Poland	Sweden – Cyprus	Austria – Hungary	Hungary – Slovakia
<b>Consumer electronics</b>	Germany – Denmark	Austria – Hungary	Netherlands – Germany	Belgium – Luxembourg
<b>Medical/dental services</b>	Germany – Poland	Germany – Czech Republic	Austria – Czech Republic	Austria – Hungary
<b>Hairdressing</b>	Belgium – Netherlands	Belgium – Luxembourg	UK – Ireland	Italy – Slovenia
<b>Pharmaceuticals*</b>	Germany – Poland	Austria – Czech Republic	UK – Ireland	Bulgaria – Greece
<b>Boat wintering*</b>	Croatia – Slovenia	Italy – Malta	Finland – Estonia	UK – Ireland
<b>Distance sales</b>	UK/Ireland – Germany	UK/Ireland – Netherlands	UK/Ireland – Denmark	
<b>Tourism</b>	Beach holiday destinations (Croatia, Greece, Portugal, Spain, Cyprus, Malta)	Winter sports holiday destinations (Germany, Austria, Finland)		
<b>Flat-rate scheme for farmers</b>	Germany – Luxembourg	Hungary – Slovenia	Lithuania – Poland	
<b>Second-hand scheme</b>	UK	Cyprus	Germany	

Source: field research and analysis.

\* Case studies for pharmaceuticals and boat wintering services were only subject to preliminary analysis. See section 3.1.9 for further discussion.

## 2.6 Overarching elements of case study research methodology

Due to the variety of situations in which the origin principle still persists in practice, the range of goods and services that might be implicated, and differing levels of data availability, there is no single standardised methodology that is appropriate to all our case studies.

Nevertheless, certain evidence-gathering procedures are common to many of our case studies. This section provides a brief overview of the kind of procedures we have conducted, as well as their advantages and limitations. In all instances, we have attempted to combine multiple methods to provide as comprehensive a picture as possible of the scale (or lack) of any distortions.

**Pricing differences:** In many cases, it has been necessary to establish whether or not there is a price difference between two jurisdictions, as well as its magnitude and direction. Difficulties arise as, for most goods and services there is not a single identifiable 'price' in a given jurisdiction, even for a standardised product or service. Prices will vary by retailer and location, and over time. In some instances, we have attempted to sample a variety of retailers (both via websites and direct inquiries); in some instances, we have used high-level data such as Eurostat Price Level Indices either to supplement or substitute for such concrete pricing information. Where we have obtained retail pricing information, there is a risk that these prices are not representative of the overall price levels prevailing in border regions. Nevertheless, evidence of substantial price differences is an important indicator of high potential for cross-border shopping.

**Literature reviews:** To the extent that issues relating to cross-border economic activity exist – whether they involve physical cross-border shopping for consumer goods (or agricultural inputs/used cars, in the respective cases of the flat-rate scheme for farmers and the margin scheme for second-hand goods), distance sales, or tax competition between tourist destinations – then it is likely that they will be reflected in publicly accessible reports, articles and publications. For each of our case studies, therefore, we have conducted a review of the relevant literature. Web search tools were used to identify prominent analysis and discussion of our cases online. To mitigate the risk of missing important documents, we also requested relevant articles/datasets from local tax experts, public officials, and trade associations, as well as conducting keyword searches for scholarly articles and non-academic online resources.

**Interviews with public officials, tax practitioners and other stakeholders:** Interviews with relevant stakeholders are an important component of our analysis. In addition to providing a direct insight into the scale of the problem as viewed 'on the ground' in the countries included in the study, this research should also assist us in identifying any additional sources of information not identified in our own investigation of public domain sources (for example, studies commissioned by governments or by trade associations to identify challenges posed to particular sectors of the economy by cross-border competition). To improve response rates, we have emailed questions to potential interview subjects, giving an option to respond by telephone or email; and we have followed up with telephone calls where we have not received responses.

**Data analysis:** By far the most accurate way to identify instances of economic activity relocating cross-border due to price differences would be to examine sales volume data for the particular product or service, disaggregated by customer residence status. Unsurprisingly, however, we have not been able to identify sales volume data of this degree of specificity for any of our case studies. Instead, we looked at a range of other indicators of such economic activity, through publicly available data sources.

**Business prevalence:** Particularly in the case of cross-border shopping, business prevalence analysis offered a possible proxy for transaction volume. *Ceteris paribus*, a price-driven relocation of economic activity across borders should lead to fewer businesses in the higher-price country, and more businesses in the lower-price country. The value of this measure varies across our case studies. It is particularly useful where (i) the good or service under examination (or the category it represents) comprises the majority of a vendor's business, and (ii) where growth in demand is more likely to lead

to an increased number of businesses than simply larger businesses. Hairdressers are a prime example of this. Firstly, their primary product is hairdressing services, and an increase in ancillary services and products provided by hairdressers (e.g. the sale of hair styling products) is very unlikely to increase business prevalence. Secondly, if demand for their core product (haircuts) were to increase, it would likely be represented by an increase in the number of hairdressing businesses and not just an increase in the number of haircuts produced by existing businesses, as hairdressing salons tend not to operate on industrial scales.

There are however multiple challenges to using business prevalence as an indicator of cross-border effects. Firstly, wider economic and cultural factors may mean certain countries have higher concentrations of certain types of business anyway. We have sought to correct for this by comparing business prevalence in border towns to business prevalence in the interior of the same country, rather than directly comparing business prevalence across borders. We have sought to identify towns of similar sizes in order to compare like with like. Underlying data sources may not be comprehensive: business directories may charge companies for inclusion, and internet mapping tools may not capture all business details correctly. These limitations, coupled with the impossibility of conducting a statistically robust analysis within the time constraints of the study, mean that business prevalence analysis should be understood as corroborating other aspects of the analysis, rather than offering conclusive evidence in and of itself.

## 2.7 Responses from Member States

As part of our consultation exercise with key stakeholders, we devised a short questionnaire that was distributed to the fiscal attachés of all EU28 countries. Details of this questionnaire can be found in Appendix I. 17 countries responded. We have integrated the specific comments from Member States into the case studies documented in section 3 below. The following table contains a summary of the responses received.

**Table 4: Summary of questionnaire responses from Member States**

Country	Cross-border shopping	Distance sales	Farmers	Auction
<b>Belgium</b>	No data	No significant impact noted	No data	No data
<b>Croatia</b>	No data	No data	Not applicable	No data
<b>Cyprus</b>	Not aware of VAT effect. Prohibitive cost to access local market.	Limited impact. Any effect likely not to be driven by VAT rates.	No data. Impact likely to be limited in any case.	Auction industry negligible. Second-hand car market significant, but cross-border impacts are limited by the dominance of right-hand drive cars.
<b>Czech Republic</b>	No indication of VAT effect	No indication of VAT effect	Not applicable	No data
<b>Estonia</b>	Significant level of cross-border shopping between Finland and Estonia as well as between Estonia and Latvia - but mostly related to excise goods.	No indication of significant level of distance selling to Estonia below the Estonian threshold, though risk analysis focused on larger vendors.	Not applicable	Auction industry negligible

Country	Cross-border shopping	Distance sales	Farmers	Auction
<b>Finland</b>	Not aware of VAT effect at present. Some cross-border shopping between Finland and Sweden or Estonia. Potential for growth in cross-border shopping in case of more differentiated VAT rates.	Significant levels of distance sales into Finland involving suppliers in other Member States. Analysis suggests that 25-30 per cent of distance sellers who sell their goods to Finland are not registered for VAT even though the threshold for VAT registration has been exceeded. This could be motivated by differences in VAT rates.	No indication of issue	No indication of issue
<b>Hungary</b>	No relevant data. VAT one element of price; currency effects more significant. Significant number of high-value cars noted in Hungary with non-Hungarian number plates.	Significant issues with non-compliance noted, and studies conducted. VAT differences are a major factor in price. Goods involved include pet food, electronic devices, TV-s, laptops, games, toys, sporting equipment, sporting clothes, perfumes, etc.	No data	Issues with inappropriate use of second-hand scheme for cars, clothes, etc.
<b>Ireland</b>	Perception of VAT differences between UK/Ireland has led to cross-border shopping, though price mark-ups and exchange differences play a more significant role. Groceries, alcohol, clothing and durables were main items purchased cross-border.	Significant level of purchases into Ireland from UK. Range of measures used to monitor internet retail activity directed at customers in Ireland. Enquiries into the activities of EU suppliers regularly undertaken through the relevant national tax administrations under EU Mutual Assistance provisions. Revenue staff deployed at ports, airports and postal/courier depots to ensure compliance. Supported by equipment and resources such as scanners, x-ray machines and detector dogs. Focus on prohibited goods, high value imports, and high duty goods such as tobacco and alcohol.	Issues noted with farming inputs that are zero rated in the UK for VAT purposes, such as live animals. No systematic data compiled.	Significant issues noted with second-hand vehicle imports, relating to fraudulent or incorrect VAT documentation, resulting in VAT qualifying imports being treated incorrectly as margin vehicles; and missing trader fraud. Investigations are ongoing.
<b>Italy</b>	Aware of some cross-border shopping but reliable data are	No data currently, but investigating ways of improving monitoring in	No data	No data

Country	Cross-border shopping	Distance sales	Farmers	Auction
	lacking.	future.		
<b>Latvia</b>	Not aware of any issue.	Aware of significant amount of distance sales, but detailed data lacking. VAT not considered to be a significant factor.	Not aware of any issue.	Not aware of any issue.
<b>Lithuania</b>	No data. Anecdotal evidence of Lithuanians travelling to Poland to shop.	Not aware of any issue.	Not aware of any issue.	Not aware of any issue.
<b>Luxembourg</b>	Indirect tax authorities cannot distinguish between supplies made to residents and non-residents. Lower VAT rates are generally offset by higher costs related to e.g. real estate and personnel costs.	No data	Not aware of any issue.	Not aware of any issue.
<b>Malta</b>	No issues due to location.	No data. However, aware of increased levels of e-commerce. Overseas vendors likely due to market competition and availability of product, as well as convenience.	Not applicable.	Auction industry negligible.
<b>Netherlands</b>	Some cross-border shopping noted, with products including coffee, tobacco, alcohol, diesel and LPG. Not aware of significant VAT-related effect.	Lack of data, but known issues particularly where some products available at reduced rates elsewhere (e.g. pet food).	Not aware of any issue.	Not aware of any current issue. Problems noted between 2011 and 2012 due to relatively high rate of VAT on import of artworks into Netherlands.
<b>Poland</b>	No data	No data	No data	No data
<b>Slovenia</b>	Significant level of inbound cross-border shopping, due to lower prices (particularly for services).	No significant impact noted	Not aware of any issue.	Not aware of any issue.
<b>UK</b>	No data; impact believed to be low due to limited land borders.	No systematic data. Anecdotally there are significant levels of distance sales into and out of the UK.	Not aware of any issue.	Not aware of any issue.

## 3. Case studies

Our case studies can be divided into two groups: case studies involving cross-border shopping by final consumers who physically travel to make purchases in another jurisdiction (section 3.1), and case studies involving other situations where the origin principle continues to apply in practice (sections 3.2 to 3.6).

### 3.1 Cross-border shopping

#### 3.1.1 Background

Perhaps the most obvious scenario where the origin principle still applies in practice is where cross-border shopping takes place. Cross-border shopping occurs where a consumer from one Member State physically travels to another Member State to purchase a good or service there – whether in search of a lower price or for some other reason (availability, quality, experience, etc.). In these circumstances, the applicable VAT rate is that of the country in which the transaction occurs (in which the good or service originates), rather than the consumer’s place of residence.<sup>12</sup> While for domestic customers this is in keeping with the destination principle (as the origin and destination of the good/service will be the same), for cross-border shoppers it is equivalent to the application of the origin principle.

This poses a number of potential problems, including the distortion of the proper functioning of the internal market and the potential for Member States to engage in tax competition to tempt consumers across borders. Consumers spending hours travelling across borders to buy an identical product they could source closer to home, or suppliers choosing business locations that would be suboptimal but for VAT differences, are not economically sensible outcomes. Tax-motivated cross-border shopping risks undermining businesses that would be highly competitive on a level playing field, and encouraging the use of scarce resources (such as travel costs and travel time, or legal fees and tax planning expenses) simply to capitalise on a tax advantage. Countries may be tempted to reduce VAT rates to encourage cross-border shopping, which might increase the level of revenues actually generated; others may find themselves forced to set VAT levels lower than they would otherwise choose in order to guard against such behaviours.

#### *Other factors that may impact market behaviour*

It should however be noted that VAT comprises only one component of the price of a good or service. Pricing decisions by firms reflect a range of other factors including production costs, underlying wage levels, utility costs, the level of competition in the market, the desirability of the good or service, and the existence of other taxes, tariffs or excises.<sup>13</sup> For a variety of reasons, therefore, price differences for a particular good or service between Member States may not be reflective of the underlying VAT rate differential.

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<sup>12</sup> There are a small number of exemptions to this rule, for example in the case of new cars. See [http://europa.eu/youreurope/citizens/consumers/shopping/vat/index\\_en.htm](http://europa.eu/youreurope/citizens/consumers/shopping/vat/index_en.htm).

<sup>13</sup> Note that these factors will also influence where firms and their various suppliers choose to locate their business activities.

Table 5: Components of pricing differences

Component	Comment
<b>Costs</b>	Including rental and staffing costs, as well as energy costs, cost of supplies (which may reflect relative purchasing power), and potential for economies of scale.
<b>Taxes</b>	Most obviously, VAT and excise charges related to the specific good/service in question, but price will also be influenced by income tax, corporation tax, property taxes, etc.
<b>Profit margins</b>	Price competition may be more or less intense on different sides of a border, which will influence the profit margins that companies are able to achieve.
<b>Currency fluctuations</b>	Where the neighbouring countries are not part of a currency union, fluctuations in exchange rates can result in significant pricing differentials (e.g. the fall of GBP against the Euro in 2008, and more recently following the British referendum on EU membership). Over time, however, the potential savings will be diminished as the stronger currency country capitalises on cheaper imports from its weaker neighbour, and due to inflation in the country whose currency has weakened.

Source: adapted from a study of cross-border shopping produced by the Republic of Ireland's Office of the Revenue Commissioners and the Central Statistics Office (2009).<sup>14</sup>

Furthermore, the price of a particular good or service is only one element within a broader constellation of factors that influence consumer behaviour. In addition to price, consumer behaviour will be influenced by the relative time and cost required to acquire the good or service (including physical travel time or shipping costs), real or perceived levels of quality, statutory consumer rights, the availability of alternative goods or services, retail outlet opening hours, and other experiential factors. In this regard, the increased prevalence, convenience and competitiveness of online retail outlets may make travel to a physical retail outlet, even in a jurisdiction with significantly lower tax rates, comparatively less attractive – and consumer preference for e-commerce may be expected to strengthen over time.

Table 6: Factors influencing location of consumer activity

Factor	Impact
<b>Quality</b>	Consumers' choice of retail destination will be influenced by the perceived quality of the goods or services available.
<b>Availability</b>	Shopping destinations where goods and services are in-stock and/or available without waiting periods are more attractive to consumers, <i>ceteris paribus</i> .
<b>Range</b>	Shopping destinations offering a wider range of desired goods and services will generally be preferred, as they allow consumers to economise on the number of shopping trips they need to make (Chervin et al., 2000; Bygvra, 1998).
<b>Price</b>	The opportunity to take advantage of pricing differentials will influence consumer choice of retail outlets and service providers. See discussion of

<sup>14</sup> Interestingly, the study concluded that taxes constituted a relatively minor component of pricing differentials.



	components of pricing differentials in Table 5: Components of pricing differences above.
<b>Convenience</b>	Consumers will generally prefer shopping destinations that are easier and cheaper to access – a function not just of distance, but also transportation infrastructure, traffic patterns, transport costs, and opening hours (Fitzgerald et al., 1988). The relative convenience of internet shopping is a major factor in the decline of bricks-and-mortar retail activity.
<b>After-sale service</b>	Warranties, home delivery, statutory rights, replacement policies, technical support and other after-sales services (both in store and remote) can influence choice of shopping destination.
<b>Experience</b>	A more attractive shopping experience – whether due to expertise and availability of sales staff, aesthetics of the physical or virtual retail location itself, presence of complementary amenities such as cafes and restaurants – could lead consumers to prefer one shopping destination over another.
<b>Language</b>	Consumers will generally prefer goods and services in their own language, without the need for translation. Language is an overarching factor that influences convenience, after-sale service, and consumer experience.

*Source:* extrapolated from the "4Ps" theory of marketing (product, place, price and promotion) popularised by E. Jerome McCarthy (1960).

These overarching factors are important for interpreting the case studies that follow. Even if we identify pricing differentials that are correlated with material levels of cross-border shopping, it may be that the impetus to shop across borders is driven (wholly or in part) by these non-price related factors.<sup>15</sup> Similarly, where we have not identified material levels of cross-border shopping, this may be because the non-price related considerations have been decisive for consumers in the cases under consideration. While this may be evidence of the relative weakness of price compared to other considerations in general, it may indicate only that price is relatively weak compared to other consumer considerations that are relevant to the good or service in question, in the countries examined.

Nevertheless, we have attempted to pick diverse goods and services, and diverse country pairs, to test a range of scenarios in which pricing differentials might drive cross-border shopping activity. Furthermore, qualitative research methods such as interviews allow us to probe the extent to which cross-border shopping is driven by price as opposed to other factors that would be unaffected by enhanced flexibility in the EU VAT regime.

<sup>15</sup> It is also possible that such patterns of cross-border shopping are not driven by the price differential for the item in question, but rather by a composite price differential or "bundling effect", whereby the item we have identified is purchased along with other goods or services upon which savings can be obtained. Bulk purchases of goods will however decrease portability. Note that this relationship may be non-linear: portability of a good or bundle of goods may be broadly similar up to a given threshold (for example, the volume of goods that can be easily transported in a single car journey).

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*Literature review: cross-border shopping in the EU and beyond*

Cross-border shopping has been a long-standing feature of European consumer activity, with excisable goods in particular being subject to cross-border purchasing. Nevertheless, the abolition of customs and fiscal controls at the internal borders of European Community countries from 1 January 1993 removed a significant obstacle to cross-border shopping. The change was particularly significant with regard to excisable goods: whereas previously, Member States sought to limit the level of excisable goods that could be brought across borders tax-free, EU Directive 92/12 stipulated that the applicable excise charge was the duty in the Member State in which they were acquired, provided the goods were for personal use.<sup>16</sup>

A 1994 Price Waterhouse study on the initial impact of the abolition of fiscal frontiers concluded that “generally speaking, apart from the German/Danish frontier there were no major changes in the patterns of cross-border purchasing behaviour due to differences in VAT rates alone following the abolition of fiscal frontiers”. While there were some cases where cross-border shopping to exploit VAT differentials was significant – notably between “Germany/France (for domestic durable goods), Germany/Denmark (for domestic durable goods) and Luxembourg/Belgium (for jewellery and watches)” – these shopping trends predated the creation of the single market.

The picture was somewhat different with regard to excisable goods. The 1994 Price Waterhouse study concluded that “the freedom to purchase larger quantities of duty-paid goods in other Member States since 1 January 1993 has compounded the effect of non-harmonization of the duty rates, and has led to some further changes in shopping patterns in certain cases” (Price Waterhouse, 1993; cited in European Commission, 1994). This is in line with international experience and economic theory: the OECD states that taxes with a narrow base (such as excise taxes) are more prone to tax competition than taxes with a broad tax base (OECD, 2011).

As such, Member States with high excise duties on alcohol and tobacco have consistently noted high levels of revenue loss as a result of cross-border shopping (HMRC, 2002). A 2009 study found that the 1993 reforms had increased competition between Member States with regard to excise duties, in particular for alcohol (Lockwood and Migal, 2009). For example, Sweden’s alcohol sales are estimated to have an elasticity of 0.4 with respect to foreign alcohol prices within bordering regions (Asplund et al., 2007). Fuel may also be more susceptible to cross-border shopping. In Spain, there is some empirical evidence to support the notion that the regional application of the Hydrocarbon Retail Sales Tax (HRST) in Catalonia in 2004 has strengthened the price effect between higher automotive fuel prices between Catalonia and Aragon (Leal et al., 2009).

Given the scale of and variation in VAT rates in comparison to excise tax rates and duties, VAT will have a relatively small distortive effect on cross-border consumption patterns. In a paper on VAT and excises, the UK’s Institute for Fiscal Studies noted that cross-border shopping is fairly limited in relation to VAT in the OECD, with the exception of Germany and Denmark (IFS, 2011). Additional literature supports this, suggesting the most significant cross-border issues in consumption taxation arise from excises given that relative to transport costs, excise taxes are particularly high (Keen, 2002).

As regards VAT-driven cross-border shopping, the case of the Danish-German border – described already in the 1994 Price Waterhouse study as “volatile” – has been the most prominent in the decades since the creation of the single market. Denmark has a

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<sup>16</sup> Council Directive 92/12/EEC of 25 February 1992 on the general arrangements for products subject to excise duty and on the holding, movement and monitoring of such products, reference <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31992L0012:en:HTML>.

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longstanding VAT rate of 25%, which has encouraged a significant level of consumer activity across the German border, where the VAT rate has been significantly lower since the creation of the single market (ranging from 15% to 19%).<sup>17</sup> In the mid-2000s, it was estimated that cross-border trade with Germany accounted for over 4% of household consumption in Denmark (excluding consumption of alcoholic beverages, where the cross-border effect was further compounded by differences in excise duties).<sup>18</sup> However, a 1998 study suggests that although Denmark's tax regime is structured such that VAT and excise taxes play a large role, and there are large VAT differences (as discussed above), the majority of cross-border shopping relates only to excisable items. Most Danish shoppers overwhelmingly bought those goods that are subject to excise duty, in particular beer, cigarettes and wine. Over 60% of Danes solely bought beer and tobacco goods, whilst only less than 20% also bought some other shopping goods, despite a 10% VAT differential at the time (1994).<sup>19</sup> A more recent study by the Danish Skatteministeriet (2016) found that levels of physical cross-border shopping were declining, partly due to a decrease of consumption in tobacco and alcohol products, and partly due to an increase in internet shopping.

Leaving tax aside, where neighbouring countries are not part of the currency union, fluctuations in exchange rates can result in significant pricing differentials. Berghauer (2008) and Tömöri (2011) underscore the importance of currency devaluation of neighbouring Eurozone Member States in prompting growth in shopping tourism. Such cross-country differences in price level are also observed to have influenced the behaviour of Slovakian shoppers, where, following adoption of the euro, depreciation of neighbouring countries' currencies boosted cross-border shopping (VOXeurop, 2009). For example, the number of Slovakian shopping tourists in Hungary more than doubled between 2006 and 2010, after favourable exchange rate developments from Slovakia's euro accession in 2009 (Michalkó et al., 2014). Within the EU, Slovakia is not the only country prone to such temporary swings in cross-border shopping related to exchange rate oscillations. Similar spikes of shopping tourism are observed across the Hungarian border (Michalkó et al., 2014) and between the UK and Ireland (Hilliard and Reddan, 2016).

We note that across the majority of this literature, the price differential is cited to be the most significant determinant of cross-border shopping. Lavik and Nordlund (2009), based on survey evidence in Norway and Sweden, suggest price is the most important determinant of cross-border shopping. Other factors, such as distance, product range and quality, were reported to be less influential. Perceptions of price levels are relevant here - one study based on survey evidence suggested that 5% of Dutch car owners who live 30km from the border would purchase fuel in Germany even when the financial costs of doing so are greater than the gains (Brinsma et al., 2001).

Looking beyond the EU to wider international experience, studies have evaluated the economic and fiscal impacts of cross-border shopping in a range of different contexts. One of the most widely discussed and relevant examples is the experience of US states, where internal border controls are absent, yet where states have the power to determine their own sales tax rates. Looking at strategic interaction among US states, and calculating average effective consumption tax rates, a study by Jacobs et al. uses panel data to estimate static and dynamic tax reaction functions (2010). The authors find that in terms of spatial characteristics, states near oceans and the Gulf of Mexico tend to set higher average effective consumption tax rates than inland states, suggesting that they are responding to a lack of tax competition by increasing revenues. Further, states with

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<sup>17</sup> The German standard VAT rate was 15-16% between 1993 and 2006; in 2007 it increased to its present rate of 19%.

<sup>18</sup> See Copenhagen Economics, 2007.

<sup>19</sup> See Bygvrå, 1998.

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high population density along borders (which are therefore more vulnerable to losing revenues to cross-border shopping) tax consumption at lower effective tax rates.

In Mexico, a preferential VAT rate was introduced for regions close to the US border, to deter Mexican residents from taking advantage of US states' comparatively lower rates of sales taxes. A study conducted by Lucas W. Davis (2011) examined whether this VAT rate (11%, as opposed to the nationwide 16%) could incentivise households and tax-exempt firms to travel *within* Mexico to the preferential tax zone – a journey that better reflects the ease of travel within the Schengen area than crossing the Mexico-US border. Using a regression discontinuity approach, Davis' results do indeed indicate a statistically significant distortion of economic activity (i.e. an effect that is likely not to be a statistical fluke). The actual size of the effect measured was estimated at a 15% increase in economic activity inside the preferential zone, accompanied by an 8% increase in employment, suggesting that it is important not to overstate the impact of VAT differentials on patterns of economic activity (at least at a 5% tax differential).

In terms of the political economy of cross-border shopping and tax competition, the expectation is that smaller countries will set more competitive indirect tax rates than larger neighbours, as they lose a smaller amount of domestic revenue (through the lower rate) than they gain from the broader tax base (from cross-border shoppers from the larger jurisdiction). Conversely, larger neighbours are unlikely to respond to this by reducing their own tax rates, as the fiscal loss from residents shopping in the neighbouring jurisdiction is less than would be lost through a lower tax rate. Consequently, the tax rate of the smaller country will be lower, and the per capita revenue collected will be higher (though not the absolute revenue collected). Obviously, these expectations are affected by the ease with which goods can be (legally and illegally) transported across the border in question. This finding was argued by Kanbur and Keen (1993), and subsequent literature broadly confirms it (Leal et al., 2010). The OECD (2011) also comments on goods and services taxes in subnational contexts, noting that cross-border shopping is a bigger issue for smaller sub-central governments rather than for larger ones. Further, goods that are easier to transport and have a higher price elasticity are more prone to tax competition and therefore cross-border shopping.

Surveys of the empirical literature on cross-border shopping confirm these theoretical results. Leal et al. note that though studies vary in their econometric techniques, panel data estimation is commonly employed and the results support the main theoretical conclusion: tax differentials induce consumers to purchase in places where taxation is lower, as long as the tax saving compensates for the transport costs related to the journey made by the purchaser.<sup>20</sup> Genschel and Schwarz's (2011) review builds on this, noting that most empirical studies show cross-border shopping decreases rapidly with distance from the border, and is economically relevant in border regions but not nationwide.<sup>21</sup> Estimates of the share of outbound cross-border shopping of total national consumption are invariably low across the literature, ranging from less than 1% (in the Netherlands, Belgium and Denmark, 1991) to 4.1% (in Denmark, 2005).<sup>22</sup> As such, cross-border shopping has little influence on overall consumption pattern in most countries.

If VAT cuts are only partially passed through to prices then a divergence in rates arising from increased flexibility is likely to have less impact on cross-border shopping. There is

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<sup>20</sup> The studies reviewed include cross-border shopping within the US, specifically for alcohol and cigarettes in Sweden, Finland, Denmark and Germany, alcohol for the US and Canada, tobacco within the US and gasoline between Switzerland, Germany, Italy and France.

<sup>21</sup> P. Genschel and P. Schwarz (2011), "Tax competition: a literature review", in *Socio-Economic Review*, 9(2), pp.339-370.

<sup>22</sup> See Bode et al., 1994; Copenhagen Economics, 2007.

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debate within the academic literature around the extent to which changes in taxes are passed through to consumer prices. In 2011 when the VAT rate increased from 17.5 to 20% in the UK, the ONS estimated that this only brought an increase of 0.76 percentage points in the Consumer Prices Index (CPI). However, on the other hand, Jonker *et al.* (2004) suggest (based on changes in VAT in the Netherlands over the period 1998-2003) that any VAT increase is almost entirely passed on to consumers through prices, although reductions in VAT are only partially passed through.

Furthermore, there may be variation in the extent to which tax rate changes are passed onto prices within countries regionally. Accordingly, this effect may negate the effects of tax changes on cross-border shopping, and instead result in a change in consumption patterns nationally. Based on evidence of the introduction of the General Sales Tax (GST) in Canada, Boisvert and Thirsk (1994) suggest that the tax was fully shifted onto consumers in non-border areas, but only 40% of the tax was shifted onto consumers in border areas, with the other 60% shifted backwards onto the suppliers and absorbed by the production process.

### **3.1.1.1 Case study selection approach**

#### *Selection of goods and services*

The aim of our case study research is to draw lessons for VAT reform as a whole, across the whole gamut of goods and services, across the entirety of the EU28. Consequently, in our examination of cross-border shopping, we selected a range of goods and services that are broadly representative of wider product categories. For example, we elected to focus on a leading brand of notebook computers as a proxy for the wider category of consumer electronics. To qualify as “representative”, the product or service must be relatively common in its market segment, not at the extreme ends of the general range of prices, and of a similar nature to other goods and services in its market segment.

We have also focused on more homogeneous categories of goods and services. Theory indicates that material levels of cross-border shopping will be more likely in the case of these products (see section 2.4 above), so this constitutes a more robust test of whether enhanced flexibility could lead to material levels of cross-border shopping. Furthermore, on a practical level, it is simpler to identify genuine pricing differences in these cases, as the goods and services in question are readily comparable across vendors. This is because the product is either identical across locations or can be specified in a way that makes comparison possible.

We also selected goods and services where pricing differentials appeared likely. Some cases were selected expressly because they are subject to reduced, super-reduced or zero-ratings for VAT purposes in some (but not all) Member States. In other cases, pricing differentials were driven by other factors.

Finally, we have sought to test goods and services where we were aware that cross-border shopping issues have been identified. Excisable goods such as vehicle fuel, alcohol and tobacco feature prominently in previous studies of cross-border shopping, and we selected vehicle fuel as a proxy for this category as a whole (Mathä *et al.*, 2014; Eurobarometer, 2004). Media commentary has also identified dentistry as an example of a service attracting cross-border traffic, hence its inclusion here (Crouch *et al.*, 2015).

The goods and services we chose for our case studies (and the general group of good or service they represent) are listed below.

- Goods:** Basket of fast-moving consumer goods (food and non-alcoholic beverages)  
Diesel vehicle fuel (excise goods)  
Motorised wheelchairs (medical equipment)  
Luxury watches (jewellery)  
Notebook computers (consumer electronics)
- Services:** Dental services (high-cost personal services)  
Hairdressing (low-cost personal services)

We also conducted preliminary analysis of pharmaceuticals and high-cost recreational services (taking boat wintering services as our example for this latter category). However, in both cases it proved difficult to establish the prices that would apply to final consumers, and thus the magnitude of price differences between jurisdictions. In the case of pharmaceuticals, this was due to the interaction with domestic healthcare and health insurance regimes; in the case of boat wintering services, this was due to marinas' reluctance to provide price estimates upon enquiry, and/or their reluctance to offer wintering services except as part of a wider package (including, for example, year-round mooring fees). Consequently, these cases were not explored further, though we have reported our initial findings in section 3.1.9.

### *Selection of country pairs*

Our overarching approach to selecting country pairs for case study research is outlined in section 2.5 above. However, for our cross-border shopping case studies, we also used the following two criteria:

- **Proximity:** Case study countries should generally have a significant contiguous and easy to navigate border, although in some instances we have relaxed this constraint in the face of unusual product/service characteristics. In the boat wintering services case study, for example, we included geographically proximate – but non-contiguous – country pairs on the grounds that boats are intended for travel and nautical distances between ports is a more appropriate criteria than land borders. It is conceivable that for very high-value goods or services, consumers might travel longer distances and/or travel by plane to non-adjacent countries to capitalise on pricing differences; we attempted to investigate this with regard to luxury watches as part of our jewellery case study.
- **Currency factors:** We have focused on Member States within the Eurozone for our country pairs, as cross-border shopping will be more straightforward in these cases, owing to easier price comparability and lower transaction costs. We have not excluded non-Euro countries, however, especially where these countries have high VAT rate differentials with their neighbouring Member States, and/or have exchange rates with the euro that are sufficiently stable to look past the impact of rate movements on behaviour. Examples include Denmark and Hungary – with standard rates of 25% and 27% respectively, compared to neighbouring countries with rates as low as 19%/20%. All currencies in our case studies have been converted to Euros using average rates for 2016, quarter three. See Appendix III: Currency conversion rates for more details.

Using these criteria, together with those outlined in section 2.5 above, we have identified four country pairs for each of our cross-border shopping case studies.

## **3.1.2 Foodstuffs**

### **3.1.2.1 Background**

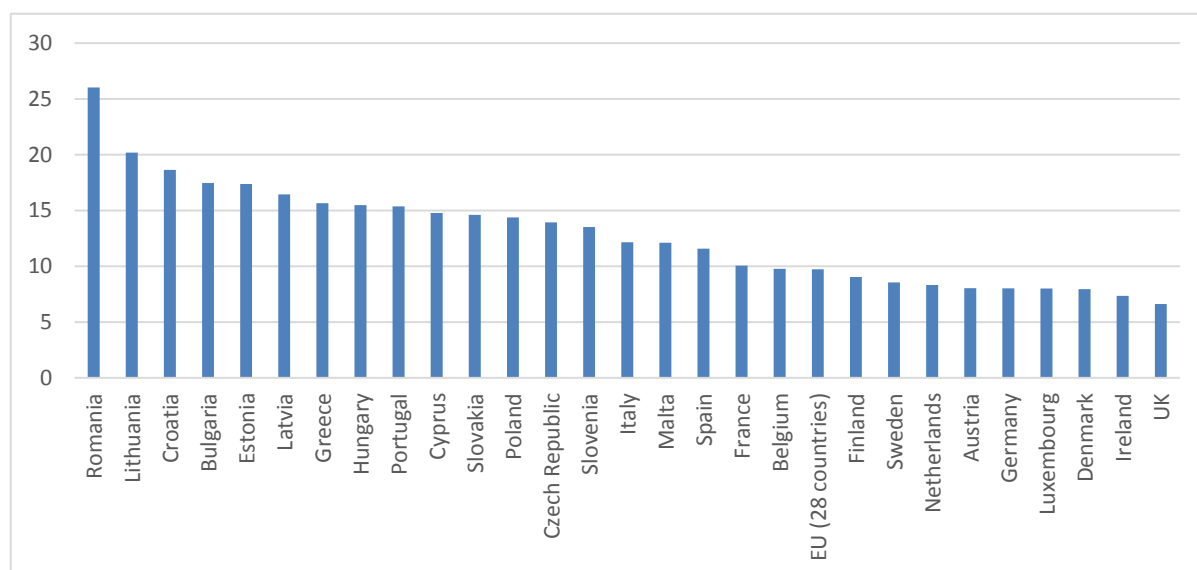
This section offers an account of the real-world impact of pricing differentials by exploring distortions between country pairs due to sales and tax policies, focusing on

cross-border shopping in fast moving consumer goods (FMCGs). From a consumer's perspective, FMCGs are goods which are frequently purchased, generally low-priced, have a short shelf-life, are consumed daily, and minimal effort is associated with the choice of the item itself. FMCGs include, for example, toiletries, foods, beverages and cleaning products. Looking at FMCGs through an income elasticity of demand perspective, the category includes products that belong to all types of goods – inferior, normal, and luxury.

In order to explore distortions in the location of sales and tax revenues within FMCGs, this section focuses on cross-border shopping in foodstuffs. Rather than focus on any particular item, we have used general data on food and non-alcoholic beverages, noting particular differences at the item level as relevant. This enables us to capture the impact of price differences on consumer motivations to purchase groceries across the border. These goods are easily transportable; however, a number of the products within this category have a short expiry period, and may present dissimilar quality and volume characteristics, a factor which may impact on varying levels of tradability.

Spending on food and beverages makes up a significant share of total consumption per inhabitant spending across EU markets, ranging from 26% in Romania to 6.6% in the United Kingdom in 2015. In nominal terms, per capita annual spending on foodstuffs ranges from a maximum of EUR2,948 in Luxembourg to a minimum of EUR776 in Bulgaria.

**Figure 3: Share of Food and Non-Alcoholic Beverages over Total Consumption per inhabitant (as a percentage for 2015)**



Source: Eurostat

Prices of foodstuffs vary significantly between Member States, due to both VAT and non-VAT related factors (as discussed in Section 3.1.1 above). However, given the heterogeneous range of goods included in any given shopping basket, incentives and disincentives to “shop out” are not expected to be exclusively financial in nature. This involves not just pricing factors such as VAT, but also perceived costs (in time and money) of travel to the shopping destination, as well as considerations linked to the quality/availability of the good (Lukić, 2012).

One further factor is particularly important in the case of FMCGs: namely, the possibility that patterns of cross-border shopping are not driven by the price differential for a particular item, but rather by a composite price differential or “bundling effect”. In other words, it is not the good-specific potential for savings that drives consumers to shop out

across the border, but the collective potential for saving. Admittedly, bulk purchases of goods will decrease portability, but this relationship is almost certainly non-linear: portability of a good or bundle of goods may be broadly similar up to a given threshold (for example, the volume of goods that can be easily transported in a single car journey).

### 3.1.2.1.1 VAT treatment

As mentioned in Section 1.1.1, the current EU VAT Directive sets out a number of general rules on VAT rates. Under this regime, Member States can opt to apply reduced rates of as little as 5% to foodstuffs, and some country-specific derogations allow for even lower levels of taxation. Individual countries exercise choice as to which specific items are available for what kinds of VAT saving: for example, soft drinks may be taxed more heavily in some jurisdictions, or biscuits taxed more heavily if they are covered in chocolate (ICAEW, 2016).

This case study examines cross-border shopping in foodstuffs across four country pairs: Hungary-Romania, France-Spain, Austria-Slovakia, and Austria-Czech Republic. As shown in Table 7, the country pairs selected include instances of VAT differences that range from five percentage points (pp) to 10pp.

Table 7: VAT rates on foodstuffs

Country Pair	VAT Country A	VAT Country B	VAT difference
Hungary - Romania	5/18%	9%	9 pp
France - Spain	2.1/5.5/10/20%	4/10%	10 pp
Austria - Slovakia	10%	10/20%	-10 pp
Austria - Czech Republic	10%	10/15%	-5 pp

Source: European Commission. VAT rates as at 1 August 2016. Where multiple VAT differences apply to foodstuffs, we have calculated VAT difference on the basis of the top bands in each country.

### 3.1.2.1.2 Pricing differences

One of the central hypotheses that we are testing in this study is whether price differences promote cross-border shopping, as the main mechanism by which future VAT flexibility could influence consumer behaviour is through price. Other things being equal, we anticipate that bordering countries with substantial differences in the price level of foodstuffs will exhibit high volumes of cross-border shopping, given the frequency with which these goods need to be purchased, and the significant role they play in household consumption.

Whereas in most case studies, we have sought to compare prices for a representative good, in the case of foodstuffs this is complicated by the sheer diversity of local consumption habits. A particular brand of cereal or soft drink may be a staple in one Member State and a luxury in another. Consequently, we have instead used the Eurostat price level statistics for foodstuffs and non-alcoholic beverages in each of the seven countries examined. In this way, we are able to capture the potential for collective savings across a range of foodstuffs, a more reliable indicator of incentives faced by cross-border shoppers given the tendency to buy an assortment of FMCGs in any given shopping trip. Table 8 presents the most recent (2015) available price level estimates for foodstuffs.



**Table 8: Price difference for foodstuffs and non-alcoholic beverages**

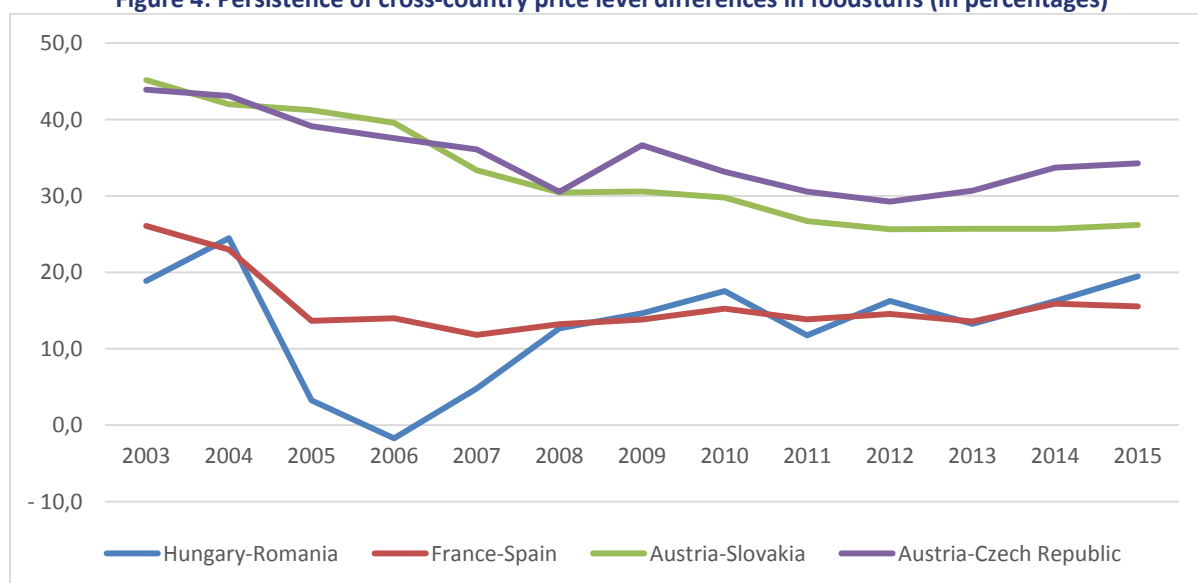
Country pair	Price country A	Price country B	Potential savings in Country B
<b>Hungary – Romania</b>	79.1	63.7	19.5%
<b>France – Spain</b>	109.4	92.4	15.5%
<b>Austria – Slovakia</b>	120.2	88.7	26.2%
<b>Austria – Czech Republic</b>	120.2	79.0	34.3%

Source: Eurostat (series prc\_ppp\_ind), 2015 data. EU28 average=100. Potential savings are calculated as the difference in price level between Country A (higher price level) and Country B (lower price level), in relation to the price level of country A.

Out of the four country pairs, the most significant price difference was observed between Austria and the Czech Republic, with foodstuffs in the Czech Republic 34.3% cheaper than in Austria. The second largest difference was observed between Austria and Slovakia, where Austrians are able to purchase foodstuffs across the border, in Slovakia, 26.2% cheaper. The country pairs of Hungary-Romania and France-Spain offer less pronounced opportunities for saving via crossing the border. Hungarians may profit from crossing to neighbouring Romania and purchasing foodstuffs at a 19.5% lower price level, while French inhabitants of bordering regions may enjoy savings amounting to 15.5% by crossing to Spain for the purchase of foodstuffs.

Given the recursive nature and information-associated economies of scale characterising cross-border shopping in foodstuffs, changes in price levels may not translate immediately to changes in consumer behaviour. Figure 4 below shows these price differences over time.

**Figure 4: Persistence of cross-country price level differences in foodstuffs (in percentages)**



Source: Eurostat (series prc\_ppp\_ind)

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Both country pairs that include Austria, despite exhibiting a downward trend between 2003 and 2015, retain a significant opportunity for savings across time through cross-border shopping in foodstuffs. This is not the case for Hungary-Romania, which show the highest level of volatility, where during 2006 the opportunity for savings via cross-border shopping in foodstuffs was eliminated entirely. Finally, the difference in the price level between France and Spain shows an initial drop of 14.2% between 2003 and 2007, only to balance close to 14.5% for the remaining period.

### 3.1.2.2 Literature review

#### *Cross-border shopping for foodstuffs*

The recursive character of cross-border shopping in foodstuffs means that the cost of travel to the point of sale, including crossing the physical border between countries and navigating between retailers in the neighbouring country, plays a significant role in the decision to travel. The importance of the cost linked with undertaking the trip for the purchase of foodstuffs is further magnified by a principal characteristic of FMCGs, namely their low price. This creates a stark difference in comparison to shopping for most other goods, where savings achieved through cross-border shopping are generally associated with the purchase of a single unit of the good. Consequently, saving through cross-border shopping in foodstuffs is associated with either (i) bulk-buying, which necessitates planning of trips instead of shopping on impulse or during vacations, or (ii) proximity to the border, which will have a more limited economic and fiscal impact (the precise nature of which will vary depending on population patterns). Therefore, savings generated by shopping for foodstuffs must be weighed against a significant fixed economic cost, which includes also an opportunity cost (time spent travelling instead of doing something else).

Conversely, however, recursive shopping introduces the possibility of information-associated economies of scale. FMCG cross-border shoppers tend to base their decisions on habit, i.e. information drawn from the most recent trip, rather than through constant searching for new information (Hall and Smith, 1995). Thereby, informational costs associated with spotting a bargain are only incurred the first time the point of sale in the neighbouring country is identified. Following the first journey, due to high shopping frequency, cross-border FMCG shoppers face zero or near-zero additional informational costs.

Given the large fixed costs associated with cross-border shopping, greater opportunities to save through crossing the border are available when consumers combine purchases of foodstuffs with other regularly consumed goods, such as fuel, alcohol, and cigarettes. Therefore, we speculate that the overall price difference between two neighbouring countries for a basket of goods including FMCGs and excisable goods will impact the motivation for cross-border shopping for any single item included in that basket (Lockwood and Migal, 2009).

The time-consuming nature of these recursive trips also indicates that the way in which specific socioeconomic groups value their time will play a significant role in determining shopping patterns. When assessing leisure in terms of the income elasticity of demand, leisure is considered as a luxury good, where the demand for it rises more than proportionally as income increases. Similarly, demand for saving (defined as in opposition to enjoying more leisure) will be linked to available income: cross-border shopping in foodstuffs can be used as a survival strategy and thereby treated as a necessity good, up to the point where consumers can afford the fixed costs of the trip. According to Michalkó et al. (2014), the economic situation in the home country is a significant determinant of cross-border shopping, where temporary or permanent economic recession can further stimulate incentives for cross-border shopping. By crossing the border to purchase foodstuffs at a cheaper price, households can mitigate a

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decline in their level of consumption (Hampson and McGoldrick, 2011). Thus, we hypothesise that the necessity to economise, coupled with proximity to border crossings, will be significant in motivating people to shop for foodstuffs across borders.

### *Cross-border shopping for foodstuffs within the EU*

Cross-border shopping has been a long-standing feature of European consumer activity, with excisable goods in particular being a popular item for cross-border purchasing. Nevertheless, the abolition of customs and fiscal controls at the internal borders of European Community countries on 1 January 1993 removed a significant obstacle to cross-border shopping, strongly boosting recurrent border crossings by consumers seeking bargains in foodstuffs and other FMCGs in neighbouring countries.

Cross-border shopping for foodstuffs has been observed in a number of different contexts. During the early years of the European Union, the most prominent route was the one linking Western Europe to Post-Communist states. For a number of years, Austrians and Germans, motivated by price differences, headed towards the Czech Republic, Poland, Slovakia, and Hungary in search of savings. Meanwhile, residents of Central Eastern European cities crossed the border to Germany and Austria, motivated not by price differences, but by quality and assortment of goods. In these instances, FMCGs were not necessarily purchased solely for private consumption, but were sometimes resold once shoppers returned to their home countries.

France and Belgium offer a contemporary instance of cross-border shopping for FMCGs. During 2015, savings of close to 13% could be obtained by Belgians who were willing to cross the border to France to purchase regular consumption goods (Les Frontaliers, 2015). Most favourably priced goods on the French side of the border are considered to be dairy products, bread, meat and soft drinks. However, when a broader basket of goods is used for the same exercise (soda, wine, water, milk, pasta, chips, vegetables, fruits, fruit juice, cheese, butter and yoghurt), the savings available appear to diminish significantly (Gerbinet, 2016). Notably, such press articles tend to focus on gross price savings to generate more eye-catching headline figures, without factoring in the costs of travel for the average consumer, or the sacrifice of leisure time that repeat journeys would require.

There is anecdotal evidence of German residents leaving the country in order to purchase everyday consumer goods at lower prices. German consumers perceive fruits and vegetables, household goods, pets' food, handicraft-related goods, DVDs and CDs to be substantially cheaper in Poland. In Luxembourg, where cross border shopping is a significant source of revenue for the economy, consumers from Germany buy coffee, excisable goods and soft drinks (Matha et al., 2014). In the Czech Republic, German cross border shoppers find fruits, vegetables, meat and dairy products as well as excisable goods available at better prices (Mitsis, 2016).

In the case of Denmark, cross-border shopping patterns have been attributed to tax policy decisions. For example, the introduction of a fat tax in 2011 (which was subsequently abolished) and the imposition of higher VAT and non-VAT charges on a number of FMCGs, such as chocolate, candy, sodas, ice-cream and coffee, significantly increased cross-border shopping by Danes in Germany (EurActiv.com, 2012).

Furthermore, some level of cross-border shopping in FMCGs can also be observed between the Scandinavian countries, for example with Finnish residents visiting neighbouring Sweden. Between Baltic and Central and Eastern European countries, instances of cross-border shopping in FMCGs that stand out include Lithuanians visiting Poland, Slovaks visiting Hungary and of Slovenia experiencing a strong influx of cross-border shoppers from several neighbouring countries (Jansen, 2006). Finally, looking at the south-eastern part of Europe, Greeks are observed to visit neighbouring

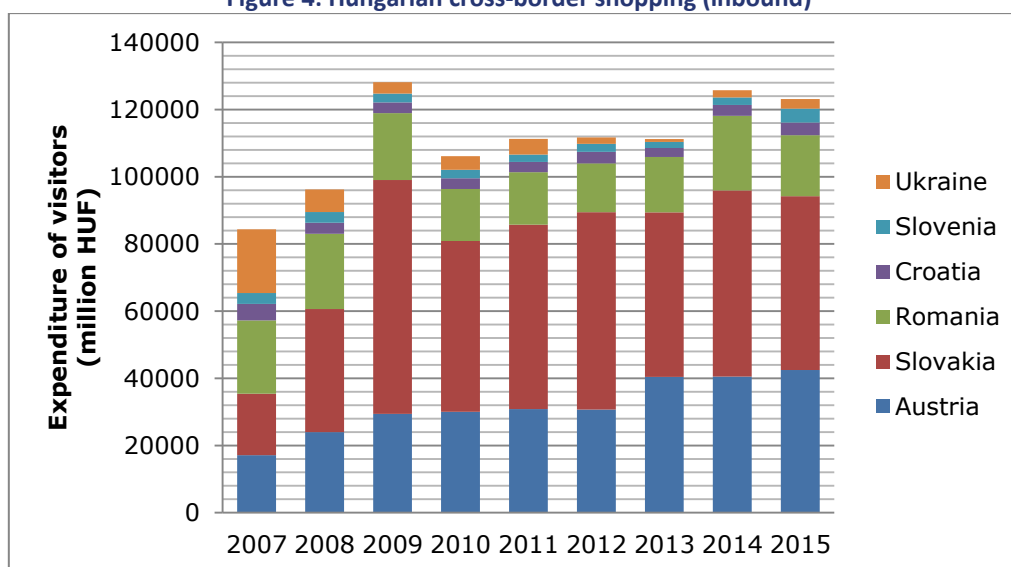
Bulgaria for purchases of foodstuffs, and also other FMCGs and excise goods (RTL, 2016; Mega, 2013).

In addition, Chandra, Head and Tappata (2014) emphasise the significance of population distribution for cross-border shopping in foodstuffs. Their findings suggest that countries with densely populated areas neighbouring the border offer an environment that is conducive to the emergence of cross-border shopping of a recursive character.

*Hungary – Romania:* Geography and favourable distribution of population are underscored as principal determinants of cross-border shopping between Hungary and Romania. Irrespective of which portion of the border between the two countries is studied, there are a number of cities with close proximity to one another.

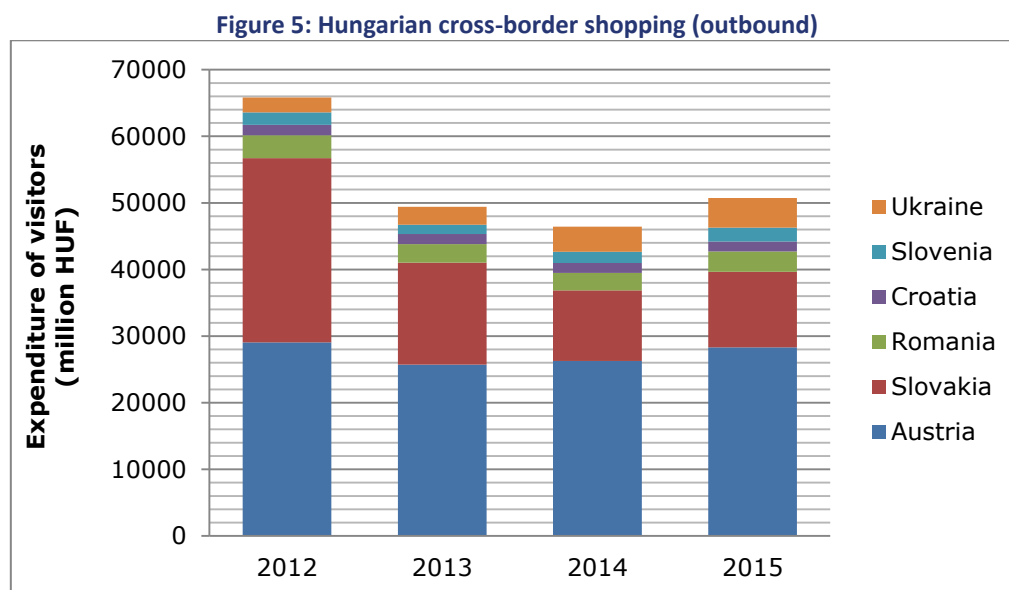
Unlike most countries included in the country pairs, the Hungarian example offers an opportunity for in-depth analysis of cross-border shopping, given the wealth of data that the Hungarian Central Statistical Office (HCSO) compiles on this issue. Estimates of expenditures on cross-border shopping for Hungary underline the greater size of the inbound channel, compared to the outbound one – albeit this includes all goods and services. Residents of neighbouring countries coming into Hungary are observed to spend between HUF 84,351m (EUR 269.33m) and HUF 125,761m (EUR 402.55m), with total expenditure largely increasing across time. Residents of Croatia, followed by residents of Austria and Romania, contribute the most to total expenditures of cross border shopping in Hungary (see Figure 4).

Figure 4: Hungarian cross-border shopping (inbound)



Source: HCSO

Focusing specifically on Hungary and Romania, the HCSO's data suggests that cross-border shopping between the two neighbouring countries is not one-way. Both Hungarians and Romanians are observed to cross the border into their neighbouring country to shop. Meanwhile, spending by Romanians in Hungary exceeds that of Hungarians in Romania, with the difference ranging from HUF 11,161m (EUR 35.64m) for 2012 to HUF 19,567m (EUR 62.48m) for 2015.



Source: HCSO

The HCSO data points to two distinctive time periods, which illustrate factors that might significantly influence cross-border shopping patterns.

1. During the early years of the Eurozone crisis, Hungarian-Romanian overall cross-border shopping saw a significant drop as a consequence of a rise in the price level in Hungary and economic crisis in Romania, leading to decreasing households' purchasing power and the depreciation of the RON against the HUF.
2. The second incident covered in the literature relates to Hungary's increase in the standard VAT rate (which includes foodstuffs) to 27%, leading to notable differences between the VAT rate in Hungary and in neighbouring countries. Literature further highlights that differences between the Hungarian VAT and the VAT rate of the neighbouring countries have boosted incentives for illicit trade, something that unfortunately is not captured by the data made available by HCSO. Local producers of foodstuffs complain the costs of this activity are significant, as their produce is undercut by rival goods which are illegally imported without paying the requisite Hungarian VAT charge (Dunmore and Dunai, 2012). Interestingly for our purposes, the high VAT rate is here linked to VAT evasion, which would *reduce* the incentive to engage in cross-border shopping by reducing the price differential between countries – though obviously still generating economic distortion and fiscal loss to the government.

Finally, the trend of Hungarians crossing the border to Romania for shopping in foodstuffs (legally or illegally) is expected to strengthen, following Romania's VAT cut in foodstuffs in June 2015. According to reports, lower retail prices in Romania are already encouraging Hungarians to cross the border to capitalise on cheaper grocery prices (Cosmin, 2015).

*France – Spain:* An extensive examination of the academic literature and regional press fails to highlight occasions where price differences between the two countries have given rise to cross-border shopping. Looking at the geography of the border between the two countries, there is a low density of population around the Pyrenees, meaning that significant levels of cross-border shopping between the two countries are most likely in the Bay of Biscay area near San Sebastian (Spain) and Bayonne (France). Meanwhile, closer to the western side of the border, given that Andorra is a low-tax jurisdiction, shoppers from both France and Spain are more likely to shop foodstuffs there, together

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with excise goods, instead of crossing the border to the neighbouring EU country (Ladepeche, 2012).

The only substantial reference to cross-border shopping between France and Spain that we have found mentions Le Perthus, a border town belonging partly to France and partly to Spain, located close to two major highways (D900 and A9) connecting the two countries. However, due to the low density of the permanent population in the region, cross-border shopping is not observed to have a recursive character across the year. Instead, a high concentration is observed only over the summer months, as French shoppers rush from Perpignan to the border town in order to profit from lower prices. During the peak of the touristic period, it is estimated that Le Perthus has about 70,000 visitors on a daily basis, though the basket of shopped goods is mainly comprised of excisable goods such as cigarettes and alcohol (Ladepeche, 2012; Crouch et al., 2015).

*Austria – Slovakia:* We found no discussion of cross-border shopping in foodstuffs between Austria and Slovakia in academic literature or articles in the popular press.

*Austria – Czech Republic:* Available information suggests a weakening in the recurrent exodus of Austrians to do their groceries in neighbouring countries of the Central and Eastern Europe such as the Czech Republic. This contrasts with the early years of Europe's opening to the East (*Ostöffnung*).<sup>23</sup> At the same time, internet searches did suggest a significant number of Czech consumers crossing the border to purchase foodstuffs in Austria and Germany. These goods were generally slightly cheaper in Germany in comparison to the Czech Republic (the same article did not report price levels in Austria).<sup>24</sup> Furthermore, foodstuffs in both Austria and Germany were generally considered to be higher quality than in the Czech Republic. This is a salient topic in the Czech Republic, currently featuring prominently both in press and political discussions (Sladkovska, 2016).

### **3.1.2.3 Interview results**

#### **3.1.2.3.1 Public officials and trade associations**

Representatives of EU Member States also provided high-level information as to the occurrence of cross-border shopping in their countries. Respondents in the Czech Republic, Hungary and Slovakia highlighted that even though cross-border shopping takes place between their respective country and neighbouring ones, data describing the phenomenon in greater detail was limited. Moreover, all three respondents were consistent in identifying differences in price level (instead of VAT rate) as the principal driver of cross-border shopping; the Hungarian representative underscored the relative unimportance of VAT differences in driving cross border shopping, when compared with exchange rate oscillations between the HUF and neighbouring currencies.

The Czech Confederation of Commerce and Tourism also provided information about cross-border shopping patterns involving the Czech Republic. According to the interviewee, Czech consumers often exit the country to go to Germany or Austria in order to visit large outlet stores situated on the other side of the border. Principal determinants of this behaviour are the small distance to the border, as well as a better range of products available.

No exact figures were provided. Our interviewee emphasised however that cost saving was not the principal motivation for Czech residents crossing to neighbouring countries to shop FMCGs. Today, Czech cross-border shoppers are mainly guided by the larger

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<sup>23</sup> See burgenlandorf.at. 2012; and Czech-tourist.de, 2016.

<sup>24</sup> See iDNES.cz. 2015; Actualne.cz. 2015; and dTest. 2016.

assortment and better quality of the goods available in countries of the Western Europe. Notably, the difference in the quality of the same good across the border is a topic that has featured prominently in public discussions, shifting the focus away from issues of distortions in the location of sales and tax revenues. Nevertheless, higher prices in FMCGs in Austria were observed to discourage consumers crossing to Austria, with cross-border shopping with Germany more commonplace.

### 3.1.2.3.2 Businesses

Over the course of phone interviews conducted to collect data on pricing differences from border-based supermarkets, we asked for any other insights into regional pricing differences from our respondents. An employee of one discount supermarket chain (occupying a central management position) noted that they had recently adopted a single price policy. According to this, the supermarket in question offers zero price-variation on each good made available in stores within the borders of a country. During the interview, the representative also mentioned that other large discounters or hypermarkets might be following a similar policy.

### 3.1.2.4 Data review

#### 3.1.2.4.1 Sales data

Aside from the information provided by the HCSO (described in section 3.1.2.2 above), we were unable to identify data on the volume of purchases of foodstuffs by non-residents in our case study countries.

#### 3.1.2.4.2 Business prevalence analysis

In order to address the issue of data limitations relating to turnover, we analysed business prevalence as a possible indicator of non-resident demand for foodstuffs from border region retailers. Given the food retail industry in most Member States is dominated by a number of large supermarkets (which are also likely to offer the lowest prices, due to economies of scale), and given most supermarket networks provide quite comprehensive data on supermarket locations, we propose the use of a difference-in-difference set-up, where we calculate the difference between the density of distribution of hypermarkets in the region near the border (DR Border) and the density of distribution in the rest of the country (DR RoC), as shown in equations 1 and 2.

$$\text{Eq. 1 } DR \text{ Border} = \frac{\text{Number of Hypermarkets in bordering region}}{\text{Population in bordering region}}$$

$$\text{Eq. 2 } DR \text{ RoC} = \frac{\text{Total Number of Hypermarkets} - \text{Number of Hypermarkets in bordering region}}{\text{Total Population} - \text{Population in bordering region}}$$

By capitalising on observed supply-side dynamics, this measure captures the relative displacement of demand for foodstuffs in regions along the border through observing relative hypermarkets' density in bordering regions compared to average density in the rest of the country.

For the computation of the country-specific density ratios, this case study used information on the number of hypermarkets in each country, made available through the retailers' websites. Regional disaggregation of observations takes place at the NUTS3 level. For purposes of this analysis, we have defined a *bordering region* as one where 50 percent of its geographic area has a maximum distance of 50km from the border (Bar-Kolelis, 2013).

Table 9: Prevalence of supermarkets

Country	Density Rest of Country	Density at Border	Within Country Difference
<b>Romania</b>	2.298	2.949	-0.651
<b>Hungary</b>	16.300	16.542	-0.242
<b>France</b>	11.561	33.983	-22.422
<b>Spain</b>	5.380	8.376	-2.995
<b>Austria<sup>a</sup></b>	7.484	7.800	-0.315
<b>Slovakia</b>	12.035	13.515	-1.479
<b>Austria<sup>b</sup></b>	7.396	12.173	-4.777
<b>Czech Republic</b>	12.289	11.206	1.083

Source: Supermarket websites, data retrieved in November 2016. A distinction is made between Austria<sup>a</sup> and Austria<sup>b</sup>, depending on the pair for which the country is studied. For Austria<sup>a</sup>, the border region includes that with proximity to Slovakia. For Austria<sup>b</sup>, the border region includes that with proximity to the Czech Republic. This explains the different results for business prevalence between the two cases.

For three out of four country pairs we cannot find evidence of a relative decrease in business prevalence on one side of the border, mirroring a relative increase on the other side. Although in Romania, Slovakia and Spain, we see an increase in business density in border regions consistent with price differences, we also see an identical pattern on the other side of the borders in question. It appears that there are generally more large-scale food retailers per capita in border regions, irrespective of price differences.

Austria and the Czech Republic is the only country pair where we can see evidence of a relative decrease in business prevalence on one side of the border, mirroring a relative increase on the other side. Interestingly, however, this change in business prevalence is in the opposite direction to what we have hypothesised, with more hypermarkets in the more expensive territory. This is perhaps less surprising in light of our interview findings and literature review, which indicated a high level of cross-border shopping by residents of the Czech Republic in Austria, motivated by better quality products.

### 3.1.2.5 Conclusion

Our analysis has identified a number of channels for cross-border shopping for foodstuffs within the EU, but price remains the main driver for cross-border trade. However, VAT is only one component of this pattern, with other taxes, as well as other cost elements such as salaries and rents, generally playing a significant role in pricing. Moreover, quality and range were also identified as significant factors influencing consumer behaviour.

Our business prevalence analysis did not identify any unambiguous indication of price-driven cross-border shopping. In fact, the only instance where the pattern was suggestive of cross-border travel was in the case of Austria and the Czech Republic, and here the possible cross-border shopping effect ran in the opposite direction to that which we expected on the basis of price differences alone.

Overall, the evidence for price-driven cross-border shopping for foodstuffs in our country pairs was weak. We have found no indication that cross-border shopping in the case of foodstuffs would be dramatically influenced by VAT rate changes, as existing price differentials appear to have only limited impacts. While there may be other country pairs worth exploring in more detail, our research has found nothing to indicate that large-scale cross-border shopping in foodstuffs takes place, irrespective of price differences.



Case study: Cross-border shopping (foodstuffs)				
<b>Evidence of impact</b>	None	Limited	<b>Some</b>	Substantial
<b>Maximum value of price differences noted</b>	34.3% savings			
<b>Maximum scale of impact noted</b>	None	<b>Limited</b>	Some	Substantial
<b>Localisation of impact</b>	Densely-populated and well-connected border regions of areas with large price differentials			
<b>Explanation of impact</b>	Price differences obtainable on foodstuffs alone are insufficient to drive cross-border shopping except in very narrow areas close to border.			

### 3.1.3 Vehicle fuel

#### 3.1.3.1 Background

Diesel fuel is homogeneous and easily transportable up to tank volume. What makes diesel fuel complementary to the other case studies is that its price differential stems mostly from different excise levels, and only to a secondary extent from VAT burdens (as fuel is standard-rated under the current VAT directive). The excise differential provides a useful proxy for the possible effect of VAT differences under enhanced flexibility.

##### 3.1.3.1.1 VAT treatment

Fuel, including diesel, is standard-rated under the current VAT directive. The standard VAT rates which are applicable to diesel in the countries covered in this case study are given in Table 10.

Table 10: VAT rates charged on diesel in countries under study

Country	VAT on diesel (%)
<b>Belgium</b>	21
<b>Bulgaria</b>	20
<b>France</b>	20
<b>Greece</b>	24
<b>Italy</b>	22
<b>Luxembourg</b>	17
<b>Slovenia</b>	22

Source: European Commission (2016a)

*Belgium – Luxembourg:* Luxembourg has a comparatively low standard VAT rate – which applies also to diesel – is 17%, four percentage points lower than the analogous rate in Belgium. These rates have been used since 2000 in Belgium and since 2015 in Luxembourg. Before 2015, the VAT rate on diesel in Luxembourg was even lower, at 15%, so the VAT differential between the two countries has been as high as six percentage points.

*France – Luxembourg:* The standard VAT rate in France is 20%, which means that the VAT differential in relation to Luxembourg amounts to three percentage points (see Table 1). The current rate in France follows an increase from January 2014 (from 19.6%). At the time of the reform, an alternative rate of 22.6% was proposed, but this higher rate was eventually rejected (Avalara VATLive, 2012). Because the standard VAT rate in

Luxembourg was 15% before 2015, the VAT differential was even higher in that period, at 4.6 percentage points.

*Greece – Bulgaria:* In Greece, the standard VAT is 24%, compared to 20% in Bulgaria (see Table 1), which makes Greece and Bulgaria the pair with the joint highest VAT differential in the study case – four percentage points (together with Belgium and Luxembourg). Since 2010, Greece has increased its standard VAT three times: from 19% to 21% (in 2010), from 21% to 23% (in 2013) and from 23% to 24% as of 1 June 2016 (Avalara VATLive, 2016).

*Italy – Slovenia:* Italy and Slovenia have the same VAT rate on diesel – 22% (see Table 1) – and are the only pair in the case study to have a zero VAT differential.

### 3.1.3.1.2 Excise duty treatment

The minimum excise duty rate for gas oil used as a motor fuel, as established by the Energy Taxation Directive<sup>25</sup> (Annex I), is EUR 330 per 1,000 litres and EUR 21 per 1,000 litres for commercial and industrial use.<sup>26</sup> However, most countries do not apply the minimum tax rates, with the exception of Greece applying the minimum tax rate for motor fuel use (but using the same rate for commercial and industrial use, which is almost sixteen times higher than the minimum rate), and only Luxembourg applying the minimum rate for commercial and industrial use.

Table 11: Excise duty rate charged on diesel in countries under study

Country	Excise duty on diesel	
	Standard use (in EUR per 1,000 litres)	Commercial and industrial use (in EUR per 1,000 litres)
<b>Minimum</b>	330	21
<b>Belgium</b>	479.9698 464.8345 <sup>27</sup>	22.8845
<b>Bulgaria</b>	330.29	330.29
<b>France</b>	498.1	128.39
<b>Greece</b>	330	330
<b>Italy</b>	617.40	185.22
<b>Luxembourg</b>	338.3548 335 <sup>28</sup>	21
<b>Slovenia</b>	472.76	259.73

Source: European Commission (2016b)

*Belgium – Luxembourg:* Luxembourg uses the minimum excise rate for gas oil for commercial and industrial purposes (Art. 8 of the Energy Taxation Directive), which follows from the Energy Taxation Directive (Annex I) and amounts to EUR 21 per 1,000 litres. It also uses an excise duty rate for motor fuel use of diesel that is only 1.5-2.5% higher than the EU minimum (the exact rate depends on the sulphur content in a given diesel mix). In contrast, Belgium uses rates which are 41-45% higher than the minimum rates for motor fuel use (depending again on the sulphur content of the fuel).

<sup>25</sup> Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity

<sup>26</sup> When used as a motor fuel, source: [http://ec.europa.eu/taxation\\_customs/business/excise-duties-alcohol-tobacco-energy/excise-duties-energy/excise-duties-energy-tax-rates\\_en](http://ec.europa.eu/taxation_customs/business/excise-duties-alcohol-tobacco-energy/excise-duties-energy/excise-duties-energy-tax-rates_en)

<sup>27</sup> The rate of EUR 464.8345 applies to diesel mixes with sulphur content not exceeding 10 mg/kg. The rate of EUR 479.9698 applies to diesel mixes with sulphur content exceeding 10 mg/kg.

<sup>28</sup> The rate of EUR 335 applies to diesel mixes with sulphur content not exceeding 10 mg/kg. The rate of EUR 338.3548 applies to diesel mixes with sulphur content exceeding 10 mg/kg.

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*France – Luxembourg:* Luxembourg has adopted an excise duty rate for motor fuel use of diesel which is just 1.5-2.5% higher than the minimum rate (the exact rate depends on the sulphur content in a given diesel mix). In contrast, France applies a rate which is 51% higher than the minimum rates for motor fuel use (EUR 498.1 versus EUR 330).

*Greece – Bulgaria:* Greece is the only country in the case study which uses the minimum excise duty rate for motor fuel use of diesel (EUR 330 per 1,000 litres). On the other hand, Greece applies the same rate for motor fuel, commercial and industrial use of diesel, which means that the applicable rate for commercial and industrial use is almost sixteen times higher than the minimum rate under the Energy Taxation Directive (Annex I). Bulgaria also uses a single rate both for commercial, industrial, and for standard use, which is higher than the rate in Greece by EUR 0.29 per 1,000 litres. This is a negligible amount (0.09% of the average rate in the two countries, or EUR 0.0003 per litre), which makes it possible to study the effect of the VAT differential without the confounding effect of the excise differential.

*Italy – Slovenia:* Both Italy and Slovenia have excise duty rates on diesel that are substantially higher than the EU minimum tax levels. This applies both to standard use and commercial and industrial use. Italy's rate for standard use of diesel is 87% higher than the minimum tax rate (Slovenia's rate is 43% higher), and it is the highest rate of all the countries in the case study.

### **3.1.3.1.3 Pricing differences**

Unlike most processed goods, which are the subject of analysis in the other case studies, the price of diesel is closely related to the underlying commodity price: the price of crude oil. Other relevant costs include refining costs, sales costs, foreign exchange rates, and taxation.

The price of crude oil is shaped by global factors on the world market, which means that these factors are not a source of significant variation between countries. Refining costs do differ between countries, but this effect is weakened by the fact that diesel undergoes a relatively simple refining process compared to other fuels such as petrol. Sales costs also differ between countries and may be a source of price differentials, but the effect is small relative to tax differences. In our case study, foreign exchange rates are a factor only for the country pair Greece - Bulgaria, as all the other countries are part of the Eurozone – and exchange rate changes are generally passed through relatively rapidly to pump prices. Taxation is therefore the single most important factor driving the price differences between the countries. As discussed in section 3.1.3.1.1, VAT differentials run up to four percentage points in our case study (and to even higher values historically), whereas excise differentials tend to be so large that some of them are better expressed as multiples rather than percentages.

To compare the price levels in diesel fuel, we relied on data provided by the website <http://www.brandstofprijzen.info>. This site features average fuel prices in European (as well as some non-European) countries and is updated daily. Table 12 provides a summary of the price differentials in the country pairs under study.

Table 12: Summary of national price differences for diesel (standard use, per litre)

Country pair	Country A	Country B	Price difference
<b>Belgium – Luxembourg</b>	EUR 1.276	EUR 0.986	EUR 0.290
<b>France – Luxembourg</b>	EUR 1.193	EUR 0.986	EUR 0.207
<b>Italy – Slovenia</b>	EUR 1.352	EUR 1.110	EUR 0.242
<b>Greece - Bulgaria</b>	EUR 1.129	EUR 0.996	EUR 0.133

Prices as of December 5, 2016

The largest price differential can be observed between Belgium and Luxembourg (EUR 0.290), and the smallest for the country pair Greece-Bulgaria. Greece-Bulgaria is also the only country pair in which different currencies are used (EUR in Greece, and BGN in Bulgaria).

We attempted to supplement this information with pricing data from countries' border regions, which might show different pricing dynamics than national averages. For Belgium, France and Luxembourg, we extracted data from <https://belgique.carbu.com/>. The results of this analysis are shown below.

Table 13: Prices of diesel (standard use, per litre) at selected gas stations in border regions of Belgium and Luxembourg as of 5 December 2016

Distance to border/Country		Belgium	Luxembourg
<25km	<b>EUR 1.226</b> Bastogne	<b>EUR 0.986<sup>29</sup></b>	
	<b>EUR 1.226</b> Bertrix		
	<b>EUR 1.276</b> Bertrix		
>25km	<b>EUR 1.212</b> Baillonville		
	<b>EUR 1.217</b> Carlsbourg		
	<b>EUR 1.251</b> Ciney		
Distance to border/Country		France	Luxembourg
<25km	<b>EUR 1.172</b> Aumetz	<b>EUR 0.986<sup>30</sup></b>	
	<b>EUR 1.178</b> Thionville		
	<b>EUR 1.300</b> Yutz		
>25km	<b>EUR 1.189</b>		

<sup>29</sup> The website <https://belgique.carbu.com/> quotes the price of EUR 0.986 for all the petrol stations in Luxembourg. This price is consistent with the website [www.brandstofprijzen.info](http://www.brandstofprijzen.info)

<sup>30</sup> The website <https://belgique.carbu.com/> quotes the price of EUR 0.986 for all the petrol stations in Luxembourg. This price is consistent with the website [www.brandstofprijzen.info](http://www.brandstofprijzen.info)

	Briey	
	<b>EUR 1.222</b> Rombas	
	<b>EUR 1.310</b> Lantéfontaine	

Source: Belgique Carbu (2016)

As of 5 December 2016, the average price differential between the selected stations in Belgium and Luxembourg was **EUR 0.257** for petrol stations located up to 25km from the border and **EUR 0.241** for petrol stations located further away from the border. This result is somewhat surprising, as we might expect petrol stations in border regions to be more price competitive. By contrast, the average price differential between France and Luxembourg was **EUR 0.231** for petrol stations located up to 25km from the border and **EUR 0.254** for petrol stations located further away from the border.

We were unable to find an authoritative source for localised pricing differences in the case of Greece-Bulgaria.

Finally, to find fuel prices at the petrol station level in Italy, we used public information provided to us by regional Italian authorities. The entire Slovenian border is located in the Italian region Friuli Venezia Giulia. The region operates a website on which prices of fuel charged in the region's petrol stations are quoted.<sup>31</sup> All the petrol stations that operate under the region's discount system (see section 3.1.3.2) are included – there were 464 diesel vendors listed as at 13 November 2016. The website is detailed, enabling one to browse the data by province, municipality, and petrol station operator, and quotes the data at the level of a single petrol station. The results of this analysis are shown below.

**Table 14: Prices of diesel (standard use, per litre, service excluded) at selected gas stations in border regions of Italy and Slovenia as of 2 December 2016**

Distance to border/Country	Italy	Slovenia
<b>&lt;25km</b>	<b>EUR 1.359</b> Gorizia	EUR 1.110 <sup>32</sup>
	<b>EUR 1.369</b> Monfalcone	
	<b>EUR 1.429</b> Gorizia	
<b>&gt;25km</b>	<b>EUR 1.309</b> Udine	
	<b>EUR 1.535</b> Pordenone	
	<b>EUR 1.599</b> Porcia	

Source: Carburanti Regione, 2016a.

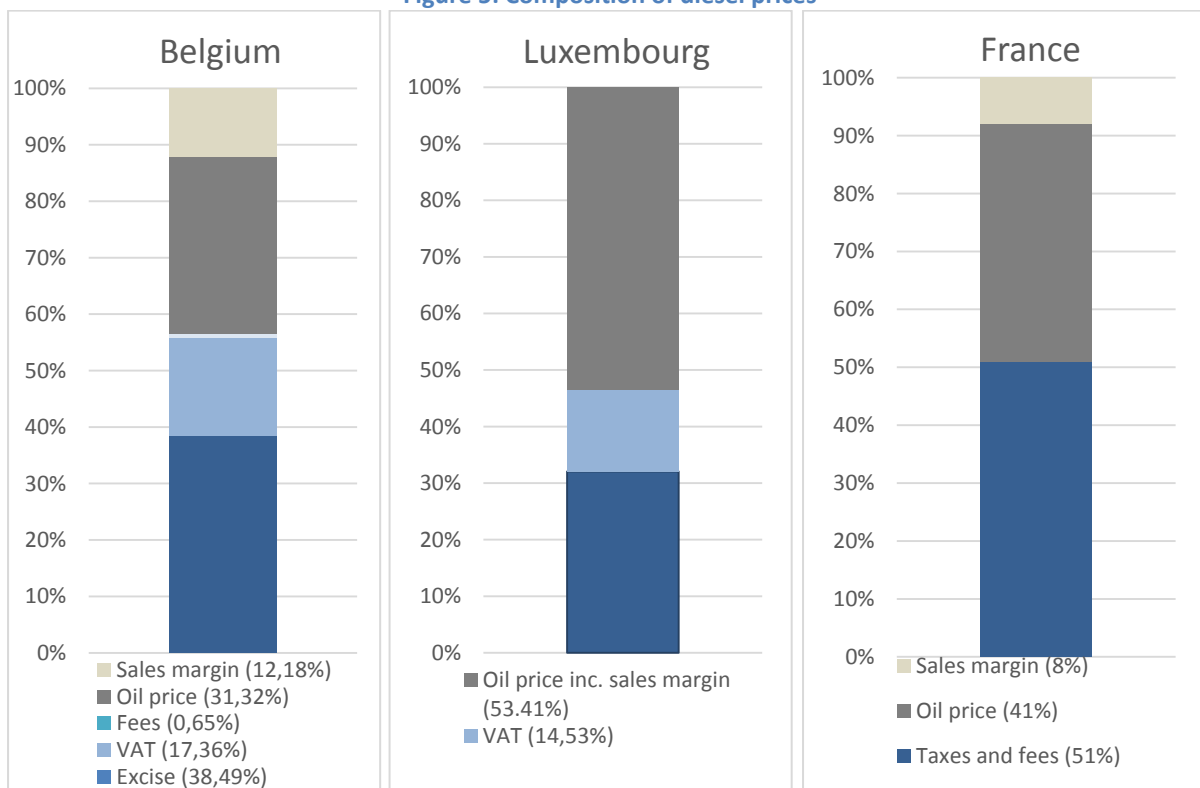
<sup>31</sup> Carburanti Regione (2016a), see also the description of the database: <http://www.regione.fvg.it/rafvfg/cms/RAFVG/ambiente-territorio/carburanti/FOGLIA1/>

<sup>32</sup> [www.brandstofprijzen.info](http://www.brandstofprijzen.info), 2016.

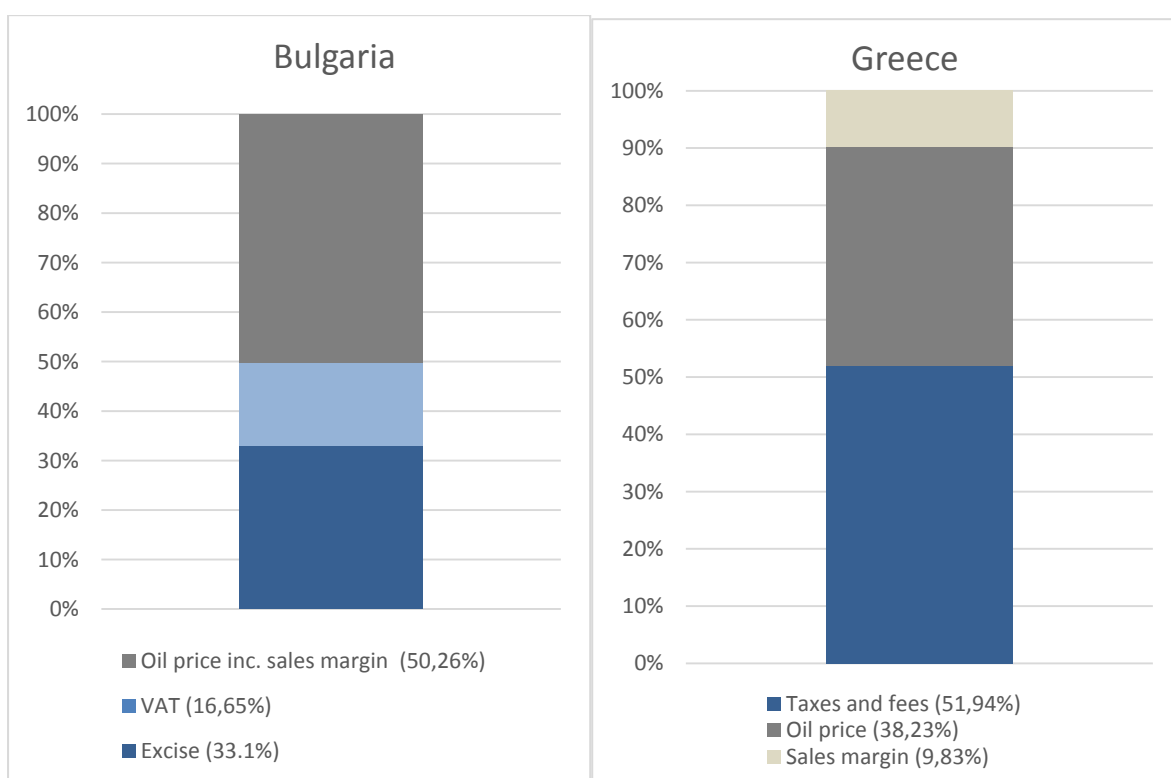
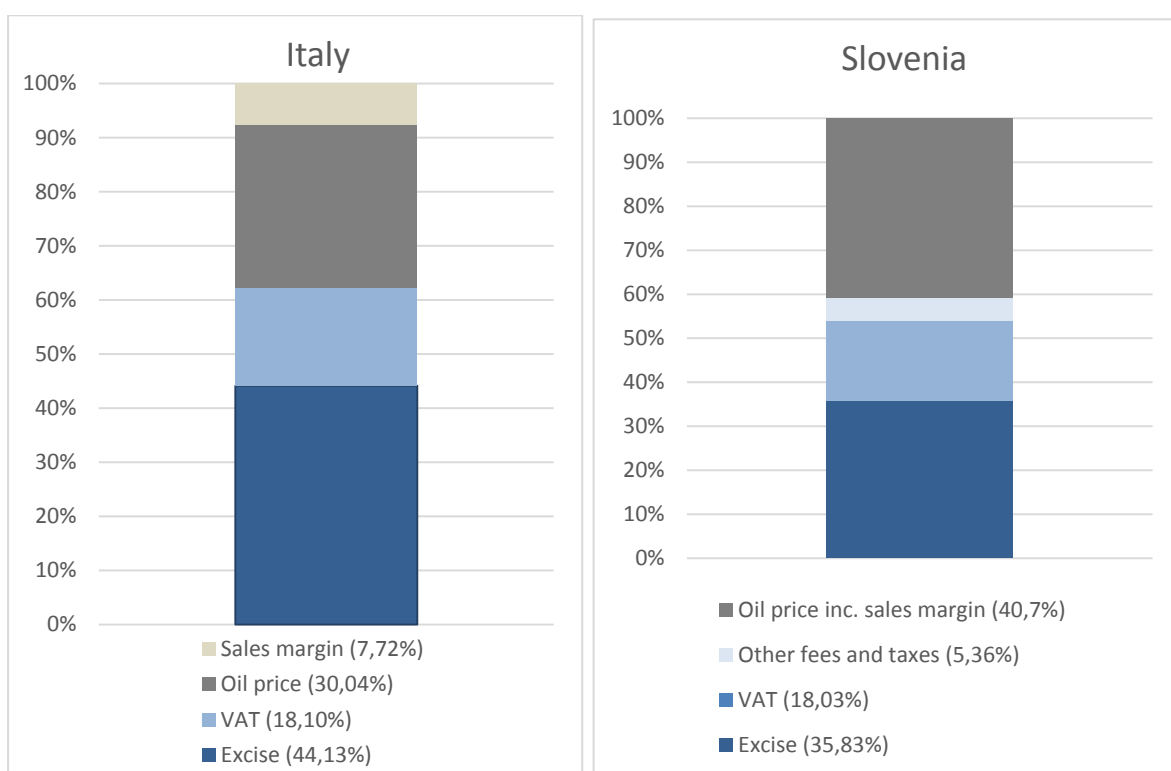
As of 2 December 2016, the average price differential was **EUR 0.276** for selected petrol stations located up to 25km from the border and **EUR 0.371** for petrol stations located further away from the border. According to our expectations, the diesel price was an increasing function of distance from the border to Slovenia.

Below are graphs showing the composition of the diesel price in each of the countries analysed in the study. Because of varying availability of data, not every graph follows the same level of component aggregation. To ease comparisons, all tax components (excise duty, VAT, and other fees and taxes) are marked in shades of blue, and all commercial components (oil price, sales margin) are marked in shades of grey. One point to emphasise is that excise duties generally account for twice as big a proportion of the price level as VAT. Consequently, the price differences that result from excise duties on this particular good are significantly greater than those that might be expected as a result of enhanced flexibility in VAT rates on other goods.<sup>33</sup>

Figure 5: Composition of diesel prices



<sup>33</sup> Assuming countries maintain similar maximum VAT-rate preferences in the wake of reform.



Sources: Fédération Pétrolière Belge (2017); Guichet.lu (2017); Egedis (2017) – data for H2 2014; Unione Petrolitera (2017) – data for February 6, 2017; Ministry of Economic Development and Technology of Slovenia (2017) – data for February 2017; Europe’s Energy Portal (2017); Ministry of Economics, Development and Tourism of Greece (2017) – data for February 3, 2017.

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### 3.1.3.2 Literature review

Diesel is an example of a good on which not only VAT but also excise duty is charged. Because the level of excise duty on diesel (and other goods) differs from one Member State to another, the excise differential provides a useful proxy for how VAT rates might differ under enhanced flexibility. Because excise differentials are generally greater than VAT differentials, excisable goods have generally varied in price between Member States more than other types of goods, leading to greater historical interest in cross-border shopping patterns for these goods.

The establishment of the Single Market enabled customers to take advantage of a lower excise – which translates to a lower product price – by shopping abroad. A notable example is alcoholic beverages, which are charged a much higher excise rate in the United Kingdom than mainland Europe, e.g. in France. In 1998, five years after the establishment of the Single Market, UK revenue lost from the excise tax on alcoholic beverages as a result of cross border trade was estimated at between GBP 290 million (Smith, 1999) and GBP 375 million (Royal Economic Society, 2009).

Apart from these direct effects of the excise differential, there are also indirect effects in the form of tax competition between Member States. In order to maximize revenue by preventing residents from shopping abroad, Member States engage in strategic interactions and charge lower excise rates than they would in absence of the Single Market. Lockwood and Migali (2009) used panel data from 12 EU countries collected over the period 1987-2004 to demonstrate a significant increase in tax competition in the excise for wine, beer, and ethyl alcohol after the establishment of the Single Market in 1993. In contrast, there seems to be limited evidence for a similar change in the cigarette excise. This, however, might be explained by the presence of increased tax competition even in the period *before* 1993, due to the prevalence of cigarette smuggling.

*Belgium – Luxembourg:* Luxembourg is a particularly interesting country to include in the cross-border trade analysis due to its approach to excise duties, which are substantially lower than in its neighbouring countries.

In Luxembourg, only 16.8% of revenue from fuel VAT and excise duties is contributed by residents, with the remainder contributed by non-residents, including 42.4% by professional transit operators (IMF, 2015). Some stakeholders claim that transit operators purposefully plan routes to cross through Luxembourg and take advantage of attractive diesel prices (Reuters, 2015), a practice that is facilitated by the country's central geographic location in Europe.

An illustrative example of cross-border shopping between Belgium and Luxembourg is the village Martelange (see Jovanović, 2015). Located in the Wallonia region of Belgium, Martelange shares a border with Luxembourg along the 1.8 km of the N4 Brussels-Arlon motorway that passes through the village. While the Belgian side of the street consists mainly of houses, the Luxembourgian side is filled with petrol stations and liquor stores. Owing to the excise duty differential, those businesses are able to attract Belgian customers with prices of fuel, alcohol and tobacco that are substantially lower than those in similar establishments on the Belgian territory. The businesses, which are accessible only to drivers arriving from the Belgian territory, exhibit a striking density. For example, a single 850-metre stretch of the street accommodates 12 gas stations, most of them with convenience stores.

*France – Luxembourg:* The border between France and Luxembourg extends from Schengen to Rodange and is 73 kilometers long. Although it is the shortest border between the countries in the region, in 2009 there were 55 fuel stations alongside it. This is almost as many as on the border between Germany and Luxembourg, which is



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twice as long (Ullrich, 2009). In 2014, a survey prepared by a website that targets people living in France and working in Luxembourg (which in French are called *les frontaliers*) showed that one of the main sources of hesitation that French people had been facing while deciding whether or not to work in Luxembourg was the price of traveling to the workplace (Les Frontaliers, 2014). However, cheap fuel prices in Luxembourg seemed to be making this concern less important. The results showed that for 41% of respondents, fuel expenses were in the range of EUR 100-200, while another 35% were in the range from EUR 200-300. Additionally, 16% of respondents had a "fuel card", and 5% of them had their fuel expenses refunded by the employer. Although the amount of "fuel-tourists" in Luxembourg have fallen during the past two years, Luxembourg still offers the cheapest fuel prices in the region (Drive Europe News, 2016). According to the recent classification of VAB, a Wallonian motorists' association, Luxembourg is the cheapest destination for both unleaded fuel and diesel prices in the region, whereas France is in fourth place with regard to both products (Les Frontaliers, 2016). It is therefore very advantageous also for the French *frontaliers* to fill up their cars in Luxembourg instead of in France. However, fuel purchasing by commuters should not be considered distortionary in the sense used in this study – it is not distortionary in that it does not involve a distinct tax-driven journey, and commuters the world over tend to refuel at the cheapest outlets available on their routes. On the other hand, the cross-border trade in fuel between France and Luxembourg shows signs of slowing down. Fuel sales in Luxembourg have declined between 2012 and 2015 by 12% (Le Quotidien, 2016).

*Greece – Bulgaria:* The scale of cross-border trade in diesel between Greece and Bulgaria is reduced by two factors. One is the relatively low price differential between the countries – at EUR 0.14, it is the lowest of all four pairs. Another is the relatively low penetration of diesel cars in Greece, which amounts to 3.94% of all passenger cars, compared to the EU average of 40.97% (ACEA, 2014). However, there is an even greater difference in the excise charges on unleaded petrol applied in the two countries (with Bulgaria again the cheaper), which means we would still anticipate a substantial level of cross-border activity.

*Italy – Slovenia:* In general, the prices of both unleaded petrol and diesel are substantially higher in Italy than in Slovenia. The price differential of diesel between the two countries at the time of the study was approximately EUR 0.24.

Italy has been working to reduce the negative fiscal impact of cross-border fuel trade. In the past, the country introduced a solution that allows Friuli-Venezia Giulia, the region bordering Slovenia, to reduce the excise on petrol (Ahmad et al., 2008). The disadvantage of this solution was additional administrative burdens. The removal of this system was associated with a decline in the sales of diesel (as well as of petrol) by 18% on average in the region. Even larger declines were reported in the municipalities of Udine (by 30%) and Gorizia (by 60%), both of which are close to the Slovenian border (Messaggero Veneto, 2015).

Another solution introduced in the region of Friuli-Venezia Giulia has been fuel discounts. They are granted to residents of border areas, which are divided into two tiers: Area 2 (a basic discount) and Area 1 (special discount applicable to mountainous areas and areas identified as disadvantaged or partly disadvantaged).<sup>34</sup> All automobile users who are residents of the region are entitled to the discount when purchasing fuel for private use (see Table 15 for the discount rates; Carburanti Regione, 2016b). The system has been

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<sup>34</sup> Gestori Carburanti, 2016b. The prolongation was justified by reference to the decreasing purchasing power of the households in the region.

in place since 2010<sup>35</sup> and has been prolonged several times, most recently until December 2016 (Gestori Carburanti, 2016b), making use of magnetic cards that can be obtained by users in the chambers of commerce in each of the region's provinces.<sup>36</sup>

The discounts offered by the region are in general insufficient to cover the price differential in fuels between Italy and Slovenia. Nevertheless, it has occasionally been possible to find petrol stations in Italy offering petrol at comparable or marginally lower prices than in Slovenia. For example, *Messaggero Veneto* (2015) reports that on 30 July 2015 the price of unleaded petrol at the petrol station in Gorizia, Italy was EUR 1.349 (after applying the regional discount) compared to EUR 1.353 offered across the border in Nova Gorica, Slovenia. However, this is far from being a rule: the average price of unleaded fuel (Euro95) in Italy was EUR 1.513 compared to EUR 1.242 in Slovenia as of 6 December 2016 (Brandstofprijzen.info). Moreover, diesel has usually been more expensive. On 30 July 2015 the cheapest petrol station on the Italian side offered diesel for EUR 1.293, including the Area 1 discount, while the price in Slovenia was EUR 1.187. There have been suggestions to make the discount system more generous: for example, it has been proposed that the available discounts are increased by EUR 0.10 for gasoline and by EUR 0.08 for diesel (*Messaggero Veneto*, 2015).

The costs of the discount system were approximately EUR 60 million per annum in 2014 (Gestori Carburanti, 2014). Furthermore, the system creates opportunities for abuse. For instance, in 2014 Italian financial police Guardia di Finanza launched an investigation into the case of two petrol station managers who had been reported to charge larger amounts of fuel on the cards of their customers than actually sold, and in this way inflated the volume of fuel on which reimbursement from regional authorities was due (Gestori Carburanti, 2014).

**Table 15: Fuel discounts available for residents of Friuli Venezia Giulia**

Area/Type of fuel	Unleaded petrol	Diesel
<b>1</b>	EUR 0.21	EUR 0.14
<b>2</b>	EUR 0.14	EUR 0.09

Source: Carburanti Regioni (2016b) and Gestori Carburanti (2016b).

In order to "provide maximum information and contribute to the market transparency" (Regione, 2016), the region Friuli Venezia Giulia operates a website containing fuel prices at all the petrol stations of the region that participate in the discount programme.

### 3.1.3.3 Interview results

As part of the case study, we contacted a range of public officials, trade associations and private businesses. Our aim was to collect first-hand evidence on the cross-border trade in diesel, and in particular its economic and fiscal impacts.

#### 3.1.3.3.1 Public officials

The Luxembourgian tax authorities referred us to a study conducted by Dr Dieter Ewringmann on behalf of the Luxembourg government and submitted on 25 November 2016, which included useful data which we have included in our subsequent analysis (see section 3.1.3.4 below).

<sup>35</sup> Introduced by Regional Act No 14/2010 – Regulation for the support of purchase of transport fuels (legge regionale n. 14/2010: Norme per il sostegno all'acquisto dei carburanti per autotrazione), as amended by Regional Act No 11/2011

<sup>36</sup> See <http://www.ud.camcom.it/P42A239C235S40/Rilascio-della-tessera-per-la-prima-volta.htm>

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Belgian and Slovenian tax authorities replied to our query and informed us that there are no estimates of cross-border shopping for car fuel available. According to the Slovenian authorities, such estimates are in general difficult to obtain and sources are very limited. Potential sources of information indicated by the Slovenian authorities include fuel traders and trade associations in Slovenia and Italy. The authorities also added that one of the methods used by their organization in the past was to trace articles in the newspapers in order to estimate quantities and values of fuel traded cross-border in the region.

The Italian authorities replied that they do not have any information concerning the purchase of fuel abroad by Italian nationals, while Bulgarian and Greek tax authorities did not reply to our query.

### **3.1.3.3.2 Tax experts**

Apart from contacting public officials, we also contacted tax experts from a select group of countries covered in our analysis. The tax experts replied that they did not have knowledge of any statistical data related to cross-border trade, and some noted that cross-border trade, including trade in fuel, is not monitored in their countries. However, they were able to corroborate that they believed that the existence of price differentials leads to cross-border trade.

The Luxembourgian tax experts observed that consumers come to Luxembourg to purchase fuel, alcohol and tobacco. In fact, Europe's largest petrol station operates on the territory of Luxembourg (on a highway in the border area) to address the demand from cross-border shoppers. The experts also remarked that the price differentials for these goods were not primarily caused by VAT differentials, but mainly driven by the lower rates of excise taxes. The experts confirm the conclusion from our literature review that the recent increase in the excise rate for fuel has diminished the price differential and potentially also the cross-border trade. The tax experts in Luxembourg are also aware that there are around 200,000 commuters who work in Luxembourg, but live in one of the neighboring countries. While not visiting Luxembourg specifically for the purpose of shopping, they nonetheless contribute to cross-border trade statistics. Consequently, these statistics overstate the level of cross-border trade driven by statistics alone.

The Belgian tax experts consulted noted that Dutch consumers often purchase diesel fuel in Belgium due to the existence of a favorable price differential.

Finally, the Slovenian tax experts we approached confirmed that consumers come to Slovenia to purchase fuel. These consumers are mainly from Italy, Hungary, and Croatia. The tax experts emphasized that in general price differentials are not only due to VAT, but due to other factors as well. The case of diesel is a good corroboration of this statement, as a price differential exists for this commodity even though the VAT rate in both countries is the same, at 22%.

### **3.1.3.3.3 Trade associations and businesses**

We contacted five different trade associations representing vehicle fuel vendors and three different fuel vendor organisations based in our case study countries. Despite follow-up emails and phonecalls, we did not receive any responses.

### **3.1.3.4 Data analysis**

In the course of our research, it has become clear that the availability of sales and turnover data in the countries under examination is severely limited, with the exception of Luxembourg. For that reason, our analysis combines two approaches. First, we use

sales and tax revenue data where available. Second, we supplement this analysis by using publicly available country-by-country data on the quantity of petroleum products purchased, number of petrol stations, population size, and the number of registered vehicles. This enables us to arrive at relative sizes of the petroleum products markets in our country-pairs, which we then use to draw inferences about the possibility of cross-border shopping.

### 3.1.3.4.1 Direct data

Using the value of non-deductible fuel exports and the 15% VAT rate applicable prior to 2015, we calculate the value of fuel exports from Luxembourg due to cross-border trade to be as follows:

**Table 16: Fuel Exports (all types) from Luxembourg due to cross border trade**

Year	Value of fuel exports (purchaser price, EUR million)
<b>2010</b>	46
<b>2011</b>	69
<b>2012</b>	77
<b>2013</b>	123
<b>2014</b>	146

Source: Data provided by Tax Authorities in Luxembourg.

Tax revenue generated from the sale of fuel to foreigners (including commuters who live in neighbouring countries, but work in Luxembourg) amounted to EUR 795 million in 2012 (Ewringmann, 2016). This is three times more than the EUR 265 million in tax generated from the sale of fuel to local inhabitants in the same year. This is also 35% more than the tax income generated from the sale of cigarettes to foreigners in 2012, the second largest source of tax income due to cross-border trade (EUR 517 million).

Recently, there seems to be a downward trend in fuel tourism in Luxembourg. Luxembourgish Wort reports (2016a) that the number of visitors at Luxembourgish petrol stations dropped by 10% over the period 2014-2015. This may be linked to the fall in world fuel prices, reducing the incentive for Belgian, German, and French motorists to go abroad to fill up the tank. Over the past ten years, the revenues from VAT on petrol fell by 35%, and the revenues from VAT on diesel by 10% (Luxembourgish Wort, 2016b).

### 3.1.3.4.2 Indirect data

For this section, we use data on the volume of petroleum products consumed, the number of petrol stations, population size, and the number of registered vehicles to arrive at relative sizes of the petroleum products markets in our country pairs. Large relative petroleum product consumption and high petrol station density in border regions could suggest that some of the fuel sales in these jurisdictions can be attributed to cross-border trade. To arrive at relative values, we control absolute values using both the population size and the number of registered vehicles.

Although some of the available data is not disaggregated by region, we expect the relationship between the consumption of petroleum products and cross-border trade to be valid, especially for smaller countries such as Luxembourg and Slovenia, in which the border area (which we target) is large relative to the total territory (for which we have the data). Similarly, while some data does not differentiate between diesel and other forms of fuel, price differentials of at least 13% exist on both fuel types in all our case study country pairs (see table below).

Table 17: Price differentials in diesel and petrol as of 7 December 2016

Indicator	Belgium over Luxembourg	France over Luxembourg	Italy over Slovenia	Greece over Bulgaria
<b>Diesel price differential</b>	29%	18%	19%	13%
<b>Petrol (Euro95) price differential</b>	21%	16%	22%	43%

Source: Brandstofprijzen (2016)

Clearly, cross-border trade is not the only possible driver of apparent differences in per capita fuel consumption. Most obviously, lower price levels would lead us to anticipate higher levels of consumption domestically, so on that basis alone we would expect to see higher per capita consumption in the lower-price countries. Studies have shown that price elasticity of demand with regard to petrol products is low in the short run (between -0.05 and -0.26), but increases substantially in the long run (to between -0.21 and -0.86).<sup>37</sup> Alternatively, regardless of the number of registered vehicles, people may prefer to use public transportation in some countries more than in other countries. This may be due to differences in infrastructure, relative prices, and societal trends. However, available data (from Eurostat) shows that the share of kilometers traveled by a passenger car in total travels is similar across Belgium (80.4%), France (85.1%), and Luxembourg (83%). It is also very similar, and lower, in Bulgaria (80.1%) compared to Greece (81.6%), although, admittedly, it is higher in Slovenia (86.7%) than in Italy (78.9%).

Other possible factors include average distances driven and average income levels. However, these factors are not expected to inflate the effect of increased consumption due to cross-border trade. In contrast, they may underestimate it (e.g. Slovenia and Bulgaria are less wealthy than Italy and Greece respectively, while Luxembourg has shorter distances to drive than France and Belgium, so in all cases we would anticipate these factors would lead to lower levels of per capita consumption in the cheaper countries).

Having discussed the caveats of analysis and potential channels of the relationship, we turn to examining the data.

Table 18: Absolute and relative petroleum products consumption in 2014 (in barrels per day)

Indicator	Belgium	France	Luxembourg
<b>Petroleum products consumption</b>	619,000	1,692,000	57,000
<b>Petroleum products consumption per capita</b>	0.056	0.026	0.114
<b>Petroleum products consumption per vehicle</b>	0.113	0.053	0.157

Source: EIA Beta<sup>38</sup>, Belgische Petroleum Federatie (BPF)<sup>39</sup>

<sup>37</sup> See e.g. Hamilton (2008), which provides an overview of existing literature.

<sup>38</sup> <http://www.eia.gov/>

<sup>39</sup> <http://www.petrolfed.be/nl/petroleumindustrie/economie/evolutie-van-het-aantal-tankstations>

It is clear from Table 18 above that Luxembourg has the highest rate of consumption of petroleum products, which would be consistent with some of this consumption pertaining to individuals and vehicles based outside Luxembourg. This effect is present regardless whether we control the absolute sizes of the market using the population size or the number of registered vehicles.

We also used data on the number of petrol stations, population size, the number of registered vehicles, and sales volumes to calculate the per capita and per vehicle density of petrol stations in Belgium, France and Luxembourg (see below).

**Table 19: Petrol station density in 2015**

Indicator	Belgium	France	Luxembourg
<b>Number of gas stations</b>	3,386	10,860	237
<b>Ratio of inhabitants to gas stations</b>	3,278	5,948	2,110
<b>Ratio of vehicles to gas stations</b>	1,612	2,929	1,532
<b>Ratio of sales volume to gas stations</b>	1,950	3,890	8,340

Source: Belgische Petroleum Federatie (BPF).<sup>40</sup> Data for Belgium is assessed using the Fapetro methodology.

Again, Luxembourg has a much higher density of petrol stations than Belgium and France. This suggests that Luxembourg's petrol stations serve not only domestic customers, but also foreign visitors who take advantage of the price differential.

We supplement this analysis by taking a disaggregated, regional approach. Using online mapping technology, we counted the number of petrol stations in each of Luxembourg's 42 communes that lie on a border with another Member State. We then calculate the petrol station density by dividing the total population in the 42 communes by the total number of petrol stations in this region. Finally, we compare the density in the border communes to that in non-border communes (see below).

**Table 20: Petrol stations density in border communes vs. non-border communes**

Region	Ratio of inhabitants to gas stations
<b>Communes that border another country</b>	2,085
<b>Communes that border France</b>	4,521
<b>Communes that border Belgium</b>	1,521
<b>Communes that border Germany</b>	925
<b>Communes that do not border any country</b>	2,431

Source: Major online mapping platform (petrol stations data), Le Portail des Statistiques, Grand-Duché de Luxembourg (population data), <http://www.statistiques.public.lu/stat/>

As we expected, the petrol stations density was generally higher in the border regions (2,085 inhabitants per a petrol station) than in the non-border region (2,431 inhabitants per a petrol station). There is however a relatively low petrol station density in the communes that border with France, though this region of Luxembourg is particularly

<sup>40</sup> <http://www.petrolfed.be/nl/petroleumindustrie/economie/evolutie-van-het-aantal-tankstations>

heavily urbanized and thus the same number of stations may be expected to serve a higher number of customers.

In the case of Italy and Slovenia, effects were less tangible. Slovenia, which is the country with cheaper fuel, does have a larger relative market for petroleum products, but the difference is not as large as in the case of Luxembourg – perhaps indicating the prominence of commuter traffic in accounting for the Luxembourg effect. Differences in consumption between Italy and Slovenia might potentially be driven by a mixture of factors (e.g. higher use of passenger cars for personal transportation in Slovenia, as outlined above), but it is highly plausible that one of those factors is cross-border trade in diesel.

**Table 21: Petroleum products consumption in 2014 (in barrels per day)**

Indicator	Italy	Slovenia
<b>Petroleum products consumption</b>	1,266,000	50,000
<b>Petroleum products consumption per capita</b>	0.021	0.024
<b>Petroleum products consumption per vehicle</b>	0.034	0.043

Source: EIA Beta<sup>41</sup>, Nationmaster

Bulgaria has a smaller market for petroleum products than Greece, which may suggest that other factors, rather than cross-border trade, determine the relation of per vehicle consumption of petroleum products in the analyzed country pair. This may also corroborate the findings in the other parts of the report: relatively low price differential, and the barrier posed by different currencies.

**Table 22: Petroleum products consumption in 2014 (in barrels per day)**

Indicator	Bulgaria	Greece
<b>Petroleum products consumption</b>	84,000	284,000
<b>Petroleum products consumption per capita</b>	0.012	0.026
<b>Petroleum products consumption per vehicle</b>	0.030	0.042

Source: EIA Beta<sup>42</sup>, Nationmaster

With the use of price data, standard tank volumes, and average fuel consumption, and proxies of leisure/work time costs we estimated maximum distances for which cross border journeys would be profitable.<sup>43</sup> Table 23 reports two crucial figures, namely

<sup>41</sup> <http://www.eia.gov/>

<sup>42</sup> <http://www.eia.gov/>

<sup>43</sup> Sources: average assumed tank volume is 700 litres for trucks and 70 for passenger cars, source of average fuel consumption is Ewringmann (2016), whereas labour costs and hourly net

distances for which economic costs of travelling to gas stations are lower than gains from price differentials, and an element of sensitivity analysis – the impact of a potential increase in price differential on the range of tank tourism.

In the analysed country pairs, under current price conditions for owners of passenger cars it is profitable to fill an empty tank across border if a gas station is ca. 21-27 kilometers away. Much longer are ranges, ca. 89-116 kilometers, under which tank tourism is profitable for haulage companies. Under the assumption of perfect elasticity of supply and perfectly rigid demand, a one percent decrease in price in a Member State with lower prices would increase the range of tank tourism by 0.95-2.06km for passenger car owners and 5.17-8.40km for haulage companies. Given these are maximum values (as they assume no cost for foregone leisure time or vehicle depreciation), it becomes apparent that even quite large discrepancies in VAT rates (such as between 0% and 27%) are unlikely to encourage a great deal of tank tourism outside a narrow border region.

**Table 23: Maximum distances at which cross-border tank tourism is economically rational**

Country A / Country B	Price Country A	Price Country B	Price difference	Difference on a small tank	Difference on a large tank	Range to breakeven point (passenger car)	Range to breakeven point (truck)	Increase in range due to 1% decrease in price (passenger cars)	Increase in range due to 1% decrease in price (trucks)
<b>BE/ LU</b>	1.276	0.986	0.29	20.3	203	26.65	116.53	0.95	5.17
<b>FR/ LU</b>	1.193	0.986	0.207	14.49	144.9	20.70	89.42	1.03	5.20
<b>IT/ SL</b>	1.352	1.11	0.242	16.94	169.4	27.65	106.22	1.33	5.99
<b>GR/ BL</b>	1.129	0.996	0.133	9.31	93.1	26.14	98.04	2.06	8.40

Source: Our analysis, based on Eurostat and Ewringmann (2016).

### 3.1.3.5 Conclusion

The analysis of cross-border trade in diesel, its patterns and drivers on a sample of four EU Member State pairs offers a number of important lessons. Firstly, the analysis showed that price differentials in diesel are significant, which stems mostly from differences in excise rates. The impact of VAT rate differentials on cross-border trade patterns is by contrast moderate.

As diesel is a homogenous and relatively expensive good, price differentials create clear incentives for cross-border trade. In the country pairs analysed, the volume of cross-border trade is substantial. In Luxembourg alone it amounts to approximately 146

wages from Eurostat were included in the estimation to proxy economic cost of leisure and work time taken. In estimating the cost we assumed 60 kilometer per hour average pace of driving and we assumed that the same distance will be traveled in both ways.



million EUR, which is reflected in the prevalence of petrol stations on both sides of its borders.

Price differentials ranging from 11 to 23% in our different country pairs made tank tourism profitable in the range of 21-28 kilometers, for a standardised passenger car. Further increases in price differentials would increase the distance to which travel might be rational. If prices in Members States with relatively lower prices of diesel went down by 1%, the economically rational range for tank tourism would increase by 0.95-2.06 for passenger cars.

Our business prevalence analysis supports these findings in the cases of France-Luxembourg and Belgium-Luxembourg. Although less comprehensive data were available, our analyses for the cases of Italy-Slovenia and Greece-Bulgaria corroborated these effects. Our interviews with stakeholders also supported these results.

In conclusion, where prices are determined more by global market conditions than by local issues of rent and wage levels, and goods are portable, there is scope for tax-related distortion in the location of economic activity. However, the incentives that can be created through VAT rates (assuming that these continue to vary within existing bands of 0% to 27% of the value of goods) are limited in comparison to incentives for cross-border shopping for excisable goods, where excise duties can account for well over 100% of the pre-tax price of goods.

<b>Case study: Cross-border shopping (vehicle fuel)</b>				
<b>Evidence of impact</b>	None	Limited	<b>Some</b>	Substantial
<b>Maximum value of price differences noted</b>	EUR 0.29/litre or 22.7% (Belgium-Luxembourg)			
<b>Maximum scale of impact noted</b>	None	Limited	<b>Some</b>	Substantial
<b>Localisation of impact</b>	Border regions with substantial excise differences.			
<b>Explanation of impact</b>	Price differences achievable on excisable goods are greater than those achievable through VAT differentials, even taking the most extreme VAT differences currently in place in the EU28. This is sufficient to incentivise cross-border shopping, though even so travel costs limit the area to which the incentive applies.			

### 3.1.4 Medical equipment

#### 3.1.4.1 Background

Medical equipment for disabled persons – a sub-category of the broader medical equipment category of goods – attracts reduced or super-reduced VAT rates in many Member States. Moreover, such items are often very expensive. In principle, this should create incentives to engage in cross-border shopping, making it an interesting case to include in our research.

We have focused on motorised wheelchairs as a relatively standard but expensive item purchased by customers with certain mobility-related disabilities. Motorised wheelchairs are a much less uniform product than many of the goods we are including in our cross-border shopping case studies, with a fragmented market of retailers and products tailored to a variety of disabilities. For this reason we have been unable to identify one particular product with complete EU coverage and a large share of the market, and have instead relied on a representative product that is widely sold and of relatively standard specifications.

Following discussions with industry experts, we examined a major brand of powered wheelchair, manufactured by a leading medical company that is based in the UK but has dealerships across the European Union. Although the model is offered with a range of optional extras, we compare the 'base' model for each country only.

This powered wheelchair is only sold new by dealers authorised by the manufacturer, who set the retail prices their dealers must apply in each jurisdiction. For this reason determining the prices is relatively straightforward, as we do not have to rely on any sort of aggregate proxy measure of prices in a given country.

#### **3.1.4.1.1 VAT treatment**

Because of how medical equipment is handled in the existing EU VAT regime, the VAT rates applied by Member States vary widely – from super-reduced rates as low as 0% right up to standard rates of 25% (or even 27% for customers who don't qualify as disabled).

A complication with medical equipment for disabled people is that, in some cases, the VAT rate applicable on the sale differs according to the customer. In nearly 40% of Member States, medical equipment sold to those with disabilities for their personal use attracts a reduced or super-reduced VAT rate.

However, in one of our case study countries, disabled customers cannot take advantage of these lower rates through cross-border shopping. In Sweden the supply of medical equipment is zero rated only where the equipment is supplied to the disabled person by the entity treating the disability, as a consequence of medical treatment. Where the equipment is supplied by someone other than the entity providing the medical care, the applicable rate is 25%.

The VAT rates in each of our case study countries is provided below in Table 24.

#### **3.1.4.1.2 Pricing differences**

Prices were identified through telephone conversations with the manufacturer and their authorised dealers in Member States, and through the relevant dealer websites. Not all Member States sell the powered wheelchairs directly and customers in some countries are directed to neighbouring Member States if they wish to make a purchase, so we have focused only on those countries with their own authorised retailers.

Interestingly, the VAT rate and price differentials we observed were not only poorly aligned, but for a number of country pairs they actually tended in opposite directions – with the price significantly lower in the Member State with the higher applicable VAT rate. However, this does not preclude these country-pairs from being included here. A significant price differential could still incentivise cross-border shopping behaviour, and including cases where the prices do not appear to be driven by VAT rates is an important finding for our wider analysis.

Our chosen country pairs and their respective price data is provided in the table below:

Table 24: Price differentials for powered wheelchair at authorised retailers

Country pair	Price country A	Price country B	Pricing difference	VAT country A	VAT country B	VAT difference
<b>Denmark – Sweden</b>	4,016 [EUR]	29,688 [SEK] / 3,121 [EUR]	895 [EUR] 22.3%	25%	25% / 0%	0 pp
<b>Czech Rep. – Poland</b>	97,570 [CZK] / 3,610 [EUR]	8,600 [PLN] / 1,982 [EUR]	1,628 [EUR] 45.1%	15%	8%	7 pp
<b>Germany – Poland</b>	5,255 [EUR]	8,600 [PLN] / 1,982 [EUR]	3,273 [EUR] 62.3%	7%	8%	-1 pp
<b>Germany - Denmark</b>	5,255 [EUR]	23,900 [DKK] / 4,015 [EUR]	1,240 [EUR] 23.6%	7%	25%	-18 pp

Source: manufacturer website for individual countries, August 2016.

We also analysed the Eurostat Price Level Indices (PLIs) for “Health” consumption, to assess whether this was consistent with the price differences we observed. Note however that this aggregate contains all health-related goods and services consumed (including, for example, hospital services) so may conceal price differences in medical equipment (ESA, 2010).

Table 25: Price Level Index data for Health consumption

Country pair	Health PLI country A	Health PLI country B	PLI difference	Pricing difference
<b>Denmark – Sweden</b>	132.4	164.2	-31.8	895 [EUR] 22.3%
<b>Czech Rep. – Poland</b>	43.8	44.9	-1.1	1,628 [EUR] 45.1%
<b>Germany – Poland</b>	103.3	44.9	58.4	3,273 [EUR] 62.3%
<b>Germany - Denmark</b>	103.3	132.4	-31.1	1,240 [EUR] 23.6%

Source: Eurostat PLI data for 2015 (latest available). 100=EU28 average.<sup>44</sup>

The PLIs for “Health” do not track the pricing differences for our case study item particularly well. This may be because the consumer-facing price is not indicative of the *de facto* price due to interactions with health insurance schemes (see discussion below), or simply because the price of this particular motorised wheelchair in these particular countries is atypical of health goods and services more broadly.

*Denmark / Sweden:* Despite the identical VAT rates applicable to cross-border shoppers in Denmark and Sweden, we still identified a significant price difference of EUR 895. Although they do not share a land border, the two countries join via a road bridge in a reasonably highly populated area and there is an authorised dealer in Gothenburg – a three hour drive to Copenhagen or a direct ferry journey to closer parts of Denmark. The two currencies do not exhibit any major fluctuations that would cause us to question a price difference of this magnitude, making this a suitable pair for comparison.

*Czech Republic / Poland:* We identified a EUR 1,628 price difference between Poland and the Czech Republic. This difference can only partly be attributed to the VAT rate

<sup>44</sup> [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc\\_ppp\\_ind&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc_ppp_ind&lang=en)

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differential of 7%, and offers a significant incentive for customers to engage in cross-border shopping. The exchange rate between the Czech koruna and the Polish zloty is sufficiently stable not to warrant the exclusion of this country pair – with daily CZK/PLN closing rates only varying from a low of 0.145 to a high of 0.166 over the last two years.<sup>45</sup>

*Germany / Poland and Germany / Denmark:* Despite having a very low VAT rate for all customers purchasing medical equipment, the German wheelchair price is significantly higher than those of its neighbours. In the case of Denmark the VAT rate on medical equipment is 18% higher than in Germany, but the price of the powered wheelchair is EUR 1,239 lower: a reduction of 24% on the price in Germany. In comparison to Poland, the effect is even more pronounced: Polish VAT is 1% higher, but the price of the powered wheelchair is EUR 3,273 lower.

### **3.1.4.1.3 Interactions with health insurance and public healthcare provisions**

Unlike most other products and services discussed in this report, medical equipment prices must be considered in combination with domestic health insurance policies that impact the cost of powered wheelchairs purchased by disabled persons in their country of citizenship or residency.

We undertook research on the interactions of national health systems on the prices of medical equipment for each of our case study countries. Each country examined has a health insurance system that provides significant contributions towards assistive devices for disabled persons, such that the true cost of powered wheelchairs for domestic consumers ranges from 0 EUR to 10 EUR in most countries. The exception was Poland, where the price was 1,303 EUR. Even with Poland included, these effective prices are far lower than any prices a consumer would obtain when making a purchase at retail price in another country, making it very unlikely that price-driven cross-border shopping takes place for powered wheelchairs despite the large differences in price initially identified.

The paragraphs below discuss the health insurance systems operating in each of the five countries included in this case study, along with the specific coverage for assistive devices. Table 26 summarises this information, comparing the retail price faced by cross-border shoppers with the deductions and effective price faced by domestic consumers.

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<sup>45</sup> As at 11 August 2016. Midpoint rates taken from [www.xe.com](http://www.xe.com).

**Table 26: Market prices and effective consumer prices for powered wheelchairs (based on representative model) at authorised retailers**

Country	Retail price	Healthcare coverage	VAT rate difference for domestic consumers	Effective price for domestic disabled persons
<b>Denmark</b>	4,016 [EUR]	Free of charge	Reduced from 25% to 0%	0 EUR
<b>Sweden</b>	29,688 [SEK] / 3,121 [EUR]	Free of charge	-	0 EUR
<b>Czech Republic</b>	97,570 [CZK] / 3,610 [EUR]	Free of charge with small prescription fee	-	~1 EUR
<b>Poland</b>	8,600 [PLN] / 1,982 [EUR]	Reimbursement up to 3000 [PLN] / 679 [EUR]	-	1,303 EUR
<b>Germany</b>	5,255 [EUR]	10% of price, capped at 10 EUR	-	10 EUR

*Source:* manufacturer website for individual countries, August 2016. Public and private health insurance policies, November 2016.

*Denmark:* The Danish health service is a tax-funded, state-run system which provides free medical treatment to all residents. Various levels of grants are provided for medical equipment. Assistive devices – defined as products manufactured with a view to helping alleviate the effects of a physical or mental disability – are provided free of charge.

*Sweden:* The healthcare system in Sweden is largely tax-funded and service provision is devolved to county councils and municipal governments. Municipalities are responsible for purchasing and providing assistive devices to those with physical disabilities and these products are typically free of charge to disabled patients.

*Czech Republic:* Health insurance is compulsory in the Czech Republic, either through the public healthcare system or private insurance. For disabled persons covered by public insurance, assistive devices are provided for only the prescription fee of 30 CZK.

*Poland:* The Polish National Health Fund is the public health insurance scheme in Poland, and it is compulsory. The service provides reimbursements for medicines and medical equipment that are required. For powered wheelchairs the reimbursement amount is up to 3000 PLN.

*Germany:* Health insurance is compulsory in Germany. The majority of people participate in statutory insurance schemes while 11% opt for private insurance. For disabled persons deemed to have a medical need for a powered wheelchair, the cost to the patient is 10% of the cost of the medical device, up to a maximum limit of EUR 10. We therefore consider the effective price to be EUR 10 as this constraint will be binding in almost all cases.

The interaction of national healthcare systems with the market for medical equipment for disabled persons is clearly very strong in each of these case study countries. We anticipate that this will be true of other Member States too. For this reason, we do not expect retail price differences – whether driven by VAT or other factors – to be a driver for cross-border shopping of medical equipment for disabled persons in the EU. In fact, the interaction of national health systems on prices faced by those shopping domestically should be a strong incentive *not* to shop across borders, even when other factors (e.g. quality, choice) may otherwise encourage this behaviour.

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Nevertheless, for completeness we have investigated the existence of any evidence of cross-border shopping for medical equipment (particularly powered wheelchairs) in the sections below.

### **3.1.4.2 Literature review**

We undertook an in-depth desk-based research exercise using standard web search tools for both webpages and academic articles, focusing on literature on cross border shopping for powered wheelchairs and also more broadly in the medical equipment area. This included a search for academic articles, journal articles, media reports, industry and lobby group statements, and other material available online. No relevant records or literature on this type of cross border shopping or sales activity could be identified.

The literature that we did identify was of very limited relevance to this particular case study – either covering aspects of cross-border shopping generally or the market for cross-border medical treatment. Cross-border shopping for medical services, as opposed to medical equipment, is considered separately in section 3.1.7. One article discussing cross-border medical treatment focused on patient flows for non-price reasons (i.e. proximity to treatment facilities, waitlists, etc.), and noted the scarcity of relevant literature in this area (Gilnos & Baeten, 2006).

We were thus unable to identify any evidence for cross-border shopping for powered wheelchairs, or medical equipment more broadly.

### **3.1.4.3 Interview results**

#### **3.1.4.3.1 Public officials**

We approached tax officials in our case study countries for comment on the specific issue of cross-border shopping for powered wheelchairs. Where we received responses, no issues were noted. We also approached public officials in all EU28 countries to inquire about particular categories of goods and services where cross-border shopping was prevalent. No respondents mentioned medical equipment as a particular cause for concern.

#### **3.1.4.3.2 Tax experts**

We approached tax experts in our case study countries for comment on the specific issue of cross-border shopping for powered wheelchairs. In line with our expectations for this case study, no notable cross-border shopping for medical equipment was reported.

#### **3.1.4.3.3 Trade associations and businesses**

In addition to public officials and tax experts, we contacted three EU-wide industry bodies, 11 national industry groups and nine local retailers across our case study countries.

Although the response rate was low, the instances where we did receive a reply or conduct a conversation revealed no evidence of any significant cross-border shopping for either powered wheelchairs or medical equipment more generally. Rather, the responses confirmed our hypothesis that the impact of national health schemes provides a strong incentive to customers to purchase any necessary medical equipment domestically, rather than across the border. The only exception to this was identified by a retailer in Sweden, who noted that for non-essential, highly-specialised medical equipment such as that required for participation in competitive sports, it was more common for Swedish consumers to purchase these items abroad. This is to be expected given this type of

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equipment is unlikely to be covered by national health schemes and may only be available from a limited number of manufacturers/retailers worldwide.

In the Polish case it was noted that there is a market for second-hand wheelchairs, and that a component of this may be cross-border. However, where the second-hand market is excluded from the national health system subsidy regime, or where – as in the case of Sweden – subsidised equipment that is no longer needed is returned to the state for refurbishment and reallocation, the impact of second-hand sales is likely to be small.

The interviews also provided an explanation for the seemingly significant price differences for our representative powered wheelchair across countries. The 'base price' involves different permutations of the base product – in some countries it is entirely without extras, while in others certain extras are included as standard. This makes direct price comparison difficult.

### **3.1.4.4 Data review**

In this section we outline the findings of any relevant sales data and business prevalence and location analysis for sales of powered wheelchairs and medical equipment more generally.

#### **3.1.4.4.1 Sales data**

Despite an extensive online search of relevant websites and databases, we were unable to identify any information on the volume or direction of sales of medical equipment or powered wheelchairs – either generally or with regards to cross border shopping.

We also approached the manufacturer of our representative powered wheelchair to request sales data, but were not granted access to this data for reasons of commercial confidentiality.

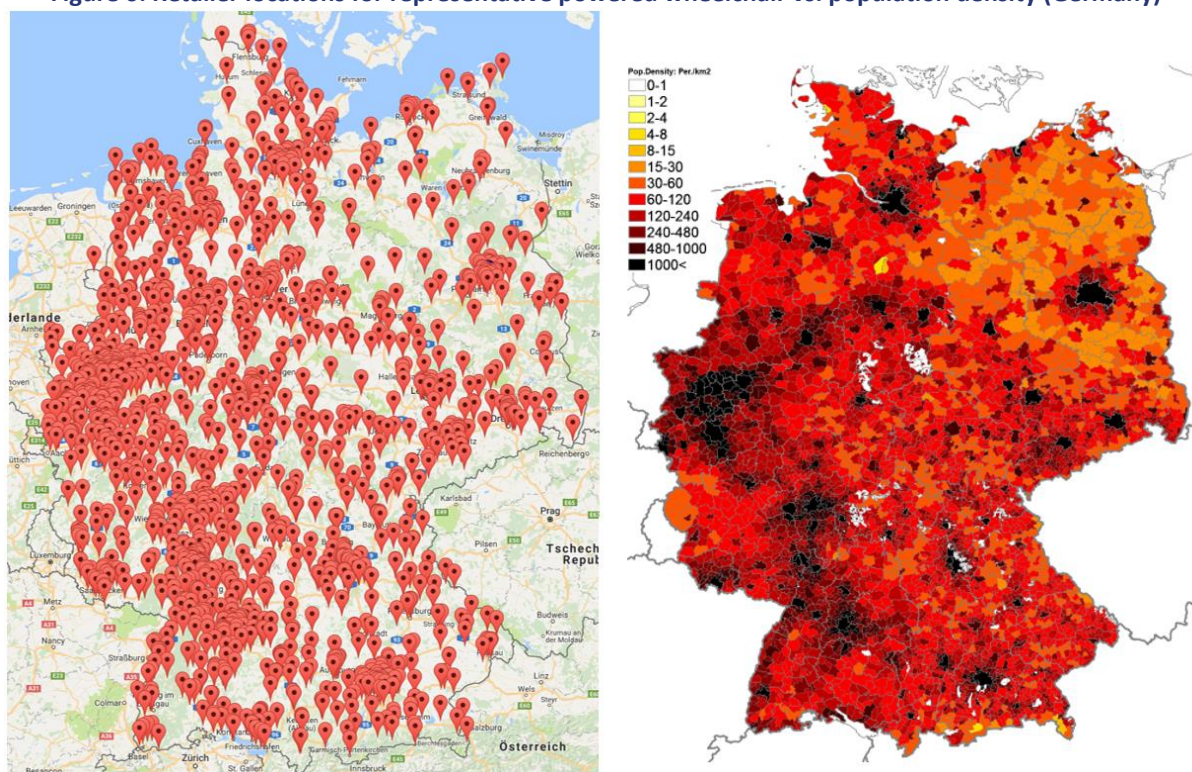
#### **3.1.4.4.2 Business prevalence and location analysis**

In the presence of significant cross border shopping driven by price differentials, we might expect to see a concentration of retailers on the cheaper side of the relevant international borders, and a dearth of retailers on the more expensive side. In this section we attempt to use this logic to identify evidence of cross border shopping for medical equipment.

Despite contacting the manufacturer directly, due to the company's international business model we were unable to determine the location of all authorised retailers of our representative model of powered wheelchair across the EU. For Germany, however, the manufacturer was able to provide us with the exact locations of all ~1500 authorised retailers of our particular case study powered wheelchair.

We compared the plot of German retailers against a map of population density across Germany, to identify the extent to which suppliers were sparser around the areas bordering Denmark, the Czech Republic and Poland (which offer prices that are EUR 1239, EUR 1645 and EUR 3273 cheaper, respectively). These two maps are compared side-by-side below:

Figure 6: Retailer locations for representative powered wheelchair vs. population density (Germany)



Source: Authorised retailer website.

It is evident from a visual examination of the left-hand map, showing the location of authorised retailers, that there are fewer outlets in the aforementioned border regions than in other parts of Germany, particularly the south and west. However, comparing the two maps, we see that the location of retailers corresponds closely to *population density*, and thus does not appear indicative of cross-border shopping patterns.

To supplement this examination of business prevalence for our specific brand of powered wheelchair, we undertook a search of European business directories for retailers of medical equipment and specialist equipment for those with disabilities. The online business directory Europages offers the facility to map medical equipment retailers in our case study countries,<sup>46</sup> the results of which are as follows:

- **Sweden:** Only 9 medical equipment retail locations registered on the site; all in the southern areas of Sweden but concentrated in urban areas, rather than near borders.
- **Denmark:** 83 retailers, mostly concentrated around Copenhagen with no noticeable concentration around the borders with Sweden (noting that Copenhagen itself is the largest urban agglomeration and very near the Swedish border), or Germany.
- **Germany:** 844 retailers, spread across the country with no noticeable concentration or relative sparseness near the borders with any country, including Denmark and Poland.

<sup>46</sup> [medical-equipment.europages.co.uk](http://medical-equipment.europages.co.uk), examined 21 October 2016.



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- **Poland:** 133 retailers, with some degree of concentration near the border with the Czech Republic which appears to be driven by the existence of two cities near the border: Wroclaw and Katowice.
  - **Czech Republic:** 78 retailers, again concentrated around urban areas with no noticeable concentration near the borders with any country, including Poland and Germany.

Unfortunately, listing on Europages is at the discretion of the retailer, and as such the directory is not comprehensive (note the difference between the number of retailers listed in Sweden, 9, and the Czech Republic, 78, despite the countries having almost the same population). For this reason, the directory cannot be relied upon to provide a full picture of the location of retailers and restricts our ability to conduct nationwide business prevalence (density) analysis.

We were, however, able to use this data to undertake some business prevalence analysis *within* our chosen countries. Although usage of the Europages website appears to vary heavily by country, by making the assumption that the propensity to list a business on Europages within a given country is approximately constant across regions, we were able to test for unusual concentrations of medical equipment retailers in border regions.

To this end, we compared the concentration of medical retailers (measured by number of medical retail outlets per 100,000 residents) in a border region to that of an internal region where the impacts of cross-border shopping would not be expected to influence business prevalence. A higher density could be seen as evidence for greater supply, in turn reflecting greater demand.

In order to ensure consistency, regions were chosen according to strict criteria. We selected adjoining regions, separated by national borders (the data only allowed assessment at a regional level; in other case studies we have compared towns). Any size differences between these regions were controlled for by comparison with a similarly-sized internal counterpart, rather than their border-pair regions. As density of retailers was generally low, the regions were required to have a minimum population of 250,000. We ultimately decided that we could not reasonably compare Swedish regions, as only nine medical retailers were registered in Europages for the entire country.

Internal control regions were then chosen on the basis of additional criteria. The control region had to be at least 100km from any international border, although this criteria was relaxed to being at least 50km from the relevant border where the country was not large enough for this to be possible. Where more than one region met these conditions, the region with the closest population size to the border region was chosen (in order to control for population-driven differences in business prevalence). Regions for which Europages did not provide business location data were assumed to be locations with no retail outlets.<sup>47</sup>

In many cases these strict conditions led to only a small number of comparisons being available. We conducted our analysis on the basis of the first qualifying set of comparison regions that we were able to identify. While it is possible that different selections might have yielded different results, there was not scope to conduct a statistically robust analysis of business prevalence within the framework of this study. These findings should thus be viewed as suggestive only, to be interpreted alongside the results of our other evidence-gathering procedures.

The results of this assessment are provided in Table 27 below:

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<sup>47</sup> Note that this may be because no registered businesses exist in these regions

Table 27: Within country business prevalence analysis – medical equipment retailers

Country	Region	Border or internal?	Population <sup>1</sup>	Retail outlets <sup>2</sup>	Density <sup>3</sup>	In line with expectation?
<b>Sweden</b>	N/A (insufficient data on retail outlets)					
<b>Denmark</b>	Aarhus	Internal	330,639	15	4.54	YES
	Copenhagen	Border (Sweden)	1,789,174	42	2.35	
<b>Germany</b>	South Jutland	Border (Germany)	1,211,770	No data available	0.00	NO
	Hamburg	Internal	1,787,408	32	1.79	YES
	Schleswig-Holstein	Border (Denmark)	2,858,714	27	0.94	
<b>Czech Republic</b>	Saxony	Border (Pol. & Cz)	4,084,851	26	0.64	NO
	Moravsko-slezsky	Border (Poland)	1,213,311	8	0.66	
<b>Poland</b>	Stredocesky	Internal	1,326,857	6	0.45	NO
	Lower Silesia	Border (Czech Rep.)	2,904,207	12	0.41	
	West Pomerania	Border (Germany)	1,710,482	6	0.35	
	Lodz	Internal	2,493,603	11	0.44	

1. Population data sourced from [www.citypopulation.de/](http://www.citypopulation.de/), October 2016

2. Data on medical retailers sourced from [medical-equipment.europages.co.uk](http://medical-equipment.europages.co.uk), October 2016

3. Density = number of retail outlets per 100,000 residents

As indicated in the last column of the table above, the results of this analysis were inconclusive. The result for each country is discussed, in brief, below:

**Sweden:** Due to a lack of data on medical retailers (only 9 listed in the directory), we were unable to undertake this analysis for Sweden.

**Denmark:** A higher concentration of retailers was identified in the internal Aarhus region, compared with the Copenhagen region (including Frederiksberg) near Sweden. As the prices of our representative piece of medical equipment are cheaper in Sweden, this concentration difference is in line with a behavioural response. No companies were listed in South Jutland (the area of Denmark near the German border), which is contrary to a behavioural response in line with the price differences observed.

**Germany:** Again, we find a lower concentration of outlets in the Schleswig-Holstein and Saxony regions, bordering the cheaper countries of Denmark and Poland/Czech Republic, respectively, compared with the internal region of Hamburg. This finding is compatible with a behavioural response.

**Czech Republic:** Here, however, we see suppliers concentrating more heavily in Moravskoslezsky, close to the border with Poland, than in the internal region of Stredocesky. Given the significantly cheaper prices of our representative item in Poland, this goes against the hypothesised behavioural response.

**Poland:** Again, here we observe a pattern contrary to our expectations. We find no significant difference in density between the three regions, with business being slightly less concentrated near the borders with Germany and the Czech Republic and more concentrated internally, despite Poland having the lowest prices.

Important caveats need to be emphasised here. Firstly, this analysis rests on the assumption that the prices of our chosen powered wheelchair are representative of medical equipment for disabled people more broadly. Secondly, it assumes that the

retailers identified by the Europages search engine do actually sell medical equipment for disabled people, and that these are representative of the location of all retailers within a given country. And thirdly, it ignores any other factors that may be driving a higher or lower concentration of retailers in particular regions, such as the prevalence of other retail or medical facilities. Even on the basis of these assumptions, however, we find very mixed evidence for cross border shopping for medical equipment in these case study countries.

In summary, the three different approaches we have taken to business prevalence and location analysis find no notable evidence of cross-border shopping for medical equipment. The findings are consistent with the view that customers are not altering their shopping patterns to take advantage of price (or VAT) differences by buying medical equipment in other countries.

### 3.1.4.5 Conclusions

As we have outlined above, the market for medical equipment for disabled persons is unusual due to the strong interaction with national health services and insurance schemes across the EU. Domestic prices are typically subsidised to the point where disabled persons will be able to obtain necessary items at little or no cost locally, removing any price incentive to shop across borders. For this reason we expect little-to-no cross border shopping for medical equipment for disabled persons.

This hypothesis was strongly supported by a distinct lack of evidence for any cross-border shopping in the literature, interviews, and data - including an examination of the geographical location and prevalence of relevant retailers.

<b>Case study: Cross-border shopping (medical equipment)</b>				
<b>Evidence of impact</b>	None	Limited	Some	Substantial
<b>Maximum value of price differences noted</b>	EUR 3,273 or 62%			
<b>Maximum scale of impact noted</b>	None	Limited	Some	Substantial
<b>Localisation of impact</b>	N/A			
<b>Explanation of impact</b>	National healthcare schemes mean minimal incentive to shop cross-border for medical equipment. Only mention of any possible impact was for highly specialised medical equipment for participation in disability sport.			

### 3.1.5 Jewellery

#### 3.1.5.1 Background

In this case study, we examine luxury watches as a product representative of the broader category of high-end jewellery, and of highly portable high-value items in general. Quite aside from their practical time-keeping use, luxury watches are viewed as status-symbols and as such are highly popular among certain consumer segments. Their value and ease of transportability make them an ideal candidate for cross-border shopping.

We focus here on a leading brand of luxury watches. While luxury watches produced by the leading brands can vary in price from a few thousand to hundreds of thousands of Euros, we have selected a popular mid-range watch with a new purchase price of approximately EUR 30,000-EUR 35,000. It is one of the most sought-after watches in the manufacturer's range.

### 3.1.5.1.1 VAT treatment

Items of jewellery such as luxury watches are standard-rated for VAT purposes. This constraint limits possible variations in VAT rates compared to certain other goods and services explored in this study. Nevertheless, Member States still opt for a relatively wide band of different rates, ranging from a maximum VAT charge of 27% in Hungary to a minimum rate of 17% in Luxembourg.

### 3.1.5.1.2 Pricing differences

The range of luxury watches in question can only be purchased new at approved retailers; non-approved resellers do not have the right to sell the watches as brand new even if they have never been worn and are still in their original packaging.

To ensure a fair comparison, we examined both retail and online prices for the item, in the few instances where the latter were available. However the online prices were identical to those offered in-store in Member States surveyed, so we were able to rely solely on the prices of physical approved stores as our means of price comparison. Price data has been gathered primarily on the basis of phone-calls to physical retail stores (supplemented with online price data, where available). Figures for each of these are provided below for our chosen country pairs.

Although our general approach has been to identify countries with a significant contiguous border and noticeable price differences for the product in question, in this particular case the contiguous border requirement could justifiably be relaxed – given the mobility of the customer base. It is conceivable that the item could be purchased on a vacation, so we have included one tourist destination among our country pairs. We have focused primarily on countries with a significant VAT differential for jewellery.

Our country pairs and their respective price data is provided in the table below:

**Table 28: Price differentials for luxury wristwatch at approved retailers**

Country pair	Price country A	Price country B	Pricing difference	VAT country A	VAT country B	VAT difference
<b>Sweden – Cyprus</b>	309,550 [SEK]	33,050.00 [EUR]	500.05 [EUR]	25%	19%	6 pp
	32,549.95 [EUR]		-1.5%			
<b>Poland - Germany</b>	148,290 [PLN]	31,600.00 [EUR]	2,568.20 [EUR]	23%	19%	4 pp
	34,168.20 [EUR]		7.5%			
<b>Hungary – Austria</b>	10,920,000 [HUF]	31,800.00 [EUR]	3,292.23 [EUR]	27%	20%	7 pp
	35,092.23 [EUR]		9.4%			
<b>Hungary – Slovakia</b>	10,920,000 [HUF]	31,800.00 [EUR]	3,292.23 [EUR]	27%	20%	7 pp
	35,092.23 [EUR]		9.4%			

Source: authorised retailers for individual countries, September 2016.

We also examined the Price Level Indices (PLIs) provided by Eurostat, to assess whether this was consistent with the price differences we observed. However, none of the indices available offered a meaningful proxy for jewellery.

*Sweden - Cyprus:* The 6% VAT rate differential between Sweden and Cyprus, and the relatively high volume of Swedish tourists travelling to Cyprus for holidays, led us to test prices across the two countries. Interestingly, the saving of 1.5% is made from Cyprus

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to Sweden which shows no correlation to the opposite 6% VAT difference in jewellery products. It may however be the case that VAT-related price differentials could be obtained in Cyprus on other jewellery products, and/or for customers from destinations other than Sweden. Given Cyprus is a destination with high levels of tourist traffic and a relatively low standard rate of VAT, we explore these possibilities further below.

*Poland - Germany:* Although the VAT rate differential is significantly lower than that of Denmark and Germany (a country pair we also considered), the 4% difference in rates between Germany (19%) and Poland (23%) is coupled with some other interesting features. Notably, customers are able to make a much larger saving on the watch in question by crossing over from Poland to Germany than the VAT rate alone would suggest. The 7.5% price difference is a clear example of a price variant that goes beyond the VAT differential of the two countries.

*Hungary - Austria and Hungary - Slovakia:* Austria and Slovakia are both Eurozone countries with identical (20%) VAT rates on jewellery, so given the pricing model used by the manufacturer, it is unsurprising to find that the price of the watch is identical in these two countries. Both of these countries border Hungary, which with a 27% VAT rate on jewellery leads to a highly significant 7% VAT rate differential with both Austria and Slovakia. Again, the price difference between these countries actually exceeds the difference in VAT rates, with a substantial 9.4% difference in price observed.

### **3.1.5.2 Literature review**

We carried out an online review of relevant search results in order to identify evidence of cross-border shopping for the luxury watch market and jewellery more generally. The review was undertaken in English, supplemented with searches carried out in local languages for countries covered in this particular case study. To do this, we used online translation tools for the search terms and to examine the relevance of the results returned.

While we identified a number of pieces of literature on cross-border shopping for jewellery, most of it focused on trends in the online market for these types of goods, where – due to the application of the destination principle – VAT differences should be irrelevant (see section 3.2 on distance sales for further discussion and analysis).

Of particular relevance to this case study, however, was the existence of a number of online forums which discuss the practice of customers shopping internationally for luxury watches in order to find the best prices. Interestingly, these don't appear to converge on any particular countries as being the ideal EU destination for purchases, but instead note that exchange rates and infrequent re-pricing can sometimes provide an opportunity to make savings in another country. None of our country case studies featured heavily in the literature.

In summary, we identified very little publicly available literature on the practice of cross-border shopping for luxury watches, or jewellery more generally, and nothing to indicate that cross-border shopping is significant in relation to our particular case study country pairings, or elsewhere.

### **3.1.5.3 Interview results**

#### **3.1.5.3.1 Public officials**

We approached tax officials in our case study countries for comment on the specific issue of cross-border shopping for jewellery. Where we received responses, no issues were noted. We also approached public officials in all EU28 countries to inquire about particular categories of goods and services where cross-border shopping was prevalent. No respondents mentioned jewellery as a particular cause for concern.

### **3.1.5.3.2 Tax experts**

We approached tax experts in our case study countries for comment on the specific issue of cross-border shopping for jewellery. No notable cross-border shopping for luxury watches or jewellery more generally was identified.

### **3.1.5.3.3 Trade associations and businesses**

In addition to public officials and tax experts, we contacted two international industry bodies, five national industry groups and 15 local retailers across our case study countries. In the case of the industry bodies/groups, a request was made for a phone interview and a short questionnaire was provided, outlining the key questions for those unable or unwilling to participate via a phone interview. As the retailers of our representative luxury watch operate primarily on the basis of face-to-face and verbal interactions, we contacted them for phone interviews in the first instance (with a good response rate).

Through all our interactions with these groups and businesses, no evidence of significant VAT or price driven cross-border shopping was identified. Retailers acknowledged that customers tended to be local residents for the most part, and that foreign customers were often from outside the EU altogether – particularly the Middle East, Russia and China. Given that many luxury watch retailers are located in airports and major cities, we would expect a degree of non-resident purchases to occur even where prices are identical.

### **3.1.5.4 Data review**

#### **3.1.5.4.1 Sales data**

Despite an extensive online data review of relevant websites and databases through the use of web searches, we were unable to find any data directly useful for this case study.

#### **3.1.5.4.2 Business prevalence analysis**

In the case of luxury watches, and high-end jewellery more generally, business prevalence and location analysis is not a suitable method for identifying evidence of cross-border shopping.

For business prevalence, there needs to be a strong correlation between the number of retail outlets in a given location and the number of sales in that same location. We do not have any reason to believe this to be true in the case of luxury watches, as licences to sell the items are closely controlled by the distributor and areas that sell significantly more of these goods may not see any noticeable difference in the number of retailers there, unlike with other goods and services such as hairdressing. Business prevalence for luxury watches and similar jewellery is likely to be heavily influenced by city size/prominence, making within-country analysis difficult in any case, and as with our other case studies, country-specific factors (e.g. income levels) make cross-country analysis difficult.

We may instead be tempted to examine business locations to see whether there is any evidence of clustering near country borders. However, this would also be an unsuitable method for identifying evidence of cross-border shopping. Purchasers of luxury watches are very unlikely to be restricted to a particular geographical area for shopping, and we could reasonably expect them to travel long distances to make a purchase of this size (hence including Sweden and Cyprus in our case study country pairs). An examination of prevalence in airports would not be any more feasible, as airport retail sections

consistently include these types of retailers and prevalence is more likely to reflect airport size than per capita sales volume.

For these reasons we do not include any business prevalence analysis for this particular case study.

### 3.1.5.5 Conclusions

In summary, we find very little evidence that VAT-driven cross-border shopping for luxury watches or other jewellery is taking place across the EU, though we note that data is particularly hard to gather for this category of good.

Anecdotal evidence suggests that consumers do discuss price differences for these products between countries, and this may be driving some cross-border shopping. However, the key factors cited for this are a combination of exchange rate movements and infrequent pricing changes across retailers, rather than VAT. It is also likely that any such activity will be limited to the more homogeneous end of the jewellery market (namely, high-end watches), as opposed to more bespoke items (such as engagement rings) where the reputation of the vendor and/or craftspeople is likely to play a more significant role in consumer decisions.

Given the high-end nature of luxury watches and jewellery, we would expect the customer base to be relatively mobile and for cross-border shopping to take place. We find no evidence, however, that VAT is currently causing a distortion in this market. Consumers of luxury products may be less price-sensitive than consumers of other goods, and more concerned about shopping experience (or, in the case of non-homogeneous items of jewellery, product quality and seller reputation). Indeed, in the luxury market price itself can be part of a product's attraction, meaning the consumer may be less likely to shop around for the cheapest deal.

Case study: Cross-border shopping (jewellery)				
<b>Evidence of impact</b>	None	<b>Limited</b>	Some	Substantial
<b>Maximum value of price differences noted</b>	EUR 3,292 or 9.4%			
<b>Maximum scale of impact noted</b>	<b>None</b>	Limited	Some	Substantial
<b>Localisation of impact</b>	N/A			
<b>Explanation of impact</b>	In theory, large tax-driven price savings should be achievable in this sector. However, we have found no evidence of this, and there are theoretical reasons to suppose that demand for luxury goods such as jewellery may be less price-sensitive than demand for other types of goods.			

### 3.1.6 Consumer electronics

#### 3.1.6.1 Background

As part of our suite of case studies examining the cross-border purchasing of goods and services, we include a leading brand of notebook computers as a representative product in the category of consumer electronics. Consumer electronics are a prime candidate for cross-border shopping, as they are easy to transport and sufficiently expensive to incentivise consumers to 'shop around' for the best prices. We have selected a brand of notebook that comprises a significant portion of the overall notebook market, making it an ideal product to examine in this category.

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Furthermore, the standardised nature of this notebook allows for relatively straightforward comparison across Member States, despite there being a range of different models. We have chosen to focus our analysis on a mid-range model as a proxy for them all, under the assumption that the prices of each model will differ relative to one another to a more-or-less identical degree within any given retailer – an assumption that was tested and confirmed in a small sample of countries. Other models come with a different screen size, varied storage, and/or processing capabilities.

### 3.1.6.1.1 VAT treatment

Consumer electronics are standard-rated supplies under the existing EU VAT rules. This limits the variation in VAT rates between Member States: at the time of our fieldwork, rates in the EU28 ranged from 17% to 27% in Luxembourg and Hungary, respectively. The VAT rates in each of our case study countries are provided below in Table 29.

### 3.1.6.1.2 Pricing differences

The manufacturer of this particular notebook goes to some lengths to ensure the prices of its products are standardised across its official retail stores, which leads to a large degree of uniformity of prices in any given country, and often across countries, at authorised resellers. The high level of competition in the consumer electronics market, however, means that many other retailers are willing to reduce their margins in order to generate (physical or electronic) traffic to their stores, which leads to a larger degree of price variation.

In order to compare prices in a meaningful way for consumer electronics, we must take into account both the prices at physical stores and the prices of online retailers. While a consumer will be able to access both the online and physical store prices in their country of residence, in most cases only the physical store price will be relevant to them abroad if they wish to take advantage of a VAT-driven price differential (online retailers would be required to apply the VAT rate of the customer's place of residence to any purchase made, under the destination rules). To take this into account, we compare both the online *and* physical store prices in the higher-priced country to *only* the physical store prices in the lower-priced country. Where the physical store prices abroad are significantly lower than both the online and physical store prices at home, we might expect to see cross-border shopping.

Given the range of retailers, for completeness we have used a combination of price indicators in order to identify the most appropriate price differential for a consumer in our case study countries. The five indicators we have chosen to examine are listed below:

1. **Official store / authorised reseller price:** the official price set by the manufacturer for its own stores and those of its official resellers. In almost all cases these are the highest prices in any given country.
2. **Average price at the three cheapest retail chain outlet stores:** the focus is on chain stores with multiple retail outlets, rather than individual / owner operated stores, as chain stores are typically more accessible to consumers across the country.
3. **Average price at the three cheapest online stores:** some of which may also have physical retail outlets. This excludes shipping costs, where relevant.
4. **Price at the cheapest retail chain**
5. **Price at the cheapest online store**



For robustness all five of these indicators have been considered. However, we anticipate that the latter two measures (prices of the cheapest retail chain and online store) will be more influential, under the assumption that consumers who engage in cross-border shopping are price-sensitive, and are therefore more likely to have engaged in price comparison prior to making a purchase.

Price data has been gathered on the basis of online searches and phone-calls to physical retail stores where they do not also post their prices online. Figures for each of these are provided in the table below, for each of our chosen country pairs:

Table 29: Price differentials for branded notebook

	VAT rate	Official price	Av. retail stores	Av. online stores	Cheapest retail	Cheapest online	Key Diff.*
<b>Denmark</b>	25%	10,499 [DKK] 1,411 [EUR]	10,766 [DKK] 1,447 [EUR]	9,774 [DKK] 1,314 [EUR]	10,499 [DKK] 1,411 [EUR]	9,125 [DKK] 1,226 [EUR]	77 [EUR] (6.3%)
<b>Germany</b>	19%	1,349 [EUR]	1,239 [EUR]	1,184 [EUR]	1,149 [EUR]	1,119 [EUR]	
Difference	6%	62 [EUR]	208 [EUR]	130 [EUR]	262 [EUR]	107 [EUR]	
		4.4%	14.4%	9.9%	18.6%	8.8%	
<b>Hungary</b>	27%	439,990 [HUF] 1,414 [EUR]	417,686 [HUF] 1,342 [EUR]	426,750 [HUF] 1,371 [EUR]	409,990 [HUF] 1,318 [EUR]	414,990 [HUF] 1,334 [EUR]	119 [EUR] (9.0%)
<b>Austria</b>	20%	1,355 [EUR]	1,303 [EUR]	1,222 [EUR]	1,199 [EUR]	1,149 [EUR]	
Difference	7%	59 [EUR]	39 [EUR]	149 [EUR]	119 [EUR]	184 [EUR]	
		4.2%	2.9%	10.9%	9.0%	13.8%	
<b>Netherlands</b>	21%	1,349 [EUR]	1,303 [EUR]	1,302 [EUR]	1,229 [EUR]	1,229 [EUR]	80 [EUR] (6.5%)
<b>Germany</b>	19%	1,349 [EUR]	1,239 [EUR]	1,184 [EUR]	1,149 [EUR]	1,119 [EUR]	
Difference	2%	0 [EUR]	64 [EUR]	118 [EUR]	80 [EUR]	110 [EUR]	
		0.0%	4.9%	9.1%	6.5%	9.0%	
<b>Belgium</b>	21%	1,349 [EUR]	1,349 [EUR]	1,349 [EUR]	1,349 [EUR]	1,349 [EUR]	50 [EUR] (3.7%)
<b>Luxembourg</b>	17%	1,304 [EUR]	1,326 [EUR]	1,308 [EUR]	1,299 [EUR]	1,267 [EUR]	
Difference	4%	45 [EUR]	23 [EUR]	41 [EUR]	50 [EUR]	82 [EUR]	
		3.3%	1.7%	3.0%	3.7%	6.1%	

Source: authorised retailers and additional field research, September 2016.

\* The 'Key Difference' column is calculated as the difference between the cheapest physical retail or online price in the more expensive country and the cheapest physical retail price of the cheaper country.

We also analysed the Eurostat Price Level Indices (PLIs) for "Consumer electronics", to assess whether this was consistent with the price differences we observed.

Table 30: Price Level Index data for Consumer electronics

Country pair	PLI country A	PLI country B	PLI difference	Pricing difference
<b>Denmark – Germany</b>	116	92	24	77 [EUR] 6.3%
<b>Hungary – Austria</b>	92	97	-5	119 [EUR] 9.0%
<b>Netherlands – Germany</b>	98	92	6	80 [EUR] 6.5%
<b>Belgium – Luxembourg</b>	101	101	0	50 [EUR] 3.7%

Source: Eurostat PLI data for 2015 (latest available). 100=EU28 average.<sup>48</sup>

These results are consistent with the price differences noted in the case of Denmark-Germany and Netherlands-Germany, though the magnitude of the difference varies. In the case of Austria and Luxembourg, the discrepancy between aggregate PLIs and prices for the specific laptop selected may be attributable to the relatively higher cost of living in these two countries, when compared to Hungary and Belgium respectively.

*Denmark - Germany:* The price differences across our five indices are all lower in Germany, with a key difference of EUR 77 (6.3%). This degree of difference is very similar to the VAT difference between the two countries. Although Denmark is not in the Eurozone, the Danish krone is pegged to the euro, so currency fluctuations should not pose a problem for the purposes of this study.

*Hungary - Austria:* Hungary, however, is outside the Eurozone, with the official currency being the Hungarian forint. Despite the potential for currency differences to deter consumers from partaking in cross-border shopping between Hungary and its neighbours, the significant VAT rate differential makes Hungary an important country to include in our country pairs. The VAT rate differential of 7% between Hungary and Austria is consistent with the differences in our price indices.

*Netherlands - Germany:* Although the official price of the notebook is identical in both of these countries, physical retail chain stores in Germany sell the product at a noteworthy discount of EUR 80 (6.5%) compared to prices available in the Netherlands. This is despite the VAT rate differentials being only 2%. The country pair makes a good comparison as the land borders between the two are large and both countries use the Euro. The particular chain that sells this product at the lowest price in Germany has a Düsseldorf retail outlet, not far from the Netherlands.

*Belgium - Luxembourg:* Interestingly, for Belgium and Luxembourg we observe a price difference at the official retailer of 3.3%, which is close to the 4% VAT rate difference. In Belgium, we were unable to identify any price differences between retailers (physical and online) at the time we conducted our fieldwork. By contrast, while Luxembourg prices were lower across all five of our indices in line with the lower VAT rate, there was some variation between outlets. We calculated the cross-border saving available to a price-sensitive Belgian consumer as EUR 50 (3.7%).

### 3.1.6.2 Literature review

In this section we present the findings of our review of relevant literature, including media reports, news articles, blogs and other documents that discuss the phenomenon of cross-border shopping for consumer electronics within the EU. Most search terms were

<sup>48</sup>

[http://ec.europa.eu/eurostat/statistics-explained/index.php/Comparative\\_price\\_levels\\_of\\_consumer\\_goods\\_and\\_services](http://ec.europa.eu/eurostat/statistics-explained/index.php/Comparative_price_levels_of_consumer_goods_and_services). Note that, in the public domain, this dataset is only available to 1d.p.

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undertaken in English, but these were supplemented with targeted searches in local languages.

We were unable to identify any literature that focused on physical cross-border shopping for consumer electronics between Member States. The literature we did identify was focused solely on the practice of customers making electronics purchases in another country online. This practice is not insignificant, although still small in comparison to the total sales of consumer electronics, with one extensive Danish government study on consumer behaviour estimating that only 3% of consumer electronics are purchased abroad or via a foreign website (Konkurrence og Forbrugerstyrelsen, 2011). The study attributes this to a tendency for consumers to consider it too time consuming to shop abroad, as well as to concerns regarding their rights should something go wrong with their purchase. A more recent study by the Danish Skatteministeriet (2016) noted declining levels of physical cross-border shopping for consumer electronics, reducing from DKK 740m (EUR 99m) in 2010 to DKK 105m (EUR 14m) in 2015. Increase in internet sales was deemed to be a significant factor underlying this trend.

It is worth reiterating, in this context, that by making purchases online, consumers are able to take advantage of some of the price differential between two countries. However, the application of the destination principle to online purchases should mean that any VAT differential cannot be exploited by consumers shopping online, unless the supplier's turnover falls below the VAT registration threshold for distance sales, or the supplier fails to comply with these VAT registration requirements. See further discussion in Section 3.2.

The only other relevant piece of literature we identified that touched on physical cross-border shopping for electronics was an online news report centred on the United States, which looked at data from two separate studies on price differentials between the US and UK (Christie, 2014). This was published in 2014, however, when the value of the pound against the US dollar was significantly higher, and made no reference to the scale of UK-US cross-border shopping.

### **3.1.6.3 Interview results**

#### **3.1.6.3.1 Public officials**

We approached tax officials in our case study countries for comment on the specific issue of cross-border shopping for consumer electronics. Unfortunately we did not receive any responses. We also approached public officials in all EU28 countries to inquire about particular categories of goods and services where cross-border shopping was prevalent. No respondents mentioned consumer electronics as a particular cause for concern for physical cross-border shopping, though laptops and other electronic devices were explicitly mentioned by our Hungarian respondent as a problem for distance sales.

#### **3.1.6.3.2 Tax experts**

We approached tax experts in our case study countries for comment on the specific issue of cross-border shopping for consumer electronics. Our experts in Hungary and Belgium mentioned that residents of these countries were known to cross borders to lower-VAT jurisdictions such as Austria and Luxembourg in order to purchase consumer electronics. However, the scale of the effect was not clear. Our Belgian expert mentioned that this did not pose a significant challenge for larger Belgian retail businesses, as they tended to operate outlets on both sides of the border with Luxembourg.

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### 3.1.6.3.3 Trade associations and businesses

In addition to public officials and tax experts, we contacted two EU-wide industry bodies, 11 national industry groups and 19 local retailers across our case study countries. In each case, a request was made for a phone interview and a short questionnaire was provided, outlining the key questions for those unable or unwilling to participate via a phone interview.

One EU-wide trade association, representing national associations of electronics retailers, also contacted each of their member associations directly to identify any concerns that might be of relevance to this case study. No issues were noted.

### 3.1.6.4 Data review

In this section we outline the findings of any relevant sales data and business prevalence and location analysis for consumer electronics.

#### 3.1.6.4.1 Sales data

We were unable to find any information on retail sales of notebook computers or consumer electronics to non-residents.

#### 3.1.6.4.2 Business prevalence analysis

In this section we test the hypothesis that cross-border shopping is occurring by assessing whether there is sufficient demand in border regions to generate a supply response from retailers of consumer electronics. The specific hypothesis we are testing is that higher/lower prices in a particular border region generate lower/higher demand through cross-border shopping, and that this is reflected in the prevalence of consumer retailers in those regions.

To test this hypothesis, we compared the concentration of electronics retailers (measured by number of electronics retailers per 10,000 residents) in a border town to that of an internal town where the impacts of cross-border shopping would not be expected to have an impact on business prevalence. A higher density could be seen as evidence for greater supply, in turn reflecting greater demand.

Data on population was combined with data on the number of retailers taken from a major online search provider's business mapping software. To ensure all relevant businesses were captured in this exercise, the latter had to be pieced together using a combination of search terms in English and in the local language (where relevant). The resulting data was cleaned for duplication and erroneous entries (e.g. businesses associated to a particular location via a reference in their name, rather than geographical location) to ensure a reliable figure was obtained.

In order to ensure consistency, towns for comparison were chosen according to strict criteria. Border town pairs were restricted to be no more than 50km apart across the relevant country border. We did not impose the requirement that towns on either side of the border be the same size as one another, as any size differences were controlled for by comparison with their internal counterpart, rather than their border-pair towns. In order to avoid small sample bias, for this particular case study each town was required to have a minimum population of 25,000.

Internal control regions/towns were then chosen on the basis of additional criteria. The control town had to be at least 100km from any international border, although this criteria was relaxed to being at least 50km from the relevant border where the country was not large enough for this to be possible. Where more than one town met these conditions, the town with the closest population to the border region was chosen (in

order to control for population-driven differences in business prevalence). Towns for which the relevant population or business location data were not available (or not available for a comparable geographic area), were excluded.

Where these 'distance from the border' constraints allowed, for countries with a federal (or highly devolved) system of government we used a comparator town from within the same state/region to control for other local economic conditions on business prevalence. For this case study this was possible for Germany and Belgium, whereas as all towns in the Austrian state of Burgenland were too close to the respective border so a town from another region was used.

In many cases these strict conditions led to only a small number of comparisons being available. We conducted our analysis on the basis of the first qualifying set of comparison towns that we were able to identify. While it is possible that different selections might have yielded different results, there was not scope to conduct a statistically robust analysis of business prevalence within the framework of this study. These findings should thus be viewed as indicative only, to be interpreted alongside the results of our other evidence-gathering procedures.

Table 31 below lists each of our border and control (internal) towns, and presents the results of this research.

**Table 31: Within country business prevalence analysis – consumer electronics**

Country	Town	Border or internal?	Population <sup>1</sup>	Retailers <sup>2</sup>	Density <sup>3</sup>	In line with hypothesis?
<b>Denmark</b>	Holstebro	Internal	35,392	11	3.11	NO
	Sønderborg	Border (Germany)	27,595	11	3.99	
<b>Germany</b>	Neumunster	Internal	79,197	40	5.05	NO
	Flensburg	Border (Denmark)	107,700	24	2.23	
	Nienburg	Internal	31,193	24	7.69	NO
	Meppen	Border (Netherlands)	34,918	20	5.73	
<b>Netherlands</b>	Bussum	Internal	47,905	10	2.09	NO
	Emmen	Border (Germany)	52,525	33	6.28	
<b>Belgium</b>	Courcelles	Internal	31,217	10	3.20	NO
	Arlon	Border (Lux.)	29,274	14	4.78	
<b>Hungary</b>	Veszprem	Internal	60,392	32	5.30	YES
	Sopron	Border (Austria)	61,887	24	3.88	
<b>Austria</b>	Steyr	Internal	38,347	22	5.74	YES
	Wiener Neustadt	Border (Hungary)	43,833	36	8.21	

1. Population data sourced from [www.citypopulation.de/](http://www.citypopulation.de/), October 2016

2. Data on electronics stores collected using a major online search provider's business mapping software, October 2016

3. Density = number of retail outlets per 10,000 residents

*Denmark:* We observe a slightly higher concentration of retailers in the border town of Sønderborg, despite prices being higher in Denmark than in Germany. This goes against the cross-border shopping hypothesis, although the differences are too small to consider conclusive.

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*Germany:* In Germany we observe a significantly higher business density in internal towns versus their border counterparts, despite prices in Germany being lower than in either Denmark or the Netherlands. This is contrary to what we would expect if price differences were driving higher demand in Germany vis-à-vis these two countries.

*Netherlands:* As with Denmark, we observe a significantly higher concentration of retailers in the town bordering Germany than in the internal control town, despite prices being higher than in Germany.

*Belgium:* The pattern in Belgium does not follow the cross-border shopping hypothesis, with retailers more prevalent near the border with Luxembourg despite the lower prices there.

We were unable to undertake this analysis for Luxembourg directly, as the country cannot be feasibly separated into border and internal towns. Because of the small size of the country, no town is more than approximately half an hour's drive from an international border, and therefore all areas are hypothetically subject to the same forces that we might expect to drive cross-border shopping. However, this case is still explored indirectly through the inclusion of Belgium.

*Hungary and Austria:* Interestingly, these two countries have the highest price difference of all our country pairs, and in both cases we observe a business density pattern in line with the cross-border shopping hypothesis. For Hungary, we observe a significantly lower business density near the border, where shoppers can cross into Austria to make cheaper purchases. In Austria the pattern is reversed, with a significantly higher density of businesses in the town of Wiener Neustadt – near the Hungarian border – than in the internal town of Steyr.

Note however that, as with all our business prevalence analyses, these results depend on the accuracy and completeness of the search software used, and also the representative character of the case study towns selected for examination. It is possible that further research using a wider sample of towns, and/or a different data source, may produce different results.

Overall then, our business prevalence analysis does not provide strong evidence for the existence of significant cross-border shopping. In most cases in our sample the pattern is actually contrary to what we would expect in the presence of cross-border shopping, given the identified price differences.

### **3.1.6.5 Conclusions**

In summary, we find very little evidence that VAT-driven cross-border shopping for notebook computers or other consumer electronics is taking place across the EU.

While we might expect some cross-border shopping through the proper functioning of the EU's internal market, there is limited evidence to suggest that VAT-driven price differences are currently causing significant cross-border shopping and distorting the market.

<b>Case study: Cross-border shopping (consumer electronics)</b>				
<b>Level of evidence available</b>	None	Limited	<b>Some</b>	Substantial
<b>Maximum value of price differences noted</b>	EUR 119 or 9.0%			
<b>Maximum scale of impact noted</b>	None	<b>Limited</b>	Some	Substantial
<b>Localisation of impact</b>	Country pairs with substantial VAT differences.			
<b>Explanation of impact</b>	Anecdotal evidence indicates there is some cross-border shopping for consumer electronics, driven by pricing differences. Pricing differences noted appear to correspond closely to VAT differences.			

### 3.1.7 Medical and dental services

#### 3.1.7.1 Background

Medical and dental services constitute a category of high-value services that are relatively easy for consumers to purchase in other jurisdictions. They are also subject to a wide range of VAT treatments under the existing European VAT regime, with rates varying as low as 5% and as high as 25%, with many jurisdictions treating medical and dental services as exempt supplies.

Medical and dental services cover a wide range of different services. Some of these are highly standardised, whereas others are more bespoke. Even standardised services must be tailored to the unique circumstances and physiology of the individual recipient. These services are thus only moderately homogeneous at best.

Moreover, service quality can vary significantly both within and between jurisdictions. Added to this, the risks associated with poor service are high. Consequently, we anticipate that consumers will be particularly sensitive to non-price factors such as language barriers and service quality when purchasing medical and dental treatment. Cross-border activity may thus be less prevalent than we might expect for an equivalent saving on a consumer good such as jewellery or electronics. It may be that pricing differentials do not drive cross-border trade on their own, and what is equally necessary is a reputation for high service quality. Indeed, it may be that high service quality could override pricing differentials, and drive cross-border shopping towards more expensive jurisdictions (where these provide higher standards of treatment).

For the purposes of this case study, we will focus on the example of dental services, as this constitutes a set of relatively standardised procedures (fillings, root canals, crowns, etc.). Diagnosis, performance and recovery times are generally short, meaning it is more feasible for individuals to travel abroad for these procedures than for other types of surgery (such as a hip replacement). Moreover, in many Member States there are significant charges for dental procedures, which are not met (or which are only partially met) by health insurance schemes, thereby leaving a substantial financial incentive to engage in cross-border shopping.

The particular service that we will examine for price benchmarking purposes is a porcelain crown. This is a relatively standard product and procedure, for which pricing data is readily obtainable. It is also one of the more expensive dental treatments available, and therefore *ex hypothesi* more likely to drive cross-border shopping.

Our preliminary research indicates high levels of cross-border shopping for dentistry, with Hungary being a major destination for dental tourism.<sup>49</sup> Pricing differences and dental tourism are particularly high in central Europe, between Germany and Austria and new Member States. Consequently, we will focus on the following country pairs:

- Germany-Poland
- Germany-Czech Republic
- Austria-Czech Republic
- Austria-Hungary

### 3.1.7.1.1 VAT treatment

Under the 2006 EU VAT Directive, the majority of medical and dental services constitute “exempt supplies”, meaning that no VAT is charged on them, but equally that suppliers cannot reclaim any input VAT that they may incur on their purchases. Article 132 of the VAT Directive states that:

“Member States shall exempt the following transactions:... (e) the supply of services by dental technicians in their professional capacity and the supply of dental prostheses by dentists and dental technicians”.<sup>50</sup>

Note however that the exemption only applies where the service in question has the primary purpose of protecting, maintaining or restoring the health of the person receiving it.<sup>51</sup> Certain popular cosmetic procedures may thus be excluded. Furthermore, differential VAT rates in Member States could still impact on the pricing of exempt dental services, as there is a possibility that some proportion of input VAT charges borne by dental businesses are passed on to consumers. However, we anticipate that this pass-through effect would be relatively low compared to other cost drivers (such as labour costs) which would not result in any VAT charge.

The procedure we are discussing (production and fitting of a porcelain crown) would generally have a “health” purpose, so would generally be VAT exempt.

### 3.1.7.1.2 Pricing differences

Online research indicates that Poland, Hungary and Czech Republic are all easily accessible, low-cost destinations for dental treatment. The popular UK website NetDoctor.co.uk provides the following pricing data:

Table 32: Price differentials for fitting of porcelain dental crown

Country	GBP price	EUR price (1.176/GBP)
<b>Poland</b>	GBP 360	EUR 424
<b>Hungary</b>	GBP 329	EUR 387
<b>Czech Republic</b>	GBP 180	EUR 212
<b>UK</b>	GBP 800	EUR 941

Source: <http://www.netdoctor.co.uk/health-services/treatment-abroad/a4581/which-countries-are-popular-for-dental-treatment-abroad/>, retrieved September 2016.

<sup>49</sup> See e.g. <https://www.theguardian.com/money/2015/jul/02/cross-border-buying-shopping-bargains-globalisation>; <http://www.patientsbeyondborders.com/procedure/dentistry>.

<sup>50</sup> VAT Directive, Article 132(1)

<sup>51</sup> See the d'Ambrumel ruling of the ECJ, Judgment of the Court (Fifth Chamber) of 20 November 2003: Peter d'Ambrumenil and Dispute Resolution Services Ltd v Commissioners of Customs & Excise. <http://curia.europa.eu/juris/liste.jsf?language=en&jur=C,T,F&num=c-307/01&td=ALL>



Similarly, a German-language price comparison website noted that costs for a full porcelain crown in Germany and Austria could exceed EUR 1,000, compared to circa EUR 320 in Hungary.<sup>52</sup>

We also analysed the Eurostat Price Level Indices (PLIs) for “Health” consumption, to assess whether these were consistent with the price differences we observed. Note however that this aggregate encompasses all kinds of health-related goods and services consumed (including, for example, hospital services) so may conceal price differences in dental services (ESA, 2010).

**Table 33: Price Level Index data for Health consumption**

Country pair	Health PLI country A	Health PLI country B	PLI difference	Pricing difference
<b>Germany – Poland</b>	103.3	44.9	58.4	576 [EUR] 57.6%
<b>Germany – Czech Rep.</b>	103.3	43.8	59.5	788 [EUR] 78.8%
<b>Austria – Czech Rep.</b>	116.6	43.8	72.8	788 [EUR] 78.8%
<b>Austria – Hungary</b>	116.6	37.7	78.9	613 [EUR] 61.3%

Source: Eurostat PLI data for 2015 (latest available). 100=EU28 average.<sup>53</sup>

Pricing differences based on EUR 1,000 estimate for Germany/Austria, and pricing data from Table 32 above.

The PLIs for “Health” mirror the direction and approximate the magnitude of price differences noted for the particular dental procedure selected.

### 3.1.7.1.3 Interactions with health insurance and public healthcare provision

Health insurance schemes can substantially reduce or even eliminate the cost of medical/dental treatments. This may reduce the attraction of obtaining treatments in other jurisdictions. For the purposes of this case study, we have examined the health insurance arrangements in Germany and Austria, to determine what impact they might have on reducing domestic costs and therefore reducing the savings that might otherwise be obtained by seeking treatment in Poland, Hungary, or the Czech Republic.

**Germany:** Since 2005, the German *Krankenkassen* have been legally obliged to subsidise a minimum of 50% of the cost of patients’ dental crowns, bridges and prostheses. The subsidy level can be increased by collecting bonus stamps, designed to reward patients who attend regular appointments for preventative dental care. However, this subsidy is limited to the cost of “regular care”, which in the case of crowns generally excludes gold or porcelain treatments. According to *Der Spiegel* (2016), a standard (non-porcelain) treatment would cost in the region of EUR 280, hence the insurance subsidy would be capped at circa EUR 140. This subsidy may be claimed against the cost of treatment in other EU Member States, subject to the necessary administrative formalities being completed.<sup>54</sup>

**Austria:** As a general rule, Austrian social health insurance schemes will contribute towards removable prosthetics such as dentures, but fixed prosthetics such as crowns

<sup>52</sup> See <http://www.zahnersatzguenstig.com/Kosten-Zahnkrone.html>

<sup>53</sup> [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc\\_ppp\\_ind&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc_ppp_ind&lang=en)

<sup>54</sup> See <http://www.zahnbehandlunginungarn.at/zuschuss-der-krankenkassen/>

must be self-financed except where medically necessary.<sup>55</sup> No insurance subsidy is therefore expected in the case of our case study treatment.

### 3.1.7.2 Literature review

There is a small but growing academic literature on dental tourism. Ten years ago, journal articles tended to rely on anecdote and articles in the popular press, rather than hard data, to argue that dental tourism is on the increase (Turner, 2008). A 2010 survey article confirmed that media reports dominate over the collection of primary data (Crooks et al., 2010). However, more recent work is beginning to benefit from a more extensive evidence base (see, for example, Kovacs and Szocska, 2013).

In terms of European countries, dental tourism in Hungary appears to be the main focus of the research literature. In Hungary, important centres for dental tourism include Budapest, Sopron, Mosonmagyaróvár, Bük, Sárvár, Szombathely, Győr and the western part of the Balatons. One website estimates that circa 100,000 dental tourists travel to Hungary per year from countries such as Germany, Austria, Denmark, France and the UK.<sup>56</sup>

The focus on Hungary is unsurprising, given dental tourism from Austria to Hungary predates not just the accession of the new Member States, but even the end of the Communist era. According to the Guardian newspaper,

The historical roots of Mosonmagyaróvár's dental tourism industry lie in the relative liberalism and freedom of entry that Hungary enjoyed in the goulash communism era of the 1980s. "As a young dentist 27 or 28 years ago, I saw that Germans and Austrians holidayed in the resorts around Lake Balaton because it was one of the only meeting points with their relatives living in the eastern bloc," says Tibor Koltai, 65, who employs about 40 people at KG Dental in Mosonmagyóvár.

"These tourists also visited dentists, and I had the idea to found this business, mainly for Austrian patients. There were 30-40 dentists when I first opened a dental surgery here," he said. (Crouch et al., 2015.)

A study published in the *British Dental Journal* found that, in 2006, the number of dentists per head of population was lowest in eastern parts of Austria, and (with the exception of Budapest itself) was highest in the western parts of Hungary, closest to the border between the two countries. In these western areas, a survey of dental practices found that 42% of respondents derived more than 60% of their revenue from foreign patients. Most (84%) of these customers were Austrian; whereas Budapest had a more diverse international client base, with tourists from the UK, Austria, Germany and Switzerland accounting for over 60% of the reported total. Lower prices were cited by over 90% of dental practices as a key determinant of dental tourism (Österle et al., 2009).

A more recent survey also identified the UK, Austria, Germany and Switzerland as the most prominent countries of origin for dental tourists in Hungary. Furthermore, it suggested that there was a significant "word of mouth" effect contributing to the growth of dental tourism in Hungary, providing quality assurance to new patients, and generating high levels of repeat custom (Kovacs and Szocska, 2013). This suggests that price differences alone may be unlikely to drive immediate behavioural change in purchasing patterns for medical/dental services. Rather, businesses, regions and/or

<sup>55</sup> See <http://www.kosten-beim-zahnarzt.de/zahnbehandlung-kosten-in-oesterreich.html>

<sup>56</sup> See <http://www.topzahnarzt-ungarn.de/zahnaerzte-in-ungarn>

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countries will build a reputation for quality gradually over a number of years – indeed, in the Hungarian case, over several decades.

Other instances of intra-EU cross-border shopping for dental services that we identified in the literature include customers from Ireland travelling to the UK (Belfast Telegraph, 2014); as well as Poland and the Czech Republic acting as a hub for dental tourism for many Western European Member States (EUBusiness, 2004; Bild, 2010). In almost all cases, quality is now perceived to be broadly comparable to dental treatment in the higher-cost countries (Focus, 2015).

### **3.1.7.3 Interview results**

#### **3.1.7.3.1 Public officials**

In the responses to the general questionnaire distributed to the fiscal attaches of the EU28 Member States, only one country (Slovenia) specifically mentioned cross-border shopping for services, noting that price differences made Slovenia an attractive destination for many services.

No additional information was supplied by respondents in the Czech Republic, Hungary or Poland in response to follow up questions specifically asking about dental services.

#### **3.1.7.3.2 Tax experts**

Our Austrian and Hungarian tax experts confirmed that cross-border shopping for dental services does take place between these two countries. Our Hungarian correspondent noted the prevalence of dentists with German-language signage near to the Austrian border, though our Austrian expert commented that in general levels of cross-border shopping may be declining as price differences reduce.

In the Czech Republic, our respondent noted that medical tourism has been very popular in the past, though levels have decreased in recent years. Medical businesses are still looking at the potential for attracting foreign customers to receive treatment in the Czech Republic, notable from Russia, Germany and Austria.

#### **3.1.7.3.3 Trade associations**

We approached a total of 10 trade associations active in dentistry.

The only detailed response we received concerned Austria. Our interviewee confirmed that Hungary was the main destination for dental tourism for Austrian residents. Fixed dental prostheses are the most common procedures purchased cross-border, because they are not generally covered by Austrian health insurance. While our respondent's organisation did not collect reliable data on this, they estimated that circa 80% of dental tourism involved travel to Hungary, with perhaps 15% involving the Czech Republic and 5% involving other countries such as Slovakia and Slovenia. This resulted in a relative dearth of dentists in Austrian towns near the Hungarian border, and a relative abundance of dentists in Hungarian towns near the Austrian border.

This is interesting in that it indicates that price alone is not the sole factor, as the prices that we have identified are generally lower in the Czech Republic than in Hungary. The respondent confirmed that dental tourism from Austria to Hungary dated back to the Communist era, facilitated by special bilateral agreement between the two countries. They noted that the end of the Communist era and Hungary's subsequent accession to the EU has if anything resulted in a decrease in price differences for dental services between the two countries, as living standards and wages in Hungary have begun to increase.

Our respondent noted that VAT was not a factor in the price differences, due to the exemption on both sides of the border for dental services. However, other taxes

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(including personal and personnel taxes) were a contributing factor, although the main difference remained costs associated with wages and premises.

Our respondent noted that Austrian dentists do deal with a large number of complaints about and problems with procedures that have been conducted in other countries. While it is still obviously undesirable, Austrian dentists have by and large adapted to this state of affairs.

### **3.1.7.4 Data Review**

#### **3.1.7.4.1 Sales data**

Despite an extensive online search of relevant websites and databases, we were unable to find any information on the volume of sales of dental services to non-residents at the EU-level, though a number of studies have collected information relevant to particular country pairs (as discussed in the literature review above).

#### **3.1.7.4.2 Business prevalence analysis**

Dental services lend themselves well to business prevalence analysis: the small scale of the majority of dental practices, and the fact that services are both time- and skill-intensive, means that increased demand is likely to result in an increase in the number of businesses, rather than an increase in the scale of existing businesses. This allows us to test the hypothesis that higher/lower prices in a particular border region generate lower/higher demand through cross-border shopping, which can be detected in the prevalence of businesses in those regions.

To test this hypothesis, we applied the same methodology as in our consumer electronics case study: we compared the concentration of dental practices (measured by number of practices per 10,000 residents) in a border town to that of an internal town where the impacts of cross-border shopping would not be expected to have an impact on business prevalence. A higher density could be seen as evidence for greater supply, in turn reflecting greater demand.

Data on population was combined with data on the number of practices taken from a major online search provider's business mapping software. To ensure all relevant businesses were captured in this exercise, the latter had to be pieced together using a combination of search terms in English and in the local language (where relevant). The resulting data was cleaned for duplication and erroneous entries to ensure a reliable figure was obtained.

In order to ensure consistency, towns for comparison were chosen according to strict criteria. Border town pairs were restricted to be no more than 50km apart across the relevant country border. We did not impose the requirement that towns on either side of the border be the same size as one another, as any size differences were controlled for by comparison with their internal counterpart, rather than their border-pair towns. For this particular case study each town was required to have a minimum population of 25,000.

Internal control towns were then chosen on the basis of additional criteria. The control town had to be at least 100km from any international border, although this criteria was relaxed to being at least 50km from the relevant border where the country was not large enough for this to be possible. Where more than one town met these conditions, the town with the closest population to the border region was chosen (in order to control for population-driven differences in business prevalence). Towns for which the relevant population or business location data were not available (or not available for a comparable geographic area), were excluded.

An exception was made in this case for the Austria-Czech Republic country pair, as no towns met these proximity criteria entirely but two were very close. The towns of Krems an der Donau (Austria) and Znojmo (Czech Republic) are approximately 75km apart, with the former just under our minimum population size.

Where these 'distance from the border' constraints allowed, for countries with a federal (or highly devolved) system of government we used a comparator town from within the same state/region to control for any significant regulatory influences on business prevalence. For this case study this was possible for Germany, but suitable comparator towns could not be identified for Austria that met the 'distance from border' constraints so internal towns of a similar size were selected from other states.

In many cases these strict conditions led to only a small number of comparisons being available. We conducted our analysis on the basis of the first qualifying set of comparison towns that we were able to identify. While it is possible that different selections might have yielded different results, there was not scope to conduct a statistically robust analysis of business prevalence within the framework of this study. These findings should thus be viewed as suggestive only, to be interpreted alongside the results of our other evidence-gathering procedures.

Table 34 below lists each of our border and control (internal) towns, and presents the findings of this research.

**Table 34: Within country business prevalence analysis – dental practices**

Country	Town	Border or internal?	Population <sup>1</sup>	Practices <sup>2</sup>	Density <sup>3</sup>	In line with hypothesis?
Germany	Brandenburg an der Havel	Internal	71,574	48	6.71	NO
	Cottbus	Border (Poland)	99,984	69	6.90	
	Riesa	Internal	30,885	22	7.12	NO
	Pirna	Border (Czech-Rep.)	38,010	29	7.63	
Austria	Wolfsberg	Internal	25,051	9	3.59	NO
	Krems an der Donau	Border (Czech-Rep.)	24,344	8	3.29	
	Steyr	Internal	38,347	20	5.22	NO
	Wiener Neustadt	Border (Hungary)	43,833	27	6.16	
Czech Republic	Jihlava	Internal	50,714	14	2.76	YES
	Decin	Border (Germany)	49,739	22	4.42	
	Pribram	Internal	33,058	8	2.42	YES
	Znojmo	Border (Austria)	33,787	16	4.74	
Hungary	Veszprem	Internal	60,392	14	2.32	YES
	Sopron	Border (Austria)	61,887	31	5.01	
Poland	Sieradz	Internal	42,890	13	3.03	YES
	Zary	Border (Germany)	38,287	16	4.18	

1. Population data sourced from [www.citypopulation.de/](http://www.citypopulation.de/), January 2017

2. Data on dental practices collected using a major online search provider's business mapping software, January 2017

3. Density = number of dental practices per 10,000 residents

As this table demonstrates, we did not find a pattern consistent with our hypotheses in the high-price countries, but we did find this pattern in all of the lower-price destinations for cross-border shopping. This suggests a sufficiently high degree of cross-border demand to generate noticeable increases in business prevalence in low-cost countries. However, it also suggests that this is insufficient to affect business prevalence in the higher-cost countries (contrary to what we expected on the basis of our interview research). We speculate that this may be due to the narrow range of procedures that would not be adequately covered by health insurance schemes, and which patients would thus seek to have performed abroad. The effects of cross-border shopping may be visible in the revenue and profit figures for dental practices near the border with low-cost countries, even if they do not appear in measures of business prevalence.

Moreover, as with all our business prevalence analyses, these results depend on the accuracy and completeness of the search software used, and also the representative character of the case study towns selected for examination. It is possible that further research using a wider sample of towns, and/or a different data source, may produce different results.

### 3.1.7.5 Conclusions

Our findings indicate that consumers are willing to travel – in some cases, substantial distances – to obtain lower-priced dental services. However, patterns of cross-border shopping are not driven by price factors alone: despite lower prices reported in the Czech Republic, consumers in Austria are much more likely to visit Hungary for dental procedures. This indicates that a reputation for service quality is also essential, and such a reputation may take a long time to establish: in the case of Austria and Hungary, for example, this has been developing since before the end of the Cold War.

Medical and dental services are unlikely to be significantly affected by reform of the EU VAT rates regime, due to the exemption for services whose primary purpose is protecting, maintaining or restoring the health of the recipient. Nevertheless, the case study alerts us to the fact that sizeable price differences (potentially in the region of EUR 500 or more) can cause significant levels of cross-border shopping even where we might expect a strong preference for domestic providers. However, in the case of goods and services that are relatively heterogeneous, where quality can vary substantially (thereby involving risks to the consumer), price differences must be accompanied by a reputation for high standards. This reputation can take time to develop, which will cushion the short- to medium-term impact of VAT-driven price changes on the location of economic activity. Moreover, the relative price savings in question (circa 50% or more on a EUR 1,000 operation) are unlikely to be generated by VAT differences alone, even under enhanced flexibility.

Case study: Cross-border shopping (dental services)				
<b>Evidence of impact</b>	None	Limited	<b>Some</b>	Substantial
<b>Maximum value of price differences noted</b>	EUR 700 or 70% per crown			
<b>Maximum scale of impact noted</b>	None	Limited	<b>Some</b>	Substantial
<b>Localisation of impact</b>	Dental services that are not covered by national health insurance schemes. Border regions are particularly heavily affected, though some dental tourists travel further (e.g. flying from the UK to Hungary).			
<b>Explanation of impact</b>	Services in question are not usually discretionary purchases, and are expensive compared to average incomes. Cross-border shopping can lead to significant savings in both absolute and relative terms, even accounting for travel costs.			

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## 3.1.8 Hairdressing

### 3.1.8.1 Background

To complement our study of the relatively expensive personal service of dental treatment, we include hairdressing services as a significantly lower cost but higher frequency personal service purchase. Customers will typically travel some distance to purchase this service on-site, which makes it ideal for our case studies on cross-border shopping. Mobile hairdressing services – with a barber or hairdresser travelling to the consumer’s place of residence – are also available in many locations, but remain less common than on-site services.

We have focussed on a simple wash and cut for an adult lady with medium-long length hair. Where the service provider alters prices according to seniority of hairdresser (as is common practice in the UK and Ireland, for example), we have opted for the standard stylist rather than a senior stylist or trainee.

#### 3.1.8.1.1 VAT treatment

The VAT rates for “hairdressing” vary by Member State more than for many other goods and services, leading to significant rate differentials between contiguous jurisdictions. We used these differentials as our starting point, and for all four of our proposed country pairs we found rates differing by at least 11%.

The VAT rates in each of our case study countries is provided below in Table 35.

#### 3.1.8.1.2 Pricing differences

Prices were determined for very specific geographical locations. For these locations, we first identified local businesses providing on-site hairdressing services using an online business mapping tool. We then proceeded to determine specific prices primarily on the basis of each business’s website, where possible, and on the basis of direct phone calls to the salons themselves. Not all salons were willing to provide a fixed price without first examining the customer’s hair, but in most cases at least an approximate price was provided.

As the data gathering requirements would be too onerous we did not identify price information for all businesses in each specific location, we instead ensured that no fewer than six prices were used for each country pair included in our case study. These formed the basis of an average price for comparison across Member States.

Further to identifying rate differentials between Member States with significant borders, we then identified specific towns that were either located close to the border with a similar sized town on the other side of the border, or that actually straddled the border between two jurisdictions. If customers were crossing borders to get their hair cut these scenarios would be the most likely to reveal that behaviour, since we don’t expect customers to travel long distances for this service as they might with a significantly more expensive service.

Our chosen country pairs and their respective price data is provided in the table below:

Table 35: Price differentials for standard women's hair wash and cut (average prices)

Country pair	Average price country A	Average price country B	Pricing difference	VAT country A	VAT country B	VAT difference
<b>Belgium – Netherlands</b>	42.50 [EUR]	31.86 [EUR]	10.64 [EUR]	21%	6%	15 pp
<b>Belgium – Luxembourg</b>	38.50 [EUR]	32.83 [EUR]	5.67 [EUR]	21%	8%	13 pp
<b>UK – Ireland</b>	23.90 [GBP] / 28.18 [EUR]	48.33 [EUR]	-20.15 [EUR]	20%	9%	11 pp
<b>Italy – Slovenia</b>	21.25 [EUR]	36.67 [EUR]	-15.42 [EUR]	22%	9.5%	12.5 pp

Source: Field research, August 2016.

We also examined the Price Level Indices (PLIs) provided by Eurostat, to assess whether they were consistent with the price differences we observed. However, none of the indices available constituted a meaningful proxy for low-cost personal services such as hairdressing. Note however that aggregate PLI data would lead us to expect that most goods and services will be substantially cheaper in Slovenia than in Italy, and consequently the higher prices observed on the Slovenian side of the border may reflect the limited number of hairdressing salons that were willing to answer our enquiries.

*Belgium (Maasmechelen) - The Netherlands (Geleen):* Belgium features in two of our country pairs as it is bordered by two countries with significantly lower VAT rates on hairdressing. We have focused in on the small town of Maasmechelen in this case, with a population of approximately 38,000, as it has a neighbouring town in the Netherlands of roughly the same population (approximately 33,000). The centres of these two towns are only fifteen minutes journey by car, making them effectively the same urban area spread across two jurisdictions. Compared with Belgium's relatively high VAT rate of 21%, the Netherlands boasts a 6% rate, second lowest only to Cyprus at 5%. At 15%, the VAT rate differential is the highest of all our country pairs, and we find a corresponding price difference of approximately 25%.

*Belgium (Arlon) - Luxembourg (Sanem):* Our second Belgian case study focuses on another small town of approximately 29,000, Arlon, and its Luxembourgian neighbour of Sanem. Sanem has only 15,000 inhabitants and is 30 minutes away by car, but we chose not to compare Arlon with the similarly distant Luxembourg City as we would naturally expect prices in such a major city to differ for other reasons. Interestingly, the price difference between these two towns is roughly equivalent to the 13% VAT rate differential, at 15%.

*UK (Newry, Northern Ireland) - Ireland (Dundalk):* In the UK and the Republic of Ireland, we have chosen to include a pair of towns that feature heavily in the public press on cross-border shopping.<sup>57</sup> Newry, in Northern Ireland and with a population of approximately 28,000, is less than a 25 minute drive from Dundalk, in Ireland, with a slightly larger population of 39,000. Of particular interest is that, despite the 20% VAT rate applicable to haircuts in Newry being 11% higher than that of Dundalk, in Newry we find evidence of substantially lower hairdressing prices. In our data collection we found

<sup>57</sup> Cross-border shopping between these towns has historically been driven by exchange differentials, with direction of traffic fluctuating accordingly: <http://www.itv.com/news/utv/2016-08-01/brexit-vote-sees-increase-in-cross-border-shoppers/>, <http://utv.ie/News/2015/02/18/Increase-in-cross-border-shopping-from-north-to-south-31998>, <http://www.independent.ie/business/personal-finance/latest-news/theyre-10-miles-apart-but-its-boomtown-in-newry-and-gloomtown-in-dundalk-26492834.html>.



Newry to be significantly less expensive than Dundalk, with average prices over EUR 20 (42%) cheaper. It should however be noted that this data was collected shortly after the UK's vote to leave the EU, and the subsequent devaluation of the pound against the Euro.

*Italy (Gorizia) - Slovenia (Nova Gorica):* In the Italy and Slovenia case study we have identified two bordering towns that are effectively one urban area straddling the border, with a common trans-border metropolitan zone administered by a joint administration. As a result, to residents of either town the official border between the two Member States is relatively meaningless for the purposes of cross-border shopping, barring any impact this may have on prices. Unlike the other three cases examined, however, different languages prevail on either side of the border. As with the UK/Ireland example, we find a similarly unexpected result. Despite a 12.5% higher VAT rate in Italy, we find hairdressing prices are a significant EUR 15.42 (42%) lower. Given this runs contrary to expectations for both VAT rates and cost of living indices, it should be treated with caution. In this particular instance, response rates were very low, and there is thus a heightened risk that the businesses that were willing to respond to our (English-language) queries were not representative of the wider population.

### 3.1.8.2 Literature review

We undertook an extensive online review of relevant media reports, news articles, blogs and other literature in order to identify relevant evidence of cross-border shopping for hairdressing services. This was undertaken largely in English, with targeted searches also carried out in local languages for our case study countries, using online translation tools for the search terms and to examine the relevance of the 'hits'.

Barring one specific location which we discuss in more detail below, very little literature was found that explicitly discussed the phenomenon of consumers crossing borders to get their hair cut.

Of our case study town pairings, the only one that was widely discussed was the pairing of the Ireland-UK border towns of Dundalk and Newry. While hairdressing services do not feature in the literature, there are a number of media reports that describe the phenomenon of significant cross-border shopping of Irish consumers travelling from Dundalk – and even further afield – to take advantage of cheaper prices in Newry (UK). Most cite statistics gathered by the Buttercrane shopping centre in Newry around the country of registration of cars using the centre's car parks, and claim that the fall in the pound following the Brexit vote led to a dramatic increase in the number of customer cars registered in Ireland. The emphasis of these articles is on the impact of significant price rate differentials driven by exchange rate movements, and we would note that the standard VAT rate is only 3pp lower in the UK than in Ireland (20% to 23%, respectively), and is therefore very unlikely to be the primary cause of these differences.

Our search identified one notable occurrence of cross-border shopping for hairdressing services, outside our chosen case study towns: the Polish village of Osinow Dolny, situated on the Poland-Germany border. According to these reports, this town of approximately 200 inhabitants comprises 75% hairdressers, serving a primarily German customer market who come from as far away as Berlin (60km away). According to these reports the key driver for customers is a significant price differential, with customers able to purchase high-quality haircuts for around EUR 4 in Poland – whereas a basic cut in Germany is 2½-3 times more expensive.<sup>58</sup> The cause of this significant difference in prices is not discussed, though the difference in the cost of labour and rent is likely to play a significant role. The VAT differential of 11pp (8% in Poland and 19% in Germany)

<sup>58</sup> See <https://www.youtube.com/watch?v=0hVv7idp6vI> for an English language summary.

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will only account for a fraction of this price difference: a EUR 10 (VAT inclusive) haircut in Germany would still cost more than EUR 9 had the Polish level of VAT been charged instead.

### **3.1.8.3 Interview results**

#### **3.1.8.3.1 Public officials**

We approached tax officials in our case study countries for comment on the specific issue of cross-border shopping for hairdressing services. We only received one response, from Ireland, and this reply emphasised cross-border demand for “alcohol, groceries, and other consumables”, rather than hairdressing and other low-cost personal services.

We also approached public officials in all EU28 countries to inquire about particular categories of goods and services where cross-border shopping was prevalent. Interestingly, Slovenia reported “a significant level of [inbound] cross-border shopping”, which was “motivated by the lower prices in general, especially the prices of services”. Luxembourg noted that any VAT effects on service prices may have been offset by “high real estate costs and high human resources costs”.

#### **3.1.8.3.2 Tax experts**

We approached tax experts in our case study countries for comment on the specific issue of cross-border shopping for hairdressing.

Our Slovenian expert confirmed that Slovenia was a popular destination for hairdresser services, as well as for restaurants (with people coming on a non-tourist basis, e.g. from border areas of neighbouring countries and not staying overnight), because of price and quality. Consumers came from all neighbouring countries (Italy, Austria, Hungary and Croatia). By contrast, our Luxembourg expert did not notice any particular trend for cross-border shopping for personal services, though noted that commuters may for convenience consume these services in Luxembourg rather than their countries of residence.

Cross-border shopping for hairdressing was not identified as a substantial issue by our other tax experts.

#### **3.1.8.3.3 Trade associations and businesses**

In addition to public officials and tax experts, we contacted one EU-wide industry body, eight national industry groups and 16 local salons across our case study countries. In each case, a request was made for a phone interview and a short questionnaire was provided, outlining the key questions for those unable or unwilling to participate via a phone interview.

Although the response rate was low, the instances where we did receive a response were mostly consistent with the findings from our interviews and feedback from public officials and tax experts. No major issues were identified, and the only region where significant cross-border shopping for hairdressing services was identified was Slovenia. Local businesses noted that a number of Italian and Austrian clients come to Slovenia to get their hair cut, but interestingly also noted that some Slovenians travel to Croatia to get access to these services for an even lower price. Price was seen as the main determinant for this behaviour, and the perception was that this is driven by salaries rather than VAT.

One respondent also noted that there *may* be cross-border shopping for hairdressing services on the borders of the Republic of Ireland and Northern Ireland, but this was in

light of wider cross-border shopping and no specific issue with hairdressing was identified.

### 3.1.8.4 Data review

#### 3.1.8.4.1 Sales data

Despite an extensive online search of relevant websites and databases, we were unable to find any information on the volume or direction of sales of hairdressing services to non-residents that could be used in this case study.

We identified one website that contained general industry data, including the geographical distribution of the hairdressing workforce across the UK. The figures are for the 2011/12 year, but – under the assumption that the distribution has not changed significantly over the past five years – we were able to compare this with population density data to identify any evidence of hairdressers concentrating in Northern Ireland to take advantage of greater demand from Ireland. The findings are presented below:

**Table 36: Concentration of the hairdresser workforce vs. population density (UK)**

Region	Workforce density <sup>1</sup>	Population <sup>2</sup> (m)	Population density	Difference (pp)	Difference (%)
<b>England</b>	86.70%	54.8	84.05%	-2.6509	-3.06%
<b>Northern Ireland</b>	2.80%	1.9	2.91%	0.1141	4.08%
<b>Scotland</b>	6.40%	5.4	8.28%	1.8822	29.41%
<b>Wales</b>	4.10%	3.1	4.75%	0.6546	15.97%

1. Workforce density data: <http://www.habia.org/industry/overview>

2. Population data: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2015>

Despite media reports of cross-border shopping from the Republic of Ireland to Northern Ireland (UK), we actually observe a lower density of hairdressers in Northern Ireland (2.80%) than we would expect if the workforce was spread evenly across the UK according to general population density (2.91%). However we do not see this as conclusive, as the variations across Scotland and Wales are much more significant, indicating that the varying concentration of hairdressers is likely driven by factors other than cross-border shopping.

#### 3.1.8.4.2 Business prevalence analysis

Hairdressing services lend themselves well to business prevalence analysis, as we would expect greater sales of hairdressing services to lead to an increase in the number of businesses, on aggregate. This allows us to test the hypothesis that higher/lower hair cut prices in a particular border region generate lower/higher demand through cross-border shopping, and that this is reflected in the prevalence of businesses in those regions.

To test this hypothesis, we applied the same methodology as in our consumer electronics and dentistry case studies: we compared the concentration of hairdressing salons (measured by number of salons per 10,000 residents) in a border town to that of an internal town where the impacts of cross-border shopping would not be expected to have an impact on business prevalence. A higher density could be seen as evidence for greater supply, in turn reflecting greater demand.

Data on population was combined with data on the number of salons taken from a major online search provider's business mapping software. To ensure all relevant businesses were captured in this exercise, the latter had to be pieced together using a combination of search terms in English and in the local language (where relevant). The resulting data

was cleaned for duplication and erroneous entries to ensure a reliable figure was obtained.

In order to ensure consistency, towns for comparison were again chosen according to strict criteria. Border town pairs were restricted to be no more than 50km apart across the relevant country border. We did not impose the requirement that towns on either side of the border be the same size as one another, as any size differences were controlled for by comparison with their internal counterpart, rather than their border-pair towns. In order to avoid small sample bias, for this particular case study each town was required to have a minimum population of 10,000.

Internal control regions/towns were then chosen on the basis of additional criteria. The control town had to be at least 100km from any international border, although this criteria was relaxed to being at least 50km from the relevant border where the country was not large enough for this to be possible. Where more than one town met these conditions, the town with the closest population to the border region was chosen (in order to control for population-driven differences in business prevalence). Towns for which the relevant population or business location data were not available (or not available for a comparable geographic area), were excluded.

Where these 'distance from the border' constraints allowed, for countries with a federal (or highly devolved) system of government we used a comparator town from within the same state/region to control for any significant regulatory influences on business prevalence. For this case study this was possible for both the UK and Belgium.

In many cases these strict conditions led to only a small number of comparisons being available. We conducted our analysis on the basis of the first qualifying set of comparison towns that we were able to identify. While it is possible that different selections might have yielded different results, there was not scope to conduct a statistically robust analysis of business prevalence within the framework of this study. These findings should thus be viewed as suggestive only, to be interpreted alongside the results of our other evidence-gathering procedures.

Table 37 below lists each of our border and control (internal) towns, and presents the findings of this research.

**Table 37: Within country business prevalence analysis – hairdressers**

Country	Town	Border or internal?	Population <sup>1</sup>	Salons <sup>2</sup>	Density <sup>3</sup>	In line with hypothesis?
<b>UK (N.I.)</b>	Ballymena	Internal	29,467	42	14.25	YES
	Newry	Border (Ireland)	26,893	48	17.85	
<b>Ireland</b>	Drogheda	Internal	38,578	25	6.48	NO
	Dundalk	Border (UK)	37,816	25	6.61	
<b>Belgium</b>	Waregem	Internal	37,606	22	5.85	NO
	Maasmechelen	Border (Nether.)	37,696	30	7.96	
	Nivelles	Internal	28,027	30	10.70	
<b>Netherlands</b>	Arlon	Border (Lux)	29,274	25	8.54	YES
	Zeist	Internal	49,045	27	5.51	NO
<b>Italy</b>	Geleen	Border (Belgium)	50,565	25	4.94	
	Crema	Internal	34,371	47	13.67	YES*
<b>Slovenia</b>	Gorizia	Border (Slovenia)	34,844	32	9.18	
	Kamnik	Internal	13,768	16	11.62	YES*
Nova Gorica	Border (Italy)	12,997	22	16.93		

1. Population data sourced from [www.citypopulation.de/](http://www.citypopulation.de/), October 2016

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2. Data on hairdressers collected using a major online search provider's business mapping software, October 2016

3. Density = number of hairdresser salons per 10,000 residents

\*Note that this pattern is consistent with Slovenia being the lower price country – which was implied by the PLI data, and supported anecdotally by our interviewees, but was not confirmed by our price research. Nevertheless, we have classed the business prevalence pattern as “hypothesis confirming”, giving the balance of evidence suggests a lower price in Slovenia.

As the table above demonstrates, in the majority of cases we found a pattern that was inconsistent with our initial hypothesis. The result for each country is discussed, in brief, below:

*UK (Northern Ireland):* This is one of the few instances where we observe the expected result in line with cross-border shopping of hairdressing services. Despite the significantly higher VAT rate in the UK, prices in Newry are significantly lower than in Ireland's Dundalk, and as expected we see observe a slightly higher business prevalence in Newry compared with the control town of Ballymena (far from the Irish border).

*Ireland:* This observation is not reinforced on the Irish side, however, where we observe an almost identical concentration of businesses near the border in Dundalk and in the internal town of Drogheda.

*Belgium:* Belgium features in two of our town pairs and provides mixed results. In the case of Maasmechelen (where prices are higher than they are across the border in the Netherlands) we see a higher concentration of hairdressers than in the internal town of Waregem. This is out of line with our hypothesis. This trend is reversed for the border with Luxemburg, where the higher priced town of Arlon has a lower business prevalence than its internal control town, in line with our hypothesis.

*Netherlands:* The concentration of hairdressers in Geleen is slightly lower than in the internal control town of Zeist, which, given the cheaper prices in Geleen relative to the adjoining town of Maasmechelen, does not fit with our hypothesis.

*Italy:* Here we observe a significant difference in business density between the internal control town of Crema and the border town of Gorizia. The concentration is significantly lower in Gorizia, which would be consistent with Italians crossing the border to purchase haircuts in Slovenia.

*Slovenia:* Interestingly, this is consistent with the Italian case. We note a substantially higher density of hairdressers in Nova Gorica relative to the internal control town of Kamnik.

As with the electronics case study, we were unable to undertake this analysis for Luxembourg due to the small size of the country and the resultant lack of internal control towns on which to run this analysis. To some extent this case is still included through our assessment of Belgian business prevalence on the Luxembourg border.

To complement this quantitative analysis of the density of businesses, we undertook more simplistic visual checks of the location pattern of businesses to identify any obvious 'clustering' of salons close to the relevant border that would not have been picked up in the more formal town-by-town analysis. No obvious visible patterns could be identified.

In aggregate, therefore, this detailed business prevalence analysis provides minimal evidence that cross-border shopping is occurring in a manner that has generated a noticeable supply response – the country pair of Slovenia and Italy is arguably the only case where a behavioural response can be seen. Note also that the border towns in this instance are effectively part of one continuous urban area. This evidence is thus

consistent with the idea that customers tend to purchase haircuts at a convenient local salon, rather than travel substantial distances to enjoy a cheaper service.

### 3.1.8.5 Conclusions

In summary, we have found some evidence of cross-border shopping for hairdressing services, although this is largely localised to border regions. The evidence is by no means overwhelming, and businesses seem to prosper in high VAT jurisdictions, despite the existence of low VAT competitors in close proximity. The majority of consumers are unlikely to be so price-sensitive as to travel far to make savings. The one discussion identified in our literature review indicated that cross-border shopping was motivated by price differences of 100-150%, far exceeding those that would occur from VAT differences alone, even under enhanced flexibility – though interestingly this only amounted to EUR 6 in absolute terms.

It is hoped that these findings can be generalised to the category of low-cost services as a whole – which might also include other spa and beauty treatments, as well as a range of low-value repair/maintenance services (for example, to vehicles, or portable household appliances).

Case study: Cross-border shopping (hairdressing)				
<b>Evidence of impact</b>	None	<b>Limited</b>	Some	Substantial
<b>Maximum value of price differences noted</b>	EUR 10.64 or 25%			
<b>Maximum scale of impact noted</b>	None	<b>Limited</b>	Some	Substantial
<b>Localisation of impact</b>	Border regions of countries with high differences in cost of living. Urban areas spanning both sides of a given border. Price-sensitive demographics (low-income groups, students).			
<b>Explanation of impact</b>	The low value of these services means that only a limited saving is possible, and thus the appeal of cross-border shopping will be restricted to those living in very close proximity to borders (or, potentially, commuting).			

### 3.1.9 Other cross-border shopping cases examined

We also conducted preliminary analysis of pharmaceuticals and high-cost recreational services (taking boat wintering services as our example for this latter category). However, in both cases it proved difficult to establish the prices that would apply to final consumers, and thus the magnitude of price differences between jurisdictions. We have documented these findings here, as this provides additional evidence of the ways in which apparent pricing differences may have less impact on the location of economic activity than might *prima facie* be expected.

#### 3.1.9.1 Pharmaceuticals

Prices for oral contraception, similarly to other pharmaceuticals, vary substantially across the EU. Moreover, usage of birth control pills among adult women in Europe is relatively high (UN, 2011), and consumption of contraceptive pills is generally recurring and consistent over time, making them ideal for regular bulk purchases, and a potential object of cross-border shopping.

For this case study, we selected one of the most popular branded pills, produced by a major manufacturer and widely available across the EU. This oral contraceptive can be

purchased in a range of package sizes, with 21 pill packages common across the EU (matching the amount consumed over a single menstrual cycle), with standardised quantities of active ingredients. Birth control pills are homogeneous, easily transportable, and available with prescription in all EU Member States. Added to this, the tax treatment of pharmaceuticals varies significantly between Member States.

According to our initial research, there was significant variation in prices of birth control pills across the Member States. In general, prices in Central and Eastern Europe seemed to be lower than in Western Europe. Moreover, the price in the UK was lower than in Ireland. Based on price differentials and VAT differentials, we identified the following country pairs: Germany (indicative price of EUR 21, 19% VAT rate) – Poland (EUR 10, 8%) border, Austria (EUR 15, 10%) – Czech Republic (EUR 12, 15%) border, Ireland (EUR 13, 21%) – UK (EUR 10.58, 0%) border, and Bulgaria (EUR 8.01, 20% VAT rate) – Greece (EUR 7.80, 13% VAT rate) border.

**Table 38: Price differentials for 21 pill packages of oral contraceptive**

Country pair	Price country A	Price country B	Pricing difference	VAT country A	VAT country B	VAT difference
<b>Germany – Poland</b>	21 [EUR]	43 [PLN] / 10 [EUR]	11 [EUR] / 52.4%	19%	8%	11 pp
<b>Austria – Czech Republic</b>	15 [EUR]	324 [CZK] / 12 [EUR]	3 [EUR] / 20.0%	10%	15%	-5 pp
<b>Ireland – UK</b>	13 [EUR]	9[GBP] / 10.58 [EUR] / fully refunded	2.4 [EUR] / 18.5%	20%	0%	20 pp
<b>Bulgaria – Greece</b>	15.69 [BGN] / 8.01 [EUR]	7.80 [EUR]	0.21 [EUR] / 2.6%	20%	13%	7 pp

Source: field research, pricing data collected during September 2016.

Data was compiled from sources including the official price lists of the drug's producer, and pharmacies showing their assortment prices online and prices reported by consumers. Price differentials for pharmaceutical products in these country pairs is also confirmed by other EU research studies (European Parliament, 2010).

However, further investigation revealed that prices actually paid by individuals for these products varies substantially depending on the interaction with health insurance schemes, and other aspects of public healthcare regimes (e.g. discounted or free products available to people in low income groups). Apparent pricing differences were thus unlikely to be reflective of prices paid by the majority of consumers. While prescriptions issued by a medical practitioner in one Member State can theoretically be redeemed anywhere in the EU (subject to local regulations on drug availability and dispensable quantities),<sup>59</sup> in practice awareness of this facility is relatively low, and the ultimate price paid by the consumer subject to further opacity as rules on the amounts that can be claimed back on prescription charges varying from country to country.<sup>60</sup> Even over-the-counter retail prices in our case study country pairs seemed subject to a noticeable degree of variation, depending on the pharmacies surveyed.

<sup>59</sup> [http://europa.eu/youreurope/citizens/health/help-from-the-pharmacy/prescription/index\\_en.htm](http://europa.eu/youreurope/citizens/health/help-from-the-pharmacy/prescription/index_en.htm)

<sup>60</sup> See country-by-country guidance in <http://ec.europa.eu/social/main.jsp?catId=858&langId=en>, or the useful summaries provided by the Republic of Ireland's Health Service Executive [http://www.hse.ie/eng/services/list/1/schemes/EHIC/othercountries/Healthcare\\_services\\_in\\_other\\_EU\\_EEA\\_countries.html](http://www.hse.ie/eng/services/list/1/schemes/EHIC/othercountries/Healthcare_services_in_other_EU_EEA_countries.html).

In light of the opacity of pricing differences to final consumers, the difficulty in obtaining robust prices for comparative purposes, and the potential variability in pricing to consumers due to the interaction of retail prices with domestic and destination country health insurance schemes, this case study was not developed further. These factors make the detection of price-driven patterns of cross-border activity much harder than for other cases discussed, and also *prima facie* make cross-border shopping for oral contraceptives less likely.

### **3.1.9.2 Boat wintering services**

The final cross-border shopping case study that we considered was boat storage services for private yachts over the winter period. Although this is a less common service than those we have explored in our other case studies, the relevant 'borders' in this case were actually sea borders, which provided an opportunity to examine the impacts in some smaller, more isolated Member States.

Recreational boating is a popular pastime in Europe – it is estimated that there are about six million recreational craft in the EU and that some 32 million people a year participate in leisure boating activities (International Council of Marine Industry Associations, 2007). These leisure craft vary significantly in size and value, but most require regular maintenance in order to remain seaworthy, including being taken out of the water annually for general cleaning, repairs and painting. Owners will typically pay a marina to have their boat stored out of the water, then either pay the marina to undertake the necessary maintenance or undertake it themselves.

In order to ensure we were focused on the right set of services for comparison, we spoke with two people involved in the industry: the operator of a UK marina that provides these services to boat owners, and the owner of a yacht who purchases these services on an annual basis.

We opted to focus our comparison on the most common 'package' of services provided to boat owners for annual wintering of their craft. In each case we ensured that this included five separate services:

1. Hauling the boat out of the water via a crane and parking 'on the hard' (on land);
2. A standard jet wash of the hull;
3. Rental of a cradle for the boat to sit on while parked;
4. Storage (including incidental costs such as power and waste disposal) for 10 weeks, from early December; and
5. Relaunching the boat at the end of the period.

To ensure fair comparison, these services were quoted for a standard boat – a single-mast, single-keel white yacht, 36 feet (11 meters) in length, costing approximately EUR 170,000 to purchase brand new. We were advised that these are very popular yachts of a common size and specification.

Although many boat owners hire permanent berths and use the same marina for their annual wintering services, many marinas also offer these services to non-members. The nature of yachts means that they are easily transported to other domestic or international marinas, so in theory we would expect there to be a degree of competition in the market for wintering services.

We proposed four country pairs for this case study – two in the Mediterranean and then two in Northern Europe. We excluded countries without access to the open ocean, as even though some have access to large inland bodies of water we felt this market would be too small within the Union to warrant attention.



All the services provided by marinas in the package of boat wintering services under consideration are standard-rated in EU Member States. Combining this with the country exclusions we have identified above, this leads to very limited variation in applicable VAT rates across the remaining Member States. The largest differential was between Cyprus (19%) and Denmark/Sweden (25%), but the sheer distance separating these countries makes it extremely unlikely that we would observe boat owners 'cross-border' shopping from Scandinavia to the Eastern Mediterranean in order to take advantage of a 6% VAT rate differential. The differentials we have identified for our proposed country pairs range from just 3% to 4%. Some of these country pairs share both sea and land borders, some share only proximity by sea.

Our proposed country pairs and their respective price data is provided in the table below.

**Table 39: Price differentials for boat wintering services (average prices)**

Country pair	Average price country A	Average price country B	Pricing difference	VAT country A	VAT country B	VAT difference
<b>Croatia – Italy/Slovenia</b>	1,964.00 [EUR]	2,074.84 [EUR]	110.84 [EUR]	25%	22%	3 pp
<b>Italy – Malta</b>	2,136.50 [EUR]	1,663.80 [EUR]	472.70 [EUR]	22%	18%	4 pp
<b>Finland – Estonia</b>	2,570.00 [EUR]	1,650.00 [EUR]	920.00 [EUR]	24%	20%	4 pp
<b>Ireland – UK</b>	1,467.43 [EUR]	1,198.65 [GBP] / 1,410.18 [EUR]	57.25 [EUR]	23%	20%	3 pp

Source: Field research, August 2016.

As a first step in identifying prices, we first mapped the location of relevant marinas using an online marina mapping tool.<sup>61</sup> This provided both the location and contact details of marinas across most of Europe, which we supplemented with other business directories for the areas not covered. Acknowledging that most boat owners would prefer to limit their non-recreational travel, we focused on marinas nearer the border with the other country in our pairs. This means that in the case of Italy the data for comparison come from different marinas (those near Croatia in one case and those near Malta in the other).

As most marinas do not post details of their service charges online, we resorted to phone calls and emails to determine prices at each marina. Ideally we would have sufficient data for the marinas in each area to form a meaningful average, but in practice we found we were unable to determine prices for most marinas due to a variety of reasons:

- The marina doesn't provide these services at all;
- They provide these services but has no capacity for new bookings for a number of years;
- The marina outsources part of these services to a range of other providers with a range of prices;
- The marina only provides these services to members with their boats berthed there during the year (which rules out cross-border shopping for these services alone);
- They only provide these services in conjunction with other services such as hull painting; or

<sup>61</sup> ADAC Marinaführer, [www.marinaguide.adac.de/](http://www.marinaguide.adac.de/)

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- They weren't able/willing to provide us a quote.

For some countries we contacted as many as 20 marinas and were only able to obtain one comparable set of prices.

Given difficulties in obtaining pricing information, the fact that boat wintering services are in many instances only available to customers using other facilities on a more regular basis, and the possibility of supply chains extending beyond the marina (and potentially even beyond the jurisdiction in question), this case study was not developed further.

## 3.2 Distance sales

### 3.2.1 Background

All countries in the European Union comply with the Distance Selling Directive (EU Directive 97/7/EC). The Regulations define a distance contract as: *"...any contract concerning goods or services concluded between a supplier and a consumer under an organized distance sales or service provision scheme run by the supplier who, for the purpose of the contract, makes exclusive use of one or more means of distance communication up to and including the moment at which the contract is concluded."*

Distance selling in the EU occurs when goods are dispatched or transported for or on behalf of a supplier in one EU Member State to a person in another Member State who is not registered for VAT. It includes B2C transactions on mail order sales, phone or tele-sales, or physical goods ordered over the internet.

Application of VAT on the distance sales transactions are determined as follows:

- Businesses may sell to consumers under the local VAT rates at the home VAT rate of the seller.
- Once a business surpasses the buyer country's distance selling annual threshold, they must register as a non-resident VAT trader in the buyer country.
- After registering as a non-resident VAT trader in the buyer country, the business must apply VAT and file VAT returns in the buyer country.

Article 34 of the VAT Directive stipulates a threshold of EUR 100,000 of distance sales into a given Member State per annum, beyond which a supplier must register for VAT in said Member State. Member States have the option to reduce this threshold to EUR 35,000 where they believe the higher threshold "might cause serious distortion of competition". In practice, it is difficult for Member States to monitor and enforce these thresholds for smaller suppliers.

The risk of market distortion is particularly high where a business, not registered as a VAT payer in the buyer country, makes distance sales of goods that are reduced or zero rated in the seller country. Buyers may prefer to purchase from suppliers in the lower tax jurisdiction as the buyer would be able to benefit from goods with lower VAT costs. For example, supplies of books, newspapers, sheet music etc. are zero rated in the UK. A consumer may thus choose to buy books from a small-size vendor based in the UK where no VAT is charged, rather than buying domestically and paying VAT.

#### 3.2.1.1 Case study selection

With the expansion in online commerce over the last two decades, a wide range of items are now sold online within the EU. The growth in the scale and popularity of forums for third-party vendors means that there are many opportunities for small vendors to make distance sales to consumers in other Member States.

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For the purposes of case study analysis, we focused on the example of books. Books play a central role in the development of e-commerce. As a durable good, with a high value to weight ratio, operating in a market where consumers place significant value on retailers' ability to offer a broad range of titles, many of which may be too specialist for the shelves of high-street booksellers, online sales of books have been a significant component of e-commerce activity since the mid-1990s. Furthermore, books are VAT-privileged in certain Member States (notably Ireland and the UK, where they are zero-rated), which means that we should see some evidence of pricing differentials driven by VAT differences.

To narrow our search further, we focused on textbooks for university courses, which can be expensive, particularly when viewed in light of the financial constraints facing most students. Students are usually IT-literate and comfortable making purchases online. We focused on economics textbooks, as these tend to be among the most expensive (Priceonomics, 2015).

For this case study, then, we considered distance sales of university textbooks from the UK and Ireland to other jurisdictions. These were selected as follows:<sup>62</sup>

- Germany: selected due to prevalence of English-language courses at postgraduate level and size of market. VAT rate on books 7%.
- Netherlands: selected due to prevalence of English-language courses. VAT rate on books 6%.
- Denmark: selected due to high VAT rate on books (25%).

Although VAT rate differences across the Member States may influence pricing, we acknowledge non-VAT factors could also have an important impact as well. These factors include shipping costs between the Member States, bank charges on online transactions (particularly where conversion from GBP to EUR is involved), and differing labour and warehousing costs in different jurisdictions. Enforcement of the distance selling threshold will limit the size of the vendor, and thus limit the economies of scale and purchasing power vis-à-vis suppliers from which they can benefit, and which they can pass on to consumers.

Consumer behaviour for distance purchases of identical goods may also be influenced by non-price factors such as availability of products, quality of service, and delivery convenience.

### 3.2.2 Literature review

#### 3.2.2.1 Scope for distortion in the EU

Concern about the potential for distortion predates the creation of the single market in 1993, and VAT for distance sales to final consumers has always operated under the destination principle within the single market for precisely this reason (Fehr et al., 1995). Consequently, we do not expect a great deal of literature (academic or otherwise) on the issue of distortions arising from distance sales in the EU, as such distortions have been precluded by design.

This has been borne out by our literature review and internet searches. A 2010 review of the European VAT system noted that "the particular extent to which [distance sales] are responsible for VAT evasion is unknown. Studies on this topic are not available." (Wesselbaum-Neugebauer, 2010). A 2016 UNCTAD study concluded that "the only known official source for data on the value of bilateral B2C trade for selected

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<sup>62</sup> Using information from <http://www.topuniversities.com/student-info/studying-abroad/where-can-you-study-abroad-english>.

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destinations” was produced by the Japanese Ministry of Economy, Trade and Industry (UNCTAD, 2016). Particularly with regard to books, articles and websites focus on the issue of digital or e-books, which until 1 January 2015 were taxed on an origin rather than destination basis (along with other digital services).

More generally, it appears that major concerns about unfair competition associated with VAT charges on distance sales have focused on non-EU based vendors selling goods to final consumers within the EU, while avoiding or evading VAT entirely. This includes items sold from non-Member States that claim low-value consignment relief upon entry, other items sold from abroad that are simply sold VAT-free and not identified by customs upon entry to the EU, and items that are sold from outside the EU but warehoused inside it for rapid delivery.<sup>63</sup>

We also noted some discussion around the compliance burdens that VAT registration in multiple countries imposes upon businesses (European Commission, 2011a). In this respect, the Commission has proposed extension of the one-stop shop for VAT to distance sellers, in light of the Strategy for the EU Digital Single Market.<sup>64</sup> This could reduce the compliance costs arising from the management of multiple VAT registrations in different jurisdictions. It might then be argued that the threshold above which distance sellers must register for VAT could be reduced, thereby broadening the tax base in high-VAT jurisdictions. Nevertheless, even using a one-stop shop would entail an increase in compliance burdens which could have a substantial impact on micro- and small- businesses. Moreover, absent greater cooperation from other Member States, and/or additional monitoring of inbound packages originating in other Member States, enforcing these thresholds will remain challenging (Wesselbaum-Neugebauer, 2010).

### 3.2.2.2 Scope for distortion in Germany

As with our literature review at the European level, concerns about VAT avoidance and unfair competition associated with distance sales focus on businesses based outside the EU selling goods to EU-based final consumers that avoid VAT charges altogether.

Although there is frequent mention of the zero-rating available to children’s clothing, children’s shoes, and books in the UK,<sup>65</sup> our searches did not identify references to unfair competition with UK vendors arising from distance sales capitalising on this VAT differential. While we did identify business groups and consumer activists requesting parity with VAT treatment in the UK – including Chancellor Merkel, who proposed a 0% VAT rate on children’s clothes during the 2005 federal elections (Uhl, 2007) – the focus of news articles, commentary and analysis was on social policy considerations (such as combatting child poverty and supporting families), not on creating a level playing field for German businesses facing competition from the UK or Ireland.

Part of the reason for this could be the presence of non-VAT factors in the pricing policy and cost-base of retailers based in the UK and Ireland, in comparison to retailers in Germany. The extent to which VAT differences equated to price differences was explicitly called into question during a Bundestag debate on VAT in 2008, where an SPD politician

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<sup>63</sup> See, for example, <https://www.zenstores.com/blog/overseas-sellers-and-vat-avoidance/>, <https://www.theguardian.com/business/2015/nov/01/uk-losing-millions-vat-non-eu-sellers-amazon-ebay>.

<sup>64</sup> See [http://ec.europa.eu/taxation\\_customs/business/vat/digital-single-market-modernising-vat-cross-border-ecommerce\\_en](http://ec.europa.eu/taxation_customs/business/vat/digital-single-market-modernising-vat-cross-border-ecommerce_en)

<sup>65</sup> We encountered fewer references to the Republic of Ireland, which may reflect the difference in the scale of these countries’ e-commerce sectors.

noted instances where prices for the same item of children's clothing were higher in the UK than in Germany.<sup>66</sup>

### 3.2.2.2.1 Book sales and the *Buchpreisbindung*

While we did not find any evidence of VAT being a significant motivating factor in encouraging German consumers to purchase books from the UK and Ireland, we did uncover references to distance sales as a means of circumventing the German *Buchpreisbindungsgesetz*: the regulation governing book pricing within Germany.<sup>67</sup>

This regulation requires that all new books sold in Germany – whether by physical or online retailers – are sold at the publisher's recommended retail price (International Publishers Association, 2014). Discounting and other similar promotional schemes are prohibited. The aim of this regulation (and similar rules in other countries) is to sustain cultural diversity in the book market, by preserving the margins of publishers and booksellers alike. However, until recently, this rule did not apply to books imported from overseas, unless they were exported solely in order to be reimported to Germany to circumvent the fixed price. This meant that there was an additional price incentive, over and above the possibility of purchasing books at a zero rate of VAT, for consumers based in Germany to shop online in the UK and Ireland. Unlike the VAT zero-rating, this incentive applied equally to purchases from large retailers as well as retailers falling below the threshold for distance selling. Indeed, we anticipate that larger retailers would be able to negotiate better deals from suppliers, and thus would be able to offer larger discounts relative to the fixed price.

Since 1 September 2016, however, it is no longer legally possible for distance sales to circumvent the *Buchpreisbindung*. All books sold as new to German consumers (bar very minor exemptions) should now be sold at the publisher's retail price, irrespective of where the vendor is based.<sup>68</sup> Significantly, this retail price is inclusive of German VAT, and there are no exemptions for small vendors.<sup>69</sup> This means that any UK- or Ireland-based distance seller is obliged to charge a consumer based in Germany the same price for any given book, even where the vendor falls below the distance selling threshold and applies VAT at the UK zero-rate.<sup>70</sup>

This has three implications:

1. We might see books sold to German consumers as "like new" rather than "new", to circumvent price regulation.
2. Price-sensitive German consumers may already be accustomed to using online retailers in the UK and Ireland to purchase cheaper books.
3. Enforcement of price regulation on small vendors based outside Germany may be difficult, meaning savings may still be available from non-compliant vendors.

The German book price regulation means that enhanced flexibility should not give rise to any (legal) forms of economic distortion in the book market, or pressure to compete on VAT rates. Nevertheless, in terms of the broader category of distance sales, prevalence of non-compliant prices offered to German consumers online from abroad would

<sup>66</sup> Lydia Westrich, 14 February 2008, <http://dipbt.bundestag.de/dip21/btp/16/16142.pdf#page=43>.

<sup>67</sup> See, for example, <https://phantanews.de/wp/2013/08/buchpreisbindung-im-internetzeitalter-kauf-in-england/>

<sup>68</sup> <http://www.preisbindungsgesetz.de/content/aktuelles/1129-gesetzesanderung-am-1-september-2016-in-kraft-getreten.htm>; <https://phantanews.de/wp/2016/05/die-neue-fassung-des-buchpreisbindungsgesetzes-ein-kommentar/>

<sup>69</sup> <http://www.preisbindungsgesetz.de/content/gesetze/>, Sections 5.1-2.

<sup>70</sup> In such an instance, they would however be able to extract a larger profit margin from the sale, all other costs being equal, as they would not have to remit the German VAT.

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illustrate the difficulties that national governments face in enforcing domestic regulations on vendors based in other Member States – which would include enforcement of destination-based VAT for distance sellers above a particular threshold.

### 3.2.2.3 Scope for distortion in the Netherlands

The Netherlands also operates a fixed book price regime, which was reaffirmed in 2015 pending a further review of its impact in 2019.<sup>71</sup> Unlike the German regulation, which applies to books in any language, the Dutch regulation applies only to national languages (Dutch and Frisian), with the potential to exempt schoolbooks and textbooks (though non-fiction intended for use in higher education, such as the economics textbooks discussed later in this case study, do fall within the remit of the Dutch book pricing law).<sup>72</sup>

A 2008 research study for the Dutch Ministry of Education, Culture and Science, examining the fiscal and cultural impact of reduced VAT on items such as books, did not mention any issues around competition from overseas sellers (APE, 2008).

We found a number of articles and comment pieces noting that book prices, particularly for English-language books, were lower in the UK. However, as most articles directed readers to large retailers (which are overwhelmingly compliant with EU distance-selling rules and the destination principle for VAT), rather than small vendors, it appears that this price difference is not driven by the VAT differential.

### 3.2.2.4 Scope for distortion in Denmark

Denmark does not operate a fixed retail price rule for books. In contrast to Germany and the Netherlands, our research into the Danish case uncovered multiple instances of explicit guidance to purchase books from smaller overseas vendors, to avoid the 25% VAT charge.<sup>73</sup> It is interesting to speculate whether such guidance may have featured in the internet searches for Germany and the Netherlands, were it not for the prominence of websites relating to circumvention of fixed book price rules.

Danish politicians have criticised the abuse of the distance-selling threshold by non-Danish online vendors for many years (Computerworld, 2004), though government sources note the difficulty of overcoming the problem without the cooperation of tax authorities in other jurisdictions. A report by the Danish Competition and Consumer Authority noted that lower prices and a wider selection of products were the primary drivers of e-commerce in Denmark (Konkurrence og Forbrugerstyrelsen, 2011). A report by the Danish Association for Distance- and Internet Sales (FDIH) argued that many foreign-based distance sellers targeting the Danish market are not registered for Danish VAT. In 2012, the industry estimated that, while circa 60% of distance sales made into Denmark by foreign vendors should be subject to Danish VAT, only a small amount of this 1bnDKK (circa 134mEUR) tax liability is ever paid (Rasmussen and Olesen, 2012). An estimate by the Danish Skatteministeriet (2016) placed the figure closer to DKK 200m (EUR 27m), for the total VAT revenue lost to distance sales in 2014. Distance sales by small and medium online vendors was announced as a focus for VAT compliance activity as part of the Skatteministeriet's Action Plan for 2014.<sup>74</sup>

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<sup>71</sup> <http://www.dutchnews.nl/news/archives/2015/02/fixed-book-price-reprieved-for-four-more-years/>

<sup>72</sup> See Ronning et al., 2012.

<sup>73</sup> e.g. <http://www.vendssysselstenklub.dk/netkoeb.htm>, <https://ing.dk/artikel/dansk-moms-pa-internettet-78183>, <https://ubuntudanmark.dk/forum/viewtopic.php?t=17075>.

<sup>74</sup> <http://www.ey.com/dk/da/services/tax/artikel-skats-aktivitetsplan-2014-05042014>

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A 2015 news article in Denmark's most widely read newspaper, *Søndagsavisen*, commented that only three out of a test sample of 16 non-compliant inbound packages from the USA over a given year were picked up by the Danish customs authority (Søndagsavisen, 2015).

### 3.2.3 Interview results

#### 3.2.3.1 Public officials

Views on the distortionary impact of distance sales varied significantly between Member States.

Several countries (e.g. Belgium, Czech Republic, Estonia) reported no significant concerns regarding the volume of non-VAT registered distance sales. Belgium noted that these trade flows go in both directions, and usually reflect non-tax related price factors such as labour costs, and non-price related factors such as product availability, rather than VAT rates. The Czech Republic noted that exchange rate differences were probably more salient than VAT in driving price differences.

The Republic of Ireland acknowledged the risks posed by distance sales, but reported that they were well-managed:

"We use a range of measures to monitor internet retail activity directed at customers in Ireland and take action to require suppliers in other EU Member States that have reached or are likely to reach the distance sales registration threshold to register and account for VAT in Ireland. Enquiries into the activities of suppliers based in other EU Member States are regularly undertaken through the relevant national tax administrations under EU Mutual Assistance provisions... Revenue staff are deployed at ports, airports and postal/courier depots to ensure compliance with customs and tax legislation. They are supported by equipment and resources such as scanners, x-ray machines and detector dogs, which are deployed to detect prohibited goods and high duty goods, such as tobacco and alcohol, and high value imports where VAT and Customs Duty may be evaded. These compliance activities are very successful and Revenue seizes considerable quantities of excisable and prohibited goods annually in the course of delivery through postal and other delivery channels."

Others noted that the issue of distance sales from businesses either below the threshold or not complying with the threshold was gaining prominence, but that data collection and compliance activities were still developing. This was the case in Italy, the Netherlands, and Malta. Italy noted that "we are studying ways of analyzing data in order to combat any possible situation where there may be abuse". Malta observed that "purchases by local residents from online e-commerce websites are on the increase", but this "cannot be attributed to the VAT rate but to market competition and availability of product, as well as the facility of receiving the product at home".

Distance sales posed a significant challenge for a number of high-VAT jurisdictions, including Hungary and Finland. Hungarian distance sellers have complained "that they cannot compete with the prices of another web shops using lower VAT rates meanwhile offering the same or very similar products". The Hungarian National Tax and Customs Administration (NTCA) has recently "traced and analysed 38 web shops, which according to our data make supplies in significant amount to Hungary but which are either not registered for VAT in Hungary or do not file VAT return in Hungary. These 38 undertakings... made sales in value of 3.2 billion HUF [approximately 10.3m EUR] via the internet".

The Finnish government has conducted research into this topic, finding "that 25-30% of distance sellers who sell their goods to Finland are not registered for VAT even though the threshold for VAT registration has been exceeded". They noted that "[m]ost of the flaws in the registrations concern small and medium-sized enterprises", possibly

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indicating that it is both easier for larger scale businesses to cope with multiple VAT registrations, and that they stand a higher chance of being subject to compliance activity on the part of the revenue authority. Significantly, Finland noted that high levels of non-compliance “could be motivated by differences in VAT rates between Finland and Member States”.

Two countries (the Netherlands and Hungary) noted high levels of distance sales of animal/pet food from other Member States from businesses that had not registered for VAT in the destination country. In both instances, this was deemed to be driven by price differences, which could be attributed to the fact that this category of good is standard-rated in the destination countries, but eligible for reduced rates in the countries of origin. This is significant insofar as it suggests that distortionary effects can be observed not only (potentially even not primarily) with high-value goods,<sup>75</sup> but also with low-value goods that are purchased with high frequency.

### **3.2.3.2 Trade associations**

We contacted trade associations representing online retailers across the EU, as well as nationally. We received few responses, and the major concern expressed by these trade associations focused on the impact that enhanced flexibility could have on compliance costs for businesses operating in multiple jurisdictions. One European-wide association argued that:

“The proposed greater flexibility for Member States to set reduced VAT rates would increase the multitude of reduced VAT rates in the EU. Companies need a predictable VAT system. Retail and wholesale would rather favour a higher degree of harmonisation in respect of VAT rates.”

Additional compliance costs, and commercial uncertainties arising from the increase in political autonomy on rates, are particularly acute for SMEs: “SMEs suffer heavily from excessive bureaucracy when trading cross-border”. However, they did not specifically mention the distance sales threshold, but rather the general VAT registration threshold itself.

### **3.2.3.3 Tax experts**

With respect to distance sales, tax professionals’ commentaries followed the observations made by national governments. They reiterated that, in most cases, unregistered sales were not necessarily motivated by VAT advantages, but rather by a broad range of price and non-price factors. The exception was in Denmark, where our expert deemed VAT to be a significant motivating factor for distance sales.

## **3.2.4 Data review**

### **3.2.4.1 Online shopping data**

We have not been able to obtain standardised EU-wide statistics showing the prevalence of distance sales operating below the VAT registration threshold, nor the fiscal impacts of such activity (Wesselbaum-Neugebauer, 2010). Eurostat does however compile data on the uptake of e-commerce within different Member States, and whether citizens have made any purchases over the last 12 months from domestic online vendors or online vendors based in other EU countries (and beyond).

While this data does not provide insight into the volume and value of transactions between countries, let alone whether vendors are levying VAT on an origin or destination

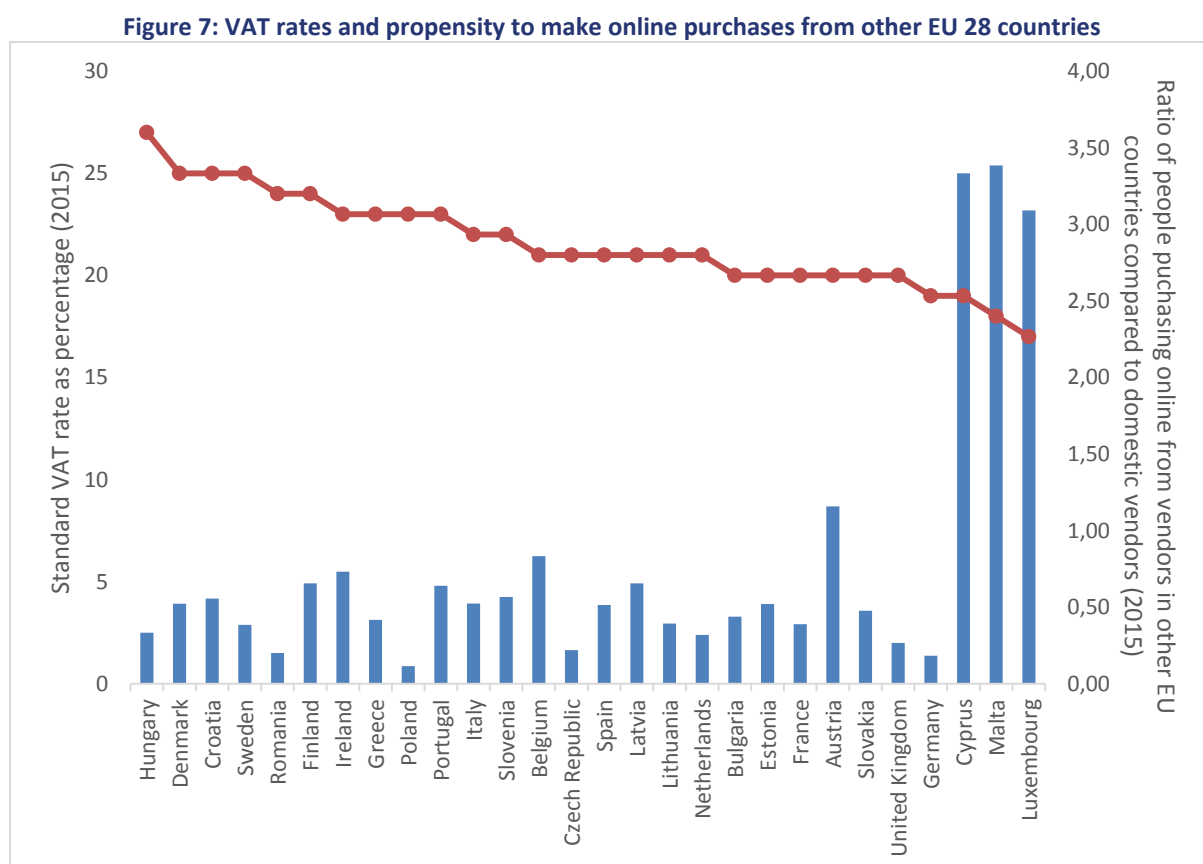
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<sup>75</sup> The Hungarian respondent mentioned “electronic devices, TV-s, laptops, games, toys, sporting equipment, sporting clothes, perfumes”.



basis, if distance sales to other EU countries were driven by the potential for VAT savings then we would expect consumers in countries with higher VAT rates to show a greater propensity to purchase from vendors based in other Member States than from vendors based domestically.

Figure 7 shows the propensity of consumers to make online purchases from vendors based in other Member States as opposed to domestic vendors (the blue bars and right-hand axis). Member States are sorted from left to right by their standard rates of VAT (as indicated by the red line and left-hand axis).



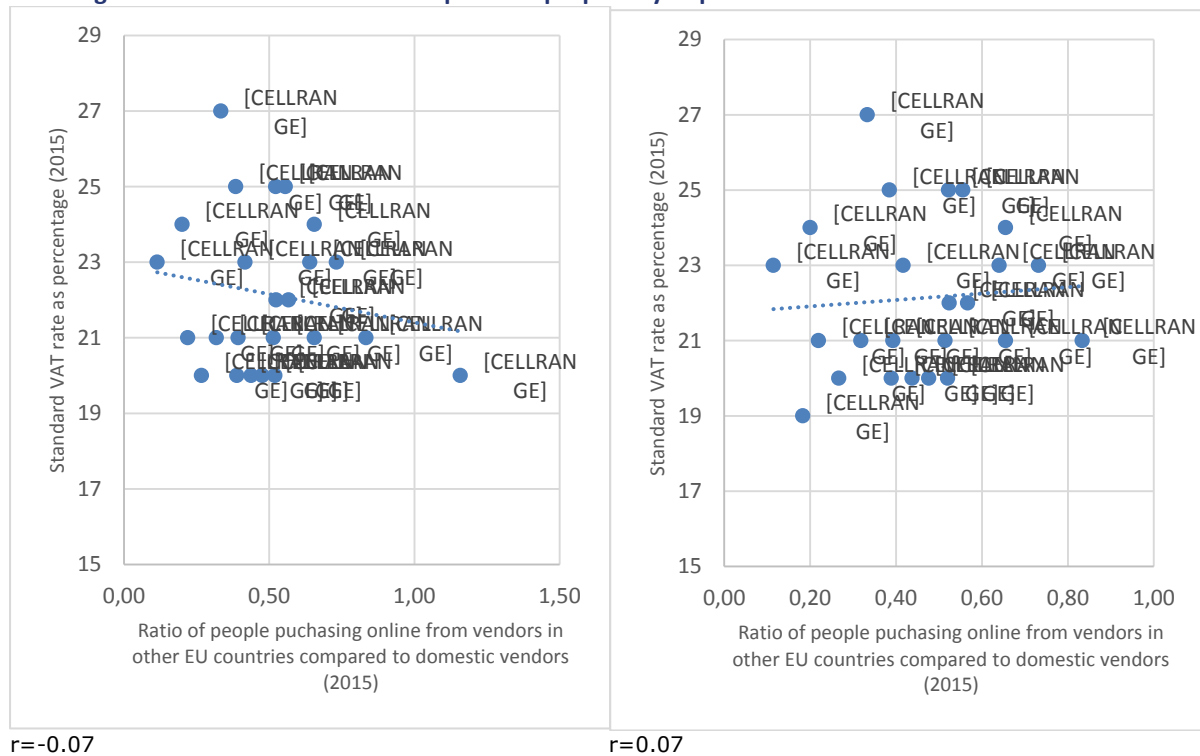
If there were a significant tendency for consumers in high VAT jurisdictions to prefer online vendors based in lower VAT jurisdictions, because of the savings that could be obtained either (i) from small retailers below the distance sales VAT registration threshold, or (ii) from larger vendors failing to comply with VAT rules regarding distance sales, then we would expect the size of the bars in the chart to trend downwards as the VAT rates decline (indicated by the declining line at the top of the graph). However, what we instead see is significant variability in preferences for domestic vendors as opposed to vendors in other Member States, irrespective of VAT rates (as signified by the undulating pattern of the blue bars).

Indeed, it is in the three Member States with the *lowest* VAT rates where consumers are *most* likely to have preferred online vendors in other Member States to domestic vendors. The final three bars indicate that consumers in Cyprus, Malta and Luxembourg were over three times *more* likely to have made at least one online purchase from vendors based in other EU Member States than from domestic vendors over the course of 2015. This is in spite of them having the lowest standard rates of VAT in the EU28 (Cyprus' VAT rate of 19% is also shared with Germany).

Note however that these three countries are also the least populous in the EU28, with all three having total populations of less than one million people in 2015. In these instances, therefore, the tendency to make online purchases from other EU countries may be related to a limited choice of domestic online shopping outlets, limited product availability, and/or limited economies of scale for domestic vendors compared to vendors based elsewhere in the EU.

If these three countries are excluded, there is still a weak *negative* correlation between the preference for vendors in other EU countries and standard rates of VAT. This is driven by the remaining outlier (Austria), which has a relatively high ratio of people who have made purchases in other EU member states despite the relatively low standard rate of VAT. (This is probably related to online retail opportunities in neighbouring Germany, which shares a common language with Austria but has almost ten times the population, as well as a 1% lower VAT rate.) Removing Austria from the dataset results in a positive, albeit similarly weak, correlation. **Figure 8** shows these results.

**Figure 8: Standard VAT rates compared to propensity to purchase online from other EU countries**



Clearly, the opportunity to purchase goods/services at lower prices from smaller or non-compliant online vendors based in other Member States has a negligible influence on the propensity for consumers to use domestic as opposed to other EU vendors at least once within a given year. While the lack of data regarding volume or value of transactions makes it difficult to draw robust conclusions about the scale of the impact, the patterns observed are consistent with the following explanations (individually and/or in combination):

- larger-scale businesses have little appetite or ability to circumvent the destination principle, given monitoring by auditors, tax professionals, shareholders, and public officials;
- smaller-scale businesses cannot provide the price savings, range of products, or service quality offered by larger-scale businesses, rendering the VAT differential insignificant;
- consumers prefer to shop domestically for experiential reasons (e.g. language, familiarity, trust) that outweigh pricing considerations;

- it is relatively hard for consumers to identify smaller-scale vendors through online searches;
- VAT differentials possible under the current EU regime are not so large as to encourage regulatory arbitrage by consumers and businesses; and/or
- there is a significant impact on the online market, but this is driven by the frequency and value of purchases from a minority of regular online shoppers, rather than a widespread consumer base, and thus cannot be detected through this dataset.

### 3.2.4.2 Pricing data

If distance sellers are choosing to base themselves in lower VAT jurisdictions to take advantage of the distance selling threshold for VAT registration, then we would expect to see this pattern reflected in the location of sellers advertising via online portals.

As mentioned in section 3.2.1.1 above, for the purposes of case study analysis, we will focus on the example of books, and in particular university textbooks. Our hypothesis is that, if there is a bias towards lower-VAT jurisdictions, we should find (i) that vendors offering the lowest prices on books are based in the UK or Ireland, (ii) that they are advertising products for delivery to mainland Europe, and (iii) that they are not adjusting their offer prices for destination VAT.

To identify major booksellers, we searched for “books uk”, “bücher deutschland”, “boeken nederland”, and “bøger danmark”. On the top bookseller hit for each search, we searched for the term “macroeconomics” in the local language (macroeconomics, makroökonomie, macro-economie and makroøkonomi), to identify the top titles in the local language.

Search terms	Top two titles
<b>books uk macroeconomics</b>	Macroeconomics, Olivier Blanchard, Pearson; 6 edition (2012) Paperback Macroeconomics, N. Gregory Mankiw, Palgrave Macmillan; 9th Revised edition edition (2015) Hardback
<b>bücher deutschland makroökonomie</b>	Makroökonomie, Olivier Blanchard and Gerhard Illing, Pearson Studium; 6th edition (2014) Hardback VP Makroökonomie including MyMathLab, Olivier Blanchard, Gerhard Illing, and Josef Forster, Pearson Studium; 7th edition textbook with 4th edition exercise book (2016) Hardback
<b>boeken nederland macro-economie</b>	Macro-economie, Freddy Heylen, Matlu; 3rd edition (2014) Paperback Macro-economie en stabilisatiepolitiek, B.C.J. van Velthoven & G.E. Hebbink, Noordhoff Uitgevers B.V., 2nd edition (2008) Paperback
<b>bøger danmark makroøkonomi</b>	Makroøkonomi - videregående uddannelser, Hans Jørgen Biede, (2015) Hans Reitzels, 4th edition Makroøkonomi - Teori og beskrivelse, Elsebeth Rygner and Henrik Grell, (2016) Limesdesign, 5th edition

Where the top two hits from this search returned companies that also acted as portals for smaller vendors, we used these as our in-country examples. Failing that, we ran searches for “used and new books”, “gebruikte en nieuwe boeken”, “brugte og nye bøger”, and “gebrauchte und neue Bücher”, and selected additional websites, to ensure that we had two portals for smaller sellers per country.

We compared prices for English-language textbooks on portals targeted at the UK, German, Danish and Dutch markets. We also compared prices for German, Danish and

Dutch textbooks on portals targeted at the respective countries, as well as in the UK. For each item, we noted the origin of the top five sellers on each portal (where available).

**Table 40: Origin of lowest cost vendors listed on portals**

Book language	Portal primary market	Origin of vendor				
		UK	Ireland	Domestic	USA	Unlisted
English	UK	10*	1	0	7	2
English	Denmark	0	0	4	0	0
English	Germany	0	0	12	0	0
English	Netherlands	0	0	1	0	0
Danish	UK	0	0	0	0	0
Danish	Denmark	0	0	10	0	0
German	UK	8**	0	3	0	1
German	Germany	0	0	13	0	0
Dutch	UK	0	0	0	1	0
Dutch	Netherlands	0	0	8	0	0

\* Five of the top UK vendors would not ship to any other EU countries. Two further UK vendors stated explicitly that "We do not ship to Denmark" in the text of their advertisements.

\*\* Only four of these vendors offered shipping to Germany.

NB For each permutation of language and portal location, the maximum number of items possible is 20 (two books from two portals from up to five vendors). The number can be smaller if availability is limited.

With the exception of one of the UK vendors – which was operated by the portal owner itself – none of the UK vendors' prices were adjusted in accordance with destination VAT when an overseas delivery address was provided.

In spite of this, the cheapest single price for any given item was consistently offered by domestic vendors, advertising through domestic portals. The only exception to this was one German language textbook, which was cheapest from a UK vendor operating through a UK-focused website. However, in this instance the pricing difference was small (approximately EUR 2.50 on a EUR 50 book). Moreover, this was not due to VAT differences as the vendor in question had already raised the price by 7% when a German destination address was provided.

### 3.2.5 Conclusions

We have not found evidence of significant VAT-related economic distortion in the case of online book sales. Moreover, the literature review and analysis of online shopping patterns suggests any links between VAT rates and a propensity to purchase from non-domestic vendors are negligible.

Nevertheless, we did find reports of fiscal loss through distance sales in Hungary and Denmark, two of the countries with the highest standard VAT rates in the EU28. Other countries reported that distance sales was a category of growing interest, research, and/or enforcement activity. Given projected trends in e-commerce, we expect distance sales to be a growing area of concern in the future.

Moreover, this conclusion is limited to VAT differentials possible under the existing EU VAT regime. It may be that, given the growing popularity of online shopping for high value goods such as consumer electronics (see section 3.1.6.2), this becomes a source of greater fiscal loss in the future. True, the existence of the distance selling threshold means that it would be unwise for companies to base their business plans on exploiting

VAT differences, and unwise for countries to engage in tax competition specifically to attract distance sales revenues. Larger vendors and/or highly competitive VAT jurisdictions can expect to be targeted for compliance activities.

Nevertheless, it was evident from our interviews that public officials viewed distance sales as a bigger cause for concern than other instances in which the origin principle persists, including physical cross-border shopping. Our research has highlighted concerns about how difficult it is to police the distance sales threshold. An increase in VAT-related distance selling could impose significant fiscal costs, and/or increase the costs of tax administration. It is difficult for tax officials in a given Member State to establish whether a business in another Member State has exceeded its threshold for a given year.

The e-commerce package presented by the Commission in December 2016 should alleviate at least some of the problems currently attributable to the lack of control of the distance sales threshold. The current threshold of EUR 35,000 or EUR 100,000 per Member State of consumption will be replaced by one threshold for all supplies of electronic services and distance sales supplied to consumers in other Member States. So, instead of up to 27 different thresholds, under the new proposals Member States will now only have to police a single threshold which is substantially lower than the current ones.

Nevertheless, the greater demands that this change will make of smaller businesses should not be underestimated. While the proposed extension of the One Stop Shop mechanism will make it easier for businesses to comply with their cross-border obligations for these supplies, using a One Stop Shop still constitutes an *increase* in compliance burden for businesses that fall below the *current* registration thresholds. Absent effective incentives to comply and effective disincentives for non-compliance, and given tax morale may not operate as strongly at the supranational as opposed to the domestic level, it may be difficult to enforce this lower threshold. Consequently, any proposal for enhanced flexibility should take account of the additional incentive that this will create for distance buying of goods from other Member States, Member States' differing abilities to enforce distance selling thresholds, and Member States' differing cultures of tax compliance.

Case study: Distance sales				
<b>Evidence of impact</b>	None	Limited	<b>Some</b>	Substantial
<b>Maximum value of price differences noted</b>	N/A			
<b>Maximum scale of impact noted</b>	None	Limited	<b>Some</b>	Substantial
<b>Localisation of impact</b>	Countries with higher standard VAT rates; goods with reduced rate in other jurisdictions (e.g. pet food).			
<b>Explanation of impact</b>	Greater savings to be obtained in higher VAT jurisdictions. Issue is increasing in importance across the EU, but difficult to monitor and enforce.			

### 3.3 Tourism

#### 3.3.1 Background

Tourism is a major economic activity in the European Union with wide-ranging impacts on economic growth, fiscal revenues, employment, and social development. Holidays and associated expenditures (on flights, hotels, restaurants, etc.) constitute significant items

of consumer expenditure, and related taxes constitute a significant source of income for governments in many jurisdictions.

As with cross-border shopping, under enhanced flexibility there would be potential for Member States to lower VAT rates to lower prices, in a bid to encourage a higher level of tourist traffic than non-tax factors alone would produce. Indeed, the risk is arguably higher in the case of tourism, as for many European tourists, holidays are synonymous with a journey to another jurisdiction (e.g. northern European tourists visiting Mediterranean countries). This means that most tourist services will be consumed in the country where the business is located, rather than where the consumer normally resides. Under certain forms of enhanced flexibility, Member States might choose to increase their price competitiveness against competitor jurisdictions offering similar holiday experiences by reducing VAT rates.

Admittedly, in most cases there will be significant pricing differentials within a single jurisdiction as well as between jurisdictions. Most major tourist destinations offer a variety of hotels and restaurants, with a high degree of variability in quality and price to cater to the needs of diverse consumers. Nevertheless, holidays of a certain class of luxury in one jurisdiction will compete with similar holidays in another jurisdiction. In these circumstances, price will be a major factor driving consumer choice,<sup>76</sup> and Member States may choose to increase the competitiveness of their own tourist industries by lowering VAT rates on services such as hotel accommodation and restaurants. This risks distorting the proper functioning of the single market, and/or provoking potentially harmful tax competition that results in all competing countries generating lower levels of revenue than they would individually choose.

Rather than approaching case study selection in terms of pairs of countries competing for transactions, tourism is better addressed by considering groups of countries that offer types of holiday that are broadly comparable from the perspective of many consumers. Using leading brands of tourism and tour operator websites, we identified three broad categories of holiday within the EU: beach holidays, skiing holidays, and city breaks. Obviously, this list is not exhaustive, excluding categories of holidays such as camping breaks, caravan holidays, cycling tours, extreme sports, mountain holidays, spa holidays, backpacking and outdoor adventure holidays etc. – but these three categories dominate in major tour operator and holiday provider websites. Focusing on beach holidays in particular is justified by Eurobarometer research that found that “nearly half the people who went on holiday last year for a minimum of four nights went mainly for the sun/beach” (Eurobarometer, 2014).

Of these three categories, city breaks appear less generic than beach or skiing holidays, and thus did not seem suitable for an analysis focused around price-related competition. Consequently, we looked at two groups of case study countries as follows:

- **Summer/beach holidays.** Country group 1: Croatia, Portugal, France, Italy, Greece, Spain, Malta, Cyprus.
- **Winter/skiing holidays.** Country Group 2: France, Italy, Germany, Austria, Finland.<sup>77</sup>

We focused on tourist services under the categories of:

<sup>76</sup> According to a recent Eurobarometer survey (2014), tourists cited price as one of the top four reasons for returning to the same holiday destination, alongside the natural features (landscape, weather), quality of the accommodation, and cultural and historical attractions.

<sup>77</sup> Obviously, it would be preferable to analyse these countries at the subnational level too, to reflect differences in tourism types by region. However, such a detailed analysis was beyond the scope of the present study.

- Hotels/accommodation
- Restaurants/catering

This choice is informed by the fact that these items constitute significant aspects of tourist expenditure: for instance, accommodation accounted for circa 37% of tourist expenditure, according to a recent Eurostat study (2015). Moreover, these are services on which many countries opt to charge reduced VAT rates under the terms of the existing VAT Directive.

### 3.3.1.1 VAT treatment

Many EU countries apply reduced rates to tourist services, where permitted under the present EU VAT regime. This is in part due to the perceived mobility of the tax base and the elasticity of demand for tourist services, as well as a conscious decision by some Member States to promote this sector.

Figure 9 and Figure 10 depict the VAT rates applied to hotels and restaurants in the countries highlighted above, over time. VAT rates for tourism-related goods and services were relatively stable in these countries until approximately 2007. Since then, governments have changed the rates, both upwards and downwards, with the spread of rates narrowing between 1995 and 2015. VAT rates on hotels varied between 5% and 15% in 1995 and narrowed to between 6% and 13% in 2015. VAT rates on restaurants varied between 7% and 22% in 1995 and narrowed very slightly to between 9% and 23% in 2015.

Changes in tourism VAT rates over the period 1995 to 2015<sup>78</sup> were as follows:

- **Austria:** VAT for both hotels and restaurants maintained at 10% throughout the period.
- **Croatia:** Increased VAT for both hotels and restaurants from 10% to 13% since joining the EU in 2013.
- **Cyprus:** Increased VAT on both hotels and restaurants gradually from 5% to 7% and 5% to 9% respectively since joining the EU in 2004.
- **Finland:** Increased VAT on hotels gradually from 6% to 10%. Maintained VAT on restaurants at 22% until 2010 and then reduced it to 13-14%.
- **France:** Maintained VAT on hotels at 5.5% until 2012 and then gradually increased it to 10%. Maintained VAT on restaurants at around 19-21% until 2009 then decreased and increased it over the following years to settle at 10% by 2015.
- **Germany:** Maintained VAT on both hotels and restaurants at 15-16% until 2007 then reduced the hotels rate to 7% and increased the restaurants rate to 19%.
- **Greece:** Maintained VAT on both hotels and restaurants at 8% until 2004 then gradually increased hotel VAT until 2012 when it had reached 23%, reduced back to 14%. Restaurants VAT gradually increased to 11% by 2010 then reduced to 7%.
- **Italy:** Maintained VAT on both hotels and restaurants at 10% throughout the period.
- **Malta:** Increased VAT on hotels from 5% to 7% and maintained VAT on restaurants at 18% since joining the EU in 2004.
- **Portugal:** Maintained VAT on hotels at 5-6% throughout the period. Reduced VAT on restaurants from 17% to 12% in 1999 then increased it to 23% in 2012.

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<sup>78</sup> Note that further changes occurred in several of these countries in 2016/2017, over the life of this study – notably in Greece, where VAT on hotel accommodation increased from 6.5% to 13% in 2016.

- **Spain:** Maintained VAT on both hotels and restaurants at 7% until 2010 and then gradually increasing it to 10%.

Figure 9: VAT rates (%) applied to hotels in selected EU countries

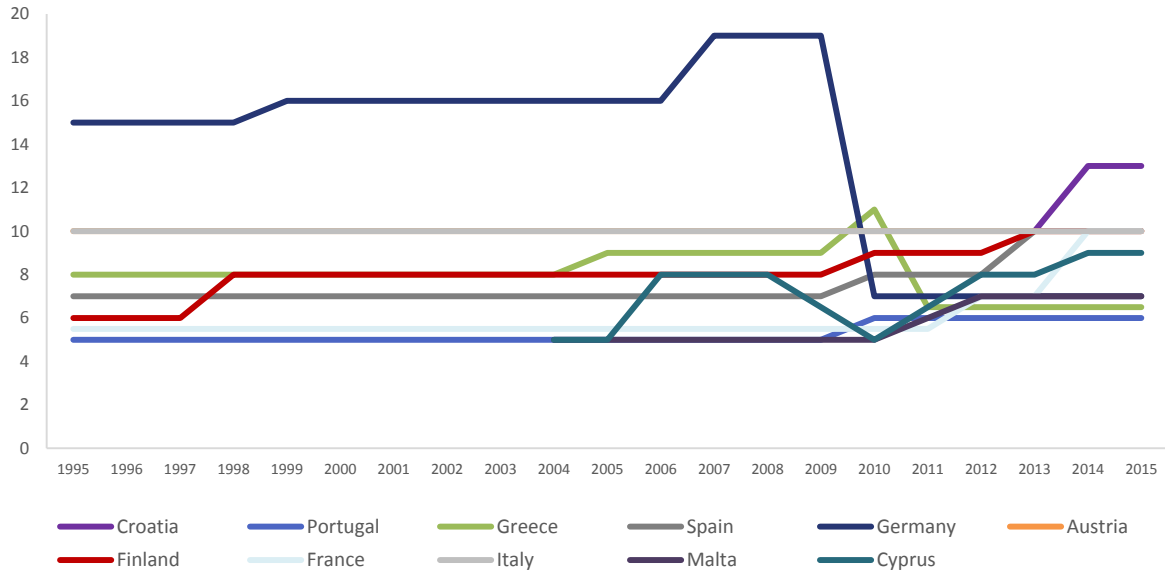
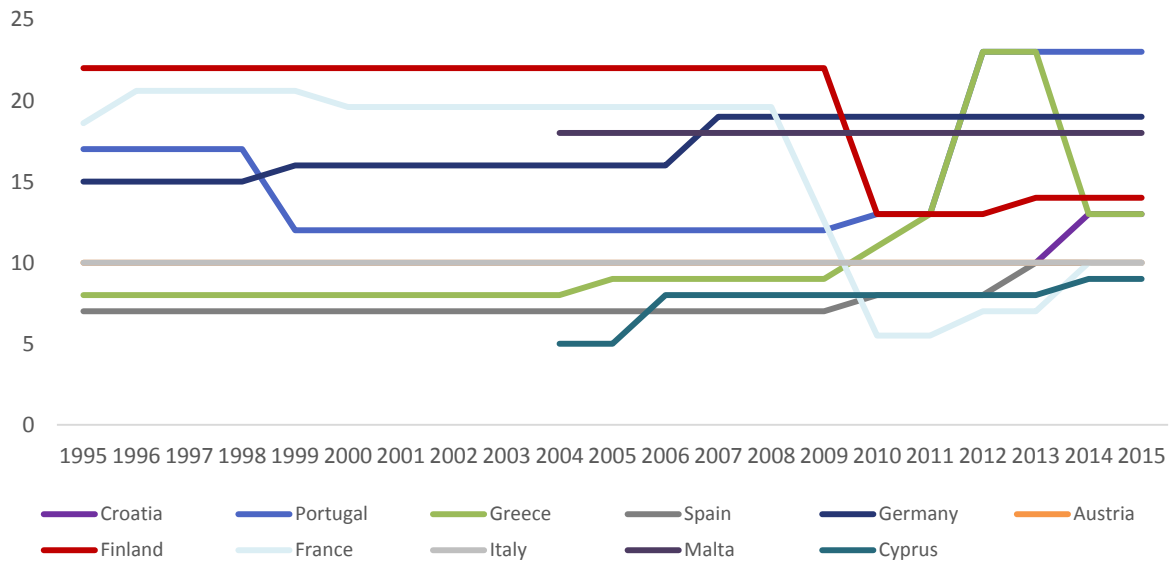


Figure 10: VAT rates (%) applied to restaurants in selected EU countries



### 3.3.1.2 Pricing differences

There is a large degree of variation between hotels and restaurants in terms of service quality and target market, hence it does not make sense to identify the pricing difference for a “typical” tourist service. We have provided Price Level Index data for hotels and restaurants in our case study countries below.



Table 41: Price Level Index data for hotels and restaurants

Beach holiday destinations		Winter sports destinations	
Country	PLI for hotels and restaurants	Country	PLI for hotels and restaurants
<b>Spain</b>	86.1	<b>France</b>	107.2
<b>Portugal</b>	73.8	<b>Italy</b>	106.8
<b>Italy</b>	106.8	<b>Austria</b>	106.5
<b>Greece</b>	78.9	<b>Germany</b>	97.6
<b>Croatia</b>	75.8	<b>Finland</b>	128.1
<b>Cyprus</b>	92.8		
<b>Malta</b>	83.6		
<b>France</b>	107.2		

Source: Eurostat PLI data for 2015 (latest available). 100=EU28 average.<sup>79</sup>

Note that these PLIs reflect prices for all hotels and restaurants, whether in beach holiday destinations, ski resorts, or elsewhere, whether catering primarily to tourists, business travellers, or domestic demand. They thus provide only a crude guide to tourist prices. There is an interesting degree of clustering within each category, in comparison to between categories.

### 3.3.2 Literature review

Economic theory suggests that, if tourism demand is relatively elastic, a reduction in the VAT rate on tourism-related goods and services such as hotels and restaurants will lead to an increase in tourism demand, and vice versa. However, this relies on the cost or cost-saving of the change in VAT being “passed-through” to the consumer, affecting the price that they face. Theoretically, the intensity of competition in the sector should increase the probability of pass-through over the medium-term.

In light of the importance of the tourist industry for many countries, there have been a number of studies that have explored the key determinants of tourism flows and the role of taxes and prices, as well as the specific impact of changes in tourism VAT, in various countries. Here we discuss some of the key research results.

#### 3.3.2.1 VAT rates and prices as a determinant of tourism flows

Tourism academics Gooroochurn and Sugiyarto (2005) wrote a paper detailing the key competitiveness indicators in the travel and tourism industry. Their list includes a broad array of variables including infrastructure, social development and many other factors. With respect to taxes, the paper focused on taxes on trade, without any mention of VAT specifically. However, their research emphasised the importance of the prices of the main services consumed by tourists, such as hotels, car rental and entertainment.

Prideaux (2005) conducted a similar piece of analysis into the factors affecting bilateral tourism flows and came to similar conclusions regarding the important elements. He does however mention indirect tax specifically, citing the imposition of a general sales tax of 10% in Australia in July 2000 that the research indicates can “discourage international arrivals because of the increase in price and encourage the substitution of domestic for international tourism to cheaper foreign destinations.”

Alongside the discussion of the importance of prices on tourism flows, most of these papers introduce the important caveat of quality, and how price is not considered in isolation. This is particularly evident in Dwyer and Kim (2010), who argue that “perception of value”, as a combination of price and quality, is the key determinant.

<sup>79</sup> [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc\\_ppp\\_ind&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc_ppp_ind&lang=en)

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The literature outlined here indicates that prices are a key factor in determining tourism flows and expenditure between countries, though the heterogeneity of tourist services means that it should not be considered in isolation. With respect to VAT, this reinforces the importance of assessing pass through (the extent to which changes in VAT rates impact prices, and therefore feed through to demand). In the next sub-section, we discuss the previous work that has been done to quantify the impact of existing or potential VAT rate changes. Some of these have considered the question of pass-through in isolation, as a first step of their analysis.

### 3.3.2.2 Empirical evidence of the impact of VAT changes on tourism

The UK Treasury partnered with Deloitte to assess the impact of reduced VAT rates on British tourism and the wider economy using Dynamic Partial Equilibrium and Computable General Equilibrium models. To inform their assumptions they conducted a survey of members of the British Hospitality Association, 95% reported that some or all of a VAT change would be passed on. Other activities that a VAT reduction would be spent on included investment, increasing employment, enhancing training and increasing wages. The authors conclude that about 60% of a VAT reduction will feed through to lower prices, though the process would take approximately four years to complete.

Previous work completed by the authors of that report found that the price elasticity for international tourism in the UK was -1.28 – a 10% decrease in the price of tourism increased tourism demand by 12.8%. Across OECD countries, a similar analysis found that the elasticity of tourism was -1.2, very close to the UK figure. Again though, the authors indicate that the adjustment is not immediate and their simulations find that it would take two years for 80% of the impact of the price change to be realised.

More widely across the EU, Copenhagen Economics (2007) found that pass-through in the hospitality sector varies a lot across different countries and across the different hospitality products/services. For example, they find that pass-through for restaurants in Portugal is only 25% while pass-through for hotels in Finland is 100%. They suggest that this is largely the result of context-specific factors, in particular the potential for businesses and the market to expand capacity in the short-and medium-term. The report suggests that lower VAT rates may expand both domestic demand in the hospitality sector as well as induce more incoming tourists, though there is no evidence presented in regards to changes in demand.

Other more specific studies have explored the impact of a specific policy in some of the countries included in our analysis of winter and beach destinations.

**Greece:** EY completed an assessment of the impact of a potential increase in the Greek's hotels VAT rate in 2013. The study estimated that a significant portion of the VAT change would be passed through to accommodation prices gradually, peaking in 2015, two years after the change. It also concluded that demand would suffer significantly with spending on hotels to fall between EUR 290 and EUR 480 million in the first year.

**Spain:** Labendeira et al. (2006) use a general equilibrium model of the Spanish economy to examine the impact of VAT on tourism expenditure, comparing it to a specific tourist tax. They find that a 10% *ad valorem* tax on lodging for non-residents versus a VAT increase on tourism goods and services from 7% to 12% will have similar impacts on non-resident expenditure (-3.1% and -3.2% respectively).

**France, the UK, Italy and Spain:** Researchers at Nottingham University (Dunberry and Sinclair, 2003) developed an Almost Ideal Demand Systems (AIDS) model to examine the impact of various factors on the French demand for tourism in other selected EU

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countries. Their model found that a 1% increase in prices in the UK, Italy and Spain reduced the demand for tourism of French people in those countries by 2.2%, 1.75% and 1.8% respectively. The research does not examine the specific impact of VAT changes but states that changes in the rate of value added tax may have an impact on price competitiveness.

### 3.3.3 Interview results

#### 3.3.3.1 Public officials

We approached tax officials in our case study countries for comment on the role of VAT in the competitiveness of their tourism industries. We only received one response back on this issue, which stated that this was not an area that was a focal point for the fiscal authorities themselves.

#### 3.3.3.2 Tax experts

We asked tax experts in our case study countries whether they were aware of significant impacts on tourist industries from lowered VAT rates in the tourism sector. Response rates were poor, particularly from summer/beach holiday destinations (only two out of eight responded, as opposed to three out of five winter/skiing holiday destinations). None of our respondents noted significant impacts on tourist activity arising from changes in VAT levels, viewing VAT as relatively insignificant compared to other components of price, and other components of the relative competitiveness of destinations.

#### 3.3.3.3 Trade associations

We contacted European trade associations, and national-level trade associations in our case study countries. Despite follow-up calls and emails, we did not receive any responses within the timeframe of the study. Nevertheless, we note that trade associations have been active in campaigning for tourism VAT cuts in many countries.

### 3.3.4 Data review

In this section we use secondary data to assess whether any impact of VAT changes on tourism demand can be detected. In order to carry out the analysis, data was collected on tourism VAT across the winter holiday and beach holiday countries previously discussed, as well as price and demand data related to tourism.<sup>80</sup> In line with previous research, and Eurostat data showing the relative size of tourist spending on different categories of goods/services, we have focused on restaurants and accommodation services as representative of tourist consumption as a whole.<sup>81</sup>

The VAT applied to hotels and to restaurants in European Union Member States is published by the European Commission in their regular report on VAT rates. Eurostat compiles data on harmonized consumer prices indices for countries across the European Union, including for "Restaurants, cafes and the like" and "Accommodation Services."<sup>82</sup> Specific data relating to the demand for hotels and restaurant services by tourists is more difficult to obtain. Instead, we have used a broader measure of demand for tourist services within a country, namely Eurostat data on the arrivals of non-residents at

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<sup>80</sup> Note that Malta, Cyprus and Croatia have been excluded from our data analysis, as they joined the EU midway through the period under examination.

<sup>81</sup> See <http://ec.europa.eu/eurostat/web/tourism/data/database>, tour\_dem\_exexp. Note that expenditures on transport includes flights etc. purchased in tourists' home countries.

<sup>82</sup> We were unable to obtain disaggregated figures from the public Eurostat portal, but the Eurostat figures are published by the Federal Reserve Bank of St Louis.

tourism accommodation establishments. Note that these statistics cover prices and demand for countries as a whole: not just beach or skiing resorts, but also hotels and restaurants in other locations. Usage of hotels/accommodation by non-residents for non-tourist purposes may also be captured, and tourists staying with friends/family will be excluded. Nevertheless, these data should provide a reasonable proxy for the impact of VAT changes on the tourism sector.

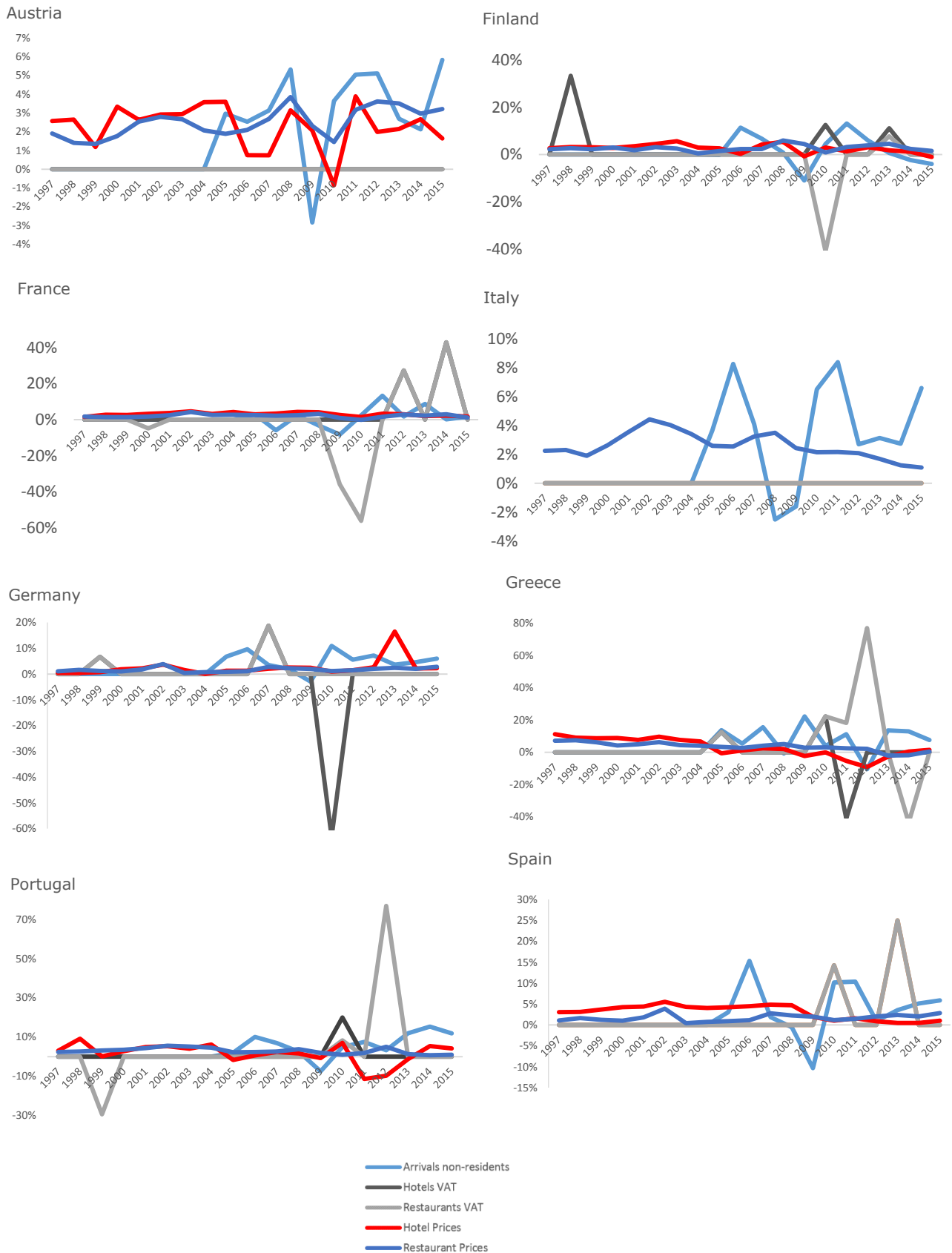
Our evaluation of the relationship between tourism VAT and tourism demand involves the analysis and identification of two stages of the relationship. The first stage is the relationship between VAT and prices, known as “pass through.” VAT changes will primarily affect consumer decisions through their impact on consumer prices;<sup>83</sup> to the extent that this holds true, pass through will be necessary for VAT to affect demand. The second stage is the relationship between prices and demand itself: are tourist numbers affected by price changes?

The following graphs indicate the annual changes in VAT applied to hotels and restaurants as well as the price indices for those services and the tourism demand data.

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<sup>83</sup> Businesses could choose to increase/decrease profit margins, investment, and/or costs to absorb the increase/decrease in VAT without changing prices. These decisions may also impact on the attractiveness of a particular business, and (if sufficiently widespread) on the attractiveness of a destination as a whole.

Figure 11: Growth rates of VAT rates, price indices for hotels and restaurants and tourism demand



The graphs illustrate that tourism demand in the form of non-resident arrivals at tourism accommodation has been growing in most years for most of the EU countries presented here over the period examined. Prices, both for hotels and for restaurants have also, in general, been growing over time, with the exception of some small periods of deflation such as in Greece during the Eurozone crisis. Since both prices and demand are generally growing, it is particularly difficult to gain insight about any interrelationships through visualisation alone. This difficulty is exacerbated by the fact that VAT rates remain relatively constant over time, as discussed above, with only occasional changes. For these reasons, it is important to look further into the data to establish if any true relationship exists.

In order to establish statistically whether there is a long-run relationship between tourism demand and VAT, we test whether they are cointegrated. Cointegration describes the situation where two data series have a long-run relationship in equilibrium, and are stationary over time. Cointegration tests allow us to decipher trends that generally move together – such as the upward nature of prices and tourist numbers in general – identifying whether there is an underlying statistical relationship between the two.

As discussed above, we have conducted the analysis in two stages, first assessing the relationship between VAT and prices, then the relationship between prices and demand. It is important to note that cointegration refers to long-term relationships and does not provide any conclusion about causality, or the materiality of relationships, which can be analysed further should a statistically significant relationship (i.e. a relationship likely to be non-coincidental) be identified.

Cointegration tests work by seeing if the residuals from a regression between two variables have a constant mean and variation over time. If that is true then a significant portion of the patterns in the x and y can be explained by the relationship between the two themselves and they therefore have a long-run relationship. The statistic of interest is therefore the test statistic of the test on the residuals, and its corresponding p-value. If it is significant (in the sense of non-attributable to chance) then there may be some long-run relationship between VAT and prices or prices and demand.

The following tables list the range of p-values for each stage of the relationship, amongst both beach and winter destinations. We have focused on hotels and accommodation, as it is easier to disaggregate non-resident demand for these services than it is for restaurants, which involve a substantial domestic demand component.

A p-value score of 0.05 or less indicates that there is a 5% or less chance of the relationship being attributable to chance, a widely accepted (though arbitrary) threshold for whether there is a relationship of substance, worthy of further investigation. We have computed the test statistic and p-value for each of our individual countries. The table below shows the range of results achieved for countries in each of our two groupings (winter holiday destinations and beach holiday destinations).

**Table 42: p-values and their significance level for the cointegration of tourist-related VAT and tourism-related prices (ranges of p-values for each destination type)**

	Winter Destinations	Beach Destinations
Hotels	0.06 – 0.76	0.04* – 0.14

\* indicates significance and the likelihood of a long-run relationship.

As highlighted above, the first stage of the analysis is assessing whether the changes in VAT are “passed-through” to consumer prices. The tests for cointegration suggest that this pass through does not happen in all cases. VAT does not seem to be passed through in any winter destinations, if it is assessed at the 5% significance level, while it may be

passed through in only one of the beach destination countries – namely Portugal. Note that the relationship is stronger (in the sense of less likely to be attributable to chance) in all the beach destination countries than in the winter destination countries, but the results are still far from conclusive.

Note also that the test results do not provide any insight into the proportion of the VAT change that is passed through. In light of previous literature, it would seem that even when some pass through exists, it would not be complete pass-through.

This analysis is consistent with accommodation prices being determined less by tax rates than by structural characteristics of international supply and demand. If VAT rate changes are not being passed through to prices, then it follows that they will be absorbed by hotel profit margins. These changes will, over time, cause higher-cost providers to close should VAT rates rise, and an increase in accommodation provision should rates fall (as higher-cost potential operators will be encouraged to enter the market). To the extent that VAT does not pass-through into prices, therefore, there could still be a VAT impact on volumes – which will affect both the size of the sector in a given country, and the tax revenues that that sector will generate. Exploring these effects would require a more complete modelling exercise, which lies beyond the remit of this study.

**Table 43: p-values and their significance level for the cointegration of tourism-related prices and tourist volumes (ranges of p-values for each destination type)**

	Winter Destinations	Beach Destinations
Hotels	0.001* - 0.12	0.12 - 0.16

\* indicates significance and the possibility of a long-run relationship.

The second stage of the analysis is to consider whether the changes in price lead to changes in behaviour. As before, the tests for cointegration are not conclusive and again, there are some countries where the prices of hotels seem to have a relatively robust relationship with arrivals of non-residents at tourist accommodation, but in the majority of cases, this is not true. Notably, we only observed a statistically significant relationship in some of our winter holiday destination countries: for no single country did we observe both strong evidence of VAT changes being passed through to prices, and strong evidence of prices affecting tourist numbers.

### 3.3.5 Conclusions

While our analysis provides some indication that some VAT rate changes applied to hotels may have an impact on prices in some cases and that, in even fewer cases, this can have some effect on consumer behaviour, the cointegration tests do not provide evidence of a clearly discernible relationship between tourism VAT and tourist volumes. Obviously, it is possible that this relationship is concealed beneath the noise of other factors affecting both pricing and demand: such as major sporting tournaments, natural disasters, extreme weather, economic crises, and terrorist incidents. It is also possible that the effect runs directly from VAT changes to tourist volumes, as tourism operators absorb VAT changes into profit margins, and higher-cost operators are forced out of the market.

In light of these limitations, we thus place greater reliance on the findings of the wider literature, which indicates that the economic impacts of VAT changes in the tourism sector may be substantial, with corresponding fiscal effects. Ironically, literature from individual Member States arguing for the importance of cuts in tourism VAT domestically may serve as an argument for limiting the potential for such cuts at the EU level. To the extent that the potential gain from VAT reductions for any individual Member State is

high, because those reductions help take market share from other EU countries, there is an argument for EU-wide action to prevent a race to the bottom.

These questions could be addressed by a more detailed modelling exercise, but this would go beyond the scope of the present study.

<b>Case study: Tourism</b>				
<b>Evidence of impact</b>	None	<b>Limited</b>	Some	Substantial
<b>Maximum value of price differences noted</b>	N/A			
<b>Maximum scale of impact noted</b>	None	Limited	<b>Some</b>	<b>Substantial</b>
<b>Localisation of impact</b>	N/A			
<b>Explanation of impact</b>	Some statistical support for passthrough of VAT rates to prices, and some support for impact of prices on demand, in some countries, but effects are not uniformly substantial. Literature indicates substantial economic impacts, which could motivate harmful tax competition.			

### 3.4 Flat-rate scheme for farmers

#### 3.4.1 Background

The flat-rate scheme for farmers is a special VAT scheme that is intended to simplify VAT compliance. It removes the need for the farmer to keep track of input VAT spent on machinery, seeds, fertilisers and other items used in the agricultural production process, but nevertheless allows the farmer to claim some degree of compensation for the VAT that she or he has paid.

The compensation is calculated as a percentage of the farmer's turnover. Each Member State fixes its compensation percentages, which may vary for forestry, for the different sub-divisions of agriculture and for fisheries. According to the EU VAT legislation, these percentages should be calculated on the basis of macro-economic statistics for flat-rate farmers for the preceding three years. Significantly, farmers can elect whether or not to join the scheme.

Assuming an accurate calculation of the percentages within each Member State, individual farmers can benefit or lose out from the scheme depending on the value of their inputs: the greater the heterogeneity among farmers, the less representative average calculations based on macro-economic data will be. However, those who would be worse-off would probably choose not to join the special scheme.

The calculations of compensation percentages are beyond the scope of this study, and are in themselves unaffected by enhanced flexibility. However, because farmers are compensated at a flat rate relative to their turnover, not only is the scheme insensitive to the quantity of inputs they purchase, it is also blind to the VAT paid on those inputs. This means that farmers could exploit differences in VAT rates between Member States by purchasing cheaper agricultural supplies from neighbouring jurisdictions. Farmers could buy agricultural supplies (pesticide, seeds, etc.) in a lower-VAT Member State (assuming this VAT saving was passed through into price). In doing so, they would pay a lower price and lower rate of input VAT than their compensation percentage assumes, exacerbating the distortion relative to the baseline VAT system.



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The potential for economic distortion between Member States in the case of the flat-rate scheme for farmers is a product of (i) the VAT differential on agricultural inputs, (ii) proximity/ease of travelling to the lower VAT jurisdiction to purchase agricultural inputs, and (iii) the level of compensation that can be obtained under the flat rate scheme in the country where the farmer is based. We will focus on the distortion coming out from the application of the origin principle, rather than the calculation of the compensation percentage, so we will focus on points (i) and (ii).

We consider four country pairs: Hungary-Slovenia and Lithuania-Poland because they offer the largest potential gains to farmers seeking to exploit differential VAT rates on agricultural inputs (see Table 44); Germany-Luxembourg, given Germany has a relatively high flat-rate compensation percentage and does not restrict the scheme to small-scale farmers, as the other countries do; and Spain-Portugal because agriculture is particularly significant in some regions of these Member States, and the risk of cross-border shopping of inputs is also high because of the long borders.<sup>84</sup>

### 3.4.1.1 VAT Treatment

The special scheme for farmers has been a long-standing feature of the European VAT system. The Second Council Directive of 11 April 1967 on the harmonisation of the common system of VAT already stated “it has proved necessary to provide for special systems for the application of the value added tax to the agricultural sector”.

The Sixth Council Directive of 17 May 1977 in Art. 25 stated the purpose of the scheme: “Where the application to farmers of the normal value added tax scheme, or the simplified scheme provided for in Article 24, would give rise to difficulties, Member States may apply to farmers a flat-rate scheme tending to offset the value added tax charged on purchases of goods and services made by the flat-rate farmers pursuant to this Article.”

When the Commission submitted its proposal for a Sixth VAT Directive, it envisaged that the special scheme should aim at easing the application of the VAT system only for small farmers. Thus, the proposal explicitly excluded certain farmers from the special scheme.<sup>85</sup> However, the Council modified the proposal and deleted these exclusions. Therefore, the scheme is only restricted to small-scale farmers when this restriction is included in the VAT law of a State Member.

The recast text adopted by the VAT Directive gives the provisions for the common flat-rate scheme for farmers in Art. 295-305. Under the special flat-rate scheme, farmers do not either charge VAT or recover input VAT, and do not have to fill VAT returns. Each Member State fixes its compensation percentages, which can be paid either by the customer or by the public authorities. When the customer is a VAT registered person, he is entitled to deduct the compensation amount. The compensation can be paid by the tax authority in intra-community supplies of goods exempted from VAT and in exports.

The very directive foresees the risk of distortion when it states (Art. 299) that the compensation “may not have the effect of obtaining for flat-rate farmers refunds greater than the input VAT charged”. As we said before, though, this will not be the focus of our analysis.

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<sup>84</sup> The largest possible gains could be made by flat-rate farmers in UK by purchasing agricultural inputs in Ireland. However, as we were advised by the Commission that the UK has very few farmers using the scheme, the UK-Ireland case was not analysed.

<sup>85</sup> COM(73) 950, Proposal for a Sixth Council Directive on the harmonisation of legislation of Member States concerning turnover taxes – Common system of value added tax: uniform basis of assessment (submitted to the Council by the Commission), Article 27, para. 13.

In terms of VAT rates on inputs, Member States levy a broad range of rates, in many cases differentiating between different categories of input. VAT rates and compensation percentages for our chosen country pairs are shown in Table 44 below.

**Table 44: Compensation rates for flat-rate scheme for farmers and VAT on agricultural inputs**

Country	Compensation percentage*	VAT on agricultural inputs**	Lowest VAT rate on agricultural inputs in adjacent jurisdictions **	VAT saving possible ***
<b>Germany</b>	10.7% agriculture/ 5.5% forestry	7%	LU 3%	4%
<b>Hungary</b>	7%/12%	27%	Slovenia 9.5%	17.5%
<b>Lithuania</b>	6%	21%	Poland 5%	16%
<b>Luxembourg</b>	4% forestry/ 12% crop production, stock farming with cultivation	3/17%	No lower rate neighbour	
<b>Poland</b>	7%	5/8/23%	No lower rate neighbour	
<b>Portugal</b>	6%	6/13/23%	No lower rate neighbour	
<b>Slovenia</b>	8%	9.5%	Italy 4%	5.5%
<b>Spain</b>	10.5% livestock and fisheries/ 12% agriculture and forestry	10%	Portugal 6%	4%

Source: [https://ec.europa.eu/taxation\\_customs/sites/taxation/files/docs/body/flat\\_rate\\_farmers\\_scheme\\_compensation\\_percentages\\_en.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/docs/body/flat_rate_farmers_scheme_compensation_percentages_en.pdf), May 2016.

\* In some Member States, multiple different compensation rates apply depending on the type of agriculture in question. See rates per [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/vat/traders/vat\\_community/flat\\_rate\\_farmers\\_scheme\\_compensation\\_percentages\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/traders/vat_community/flat_rate_farmers_scheme_compensation_percentages_en.pdf).

\*\* In some Member States, multiple rates apply to different categories of agricultural input.

\*\*\* We have compared the lowest VAT rates on inputs in each Member State.

### 3.4.1.2 Pricing differences

Agricultural inputs are very diverse: they vary between activities (agriculture, livestock and fishing), and within each group of activities (it is very different growing, for example, rice, vegetables or wheat); they also vary between input goods (for instance, there are thousands of phytosanitaries) and even within a country depending, for instance, on the climate of each particular area and activity.

Furthermore, inputs, such as phytosanitaries, are subject to different national regulations, which often mean that they cannot be used without an appropriate authorisation. Consequently, pricing differences would not be very informative in this case, as it is not possible to identify a universally representative product or set of products for comparison purposes.

### 3.4.2 Literature review

The compensation percentage in the flat-rate scheme for farmers, just like the old turnover taxes, could be used to subsidize farmers. Commentators have thus argued that best practice would be to make farmers fully liable for VAT, subject to the small-business exemption (see Sijbren Cnossen in the 2011 Mirrlees Review). Even earlier, Alan Tait observed that "If the flat rate is realistic, large farmers will probably opt for the normal system since their VAT inputs on purchases of capital equipment will make the flat rate unattractive" (Tait, 1988).

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The possibility of this distortionary effect being exacerbated by farmers exploiting differences in VAT rates to purchase cheaper agricultural supplies from neighbouring jurisdictions has been documented in a number of official publications. A 1994 study, conducted in the early days of the single market, identified instances where German farmers subject to flat-rate VAT schemes were purchasing chemical fertilisers and pesticides (which at that time in Germany were subject to the standard rate) from Luxembourg, France, the Netherlands or Belgium, where those products were taxed at reduced rates (Deutsches Institut für Wirtschaftsforschung, 1994). As of 1994, the Commission “[did] not believe that such cases can be considered to be creating distortions of competition” (European Commission, 1994). Germany has subsequently reduced VAT on agricultural inputs, though this reduced rate is still 3% higher than in Luxembourg.

In another study, del Campo *et al.* (2002) analysed the flat-rate scheme in Spain for the 1986-1997 period. They corroborate that a flat compensation for all farmers cannot be neutral for all taxpayers and suggest different percentages of compensation depending on the inputs and outputs of the farmers. According to their results, the higher the cost of inputs and investments and/or the lower the value of outputs, the worse the special scheme is for taxpayers. Furthermore, the scheme gives an advantage to farmers, the lower the cost of their inputs and investments and/or the higher their outputs. Del Campo *et al.* also indicates that the Spanish flat-rate scheme for farmers is limited to small businesses carried out only by natural persons, which is coherent with the aim of simplifying VAT compliance for farmers.

More recently, two questions were raised at the European Parliament regarding possible distortions caused by the German flat-rate scheme in the pig farmer sector. Both questions were raised by French Members of the Parliament. In April 2011, a question (E-004483-13) quoted an OECD (2005) study suggesting that “the German VAT system gives undertakings a competitive advantage, since the flat-rate scheme is applied to large agricultural holdings as well as small ones”. On behalf of the Commission, the Commissioner for taxation replied that “In the framework of an investigation the Commission services informed the German authorities that they have received a complaint regarding the application in that Member State of the common flat-rate scheme” and that on the basis of the replies from the German authorities, the Commission was examining the matter. They noted that, “should any incompatibility with EC law be established, the Commission will, as a guardian of the Treaties, take the necessary actions to ensure that EC law is correctly implemented.”

In July 2016, another MEP tabled a question (E-005948-16) suggesting that Germany flat-rate scheme “has led to a net subsidy being paid to pig breeders. On average, over the period 2008 to 2012, pig farms were paid EUR 50 million a year, i.e. EUR 2,863 euros per farm and EUR 2,052 per family employee. This practice which is linked to an ‘optimised’ use of the flat-rate VAT scheme by Germany constitutes a distortion of competition, which has been condemned for 10 years. This practice is found principally in Lower Saxony, North Rhine-Westphalia and Baden-Württemberg, which account for 67% of pig fattening units in Germany.” On behalf of the Commission, the commissioner for taxation indicated that the German scheme was not restricted to small-scale farmers. In fact, the objective of the Commission when it submitted its proposal for a Sixth VAT Directive was that the special scheme should aim at easing the application of the VAT system only for small farmers.<sup>86</sup> However, the Council modified the proposal and deleted

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<sup>86</sup> COM(73) 950, Proposal for a Sixth Council Directive on the harmonisation of legislation of Member States concerning turnover taxes – Common system of value added tax: uniform basis of assessment (submitted to the Council by the Commission)., Article 27, para. 13. It was proposed to exclude (1) farmers who also carry on another activity subject to the normal VAT scheme; (2)

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these exclusions. In his answer the commissioner mentioned a study of the Commission that concluded that, in “Germany for the period 2010 to 2014, the actual input VAT for agricultural products was higher than the compensation received by the flat-rate farmers in every year except for 2012 and thus there was no overcompensation. Based on this information, the Commission does not have enough elements to open an infringement procedure”.

Regarding also the German case, Terra and Kajus (2015) believe that in general the flat-rate scheme tends to overcompensate the farmers. A similar idea is suggested by Klenk (2015) who notes that “Some argue that the German percentages of 5,5% and 10,7% are considered to be too high - otherwise not as many farmers would decide to be subject to the flat-rate scheme”. In France, the *Collectif contre le dumping fiscal agricole en Europe* proposes that the flat-rate is applied only by small businesses, using an EU-wide definition of small enterprise.

It is important to note that, throughout these more recent discussions of the flat-rate scheme, we have not found any mention of the issue of cross-border shopping for agricultural inputs. The focus of attention has instead been on the internal functioning of the flat rate scheme in individual countries (in particular, in Germany). The focus of this study is not on possible overcompensation *per se*, but on its interaction with the incentives to purchase inputs in neighbouring jurisdictions for those farmers under the special regime. This is the effect that could potentially be exacerbated under a system of enhanced flexibility, as the flat-rate scheme could allow farmers to cross borders to purchase agricultural inputs in lower VAT jurisdictions, while claiming a fixed compensation rate back from their home governments that is insensitive to how much input VAT expense they have actually incurred (or where they have incurred it). The question of compensation percentages themselves is distinct from the potential risks of enhanced flexibility, and thus lies outside the scope of this study: even if there were no differences in VAT rates between Member States for agricultural inputs, there would still be potential for distortion through differing compensation percentages.

### **3.4.3 Interview results**

In this section we outline the findings of a series of interviews undertaken with (and questionnaires received from) public officials, trade associations, businesses and tax experts, focusing on possible distortions caused by the flat-rate scheme for farmers.

#### **3.4.3.1 Public officials**

The flat-rate scheme for farmers is used in 18 out of 28 EU countries. In response to a general questionnaire distributed to all Member States, only Ireland affirmed there may be a distortion of competition along the border with Northern Ireland, but no data was compiled. Generally speaking, they were not aware of any issues and noted that the scope of such issues would be unimportant as only small enterprises can apply the scheme.

We also interviewed public officials in Spain, from the national tax administration and the regional ministry of agriculture, and they were not aware of any distortions.

#### **3.4.3.2 Trade associations**

We contacted national and regional agriculture associations from the eight case study countries, and also a cross-European body. Where we received responses, the answer was again that they were not aware of possible distortions. We also contacted an

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farmers whose annual turnover exceeds 50.000 units of account; and (3) farmers constituted as a partnership or company.

agricultural association in France, who expressed their concerns about the German flat-rate scheme in the pig-farming sector. However, this was not due to cross-border shopping for inputs, but rather because the scheme can be applied regardless of the size of the enterprise.

### 3.4.3.3 Tax experts

We contacted tax experts across all Member States but our respondents did not have much expertise regarding the special scheme, because it is a specialised topic concerning (in most cases) only small-scale farms. We then contacted additional tax advisers from the four selected pairs of countries, with offices located close to the border with the paired countries. Those who replied were not aware about possible distortions caused by the flat-rate scheme.

### 3.4.4 Data review

As we said in section 3.4.1.2, given the heterogeneity of farm inputs, we will not carry out a pricing differential analysis. In order to shed light on the importance of the distortions related to this regime and the origin principle, we will quantify the potential gross gains (namely, without taking into consideration transportation costs) from cross border shopping for inputs (section 3.4.4.1), and also verify if business prevalence is affected by VAT tax differentials (section 3.4.4.2). Both analyses confirm the feedback obtained from stakeholders.

#### 3.4.4.1 Input data

Given the heterogeneity of farm inputs, we have used VAT differences as a proxy for price differences. On this basis, the gross gain from cross border shopping of inputs depends on:

- a) the difference between tax rates the Home country (H) and Abroad (A); and
- b) the relative importance of those inputs that can be purchased abroad in the production process.

Therefore, on the one hand, we need information about VAT tax rate differentials, and on the other hand, about the production technology used. As regards this latter dimension, we need to have information about the importance of those inputs that could be purchased abroad. Moreover, given that in some countries the special scheme for farmers is size-dependent, we need to have that information across different business sizes.

In order to obtain up-to-date and detailed information about production technology in the agricultural sector, we have used the Farm Accountancy Data Network, managed by the European Commission and available on-line at [http://ec.europa.eu/agriculture/rica/database/database\\_en.cfm](http://ec.europa.eu/agriculture/rica/database/database_en.cfm).

This database is available for the EU countries for the 2004-2013 period. It distinguishes by sectors of farm production (among others, wine, milk, horticulture, and also offers information for the aggregate). This information is provided by size of firms (according to input costs) such that we have:

#### Group sizes

<b>Group 1</b>	2,000 to 8,000 euros
<b>Group 2</b>	8,001 to 25,000 euros
<b>Group 3</b>	25,001 to 50,000 euros
<b>Group 4</b>	50,001 to 100,000 euros
<b>Group 5</b>	100,001 to 500,000 euros
<b>Group 6</b>	more than 500,000 euros

For each group, we provide information for the importance of those inputs that are either not subject to VAT (wages), or exempted from VAT (interest expenses), or which cannot be purchased abroad (energy costs<sup>87</sup>) relative to total input costs. This proportion indicates the possible relative magnitude of the indirect distortionary effect.

Table 45 indicates some features of the flat-rate schemes for the case studies selected. The flat-rate scheme is usually limited to small farmers, and there are limitations to how rapidly farmers can opt into and out of the scheme.

**Table 45: Features of the flat-rate schemes for pair of countries**

Country-pair	Compensation percentage*	VAT on agricultural inputs**	Size-dependent	Time out
<b>1- Lithuania</b>	6%	21%	Turnover < 45,000	NA
<b>1- Poland</b>	7%	5/8/23%	NA	NA
<b>2- Germany</b>	5.5% forestry 10.7% agriculture/	7%	No limit	5 years
<b>2- Luxembourg</b>	4% forestry/ 12% crop production, stock farming with cultivation	3/17%	Cooperatives and other organisations of producers are excluded	NA
<b>3- Portugal</b>	6%	6/13/23%	Small business	5 years
<b>3- Spain</b>	10.5% (livestock and fisheries) / 12% (agriculture and forestry)	10%	Small business	3 years
<b>4- Hungary</b>	7%/12%	27%	Only small and medium enterprises (special law)	2 years
<b>4- Slovenia</b>	8%	9.5%	NA	2 years

Source: Valued Added Tax, VAT & Sales Tax, IBFD, accessed September- October 2016

NA: not available

As this table suggests, some farm inputs – such as seeds, fertilisers, crop protection or feed (for grazing livestock or pigs and poultry) might be eligible for reduced rates. Our numerical analysis takes this into account. In particular, 2013 differences in tax rates for type of inputs subject to reduced tax rates are the following:

**Table 46: VAT savings achievable in analysed country pairs**

	Seeds	Fertilisers	Crop Protection (or Pesticides)	Feed
<b>Poland -Lithuania</b>	8-21=-13%	8-21=-13%	8-21=-13%	8-21=-13%
<b>Germany- Luxembourg</b>	7-3=4%	19-3=16%	19-15=4%	7-3=4%
<b>Portugal-Spain</b>	6-10=-4%	6-10=-4%	6-10=-4%	13-10=3%
<b>Hungary-Slovenia</b>	27-8.5=18.5%	27-8.5=18.5%	27-8.5=18.5%	27-8.5=18.5%

Tax rate differentials tend to be larger than the simple comparison of standard VAT tax rates. For example, the gap between Hungary and Slovenia favours purchasing of inputs in Slovenia, where the applicable VAT rate is 18.5pp lower. In any case, these are singular incentives, that is, they would only work for those inputs. Therefore, in order to know how important they might be we must weight them by their importance with respect to total input costs. That is, for a farm sector where the importance of seeds, fertilisers, crop protection and feed is very low, we expect the distortion is not relevant in practice even if VAT tax rate differentials are very large.

In the table below, we show – by group – the 2013 minimum and the maximum share of each one of the above inputs (calculated as a percentage of total input costs):

<sup>87</sup> Technically only grid-based energy costs cannot be purchased abroad, as fuels could be transported; however, due to difficulties in separating out these elements, we have excluded this category from our analysis.

**Table 47: Relative role of inputs in overall input costs**

	Seeds	Fertilisers	Crop Protection (or Pesticides)	Feed
<b>Group 1</b>	1%-18%	1%-29%	1%-14%	0%-68%
<b>Group 2</b>	0%-17%	1%-29%	1%-23%	0%-75%
<b>Group 3</b>	0%-22%	1%-27%	1%-23%	0%-73%
<b>Group 4</b>	0%-15%	1%-21%	1%-24%	0%-68%
<b>Group 5</b>	0%-23%	1%-18%	0%-23%	0%-69%
<b>Group 6</b>	0%-12%	1%-14%	1%-26%	0%-41%

There is considerable variation within groups (depending on the nature of the farm activity), but not so much across groups. In any case, the relative importance of these inputs can be quite large, so further analysis of the size of the savings possible on different inputs is necessary.

Ideally, this analysis would involve looking at real-world price differences, as it is possible that VAT differences between countries are not fully passed through to purchasers of agricultural inputs. However, this is impossible due to the aforementioned diversity of inputs, so we have instead assumed maximum passthrough. This should indicate the maximum incentive possible, and thus if anything overstate the scale of any distortion.

In Appendix IV: Gross savings by group size of farmers, we show the possible gain (per Euro of input cost) available for different sizes of farm business, arising from purchasing inputs in neighbouring jurisdictions. The highest potential gains for seeds, pesticides and feed could be achieved at the Hungary/Slovenia border. The largest gains on seeds were for Group 2-sized businesses engaged in horticulture (EUR 0.0427 per EUR 1 of total business costs); on pesticides Group 1-sized businesses engaged in growing miscellaneous permanent crops (EUR 0.0452); and on feed Group 5-sized businesses involved in rearing granivores (EUR 0.1393). For fertilizers, the largest potential gain was visible between Poland and Lithuania (EUR 0.0383) for fieldcrop-producing Group 5-sized farms. The largest total gains, which was the addition of the euro savings per input type (seeds plus fertilisers plus pesticides plus feed), was also found among granivore-rearing Group 5-sized farmers in Hungary. They stood to earn an additional EUR 0.1426 per EUR 1 of input cost. However, for the vast majority of farm sizes and farm types, the potential gains are much smaller as a proportion of total input costs. Recall also that net savings - once we take into account transportation costs - would be even lower.

#### **3.4.4.2 Business prevalence analysis**

In this section we test the hypothesis that cross-border shopping for agricultural inputs by flat-rate scheme farmers is occurring by assessing whether there is sufficient demand in border regions to generate a supply response from agricultural suppliers. The specific hypothesis we are testing is that higher/lower prices in a particular border region generate lower/higher demand through cross-border purchases, and that this is reflected in the prevalence of agricultural suppliers in those regions.

To test this hypothesis, we compared the concentration of agricultural suppliers (measured by number of suppliers per 10,000 residents) in a border town to that of an internal town where the impacts of cross-border purchases would not be expected to have an impact on business prevalence. A higher density could be seen as evidence for greater supply, in turn reflecting greater demand.

Data on population was combined with data on the number of retailers taken from a major online search provider's business mapping software. To ensure all relevant businesses were captured in this exercise, the latter had to be pieced together using a

combination of search terms in English and in the local language (where relevant). The resulting data was cleaned for duplication and erroneous entries (e.g. businesses associated to a particular location via a reference in their name, rather than geographical location) to ensure a reliable figure was obtained.

In order to ensure consistency, towns for comparison were chosen according to strict criteria. Cross-border, town pairs were restricted to be no more than 45 minutes by car from each other, and not close to a border with another country nor close to other important cities.

Internal control regions/towns were then chosen on the basis of additional criteria. The control town had to be at least 100km from any international border, although this criteria was relaxed to being at least 50km from the relevant border where the country was not large enough for this to be possible. Where more than one town met these conditions, we selected internal control towns with comparable population sizes to the border region town (in order to control for population-driven differences in business prevalence). Towns for which the relevant population or business location data were not available (or not available for a comparable geographic area), were excluded.

In some cases these strict conditions led to only a small number of comparisons being available; where no pairs were identified, we relaxed the population size conditions. We conducted our analysis on the basis of the first qualifying set of comparison towns that we were able to identify. While it is possible that different selections might have yielded different results, there was not scope to conduct a statistically robust analysis of business prevalence within the framework of this study.

**Table 48** below lists each of our border and control (internal) towns, and presents the results of this research.

**Table 48: Within country business prevalence analysis – agricultural suppliers**

Country	Town	Border or internal?	Population <sup>1</sup>	Suppliers <sup>2</sup>	Density <sup>3</sup>	In line with hypothesis ?
<b>Germany</b>	Mayen	Internal	15,900	2	1.26	YES (marginal)
	Bitburg	Border (Luxembourg)	13,300	2	1.50	
<b>Luxembourg<sup>4</sup></b>	Echternach	N/A	5,249	3	5.72	N/A
<b>Lithuania</b>	Ukmergė	Internal	21,226	5	2.36	YES
	Alytus <sup>5</sup>	Border (Poland)	52,933	3	0.57	
<b>Poland</b>	Kolno	Internal	39,162 <sup>6</sup>	1	0.26	YES
	Sejny <sup>5</sup>	Border (Lithuania)	20,606 <sup>6</sup>	2	0.97	
<b>Hungary</b>	Zalaszentgrót	Internal	15,055	2	1.33	YES
	Lenti	Border (Slovenia)	19,110	1	0.52	
<b>Slovenia</b>	Hoče - Slivnica	Internal	11,273	0	0	YES
	Lendava	Border (Hungary)	10,538	5	4.74	

1. Population data sourced from [www.citypopulation.de/](http://www.citypopulation.de/), March 2017.

2. Data on agricultural suppliers collected using a major online search provider's business mapping software, March 2017.

3. Density = number of retail outlets per 10,000 residents

4. Luxembourg is too small to distinguish between border and internal regions by our methodology. We have however included a "border" town here for direct comparison of supplier density with the German border town, though such a measure is weaker than the comparison against an internal control town.



5. The travel distance between Alytus and Sejny is above 45 minutes, and they are weak comparisons in terms of number of inhabitants; however, lack of choice in this border region has rendered compromise necessary.
6. Figures for Sejny county and Kolno county respectively.

We note that per capita business prevalence is less useful in the case of agricultural supplies than consumer goods, as population is a weaker indicator of market size; indeed, it could be argued that higher population levels are indicative of urbanisation, and might tend in the opposite direction to the size of the agricultural sector. Moreover, the number of agricultural supply outlets identified was small (single digit) in all cases surveyed, meaning that our findings are very sensitive to small changes. Nevertheless, our analyses offered some evidence of border effects in all instances.

### 3.4.5 Conclusions

In this analysis, we have studied the distortions possible due to cross-border shopping for agricultural inputs by farmers operating under the flat-rate scheme.

From our analysis, which includes anecdotal evidence, opinions from stakeholders and data analysis, we conclude that in practice distortions due to the origin principle are small. While modest savings can in theory be obtained (and potentially larger savings for particular categories of farmer who use a greater amount of VAT-able inputs in the production process), the only evidence of this we encountered was through our business prevalence analysis, which is indicative but far from conclusive. Furthermore, generally only small farmers can apply the flat-rate scheme. Therefore, at least for the pairs of countries in our analysis, the case against greater flexibility in VAT rates due to the risk of cross-border shopping for agricultural inputs by flat-rate farmers is weak. Nonetheless, these findings assume that this special scheme only applies to small farms. However, in the case of Germany (where there scheme is not size-dependent) and Luxembourg, our business prevalence analysis still found only minimal evidence of cross-border effects: though business prevalence analysis here is further complicated by the lack of an internal control town in Luxembourg, due to the size of the country.

While there is a risk that distortions could arise under enhanced flexibility, with agricultural suppliers and producers alike both responding to changes in incentives, the risk of any substantial impact could be mitigated by limiting the flat-rate scheme only to smaller farming concerns, or by abolishing the flat-rate scheme altogether and applying simplified compliance rules to all smaller businesses equally.

Case study: Flat-rate scheme for farmers				
Evidence of impact	None	Limited	Some	Substantial
Maximum value of price differences noted	EUR 0.14 per EUR 1 of input cost (theoretical result, not empirical observation)			
Maximum scale of impact noted	None	Limited	Some	Substantial
Localisation of impact	Agricultural businesses where VAT-able inputs constitute a large proportion of cost-base (e.g. granivore-rearing)			
Explanation of impact	Theoretically, incentives do exist for a small subset of businesses (though they will be few in number after allowing for the potential inconvenience and transport costs associated with cross-border shopping for inputs).			

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## 3.5 Auction houses and second-hand goods under the margin scheme

### 3.5.1 Background

The margin scheme for certain second-hand goods – such as works of art, collectors' items and vehicles – and auction houses is intended to prevent the double taxation of goods that, having been owned by private individuals, are subsequently placed back on the market. For example, when a private individual buys a new work of art in the EU, she has to pay VAT on the acquisition. As she is the final consumer, the VAT is not deductible and, therefore, increases the total acquisition price.

If subsequently the private individual sells the work of art to a dealer, the transaction is not subject to VAT. The item has already been taxed for VAT purposes at the purchase price originally paid by the private individual. If the dealer were later on to resell the work of art to another private individual, and charge the full rate of VAT on the sale, then there would be double taxation: the same item would be taxed twice, upon its sale to two different final consumers. This is most clearly evident where the dealer sells the work of art at the same price that the initial customer paid: in this case, VAT has been paid twice on precisely the same purchase value, for the same item.

The price paid by the dealer to the owner can thus be understood to contain an element of residual VAT, in respect of the VAT that was paid (but not recovered) by the owner upon acquisition, and which cannot be recouped by her on resale either (van Noordenne, 1995). This residual VAT element cannot be recouped by the dealer either: as the private individual selling the work of art cannot bill it as output VAT, the dealer cannot claim it as input VAT. Consequently, in recognition of this already-paid VAT, and to ensure that only the value added by the dealer is taxed, under the special scheme VAT could be charged on the margin the dealer makes (the difference between purchase and sale prices), rather than on the full sale price.<sup>88</sup>

The Directive applies the country-of-origin principle enabling dealers to enjoy the same simplicity of operation as private individuals: purchases of goods anywhere within the EU without tax formalities and total freedom of movement. Consequently, differences in tax rates between countries are a clear source of potential distortion,<sup>89</sup> especially if we bear in mind the high value of some works of art, and the volume of trade in second-hand cars. Because the VAT rate applicable to the margin is the same as the VAT rate for the type of second-hand good sold – so for cars, for instance, the standard rate applies – there is an incentive for dealers in particular types of good to base themselves in jurisdictions with low VAT rates on those types of good. Because the second-hand goods scheme currently operates on the origin principle, dealers have the freedom to sell to customers based anywhere in the EU, using the lower VAT rate of their base location.

Furthermore, as with other goods, import VAT is levied on works of art upon entry to the EU – albeit in many cases, at a reduced rate. However, this import VAT is *not* recoverable by dealers operating under the margin scheme (as the assumption is that the item has *not* already been taxed for VAT purposes, so the double-payment issue mentioned above does not arise). Therefore, differences in import VAT rates between countries can be a source of distortion: it may be more cost-effective to first import the work of art to a country with a lower import VAT rate, pay taxes there, and then ship it freely to its final destination in another European country with a higher rate.

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<sup>88</sup> Clearly, this mechanism is imperfect: if the owner sells the work of art for more than she purchased it for, the added value at this stage is not taxed as the transmission is not subject to VAT. This can only happen because of the special nature of certain goods, whose market value can increase as time goes by, instead of depreciating as is the case with normal goods.

<sup>89</sup> See Appendix V for an analytical development of the distortion involved.

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### 3.5.1.1 VAT treatment

On 1 January 1995 the Seventh VAT Directive introduced a VAT charge on the dealers' margin between purchase and sale prices, rather than on the full purchase price.<sup>90</sup> The margin scheme shall apply to the supply by a taxable dealer of works of art where those goods have been supplied to her within the EU by a non-taxable person (or by a taxable person that cannot recover input VAT). The country-of-origin principle applies to all such transactions. As Schulze (2003) notes, "VAT regulations may distort trade [in works of art and other collectors' items]: within the EU, works of art are taxed at the margin (on the difference between purchasing and selling price) according to the origin principle, which disfavors high VAT countries".

Furthermore, the Directive also insisted that works of art be subject to a minimum 5% VAT charge when imported into the EU. This import VAT would not be recoverable by a taxable dealer if it were the subject of a subsequent supply subject to the margin scheme. If the dealer opts for the general scheme, the import VAT would be recoverable on VATable sales within the EU, and on exports of art outside the EU (which would be zero-rated), but the charge increases the working capital required by art dealerships. Therefore, lower import VAT rates could be an additional source of competitive advantage for countries in the market for second-hand goods, works of art, and antiques subject to the margin scheme.

The taxable amount in respect of the supply of the second-hand goods is the profit margin made by the taxable dealer. The dealer issues an invoice that does not show VAT separately. The purchaser pays the corresponding amount and does not know how much VAT he pays (otherwise, the buyer would know the dealer margin). If the buyer is a private individual, they will not be able to claim input VAT, and if they are a VAT-taxable person, they will not be entitled to deductibility in respect of any VAT included in the purchase price. However, as the dealer can choose to apply or disapply the scheme to individual transactions, she can always opt to apply normal VAT rules instead.

The directive also foresees simplified arrangements for the calculation of the margin for low-value goods. The dealer accounts for VAT on her global profit margin, that is, the difference between the value of sales and purchases of all low-value margin scheme goods in each taxable period.

For sales of works of art under the margin scheme, we have selected three case study countries that are of particular interest: the UK, Cyprus, and Germany. The UK has historically been the main centre of auction house activity in the EU. It accounts for the 64% of EU art market value in 2015, and 21% of global art market value (TEFAF, 2016). The UK also has the joint lowest import rate on goods eligible for the margin scheme. Cyprus offers the lowest rate on works of art, collectors' items and antiques within the EU. In Germany, the rate of VAT charged on works of art has changed in 2014 (from 7% to 19%), and thus provides a good case study for how flexibility in rate-setting may impact upon sales of second-hand goods under the margin scheme (Lash, 2015).

Regarding second-hand vehicles, however, as they are lower value and customers generally make shorter journeys to purchase them, we will focus on adjoining country pairs with sizeable differences in the standard rate of VAT: Austria (20% rate) and Hungary (27%), Germany (19%) and Denmark (25%), and Luxembourg (17%) and France (20%).

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<sup>90</sup> See [http://europa.eu/rapid/press-release\\_IP-95-1\\_en.htm](http://europa.eu/rapid/press-release_IP-95-1_en.htm).

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### 3.5.1.2 Price differences

It is difficult to compare the prices of second-hand goods, whether artworks or used cars. The previous histories of such objects have a significant impact on their condition at the point of resale, and thus on their value. Moreover, there is often scope for negotiation on listed prices with any given dealer. Finally, particularly in the case of artworks listed with an agent (whether a physical auction house or online entity), the country of origin of the dealer (as opposed to the agent) may not be listed anyway. Consequently, we have not been able to compare prices from dealers based in different jurisdictions directly.

### 3.5.2 Literature review

According to the TEFAF Art Market Report 2014, taxes and regulations are a major concern for art market businesses. European dealers especially complain about VAT and the distortions it continues to create. Some dealers even affirm that collectors push them to engage in more complex transactions to avoid high taxes (TEFAF, 2014).

There is also some information about the relevance of tax rates on imports. In France the tax rate on imports used to be 5.5%. The rate was increased up to 7% in 2012, and a new increase to 10% was subsequently proposed. The three principal associations of art dealers published a report in 2013, indicating the risks associated with such an increase in the highly competitive global art market (Comité professionnel des Galeries d'Art, Syndicat National des Antiquaires et Syndicat National de Maisons de Vente Volontaires, 2013). A series of protests from French art market professionals caused a U-turn, and the rate of import VAT was reduced back to 5.5% from January 2014.<sup>91</sup>

In Spain, the tax rate on imports was increased from 8% to 21% between 2012 and 2013, which provoked a reduction in the amount of imports. When the rate went down to 10% in 2014, according to the report of a private art foundation, the level of imports increased 50% (McAndrew, 2014).

There is more anecdotal information that VAT strategies can be important when importing art in Europe. A Greek law firm based in Athens, offering specialized advice on art and cultural property matters, recommends on its site "be smart if you want to import an expensive work of art in Greece (...); it may be more cost-effective to first ship the work to the UK, pay their 5% import VAT and then ship it freely to its final destination in Greece without being liable to pay the higher Greek 23% import VAT."<sup>92</sup> The same idea is given by a specialist art law firm in London: "Above a certain value, it can be cost effective to ship an artwork from a country outside the EU to the UK even if the artwork is destined to another EU country."<sup>93</sup>

The TEFAF Art Market Report 2014 confirms this information when it states that "domestic demand in the UK also comes from many European buyers, who use the UK as a conduit for purchases from outside the EU because of its relatively low import VAT" (TEFAF, 2014).

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<sup>91</sup> For another example of the protests, see <http://www.latribunedelart.com/a-10-la-tva-a-l-importation-des-oeuvres-d-art-menace-le-patrimoine>

<sup>92</sup> <http://www.attorney-at-art.com/blog/buying-art-eu-import-vat-what-you-must-know>

<sup>93</sup> <http://www.artatlaw.com/archives/archives-2013-july-dec/import-vat-and-free-movement-of-goods-within-european-union>

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### 3.5.3 Interview results

#### 3.5.3.1 Public officials

In their responses to our general questionnaire, most countries indicated that they were not aware of any possible distortions caused by the margin scheme. Nonetheless, Hungary identified several cases of distortion arising from the second-hand scheme, with items ranging from cars to clothes being purchased abroad (at lower VAT rates) and brought into Hungary for use or resale. Moreover, this was sometimes combined with legal and illegal schemes to reduce tax burdens: for example, taxable dealers using non-taxable persons to import cheaper overseas vehicles, which are then supplied to taxable dealers allowing the use of the margin scheme. The margin scheme is also used instead of normal VAT schemes – so rather than paying the full 27% VAT on imported items, some Hungarian businesses are purchasing them on a non-export basis in other Member States, where they pay the reduced VAT, and then only pay the 27% Hungarian VAT on the margin.

Issues with nearly new second-hand cars were also reported by Ireland, who noted “significant irregularities relating to fraudulent or incorrect VAT documentation, resulting in VAT qualifying imports being treated incorrectly as margin vehicles; and missing trader fraud”.

Regarding works of art, our Dutch respondent noted that, when the Netherlands applied the standard rate of VAT to works of art between 2011 and 2012, it was noticeable that taxpayers under the margin scheme chose to import works of art in Member States with reduced VAT rates.

#### 3.5.3.2 Trade associations and tax experts

Trade associations and tax experts indicated that VAT arrangements for artworks lead to more complex transactions and can cause distortions in the location of economic activity. For instance, supplies by creators of artworks can be taxed at reduced VAT rates but the supplies by art dealers are widely taxed at standard rates. This difference causes distortions as it promotes direct sells from creators. Likewise, different national VAT tax rates can cause distortions between art dealers.

Tax experts also indicated that, although VAT differences can be important, when deciding how to purchase collectors also take into account other important issues such as the prestige of the dealers, the reputation of the jurisdictions in which they are based, and the regulations applicable in those jurisdictions.

One tax expert commented that the practice of dealers in second-hand goods (including both artworks and antiques, and other items such as cars) locating in low-VAT jurisdictions was widespread in the industry, particularly for dealerships that are large enough to engage in tax planning.

### 3.5.4 Data review

#### 3.5.4.1 Works of art

We hypothesise that channels for the distribution of works of art (both dealers and auction houses) should be concentrated in countries where the standard rate and import rate of VAT are lowest. To this end, we examined the correlation between intra-EC trade in works of art as reported by Eurostat,<sup>94</sup> and VAT rates. Note that this measure will be imperfect: exports to final consumers under the margin scheme do not feature in the

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<sup>94</sup> Product code 97: “Works of Art, Collectors’ Pieces and Antiques”.

official data.<sup>95</sup> Nevertheless, given dealers can opt in and out of the scheme for individual transactions, depending on the customer, we would expect margin scheme dealers to be engaged in registered B2B and B2C export transactions as well, and thus be visible in the aggregate statistics.

In order to improve comparability, we have calculated the ratio of exports from a given EU country to the rest of the EU countries relative to GDP. We would expect exports to be larger, the lower the VAT rates applied to works of art. In order to focus on a long-term relationship, we have taken average figures for our variables for the 2004-2015 period.<sup>96</sup>

**Table 49: Average data for tax rates vs. trade flows in works of art (2004-2015)**

	VAT Tax rates		Trade flows relative to national GDP	
	Works of arts	Importation	Exports	Imports
<b>Cyprus</b>	16.08%	5.00%	19%	3%
<b>Luxembourg</b>	15.17%	6.17%	17%	11%
<b>Austria</b>	20.00%	10.00%	14%	10%
<b>Belgium</b>	21.00%	6.00%	10%	10%
<b>United Kingdom</b>	18.96%	5.00%	7%	6%
<b>Malta</b>	11.50%	11.50%	7%	8%
<b>Netherlands</b>	19.50%	6.00%	6%	9%
<b>Greece</b>	20.58%	10.58%	6%	1%
<b>Portugal</b>	9.67%	5.42%	4%	3%
<b>Estonia</b>	19.00%	19.00%	4%	8%
<b>Ireland</b>	13.50%	13.50%	4%	3%
<b>France</b>	19.67%	5.75%	4%	5%
<b>Spain</b>	17.58%	7.92%	4%	3%
<b>Denmark</b>	25.00%	5.00%	4%	3%
<b>Germany</b>	8.00%	7.00%	4%	5%
<b>Hungary</b>	24.00%	24.00%	3%	2%
<b>Italy</b>	20.50%	10.00%	3%	3%
<b>Finland</b>	22.67%	8.67%	2%	1%
<b>Sweden</b>	25.00%	12.00%	2%	2%
<b>Czech Republic</b>	20.13%	12.63%	2%	2%
<b>Slovenia</b>	20.33%	8.67%	2%	1%
<b>Latvia</b>	19.92%	19.92%	2%	1%

<sup>95</sup> See <https://www.gov.uk/government/publications/vat-notice-718-the-vat-margin-scheme-and-global-accounting/vat-notice-718-the-vat-margin-scheme-and-global-accounting>, as well as the Eurostat external trade statistics user guide (available at <http://epp.eurostat.ec.europa.eu/newxtweb/setup/metadata.do?keepsessionkey=true>).

<sup>96</sup> Unfortunately, we do not have data on transactions for 2016, meaning that we cannot see the impact of the VAT tax decrease of Cyprus. In any case, time variation is so small that it is not statistically possible to infer changes in the transaction patterns matching different tax rates over time.

<b>Slovakia</b>	19.42%	19.42%	1%	1%
<b>Bulgaria</b>	20.00%	20.00%	1%	1%
<b>Romania</b>	22.57%	22.57%	1%	1%
<b>Lithuania</b>	19.58%	19.58%	1%	2%
<b>Poland</b>	22.42%	11.17%	1%	2%
<b>Croatia</b>	25.00%	25.00%	1%	1%
Unweighted Average	<b>19.17%</b>	<b>12.05%</b>	<b>4.83%</b>	<b>3.85%</b>

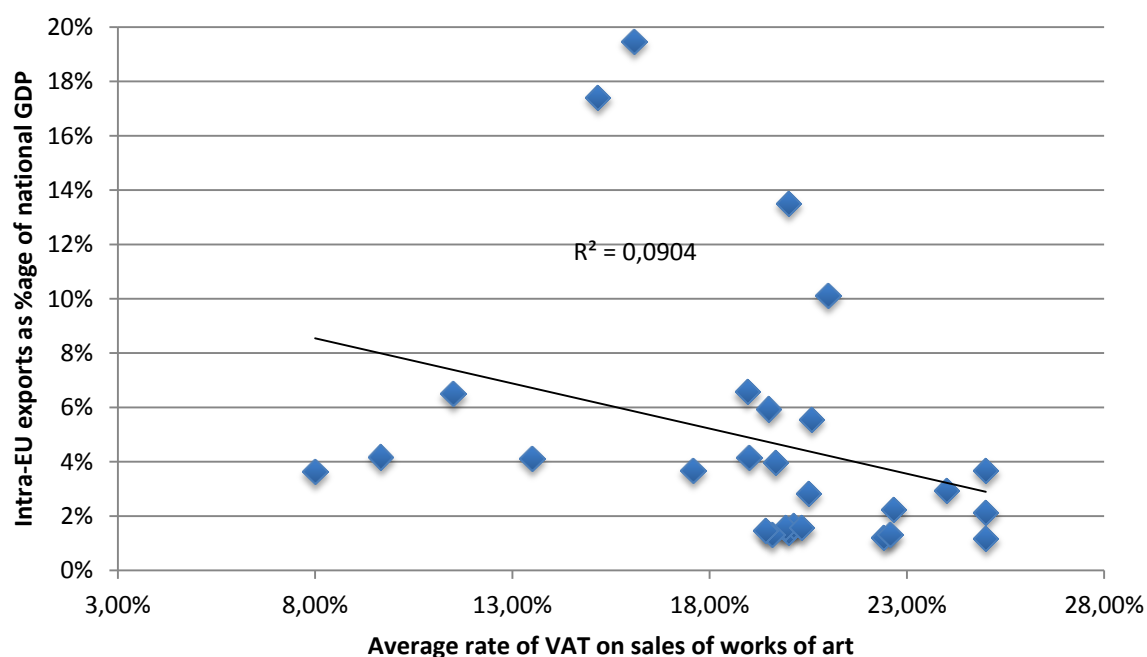
Source: Eurostat; European Commission (DG TAXUD).

In Table 49 we show the average tax rates applicable to the import and sale of works of art, and the importance of EU exports or imports of these goods relative to national GDP. Countries are ordered according to the importance of exports with respect to GDP (or propensity to export within the EU).

In order to have a clearer interpretation of the data, below we perform a graphical analysis. Figure 12 shows that the expected negative relationship holds. However, the correlation is weak: dispersion of exports (to GDP) is explained by the dispersion of VAT tax rates only up to 9% (this is indicated by the  $R^2$  of the regression). This simple relationship does not account for all factors that might explain the dispersion of exports among EU countries, so this univariate graphical analysis has to be approached with caution.

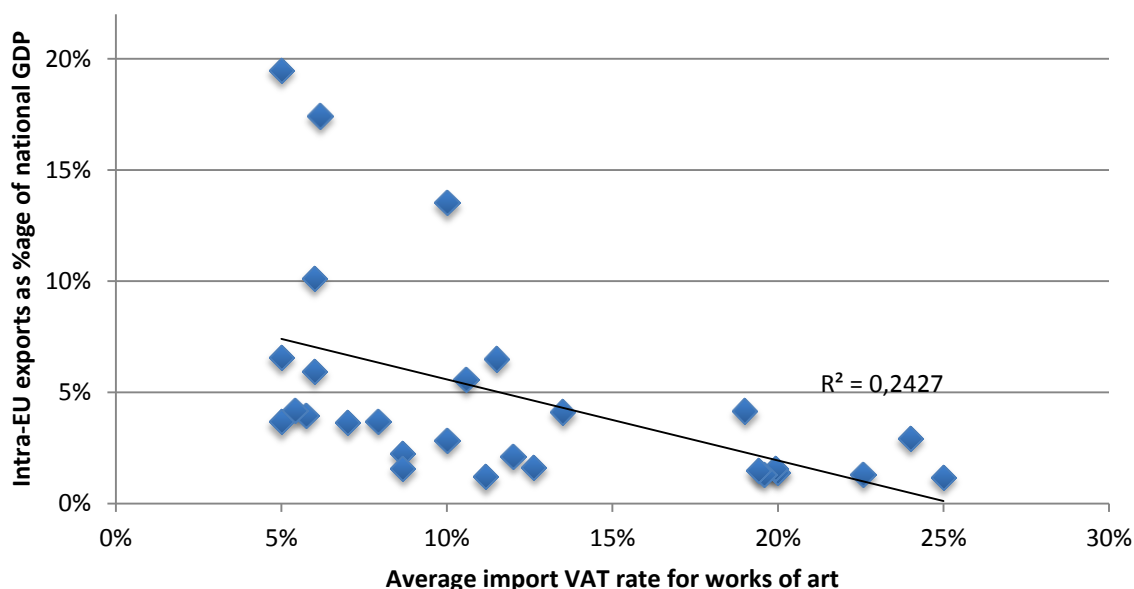
In Figure 13, we test a slightly different hypothesis. As mentioned above, a purchaser of second-hand artworks might import them through a Member State with a low tax rate in imports to minimize the tax bill. When intra-EU exports are correlated against VAT import tax rates, we see a stronger  $R^2$  score (amounting to 24% of variance in the other variable).<sup>97</sup>

Figure 12: Intra-community exports vs VAT rate on works of art (2004-15)



<sup>97</sup> Note that this result may be driven by the fact the dispersion of import tax rates is higher than the dispersion of general tax rates on artworks.

Figure 13: Intra-community exports vs import VAT on works of art (2004-15)



These data patterns are consistent with an intensification of dealer activity in low VAT jurisdictions, corroborating the results of our interview research and literature review. However, import VAT rates (which are outside the scope of our study, as they would not be impacted by enhanced flexibility) appear to play a more important role than consumer-facing VAT rates.

### 3.5.4.2 Business prevalence: second-hand vehicles

In order to analyse the relevance of VAT rates to trade in second-hand goods, we have also studied the prevalence of car dealers in border regions between high-VAT and low-VAT jurisdictions. We have focused here on three country pairs: Germany-Denmark, Luxembourg-France, and Austria-Hungary.

We test the hypothesis that cross-border shopping for second-hand vehicles is occurring by assessing whether there is sufficient demand in border regions to generate a supply response from dealers. The specific hypothesis we are testing is that higher/lower VAT rates in a particular border region generate lower/higher demand through cross-border shopping, and that this is reflected in the prevalence of businesses selling second-hand vehicles in those regions.

To test this hypothesis, we compared the concentration of second-hand vehicle dealers (measured by number of businesses per 10,000 residents) in a border town to that of an internal town where the impacts of cross-border shopping would not be expected to have an impact on business prevalence. A higher density could be seen as evidence for greater supply, in turn reflecting greater demand.

Data on population was combined with data on the number of dealers taken from a major online search provider's business mapping software. To ensure all relevant businesses were captured in this exercise, the latter had to be pieced together using a combination of search terms in English and in the local language (where relevant). The resulting data was cleaned for duplication and erroneous entries (e.g. businesses associated to a particular location via a reference in their name, rather than geographical location) to ensure a reliable figure was obtained.



In order to ensure consistency, towns for comparison were chosen according to strict criteria. Cross-border, town pairs were restricted to be no more than 45 minutes by car from each other, and not close to a border with another country nor close to other important cities.

Internal control regions/towns were then chosen on the basis of additional criteria. The control town had to be at least 100km from any international border, although this criteria was relaxed to being at least 50km from the relevant border where the country was not large enough for this to be possible. Where more than one town met these conditions, we selected internal control towns with comparable population sizes to the border region town (in order to control for population-driven differences in business prevalence). Towns for which the relevant population or business location data were not available (or not available for a comparable geographic area), were excluded.

In some cases these strict conditions led to only a small number of comparisons being available; where no pairs were identified, we relaxed the population size conditions. We conducted our analysis on the basis of the first qualifying set of comparison towns that we were able to identify. While it is possible that different selections might have yielded different results, there was not scope to conduct a statistically robust analysis of business prevalence within the framework of this study.

**Table 50** below lists each of our border and control (internal) towns, and presents the results of this research.

**Table 50: Within country business prevalence analysis – second-hand car dealerships**

Country	Town	Border or internal?	Population <sup>1</sup>	Suppliers <sup>2</sup>	Density <sup>3</sup>	In line with hypothesis?
<b>Denmark</b>	Grindsted	Internal	9,732	3	3.08	NO
	Tønder	Border (Germany)	7,587	7	9.23	
<b>Germany</b>	Brunsbüttel	Internal	12,100	0	0	YES
	Niebüll	Border (Denmark)	9,600	2	2.08	
<b>France</b>	Saint-Dizier	Internal	25,505	7	2.79	YES
	Thionville	Border (Luxembourg)	41,083	3	0.73	
<b>Luxembourg<sup>4</sup></b>	Differdange	N/A	24,805	5	2.02	N/A
<b>Hungary</b>	Veszprém	Internal	60,392	8	1.32	YES
	Sopron	Border (Austria)	61,887	3	0.48	
<b>Austria</b>	Leoben	Internal	24,903	0	0	YES
	Wiener Neustadt	Border (Hungary)	44,480	7	1.57	

1. Population data sourced from [www.citypopulation.de/](http://www.citypopulation.de/), March 2017.

2. Data on agricultural suppliers collected using a major online search provider's business mapping software, March 2017.

3. Density = number of retail outlets per 10,000 residents

4. Luxembourg is too small to distinguish between border and internal regions by our methodology. We have however included a "border" town here for direct comparison of supplier density with the German border town, though such a measure is weaker than the comparison against an internal control town.

Our business prevalence analysis revealed patterns consistent with a response to VAT rates in most of the cases examined.

### 3.5.5 Conclusions

In this section we have explained the functioning of the margin scheme for second-hand goods, focusing in particular on works of art and used cars. This special scheme is justified to prevent the double taxation of goods that were chargeable for VAT when they were first sold, and which are subsequently placed back on the market.

Potential for distortion arises due to differences in tax rates between countries. As art dealers using the margin scheme apply the VAT rate in their country of origin, there is a substantial incentive for dealers to locate in lower VAT jurisdictions. The margin scheme allows them to access customers elsewhere in the EU without incurring destination VAT charges, including where their goods are sold by agents such as auction houses or auction websites. A similar pattern can be observed in the case of second-hand car dealers in border regions: businesses prefer to base themselves in the Member State with lower VAT costs, even when targeting consumers in the neighbouring jurisdiction.

These effects should not be overstated: there are clearly other factors at work too, such as reputation and trust. Nevertheless, there is evidence to suggest that the margin scheme for second-hand goods does have a distortionary effect, and this might be exacerbated under enhanced flexibility. To limit economic distortion, it would be preferable to switch the margin scheme to a destination-principle basis, with dealers and agents paying VAT on their margin using the VAT rate in the country where their customer is based, and with exemptions applied for small businesses to avoid excessive compliance burdens for SMEs. Further research in this area is recommended.

Case study: Margin scheme for second-hand goods				
<b>Evidence of impact</b>	None	Limited	<b>Some</b>	Substantial
<b>Maximum value of price differences noted</b>	Not applicable			
<b>Maximum scale of impact noted</b>	None	Limited	<b>Some</b>	<b>Substantial</b>
<b>Localisation of impact</b>	Origin principle applies to all sales made under the margin scheme, irrespective of where in the EU the consumer is located.			
<b>Explanation of impact</b>	The margin scheme provides a substantial incentive for dealers in second-hand goods to locate themselves in low VAT jurisdictions. This could be exacerbated by enhanced flexibility.			

### 3.6 Other cases

We have investigated the possibility of other cases where the origin principle might still persist despite the move to a final VAT regime based around the destination principle. Possible categories explored included intra-Community B2C supplies of services that might still be taxed under the origin principle for final consumers; and intra-Community B2B supplies of services that might still be taxed under the origin-based principle (e.g. to public authorities and businesses that carry out activities that are outside the scope of VAT). However, we were unable to identify any cases where either of these theoretical situations applied.

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## 4. Assessment of reform options

### 4.1 Background

#### 4.1.1 Context for reform

The existing EU VAT rules were conceived over two decades ago, at a point in time where the EU was moving towards a definitive VAT system based on the origin principle (with VAT charged based on where the supply of goods/services originated). In light of subsequent economic and technological developments, this system has instead developed into a regime based upon the destination principle (with VAT based on where the goods/services are delivered). This change should in theory allow for enhanced flexibility in VAT rates, as it reduces the scope for economic distortions.

#### 4.1.2 Objectives of reform

Enhanced flexibility is intended to achieve three core objectives: enhancing subsidiarity, preventing unnecessary litigation between Member States and the EU, and promoting equal treatment of Member States (European Commission, 2016a). However, these objectives must be achieved in a manner that is also consistent with limiting economic distortions, minimising complexity and cost, and protecting VAT revenues from domestic pressures. A comprehensive definition of each of these objectives can be found in section 1.2.2 above; however, we summarise key aspects of each definition as follows:

*Enhance subsidiarity:* The reform of the EU VAT regime is intended to bring the existing system in-line with the principle of subsidiarity: the requirement that action at the EU level be taken only if, and in so far as, objectives cannot be achieved by Member States acting themselves. The current VAT rules prevent Member States from adapting their VAT systems easily, to reflect domestic political, economic, fiscal and social objectives. The move towards a definitive VAT regime based on the destination principle should allow for a greater degree of autonomy on the part of Member States, without undermining the functioning of the internal market and distorting competition.

*Promote equal treatment of Member States:* At present, some Member States enjoy a number of derogations from the EU VAT regime, enabling them to apply rates below those in the EU-wide rules on a number of goods and services. Many of these derogations are due to expire upon the implementation of the EU's definitive VAT regime. A new system of EU VAT rates could remove or minimise the need for such derogations, leading to fair treatment of all Member States.

*Limit economic distortions:* For the purposes of this study, we define "economic distortion" as the relocation of economic activity between jurisdictions, motivated purely by differences in VAT regimes, as opposed to other factors, such as lower costs or higher demand. This definition therefore includes responses to tax regimes by both consumers and businesses, and a wide range of possible activities such as cross-border shopping, distance sales, and tourism. The relocation of economic activity is broadly beneficial to the country to which activity relocates, bringing with it both economic advantages (increases in employment, salaries, investment and growth) and fiscal advantages (increases in VAT receipts; increases in other revenues derived from the increase in economic activity, such as payroll and corporation taxes). Under a destination-based VAT regime, the scope for economic distortion is limited, as consumers make purchases from domestic and international suppliers using the same (domestic) rate of VAT, and any VAT incurred by these suppliers is recoverable so VAT does not affect their commercial decisions either. However, scope for distortion of economic decisions through differences in VAT rates does arise through opportunities to engage in cross-border shopping, and other similar situations where the origin principle persists in practice. In these

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circumstances, the neutrality of VAT (when it comes to business decisions about where to locate and how to structure supply chains) can be compromised.

*Minimise complexity and cost:* Enhanced flexibility for Member States could mean greater complexity in the EU VAT system, particularly for businesses needing to operate across multiple jurisdictions. Understanding and applying a range of new VAT bands to calculations of both input and output VAT in all EU28 countries could significantly increase VAT compliance costs for businesses. Coupled with the Commission's proposals to develop a single audit mechanism, whereby businesses making supplies to multiple jurisdictions would be subject to a single audit in their home country (European Commission, 2016g), this could lead to substantial increases in administrative costs to governments as well, as they become responsible for applying each other's VAT rules. Beyond a certain point, increased complexity may make the costs of cross-border transactions prohibitive, undermining the proper functioning of the single market.

*Prevent litigation between Member States and the EU:* Differences in interpretation of the existing EU VAT rules (most notably, the question of whether particular goods and services should be considered eligible for reduced rates) has historically been a source of litigation between Member States and the EU. Added to this, the difficulty of updating the existing rules has meant that Member States have frequently found themselves in breach of the rules. To date, the Commission has opened more than 40 infringement proceedings, involving over two-thirds of the EU28. Reforming the rules governing EU VAT rates would reduce the need for costly litigation between Member States and the EU.<sup>98</sup>

*Protect VAT revenues from domestic pressures:* The main threat to VAT revenues under enhanced flexibility arises from economic distortions: the threat of economic activity relocating to another jurisdiction can exert a downward pressure on VAT rates, resulting in reduced tax yields. However, enhanced flexibility does give rise to a further possible source of downward pressure, namely domestic factors. Currently, the restrictions on the products to which reduced rates can be applied, the lower thresholds for both standard and reduced rates, and the number of rate bands available, limit the scope for lobbying by any particular special interest group or industry sector. A special interest group cannot currently demand rate levels lower than the standard rate, unless its goods and services are eligible for reduced rates. Even representatives of retailers of reduced rate products are unable to demand a rate reduction for their specific goods and services without demanding a rate reduction for other goods and services within the same rate band – which increases the fiscal cost of any such reduction, and thereby provides governments with stronger arguments for rejecting the request.

Note that, as this study is independent of the formal Impact Assessment that will be prepared by the Commission, the precise definition of these objectives may differ from those ultimately adopted in that document. One additional issue that must also be taken into consideration concerns the compatibility of reforms with existing EU law, particularly around questions of VAT neutrality, state aid, and the prohibition on preferential tax treatment of domestic products contained in TFEU Article 110. These issues are discussed in section 4.4 below.

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<sup>98</sup> Note that any impacts on litigation at the domestic level is captured under the heading of "minimise complexity and cost", and these two criteria may pull in opposite directions: a scheme in which more details are left to Member States may reduce the scope for EU-level litigation, but may introduce additional complexity and compliance costs for businesses at the national level.

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## 4.2 Reform options

In order to achieve the objectives outlined above, we have considered a number of reform options, based on the two reform options outlined in the Commission's "Action Plan on VAT" (2016a):

### **Option One: Extension and regular review of the list of goods and services eligible for reduced rates.**

The list of goods and services to which reduced rates can apply would be broadened, incorporating all current legally applied reduced rates. As a result, all existing country-specific derogations would be extended to all Member States. The list would be periodically reviewed and updated by the Commission in consultation with the Member States, ensuring that it reflected prevailing political priorities.

Other aspects of the regime (such as the minimum standard VAT rate of 15%, the option of applying two reduced rates no lower than 5%, and exemptions without the right to deduct input VAT on certain types of supply) would be maintained. Nevertheless, note that in practice the extension of all existing derogations to all Member States may complicate this structure (for instance, extension of existing "zero-rate" derogations, such as the zero-rate on children's clothing and footwear currently applied in Ireland and the UK, would necessitate a sub-5% reduced rate, and may also necessitate an additional rate band).

Note that it would be possible to implement Option One with a more selective extension of existing derogations, or with the abolition of existing derogations. While we have not formally assessed these suboptions, they would involve a somewhat different trade-off between the various reform objectives.

### **Option Two: Abolition of the list.**

The list of goods and services to which reduced rates can be applied would be abolished, and Member States would be permitted to decide for themselves which goods and services should be placed within which rate bands. Member States would be free to set standard and reduced rates at whatever levels they see fit, down to and including a zero-rate band. (This flexibility might be supplemented by some targeted restrictions to limit economic distortions.)

Within this option, we consider three distinct suboptions, concerning additional flexibility in the *number* of rate bands that Member States are permitted to deploy. The status quo situation allows each Member State a maximum of two reduced rate bands in addition to the standard rate. However, currently several Member States enjoy a number of derogations from this regime, offering them the option of additional rate bands. Consequently, full flexibility in setting rate levels and categorising goods/services ("full flexibility"), coupled with two reduced rate bands, would not be sufficient to provide all Member States with the level of flexibility that they currently enjoy.

The three suboptions of full flexibility under consideration are as follows:

- Suboption One: a maximum of three reduced rates allowed, in addition to a standard rate (existing super-reduced and zero rates would count towards this allowance, if maintained; any continuing exemptions would not). This would match the existing level of flexibility enjoyed by all Member States bar one (Ireland).
- Suboption Two: a maximum of four reduced rates allowed (the current two reduced rates and two additional rates). Existing super-reduced and zero rates would count towards this allowance, if maintained; any continuing exemptions would not. This is the minimum number of additional rate bands required in order

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to replicate all Member States' existing VAT regimes under a scenario of enhanced flexibility.

- Suboption Three: no limits on the number of rates. Coupled with flexibility in rate levels and classification of goods and services, this would allow Member States to specify different VAT rates for different products without restriction.

These options will be assessed in comparison to the **status quo**, namely, a system in which Member States are allowed to set:

- a standard rate of VAT of no less than 15%;
- up to two reduced rates of no less than 5%, applicable only to goods and services as listed in Annex III of the VAT Directive;
- additional super-reduced and zero rates, and additional reduced rates for specified items, as negotiated through country-specific derogations.

Note that, as this study is independent of the formal Impact Assessment that will be prepared by the Commission, the precise definition of these options may differ from the proposals ultimately assessed in that document.

### 4.3 Evaluating reform options

The various options for reform of the EU VAT regime outlined above can be broken down into three different component variables:

1. Range of rate levels permitted;
2. Number of rate bands permitted;<sup>99</sup> and
3. Goods and services eligible for each rate band.

The policy settings for each of these variables under the existing VAT regime is as follows:

1. Standard/reduced rates no lower than 15%/5% respectively are permitted (subject to derogations);
2. Two reduced rate bands below the standard rate are permitted (subject to derogations);
3. The goods and services listed in Annex III of the EU VAT Directive are eligible for reduced rate bands (subject to derogations).

In this section, we will examine each of these three variables in turn, looking at how different policy settings for each variable might further or frustrate each of our six objectives. **Our aim is to understand the maximum degree of flexibility possible in all three dimensions**, without undermining the efficient operation of the single market, causing economic distortions, or creating significant compliance burdens for business. We will perform this evaluation on the basis of the information we have gathered from our case study research, the academic literature, and from additional analysis where appropriate. While we focus primarily on the issue of cross-border shopping, we also explore how flexibility in these three dimensions might impact on other scenarios where the origin principle still persists in practice, particularly where we have noted potential issues in our case study research (namely, distance sales, tourism, and the margin scheme for second-hand goods).

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<sup>99</sup> Regionalisation of VAT can be understood as additional rate bands within a single country for a particular class of goods and services. In light of the prohibitive compliance costs that we have identified as a byproduct of multiple rate bands, we have not performed additional analysis of this possibility using the Standard Cost Model approach. Nevertheless, we have included a summary of existing literature on and experience of regionalisation of VAT and sales taxes in section 4.3.4.

### 4.3.1 Flexibility in rate levels

#### 4.3.1.1 Evidence from the case studies

As **Table 51** below indicates, we did not identify “substantial” levels of cross-border shopping in any of our cross-border shopping case studies. The only cases where we identified “some” degree of cross-border shopping (as opposed to “limited” levels or “none”) were vehicle fuel and dental services, with price differentials of 22.7% and 68.0% respectively.

**Table 51: Price differentials and levels of cross-border shopping observed**

Category	Good/Service	Highest price differential	Scale of impact
<b>Foodstuffs</b>	Basket of fast-moving consumer goods	34.3% (price index difference)	Limited
<b>Vehicle fuel</b>	1 litre diesel	EUR 0.29/litre or 22.7%	Some
<b>Medical equipment</b>	Powered wheelchair	EUR 3,273 or 62.3%	None
<b>Jewellery</b>	Luxury wristwatch	EUR 3,292 or 9.4%	None
<b>Consumer electronics</b>	Notebook computer	EUR 119 or 9.0%	Limited
<b>Medical/dental services</b>	Porcelain crown fitting	EUR 680 or 68.0%	Some
<b>Hairdressing</b>	Women’s haircut (medium-length hair)	EUR 20 or 41.7%	Limited

In terms of price differentials (which we are using as a proxy for the effect of VAT rates), the case studies indicate limited levels of cross-border shopping where price differentials are 9.4% or below (jewellery; consumer electronics). Some evidence of cross-border shopping was found with a price differential of only 22.7% (diesel), but equally instances where the price differential was higher (34.3% for foodstuffs or 41.7% for haircuts) did not generate a significant cross-border effect. The highest percentage price difference (68%, for dental services) did produce a notable level of cross-border shopping. However, it seems unlikely that enhanced VAT rate flexibility alone would produce such large price differentials (given VAT rates presently range from 0% to 27%).

#### 4.3.1.2 Evidence from the literature

In general, the literature suggests the impacts of changes in taxation on cross border shopping are relatively small. Genschel and Schwartz (2011) conclude based on a survey of the literature on the impact of consumption tax on cross-border shopping that as distance from the border increases, cross-border shopping declines rapidly. Accordingly, they suggest consumption tax (i.e. including VAT) “has little influence on overall consumption patterns” and cross-border shopping is “economically relevant in border regions but not nation-wide.” Table 52 below provides a selection of the literature we have surveyed that best highlights the estimated impact of changes in taxation on cross-border shopping.

It is important to note that the studies surveyed look at the impact of both sales tax and VAT on cross-border shopping. Whilst the estimates provided by studies of the impact of sales tax on cross-border shopping are useful indicators, we expect the impact of VAT to be significantly smaller. Sales taxes are more visible to consumers (Fox, 1996) than VAT and thus their influence on cross-border shopping is likely larger. For example, a study that looks purely at the effect of VAT suggests that less than 1% of potential VAT revenue was lost as a result of cross-border shopping (Gordon and Nielsen, 1996), whilst the studies on sales taxes suggest more significant effects (e.g. Fox, 1996, suggests a 1% change in taxation would lead to a 3.73% change in total consumption).

We also note that there is considerable variance amongst the estimates and this is a consequence of the fact that both the type of consumption, and country studied vary across the literature surveyed. However, a common theme throughout the literature is the localisation of economic impacts, which are generally limited to quite narrow border regions.

**Table 52: Impacts of tax rates on cross-border shopping**

Source	Country of study	Estimated impact of different types of tax on cross-border shopping
<b>Gordon, and Nielsen (1996)</b>	Denmark	The study suggests in Denmark in 1972, that <b>0.77% of potential VAT revenue appears to have been lost due to cross-border shopping</b>
<b>Asplund et al. (2007)</b>	Sweden	The study's results suggest that <b>the elasticity with respect to the foreign price is around 0.3</b> in the border region
<b>Snowdon (2013)</b>	Denmark	The study notes that the number of cross-border transactions had been falling before the implementation of the tax on fats. The number of cross-border purchases was highest in 2005 at 15.6 billion kroner (EUR 2.1 billion) and fell to 9.6 billion kroner (EUR 1.3 billion) in 2011. The study suggests based on preliminary evidence from 2012 that <b>the tax on fats led to cross-border sales rising by the equivalent of 100 million kroner (EUR 13.4 million) per annum i.e. less than 1.1% of the total cross-border shopping in 2011.</b>
<b>Bode et al. (1994)</b>	Denmark, Germany and the Netherlands	In Denmark, Belgium and the Netherlands, outbound cross-border transactions account for <b>less than 1% of total national consumption expenditure</b>
<b>Bygvrå (2009)</b>	Denmark	The author suggests that cross-border shopping is "significantly dependent on how far residents live from the border". Based on survey data from 2003 they suggest <b>residents living within 10km from the border made cross-border trips on average twice per month whilst those living between 150-200km from the border made trips on average twice per year.</b> Therefore they suggest the population distribution in terms of the proportion of the population living nearby the border is most important in determining the extent of cross-border shopping.
<b>Fitzgerald et al. (1988)</b>	Ireland	The ownership of a car, and distance from the border explained 36% of the variance in cross-border shopping trips made. <b>For every mile from the border, the number of cross-border shopping trips fell by 0.72%.</b> Between 1972 and 1986 there was a steep increase in the VAT rates in the Republic of Ireland (from 5.26% to 25% in terms of the normal rate, and 16.37% to 35% in terms of the luxury rate) whilst over the same period Northern Ireland faced rates inclining at a much slower rate (10%-15%). Accordingly they suggest that in 1986 the value of cross border shopping fell within the range of IR£57 million – IR£119 million. However, we note that the study only provides an estimate of total cross-border shopping and does not quantify the impact of tax specifically on cross-border shopping.
<b>Brinsma et al. (2001)</b>	Netherlands	The study finds <b>a price differential of 5 cents per litre would lead to 30% of Dutch car owners living at the border fuelling in Germany.</b>
<b>Mikesell and Zorn (1986)</b>	United States of America	<b>A 1 percentage point increase in sales tax differentials reduced sales in the town by 3%</b>
<b>Mikesell (1970)</b>	United States of America	The study suggests <b>the loss of per capita city sales from a 1% change in the sales tax variable will be between 1.69% and 10.97%</b>
<b>Walsh, and Jones (1988)</b>	United States of America	The study finds for a <b>1% reduction in the after-tax price, grocery store sales increase by 5.9%</b>



<b>Tosun and Skidmore (2007)</b>	United States of America	The authors estimate that for every <b>one percentage point increase</b> in the county relative price ratio due to the sales tax change, <b>per capita food sales decreased by approximately 1.38%</b>
<b>Fox (1996)</b>	United States of America	The study suggests <b>a 1% increase in sales tax</b> in Tennessee would <b>reduce Montgomery county's (a county within Tennessee) sales by 3.73%</b> and Tri-Cities county's sales by 0.44%

A more substantial literature exists on excise rates and cross-border shopping, which we have discussed in section 3.1.3.2 above. This suggests that, when price differences driven by VAT and sales tax begin to reach the same level as price differences driven by excise duties, a behavioural response by consumers becomes increasingly likely. The analysis that follows provides further support to this conclusion.

#### 4.3.1.3 Additional analysis

To complement our case study research and literature review, we have examined additional macroeconomic and microeconomic data to provide insight into the potential scale of cross-border effects under a scenario of enhanced rate-setting flexibility.

Using publicly available data such as population density, household income, consumption expenditure of households abroad, we have analysed the scale of the incentives to engage in cross-border shopping in a typical border region. We have chosen to focus on Luxembourg and its neighbouring countries Belgium, Germany and France, as our main dataset only covers Western European countries, and due to its small size Luxembourg offers the opportunity to examine multiple border regions in a small area. While the literature tells us that in general, smaller countries stand to gain more by competitive VAT rate setting than their larger counterparts (Kanbur and Keen, 1993; Leal et al., 2010), our analysis is about hypothetical VAT rates, and the analysis applies equally to a hypothetical scenario where residents of Germany, France or Belgium might travel to Luxembourg to capitalise on lower VAT rates, and where residents of Luxembourg might travel to Germany, France, and/or Belgium to capitalise on lower VAT rates. Because of this hypothetical construct, these findings should be broadly generalizable to other national border regions within the EU.

##### 4.3.1.3.1 Understanding travel costs and VAT savings

Assuming that shoppers are rational, if VAT savings exceed travel costs we would expect cross-border shopping to occur. Consequently, we can look at travel costs to establish what level of VAT saving is necessary to incentivise cross-border shopping. VAT savings are themselves a product of overall volume of purchases made, and the difference in VAT rates between countries. Once we have identified travel costs between neighbouring countries, we can model what level of future VAT differentials would be necessary to make cross-border shopping worthwhile, for what scale of transactions. Policy-makers can then judge the scale of the risk, on the basis of likely future patterns of VAT differentials between countries, but also additional data around typical transaction sizes, household disposable income levels, consumption patterns and consumer habits, and so forth.

Note that, for the purposes of this assessment, we are excluding other drivers of price difference. This is not simply for ease of analysis. The underlying assumption of this study is that cross-border shopping is not in itself problematic; indeed, where cross-border shopping is driven by factors such as range of goods, quality of service, and underlying cost features such as premises and salaries, it can be seen as evidence of the proper functioning of the single market. The negative form of cross-border shopping that concerns us here is cross-border shopping driven solely by VAT differences, which leads

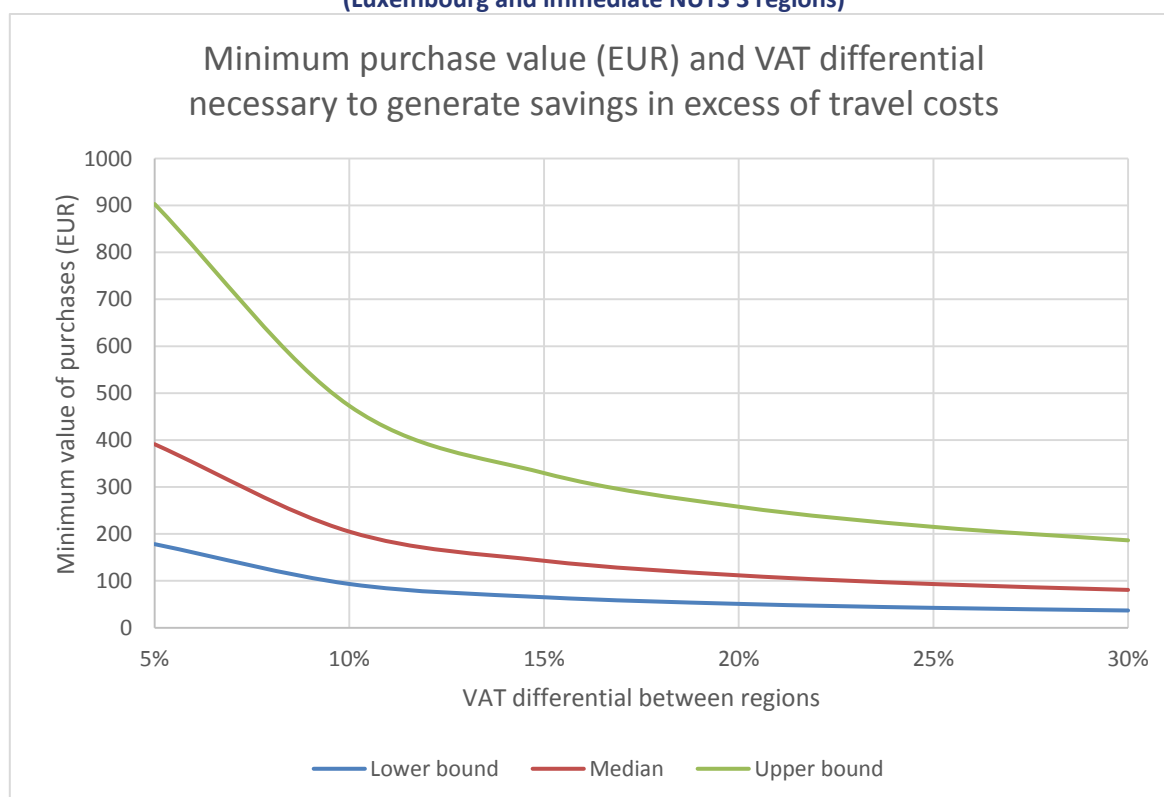
to an inefficient use of resources and distorts the proper functioning of the single market.

To perform this analysis, we have generated our own dataset of travel times using ESRI's Geographical Information Systems (GIS) software. This data captures the average length of time required for a return trip by road, from the geographic centre of one region to the neighbouring region – in this case, from border regions of France, Belgium and Germany to the centre of Luxembourg, or vice versa. The use of this dataset means that we automatically factor in issues such as level of infrastructure, quality of roads, and congestion.

We have then determined a basic cost of travel on the basis of the estimated fuel costs of a return trip. Note that the real cost of travel would need to include the opportunity cost of the journey in addition to this basic cost, so these estimates provide a minimum threshold, and are therefore likely to *overstate* the VAT-related incentive to engage in cross-border shopping.

The results of our analysis are shown in [Figure 14](#) below, demonstrating the minimum combination of VAT differential and purchase value necessary for cross-border shopping to be rational in the regions examined. Note that this analysis is agnostic as to the composition of purchase value – the threshold applies irrespective of whether this value is comprised of a single expensive item (such as a laptop), or a combination of cheaper goods and services (a haircut, a tank of diesel, and a week's worth of groceries), or bulk purchasing of a single good (a year's supply of soft drink).

**Figure 14: Value of purchases and VAT differentials necessary to generate savings in excess of travel costs (Luxembourg and immediate NUTS 3 regions)**



To contextualise these findings further:

- These border regions account for only 1.65%, 2.66% and 0.56% of the overall populations of Belgium, France and Germany, respectively. Higher VAT differentials and/or higher purchase values would be necessary to incentivise people living further from the border to engage in cross-border shopping.
- VAT rates within the European Union presently vary between 0% and 27%. Given EU28 countries rely on value-added type taxes to generate between 14.1% and 34.5% of total tax revenues (including social contributions), scope for radical reductions in these rates is limited.<sup>100</sup>
- The average value a single credit card transaction in the EU28 in 2015 was only EUR 49.<sup>101</sup> While a cross-border shopper can make multiple transactions in a single trip, this statistic provides some evidence that it will be rare for consumers to reach the level of expenditure necessary to justify cross-border shopping, under most conceivable VAT differentials.

#### 4.3.1.3.2 Household incomes and cross-border shopping

Travel costs and VAT savings are not the only variables relevant to assessing the likely magnitude and composition of cross-border shopping under a scenario of enhanced flexibility. Household income patterns will also be highly influential in determining whether or not cross-border shopping takes place, how frequently it takes place, how large its aggregate economic impact will be, and what kinds of goods and services will be the object of cross-border purchases.

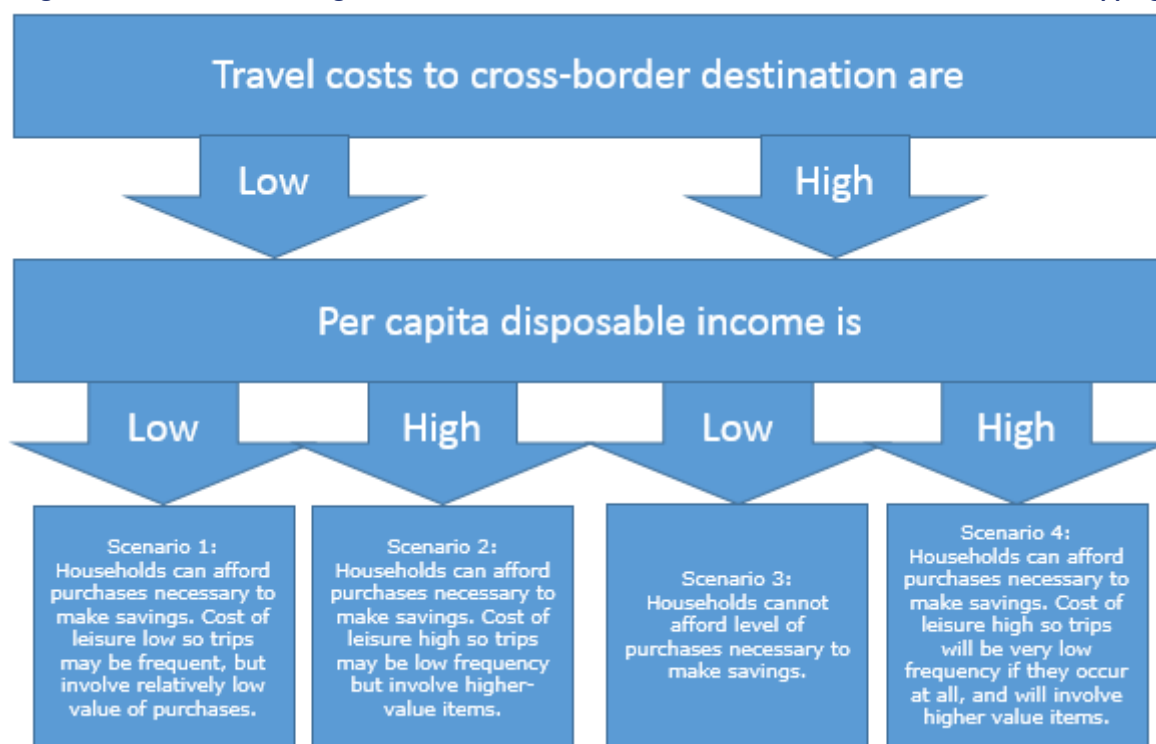
Low income households are more likely to be cross-border shoppers for potential VAT savings on everyday consumables, as the opportunity cost of foregone leisure time will in general be lower, and the value of savings relative to income is higher. Likewise, high income households may have more money available for purchases, and generally consume more expensive luxury products. While a cross-border shopping trip may be relatively more expensive for them, assuming the opportunity cost of foregone leisure time is higher, they may be able to obtain greater savings on a single trip due to the higher value of items they are likely to purchase.

We have aggregated these considerations into a flowchart, showing some of the main determinants of whether cross-border shopping will occur, and what its character will be:

<sup>100</sup> 2015 figures from Eurostat, [http://ec.europa.eu/eurostat/statistics-explained/index.php/Tax\\_revenue\\_statistics#Direct\\_taxes\\_increased\\_in\\_2015.2C\\_while\\_indirect\\_taxes\\_remained\\_stable\\_and\\_social\\_contributions\\_decreased](http://ec.europa.eu/eurostat/statistics-explained/index.php/Tax_revenue_statistics#Direct_taxes_increased_in_2015.2C_while_indirect_taxes_remained_stable_and_social_contributions_decreased)

<sup>101</sup> <https://www.ecb.europa.eu/press/pdf/pis/pis2015.pdf> - though this will understate the potential value of purchases made on a single cross-border trip, as individuals may engage in multiple transactions, and may travel specifically to make higher value transactions (though these trips will by definition be less frequent, and thus pose a lower distortionary risk).

Figure 15: Flowchart showing determinants of scale and character of VAT-driven cross-border shopping



While we have focused our analysis on travel costs and household income levels, other variables are also relevant. For example, on the assumption that urban areas have a wider range of shopping opportunities (and thus more competition on price, quality, range of products, etc.), we would expect that population density could also influence households' propensity to engage in cross-border shopping. Areas of low population density are likely to have fewer shopping opportunities overall, so we expect that households in these regions are more likely to travel (domestically or cross-border) in order to shop. By the same token, regions with high population density may be more likely to attract shoppers from other regions (domestically or cross-border). However, cross-border shopping driven by these factors would not be distortionary, on the definition adopted in this study, as they are not tax-related; indeed, such cross-border shopping activity will

Levels of population will impact upon the aggregate levels of cross-border shopping observable between two regions, albeit not the propensity of an individual household to cross-border shop.

We have compiled relevant indicators for conducting this analysis, such as population levels, GDP per capita, household disposable income and consumption expenditure, for the regions of Belgium, France and Germany bordering Luxembourg discussed in section 4.3.1.3.1 above. The results of this analysis are provided in Appendix VI.

Broadly speaking, then, VAT-driven cross-border shopping will be limited for most conceivable VAT differentials, for most regions. However, as VAT differentials begin to drive price differences of the level currently associated with excise goods, then we would anticipate that these effects would become more substantial. As [Figure 14](#) shows, in border regions with connectivity comparable to Luxembourg and its neighbours, in the majority of cases a VAT difference of more than 20% will be necessary before transactions of EUR 100 and below become rational for residents of border regions. Even greater VAT differences will be required to motivate cross-border shopping by residents living further afield.

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#### 4.3.1.4 Other cases

Cross-border shopping is not the only situation in which our case study research identified non-negligible risks of economic distortion arising from VAT rate differentials.

**Distance sales:** Larger VAT differentials provide an incentive for suppliers in low-VAT countries (claiming, legitimately or otherwise, to be below the threshold for VAT registration for distance sales) making supplies to consumers in high-VAT countries. Public officials in higher VAT jurisdictions already report substantial levels of such activity, and existing literature (though limited) supports these claims. Admittedly, the reduction in distance sales registration threshold mooted in the Commission's December 2016 E-Commerce proposals should make it easier for tax authorities to detect non-compliant suppliers, and the extension of the MOSS to all online purchases will make it cheaper for businesses to comply with the VAT rules. However, challenges remain in ensuring that tax authorities are adequately equipped to prevent and detect non-compliant distance sales, particularly in light of the fact many more businesses will be expected to comply as a result of the threshold reduction.

Any proposal for enhanced flexibility in rate-setting powers should take account of the additional incentive that this may create for distance buying of goods from other Member States, Member States' differing abilities to enforce distance selling thresholds, and Member States' differing cultures of tax compliance. Sharing of best practices and increased coordination of compliance activities between tax authorities may be adequate to mitigate this risk; if not, it might limit the degree of rate-setting flexibility that can be achieved without undermining the efficient operation of the single market, and avoiding economic distortions. At the very least, these practical considerations must be factored in to decisions around the timeframes within which enhanced flexibility is introduced.

**Tourism:** Tourism is a highly competitive sector, with an internationally mobile customer base. Many countries already seek to support the sector with lower VAT rates, and our literature review identified a number of national-level studies showing that VAT reductions could improve competitiveness and increase both the size of the sector, and its overall fiscal contributions. In light of this, there appears to be a risk of a race-to-the-bottom in taxation of this sector. However, this is not an argument against limiting flexibility of VAT rates as a whole, but rather for certain specific goods and services. Consequently, this is discussed in more detail in section 4.3.3.3 below.

**Margin scheme on second-hand goods:** The margin scheme for second-hand goods already creates substantial incentives for dealers to base themselves in low-VAT jurisdictions, and evidence suggests that this incentive is effective. Enhanced flexibility risks magnifying these incentives. Consequently, reform of the margin scheme for second-hand goods should be considered alongside proposals to reform the EU VAT rates regime as a whole. One possible solution would be to introduce a destination principle for the taxation of margins on second-hand goods (both for dealers and their agents), above a certain threshold.

#### 4.3.1.5 Conclusions

Our case studies indicate levels of cross-border shopping are generally limited, in spite of potentially substantial price savings, though impacts do become noticeable on certain categories of goods and service where price savings of circa 20% or above are achievable. As our broader macroeconomic analysis shows, this pattern can be explained by travel costs, which generally outweigh the benefits of cross-border shopping for all but a narrow group of people living in close proximity to a low-cost jurisdiction. Nevertheless, where VAT differences exceed a threshold of circa 20%, VAT-motivated cross-border shopping for smaller purchases (<EUR 100) starts to become rational for

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the majority of people in border regions, though the effect on the wider population will remain limited.

While more affluent households are more likely to make more expensive purchases more often, this sector of the population is also more likely to value its leisure time more highly, which will limit the appetite for travel. This pattern is confirmed by the literature review.

However, additional attention needs to be paid to certain categories of goods and services that appear to run a higher risk of cross-border shopping. These issues are discussed in more detail in section 4.3.3 below.

### 4.3.2 Flexibility in number of rate bands

#### 4.3.2.1 Evidence from the literature

A long and varied literature tries to estimate the compliance costs for firms in living up to their VAT obligations in various developed countries, with studies focusing on Canada, Australia, New Zealand, developed Asia, and elsewhere in the world (the US is notably excluded due to its lack of a consumption tax – see Barbone *et al.* 2012 for a useful summary of these studies). Several key points emerge from this large body of research which are relevant for any reform that could increase the complexity of the EU VAT system:

- *VAT compliance is expensive for firms*

Uniformly, the literature suggests that VAT compliance is the costliest of any tax obligation incurred by businesses, due to several factors. In the first instance, the paper trail required to track transactions imposes a high burden on record-keeping and inventory management, a difficult requirement where volumes may be high and staff numbers low (and/or ill-equipped administratively). In South Africa, for example, the amount of time spent recording information is 66% of the total time spent paying VAT, a burden which fell mainly on the highest-paid employees or the owners (Smulders *et al.* 2012). From a policy standpoint, confusion on correct classifications of goods (and the sometimes-arcane classifications used for different goods) may also create additional burdens as firms struggle to understand the rates needed for particular goods. This cost may multiply in the presence of many bands that must be adhered to.

The empirical evidence bears this theoretical assumption out entirely. For example, Snijder (1981) found that VAT compliance in the Netherlands cost nearly four times all other tax compliance combined, a number based on interviews with SMEs only. Similarly, Schoonjans *et al.* (2011) find that VAT compliance is a full 50% of all compliance costs borne by businesses in Belgium, while Täuber (1984), Tiebel (1986), and Bannock and Peacock (1989) presented survey results showing VAT as the most expensive aspect of firm compliance in (then West) Germany. Elsewhere in the world, the trend is similar, as Susila and Pope (2012) show VAT comprising 44% of compliance costs in Indonesia and Smulders *et al.* (2012) find that VAT compliance is 41% of all tax compliance costs in South Africa. In regards to time costs, as well, VAT takes up a large percentage of a firm's overall tax compliance: according the World Bank (2017), VAT compliance in Poland takes 36% of the time a firm spends on its taxes, while it is 20% for Germany and 13% for Italy (the most egregious case in the EU is Belgium, where VAT takes 62% of all time spent paying taxes).

- *Higher complexity equals higher compliance costs*

Theoretically, there should be a highly significant difference in compliance costs from changing the number of VAT bands versus changing rate levels alone. Increases in the

number of bands can be expected to a) increase compliance costs and b) increase audit costs, but in a non-linear fashion. Whereas the marginal cost of adjusting payments to a simple change of rate is low, requiring an adaptation at the stage of payment, increasing the number of VAT bands involves adaptation at every stage of the VAT compliance process.

This theoretical supposition has some support in the extant literature, as Aga and Haughton (1996:304) correctly note that “apart from the greater ease of fraud, there are additional problems with multiple-rate VAT systems. Compliance costs rise as the tax forms become more complex and accounting records need to be more complete,” citing research that shows that firms in the UK working with multiple VAT bands have up to double the costs of firms working with a single rate (Hemming and Kay, 1981). Moreover, as Kox (2011) notes, the compliance costs that accrue due to more complex VAT systems rarely have a salutary effect on tax revenues and, in fact, often have the opposite outcome.

Globally, there are few examples of VAT systems that have more than four rates,<sup>102</sup> with the most complex being Bangladesh (a standard rate, nine additional rates, and a zero-rate). A comprehensive survey undertaken by Faridy *et al.* (2014) on the complex Bangladeshi VAT system indicated that the “smallest” medium-sized enterprise (defined as having a turnover of 1.5 million Bangladeshi taka, or approximately EUR 17,750) could be expected to incur compliance costs of approximately 12% of gross turnover. While part of this cost can be attributed to other issues inherent in the Bangladeshi case, the fact that the country has ten VAT rates is a major contributor.

- *What kind of firm you are (and how big) directly affects compliance costs*

The sector in which a firm works is a large determinant of its VAT compliance costs, as Hasseldine and Hansford (2002) showed that manufacturing firms on average tend to spend less time and money in compliance. Services firms, on the other hand, have the highest compliance costs (Sanford *et al.* 1981, Eichfelder and Schorn, 2008), with some cases and in some countries showing more than double the costs incurred by manufacturing firms (Schoonjans *et al.* 2011 shows this is the case for Belgium).

Part of this disparity comes about from the fact that manufacturing firms tend to be larger; indeed, a further key attribute of VAT compliance costs is that size matters. Across countries, there is broad evidence that VAT compliance is a highly regressive tax: Sanford *et al.* (1989) discovered in the UK case that VAT compliance costs fell from 1.94% of annual turnover for the smallest businesses (by turnover) to 0.78% for medium-sized businesses and 0.26% for businesses with high turnover (and to a mere 0.003% for the largest firms). In the context of formerly-communist EU Member States, this regressivity is just as pronounced: Klun and Blažić (2005) show that small Slovenian firms have *overall* compliance costs of 3.73% of turnover while Croatian ones have costs of 3.42%, a cost which decreases at larger sizes to only 0.08% (Slovenia) or 0.09% (Croatia). VAT compliance costs from this study range from 2.5% of turnover in Slovenia and 1.63% in Croatia for small firms, reduced to 0.05% (Slovenia) and 0.04% (Croatia) for the largest firms.

- *Not all costs can be directly measured*

These direct compliance costs are compounded by associated costs that are even more difficult to quantify. Evans (2008) also notes that there may be a social cost incurred by an increase of VAT bands, as firms shift away from high-tax outputs to lower-tax ones.

<sup>102</sup> Within the EU, Ireland has the most VAT bands, five, consisting of a standard rate, two reduced rates, a super-reduced rate, and a zero-rate.

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Such a dynamic effect is difficult to observe, as it involves broader market shifts and a deadweight loss by consumers as preferred goods become less available (in effect, requiring one to model the counterfactual). Other “psychological costs” may be incurred which further occupy a firm (Hansford *et al.* 2003), a particularly relevant factor for a small- or medium-sized company which already is directing substantial energy towards its survival; as Evans and Tran-nam (2014:347) note, “these businesses have rather limited opportunities or capacities to outsource the compliance obligations to third parties such as tax advisers or experts” and thus are most affected by the stress of VAT compliance. These effects are also difficult to quantify but must be captured somehow in the burden of compliance.

### 4.3.2.2 Additional analysis

Given the need to provide an estimate of costs across all Member States, we examine an “EU firm” as a generic representative firm which could be based in any country, a firm which forms the basis for the business compliance cost exercise.

While this approach, of analysing a representative firm, will work for estimating business compliance costs, it is not sufficient for understanding administrative costs, especially given the diversity amongst Member States in terms of tax administration. To address this point, we have selected three countries representing a range of administration costs (Germany, Poland, Italy) to estimate possible marginal changes in administrative costs to public authorities arising from VAT policy changes.

#### 4.3.2.2.1 Compliance Costs for Businesses

The first stage of our analysis involves assessing how additional VAT bands for goods and services might impact upon businesses. Under this scenario, we will examine the status quo within EU Member States (three permitted rate bands, namely one standard rate and two reduced rates) and compare it to reform options varying by an additional two to five rate bands; however, we must caution that the granularity of results for additional bands will necessarily be limited (i.e. there may not be a clear delineation between costs for, say, five or six bands). To assess the maximum possible impact on businesses and revenue authorities, we will assume that Member States exercise whatever flexibility they are allowed to the full. However, we note that these assumptions are somewhat unrealistic, given not all countries currently use the full flexibility they are allowed.

As in other standard cost/compliance cost quantification literature, we propose examining a representative firm to understand the effects of tax policy changes. For the purposes of this study, and as in the PwC and World Bank *Paying Taxes* report, we assume a medium-sized firm of approximately 60 employees in each country: given the need to have exposure to different VAT rates, such a firm would need to be in manufacturing, have supply chains and customers both domestically and within the EU, and have a varied enough series of inputs to be affected by changing bands or reclassifications. For the calculations done below at the country level, we use NACE Revision 2 classification “C” (“Manufacturing”) to understand how the representative firm appears in each of the countries chosen.

In order to understand the marginal effects of VAT compliance, and in particular the addition of new VAT bands, we must look to the global cost compliance literature noted above for clues. Compliance costs are highly idiosyncratic depending upon the country being discussed and the size of the firm examined, but they tend to track each other globally in terms of their regressivity and in terms of their basic magnitude (especially in relation to firm size and turnover). Given these similarities, the baseline compliance cost for the status quo is set in this study at 0.20% of gross turnover for a two-band country, the exact cost which prevails in Germany today. This number is derived from recent



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evidence from Eichfelder and Schorn (2012), which puts German compliance costs for *all* taxes at 1.03% of turnover for a firm similar to our representative firm (i.e. 60 employees) Given that VAT takes approximately 20% of all tax compliance time in Germany (as shown in the World Bank's report on Paying Taxes 2017), it is also plausible to assume that current compliance costs for VAT alone in Germany are in the neighbourhood of 0.20% of turnover.

To understand the compliance costs as we increase the number of bands, we also resort to examining other countries with the requisite number of VAT rates, where such data is available. Slovenia has two additional VAT bands beyond exemption and the zero-rate, and important work from Klun and Blažić (2005) placed the compliance costs for VAT immediately following EU accession at approximately 0.5% of total turnover, as the benchmark. This estimate, it must be noted, is an estimate right in-line with compliance costs imposed by VAT on medium-sized businesses: while somewhat smaller than the amount found by Sanford *et al.* (1989) for the UK, it is on par with costs seen in New Zealand for "larger" SMEs (Sandford and Hasseldine 1992), in Botswana for medium-sized firms (Makara 2014), and in Australia for larger firms by turnover (Pope 2001). This number is thus used as the baseline for a three-rate country.

Beyond three rates (not including the zero-rate), data is very scarce indeed on compliance costs, mainly because very few countries have such complex VAT systems. For four-rate countries such as Belgium (three distinctive rates and a parking rate), the data is practically non-existent, although, as noted above, Schoonjans *et al.* (2011) found that 50% of all compliance costs are directly attributable to VAT. Using this theoretical precept, where more complex VATs take a larger burden of overall compliance costs, we are able to fashion a number for a five-rate country, Ireland. According to Allers (1994) and Leonard (1986), total compliance costs for all taxes for an Irish firm in the early 1980s, with a five-rate system, amounted to 5.7% of turnover. Assuming that VAT compliance burdens have remained fairly steadily correlated with the number of rates, we may go on to assume a conservative estimate of 50% of these costs were attributable to VAT. Thus, for a five-rate country, the compliance cost baseline is set at 2.85% of turnover costs of the representative firm.

While data is scarce beyond four-band countries, it is non-existent for over five-band countries until we arrive to Bangladesh, with its aforementioned 10 rates and an estimate of 12% of turnover costs (Faridy *et al.* 2014) for firms in compliance and utilizing all ten bands. While Bangladesh as a country has little in common with the EU, the reality is that a proliferation of tax complexity lends itself to other difficulties in administration above and beyond country-specific factors, and thus we are confident that this upper bound of compliance costs will hold in the EU setting as well.

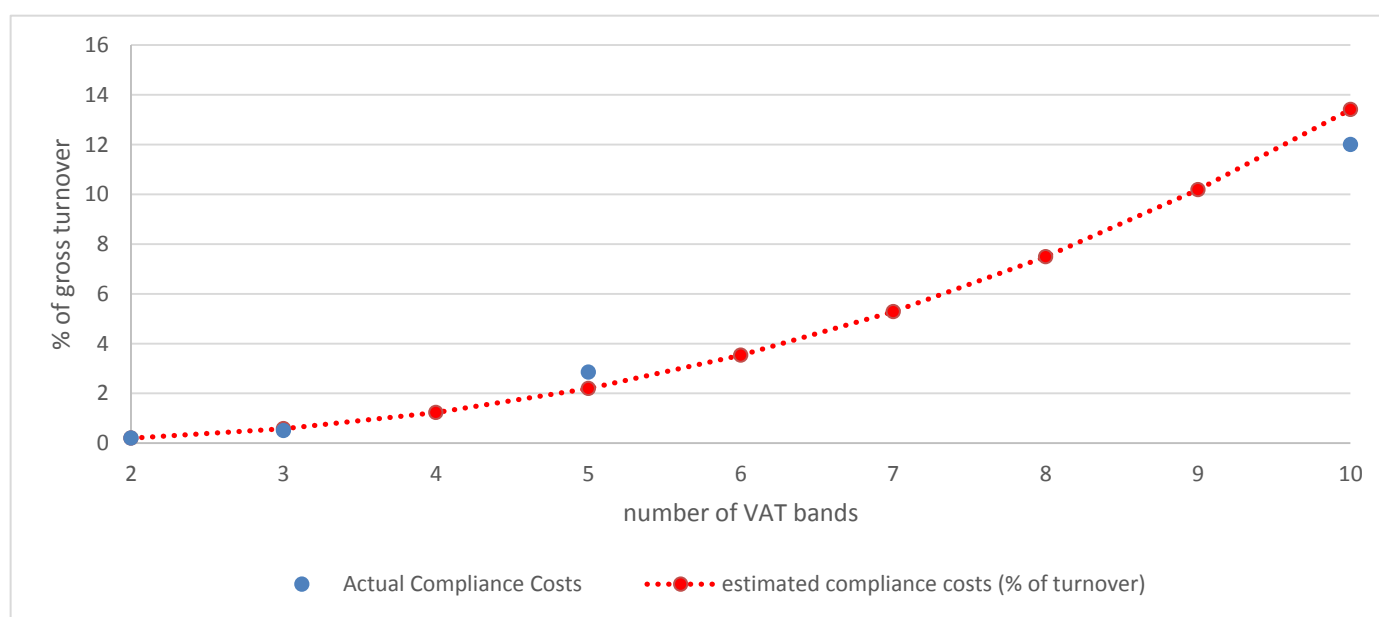
Given an upper and lower-bound and two intermediate points for tax compliance costs, we can interpolate an exponential curve of compliance costs for each additional VAT band, with costs increasing for each additional band. The incremental cost of each band is shown in [Figure 16](#) below. While a crude approximation, this interpolation is meant to not just capture the cost of an additional band – rather, it is meant (as in a vector autoregression) to capture all endogenous costs that come with additional bands and added complexity, including labour, audit, frequency of reporting, automation, and other recurring costs which must be borne by businesses. While simplistic, there is insufficient data available to break-down such costs into their constituent components; we must assume that a certain level of complexity comes with additional VAT bands at an average level of coverage, without specifying from where that complexity comes.

Note that we assume here a convex (exponential) increase in compliance costs for businesses. Theoretically, there are arguments for modelling these costs as a concave curve instead: as businesses learn to deal with additional VAT complexity, they become

more efficient in coping with new VAT rate bands, meaning a decline in marginal costs as the system becomes more complicated. However, the introduction of additional elements in the tax system tends to have a multiplicative effect on complexity: as the baseline system becomes more complicated, even relatively straightforward measures can require complex provisions governing their interrelation with existing elements of the system (Oliver and Bartley, 2005).

This is particularly true in the present instance, where intra-EU supply chains could potentially mean a 28-fold increase in complexity. Businesses operating across borders will need to contend, not just with different VAT rates, but potentially very different classification systems, as Member States come to different conclusions about which goods and services should be eligible for which VAT rate bands. Definitions of goods and services, and the particular way in which borderline cases are adjudicated, could conceivably differ in every Member State, and could conceivably vary from year-to-year as well. For example, one Member State could apply different VAT rates to beef and lamb, another could apply different VAT rates to minced meat and whole cuts, another could apply a single rate to all meat, another a single rate to all foodstuffs. Moreover, each Member State may define the boundaries of these categories differently (for example, consider how a ready meal containing 20% minced beef and 10% lamb might be classified under the aforementioned regimes).

Figure 16: Cost of Compliance associated with each additional VAT band



	2	3	4	5	6	7	8	9	10
estimated compliance cost (% of turnover)	0.20	0.58	1.23	2.19	3.53	5.28	7.49	10.18	13.41

#### 4.3.2.2.2 Results: Compliance Costs from Businesses

This section focuses on the incremental and marginal costs borne by businesses to change their accounting, HR, and audit practices to come into compliance with new VAT rates. Using an EU representative-firm, we find that such a firm is very close to the typical German medium-sized firm. Based on data from Eurostat, we may calculate the average turnover of a medium-sized firm in both Germany and the EU as a whole; in 2014, total turnover in Germany was EUR 352.2 billion over 16,484 firms, yielding an average turnover of approximately EUR 21.37 million. For the EU as a whole, turnover of

all medium-sized firms was EUR 1.5 trillion over approximately 71,000 firms in 2014, yielding an average turnover of approximately EUR 21.13 million. As our representative firm is nearly identical to a German one, we can assume that the firm would operate in an environment similar to Germany's, creating a VAT baseline cost for a country with a similar VAT rate structure as Germany, i.e. two rates (not including zero-ratings). In this case, for our representative firm, current compliance costs should equal EUR 42,253 per annum.

Using this number as a baseline of turnover, we now turn to the effect of VAT policy changes. As noted above, it is plausible that, as complexity grows, the effect of adding more VAT bands will also increase compliance costs in a non-linear fashion, as shown in [Figure 16](#). Given these incremental costs, we may then estimate that the move to additional tax bands will impose the costs on a representative EU firm shown in [Table 53](#) below. As can be seen from the Figure, the estimated curve somewhat underestimates the data we have for costs at five rates (2.19% versus 2.85%) while overestimating at the top of the range (13.41% versus 12%). However, given the lack of data between five and 10 rates, this crude approximation does offer some guide as to how the increase in complexity affects compliance costs. It also suggests that there may actually be an S-curve relationship between complexity and costs, as costs may taper off at the highest levels of complexity. Without additional data, however, such an idea remains pure conjecture.

**Table 53: VAT Compliance Costs for a Representative EU firm, by number of VAT bands**

Number of Bands	Compliance Cost (% of turnover)	Total Compliance Cost (EUR)	Incremental Cost (EUR)
2	0.20%	42,253.52	-
3	0.58%	122,535.21	80,281.69
4	1.23%	259,859.15	137,323.94
5	2.19%	462,676.06	202,816.90
6	3.53%	745,774.65	283,098.59
7	5.28%	1,115,492.96	369,718.31
8	7.49%	1,582,394.37	466,901.41
9	10.18%	2,150,704.23	568,309.86
10	13.41%	2,833,098.59	682,394.37

#### 4.3.2.2.3 Administrative Costs for Tax Authorities

The addition of extra VAT bands will also impose an administrative and enforcement cost on tax authorities, who will have to deal with disseminating information, providing advice, administering new tax bands, checking compliance, and a host of other issues. Agha and Haughton (1996:304) also note that refund issues would multiply, as a multiple-rate VAT would require refunds "if, as sometimes occurs, the input tax rate is greater than the tax on output." Depending upon the policy reform, the sum total of administrative costs can be large, especially when compared to the additional revenue generated (or, potentially, foregone) due to the creation of additional bands.

Given the time and budgetary constraints on this project, coupled with the labour-intensive nature of precisely estimating costs of administration from the part of tax authorities, we are unable to undertake a comprehensive analysis of just what the size of these costs would be. Thus, any estimates we provide of the administrative cost of additional rate bands are somewhat fragile and with large confidence bounds. However, previous work for the Commission performed by CASE (Barbone *et al.* 2012 and 2015)

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and the extant literature provides a baseline for understanding these costs from the tax authority side and allow us to extrapolate possible costs.

In particular, while data on VAT administration costs are rare, some estimates for the EU have been made. Sanford *et al.* (1989) estimated the VAT administration cost in the UK over 1986-87 averaged 1.03% of all revenue yielded by VAT, a number which was reduced to 0.7% of revenue by 2010-2011 (HMRC 2011). Vitek *et al.* (2004) examined the Czech Republic on the eve of EU accession and calculated administrative costs of approximately 2.32% of revenue for VAT collections; this was similar to the administrative costs seen in neighbouring Slovakia, which were estimated at 3.63% of revenue in 2004 by Nemec *et al.* (2015). However, the EU effect appeared to help Slovakia immensely, as administrative costs dropped to a mere 1.32% of revenue in 2005, and were only slightly higher at 1.59% of revenue in 2011 (Nemec *et al.* 2015). Allers (1994) gives older data, listing the administrative costs of several European countries in 1985, from a low of 0.32% of revenue in Norway to 1.73% in West Germany (for an average of 0.76%). Klun (2003) gives more recent estimates for Western European Member States which show that administrative costs have risen, with a new cost of 1.8% for the Netherlands (up from 0.65% in 1985) and Finland moving to 0.5% (from 0.41% in 1985).

Other international data is scarce and may not be wholly reliable: an example is Bangladesh's tax authorities reporting in 2006-07 that its VAT administration costs were a mere 0.58% of revenue, somewhat surprising given the complexity of the system (as noted above). As Smith *et al.* (2011) note, however, problems with compliance in general and with enforcement in particular may mean that administration has nowhere near enough coverage (i.e. not enough is being spent on administration). An alternative appraisal comes from Allers (1994), who notes that VAT shifts burdens onto the private sector, meaning artificially low administrative costs at the tax authority at the cost of extremely high compliance costs from businesses (which is consistent with the finding for Bangladesh).

Where such direct data is not available, estimates of administrative costs of VAT must be teased out from other existing data regarding collections and costs. For example, Gallagher (2005) provides an introduction to a database on tax efficiency which considers overall costs of administration (not broken out by tax type). He also provides, however, information on the ratio of VAT collection to total taxes, allowing us to estimate the overall costs of VAT administration across several (mainly Latin American) countries. For example, Guatemala's total cost of tax administration in 2001 was 2.25% of revenue collected, with VAT making up 44% of all revenue; we could thus assume that a plausible estimate for costs of VAT administration would be about 0.99% of all revenue. Similarly, the Central American benchmark ratio of VAT to total revenue is 45%, so when combined with Nicaragua's total administrative costs of 3.86%, an estimate of 1.7% of total tax revenues for its VAT administrative costs is realistic.

Given this wide dispersion of administrative costs for VAT, in order to quantify the cost of VAT collection across the EU and the marginal costs incurred by changes in VAT policy we take two different approaches. In the first instance, we impose order on chaos by assuming a uniform rate of administrative costs across all countries. Of course, the wide differences in tax authorities and their capabilities means a simple average will subsume important information, but for our purposes it should suffice to understand *marginal* changes. Based on all available EU and global studies, it appears that Sanford *et al.*'s (1989) original estimate for the UK may have been the closest to reality. Indeed, a VAT administrative cost of 1.03% of revenue appears to be the mid-point of higher-cost new EU Member States (such as Slovakia) and highly efficient states such as Finland, comparable to the costs incurred by Spain in 1994 (as detailed in Klun, 2003). Such a baseline will be used for computing marginal costs for changes in VAT bands and rates for each country.

The second approach will instead attempt to stratify administrative costs based on a very simple “synthetic control” method. This method, used in papers such as Billmeier and Nannicini (2013), usually attempts to construct a synthetic country very similar to the country under observation, allowing an economist to run counterfactuals to reality to see how it responds. We cannot undertake such an approach here, but instead have decided to use existing “synthetic countries,” matching our three representative countries to countries where administrative cost data is available (or at least can be extrapolated). For this exercise, we will set administrative costs as follows:

- *Germany*: With 2 VAT bands (beyond zero-rate and exempt) but a historically higher cost of administration of VAT (likely due to its federal nature), Germany’s administrative costs are likely higher than high-efficiency countries such as Finland but not as high as the UK in 1989. Splitting the difference, we assume that Germany’s administrative costs are similar to Denmark’s cost structure in 1985 but likely is slightly higher than the Danish benchmark (to account for the country size differences, which tax administrations would have to tackle); thus, we settle on a rate of 0.85% for German administrative costs.
- *Poland*: Poland’s 3 additional VAT bands make it fairly similar to Croatia, which had its most recent estimates of VAT administrative costs at a rate of 1.13% (Klun 2003); and
- *Italy*: Italy, as noted above, has 4 additional VAT bands, but has a comparatively low administrative cost for all of its taxes (estimated at 1% by the OECD). Given this reality, Italy’s structure is fairly similar to Sweden in 1995, where administrative costs were calculated at 0.6% of revenue by Malmer (1995).

These approaches help to set a baseline for administrative costs but do not solve the issue of marginal costs. Here we are also somewhat disadvantaged: while we anticipate that compliance costs for businesses may increase exponentially as a result of added complexity, administrative costs are related to a host of other factors in addition to policy complexity. In fact, there may even be some economies of scale in tax administration, where a large outlay occurs initially and the marginal cost of each additional rate is concave down. The shape of the curve would thus depend on the actual level of complexity of the reform that is proposed; i.e., would the VAT reform involve merely adding an additional rate band on top of the additional structure (with relatively few goods covered), or would it involve additional reporting requirements, a large number of goods to be re-classified, and additional manpower costs within the administration for enforcement?

A feasible approach to solving this issue would be to perform a multiple regression analysis on data involving tax administration costs, with administrative costs of VAT a function of several independent variables, including complexity of the system. However, since such an exercise lies beyond the scope of this study, we have adopted a simpler method. We will use the dispersion of administrative costs in 1985 (as shown in Allers, 1994) as the distribution of administrative costs across all sampled countries in the EU for which data was available; given that the distribution of costs roughly approximates the number of VAT rates (i.e. higher costs were associated with more rates), this approach allows us to understand marginal costs of additional bands. Using this distribution, the change of one VAT band will result in an increase in costs equal to one-half of one standard deviation of the distribution (in this case, the standard deviation is 0.40, so increasing one band will increase costs by 0.20% of revenue). For the 1985 distribution as shown by Allers (1994), this means that a country with average

administrative costs (0.76% of revenue) would see its costs rise to 0.96% with one additional band and 1.16% with two additional bands.

For the second scenario, marginal costs will also be deduced in a synthetic manner, with the cost of one additional VAT band equal to the cost of a similar country already documented as having that number of VAT bands. In the case of Poland, which already has high administrative costs, the addition of another VAT band could take compliance cost from 1.13% of revenue to 1.35%, similar to Slovakia or France in the mid-2000s (for a marginal change of 0.22% of revenue). For Germany, a jump in one band could take it from its Denmark-augmented level of 0.85% to the relative inefficiency level of the UK in 1989, i.e. 1.03% of revenue, or an increase of 0.18 percentage points. Finally, Italy's low administrative costs could not be maintained under a system of increasing complexity, but it is likely to increase costs at a higher pace than Germany or Poland, meaning a move from 0.6% to 0.95% (a marginal change of 0.35 percentage points).

In order to estimate additional bands beyond this first band, an assumption must be made regarding the nature of the complexity introduced to the administrative system. Whereas a "normal" reform would likely see an exponential decay function in regards to increasing costs, the reform proposed here is not "normal" and entails additional costs. Indeed, we have assumed that the added complexity associated with factors such as a Home Audit Rule (making Member States responsible in part for collecting each other's revenues, in line with each other's VAT rules) results in an exponential increase in costs with no such decay. In particular, the additional manpower costs caused by monitoring of neighbouring countries, coupled with the complexity of monitoring, would compound the already-existing administrative costs in enforcement and oversight from extra VAT rate classifications. Put another way, the proposed VAT reform is not just the augmentation of existing administrative structures, but a policy which necessitates new structures, oversight, and internal reporting. Thus, our modelling below assumes an exponential growth rate of  $Ae^{rt}$ , where  $A$  is the initial level of costs,  $r$  is the growth rate based on the initial marginal change, and  $t$  is the number of additional bands.

#### 4.3.2.2.4 Results: Administrative Costs from Tax Authorities

To assess the marginal costs of additional VAT bands for tax authorities, as noted in Section 5.3.2, we have analysed two separate scenarios. Under the first scenario, we impose a median administrative cost of 1.03% on all three of our representative countries. While perhaps unrealistic, the differential revenue collections should give a sense of how marginal changes would affect each country proportionally.

**Table 54** below shows the estimated administrative cost for each country's VAT collection, based on VAT revenue figures obtained from Eurostat in 2015. With a cost of 1.03% of collections, substantial real costs still accrue from administering the tax in each country.

**Table 54: VAT Revenue and Estimated Administrative Costs, Uniform Rate, 2015**

	VAT revenue (million EUR)	Estimated Administrative Cost (million EUR)
<b>Germany</b>	211,616.00	2,179.64
<b>Italy</b>	101,207.00	1,042.43
<b>Poland</b>	30,074.80	309.77

Source: Eurostat, Author's calculations

Using the standard deviation method noted above, we may now calculate how the imposition of additional bands would impact administrative costs in each country. Table 55 shows that, assuming that VAT revenue remains the same (an inaccurate assumption

given the dynamic effects of changing VAT rates, but nonetheless one we must use here), administrative costs increasingly bite into the revenue take from VAT.

**Table 55: Scenario One, Marginal Administrative Costs**

Number of additional VAT bands	Administrative cost (% of revenue)	Germany - Estimated Administrative Cost (EUR million)	Poland - Estimated Administrative Cost (EUR million)	Italy - Estimated Administrative Cost (EUR million)
<b>0</b>	1.03%	2,179.64	309.77	1,042.43
<b>1</b>	1.23%	2,602.88	369.92	1,244.85
<b>2</b>	1.43%	3,026.11	430.07	1,447.26
<b>3</b>	1.63%	3,449.34	490.22	1,649.67
<b>4</b>	1.83%	3,872.57	550.37	1,852.09

Source: Eurostat, Author's calculations

Turning to the more realistic second scenario, with a stratification of tax administrative costs, the differences in adding VAT bands become clearer (Table 56, Table 57 and Table 58). Even for countries that are relatively efficient in their administrative costs for VAT, increased complexity along the lines of that suggested by the Commission's proposal results in much higher costs with each additional band. Thus, as noted above, an exponential growth model is used to estimate additional costs for each additional band beyond the first. With this in mind, these tables show the increasing cost structure and concomitant estimated costs of administration. For Italy, administrative costs increase nearly five times by the fourth additional band, while German and Polish costs are also approximately 4.5 times their starting cost.

**Table 56: Scenario Two, Marginal Administrative Costs, Germany**

Number of additional VAT bands	Administrative cost (% of revenue)	VAT revenue (EUR million)	Estimated Administrative Cost (EUR million)
<b>0</b>	0.85%	211,616.00	1,798.74
<b>1</b>	1.03%	211,616.00	2,186.13
<b>2</b>	1.91%	211,616.00	4,041.49
<b>3</b>	2.83%	211,616.00	5,983.02
<b>4</b>	3.81%	211,616.00	8,054.88

**Table 57: Scenario Two, Marginal Administrative Costs, Poland**

Number of additional VAT bands	Administrative cost (% of revenue)	VAT revenue (EUR million)	Estimated Administrative Cost (EUR million)
<b>0</b>	1.13%	30,074.80	339.85
<b>1</b>	1.35%	30,074.80	407.51
<b>2</b>	2.53%	30,074.80	761.45
<b>3</b>	3.78%	30,074.80	1,137.52
<b>4</b>	5.15%	30,074.80	1,548.11

Table 58: Scenario Two, Marginal Administrative Costs, Italy

Number of additional VAT bands	Administrative cost (% of revenue)	VAT revenue (EUR million)	Estimated Administrative Cost (EUR million)
0	0.60%	101,207.00	607.24
1	0.95%	101,207.00	965.73
2	1.57%	101,207.00	1,590.61
3	2.21%	101,207.00	2,237.25
4	2.88%	101,207.00	2,915.46

### 4.3.2.3 Conclusions

The introduction of new VAT rate bands poses challenges for businesses not just in terms of invoicing, but also in terms of accounting, record-keeping, tracking legislative changes, and so forth. The literature review and our additional analysis indicate that these costs are significant, providing compelling reasons for countries to limit the number of rate bands in their VAT systems.

The status quo VAT system in the EU already imposes compliance costs of circa 0.5% of turnover on medium-sized enterprises; and, internationally, systems with more rate bands impose even higher costs. The burden is even greater, in relative terms, for smaller VAT-registered businesses. Our analyses indicate that these costs may increase exponentially as additional VAT bands are introduced, particularly for businesses with supply chains and customers in multiple jurisdictions. Administrative costs to government are similarly substantial (we estimate them at circa 1% of VAT revenue for the existing system), though we envisage greater economies of scale for tax authorities than businesses as they deal with additional complexity. Such scale economies may be wiped out, however, by the increasing burdens associated with a single audit mechanism, requiring governments to enforce the VAT rules of other Member States.

This indicates that the fewer the number of rate bands, the simpler the EU VAT system and the more efficient the single market. Note, however, that this does not mean that there is *necessarily* a trade-off between simplicity and efficiency on the one-hand, and subsidiarity on the other. Member States may choose not to use the full degree of enhanced flexibility that they are permitted, given the burdens that additional bands will impose on domestic businesses. In this case, greater flexibility could be offered within the framework of the EU VAT system, in the anticipation that few if any Member States would choose to exercise the full degree of flexibility. Conversely, however, an EU-wide upper limit to the number of bands available may assist Member States in resisting lobbying from any single sector for preferential treatment.

The scale of the impacts associated with enhanced flexibility could also be mitigated by harmonised definitions of the categories to which different rates are applied (which could still leave Member States with more or less discretion about the VAT rates themselves). The largest complexity challenge associated with multiple rate bands does not come from the different rates applied in different jurisdictions, but from the need to understand how goods and services are classified in each jurisdiction. Consequently, harmonisation of these definitions (and potentially also of the judgements applicable to borderline cases) would radically reduce these complexity costs.

A taxonomy such as the Combined Nomenclature, which is already the basis for the EU's Common Customs Tariff, could act as the basis for these definitions (though it would need to be expanded to include services). The different rates applicable to different categories in different jurisdictions could then be updated live online, for ease of reference. This approach would also mitigate certain legal complexities that would



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otherwise result from enhanced flexibility; these are discussed in more detail in section 4.4 below.

It should be noted that the Combined Nomenclature is far from a complete “off-the-shelf” solution. Most obviously, it only applies to goods, and not services; it would need to be extended to cover services to acts as a basis for EU-wide VAT categories. The Combined Nomenclature is also fluid, regularly updated in light of changes in commercial policy, technology and statistical requirements. The same consideration that dictates a change in the Combined Nomenclature may not be as relevant to classifications for VAT purposes, or might have different implications for VAT purposes. Staying up-to-date on these changes would be burdensome for businesses, particularly smaller businesses that do not currently operate on an extra-EU basis and thus do not currently incorporate the Combined Nomenclature into their everyday operations.

Nevertheless, a variety of institutional and technological remedies to these deficiencies could be explored – for example, a separate VAT classification working group to manage this taxonomy, and a website to assist with both the identification of VAT rates for different categories, and the identification of categories for different particular products. While a detailed investigation of these possibilities lies outside the scope of the present study, the anticipated introduction of the definitive VAT regime in 2022 would allow some scope for exploring these avenues further before making a full feasibility assessment. Furthermore, developing these tools may have benefits even if other policy options are ultimately preferred – as things stand, businesses operating across EU borders already confront different decisions about the classification and taxation of goods/services for VAT purposes in different Member States, so there are benefits to be gained from better information and decision-making mechanisms even under the status quo.

### 4.3.3 Flexibility in eligibility for reduced rates

#### 4.3.3.1 Evidence from the case studies

As detailed in section 4.3.1.1 above, our case studies indicate that relative price differentials (which mirror the effects of variable VAT rate levels under enhanced flexibility) are not the only variable relevant to cross-border shopping patterns, as we saw some impact from cross-border shopping for relative price differentials as low as 22.7% (diesel), but also limited or no impact for relative price differentials as high as 41.7% (hairdressing). Consequently, complete flexibility in VAT rates may only be appropriate for certain types of goods and services.

What factors, other than relative price differentials, determine levels of cross-border shopping? **Absolute price differentials** are clearly extremely important to cross-border shopping patterns: despite the relative price savings possible on a haircut, the fact that the absolute price savings are still low will make it difficult to justify the inconvenience and travel costs involved in cross-border shopping (analysed in more detail in section 4.3.1.3.1). At first glance, this would suggest imposing limits on VAT rate differences for high value goods, and lower value goods that can be easily purchased in bulk, as these would offer cross-border shoppers the highest level of absolute savings.

However, **high absolute price differentials do not necessarily lead to high levels of cross-border shopping**. We found minimal evidence of cross-border shopping even where savings of over EUR 100 could be made on a single product, as in the case of jewellery and consumer electronics (the price saving on medical equipment was cancelled out by the interaction with public health insurance schemes). Dental services were an exception to this pattern. Possible explanations for this difference include:

- for dental services, there is a **combination of a large absolute price saving with a large relative price saving** (68%, as opposed to 9% for both jewellery and consumer electronics); and
- dental treatment is a **necessity**, whereas purchases of jewellery and consumer electronics can be deferred or foregone, so consumers may opt to cross-border shop for dental treatment if the domestic price is too high.

The contrast between consumer electronics and vehicle fuel is also instructive. While the maximum savings possible on a standard tank of diesel were circa EUR 20, compared to savings of over EUR 100 on a laptop computer, cross-border shopping was much more common in the first instance than in the second. Possible reasons for this include:

- **frequency with which purchases occur** (so the larger economic effect is simply a product of the larger aggregate level of consumer spending on fuel than laptops; the greater level of cross-border shopping for fuel could even be produced by fewer consumers making a greater number of trips);
- **information costs** (the repeat nature of fuel purchases mean that the one-off information cost incurred when finding a low-price cross-border vendor can be split out over multiple trips);
- **the psychological salience of relative savings** (9.0% for the laptop as opposed to 22.7% for fuel) compared to absolute savings;
- **necessity of purchase** (a shopper for whom the price of a laptop is too high can elect to defer their purchase; this option is less feasible in the case of vehicle fuel);
- **value of leisure to purchasers** (related to the previous point, someone with the disposable income necessary to buy a laptop is likely to value leisure more highly, and thus incur greater disutility from a physical cross-border shopping trip relative to the amount saved).

It seems, then, that the risk of cross-border shopping is highest for everyday purchases, where a significant relative price saving is possible, leading to a substantial absolute saving on a typical shopping trip. However, a relative price difference of 34.3% on foodstuffs did not appear to be sufficient to drive notable levels of cross-border shopping, but a price difference of 22.7% on fuel did. Both goods would appear to fall into the bracket of frequently-purchased necessities, which shoppers have no choice but to purchase. Consequently, we would expect to see cross-border shopping for both goods as a result of (particularly lower-income) households adopting a “survival strategy”, to the extent that this is rational given travel costs (Michalkó et al., 2014; Hampson and McGoldrick, 2011). However, within the category of foodstuffs, a number of price-saving substitutions are possible (buying cheaper types of food, and/or shopping at discount retailers), so the headline difference in prices may mask real price differences facing consumers.

#### 4.3.3.2 Evidence from the literature

The primary reason for many countries to apply reduced rates to particular goods and services stems from distributional considerations (Oosterhuis et al., 2008). A uniform VAT rate is supposed to have a regressive impact, because low-income households tend to spend a larger share of their income on basic consumption and less on luxuries and on savings than higher income households. Applying a lower VAT rate (i.e. reduced rates) to ‘basic needs’ such as food might neutralize or reduce this regressive impact.<sup>103</sup> In fact, Müllbacher *et al.* (2013) find that reduced rates are effective in lowering the VAT burden on lower-income households for at least half of EU countries or are at least mitigating regressive VAT effects to a neutral overall effect. In contrast, Owen *et al.* (2012) find

<sup>103</sup> To what extent reduced VAT rates on such product groups actually ‘benefit the poor’ is questionable, however (see e.g. OECD, 1998).

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that reduced rates rarely achieve their objective, and Copenhagen Economics argue that distributional effects are modest in relation to compliance and distortionary costs. Crawford *et al.* (2010) argue that there are more effective redistributive mechanisms that can be utilised by the government.

Economic theory moreover suggests that taxes on different goods and services will have different effects on revenues and welfare. Specifically, taxing goods with a high demand elasticity with high rates will impose a welfare burden on society, arising from an income effect on consumers that is not outweighed by the value of the tax revenue collected (Ramsey, 1927). Instead, less elastic goods should be taxed more, i.e. goods for which demand is not very price sensitive. Extending the eligibility of goods and services for reduced rates by expanding Annex III could thus enhance economic efficiency and welfare, by allowing the flexibility to tax elastic and inelastic goods more appropriately.<sup>104</sup>

A third advantage of enhanced flexibility in determining which goods and services should be eligible for reduced rates is the incentive these rates provide for the consumption of socially beneficial goods relative to other goods that are not subject to preferential rates. For example, some goods may have positive consumption externalities that result in positive outcomes for society due to their production or consumption that are however not taken into account by the individual consumer, for example the use of environmentally friendly light bulbs. Other goods can have positive production externalities: by relying on low skilled labour, the production of some goods can keep down structural unemployment. Boosting the demand for these goods can therefore have beneficial labour market effects. Such goods with positive externalities could be promoted through preferential VAT treatment in order to enhance societal welfare, and, conversely, it would be beneficial that negative externality goods be subjected to relatively higher rates (Müllbacher *et al.*, 2013). Granting more flexibility could help facilitate these objectives.

In short, there are strong arguments for extending reduced rates to goods and services that are price-elastic, necessities, or associated with socially beneficial production/consumption externalities, and the principle of subsidiarity indicates that Member States should be able to make these determinations.

These considerations must be balanced against the practicalities of reduced rates for particular types of goods, including the risk of economic distortion and tax competition. Unlike broad-based rate levels, the option to set reduced rates for particular goods and services can lead to greater levels of potentially harmful tax competition, as Member States do not have to suffer significant fiscal costs in order to compete. (Conversely, they may allow Member States to lower rates to combat tax competition regarding a particular product, without foregoing wider fiscal revenues).

Widening the range of goods and services that are eligible for reduced rates also creates risks of distortion, systemic complexity and litigation. Some goods will have very similar attributes, yet be classified into different tax categories. Such 'borderline' goods will suffer from distortions where closely related goods are eligible for reduced rates, but they are not. For example, in Ireland the distinction of healthy and unhealthy goods' VAT implies that unroasted almonds or normal biscuits are sold at a lower VAT, and subsequently price, than roasted almonds or chocolate covered biscuits, although these goods are close substitutes (Charlet and Owens, 2007). This can induce distortive price

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<sup>104</sup> Note however, that these two rationales might be conflicting in some instances. Some price inelastic goods are necessity goods, thus making them a good candidate for taxation in the sense that consumer decisions will not be much changed, but a bad candidate for equity reasons (Copenhagen Economics, 2008).

pressures into the market (Copenhagen Economics, 2008). Moreover, differential VAT rates create arbitrage opportunities by consumers and sellers to evade the appropriate tax rate. Some substitutable goods, e.g. heating oil and diesel could be bought as a reduced rate good (i.e. heating oil) instead of a standard rate good (diesel), but nevertheless be attributed to the standard rate use (fuelling car travel). This distorts the effect of the VAT and erodes revenues for the public sector (Marion and Muehlegger, 2007).

#### 4.3.3.3 Other cases

**Distance sales:** As mentioned in section 4.3.1.4 above, a number of Member States flagged issues around distance sales of goods originating in jurisdictions where they were available at lower VAT rates. These issues would be exacerbated by enhanced flexibility, increasing the range of goods that might be available at lower VAT rates, and the extent of the VAT savings possible. If it is not possible to address concerns around enforcement capacity in Member States' tax authorities, it may be appropriate to limit the level of rate reductions possible on highly transportable high-value goods such as consumer electronics and jewellery, as the greatest potential savings will be possible on these items.

**Tourism:** The level of international competition in the tourist sector, the historical trend for governments to stimulate tourism via lower VAT rates, and the significant fiscal and economic impacts arising from rate changes as modelled in the literature, suggest that some minimum floor on VAT rates on goods and services provided to tourists may be advisable. Without such a provision, a race to the bottom in VAT rates for tourism is conceivable. At the same time, any minimum rate level should be consistent with maintaining the competitiveness of the European Union as a whole, relative to other international destinations.

**Margin scheme on second-hand goods:** As discussed in section 4.3.1.4 above, shifting the entire margin scheme on to a destination basis appears to be the best way of removing the economic distortions associated with it. However, if this is not feasible, then setting minimum VAT rates for certain types of high-value portable good that are frequently traded second-hand – in particular, cars and other modes of transport – might be considered as an alternative. Indeed, this might still be advisable to limit cross-border shopping for second-hand vehicles, unless additional measures are taken to prevent this kind of VAT-rate shopping (as already exist for new vehicles).

#### 4.3.3.4 Conclusions

The evidence from the case studies indicates that, as expected, there are low levels of cross-border shopping for goods/services where the absolute level of price saving possible is also low (hairdressing). Price differences of circa 20% or more can in some instances drive cross-border shopping, particularly for **homogeneous everyday goods for which lower price domestic substitutes are not readily available** (diesel). Where lower price substitutes are available domestically, cross-border shopping is less likely (foodstuffs). Moreover, the **limited absolute price savings** available on any single cross-border shopping trip **mean that cross-border shopping for everyday goods will only ever be rational for people living close to the border**. Consequently, risks of economic distortion and fiscal loss appear to be low in these instances.

For higher value goods and services, upon which higher absolute price savings could be achieved, the evidence was mixed. Where the purchase might be described as a necessity and the relative price saving was large – as in the case of dental treatments – we observed some degree of cross-border shopping. By contrast, we observed minimal impact where the purchase in question was discretionary, and where the relative price

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saving was small (consumer electronics and jewellery). It is however possible that the larger absolute and relative price differences that might result from unlimited VAT rate flexibility would lead to higher levels of cross-border shopping for these goods. Coupled with risks related to the enforceability of the distance sales threshold for VAT registration, caution about permitting unlimited flexibility may be advisable with regard to these (and comparable) categories.

The literature highlights some of the benefits of permitting reduced rates on goods and services that are price-elastic, necessities, or associated with socially beneficial production/consumption externalities. The principle of subsidiarity indicates that Member States should be able to make these determinations. However, these advantages must be balanced against the additional systemic complexity that could arise from every country having its own idiosyncratic definition of the kinds of goods and services that should be eligible for reduced rates (and the degree of reduction for each kind).

#### **4.3.4 Regionalisation of VAT rates**

##### **4.3.4.1 Theoretical perspectives on the regionalisation of VAT rates**

As discussed throughout this study, in an international setting the VAT autonomy of countries can generate inefficiencies, as consumers are mobile and thus there is an incentive for governments to reduce rates to attract both economic activity and fiscal revenues across borders. The even greater level of mobility of consumers within a country, coupled with the absence of linguistic barriers and other less tangible factors,<sup>105</sup> might reinforce these trends. Consequently, we would expect regionalisation of VAT rates to exacerbate economic distortions. Moreover, it could increase the incentive to engage in tax competition – by allowing countries to limit competitive rates to border regions, the aggregate fiscal cost of competitive VAT rates would be reduced.

Furthermore, a multiplicity of different VAT rate systems within a particular country would dramatically increase the complexity of the EU VAT system, both at the level of individual Member States and at the level of the EU as a whole. The academic literature has traditionally considered VAT to be difficult to decentralise, as the proliferation of multiple regional VAT rates would increase both administrative costs for governments and compliance costs for businesses. By keeping VAT centralised, countries could avoid these complications and, assuming regions also wanted to tax the same base, they could receive a share of central revenues (Tait, 1998). Regionalisation thus appears incompatible with the objectives outlined in section 4.1.2 above.

However, there is a conceivable scenario whereby VAT regionalisation could reduce the risk of tax competition. As noted in section 3.1.1 above, under a system where countries operate a single nationwide VAT system, smaller countries have greater incentives to engage in indirect tax competition than their larger neighbours. This is because, for smaller countries, the level of revenue foregone from domestic consumers as a result of lowering VAT rates is outweighed by the level of additional revenue generated from encouraging consumers to cross-border shop. VAT regionalisation could preclude such tax competition, should larger countries choose to offer lower VAT rates in border regions, thereby preventing the loss of fiscal revenues to a neighbouring jurisdiction. While there would still be an economic distortion within a country (as shoppers travel to the border region to benefit from lower prices), there would not be a distortion between countries, and thus fiscal loss would be limited. This could even be seen as compatible with subsidiarity, as it better enables countries to pursue their own tax policies.

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<sup>105</sup> Examples of which are provided earlier in this report, in section 3.1.1.

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Admittedly, there is a risk that regionalisation could also exacerbate tax competition by encouraging larger countries to undercut their smaller neighbours, prompting a “race-to-the-bottom” dynamic. However, this could be avoided by allowing countries to adopt indirect rates in border regions only to match, but not to exceed, the indirect tax rates in neighbouring jurisdictions. Admittedly, given the findings in section 4.3.2 above regarding the compliance costs associated with additional VAT rate bands, there is a risk that any such rule could be prohibitively expensive for businesses. Nevertheless, in theory the *option* of introducing regional rates alone could be enough to deter countries from engaging in tax competition, and thus the additional complexity may not need to be introduced for the reform to be effective.

#### 4.3.4.2 Empirical experience of the regionalisation of VAT rates

Despite concerns about complexity and economic distortion, over the last twenty years the academic consensus against subnational VAT rates has begun to shift. This partly reflects the fact that tax systems have become increasingly dependent on VAT revenues, rendering it one of the few taxes that could yield sufficient revenues to fund regional expenditure needs. Added to this, there have been some reasonably successful real-world experiments with decentralised VAT in some federal countries – particularly Canada but also Brazil (Bird and Gendron, 2001). Moreover, since the introduction of the single market in 1993, the European VAT system has offered a continental counterpart to sub-central VAT rates in a federal country.<sup>106</sup>

##### USA

In the USA, there is evidence of harmonisation of taxes on excisable goods (Chiou and Muehlegger, 2008), suggesting a competitive dynamic arising from regional rate-setting. From the US experience, where not only states but also local governments have autonomy to tax consumption, we have some empirical evidence about the degree of tax interdependence. At the state level, Jacobs et al. (2010) find positive evidence of tax interdependence for consumption taxation (general sales plus excise taxes). However, in the US there might be wide dispersion of rates within a state, due to local/municipal governments’ tax powers. Agrawal (2014) suggests taking this heterogeneity into account in order to obtain precise estimates. He estimates reactions taking into account both the state tax rates, as per Jacobs et al. (2010), but also general sales taxes, and a weighted average of local tax rates within each state. As might be expected, once local tax rates (county plus town plus district rates) are taken into account, interdependence is slightly greater.

There are also some studies looking at the distortions occurring in particular markets in the USA, taking local heterogeneity into account. For example, Wooster and Lehner's (2010) empirical analysis takes advantage of the fact that Washington State has one of the highest state sales taxes. These authors - controlling for unobservable county-specific characteristics - find that the price elasticity of retail commodities generated by the sales tax discrepancy with respect to counties belonging to neighbouring states is - 3.11. This implies USD 2,200m in lost sales, and over USD 145m in foregone state tax revenues. Thus, these data pick up the potential gains from tax harmonisation. Tosun and Skidmore (2007) take advantage of a large discrete increase (+6%) in the sales tax rate in West Virginia in 1990, whose rate was zero from 1983. Their estimates indicate that food sales fell in West Virginia border counties by about eight percent<sup>107</sup> as a result of the imposition of the six percent sales tax on food in 1990, in comparison with counties in neighbouring states.

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<sup>106</sup> See Keen and Smith (1996) and McLure (2000) for an analysis of several ways of decentralising VAT.

<sup>107</sup> Unfortunately, they do not transform this amount of lost sales into lost of tax revenues.

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## Canada

The Canadian experience is interesting from the European perspective as Canada, like much of the EU, is a developed country with a strong tax administration.<sup>108</sup> The Canadian system is also interesting because of its heterogeneity, as not all provinces have the same tax rules, and because it has been evolving over time, depending on the different political agreements of the provinces and the federation. Indeed, some regions have their own retail sales taxes, some have no sales tax at all, some have a harmonised VAT and some have their own VAT.

Despite this, commentators note that there are few of the complexities and competitive dynamics that would normally be associated with regional autonomy and heterogeneity (Bird and Gendron, 1998 and 2010). When the federal government of Canada introduced its VAT (in this case called General Sales Tax or GST) in 1991, the province of Quebec simultaneously replaced its retail sales tax by a new provincial VAT, the Quebec Sales Tax (QST). Both taxes constitute an operational “dual VAT” system, “with few or none of the problems usually thought to be associated with such systems” (Bird, 2013). The rates of the two taxes are set independently by the respective governments.<sup>109</sup> The tax bases are also determined independently, although they are close to uniform. From the beginning, both taxes have been collected by the administration of Quebec, as provincial administration was a necessary condition imposed by the provincial government for harmonising its tax with the federal one.<sup>110</sup>

However, the size of the country and the relatively low population density means that *prima facie* the risks of inter-provincial distortion and tax competition that would normally be associated with regionalisation are much lower in Canada than they would be in any EU country. Indeed, in terms of landmass, Canada is larger than Europe, with fewer different VAT jurisdictions. Consequently, it would be unwise to infer from the Canadian experience to the European context.

## European Union

The existing EU regime itself can be seen as a system of regionalised VAT rates within a single economic area. The literature previously referenced in sections 3.1.1 and 3.1.3.2 above indicates that this regionalization has led to some degree of economic distortion and tax competition, albeit focused primarily around excisable goods. The further introduction of regional VAT rates would create additional “tax borders” within the EU. As we have seen in section 4.3.1 above, it is the cost of travel that acts as a major disincentive to cross-border shopping. If regional VAT rates were allowed, Member States could create new internal tax borders, meaning incentives to engage in tax-motivated cross-border shopping would be extended to a larger proportion of the EU population, leading to greater levels of economic distortion and inefficiency.

In this regard, it is important to note that existing regional VAT rates within the EU are limited to relatively isolated regions within EU Member States – such as certain Greek Islands, Corsica, the Azores and Madeira – which limits the potential for such distortions. Lower VAT rates are part of a range of measures intended to compensate for remoteness and insularity, rather than a routine feature of the fiscal landscape. Even then, anecdotal evidence suggests that the creation of additional subnational VAT regimes results in substantial costs to both businesses and governments dealing with these regions – which

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<sup>108</sup> The experiences of other federal countries, such as Brazil and India are less informative from the European perspective, as their tax administrations face very different problems.

<sup>109</sup> Until 2012, the provincial tax was levied on the GST-inclusive price.

<sup>110</sup> The federal government compensates for the costs Quebec incurs in administering the federal tax. This fee is negotiated annually.

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is unsurprising in light of our findings in section 4.3.2 above, as such subnational arrangements essentially involve the introduction of new VAT rate bands within a single jurisdiction.

#### 4.3.4.3 Conclusions

While there are examples of successful regionalisation of VAT rates, it is important to note that the additional complexity of such arrangements would, in the EU context, be superimposed on the complexity of a system of enhanced flexibility within the EU28. There is thus potential for exponential complexity growth should regionalisation of VAT rates at the subnational level be introduced in tandem with other elements of enhanced flexibility. This additional complexity could place unacceptable burdens on intra-Community trade. At the very least, it would be prudent to understand how Member States use any new flexibility in rate-setting powers at the national level, before contemplating any further reforms of the regime at the regional level.

### 4.4 Legal considerations

As discussed in section 4.1.2 above, one of the objectives in light of which reforms are to be evaluated is “preventing litigation between Member States and the EU”. Under the existing regime, differences in interpretation of the rules (in particular, in interpretation of the categories of goods and services that are eligible for reduced rates) has historically been a source of litigation between Member States and the EU. In theory, allowing Member States greater flexibility (either by regularly updating the list of goods and services eligible for reduced rates, or by allowing Member States to determine themselves what goods and services should be eligible for which rates) should substantially reduce scope for such litigation, as it reduces the scope for conflict between Member States and EU-wide rules.

However, under enhanced flexibility, Member States may find themselves in conflict with aspects of the EU legal regime other than the VAT Directive itself – in particular, with rules on state aid (TFEU Articles 107-109) and on the preferential taxation of domestic products (TFEU Article 110). Furthermore, CJEU has developed the principle of “fiscal neutrality” within the case law surrounding the VAT Directive, which is also relevant to understanding the scope for litigation between Member States and the EU.

#### *State aid*

According to Article 107 of the TFEU, “save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market”. Clearly, differential VAT rates on different products favour consumption (and thus production) of goods and services eligible for reduced rates over those that are standard-rated. However, the test for state aid is not only that it be granted through state resources, but also that it be imputable to Member State decisions. A measure which is the result of a Member State enacting an EU obligation is not imputable to a Member State and thus does not constitute state aid.<sup>111</sup>

It is conceivable that certain forms of enhanced flexibility, such as those involving abolition of the list of goods and services eligible for reduced rates, might be subject to stronger state aid objections than the existing Directive. However, more detailed

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<sup>111</sup> See, for example, *Puffer v. Unabhängiger Finanzsenat* (460/07, paragraphs 69-70), and *Deutsch Bahn AG v. Commission* (351/02, paragraphs 102-106).



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evaluation of this legal issue, and the merits of different EU-level legislative choices that sought to overcome it, lie outside the scope of the present study.

### *Preferential taxation of domestic products*

Article 110 of the TFEU prohibits taxation of “the products of other Member States... in excess of that imposed directly or indirectly on similar domestic products”, and also “of such a nature as to afford indirect protection to other products”. The objective of these provisions is to prevent Member States from taxing imported products on a less favourable basis than equivalent domestic products, thereby providing a boost to domestic producers. They reflect the EU’s efforts to combat protectionist policies and other barriers to trade, to further the free movement of goods.

Historically, some Member States have attempted to draw distinctions within categories of goods (for example, sparkling wines and alcoholic spirits), offering preferential indirect tax rates for particular production techniques prevalent domestically, or particular ingredients/design features characteristic of domestic output. Depending on the circumstances, some of these allegedly protectionist measures have been contested by the Commission and rejected by CJEU.<sup>112</sup> However, to date the scope for such issues to arise with regard to differential VAT treatment has been restricted by the narrow range of goods and services eligible for reduced rates under the VAT Directive.

By extending or abolishing this list, enhanced flexibility could increase the scope for Article 110 infringements, and thus for litigation between Member States and the EU. Indeed, in abolishing the list outright, litigation arising from the contravention of a clearly stated list of categories of goods and services eligible for reduced rates would be replaced by litigation arising from the contravention of a principle of non-protection. This could even result in an increase in infringement proceedings and litigation. However, if full flexibility were limited to flexibility in determining VAT rates for a range of *predefined* categories of goods/services, rather than the power to define these categories and decide which goods and services fall on which side of these categorical boundaries, then these risks could be substantially reduced. This is in line with our findings with regard to the complexity generated by additional VAT rate bands: just as the complexity costs of additional VAT bands could be managed provided consistent EU-wide categorical definitions are adopted (such as those found in the Combined Nomenclature), the potential for Article 110 litigation could be limited by allowing Member States flexibility to determine VAT rates for EU-wide categories of goods and services. These categories could then be set at a sufficiently high level of abstraction to preclude discriminatory taxation of non-domestic outputs (e.g. “alcoholic spirits” or “alcoholic beverages” as opposed to “whisky” and “grappa”).

### *VAT neutrality*

The idea of VAT neutrality – broadly speaking, the idea that VAT should not distort commercial decisions – has featured prominently in the history of VAT. One of the key benefits of VAT from an economic perspective is its limited distortionary impact on businesses, which is a product of the way in which it can be reclaimed on intermediate inputs within the value chain. Consequently, CJEU has invoked VAT neutrality as a consideration when deciding on the scope of the exemptions and reduced rates provided for in the VAT Directive (de la Feria, 2016). In some instances, CJEU rulings have pushed countries towards greater equivalence in the tax treatment of goods, services and businesses, thereby ensuring that similar transactions are treated similarly, and thus that Member States’ choices about where and how to apply reduced rates and exemptions do not distort competition.

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<sup>112</sup> e.g. Commission v. Italian Republic (278/83) or Commission v. Hellenic Republic (230/89).

Enhanced flexibility could increase the scope for differential VAT rates that CJEU determines do not satisfy the principle of fiscal neutrality – namely, on goods or services that are deemed to be “in competition with” or “comparable to” one another. This means the reform could increase the risk of litigation between Member States and the EU. As with Article 110 objections, however, this risk could be mitigated by only allowing Member States flexibility in setting rates for predefined categories of goods and services. These categories could then be constructed such that products that are comparable (in the relevant sense) all fall under the same classification, so Member States could not set differential VAT rates for them.

### Conclusions

While enhanced flexibility decreases the scope for conflict between Member States and the VAT Directive, by allowing Member States to set VAT rates that might currently constitute infringements, these new powers could increase the scope for tension between Member State policy choices and other aspects of the EU legal regime. It might be possible to mitigate this through standardised definitions of how goods and services are categorised for VAT purposes, with Member States then free to tax these categories at whatever rates they see fit (under the more radical forms of flexibility considered here). However, a comprehensive assessment of the litigation risks involved, and the possibility of countering these risks through suitable legislative drafting, lies beyond the scope of this study.

## 4.5 Overall conclusions on reform options

We conclude by using the key findings of our case studies, literature reviews, and additional analysis to assess the options for reform of the EU VAT rates regime outlined in section 4.2 above. These have been assessed against the six objectives outlined in section 4.1.2 above, and allocated a rating between “---” (substantial negative impact on objective) and “+++” (substantial positive impact on objective). Further explanation of each of these ratings is provided below.

Table 59: Assessment of reform options

Objective	Status quo	Option 1	Option 2.i	Option 2.ii	Option 2.iii
<b>Enhance subsidiarity</b>	--	-	++	++	+++
<b>Promote equal treatment of MSs</b>	--	+++	++	+++	+++
<b>Limit economic distortions</b>	++	++	+ [+]	+ [+]	+ [+]
<b>Minimise complexity and cost</b>	++	+	- [-]	- [-]	---
<b>Prevent litigation between Member States and the EU</b>	--	0	-- [-]	-- [-]	-- [-]
<b>Protect VAT revenues from domestic pressures</b>	++	+	--	--	---

Key to measures of impact on objectives:

+++ Substantial positive impact    ++ Some positive impact    + Limited positive impact  
 --- Substantial negative impact    -- Some negative impact    - Limited negative impact  
 0 Negligible impact

[+] Positive scores in square brackets reflect the fact that risks of economic distortion associated with Option Two depend on whether or not a decision is taken to restrict full flexibility of rates on a small subset of high-risk goods and services. Such restrictions would reduce the risk of economic distortions (and thus an additional “+” would be awarded on this metric).

[-] Negative scores in square brackets reflect the fact that the complexity costs and litigation risks associated with Option Two could be mitigated by limiting flexibility to the choice of rates for *predefined* categories of goods and services (based, for instance, on the Combined Nomenclature),

rather than allowing each Member State to create its own taxonomy of goods and services. Without such mitigation, the additional negative score would apply.

#### 4.5.1 Status quo

Under the status quo, Member States are allowed to set:

- a standard rate of VAT of no less than 15%;
- up to two reduced rates of no less than 5%, applicable only to goods and services as listed in Annex III of the VAT Directive;
- additional super-reduced and zero rates, and additional reduced rates for specified items, as negotiated through country-specific derogations.

*Enhance subsidiarity (--)*: The status quo scores relatively poorly on measures of subsidiarity, as it implies a substantial EU-wide harmonisation of VAT rates, and provides limited flexibility for countries to determine which goods and services receive reduced rates. Note however that it still provides Member States with the option of reducing VAT rates on a wide range of items: existing provisions for reduced rates and exemptions allow Member States to tax a substantial majority of average household final consumption expenditure at levels below the standard rate.<sup>113</sup>

*Promote equal treatment of Member States (--)*: Although the status quo provides a single set of rules applicable to all Member States, the universality of these rules is undermined by the persistence of a range of country-specific derogations.

*Limit economic distortions (++)*: Under a destination-based regime, the scope for economic distortions under the status quo is extremely limited. Our research suggested that VAT-motivated cross-border shopping was unlikely unless VAT differentials created price differences equivalent to the more extreme price differences for excisable goods currently prevailing between some Member States; such large VAT differentials are unlikely under the existing VAT regime.

*Minimise complexity and cost (++)*: While companies operating across borders must still cope with a range of VAT rates (particularly in countries enjoying derogations), the range of different rates and the definition of goods and services eligible for these different rates are substantially harmonised at the EU-level. This leads to lower compliance costs than would be anticipated under options for enhanced flexibility.

*Prevent litigation between Member States and the EU (--)*: Harmonised EU-level rules regarding which goods and services are eligible for which kinds of VAT rates has historically led to litigation between Member States and the EU, arising from Member States attempting to apply VAT rates that have not been deemed permissible under the VAT Directive. While many issues are now part of settled EU case law, the risk of litigation persists.

*Protect VAT revenues from domestic pressures (++)*: The persistence of a list of goods and services for which reduced rates are possible, coupled with minimum thresholds below which rates cannot fall, offers governments an opportunity to resist calls from narrow pressure groups to reduce VAT rates beyond a certain level. Limitations in the number of VAT rate bands available also reduce the scope for lobbying, as special pleading by a particular interest group will generally require reducing the VAT rate on a range of other goods and services in the same band. This amplifies the fiscal cost, making the request harder to justify.

<sup>113</sup> See Eurostat, data series nama\_co3\_c, 2012 (most recent data available at time of writing).

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### 4.5.2 Option One: Extension and regular review of the list of goods and services eligible for reduced rates

This option envisages a moderate reform of the existing system: extending the scope of goods and services eligible for reduced rates, thereby making all existing country-specific derogations available to all Member States. The proposal also involves regular review and update of the list of goods and services to which reduced rates can be applied. The minimum thresholds for standard and reduced rates would remain in place (15% and 5% respectively), as would the option of two reduced rate bands. However, in extending existing derogations to all Member States, additional reduced rate bands would be required, and rates lower than 5% would become possible (to the extent that Member States elect to exercise this flexibility).

*Enhance subsidiarity (-):* While an improvement on the status quo, Member States would still find themselves constrained from making a full range of decisions around which goods and services to privilege with reduced rates. Furthermore, the minimum standard/reduced rates of 15%/5% would still apply, restricting the range of different VAT rates that Member States could apply. Nevertheless, the regular review and update of the list, in line with Member States' requests, should mitigate the first of these concerns somewhat, though the impact on subsidiarity would depend on the precise decision-making mechanism introduced.

*Promote equal treatment of Member States (+++):* Under this option, a fully harmonised EU-level regime would be introduced, with no exceptions made for individual Member States. Providing all Member States with access to all existing derogations would guarantee equal treatment.

*Limit economic distortions (++):* Much like in the status quo, the risk of economic distortions driven by VAT rate differentials is limited. The extension of existing derogations to all Member States appears unlikely to generate differences in VAT treatment between countries sufficient to create economic distortions, given the relatively limited nature of these derogations. While there may be some pressure to lower some rates in light of the changes (e.g. children's clothing, which is currently standard-rated everywhere except Ireland, Luxembourg, and the UK), the aggregate fiscal impact of such changes will likely be small. Even if some economic distortions do occur, the economic impact will be limited to narrow border regions, given the size of transaction necessary to make cross-border shopping economically rational.

*Minimise complexity and cost (+):* Option One constitutes an incremental increase in complexity relative to the status quo. Nevertheless, if all countries took advantage of all derogations permitted, this would lead to all countries operating a standard rate, three reduced and super-reduced rates, an additional zero rate band, and a category of exempt items on which input VAT could not be recovered, which would pose substantial challenges for both businesses and tax administrations. Harmonised definitions of goods and services eligible for reduced, super-reduced and zero-rate treatment would mitigate this complexity somewhat.

*Prevent litigation between Member States and the EU (0):* The increase in the range of goods and services for which reduced rates are allowed increases the scope for litigation between Member States and the EU, as Member States test the boundaries and limits of the newly introduced categories. However, regular updating of the list of goods and services eligible for reduced rates provides an opportunity to clarify any ambiguities in this listing, thereby reducing the risk of conflict over the definitions of, and boundaries between, different categories. Moreover, this mechanism should minimise the scope for conflict between the VAT Directive and the policies that Member States want to introduce, which has historically been a source of litigation between Member States and the EU.

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*Protect VAT revenues from domestic pressures (+):* By increasing the scope of goods and services for which reduced rates are legally permitted, Option One raises the possibility of increased domestic pressure for rate reductions on particular categories of goods and services. This falls short however of the across-the-board pressures that we might anticipate were the list of goods and services eligible for reduced rates were abolished outright.

Note that it would be possible to implement Option One with a more selective extension of existing derogations, or with the abolition of existing derogations. While we have not formally assessed these suboptions, they would involve a somewhat different trade-off between the various reform objectives. Such suboptions would also be more challenging politically, in that they would create equal treatment by the removal of existing freedoms, rather than through the extension of existing freedoms to Member States who may choose not to exercise them.

### **4.5.3 Option Two: Abolition of the list**

Under Option Two, the list of goods and services to which reduced rates could be applied would be abolished, and Member States would be permitted to decide for themselves which goods and services should be placed within which rate bands. Member States would be free to set standard and reduced rates at whatever levels they see fit, down to and including a zero-rate band. (This flexibility might be supplemented by some targeted restrictions to limit economic distortions.)

Within this option, we consider three distinct Suboptions, concerning additional flexibility in the *number* of rate bands that Member States are permitted to deploy:

- Suboption One: a maximum of three reduced rates allowed, in addition to a standard rate (existing super-reduced and zero rates would count towards this allowance, if maintained; any continuing exemptions would not). This would match the existing level of flexibility enjoyed by all Member States bar one (Ireland).
- Suboption Two: a maximum of four reduced rates allowed (the current two reduced rates and two additional rates). Existing super-reduced and zero rates would count towards this allowance, if maintained; any continuing exemptions would not. This is the minimum number of additional rate bands required in order to replicate all Member States' existing VAT regimes under a scenario of enhanced flexibility.
- Suboption Three: no limits on the number of rates. Coupled with flexibility in rate levels and classification of goods and services, this would allow Member States to specify different VAT rates for different products without restriction, and a potentially unlimited degree of change.

In all instances, we assumed both an unlimited range of VAT rates, and no restrictions on the goods and services that could be placed in particular VAT rate bands, as well as considering the possibility of certain targeted restrictions on the use of reduced rates for goods and services where the risks of economic distortion and other undesirable effects are greatest. The high-risk categories identified in this study include:

- durable homogeneous everyday goods for which lower price domestic substitutes are not readily available (though admittedly the most obvious examples here are fuel, tobacco and alcohol, all of which are also subject to excise duties and thus vulnerable to distortions anyway);
- high-value easily transportable items, such as consumer electronics and jewellery (even though we have not identified substantial distortions associated with existing VAT differences, these are conceivable under enhanced flexibility, and may be complicated by challenges in policing distance sales);

- the tourism sector, which is particularly exposed to international competitive pressures; and
- second-hand goods (though this risk would be mitigated by applying the destination principle to the VAT margin scheme).

*Enhance subsidiarity* (++)/++/+++): All three Suboptions represent a substantial improvement in subsidiarity, with Member States able to specify what goods and services should be eligible for reduced rates of VAT, and how great those VAT differences should be. The difference between the scores for the Suboptions reflects the level of flexibility in the number of rate bands permitted under each scenario. Note that, in practice, Member States may not wish to create VAT regimes with more than three or four reduced rate levels, in which case Suboptions One and Two may be considered just as advantageous as Suboption Three. Note also that targeted restrictions would limit subsidiarity, but only marginally, assuming the range of goods and services to which restrictions would apply would remain limited.

*Promote equal treatment of Member States* (++)/+++/+++): All three Suboptions would treat Member States equally, as the same rules on rate levels, rate bands, and the classification of goods and services would apply to all jurisdictions. Note however that Suboption One would not permit all Member States to implement all existing VAT arrangements, as Ireland currently has four rate bands below the standard rate (including its zero-rate band), and would thus be required to remove one of these rate bands. Suboptions Two and Three, by contrast, allow all Member States to perpetuate all legacy arrangements, should they so wish.

*Limit economic distortions* (+[+]/+[+]/+[+]): Our research indicates that the risk of economic distortion associated with full flexibility in rate levels is limited to a narrow range of goods and services. Were full flexibility in rate levels and classifications of goods and services to be granted, we anticipate that this would result in competitive considerations playing a larger part in tax policy-making, and more relocation of economic activity across borders for tax reasons, than currently occurs under the existing VAT regime. Nevertheless, our case studies, literature review and additional analyses suggest that this effect would still be of limited magnitude, as VAT differentials would need to approximate some of the larger excise differentials observable between Member States in order to have a substantial impact. For this reason, we score Option Two (including all three Suboptions) as still having a broadly positive impact on economic distortions (“+” as opposed to “++” for the status quo). Moreover, targeted limitations could be introduced to limit flexibility on a small number of high-risk items. If adequate protections are put in place, then the risks of economic distortion under full flexibility should not be materially greater than under the status quo (“++”).

*Minimise complexity and cost* (-[-]/-[-]/---): The major disadvantage of Option Two relative to Option One is the additional complexity it introduces into the EU-wide VAT system. Businesses operating across borders will need to contend, not just with different VAT rates, but potentially very different classification systems, as Member States come to different conclusions about which goods and services should be eligible for which VAT rate bands. Definitions of goods and services, and the particular way in which borderline cases are adjudicated, could conceivably differ in every Member State, and could conceivably vary from year-to-year as well. However, these risks could be mitigated by harmonising definitions of categories of goods and services at the EU-level (for example, by using an existing taxonomy such as the Combined Nomenclature). Suboptions One and Two (reflecting three permitted reduced rate bands and four permitted reduced rate bands, respectively) are both ranked as having “some” negative impact (or “limited” negative impact, if combined with harmonised definitions), though we note that the additional rate band means that costs associated with Suboption Two will be greater than those associated with Suboption One. The costs associated with Suboption Three are likely to be prohibitive, as this could result in different VAT rates for every

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conceivable good and service (or conceivable category of good and service, if these classifications are harmonised), for each of the EU28. Admittedly, Member States are unlikely to choose such an extreme VAT policy; however, the risk remains that high degrees of divergence in VAT regimes would present barriers to trade between Member States, undermining the proper functioning of the single market.

*Prevent litigation between Member States and the EU (--[-]/--[-]/--[-]):* Devolving responsibility for decisions on what goods and services are eligible for what VAT rate levels should substantially decrease the scope for conflict between individual Member States' policy choices and the VAT Directive itself. However, these benefits must be weighed against the risk of Member States deliberately or accidentally contravening TFEU provisions prohibiting state aid and protectionist taxation, as well as the principle of VAT neutrality that has been established in case law on VAT. Indeed, the litigation risk may be greater than for the status quo and Option One, as the rules of the existing VAT Directive are relatively clearly defined in comparison to the higher-level principles articulated in the TFEU. This risk could be reduced by harmonisation of the definitions of categories of goods and services at the EU-level, at a suitable level of abstraction to prevent Member States from arbitrarily discriminating between comparable products. Such harmonisation could reduce the negative impact of this litigation risk from "substantial" to "some".

*Protect VAT revenues from domestic pressures (--/--/---):* The additional flexibility provided by all three Suboptions renders governments more susceptible to lobbying by industry groups, as there is no legal obstacle to reducing any particular rate band, or moving any particular good and service to a lower rate band. While targeted restrictions on high-risk goods and services would provide some legal limits, these are not anticipated to apply to a particularly wide range of products. The vulnerability to domestic pressures would be particularly acute where there are no limitations on the number of rate bands a country could implement: lobbyists could then propose a particular rate for a particular product, or even demand a particular unique trajectory of VAT rates for a particular product over time.

## References

ACEA (2014), "Passenger car fleet by fuel type", accessed 12.11.2016 at <http://www.acea.be/statistics/tag/category/passenger-car-fleet-by-fuel-type>

Actualne.cz., (2015). "Test potravin: Stejně značky mají jiné složení než v Německu". [online] Available URL: <https://zpravy.aktualne.cz/ekonomika/test-potravin-stejne-znacky-maji-jine-slozeni-nez-v>

ADAC Marinaführer, (2017). [online] Available URL: [www.marinaguide.adac.de/](http://www.marinaguide.adac.de/)

Agha, A.; Haughton, J. (1996) "Designing VAT Systems: Some efficiency considerations in *The Review of Economics and Statistics*" 78(2) pp. 303-308

Agrawal, D. R. (2014): "LOST in America: Evidence on local sales taxes from national panel data", *Regional Science and Urban Economics*, 49, 147-163.

Ahmad, E. and Brosio, G. (2008), "Political economy of multi-level tax assignments in Latin American countries: Earmarked revenue versus tax autonomy", pp. 15-16, accessed 12.11.2016 at

Allers, A.M., (1994). "Administrative and Compliance Costs of Taxation and Public Transfers in the Netherlands." Groningen, Rijksuniversiteit.

Alm, J.; Melnik, M. (2012), "Cross-border Shopping and State use Tax Liabilities: Evidence from eBay Transactions" in Tulane Economics Working Paper Series.

APE, (2008). Evaluatie van het verlaagde BTW-tarief voor cultuur en media [online] Available URL: <https://zoek.officielebekendmakingen.nl/blg-11401.pdf>

Artatlaw, (2013). [online] Available URL: <http://www.artatlaw.com/archives/archives-2013-july-dec/import-vat-and-free-movement-of-goods-within-european-union>

Asplund, M., Friberg, R. and Wilander, F. (2007), "Demand and distance: evidence on cross-border shopping", in *Journal of Public Economics*, 91(1), pp.141-157.

Attorney-at-art, (2014). [online] Available URL: <http://www.attorney-at-art.com/blog/buying-art-eu-import-vat-what-you-must-know>

Avalara VATLive (2012), "French VAT rate increases from 19.6% to 20% in 2014", accessed 12.11.2016 at <http://www.vatlive.com/french-news/french-vat-rate-increases-from-19-6-to-20-in-2014/>

Avalara VATLive (2016), "Greece raises VAT rate to 24% 1<sup>st</sup> June 2016", accessed 12.11.2016 at <http://www.vatlive.com/european-news/greece-raises-vat-rate-to-24-2017/>

Bannock, G., and Peacock, A. (1989). "Governments and Small Business." London: Paul Chapman.

Barbone L., Bird R., Vazquez-Caro J. (2012). "The Costs of VAT: A Review of the Literature." CASE Network Reports 0106, CASE – Center for Social and Economic Research.

Bar-Kolelis, D., (2013). "New retail locations and cross-border shopping in Poland." *Journal of Geography, Politics and Society*, 1(5), 19-31.

Barrel, R.; Weale, M. (2009) "The Economics of a Reduction in VAT" in National Institute of Economic and Social Research, Discussion Paper No. 325



- Belfast Telegraph, (2014). [online] Available URL: <http://www.belfasttelegraph.co.uk/news/health/dental-tourists-flocking-across-irish-border-to-save-thousands-on-treatment-30356305.html>
- Belgique Carbu (2016), "Votre énergie au meilleur prix", <https://belgique.carbu.com/>
- Belgische Petroleum Federatie (BPF). [online] Available URL: <http://www.petrolfed.be/nl/petroleumindustrie/economie/evolutie-van-het-aantal-tankstations>
- Bergman, M.; and Hansen, N., (2010). "Are Excise Taxes on Beverages Fully Passed Through to Prices?" The Danish Evidence.
- BILD, (2010). [online] Available URL: <http://www.bild.de/regional/dresden/guenstig-zaehne-botox-frisur-praxis-schnaepchen-14039994.bild.html>
- Billmeier, A. and Nannicini, T., (2013). "Assessing economic liberalization episodes: A synthetic control approach." *Review of Economics and Statistics*, 95(3), pp.983-1001.
- Bird, R. (2013), "Decentralizing value added taxes in federations and common markets", *Bulletin for International Taxation*, 67, 655-672.
- Bird, R.; and Gendron, P., (2007). "The VAT in Developing and Transitional Countries" Cambridge University Press
- Bird, R.M. (2013), "Below the Salt: Decentralizing Value-Added-Taxes", *Working Paper 13-02*, International Center for Public Policy, Georgia State University.
- Bird, R.M., Gendron, P.P. (1998), "Dual VAT and cross-border trade: two problems, one solution?", *International Tax and Public Finance*, 5, 429-442.
- Bird, R.M., Gendron, P.P. (2001), "VATs in federal countries: international experience and emerging possibilities", *Bulletin for international fiscal documentation*, 55, 7, 293-309.
- Bird, R.M., Gendron, P.P. (2010) "Sales Taxes in Canada: The GST-HST-QST-RST System," *Tax Law Review*, 63 (3): 517-582.
- Bode, E., Krieger-Boden, C. and Lammers, K., (1994). "Cross-Border Activities, Taxation and the European Single Market". Kiel, Institut fuer Weltwirtschaft.
- Boisvert, M., & Thirsk, W. (1994). "Border taxes, cross-border shopping, and the differential incidence of the GST". *Canadian Tax Journal*, 42(5), 1276-1293
- Brandstofprijzen (2016), "Brandstofprijzen in Europa per 6 december 2016" <http://www.brandstofprijzen.info/brandstofprijzen-europa.php>
- Brederode, R.F. van, Gendron, P.P. (2013), "The taxation of cross-border interstate sales in federal or common markets", *World Journal of VAT/GST Law*, 2 (1), 1-23.
- Brinsma, F.; Rietveld, P; Van Vuuren, D., (2001). "Spatial graduation of fuel taxes; consequences for cross-border and domestic fuelling" in *Transportation Research*, Part A.
- Burgenlandorf.at., (2012). "Ungarn - Österreich: Kaum Einkaufstourismus." [online] Available URL: <http://burgenland.orf.at/news/stories/2563359/>. & Czech-tourist.de 2016
- Bygvrå, S., (1998). "The road to the Single European Market as seen through the Danish retail trade: Cross-border shopping between Denmark and Germany", *The International Review of Retail, Distribution and Consumer Research*, Volume 8, 1998 - Issue 2.

---

Bygvrå, S., (2009). "Distance and cross-border shopping for alcohol" in *Nordic Studies on Alcohol and Drugs* 26.

Camera di Commercio Udine, (2016). "Rilascio della tessera per la prima volta." [online] Available URL: <http://www.ud.camcom.it/P42A239C235S40/Rilascio-della-tessera-per-la-prima-volta.htm>

Carburanti Regione (2016a), "Carburanti: I prezzi applicati nella regione FVG", [http://carburanti.regione.fvg.it/carburanti\\_new.asp](http://carburanti.regione.fvg.it/carburanti_new.asp)

Carburanti Regione (2016b), "Il Sistema di contribuzione sull'acquisto di carburanti",

Carburanti Regione, (2016a). [online] Available URL: <http://www.regione.fvg.it/rafvfg/cms/RAFVG/ambiente-territorio/carburanti/FOGLIA1/>

CASE – Center for Social and Economic Research, 2016. Study and Reports on the VAT Gap in the EU-28 Member States: 2016 Final Report. Final report under contract TAXUD/2015/CC/131.

Casino City, (2017). [online] Available URL: <http://online.casinocity.com/>

Cees-Wim van Noordenne, (1995). "New VAT Rules for Second-hand goods, Works of Art, Collectors' Items and Antiques." 4 *EC Tax Review*, Issue 1, pp. 53–55

Chandra, A., K. Head, and M. Tappata, (2014). "The Economics of Cross-Border Travel." *The Review of Economics and Statistics*.

Chandra, A., K. Head, M. Tappata (2014): "The Economics of Cross-Border Travel", *The Review of Economics and Statistics*, 96, 648–661.

Charlet, A., and Owens, J., (2007). "An international perspective on VAT. Future."

Chervin, S.; Edmiston, K.; Murray, M. N., "Urban Malls, Tax Base Migration, and State Intergovernmental Aid" in *Public Finance Review* 28(4) pp. 309-334.

Chiou, L., E. Muehlegger (2008) "Crossing the Line: Direct Estimation of Cross-Border Cigarette Sales and the Effect on Tax Revenues," *B.E. Journal of Economic Analysis and Policy*, 8.

Christiansen, V., (2003/4). "Cross Border Shopping and Tax Structure" in *Economic Policy Research Unit, Institute of Economics; University of Copenhagen*.

Christie, Sophie, (2014). "Why are electronic goods so much cheaper in the US?" [online] Available URL: [www.telegraph.co.uk/finance/personalfinance/money-saving-tips/10982132/Why-are-electronic-goods-so-much-cheaper-in-the-US.html](http://www.telegraph.co.uk/finance/personalfinance/money-saving-tips/10982132/Why-are-electronic-goods-so-much-cheaper-in-the-US.html)

Crossen, S. (2010). "Commentary" on Chapter 4 – Value Added Tax and Excises, in *Dimensions of Tax Design*, Institute for Fiscal Studies.

Comité professionnel des Galeries d'Art, Syndicat National des Antiquaires et Syndicat National de Maisons de Vente Volontaires, (2013). Rapport. Sur les risques induits par une nouvelle augmentation du taux de TVA à l'importation sur les œuvres d'art,

Computerworld, (2004). [online] Available URL: <http://www.computerworld.dk/art/25343/sf-kraever-handling-mod-momssvindel>

Copenhagen Economics, (2007). "Study on reduced VAT applied to goods and services in the Member States of the European Union" [online] Available URL: [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/vat/how\\_vat\\_works/rates/study\\_reduced\\_vat.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/how_vat_works/rates/study_reduced_vat.pdf).

- 
- Cosmin, Dan., (2015). "The Impact of the VAT decrease for Food and Non-Alcoholic Drinks in Romania." Euromonitor International News and Resources. [online] Available URL: <http://blog.euromonitor.com/2015/12/the-impact-of-the-vat-decrease-in-romania.html>.
- Crawford, I., Keen, M., and Smith, S., (2010). "Value added tax and excises" Chapter 4 in Dimensions of Tax Design: the Mirrlees Review by Mirrlees, S., Besley, A., Blundell, R., Bond, S., Chote, R., Gammie, M., Johnson, P., Myles, G., and Porterba, J.
- Crouch et al. 2014, "Shop frontiers: the rise of cross-border buying around the world" (2015), The Guardian, <https://www.theguardian.com/money/2015/jul/02/cross-border-buying-shopping-bargains-globalisation>.
- Czech-tourist.de, 2016 "Lebensmittel aus Tschechien: Kauftipps, Shopping-Center, Märkte." *Czech-tourist.de*. Accessed 11 14, 2016. <http://www.czech-tourist.de/lebensmittel.htm>.
- d'Ambruminel ruling of the ECJ, (2003). "Judgment of the Court (Fifth Chamber)" Peter d'Ambrumenil and Dispute Resolution Services Ltd v Commissioners of Customs & Excise. [online] Available URL: <http://curia.europa.eu/juris/liste.jsf?language=en&jur=C,T,F&num=c->
- Davis, L. W. (2011). "The effects of preferential vat rates near international borders: evidence from Mexico". *National Tax Journal*, 64(1), pp.85-104.
- Davis, L.W., (2011). "The effects of preferential vat rates near international borders: evidence from Mexico", *National Tax Journal*, 64(1), pp.85-104.
- del Campo, F.J. J.F. Juliá, J.M. Sale, (2002). "Evolución de la neutralidad impositiva del I.V.A. en el Régimen Especial de la Agricultura, Ganadería y Pesca. Efectos de la revisión de los tipos impositivos en el período 1986-1997". *Investigación agraria. Producción y protección vegetales*, 17 (2): 275-289.
- Deutsches Institut fur Wirtschaftsforschung, (1994), "The extent of transboundary transactions taxed according to the origin principle"
- Drive Europe News (1.2.2016), "Fuel Tourism Falling in Luxembourg", accessed 2.12.2016 at <https://driveeurope.co.uk/2016/02/01/fuel-tourism-falling-in-luxembourg/>
- dTest. 2016. Rozdílná kvalita potravin v EU. <https://www.dtest.cz/clanek-5156/rozdilna-kvalita-potravin-v-eu>
- Dunbarry R. and Sinclair M. (2003), "Market shares analysis: The case of French tourism demand", in *Annals of Tourism Research*
- Dunmore, C. and M. Dunai, (2012). "Exclusive: Hungary losing 1 billion euros a year from food VAT fraud." Reuters. [online] Available URL: <http://www.reuters.com/article/us-hungary-vat-fraud-idUSBRE85614B20120607>.
- Durán-Cabré, J.M. (2008), "La descentralització de l'IVA en fase minorista", Monografies 4/2008, Departament d'Economia i Finances, Generalitat de Catalunya, [online] Available URL: [http://economia.gencat.cat/web/.content/70\\_analisi\\_finances\\_publicques\\_financament\\_automonic/arxius/financament/bibliografia/descentralitzacio-iva-fase-minorista.pdf](http://economia.gencat.cat/web/.content/70_analisi_finances_publicques_financament_automonic/arxius/financament/bibliografia/descentralitzacio-iva-fase-minorista.pdf).
- DutchNews, (2015). [online] Available URL: <http://www.dutchnews.nl/news/archives/2015/02/fixed-book-price-reprievd-for-four-more-years/>
-

---

Dwenger, N., Kleven, H., Rasul, I. and Rincke, J., (2016). Extrinsic and intrinsic motivations for tax compliance: Evidence from a field experiment in Germany. *American Economic Journal: Economic Policy*, 8(3), pp.203-232.

Dwyer L., and Kim C. (2010), "Destination Competitiveness: Determinants and Indicators", in *Current Issues in Tourism*

Egedis (2017), "De quoi est composé le prix à la pompe?", <https://www.egedis.com/prix-carburant>

EIA Beta. [online] Available URL: <http://www.eia.gov/>

Eichfelder, S. and Schorn, M., (2008). "Tax compliance costs and its determinants: Evidence from German businesses." Leipzig: Institute of Accounting and Tax Management.

ESA, (2010). "European System of Accounts". [online] Available URL: [http://ec.europa.eu/eurostat/cache/metadata/Annexes/nasa\\_10\\_f\\_esms\\_an1.pdf](http://ec.europa.eu/eurostat/cache/metadata/Annexes/nasa_10_f_esms_an1.pdf) Section 3.104, p71

EUBusiness, (2004). [online] Available URL: <http://www.eubusiness.com/europe/poland/040413025717.3rxnfish/>

EurActiv.com, (2012). "Danish fat tax a feast for German border shops." [online] Available URL: <https://www.euractiv.com/section/agriculture-food/news/danish-fat-tax-a-feast-for-german-border-shops/>

Eurobarometer (2004), "Qualitative study on cross border shopping in 28 European countries", [online] Available URL: [http://ec.europa.eu/public\\_opinion/archives/quali/ql\\_cbs2004\\_en.pdf](http://ec.europa.eu/public_opinion/archives/quali/ql_cbs2004_en.pdf).

Eurobarometer (2014), "Preferences of Europeans towards tourism", EC, 2015. [online] Available URL: [http://ec.europa.eu/public\\_opinion/flash/fl\\_392\\_en.pdf](http://ec.europa.eu/public_opinion/flash/fl_392_en.pdf)

Europages, (2016). [online] Available URL: [medical-equipment.europages.co.uk](http://medical-equipment.europages.co.uk)

Europe's Energy Portal (2017), "Diesel and Unleaded Fuel Price Components", <https://www.energy.eu/fuelprices/>

European Commission, (1994). "Report from the Commission to the Council on the harmonization of the laws of the Member States relating to turn-over taxes- Common system of value added tax: uniform basis of assessment", [online] Available URL: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:51994DC0584&from=EN>

European Commission, (2006). "VAT Directive, Article 132(1)". [online] Available URL: <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:347:0001:0118:en:PDF>

European Commission, (2007). "Study on reduced VAT applied to goods and services in the Member States of the European Union" [online] Available URL: [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/vat/how\\_vat\\_works/rates/study\\_reduced\\_vat.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/how_vat_works/rates/study_reduced_vat.pdf).

European Commission, (2010). "European System of Accounts". [http://ec.europa.eu/eurostat/cache/metadata/Annexes/nasa\\_10\\_f\\_esms\\_an1.pdf](http://ec.europa.eu/eurostat/cache/metadata/Annexes/nasa_10_f_esms_an1.pdf), Section 3.104, p71

European Commission, (2011). "VAT in the public sector and exemptions in the public interest",

---

[http://ec.europa.eu/taxation\\_customs/resources/documents/common/publications/studies/vat\\_public\\_sector.pdf](http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/vat_public_sector.pdf)

European Commission, (2011a). [online] Available URL: [https://ec.europa.eu/taxation\\_customs/sites/taxation/files/docs/body/report\\_evaluation\\_vat.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/docs/body/report_evaluation_vat.pdf)

European Commission, (2012). "A European Consumer Agenda – Boosting confidence and growth" [online] Available URL: [http://ec.europa.eu/consumers/archive/strategy/docs/consumer\\_agenda\\_2012\\_en.pdf](http://ec.europa.eu/consumers/archive/strategy/docs/consumer_agenda_2012_en.pdf).

European Commission, (2013), "A study on the economic effects of the current VAT rates structure", [online] Available URL: [http://ec.europa.eu/taxation\\_customs/resources/documents/common/publications/studies/vat\\_rates\\_structure\\_final\\_report.pdf](http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/vat_rates_structure_final_report.pdf).

European Commission, (2014a). "Cross-border commuting and consuming: an empirical investigation." Thomas Y. Mathä, Alessandro Porpiglia and Michael Ziegelmeyer.

European Commission, (2014b). "Preferences of Europeans towards tourism" [online] Available URL: [http://ec.europa.eu/public\\_opinion/flash/fl\\_392\\_en.pdf](http://ec.europa.eu/public_opinion/flash/fl_392_en.pdf)

European Commission, (2015a). [online] Available URL: [http://ec.europa.eu/growth/sectors/gambling\\_en](http://ec.europa.eu/growth/sectors/gambling_en)

European Commission, (2015b) "Update Report to the Study to quantify and analyse the VAT gap in 26 EU Member States"

European Commission, (2016a). "Action Plan on VAT: Towards a single EU VAT area" [online] Available URL: [https://ec.europa.eu/taxation\\_customs/sites/taxation/files/docs/body/com\\_2016\\_148\\_en.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/docs/body/com_2016_148_en.pdf).

European Commission, (2016b), "Excise duty tables. Part II – Energy products and electricity", accessed 12.11.2016

European Commission, (2016c). "TAXATION AND CUSTOMS UNION" [online] Available URL: [http://ec.europa.eu/taxation\\_customs/sites/taxation/files/resources/documents/taxation/vat/how\\_vat\\_works/rates/vat\\_rates\\_en.pdf](http://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/taxation/vat/how_vat_works/rates/vat_rates_en.pdf)

European Commission, (2016d). [online] Available URL: [http://europa.eu/youreurope/citizens/consumers/shopping/vat/index\\_en.htm](http://europa.eu/youreurope/citizens/consumers/shopping/vat/index_en.htm).

European Commission, (2016e). [online] Available URL: [http://ec.europa.eu/eurostat/statistics-explained/index.php/Comparative\\_price\\_levels\\_of\\_consumer\\_goods\\_and\\_services](http://ec.europa.eu/eurostat/statistics-explained/index.php/Comparative_price_levels_of_consumer_goods_and_services). Note that, in the public domain, this dataset is only available to 1d.p.

European Commission, (2016f). [online] Available URL: [http://ec.europa.eu/taxation\\_customs/business/vat/digital-single-market-modernising-vat-cross-border-ecommerce\\_en](http://ec.europa.eu/taxation_customs/business/vat/digital-single-market-modernising-vat-cross-border-ecommerce_en)

European Commission, (2016g). *Impact assessment for the proposal to modernise VAT for cross-border E-Commerce.* [online] Available URL: [https://ec.europa.eu/taxation\\_customs/sites/taxation/files/swd\\_2016\\_379.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/swd_2016_379.pdf)

European Commission, (2017). [online] Available URL: <http://europa.eu/youreurope/citizens/health/help-from-the->

pharmacy/prescription/index\_en.htm  
<http://ec.europa.eu/social/main.jsp?catId=858&langId=en>

European Parliament (2010), "*Differences in costs of and access to pharmaceutical products in the EU*" [online] Available  
URL: [http://www.europarl.europa.eu/RegData/etudes/etudes/join/2011/451481/IPOL-ENVI\\_ET\(2011\)451481\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/etudes/join/2011/451481/IPOL-ENVI_ET(2011)451481_EN.pdf)

Eurostat (2014), "Energy, transport and environment indicators. 2014 Edition", accessed 6.12.2016 at <http://ec.europa.eu/eurostat/documents/3930297/6613266/KS-DK-14-001-EN-N.pdf>

Eurostat (2015). "*Tourism statistics – expenditure*" (2015), Eurostat, [online] Available  
URL: [http://ec.europa.eu/eurostat/statistics-explained/index.php/Tourism\\_statistics\\_-\\_expenditure](http://ec.europa.eu/eurostat/statistics-explained/index.php/Tourism_statistics_-_expenditure)

Eurostat (2016a). "*Tourism Database*" (2016), Eurostat, [online] Available URL:  
<http://ec.europa.eu/eurostat/web/tourism/data/database>

Eurostat (2016b). "*external trade statistics user guide*" (2016), Eurostat, [online]  
Available URL:  
<http://epp.eurostat.ec.europa.eu/newxtweb/setuplistmeta.do?keepsessionkey=true>).

Eurostat (2016c). "*Comparative price levels of consumer goods and services*" [online]  
Available URL: [http://ec.europa.eu/eurostat/statistics-explained/index.php/Comparative\\_price\\_levels\\_of\\_consumer\\_goods\\_and\\_services](http://ec.europa.eu/eurostat/statistics-explained/index.php/Comparative_price_levels_of_consumer_goods_and_services)

Eurostat (2016d). "*Purchasing power parities (PPPs)*," (2015), Eurostat, [online]  
Available URL:  
[http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc\\_ppp\\_ind&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc_ppp_ind&lang=en)

Evans, C. and Tran Nam, B., (2014). "*Tax compliance costs in New Zealand: An international comparative evaluation.*" *New Zealand Journal of Taxation Law and Policy*, 20(4), pp.339-361.

Evans, C., (2008). "*Taxation compliance and administrative costs: an overview.*" In M. Lang, J. Obermair, J. Schuch, C. Staringer, & P. Weninger (Eds.), *Tax compliance for companies in an enlarged European Community*. Alphen aan den Rijn: Kluwer Law International, pp. 447–468.

Ewringmann, D. (2016), "Ermittlung und Bewertung der positiven und negativen Wirkungen des Treibstoffverkaufs unter besonderer Berücksichtigung negativer externer Umwelt- und Gesundheitseffekte – Status quo 2012 und maßnahmeninduzierte Veränderungen."

EY (2014), "Luxembourg VAT – various changes due to take effect 1 January 2015", [http://www.ey.com/lu/en/services/tax/vat--gst-and-other-sales-taxes/tax\\_alert\\_141211\\_luxembourg\\_vat\\_various\\_changes\\_due\\_to\\_take\\_effect\\_from\\_1\\_january\\_2015](http://www.ey.com/lu/en/services/tax/vat--gst-and-other-sales-taxes/tax_alert_141211_luxembourg_vat_various_changes_due_to_take_effect_from_1_january_2015)

EY (2015), "VAT increase in the Greek hotel industry: Economic impact assessment"

EY, (2014). [online] Available URL: <http://www.ey.com/dk/da/services/tax/artikel-skats-aktivitetsplan-2014-05042014>

Fédération Pétrolière Belge (2017), "Décomposition prix maximums actuels", <http://www.petrolfed.be/fr/prix-maximums/d%C3%A9composition-prix-maximums-actuels>

---

de la Feria, R. (2016), "EU VAT principles as interpretative aids to EU VAT rules: the inherent paradox", Oxford University Centre for Business Taxation Working Papers. Available URL: [http://www.sbs.ox.ac.uk/sites/default/files/Business\\_Taxation/Docs/Publications/Working\\_Papers/Series-16/WP1603.pdf](http://www.sbs.ox.ac.uk/sites/default/files/Business_Taxation/Docs/Publications/Working_Papers/Series-16/WP1603.pdf)

Ferris, J. S. (2000): "The Determinants of Cross Border Shopping: Implications for Tax Revenues and Institutional Change", *National Tax Journal*, 53, 801-824.

Flyvbjerg, B. (2006), "Five misunderstandings about case-study research", *Qualitative inquiry*, 12(2), 219-245.

Focus, (2015). [online] Available URL: [http://www.hahs.co.uk/sites/default/files/media-pliki/01\\_hahs\\_magazyn.pdf](http://www.hahs.co.uk/sites/default/files/media-pliki/01_hahs_magazyn.pdf)

Fox, (1996), "Tax structure and the location of economic activity along state borders" in *National Tax Journal* 39(4), pp.387-401.

Gallagher, M., (2005). "Benchmarking tax systems. *Public administration and development*" 25(2), pp.125-144.

Gambling Compliance, (2016). [online] Available URL: [www.gamblingcompliance.com](http://www.gamblingcompliance.com) for detailed country-by-country analysis.

GamblingCompliance, (2016). [online] Available URL: [https://gamblingcompliance.com/premium-content/news\\_analysis/belgium-faces-opposition-over-online-gambling-vat](https://gamblingcompliance.com/premium-content/news_analysis/belgium-faces-opposition-over-online-gambling-vat)

GamblingLicences, (2015). [online] Available URL: <https://www.gamblingsites.com/online-gambling-jurisdictions/>

GamblingSites, (2015). [online] Available URL: <https://www.gamblingsites.com/online-gambling-jurisdictions/>

Genschel, P. and Schwarz, P. (2011), "Tax competition: a literature review", in *Socio-Economic Review*, 9(2), pp.339-370.

Geo-Graphics, 2017." *Council on Foreign Relations*". [online] Available URL: <http://blogs.cfr.org/geographics/2017/01/19/minimactrumpsbigmindex/>. Prices are ex-VAT (see <http://blogs.cfr.org/geographics/2013/06/27/ipadminiindex/> for methodological discussion).

Gerbinet, Corinne, (2016). "Faire ses courses en France, moins cher qu'en Belgique?" [online] Available URL: [http://www.rtbef.be/info/societe/onpdp/on-a-teste/detail\\_faire-ses-courses-en-france-moins-cher-qu-en-belgique-on-a-teste?id=9405163](http://www.rtbef.be/info/societe/onpdp/on-a-teste/detail_faire-ses-courses-en-france-moins-cher-qu-en-belgique-on-a-teste?id=9405163)

Gestori Carburanti 2014 (16.06.2014), "Friuli venezia Giulia, prorogati gli sconti sui carburanti", accessed 13.11.2016 at <http://www.gestoricarburanti.it/redazione/dal-territorio/notizie-regionali/5303-friuli-venezia-giulia-prorogati-gli-sconti-sui-carburanti>

Gestori Carburanti 2016a (21.03.2016), "Friuli Venezia Giulia, sconto benzina prorogato al 30 giugno 2016", accessed 13.11.2016 at <http://www.gestoricarburanti.it/redazione/dal-territorio/notizie-regionali/6089-friuli-venezia-giulia-sconto-benzina-prorogato-al-30-giugno-2016>

Gestori Carburanti 2016b. (19.09.2016), "FVG prorogati fino al 31 dicembre incentivi regionali per l'acquisto di benzina e gasolio", accessed 13.11.2016 at <http://www.gestoricarburanti.it/redazione/dal-territorio/notizie-regionali/6250-fvg-prorogati-fino-al-31-dicembre-incentivi-regionali-per-lacquisto-di-benzina-e-gasolio>

---

Gilnos & Baeten. (2006). "A Literature Review of Cross-Border Patient Mobility in the European Union" [online] Available URL: [http://www.ose.be/files/publication/health/WP12\\_lit\\_review\\_final.pdf](http://www.ose.be/files/publication/health/WP12_lit_review_final.pdf)

Gonzi, (2015). [online] Available URL: <http://www.gonzi.com.mt/en/gaming-it-and-telecoms-news/new-vat-laws-could-prove-costly-for-online-gaming-providers>

Gooroochurn N., Sugiyarto G. (2005), "Competitiveness Indicators in the Travel and Tourism Industry", in *Tourism Economics*

Gordon, R.; Nielsen, S. (1996) "Tax Avoidance and Value-Added vs. Income Taxation in an Open Economy" National Bureau of Economic Research Working Paper 5527.

Guardian, (2015). [online] Available URL: <https://www.theguardian.com/business/2015/nov/01/uk-losing-millions-vat-non-eu-sellers-amazon-ebay>.

Guichet.lu (2017), "Les prix des produits pétroliers", <http://www.guichet.public.lu/entreprises/en/divers/prix-produits-petroliers/index.html>

Hall, J.; Smith, S., (1995), "Local Sales Taxation: An Assessment of the Feasibility and Likely Effects of Sales Taxation at the Local Level in the UK" in The Institute for Fiscal Studies.

Hamilton, J.D. (2008), "Understanding Crude Oil Prices", [http://econweb.ucsd.edu/~jhamilton/understand\\_oil.pdf](http://econweb.ucsd.edu/~jhamilton/understand_oil.pdf)

Hampson, D, and P McGoldrick., (2011). "A typology of adaptive shopping patterns in recession." *Journal of Business Research* 66 (7): 831-838.

Hans Fehr, Christoph Rosenberg, Wolfgang Wiegard., (1995). "Welfare Effects of Value-Added Tax Harmonisation in Europe" Springer-Verlag Berlin, pp58-65.

Hansford, A., Hasseldine, J. and Howorth, C., (2003). "Factors affecting the costs of UK VAT compliance for small and medium-sized enterprises" *Environment and Planning C: Government and Policy*, 21(4), pp.479-492.

Hasseldine, J. & Hansford, A., (2002). "The compliance burden of VAT: Further evidence from the UK. *Australian Tax Forum*" 17(4), pp. 369-388.

Hau, T., (1992). "Congestion Charging Mechanisms for Roads: An Evaluation of Current Practice" in *Police*, Research working papers; no. WPS 1071. Transport. Washington, DC: World Bank

Hays Group (2013). "Made in Poland: Investor's Guide for Manufacturing Companies." [online] Available URL: [http://www.hays.pl/en/media-centre/HAYS\\_687628EN](http://www.hays.pl/en/media-centre/HAYS_687628EN), accessed March 10, 2017.

Hemming, R., and Kay, J.A., 1981. The United Kingdom. In Aaron, H.J. (ed.), "The Value Added Tax: Lessons from Europe." Washington, D.C.: The Brookings Institution.

Hilliard Mark, and Fiona Reddan. 2016. "Weaker sterling will make cross-Border shopping attractive." *The Irish Times*. 24 June. Accessed 12 5, 2016. <http://www.irishtimes.com/business/personal-finance/weaker-sterling-will-make-cross-border-shopping-attractive-1.2698528>.

HM Revenue and Customs, 2011. Annual report and resource accounts 2010-11. London: HMRC, [online] Available URL: <https://www.gov.uk/government/publications/annual-report-and-resource-accounts-2010-11>.



---

HM Treasury (2012), "The impact of reduced VAT rates on British visitor accommodation, attractions and the wider economy: Results of dynamic partial equilibrium and computable general equilibrium models"

HMRC (2002), *Measuring indirect tax losses*, London: HMSO.

ICAEW, (2016). "Jaffa cake - is it a cake or a biscuit? VAT's the difference" [online] Available URL: <https://www.icaew.com/en/about-icaew/news/press-release-archive/2016-press-releases/jaffa-cake-is-it-a-cake-or-a-biscuit-vats-the-difference>

iDNES.cz., (2015). "Srovnání potravin v ČR a Německu: stejný obal, stejná cena, jiné jídlo" [online] Available URL: Zdroj: [http://ekonomika.idnes.cz/stejne-potraviny-v-cesku-a-nemecku-se-lisi-ukazal-test-pp4-/test.aspx?c=A150701\\_183949\\_test\\_ozr](http://ekonomika.idnes.cz/stejne-potraviny-v-cesku-a-nemecku-se-lisi-ukazal-test-pp4-/test.aspx?c=A150701_183949_test_ozr)

IMGL, (2016). [online] Available URL: [https://imgl.org/sites/default/files/media/publications/belgiumsvatononlinegaming\\_klaes\\_er\\_egl\\_autumn2016.pdf](https://imgl.org/sites/default/files/media/publications/belgiumsvatononlinegaming_klaes_er_egl_autumn2016.pdf)

Independent, (2015). [online] Available URL: <http://www.independent.ie/business/personal-finance/latest-news/theyre-10-miles-apart-but-its-boomtown-in-newry-and-gloomtown-in-dundalk-26492834.html/>

ING, (1999). [online] Available URL: <https://ing.dk/artikel/dansk-moms-pa-internettet-78183>

Institute for Fiscal Studies, (2011). "Value added tax and excises" in *Dimensions of Tax Design, Institute for Fiscal Studies* [online] Available URL: <https://www.ifs.org.uk/uploads/mirrleesreview/dimensions/ch4.pdf>

International Council of Marine Industry Associations (2007), "Decommissioning of end-of-life boats: A status report", [www.eba.eu.com/site-documents/environmental-docs/environmental-2008/Decommissioning-of%20End-of-Life%20Boats%20\\_Rev-Dec-07.pdf](http://www.eba.eu.com/site-documents/environmental-docs/environmental-2008/Decommissioning-of%20End-of-Life%20Boats%20_Rev-Dec-07.pdf)

International Monetary Fund (June 2015). "Luxembourg. Selected issues."

International Publishers Association 2014. *Global Fixed Book Price Report* [online] Available URL: <http://www.internationalpublishers.org/images/reports/2014/fixed-book-price-report-2014.pdf>

Irish Revenue, (2016). "VAT Treatment of eGaming Services", section 5.66 [online] Available URL: [www.revenue.ie/en/about/foi/s16/value-added-tax/chpt-05/05-66.pdf](http://www.revenue.ie/en/about/foi/s16/value-added-tax/chpt-05/05-66.pdf)

ITV, (2015). "Cross-border shopping between these towns has historically been driven by exchange differentials, with direction of traffic fluctuating accordingly". [online] Available URL: <http://www.itv.com/news/utv/2016-08-01/brexit-vote-sees-increase-in-cross-border-shoppers/>

Jacobs, J.P., J.E. Ligthart, H. Vrijburg (2010): "Consumption tax competition among governments: Evidence from the United States", *International Tax and Public Finance*, 17, 271-294.

Jonker, N. C Folkertsma, H Blijenberg (2004). "An Empirical Analysis of Price Setting Behavior in the Netherlands in the Period 1998-2003 Using Micro Data". ECB Working Paper Series No. 413.

Jovanović, M. (2015), "The economics of international integration", accessed 12.11.2016 at <https://books.google.co.uk/books?id=dd0WCQAAQBAJ&pg=PA271&lpg=PA271&dq=luxembourg+fuel+tourism&source=bl&ots=rffjAo8Ld9&sig=bIweBL5a7GqaXlzTopcMNsYTfaA>

---

&hl=en&sa=X&ved=0ahUKEwi95er8-onQAhWCECwKHYJGC5Q4ChDoAQg-MAw#v=onepage&q=luxembourg%20fuel%20tourism&f=false

Kanbur, R., and M. Keen (1993), "Jeux sans frontières: tax competition and tax coordination when countries differ in size", *American Economic Review* 83, 877–892.

Keen, M. (2001), "Preferential regimes can make tax competition less harmful", *National Tax Journal* 54(4), 757-762.

Keen, M. (2002) "Some International Issues in Commodity Taxation" in The IMF Working Paper Series WP/02/124

Keen, M., K .A. Konrad (2013), "The Theory of International Tax Competition and Coordination", in *Handbook of Public Economics*, A. J. Auerbach, R. Chetty, M. Feldstein and E. Saez, Vol. 5, Ch. 5, pages 257-328.

Keen, M., Smith, S. (1996), "The future of value added tax in the European Union", *Economic Policy*, 23, 375-419.

Keuschnigg, Christian; S. Loretz, H. Winner (2014), "Tax competition and tax coordination in the European Union: A survey", Working Papers in Economics and Finance, University of Salzburg, No. 2014-04.

Klenk, (2015). 75th updated version, in: Sölch/Ringleb Umsatzsteuergesetz, C.H.Beck, p. 140. Quoted by Annette Beugel (2016), "The special schemes for small enterprises and farmers in EU VAT on the example of Germany" mimeo Master Thesis, Lund University.

Klun, M. and Blažić, H., 2005. Tax compliance costs for companies in Slovenia and Croatia. *FinanzArchiv: Public Finance Analysis*, 61(3), pp.418-437.

Konkurrence og Forbrugerstyrelsen, (2011). [online] Available URL: [http://dokumenter.forbrug.dk/konkurrencefremmende\\_forbrugeradf%C3%A6rd\\_2011/kap03.htm](http://dokumenter.forbrug.dk/konkurrencefremmende_forbrugeradf%C3%A6rd_2011/kap03.htm)

Kosten-beim-zahnarzt, (2016). [online] Available URL: <http://www.kosten-beim-zahnarzt.de/zahnbehandlung-kosten-in-oesterreich.html>

Kovacs, E. and G. Szocska, (2013). "'Vacation for your teeth' – dental tourists in Hungary from the perspective of Hungarian dentists", *British Dental Journal* 215, 415-418.

Kox, H.L., 2011. "Compliance costs and dissimilarity of VAT regimes in the EU." In A retrospective evaluation of elements of the EU VAT system, Final Report for DG TAXUD, contract TAXUD/2010/DE/328.

KPMG, (2016). [online] Available URL: <https://assets.kpmg.com/content/dam/kpmg/pdf/2016/07/mt-gaming-in-malta-keeping-ahead-of-the-game.pdf>

Labandeira et. al. (2006), "Taxing Tourism in Spain: Results and Recommendations", *Working paper*

Ladepeche, (2012). "Perthus-Andorre, le match des prix." *Ladepeche.fr*. [online] Available URL: <http://www.ladepeche.fr/article/2012/08/19/1421480-perthus-andorre-le-match-des-prix.html>.

Lash, Elizabeth (2015). "The European VAT: Good for tax revenue, bad for the commercial art market?", Center for Art Law. [online] Available URL: [https://itsartlaw.com/2015/03/04/el\\_vat/](https://itsartlaw.com/2015/03/04/el_vat/)

Latribunedelart, (2013). [online] Available URL: <http://www.latribunedelart.com/a-10-la-tva-a-l-importation-des-oeuvres-d-art-menace-le-patrimoine>

Lavik, R.; Nordlund, S. (2009), "Norway at the border of EU - cross border shopping and its implications" in *Nordic Studies on Alcohol and Drugs* 26.

Le Monde (23.9.2015), "La France toujours amoureuse du diesel", accessed 2.12.2016 at [http://www.lemonde.fr/les-decodeurs/article/2015/09/23/la-france-toujours-amoureuse-du-diesel\\_4768746\\_4355770.html](http://www.lemonde.fr/les-decodeurs/article/2015/09/23/la-france-toujours-amoureuse-du-diesel_4768746_4355770.html)

Le Quotidien (26.11.2016), "Vente de carburants : vers la fin d'une manne pour le Luxembourg", accessed 2.12.2016 at <http://www.lequotidien.lu/a-la-une/vente-de-carburants-vers-la-fin-dune-manne-pour-le-luxembourg/>

Leal, A., Lopez-Laborda, J. and Rodrigo, F., (2010). "Cross-border shopping: a survey *International Advances in Economic Research*". 16(2), pp.135-148. Leal et al.

Leal, A., López-Laborda, J., & Rodrigo, F. (2009). "Prices, taxes and automotive fuel cross-border shopping". *Energy Economics*, 31(2), 225-234.

Les Frontaliers (19.11.2014), "Budget carburant pour un frontalier: compter entre 100 et 300€/mois", accessed 2.12.2016 at <http://www.lesfrontaliers.lu/mobilite/budget-carburant-pour-un-frontalier-compter-entre-100-et-300eumois>

Les Frontaliers (29.11.2016), "Le tourisme à la pompe finalement marginal au Luxembourg!", accessed 2.12.2016 at <http://www.lesfrontaliers.lu/societe/le-tourisme-la-pompe-finalement-marginal-au-luxembourg>

Les Frontaliers (4.8.2016), "Faire le plein au Luxembourg, est-ce toujours plus intéressant?", accessed 2.12.2016 at <http://www.lesfrontaliers.lu/societe/faire-le-plein-au-luxembourg-est-ce-toujours-plus-interessant>

Les Frontaliers, (2015). "Faut-il faire ses courses au Luxembourg, en France ou en Belgique?" [online] Available URL: <http://www.lesfrontaliers.lu/finances/faut-il-faire-ses-courses-au-luxembourg-en-france-ou-en-belgique>

Lockwood Ben, and Giuseppe Migal., (2009). "Did the Single Market cause competition in excise taxes? Evidence fro EU countries." *The Economic Journal* 119: 406-442.

Lucas, V. (2004), "Cross-border shopping in a federal economy" in *Regional Science and Urban Economics*.

Lukić, Radojko, (2012). "The effects of cross-border tourist purchases on retail performace." *Singidunum Journal* 9 (2): 21-26.

Luxembourger Wort (17.10.2016), "Luxembourg losing its fuel tourism appeal", accessed 14.11.2016 at <http://www.wort.lu/en/business/vat-revenues-luxembourg-losing-its-fuel-tourism-appeal-5804c5f95061e01abe83a7ae>

Luxembourger Wort 2016a (25.01.2016), "Fuel consumption drops 10% in Luxembourg", accessed 14.11.2016 at <http://www.wort.lu/en/business/luxembourg-pump-prices-no-longer-so-attractive-fuel-consumption-drops-10-in-luxembourg-56a618f50da165c55dc51d50>

Lydia Westrich, (2008). [online] Available URL: <http://dipbt.bundestag.de/dip21/btp/16/16142.pdf#page=43>.

Makara, T.K., 2014. The compliance costs of value added tax for businesses in Botswana. Dissertation, Curtin University, Australia.

- 
- Marion, J. G., and Muehlegger, E., (2007). "Measuring Illegal Activity and the Effects of Regulatory Innovation: A Study of Diesel Fuel Tax Evasion."
- Mathä, T.Y., A. Porpiglia and M. Ziegelmeier, (2014). "Cross-border commuting and consuming: an empirical investigation", European Central Bank, <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1661.pdf>
- McAndrew, C., (2014) *El Mercado español del arte en 2014*, Fundación Arte y Mecenazgo, prepared by Dr. C. McAndrew, Arts Economics. <http://fundacionarteymecenazgo.org/wp-content/uploads/2014/11/El-mercado-espa--ol-del-en-2014-Arte-y-Mecenazgo-CIare-McAndrew.pdf>
- McCarthy, E. J. (1960). "Basic Marketing. A Managerial Approach." Homewood, IL: Richard D. Irwin.
- McLure, C. E. JR (2000), "Implementing subnational value added taxes on internal trade: the compensating VAT (CVAT)", *International Tax and Public Finance*, 7, 753-761.
- Mega 2013. "Μεγα Γεγονότα." Πηγαίνουν Βουλγαρία για τα μηνιαία ψώνια. 23 2. Accessed November 29, 2016. <http://www.megatv.com/megagegonota/article.asp?catid=27370&subid=2&pubid=30603530>.
- Messagero Veneto (1.08.2015), "Ma il diesel in Slovenia costa ancora molto meno", accessed 12.11.2016 at <http://messaggeroveneto.gelocal.it/udine/cronaca/2015/08/01/news/ma-il-diesel-in-slovenia-costa-ancora-molto-meno-1.11871530>
- Michalkó, Gábor, Tamara Rátz, Mátyás Hinek, and Mihály Tömöri., (2014). "Shopping tourism in Hungary during the period of the economic crisis." *Tourism Economics* 20 (6): 1319-1336.
- Mikesell, J., (1970). "Central Cities and Sales Tax Rate Differentials: The Border City Problem" in *National Tax Journal* 23(2), pp.206-213.
- Miki, B., (2011). "The effect of the VAT rate change on aggregate consumption and economic growth" in Center on Japanese Economy and Business, Working Paper Series No. 297
- Ministry of Economic Development and Technology of Slovenia (2017), "Cene naftnih derivatov", [http://www.mgrt.gov.si/si/delovna\\_podrocja/notranji\\_trg/nadzor\\_cen\\_naftnih\\_derivatov/cene\\_naftnih\\_derivatov/](http://www.mgrt.gov.si/si/delovna_podrocja/notranji_trg/nadzor_cen_naftnih_derivatov/cene_naftnih_derivatov/)
- Ministry of Economics, Development and Tourism of Greece (2017), "Evdomadiaio deltio episkopisis timon kausimon", [http://www.fuelprices.gr/files/EBDOM\\_DELTIO\\_03\\_02\\_2017.pdf](http://www.fuelprices.gr/files/EBDOM_DELTIO_03_02_2017.pdf)
- Mintz, J. (2010), "British Columbia's Harmonized Sales Tax: A Giant Leap in the Province's Competitiveness", *SPP Briefing Papers* 3(4), The School of Public Policy, University of Calgary.
- Mitsis, Konstantinos (2016). "Kein Pfand, keine Steuern Shoppen hinter der Grenze: Hier kriegen Sie den Einkaufswagen günstiger voll" [online] Available URL: [http://www.focus.de/finanzen/news/kein-pfand-keine-steuern-shoppen-hinter-der-grenze-hier-kriegen-sie-den-einkaufswagen-guenstiger-voll\\_id\\_5202498.html](http://www.focus.de/finanzen/news/kein-pfand-keine-steuern-shoppen-hinter-der-grenze-hier-kriegen-sie-den-einkaufswagen-guenstiger-voll_id_5202498.html)
- Müllbacher, S., Hye, R., Bettendorf, L., Rojas-Romagosa, H., Veenendaal, P., Baldini, M. and Adam, S., (2013). "A study on the economic effects of the current VAT rates

---

structure" Final Report; Study on behalf of the European Commission, TAXUD; in consortium with CAPP, CASE, DEPII, ETLA, IFO, IFS.

Nationmaster, "Motor vehicles per 1000 people", accessed 7.12.2016 at <http://www.nationmaster.com/country-info/stats/Transport/Road/Motor-vehicles-per-1000-people>

Nemec, J., Pompura, L. and Šagát, V., (2015). "Administrative Costs of Taxation in Slovakia. *European Financial and Accounting Journal*" 10(2), pp.51-61.

OECD, (1998). *Harmful Tax Competition: An Emerging Global Issue* [online] Available URL: <https://www.oecd.org/tax/transparency/44430243.pdf>

OECD, (2005). "Taxation and Social Security in Agriculture"

OECD, (2011). "Tax competition between sub-central governments" [online] Available URL: <https://www.oecd.org/tax/federalism/48817035.pdf>

Office of the Revenue Commissioners and the Central Statistics Office (2009). "The Implications of Cross Border Shopping for the Irish Exchequer" [online] Available URL: <http://oldwww.finance.gov.ie/viewdoc.asp?fn=/documents/Publications/Reports/2009/crossborderefb09.pdf>.

Oliver, Tracy and Scott Bartley, "Tax system complexity and compliance costs – some theoretical considerations" [http://archive.treasury.gov.au/documents/1009/PDF/05\\_Tax\\_Complexity\\_and\\_Compliance.pdf](http://archive.treasury.gov.au/documents/1009/PDF/05_Tax_Complexity_and_Compliance.pdf).

Oosterhuis, F. H., et al., (2008). "The use of differential VAT rates to promote changes in consumption and innovation."

Österle, A., P. Balázs & J. Delgado (2009). "Travelling for teeth: characteristics and perspectives of dental care tourism in Hungary" *British Dental Journal* 206, 425 – 428 [online] Available URL: <http://www.nature.com/bdj/journal/v206/n8/full/sj.bdj.2009.308.html>

Owen, J.; Battiau, P.; Charlet, A. (2012). "Organisation for Economic Cooperation and Development." *The OECD Observer*; Paris 284(First Quarter 2011): 20-22.

Palil, M.R., Ramli, R., Mustapha, A.F. and Hassan, N.S.A., 2013. "Elements of compliance costs: Lesson from Malaysian companies towards goods and services tax (GST)" *Asian Social Science*, 9(11), p.135-147.

PhantaNews, (2013). [online] Available URL: <https://phantanews.de/wp/2013/08/buchpreisbindung-im-internetzeitalter-kauf-in-england/>

Plamondon, R.E., Zussman, D. (1998), "The Compliance Costs of Canadas' Major Tax Systems and the Impact of Single Tax Administration", *Canadian Tax Journal*, 46, 761-785.

PokerNews, (2014). [online] Available URL: <https://www.pokernews.com/news/2014/11/new-vat-laws-could-cost-online-companies-tens-of-millions-19875.htm>

Poniatowski, G., Bonch-Osmolovskiy, M., and Belkindas, M., 2016. "Study to Quantify and Analyse the VAT Gap in the EU Member States: 2016 Final Report." CASE Network Studies and Analyses 0483, CASE-Center for Social and Economic Research.

---

Pope, J., 2001. "Estimating and alleviating the goods and services tax compliance cost burden upon small business." *Revenue Law Journal*, 11(1), pp.2-18.

Preisbindungsgesetz, (2015). [online] Available URL: <http://www.preisbindungsgesetz.de/content/gesetze/>

Preisbindungsgesetz, (2016). [online] Available URL: <http://www.preisbindungsgesetz.de/content/aktuelles/1129-gesetzesanderung-am-1-september-2016-in-kraft-getreten.htm>

Price Waterhouse (1994), "VAT and excise duties: changes in cross-border purchasing patterns following the abolition of fiscal frontiers on 1 January 1993", cited in <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:51994DC0584&from=EN>

Priceonomics, (2015). [online] Available URL: <https://priceonomics.com/which-major-has-the-most-expensive-textbooks/>

Prideaux B. (2005), "Factors affecting bilateral tourism flows", in *Annals of Tourism Research*. Vol. 32, No. 3, pp. 780–801.

PwC, (2015). [online] Available URL: [https://www.pwc.com/mt/en/industry-sectors/assets/remote\\_gaming\\_in\\_malta\\_2015\\_update.pdf](https://www.pwc.com/mt/en/industry-sectors/assets/remote_gaming_in_malta_2015_update.pdf)

Ramsey, F., (1927). "A contribution to the theory of taxation" *Economic Journal* 37.

Rasmussen, Jens Erik, Jesper Olesen, (2012). "og Nethandel koster staten dyrt, JyllandsOlesen, Jesper Postens erhvervsportal på nettet." [online] cited in [http://pure.au.dk/portal-asb-student/files/45609411/Gr\\_nsehandelskoncepter\\_i\\_en\\_momsretlig\\_belysningen\\_CMA\\_2012.pdf](http://pure.au.dk/portal-asb-student/files/45609411/Gr_nsehandelskoncepter_i_en_momsretlig_belysningen_CMA_2012.pdf)

Regione (2016), "Informazioni generali",

Reuters (21.09.2015), "Luxembourg says cannot tackle 'fuel pump tourism' yet", accessed 14.11.2016 at <http://www.reuters.com/article/us-climatechange-luxembourg-idUSKCN0RL28D20150921>

Rønning, Helge, Tore Slaatta, Olav Torvund, Håkon Larsen, Terje Colbjørnsen, (2012). [online] Available URL: <http://www.europeanbooksellers.eu/wp-content/uploads/2015/03/Books-at-which-Price.pdf>

Royal Economic Society (2009), "Europe's Single Market has kept taxes on alcohol and tobacco low", accessed 12.11.2016 at <http://www.res.org.uk/details/mediabrief/4247901/EUROPE-SINGLE-MARKET-HAS-KEPT-TAXES-ON-ALCOHOL-AND-TOBACCO-LOW.html>

RTL, (2016). "On a comparé les prix entre supermarchés belge et français et les résultats sont parfois stupéfiants: "200€ d'économies chaque mois". [online] Available URL: <http://www.rtl.be/info/belgique/economie/on-a-compare-les-prix-entre-supermarches-belge-et-francais-et-les-resultats-sont-parfois-stupefiants-200euro-d-economies-chaque-mois--794606.aspx>.

Sandford, C. Godwin, M. and Hardwick, P., (1989). "Administrative and Compliance Costs of Taxation." Bath: Fiscal Publications.

Sandford, C., and Hasseldine, J., (1992). "The Compliance Costs of Business Taxes in New Zealand" Wellington: Institute of Policy Studies, Victoria University of Wellington.

Schoonjans, B., Van Cauwenberge, P., Reekmans, C. and Simoens, G., (2011). "A survey of tax compliance costs of Flemish SMEs: magnitude and determinants. *Environment and Planning C: Government and Policy*" 29(4), pp.605-621.

Schulze, G. G. (2003), "International trade", in *A Handbook of Cultural Economics*, Ruth Towse (ed.), Edward Elgard Publishing.

Shaw, J.; Slemrod, J.; Whiting, J. (2008) "Administration and Compliance" in The Institute for Fiscal Studies

Sladkovska. Ivana., (2016). "Test potravín: kvalita nechutí nikomu". [online] Available URL: <https://www.aktuality.sk/clanok/353133/test-potravin-kvalita-nechuti-kazdemu/>

Smith, A., Islam, A. and Moniruzzaman, M., (2011). "Consumption taxes In Developing Countries - The case of the Bangladesh VAT." Centre for Accounting, Governance and Taxation Research, Victoria University of Wellington, Working Paper No. 82.

Smith, Z. (1999), "The revenue effect of changing alcohol duties", The Institute for Fiscal Studies, accessed 12.11.2016 at [www.ifs.org.uk/bns/bn4.pdf](http://www.ifs.org.uk/bns/bn4.pdf)

Smulders, S., Stiglingh, M., Franzsen, R. and Fetcher, L., (2012). "Tax compliance costs for the small business sector in South Africa-establishing a baseline." *eJournal of Tax Research*, 10(2), p.184-226.

Snijder, M.A., (1981). "De invloed van de fiscus op het midden- en kleinbedrijf." Deventer: FED Publishers.

Snowdon, C. (2013), "The Proof of the Pudding: Denmark's fat tax fiasco" in IEA Current Controversies Paper No. 42.

Sondagsavisen, (2015). [online] Available URL: <http://www.sondagsavisen.dk/bolig/boligogpenge/2015-02-05-moms-og-toldpligtige-pakker-slipper-gennem-naleojet/>

Speigel, (2016). [online] Available URL: <http://www.spiegel.de/gesundheit/diagnose/zahnarzt-was-kranken-kassen-fuer-krone-inlay-implantat-zahlen-a-1093824.html>

Susila, B. and Pope, J., (2012). "The tax compliance costs of large corporate taxpayers in Indonesia." *Australian Tax Forum* 27(4), pp. 719-772.

Tait, A.A. (1988), *Value Added Tax: International Practice and Problems*, Fons Monetari Internacional.

Tauber, G., (1984). "Folgekosten der Besteuerung - Eine Theoretische und empirische Analyse." Spardorf: Wilfer.

TEFAF, (2016). "TEFAF Art Market Report 2016" ed Dr. C. Mc Andrew.

Terra, Ben, and Julie Kajus, (2015). "Commentary - A Guide to the Recast VAT Directive" p. 5072. Quoted by Annette Beugel (2016), The special schemes for small enterprises and farmers in EU VAT on the example of Germany, mimeo Master Thesis, Lund University.

Tiebel, C., (1986). "Überwiltzte Kosten der Gesetze" - Eine empirische Analyse der Folgekosten für den Markt. Göttingen: Vandenhoeck und Ruprecht.

Times of Malta, (2011). [online] Available URL: <http://www.timesofmalta.com/articles/view/20110325/local/malta-is-europe-s-gambling-hub-brussels.356481>

- Top Universities, (2015). [online] Available URL: <https://www.topuniversities.com/student-info/studying-abroad/where-can-you-study-abroad-english>
- Topzahnarzt-Ungarn, (2016). [online] Available URL: <http://www.topzahnarzt-ungarn.de/zahnaerzte-in-ungarn>
- Tosun, M.S., M.L. Skidmore (2007), "Cross-Border Shopping and the Sales Tax: An Examination of Food Purchases in West Virginia", *B.E. Journal of Economic Analysis & Policy*, 7.
- Turner, L. (2008). "Cross-border dental care: 'dental tourism' and patient mobility", *British Dental Journal* 204, 553-554 [online] Available URL: <http://www.nature.com/bdj/journal/v204/n10/full/sj.bdj.2008.403.html>
- Uhl, S., (2007). "Noch souverän? Über Mythen und Abhängigkeiten in der europäischen Steuerpolitik" in *Steuern im europäischen Wettbewerb. Unterbieten oder gemeinsam gestalten?* [online] Available URL: <http://library.fes.de/pdf-files/id/04514.pdf>.
- UN Department of Economic and Social Affairs, (2011). [online] Available URL: [http://www.un.org/esa/population/publications/contraceptive2011/wallchart\\_front.pdf](http://www.un.org/esa/population/publications/contraceptive2011/wallchart_front.pdf)
- UNCTAD, (2016). "In search of cross-border e-commerce trade data", [online] Available URL: [http://unctad.org/en/PublicationsLibrary/tn\\_unctad\\_ict4d06\\_en.pdf](http://unctad.org/en/PublicationsLibrary/tn_unctad_ict4d06_en.pdf).
- Unione Petrolifera (2017), „Struttura del prezzo dei carburanti“, [http://www.unione petrolifera.it/?page\\_id=303](http://www.unione petrolifera.it/?page_id=303)
- UTV, (2015). [online] Available URL: <http://utv.ie/News/2015/02/18/Increase-in-cross-border-shopping-from-north-to-south-31998>
- Valorie A Crooks Paul Kingsbury, Jeremy Snyder and Rory Johnston, (2010). "What is known about the patient's experience of medical tourism? A scoping review"
- van Noordenne, C-W, (1995). "New VAT Rules for Second-hand goods, Works of Art, Collectors' Items and Antiques", *EC Tax Review*, Issue 1, pp. 53-55
- Varsano, R., (1995). "A tributação do Comércio interestadual: ICMS versus ICMS partilhado," Texto par Discussão No. 382, Instituto de Pesquisa Economica Aplicada, Brasilia.
- Vatlive, (2016). [online] Available URL: <http://www.vatlive.com/vat-news/belgium-vat-online-betting-july-2016/>
- Vitek, L., Pavel, J. and Krbova, J., (2004). "Effectiveness of the Czech tax system." *Baltic Journal of Economics*, 4(2), pp.55-71.
- VOXeup, (2009). "Price Wars: Shopping without borders." [online] Available URL: <http://www.voxeurop.eu/en/content/article/1331-shopping-without-borders>
- Walsh, M; Jones, J., (1988). "More evidence on the 'Border Tax' Effect: The case of West Virginia, 1979-84" in *National Tax Journal* 41(2), pp.261-65.
- Wesselbaum-Neugebauer, C (2010). "Wirkungen reduzierter Mehrwertsteuersätze auf nationale Steuerstrukturen im europäischen Kontext unter Berücksichtigung der Abgrenzung und Erhebungsproblematik" Habilitationsschrift in Economics, Schumpeter School of Business and Economics. [online] Available URL: <http://elpub.bib.uni-wuppertal.de/edocs/dokumente/fbb/wirtschaftswissenschaft/habi2010/wesselbaumneugebauer/hb1002.pdf>.



Wooster, R. B., J. W. Lehner (2010), "Reexamining the border tax effect: A case study of Washington State", *Contemporary Economic Policy*, 28, 511-523.

World Bank Group, (2017). "Paying Taxes 2017." Washington DC: World Bank and PwC.

World Economic Forum, (2015). "Travel and tourism competitiveness report 2015", <http://reports.weforum.org/travel-and-tourism-competitiveness-report-2015/>

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## Appendix I: Preliminary questions for Member States' VAT authorities

### *Cross-border shopping*

Are you aware of any significant levels of cross-border shopping, involving your residents leaving the country to make purchases in other Member States, or residents of other Member States coming into your country to make purchases? Are you aware of any issues this is causing (for example, fiscal losses, economic distortions, complaints from industry bodies)? If so, please provide details. If possible, please also provide any relevant data that you may have available.

### *Distance sales*

Are you aware of any significant levels of distance sales into your country, involving suppliers in other Member States that either fall below your threshold for VAT registration for distance sales, or that fail to comply with this threshold? Are you aware of any issues this is causing (for example, fiscal losses, economic distortions, complaints from industry bodies)? If so, please provide details. If possible, please also provide any relevant data that you may have available.

### *Flat-rate scheme for farmers*

Are you aware of any farmers using the flat-rate VAT scheme either (i) entering your country, or (ii) leaving your country, to purchase agricultural inputs at a lower cost? Are you aware of any issues this is causing (for example, fiscal losses, economic distortions, complaints from industry bodies)? If so, please provide details. If possible, please also provide any relevant data that you may have available.

### *Auction houses and second-hand goods*

Are you aware of any cost or benefit to your auction industry, relative to other Member States, arising from the competitiveness of your VAT regime for qualifying second-hand goods, works of art, collectors' items and antiques? If so, please provide details. If possible, please also provide any relevant data that you may have available.

## Appendix II: Preliminary literature review

Title	Source	Summary
<b>European Commission</b>		
<i>The Concept of Tax Gaps – Report on VAT Gap estimations - 2016</i>	<a href="http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/tgpg_report_en.pdf">http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/tgpg_report_en.pdf</a>	<ul style="list-style-type: none"> <li>• A report prepared by the Fiscalis Tax Gap Project Group to provide an introduction to the methodologies currently applied to estimate tax gaps, with a focus on VAT gap estimations.</li> <li>• The report finds that the reasons for seeking to measure the VAT gap vary. For instance, one might want to quantify the main channels through which VAT evasion takes place, to assess (ex-ante) the likely effects of reform options or to monitor and evaluate the impact of such reforms and other counter-measures after they have been introduced.</li> <li>• It concludes that there is no 'one-fits-for-all' VAT gap indicator or 'one-fits-for-all' estimation methodology. The choice for a methodology largely depends on the purposes of the estimation and the available resources.</li> </ul>
<i>Update Report to the Study to quantify and Analyse the VAT Gap in 26 EU Member States - 2015</i>		<ul style="list-style-type: none"> <li>• The report provides estimates of the VAT Gap for 26 EU Member States for 2013, as well as revised estimates for the period 2009-2012. It is a follow-up to the 2014 study.</li> <li>• Based on VAT collection figures from 2013, the overall difference between the expected VAT revenue and the amount actually collected did not improve on 2012. While 15 Member States including Latvia, Malta and Slovakia saw an improvement in their figures, 11 Member States such as Estonia and Poland saw deterioration.</li> <li>• The total amount of VAT lost across the EU is estimated at EUR 168 billion. This equates to 15.2% of revenue loss due to fraud and evasion, tax avoidance, bankruptcies, financial insolvencies and miscalculation in 26 Member States.</li> </ul>
<i>Study on implementing the VAT 'destination principle' to intra-EU B2B supplies of goods - 2015</i>	<a href="http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/ey_study_destination_principle.pdf">http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/ey_study_destination_principle.pdf</a>	<ul style="list-style-type: none"> <li>• The study analyses five policy options for tackling two essential issues in the current VAT system: the additional compliance costs borne by businesses that conduct cross-border trade when compared to those businesses that only trade domestically and the occurrence of VAT fraud.</li> <li>• The five policy options are designed to enable the implementation of a destination based VAT system across the EU. The performance of each option across the various areas of assessment was considered.</li> </ul>
<i>Assessment of the application and the impact of the VAT exemption for importation of small consignments - 2015</i>	<a href="http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/lvcr-study.pdf">http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/lvcr-study.pdf</a>	<ul style="list-style-type: none"> <li>• The VAT exemption on the importation of small consignments below the EUR 10/22 threshold is implemented by all 28 EU Member States.</li> <li>• The Study presents an overview of the legal framework and procedures in place in the 28 EU Member States as well as an economic analysis of the low value consignments market from 1999 until 2013, including an estimation of the potential VAT foregone by tax authorities due to this exemption</li> <li>• There is evidence to demonstrate major competitive distortions resulting from the LVCR. The impacts of such distortions include the considerable loss of VAT revenues to Member States as well as reports of business closures, business relocations and booming fulfilment industries outside the EU.</li> </ul>
<i>VAT rates structure - 2015</i>	<a href="http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/vat_rates_structure_final_report.pdf">http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/vat_rates_structure_final_report.pdf</a>	<ul style="list-style-type: none"> <li>• The study assesses the main economic effects of the current VAT rates structure and the economic effects that would follow from abolishing zero and reduced rates, under various hypotheses, including the introduction of compensatory measures.</li> <li>• Given the heterogeneous VAT rates system in the EU-27, the reform scenarios have very different effects in the different Member States. Relating specifically to cross-border issues, the study concludes:</li> <li>• Concerning the medium-run macroeconomic consequences of reforms of the VAT rates structure, harmonising diverging VAT rates within each Member State does not necessarily have significant effects, as both VAT exemptions and large rate differences between Member States continue to exist. However, if possible efficiency gains generated by simpler VAT</li> </ul>

		rates systems are allowed for, it finds larger positive effects on Member States' economies.
<i>Study on the economic effects of the current VAT rules for passenger transport - 2015</i>	<a href="http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/report_passenger_transport.pdf">http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/report_passenger_transport.pdf</a>	<ul style="list-style-type: none"> <li>The report contributes to the debate on possible options for reform by providing a summary of the current state of the passenger transport market, a review of the current VAT regime, an assessment of the impact of many of the distortions and an evaluation of some alternative VAT solutions on which a future improved VAT regime for the transport sector might be based.</li> </ul>
<i>Update Report to the Study to quantify and analyse the VAT Gap in the EU-27 Member States - 2014</i>	<a href="http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/vat_gap2012.pdf">http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/vat_gap2012.pdf</a>	<ul style="list-style-type: none"> <li>This report provides estimates of the VAT Gap for 26 EU Member States for 2013, as well as revised estimates for the period 2009-2012. It is a follow-up to the 2013 study.</li> <li>An estimated EUR 177 billion in VAT revenues was lost due to non-compliance or non-collection in 2012, equating to 16% of total expected VAT revenue of 26 Member States<sup>1</sup>.</li> <li>The main trends in the VAT Gap are also presented, along with an analysis of the impact that the economic climate and policy decisions had on VAT revenues.</li> </ul>
<i>Study to quantify and analyse the VAT Gap in the EU-27 Member States - 2013</i>	<a href="http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/vat-gap.pdf">http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/vat-gap.pdf</a>	<ul style="list-style-type: none"> <li>The study updates VAT Gap estimates for 2000-2006 produced in the Reckon Report of 2009 and by providing estimates for the VAT Gap for the period 2007-2011.</li> <li>An estimated EUR 193 billion in VAT revenues (1.5% of GDP) was lost due to non-compliance or non-collection in 2011. The study sets out detailed data on the gap between the amount of VAT due and the amount actually collected in 26 Member States between 2000-2011.</li> <li>While non-compliance is certainly an important contributor to this revenue shortfall, the VAT Gap is not only due to fraud. Unpaid VAT also results from bankruptcies and insolvencies, statistical errors, delayed payments and legal avoidance, amongst other things. Therefore, effectively tackling the VAT Gap requires a multi-pronged approach.</li> </ul>
<i>Study on the feasibility and impact of a common EU standard VAT return -2013</i>	<a href="http://ec.europa.eu/taxation_customs/common/publications/studies/index_en.htm">http://ec.europa.eu/taxation_customs/common/publications/studies/index_en.htm</a>	<ul style="list-style-type: none"> <li>This study considers the feasibility and impact of a common EU standard VAT return</li> <li>Currently, due to a lack of detailed European VAT rules regarding VAT returns, VAT returns and submission mechanisms differ among Member States. This significantly increases the compliance burden on businesses.</li> <li>The study consists of two main parts, the first being a definition of proposed standards with respect to: <ul style="list-style-type: none"> <li>information requirements to be included in the common EU standard VAT return;</li> <li>a common approach to submission of VAT returns, including e-filing;</li> <li>a common approach to correction of errors in VAT returns.</li> </ul> </li> <li>The second part of the study is an assessment of the economic impact that the common EU standard VAT return could have on businesses and tax authorities in the EU-27.</li> </ul>
<i>Study on VAT in the public sector and exemptions in the public interest (final report of a follow up study) - 2013</i>	<a href="http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/vat_public_sector_exemptions_en.pdf">http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/vat_public_sector_exemptions_en.pdf</a>	<p>The report builds on the 2011 study (below):</p> <ul style="list-style-type: none"> <li>The addition of the postal sector for modelling purposes to the five public core sectors which were modelled in the previous study (waste/sewage disposal, education, cultural services, hospitals and broadcasting)</li> <li>The examination of variants of three options previously identified by the study</li> <li>A methodological improvement has been made regarding the economic modelling used for the assessment of the economic impact.</li> <li>Findings include potential economic gains in our economic model of up to 0.34% of GDP, corresponding to almost EUR 38 billion from a full taxation solution for all Member States in the covered sectors. By removing a significant distortion in the economy, we end up utilising resources better, thus spurring growth.</li> </ul>
<i>A retrospective evaluation of the elements of the VAT system -</i>	<a href="http://ec.europa.eu/taxation_customs/resources/documents/common/">http://ec.europa.eu/taxation_customs/resources/documents/common/</a>	<ul style="list-style-type: none"> <li>This evaluation looked into the design and implementation of certain VAT arrangements, assessing their effectiveness and efficiency in terms of results and impacts they had created. It examined their relevance and their coherence with the smooth</li> </ul>

2011	publications/studies/report_evaluation_vat.pdf	<p>functioning of the single market and the requirement to avoid distortion of competition specified in Article 113 of the Treaty on the Functioning of the European Union.</p> <ul style="list-style-type: none"> <li>• The idea of a consumption tax that underlies and is largely embodied in the EU VAT system is a good one: such a tax is efficient, and avoids distorting business decisions and the internal market. However, there are significant shortcomings with the existing system.</li> <li>• Exemptions, a proliferation of reduced rates, and significant variation in rules and procedures across countries increase compliance costs for businesses, distort trade and business and consumer choices, and reduce productivity and GDP.</li> </ul>
VAT in the public sector and exemptions in the public interest - 2011	<a href="http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/vat_public_sector.pdf">http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/vat_public_sector.pdf</a>	<ul style="list-style-type: none"> <li>• The study analyses and measures the issues arising from the current VAT treatment of public bodies and activities carried out in the public interest.</li> <li>• Where differential VAT treatment exists between public activities and private activities, there is a risk of distortion of competition between the public and private activities. The distortion will reduce economic efficiency and welfare. The report finds that two types of distortions exist as a result of differential VAT treatment: the input side as a reduced incentive of public entities to outsource support services/back office-services and the output side through reduced competitiveness of private entities vis-à-vis public entities.</li> <li>• A number of EU Member States have refund schemes in place to address the former. The report estimates an EU-wide potential economic gain of 0.01 % of GDP (a little more than EUR 1bn) of remaining MS adopting similar schemes.</li> <li>• However, given the drawbacks of refund schemes the report looks to recommend a full taxation solution where VAT is applied to public entities' output, and at the same time the solution allows for public entities to fully deduct its incoming VAT. In this way, public and private entities are treated equally regarding VAT. This eliminates both distortions. The report finds a potential economic gain of 0.04 percent of GDP up to 0.19 percent of GDP, the latter corresponding to almost EUR 21 billion from a full taxation solution for all Member States in the covered sectors.</li> </ul>
DG TAXUD / Copenhagen Economics – Study on reduced VAT applied to goods and services in the Member States of the European Union - 2007	<a href="http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/how_vat_works/rates/study_reduced_vat.pdf">http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/how_vat_works/rates/study_reduced_vat.pdf</a>	<ul style="list-style-type: none"> <li>• This study examines the theoretical and empirical merits of four different arguments for reduced VAT rates.</li> <li>• Two based on efficiency grounds: reduced VAT can increase efficiency by increasing productivity or by reducing structural unemployment.</li> <li>• Two based on equity grounds: reduced VAT can enhance equity by improving the income distribution or by making particular products more accessible to the entire population.</li> <li>• This study argues that there is a strong general argument for having uniform VAT rates in the European Union. Uniform rates is a superior instrument to maintain a high degree of economic efficiency, to minimise otherwise substantial compliance costs and to smooth the functioning of the internal market. However, there are exceptions. There are real and valid economic arguments for extending lower VAT rates to some very specific sectors in member states characterised by specific economic structures.</li> <li>• The study notes that for businesses, there are very few cases where differences in VAT rates across countries can be exploited to reduce their own production costs. However, there is a large variety of situations for consumers.</li> <li>• The main conclusion is that the uniform rate scenario tends to be the most beneficial seen from an internal market perspective. Focussing on the cross-country differentials in VAT rates that actually matter for cross-border trade (which are typically standard rated), the average numerical difference between the 25 member states is now plus 5 percentage points.</li> </ul>
<b>Academic</b>		
Bird, R.M. and Gendron, P.P., 1998. <i>Dual VATs and cross-border trade: Two problems, one solution?</i> . International Tax and Public Finance, 5(3), pp.429-		<ul style="list-style-type: none"> <li>• In recent years, concern has been expressed over whether it is desirable or even possible for both national and subnational governments in federal countries such as India, Argentina, and Russia to impose VATs.</li> </ul>

442.	<ul style="list-style-type: none"> <li>• One reason for thinking that such subnational VATs are unlikely to be workable on a destination basis is the problem of cross-border trade. Of course, this same problem also arises within the European Union, where there is no "EU" VAT.</li> <li>• Drawing upon Canadian experience, the paper argues that not only is it possible to have "two-tier" or "dual" VATs on a destination basis in a single country, but that the existence of dual VATs may help deal with some of the problems of cross-border trade.</li> </ul>
Bygvrå, S., 1998. <i>The road to the single European market as seen through the Danish retail trade: Cross-border shopping between Denmark and Germany</i> . International Review of Retail, Distribution and Consumer Research, 8(2), pp.147-164.	<ul style="list-style-type: none"> <li>• Traditionally, Denmark has a tax structure in which VAT and excise duties played a significant role. This has caused large price differences between goods in shops in Denmark and the same goods in shops in the neighbouring country of Germany.</li> <li>• This paper shows how Danish-German cross-border shopping has reacted to changing conditions during the first decades of the Danish membership of the EEC up to the establishment of the Single European Market in 1993 and during the years immediately following.</li> <li>• It is shown that, even with a large difference in VAT rates, the cross-border shopping done by Danes involves hardly anything but items subject to excise duty. Even since the inception of the Single European Market, the border has continued to form a barrier with respect to other purchases. The cross-border shopping done by Germans is not caused by price differences to the same extent, but is mainly the result of difference in the range of products available on the other side of the border. Moreover, the surveys have shown that the volume of cross-border shopping done by Danes is significantly larger than that done by Germans.</li> </ul>
Genser, B., Haufler, A. and Sørensen, P.B., 1997. <i>Indirect taxation in an integrated Europe: Is there a way of avoiding trade distortions without sacrificing national tax autonomy?</i> . In Trade and Tax Policy, Inflation and Exchange Rates (pp. 263-294). Springer Berlin Heidelberg.	<ul style="list-style-type: none"> <li>• The paper discusses the main arguments for destination-versus origin-based commodity taxation in the European Community's Internal Market.</li> <li>• Destination-based solutions distort commodity trade in the Community because cross-border purchases by final consumers can only be taxed in the origin country. On the other hand, an origin-based general consumption tax is neutral in a European context and it can be combined with destination-based taxation in third countries in a non-distortionary way.</li> <li>• Furthermore, it is shown that the introduction of capital mobility does not affect the neutrality of an origin-based consumption tax.</li> </ul>
Davis, L.W., 2011. <i>The effects of preferential vat rates near international borders: evidence from Mexico</i> . National Tax Journal, 64(1), pp.85-104.	<ul style="list-style-type: none"> <li>• Most goods and services in Mexico are subject to a 16 percent value added tax (VAT). However, within 20 kilometers of the border with the United States, the VAT rate is 11 percent. This preferential rate was implemented by the Mexican Department of Revenue to reduce cross-border shopping in the United States. However, the tax differential also creates an unusual distortion within Mexico, encouraging Mexicans to travel to the preferential tax zone for shopping.</li> <li>• This paper performs an empirical test of tax avoidance using the Mexican Economic Census, comparing towns on either side of the 20km threshold using a regression discontinuity design. The analysis provides evidence of a modest but statistically significant distortion in economic activity toward the preferential tax zone.</li> </ul>
Leal, A., Lopez-Laborda, J. and Rodrigo, F., 2010. <i>Cross-border shopping: a survey</i> . International Advances in Economic Research, 16(2), pp.135-148.	<ul style="list-style-type: none"> <li>• This paper undertakes a review of the most important literature on the phenomenon of fiscally induced cross-border shopping. Using principal theoretical models, the study concentrates on applied literature.</li> <li>• Firstly, the elements common to the diverse applications are described, and then a detailed analysis of the research undertaken into cross-border shopping for alcoholic drinks, tobacco, fuel, and lotteries is provided.</li> <li>• The paper concludes with a reference to the interaction between cross-border purchases and those affected over the internet.</li> <li>• The empirical results support the principal result of the theoretical literature: the tax differentials between neighbouring territories induce consumers to purchase in the</li> </ul>

	<p>territory where taxation is lower, on the condition that the tax saving compensates for the transport costs associated with the travel made by the purchaser in order to take advantage of the lower taxation.</p>
<p>Kessing, S.G. and Koldert, B., 2013. <i>Cross-border shopping and the Atkinson-Stiglitz theorem</i>. <i>International Tax and Public Finance</i>, 20(4), pp.618-630.</p>	<ul style="list-style-type: none"> <li>This paper introduces cross-border shopping and indirect tax competition into a model of optimal taxation. The Atkinson-Stiglitz result that indirect taxation cannot improve the efficiency of information-constrained tax-transfer policies, and that indirect taxes should not be differentiated across goods, is shown to hold in this case even if countries are asymmetric.</li> <li>However, if the tax system must contain indirect taxation, differentiated indirect tax rates arise in the equilibrium and restricting differentiated indirect taxation can be welfare-increasing.</li> </ul>
<p>Genschel, P. and Schwarz, P., 2011. <i>Tax competition: a literature review</i>. <i>Socio-Economic Review</i>, 9(2), pp.339-370.</p>	<ul style="list-style-type: none"> <li>This article reviews the social science literature on tax competition in three steps. <ol style="list-style-type: none"> <li>The first step is to look at the baseline model of tax competition on which most of the literature implicitly or explicitly builds. The key feature is that governments in a context of open borders will engage in wasteful competition for mobile economic assets and activities through tax reductions.</li> <li>The second step is to focus more closely on tax-induced cross-border mobility. Do tax payers actually shift assets and activities across borders in response to differences in taxation? The main message of the literature is that the scope for tax arbitrage depends crucially on the legal rules governing the taxation of cross-border activities and that the intensity of tax arbitrage varies greatly across different taxes.</li> <li>The final step is to analyze government reactions to tax arbitrage. Do they engage in competitive tax cutting as predicted by the baseline model?</li> </ol> </li> <li>The literature discusses various strategies of tax competition and demonstrates that different governments use them to different degrees across different taxes. It also shows, however, that governments increasingly engage in tax cooperation to reign in tax arbitrage and competition. While off to a slow start in the 1960s, tax cooperation has gained momentum in recent years, especially after the financial crisis in 2008.</li> </ul>
<p>Leal, A., López-Laborda, J. and Rodrigo, F., 2009. <i>Prices, taxes and automotive fuel cross-border shopping</i>. <i>Energy Economics</i>, 31(2), pp.225-234.</p>	<ul style="list-style-type: none"> <li>The aim of the paper is to determine whether differences in automotive fuel prices among neighboring Autonomous Communities (i.e. Spanish political-administrative regions) affect the decisions taken by individuals regarding the region in which to purchase fuel.</li> <li>The paper finds empirical evidence to demonstrate a positive effect of the relative prices in the neighboring Communities and vehicle registrations, and also a negative effect of prices in Aragon, upon the acquisition of diesel in this region. In the case of Catalonia, some evidence suggests that the price effect may have been strengthened following the introduction of the regional tranche of the HRST in August 2004.</li> </ul>
<p>Lockwood, B. and Migali, G., 2009. <i>Did the single market cause competition in excise taxes? Evidence from EU countries</i>. <i>The Economic Journal</i>, 119(536), pp.406-429.</p>	<ul style="list-style-type: none"> <li>Tax competition theory predicts that the introduction of the EU Single Market in 1993 should have caused excise tax competition and thus increased strategic interaction in the setting of excise taxes among EU countries.</li> <li>This prediction is tested using a panel data set of 12 EU countries over the period 1987-2004.</li> <li>The authors find that for excise duties on still and sparkling wine, beer and ethyl alcohol, strategic interaction significantly increased after 1993. There is weaker evidence of increased interaction in cigarette taxes, possibly because cigarettes are widely smuggled, giving rise to tax competition even before the Single Market.</li> </ul>
<p>Jacobs, J.P., Ligthart, J.E. and Vrijburg, H., 2010. <i>Consumption tax competition among governments: evidence from the United States</i>. <i>International Tax and Public</i></p>	<ul style="list-style-type: none"> <li>The paper contributes to literature that estimates tax reaction functions of governments competing with other governments.</li> <li>It analyses consumption tax competition between US states, employing a panel of state-level data for 1977-2003. Specifically, it look at the impact of a state's spatial</li> </ul>

Finance, 17(3), pp.271-294.	<p>characteristics (i.e., its size, geographic position, and border length) on the strategic interaction with its neighbours, calculating an average effective consumption tax rate (which covers both sales and excise taxes).</p> <ul style="list-style-type: none"> <li>The study finds evidence for strategic interaction among state governments, but only partial support for the effect of spatial characteristics on tax setting. Further, tax competition seems to have lessened in the 1990s compared to the early 1980s.</li> </ul>
Nielsen, S.B., 2001. <i>A simple model of commodity taxation and cross-border shopping</i> . The Scandinavian Journal of Economics, 103(4), pp.599-623.	<ul style="list-style-type: none"> <li>This paper sets up a model in which two countries, differing in geographical extent, engage in commodity tax competition originating in opportunities for cross-border shopping.</li> <li>Unexpected results suggest that: i) pure profits accrue to sellers near the border, but subjecting them to tax may lower the country's total tax revenue and ii) the volume of cross-border shopping may well increase.</li> </ul>
Asplund, M., Friberg, R. and Wilander, F., 2007. <i>Demand and distance: evidence on cross-border shopping</i> . Journal of public Economics, 91(1), pp.141-157.	<ul style="list-style-type: none"> <li>An important issue for commodity taxation is the extent to which changes in foreign taxes affect the extent of cross-border shopping and thereby, domestic tax revenue.</li> <li>Using data from Swedish municipalities, the authors estimate how responsive alcohol sales are to foreign prices, and relate the sensitivity to the location's distance to the border. Typical results suggest that the elasticity with respect to the foreign price is around 0.3 in the border region; moving 150 (400) km inland reduces the cross-price elasticity to 0.2 (0.1).</li> <li>Estimates suggest that a recent Danish cut in the spirits tax reduced Swedish tax revenues from spirits sales by more than 2%, and that an attempt by Sweden to cut taxes in response would reduce tax revenues further.</li> </ul>
Tosun, M.S. and Skidmore, M.L., 2007. <i>Cross-border shopping and the sales tax: An examination of food purchases in West Virginia</i> . The BE Journal of Economic Analysis & Policy, 7(1).	<ul style="list-style-type: none"> <li>In this article, new evidence of cross-border shopping in response to sales taxation is presented.</li> <li>The study notes that while several instructive studies provide estimates of the cross-border shopping effect, this paper utilizes a unique opportunity to evaluate the effect of a large discrete change in sales tax policy.</li> <li>Using county level data on food sales and sales tax rates for West Virginia over the 1988-1991 period they estimate that for every one-percentage point increase in the county relative price ratio due to the sales tax change, per capita food sales decreased by about 1.38 percent.</li> </ul>
Ballard, C.L. and Lee, J., 2007. <i>Internet purchases, cross-border shopping, and sales taxes</i> . National Tax Journal, pp.711-725.	<ul style="list-style-type: none"> <li>This paper investigates the relationship between retail sales taxes and internet purchases in a model that allows for cross-border shopping.</li> <li>The authors estimate the probability that a consumer engages in internet shopping, controlling for county fixed effects and a variety of demographic variables. Using variation in sales-tax rates by county they identify the effect of the sales-tax rate in the home county, as well as the effect of differences in sales-tax rates between adjacent counties.</li> <li>Estimates support the hypothesis that consumers in counties with higher sales-tax rates are more likely to shop on the internet, all else equal.</li> <li>In addition, consumers whose home county is adjacent to a county with a lower sales-tax rate are less likely to use the Internet for shopping, all else equal. This is interpreted as reflecting the effect of cross-border shopping.</li> </ul>
Garrett, T.A. and Marsh, T.L., 2002. <i>The revenue impacts of cross-border lottery shopping in the presence of spatial autocorrelation</i> . Regional Science and Urban Economics, 32(4), pp.501-519.	<ul style="list-style-type: none"> <li>In this paper the authors perform analysis of cross-border lottery shopping.</li> <li>They directly estimate the lottery revenue gains and losses between a state and its neighbours using models that account for spatial dependence between cross-sectional units.</li> <li>The paper finds that cross-border lottery shopping can lead to significant reductions in lottery revenue. Given that 37 states rely on lotteries to fund certain state programs, the results have policy implications for state officials and lottery operators.</li> </ul>
Rork, J.C., 2003. <i>Coveting thy neighbors' taxation</i> . National Tax Journal, pp.775-787.	<ul style="list-style-type: none"> <li>The paper builds on previous research that finds that a state's overall tax burden is dependent on that of neighbouring states.</li> <li>The paper disaggregates a state's tax burden into its individual components, demonstrating that during the period</li> </ul>



		<p>of 1967–1996, state taxes with a mobile tax base had positive response rates as high as 60 percent.</p> <ul style="list-style-type: none"> <li>• A 10 percent increase in neighbouring states' rates was met by an increase of up to 6 percent in the home state's rate.</li> <li>• Taxes with relatively immobile tax bases exhibit negative responsiveness, meaning that states respond to rate increases in neighbouring states by decreasing home rates.</li> </ul>
Devereux, M.P., Lockwood, B. and Redoano, M., 2007. <i>Horizontal and vertical indirect tax competition: Theory and some evidence from the USA</i> . Journal of Public Economics, 91(3), pp.451-479.		<ul style="list-style-type: none"> <li>• This US study provides a theoretical framework for analysing simultaneous vertical and horizontal competition in excise taxes, based on US state and federal excise taxes on cigarettes and gasoline.</li> <li>• Results are generally consistent with theory (when the characteristics of the markets for the goods are taken into account) in that for neither good do federal excise taxes affect state taxes. Taxes in neighbouring states have a significant and large effect in the case of cigarettes and a weaker effect in the case of gasoline.</li> </ul>
Burge, G. and Rogers, C., 2011. <i>Local option sales taxes and consumer spending patterns: Fiscal interdependence under multi-tiered local taxation</i> . Regional Science and Urban Economics, 41(1), pp.46-58.		<ul style="list-style-type: none"> <li>• This study investigates the multi-jurisdiction and multi-tier dimensions of local option sales taxes (LOSTs) in the US, where 20 US states currently allow both county and municipal governments to impose sales taxes on purchases within their jurisdictions.</li> <li>• The authors estimate own-rate and cross-tier elasticities using data from 1993 to 2006 for Oklahoma municipalities and counties, using a variety of panel data techniques including first differenced and random trends models.</li> <li>• Results show that both are significant determinants of consumer spending patterns. Additionally, accounting for localized tax rate differentials reveals important nuances in the interpretation of cross-tier and own-rate elasticities.</li> <li>• The results suggest that municipal LOST revenues can be significantly affected by the rate setting decisions of parent counties as well as nearby regional retail centers. Therefore, the ability of municipal governments to control LOST revenues by varying their own LOST rate is affected by both vertical and horizontal fiscal spillovers.</li> </ul>
Mesdom, B., 2011. <i>VAT and Cross-Border Trade: Do Border Adjustments Make VAT a Fair Tax?</i> . Tax Analysts, pp.192-203.		<ul style="list-style-type: none"> <li>• This article explains how border adjustments work from a technical perspective, the outcome if there were no border adjustments, and some key focus points regarding application of border adjustments. The purpose is to show the reader how VAT operates in cross-border situations and how that may influence trade.</li> <li>• The article concludes that border adjustments are necessary to design a fair destination-based VAT. Otherwise, local businesses may face unfair competition both domestically and internationally. That is true both for businesses that sell tangible goods and businesses that provide services.</li> <li>• Border adjustments are easier to administer for tangible goods than for services. To achieve fair results, some proxies for services will be necessary. The OECD's work can offer useful guidance on these important design features.</li> </ul>
<ul style="list-style-type: none"> <li>• Institutional</li> </ul>		
OECD – Tax competition between sub-central governments – 2011	<a href="https://www.oecd.org/tax/federalism/48817035.pdf">https://www.oecd.org/tax/federalism/48817035.pdf</a>	<ul style="list-style-type: none"> <li>• The paper considers how SCGs use taxation for economic development purposes (noting that tax competition is only one element of inter-jurisdictional competition)</li> <li>• It finds that tax competition is widespread, but some sub-central taxes are more prone to tax competition than others. In the case of consumption taxes, competition depends strongly on the geography and size of jurisdictions.</li> </ul>
OECD – The Brazilian 'Tax War' – 2007	<a href="http://www.oecd-ilibrary.org/docserver/download/514tgs01w9ms.pdf?expires=1472139659&amp;id=id&amp;acname=guest&amp;checksum=EB9D920445F6BE6E10436DF08C8B5CAD">http://www.oecd-ilibrary.org/docserver/download/514tgs01w9ms.pdf?expires=1472139659&amp;id=id&amp;acname=guest&amp;checksum=EB9D920445F6BE6E10436DF08C8B5CAD</a>	<ul style="list-style-type: none"> <li>• Brazilian states have considerable autonomy to set their VAT rates and bases, often using it as an industrial tool.</li> <li>• The study tests for horizontal tax competition in the VAT for a sample of Brazilian states in the period 1985-2001.</li> <li>• Empirical findings, based on the estimation of a tax reaction function in an error-correction set-up, confirm the hypothesis of horizontal tax competition: the states react strongly to changes in their neighbours VAT code, especially those that belong to the same geo-economic region.</li> <li>• There also appears to be a Stackelberg leader among the states, with the remaining jurisdictions responding strongly to</li> </ul>

<p>UK Institute for Fiscal Studies – 'Value added tax and excises' in 'Dimensions of Tax Design' – 2011.</p>	<p><a href="https://www.ifs.org.uk/uploads/mirrleesreview/dimensions/ch4.pdf">https://www.ifs.org.uk/uploads/mirrleesreview/dimensions/ch4.pdf</a></p>	<p>its policy moves.</p> <ul style="list-style-type: none"> <li>• The chapter notes that VAT exemptions can cause competition distortions across borders and a bias towards imports.</li> <li>• For example: as financial institutions across the EU face different input costs as a consequence of being charged different rates on their inputs, this effect also cascading into the costs of business using those services; and as exempt public services compete with taxable ones provided by the private sector or.</li> <li>• However, it states that the most direct form of interaction between national indirect tax systems – smuggling and cross-border shopping – seems to be fairly limited in relation to the VAT, with the exception of Germany and Denmark.</li> </ul>
<p>IMF – Imperfect competition and the design of VAT regimes: The case of energy trade between Russia and Ukraine – 2002</p>	<p><a href="https://www.imf.org/external/pubs/ft/wp/2002/wp02235.pdf">https://www.imf.org/external/pubs/ft/wp/2002/wp02235.pdf</a></p>	<ul style="list-style-type: none"> <li>• This IMF working paper suggests that under imperfect competition, Russia and Ukraine may deviate from optimal tax considerations which suggest the use of a destination-based VAT regime.</li> </ul>

## Appendix III: Currency conversion rates

All currencies referred to in this report have been converted into Euros on the basis of three-month average rates for the third quarter of 2016 (1 July – 30 September).

Table 60: Currency conversion rates

Country	Currency	Three-month average [EUR]:[XXX] Third quarter, 2016
<b>Bulgaria</b>	Bulgarian lev [BGN]	1.96
<b>Croatia</b>	Croatian kuna [HRK]	7.49
<b>Czech Republic</b>	Czech koruna [CZK]	27.03
<b>Denmark</b>	Danish krone [DKK]	7.44
<b>Hungary</b>	Hungarian forint [HUF]	311.18
<b>Poland</b>	Polish złoty [PLN]	4.34
<b>Romania</b>	Romanian leu [RON]	4.47
<b>Sweden</b>	Swedish krona [SEK]	9.51
<b>UK</b>	British pound sterling [GBP]	0.85

Source: Oanda, average of bid/ask prices for third quarter 2016 against the Euro, to two decimal places. See <https://www.oanda.com/currency/average>.

## Appendix IV: Gross savings by group size of farmers

### GROUP 1

Country	Farm activity	Seeds	Fertilisers	Pesticides	Feed	Total
(ESP) Spain*	(1) Fieldcrops	0,0024	0,0043	0,0024	0,0012	0,0102
(ESP) Spain*	(2) Horticulture	n.a.	n.a.	n.a.	n.a.	0,0000
(ESP) Spain*	(3) Wine	0,0003	0,0036	0,0058	0,0002	0,0098
(ESP) Spain*	(4) Other permanent crops	0,0002	0,0040	0,0038	0,0003	0,0084
(ESP) Spain*	(6) Other grazing livestock	n.a.	n.a.	n.a.	n.a.	n.a.
(ESP) Spain*	(7) Granivores	n.a.	n.a.	n.a.	0,0060	n.a.
(ESP) Spain*	(8) Mixed	n.a.	n.a.	n.a.	n.a.	n.a.
(ESP) Spain*	Total (TF8 Grouping)	0,0011	0,0040	0,0034	0,0062	0,0146
(HUN) Hungary	(1) Fieldcrops	0,0222	0,0246	0,0172	0,0032	0,0671
(HUN) Hungary	(2) Horticulture	n.a.	n.a.	n.a.	n.a.	n.a.
(HUN) Hungary	(3) Wine	n.a.	n.a.	n.a.	n.a.	n.a.
(HUN) Hungary	(4) Other permanent crops	0,0022	0,0125	0,0452	0,0006	0,0605
(HUN) Hungary	(5) Milk	n.a.	n.a.	n.a.	n.a.	n.a.
(HUN) Hungary	(6) Other grazing livestock	n.a.	n.a.	n.a.	n.a.	n.a.
(HUN) Hungary	(7) Granivores	0,0014	0,0029	0,0011	0,0767	0,0820
(HUN) Hungary	(8) Mixed	0,0080	0,0103	0,0038	0,0643	0,0864
(HUN) Hungary	Total (TF8 Grouping)	0,0122	0,0131	0,0137	0,0362	0,0752
(LTU) Lithuania	(1) Fieldcrops	0,0097	0,0102	0,0081	0,0062	0,0341
(LTU) Lithuania	(2) Horticulture	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(4) Other permanent crops	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(5) Milk	0,0031	0,0046	0,0027	0,0388	0,0492
(LTU) Lithuania	(6) Other grazing livestock	0,0008	0,0011	0,0033	0,0371	0,0423
(LTU) Lithuania	(7) Granivores	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(8) Mixed	0,0058	0,0065	0,0037	0,0284	0,0444
(LTU) Lithuania	Total (TF8 Grouping)	0,0044	0,0053	0,0047	0,0284	0,0428

(\*): for feed the distortion works in such a way that the incentive is for Portuguese farmers to purchase feed in Spain

**GROUP 2**

Country	Farm activity	Seeds	Fertilisers	Pesticides	Feed	Total
(ESP) Spain*	(1) Fieldcrops	0,0037	0,0072	0,0028	0,0003	0,0141
(ESP) Spain*	(2) Horticulture	0,0090	0,0049	0,0055	0,0001	0,0195
(ESP) Spain*	(3) Wine	0,0003	0,0045	0,0037	0,0000	0,0085
(ESP) Spain*	(4) Other permanent crops	0,0004	0,0048	0,0048	0,0001	0,0101
(ESP) Spain*	(5) Milk	n.a.	n.a.	n.a.	n.a.	n.a.
(ESP) Spain*	(6) Other grazing livestock	0,0003	0,0006	0,0005	0,0105	0,0119
(ESP) Spain*	(7) Granivores	0,0002	0,0004	0,0001	n.a.	n.a.
(ESP) Spain*	(8) Mixed	0,0022	0,0037	0,0028	0,0065	0,0152
(ESP) Spain*	Total (TF8 Grouping)	0,0016	0,0048	0,0032	0,0038	0,0134
(HUN) Hungary	(1) Fieldcrops	0,0262	0,0252	0,0182	0,0050	0,0747
(HUN) Hungary	(2) Horticulture	0,0427	0,0066	0,0203	0,0000	0,0696
(HUN) Hungary	(3) Wine	0,0004	0,0012	0,0370	0,0000	0,0386
(HUN) Hungary	(4) Other permanent crops	0,0032	0,0071	0,0331	0,0000	0,0434
(HUN) Hungary	(5) Milk	0,0051	0,0033	0,0023	0,0759	0,0866
(HUN) Hungary	(6) Other grazing livestock	0,0052	0,0036	0,0030	0,0811	0,0930
(HUN) Hungary	(7) Granivores	0,0020	0,0014	0,0010	0,1285	0,1329
(HUN) Hungary	(8) Mixed	0,0128	0,0099	0,0077	0,0535	0,0839
(HUN) Hungary	Total (TF8 Grouping)	0,0197	0,0151	0,0153	0,0276	0,0776
(LTU) Lithuania	(1) Fieldcrops	0,0111	0,0225	0,0095	0,0040	0,0471
(LTU) Lithuania	(2) Horticulture	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(4) Other permanent crops	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(5) Milk	0,0017	0,0023	0,0025	0,0494	0,0560
(LTU) Lithuania	(6) Other grazing livestock	0,0020	0,0012	0,0040	0,0483	0,0555
(LTU) Lithuania	(7) Granivores	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(8) Mixed	0,0056	0,0090	0,0046	0,0325	0,0517
(LTU) Lithuania	Total (TF8 Grouping)	0,0043	0,0077	0,0048	0,0361	0,0529

(\*): for feed the distortion works in such a way that the incentive is for Portuguese farmers to purchase feed in Spain

**GROUP 3**

Country	Farm activity	Seeds	Fertilisers	Pesticides	Feed	Total
(DEU) Germany	(1) Fieldcrops	0,0022	0,0166	0,0036	0,0004	0,0229
(DEU) Germany	(2) Horticulture	0,0029	0,0021	0,0010	0,0000	0,0060
(DEU) Germany	(3) Wine	0,0000	0,0013	0,0094	0,0000	0,0108
(DEU) Germany	(4) Other permanent crops	n.a.	n.a.	n.a.	n.a.	n.a.
(DEU) Germany	(5) Milk	0,0004	0,0040	0,0006	0,0071	0,0122
(DEU) Germany	(6) Other grazing livestock	0,0006	0,0041	0,0009	0,0052	0,0108
(DEU) Germany	(7) Granivores	n.a.	n.a.	n.a.	n.a.	n.a.
(DEU) Germany	(8) Mixed	0,0013	0,0104	0,0022	0,0058	0,0196
(DEU) Germany	Total (TF8 Grouping)	0,0011	0,0084	0,0024	0,0041	0,0160
(ESP) Spain*	(1) Fieldcrops	0,0042	0,0077	0,0030	0,0000	0,0148
(ESP) Spain*	(2) Horticulture	0,0060	0,0053	0,0064	0,0001	0,0178
(ESP) Spain*	(3) Wine	0,0004	0,0043	0,0038	0,0000	0,0085
(ESP) Spain*	(4) Other permanent crops	0,0004	0,0046	0,0047	0,0001	0,0098
(ESP) Spain*	(5) Milk	0,0004	0,0013	0,0007	0,0155	0,0178
(ESP) Spain*	(6) Other grazing livestock	0,0004	0,0008	0,0004	0,0102	0,0118
(ESP) Spain*	(7) Granivores	0,0002	0,0006	0,0002	n.a.	n.a.
(ESP) Spain*	(8) Mixed	0,0013	0,0026	0,0011	0,0059	0,0110
(ESP) Spain*	Total (TF8 Grouping)	0,0022	0,0045	0,0030	0,0050	0,0147
(HUN) Hungary	(1) Fieldcrops	0,0226	0,0280	0,0183	0,0054	0,0743
(HUN) Hungary	(2) Horticulture	0,0219	0,0110	0,0212	0,0000	0,0541
(HUN) Hungary	(3) Wine	0,0008	0,0026	0,0387	0,0002	0,0423
(HUN) Hungary	(4) Other permanent crops	0,0027	0,0063	0,0375	0,0003	0,0467
(HUN) Hungary	(5) Milk	n.a.	n.a.	n.a.	n.a.	n.a.
(HUN) Hungary	(6) Other grazing livestock	n.a.	n.a.	n.a.	n.a.	n.a.
(HUN) Hungary	(7) Granivores	0,0029	0,0027	0,0014	0,1257	0,1326
(HUN) Hungary	(8) Mixed	0,0115	0,0109	0,0082	0,0637	0,0942
(HUN) Hungary	Total (TF8 Grouping)	0,0168	0,0186	0,0173	0,0235	0,0763
(LTU) Lithuania	(1) Fieldcrops	0,0111	0,0253	0,0124	0,0044	0,0533
(LTU) Lithuania	(2) Horticulture	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(4) Other permanent crops	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(5) Milk	0,0024	0,0036	0,0064	0,0470	0,0593
(LTU) Lithuania	(6) Other grazing livestock	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(7) Granivores	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(8) Mixed	0,0055	0,0086	0,0105	0,0322	0,0568
(LTU) Lithuania	Total (TF8 Grouping)	0,0063	0,0127	0,0095	0,0274	0,0559

(\*): for feed the distortion works in such a way that the incentive is for Portuguese farmers to purchase feed in Spain

**GROUP 4**

Country	Farm activity	Seeds	Fertilisers	Pesticides	Feed	Total
(DEU) Germany	(1) Fieldcrops	0,0024	0,0182	0,0042	0,0013	0,0260
(DEU) Germany	(2) Horticulture	0,0070	0,0025	0,0021	0,0000	0,0117
(DEU) Germany	(3) Wine	0,0001	0,0022	0,0093	0,0001	0,0116
(DEU) Germany	(4) Other permanent crops	0,0002	0,0031	0,0058	0,0001	0,0092
(DEU) Germany	(5) Milk	0,0006	0,0060	0,0007	0,0092	0,0166
(DEU) Germany	(6) Other grazing livestock	0,0012	0,0072	0,0013	0,0066	0,0163
(DEU) Germany	(7) Granivores	0,0007	0,0051	0,0013	0,0178	0,0248
(DEU) Germany	(8) Mixed	0,0013	0,0101	0,0022	0,0080	0,0216
(DEU) Germany	Total (TF8 Grouping)	0,0014	0,0093	0,0024	0,0063	0,0194
(ESP) Spain*	(1) Fieldcrops	0,0043	0,0080	0,0031	0,0036	0,0190
(ESP) Spain*	(2) Horticulture	0,0059	0,0050	0,0052	0,0051	0,0212
(ESP) Spain*	(3) Wine	0,0004	0,0034	0,0037	n.a.	n.a.
(ESP) Spain*	(4) Other permanent crops	0,0004	0,0041	0,0048	0,0000	0,0094
(ESP) Spain*	(5) Milk	0,0004	0,0012	0,0005	0,0007	0,0027
(ESP) Spain*	(6) Other grazing livestock	0,0006	0,0010	0,0004	0,0013	0,0033
(ESP) Spain*	(7) Granivores	0,0005	0,0009	0,0007	n.a.	n.a.
(ESP) Spain*	(8) Mixed	0,0017	0,0031	0,0013	n.a.	n.a.
(ESP) Spain*	Total (TF8 Grouping)	0,0020	0,0039	0,0023	0,0012	0,0095
(HUN) Hungary	(1) Fieldcrops	0,0207	0,0277	0,0169	0,0033	0,0686
(HUN) Hungary	(2) Horticulture	0,0411	0,0039	0,0288	0,0000	0,0738
(HUN) Hungary	(3) Wine	n.a.	n.a.	n.a.	n.a.	n.a.
(HUN) Hungary	(4) Other permanent crops	0,0031	0,0096	0,0430	0,0003	0,0559
(HUN) Hungary	(5) Milk	0,0054	0,0052	0,0036	0,0794	0,0936
(HUN) Hungary	(6) Other grazing livestock	0,0054	0,0025	0,0025	0,0747	0,0851
(HUN) Hungary	(7) Granivores	0,0024	0,0017	0,0011	0,1351	0,1402
(HUN) Hungary	(8) Mixed	0,0117	0,0135	0,0079	0,0556	0,0887
(HUN) Hungary	Total (TF8 Grouping)	0,0206	0,0172	0,0171	0,0209	0,0758
(LTU) Lithuania	(1) Fieldcrops	0,0101	0,0346	0,0160	0,0011	0,0618
(LTU) Lithuania	(2) Horticulture	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(4) Other permanent crops	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(5) Milk	0,0023	0,0046	0,0051	0,0465	0,0585
(LTU) Lithuania	(6) Other grazing livestock	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(7) Granivores	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(8) Mixed	0,0060	0,0218	0,0094	0,0279	0,0651
(LTU) Lithuania	Total (TF8 Grouping)	0,0067	0,0218	0,0111	0,0212	0,0609

(\*): for feed the distortion works in such a way that the incentive is for Portuguese farmers to purchase feed in Spain

**GROUP 5**

Country	Farm activity	Seeds	Fertilisers	Pesticides	Feed	Total
(DEU) Germany	(1) Fieldcrops	0,0026	0,0191	0,0047	0,0012	0,0276
(DEU) Germany	(2) Horticulture	0,0063	0,0040	0,0023	0,0000	0,0126
(DEU) Germany	(3) Wine	0,0002	0,0035	0,0089	0,0000	0,0126
(DEU) Germany	(4) Other permanent crops	0,0005	0,0031	0,0057	0,0000	0,0093
(DEU) Germany	(5) Milk	0,0009	0,0070	0,0009	0,0104	0,0192
(DEU) Germany	(6) Other grazing livestock	0,0012	0,0088	0,0013	0,0100	0,0213
(DEU) Germany	(7) Granivores	0,0008	0,0039	0,0012	0,0191	0,0250
(DEU) Germany	(8) Mixed	0,0013	0,0086	0,0020	0,0129	0,0249
(DEU) Germany	Total (TF8 Grouping)	0,0014	0,0088	0,0021	0,0098	0,0221
(ESP) Spain*	(1) Fieldcrops	0,0047	0,0069	0,0036	0,0003	0,0155
(ESP) Spain*	(2) Horticulture	0,0053	0,0032	0,0052	0,0000	0,0137
(ESP) Spain*	(3) Wine	0,0004	0,0024	0,0036	n.a.	n.a.
(ESP) Spain*	(4) Other permanent crops	0,0005	0,0043	0,0053	0,0004	0,0104
(ESP) Spain*	(5) Milk	0,0004	0,0007	0,0004	0,0164	0,0179
(ESP) Spain*	(6) Other grazing livestock	0,0006	0,0011	0,0005	0,0055	0,0076
(ESP) Spain*	(7) Granivores	0,0004	0,0007	0,0005	n.a.	n.a.
(ESP) Spain*	(8) Mixed	0,0015	0,0022	0,0015	n.a.	n.a.
(ESP) Spain*	Total (TF8 Grouping)	0,0016	0,0024	0,0020	0,0099	0,0159
(HUN) Hungary	(1) Fieldcrops	0,0172	0,0282	0,0175	0,0020	0,0647
(HUN) Hungary	(2) Horticulture	0,0227	0,0103	0,0151	0,0000	0,0481
(HUN) Hungary	(3) Wine	n.a.	n.a.	n.a.	n.a.	n.a.
(HUN) Hungary	(4) Other permanent crops	0,0032	0,0052	0,0287	0,0004	0,0375
(HUN) Hungary	(5) Milk	0,0065	0,0067	0,0047	0,0771	0,0951
(HUN) Hungary	(6) Other grazing livestock	n.a.	n.a.	n.a.	n.a.	n.a.
(HUN) Hungary	(7) Granivores	0,0009	0,0011	0,0013	0,1393	0,1426
(HUN) Hungary	(8) Mixed	0,0098	0,0126	0,0083	0,0574	0,0880
(HUN) Hungary	Total (TF8 Grouping)	0,0126	0,0188	0,0141	0,0308	0,0763
(LTU) Lithuania	(1) Fieldcrops	0,0098	0,0383	0,0189	0,0008	0,0678
(LTU) Lithuania	(2) Horticulture	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(5) Milk	0,0027	0,0074	0,0036	0,0484	0,0621
(LTU) Lithuania	(6) Other grazing livestock	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(7) Granivores	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(8) Mixed	0,0062	0,0239	0,0101	0,0277	0,0679
(LTU) Lithuania	Total (TF8 Grouping)	0,0078	0,0292	0,0143	0,0156	0,0668

(\*): for feed the distortion works in such a way that the incentive is for Portuguese farmers to purchase feed in Spain



**GROUP 6**

Country	Farm activity	Seeds	Fertilisers	Pesticides	Feed	Total
(DEU) Germany	(1) Fieldcrops	0,0026	0,0172	0,0045	0,0011	0,0254
(DEU) Germany	(2) Horticulture	0,0064	0,0035	0,0031	0,0000	0,0130
(DEU) Germany	(3) Wine	n.a.	n.a.	n.a.	n.a.	n.a.
(DEU) Germany	(4) Other permanent crops	n.a.	n.a.	n.a.	n.a.	n.a.
(DEU) Germany	(5) Milk	0,0010	0,0069	0,0015	0,0089	0,0183
(DEU) Germany	(6) Other grazing livestock	0,0010	0,0079	0,0013	0,0074	0,0175
(DEU) Germany	(7) Granivores	0,0006	0,0037	0,0012	0,0183	0,0238
(DEU) Germany	(8) Mixed	0,0012	0,0091	0,0022	0,0087	0,0212
(DEU) Germany	Total (TF8 Grouping)	0,0017	0,0089	0,0024	0,0084	0,0214
(ESP) Spain*	(1) Fieldcrops	n.a.	n.a.	n.a.	n.a.	n.a.
(ESP) Spain*	(2) Horticulture	0,0071	0,0036	0,0042	n.a.	n.a.
(ESP) Spain*	(4) Other permanent crops	n.a.	n.a.	n.a.	n.a.	n.a.
(ESP) Spain*	(5) Milk	0,0004	0,0005	0,0002	n.a.	n.a.
(ESP) Spain*	(6) Other grazing livestock	n.a.	n.a.	n.a.	n.a.	n.a.
(ESP) Spain*	(7) Granivores	0,0003	0,0009	0,0005	n.a.	n.a.
(ESP) Spain*	(8) Mixed	n.a.	n.a.	n.a.	n.a.	n.a.
(ESP) Spain*	Total (TF8 Grouping)	0,0015	0,0014	0,0012	0,0177	0,0218
(HUN) Hungary	(1) Fieldcrops	0,0135	0,0247	0,0179	0,0026	0,0586
(HUN) Hungary	(2) Horticulture	n.a.	n.a.	n.a.	n.a.	n.a.
(HUN) Hungary	(5) Milk	0,0075	0,0071	0,0051	0,0558	0,0755
(HUN) Hungary	(6) Other grazing livestock	n.a.	n.a.	n.a.	n.a.	n.a.
(HUN) Hungary	(7) Granivores	0,0015	0,0027	0,0020	0,1076	0,1139
(HUN) Hungary	(8) Mixed	0,0063	0,0111	0,0098	0,0495	0,0767
(HUN) Hungary	Total (TF8 Grouping)	0,0071	0,0116	0,0092	0,0531	0,0810
(LTU) Lithuania	(1) Fieldcrops	0,0109	0,0372	0,0186	0,0011	0,0678
(LTU) Lithuania	(2) Horticulture	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(5) Milk	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(7) Granivores	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	(8) Mixed	n.a.	n.a.	n.a.	n.a.	n.a.
(LTU) Lithuania	Total (TF8 Grouping)	0,0049	0,0175	0,0084	0,0388	0,0696

(\*): for feed the distortion works in such a way that the incentive is for Portuguese farmers to purchase feed in Spain

## Appendix V: Analysis of distortions of second-hand goods scheme

We are going to analytically develop the functioning of the special scheme for second-hand goods. Once this is clear, we should be able to identify the distortions due to the application of the origin principle.

Our context is the following: there is a consumer<sup>114</sup> (e.g., a private investor in antiques),  $C_1$ , who bought a painting paying VAT (e.g., he bought it from the artist, the painter). He now sells this painting to a reseller or dealer,  $R$ ; the reseller does not have to pay VAT for this transaction, as  $C_1$  is not a VAT taxable person. Finally, the reseller sells that antique to another individual private investor,  $C_2$ . It is this transaction, which is subject to VAT, that originates the need for a special regime.<sup>115</sup>

The price charged by  $R$  to  $C_2$  already includes the VAT paid by  $C_1$ . In order to avoid the so-called "cascading effect", ideally in this last transaction in our example, only the added value produced by  $R$  should be taxed, that is, somehow the value added in the first transaction (already taxed and paid by  $C_1$ ) should be deducted from the tax base in the transaction between  $R$  and  $C_2$ .

We need some further notation to see how this would work with and without the special scheme:

$PP_0$ : price paid by  $C_1$  for the painting (in absence of taxes)

VAT: VAT tax rate

$SP_1$ : selling price of the painting by  $C_1$  to  $R$

$SP_R$ : selling price of the painting by  $R$  to  $C_2$

$m_R$ : added value by the reseller

$m_1$ : gain for  $C_1$  of selling the antique to  $R$

Both  $m$  are a percentage applicable to the selling price of each agent. In any case, the important issue to note here is that the VAT aims at taxing  $m_R$ , not  $m_1$ . The individual gain – picked up by  $m_1$  – would be taxed in the individual capital gains tax, so typically in the personal income tax, as the transmission is not subject to VAT.

In order to explain why the special scheme achieves efficiency, let's first show the situation without special scheme:

**Table 61: No special scheme (and all transactions in destination)**

Transaction	Retail Price (VAT included)	VAT collected
<b>C<sub>1</sub> purchases</b>	$PP_0 \times (1 + \text{VAT})$	$PP_0 \times \text{VAT}$
<b>C<sub>1</sub> sells to R</b>	$SP_1 = PP_0 \times (1 + m_1) \times (1 + \text{VAT})$	0
<b>R sells to C<sub>2</sub></b>	$SP_R = SP_1 \times (1 + m_R) \times (1 + \text{VAT})$	$SP_1 \times (1 + m_R) \times \text{VAT}$

Implicitly in the above Table we are assuming each agent is fully able to shift the VAT to the next stage. Throughout the analysis, we maintain this assumption.

<sup>114</sup> The same would happen if the seller were a taxable person subject to the regime of small businesses (non-registered), a taxable person that has not been able to recoup input VAT or another taxable dealer under the margin scheme.

<sup>115</sup> We are interested in the combination of this special regime with the fact that second-hand good (in our case, an antique) is purchased by a final consumer. If a VAT taxable firm purchased the good, it would be able to reclaim the input tax, and so there would not be any distortion. On top of that, given the VAT is fully deductible, the buyer would ask the seller to apply the general regime in the transaction.

In contrast, under the special scheme, in the final stage ("R sells to C2") we aim at only taxing the added value produced by the reseller. In order to do so, the reseller has to calculate that added value in euros (including the implicit input and output tax; that is, on the one hand, he formally will not charge the output tax, but it will be implicitly included in the retail price; on the other hand, he implicitly will have paid to C<sub>1</sub> the VAT originally paid by C<sub>1</sub> to the painter) and divide it by (1+VAT). This is supposed to be the added value before taxes, and he will have to transfer that value before taxes times the VAT tax rate to the state (if the added value is negative, for VAT purposes it is forced to be zero and as a consequence there is no transfer to be made to the state by the reseller). Following the same structure as **Table 61**:

**Table 62: Special scheme (all transactions in destination)**

Transaction	Retail Price (VAT included)	VAT collected
<b>C<sub>1</sub> purchases</b>	$PP_0 \times (1 + \text{VAT})$	$PP_0 \times \text{VAT}$
<b>C<sub>1</sub> sells to R</b>	$SP_1 = PP_0 \times (1 + m_1) \times (1 + \text{VAT})$	0
<b>R sells to C<sub>2</sub></b>	$SP_R = [SP_1 \times (1 + m_R) \times (1 + \text{VAT}) - PP_0 \times (1 + m_1) \times (1 + \text{VAT})] / (1 + \text{VAT})$	$[SP_1 \times (1 + m_R) - PP_0 \times (1 + m_1)] \times \text{VAT}$

Therefore, in the final stage, we are exactly taxing the added value (including his margin) of the reseller. We now can compare the total amount of VAT taxes paid under both scenarios:

**VAT collected under No Special Scheme:**

$$\text{VAT} \times [PP_0 + SP_1 \times (1 + m_R)]$$

**VAT collected under Special Scheme:**

$$\text{VAT} \times [SP_1 \times (1 + m_R) - PP_0 \times m_1]$$

Under the Special Scheme, we tax the price paid by the final consumer,  $SP_1 \times (1 + m_R)$ , but we allow deducting from it the gain for C<sub>1</sub>, which is not subject to VAT and should be taxed in the capital gains tax. This is our benchmark case, where moreover all transactions occur in destination. In contrast, under the No Special Scheme scenario,  $PP_0$  is being taxed twice as it is included in  $SP_1$  ("cascading effect"), and moreover there is no deduction of  $m_1$  (double taxation: both in the VAT and in the capital gains tax).

We understand the special scheme is originally designed to avoid the "cascading effect". That is why, and to ease any further analytical development, from now on, we assume  $m_1 = 0$ .

*The functioning of the special regime for second-hand goods when destination and origin differ.*

We will set two cases where the origin (where the antique is first purchased) does not coincide with the country of destination, that is, where the antique will be placed back on the market (i.e., the country of residence of the final consumer). In order to distinguish between origin and destination, we will use the sub-indices O and D, respectively.

**Case A:** Suppose C<sub>1</sub> bought the antique in origin (here "origin" is defined in contrast to the country of residence of the final consumer, C<sub>2</sub>). Let's then conveniently modify Table 62:

Table 63: Special regime (first transaction in origin)

Transaction	Retail Price (VAT included)	VAT collected
<b>C<sub>1</sub> purchases</b>	$PP_0 \times (1 + VAT_0)$	$PP_0 \times VAT_0$
<b>C<sub>1</sub> sells to R</b>	$SP_1 = PP_0 \times (1 + VAT_0)$	0
<b>R sells to C<sub>2</sub></b>	$SP_R = [SP_1 \times (1 + m_R) \times (1 + VAT_D) - PP_0 \times (1 + VAT_0)] / (1 + VAT_D)$	$[SP_1 \times (1 + m_R) - PP_0] \times VAT_D + \mathbf{PP_0 \times [(VAT_D - VAT_0) / (1 + VAT_D)] \times VAT_D}$

Therefore, the second summand (in bold) is the source of the distortion because C<sub>1</sub> was purchased in origin. In particular,

If  $VAT_D > VAT_0$ , this creates a penalty to intra-Community acquisitions

If  $VAT_D < VAT_0$ , this creates a subsidy to intra-Community acquisitions

This effect might not be very important, though, as this final distortion tends to compensate the higher VAT paid by C<sub>1</sub>, which is still included in SP<sub>1</sub>.

Here by intra-Community acquisitions we mean purchasing paintings by the gallery owner (reseller) to a final consumer who bought it in a different country from destination, but within the EU.

**Case B:** Suppose C<sub>2</sub> resides in country D, while he purchases from a gallery located in O. In this case, the VAT C<sub>2</sub> will have to pay is:

$$[SP_1 \times (1 + m_R) - PP_0] \times VAT_0$$

And the arbitrage condition to purchase in O or in D, for a given margin of the gallery owner, will simply be whether  $VAT_0$  is greater or lower than  $VAT_D$ . This is a distortion, which could even provoke galleries to relocate in countries where the VAT is lowest, or channel their sales to countries with lower VAT rates.

From now on, **we will focus on Case B**. And this will occur because EU final consumers might have incentives to buy in a EU country different to the one where they reside. Ceteris paribus, **the importance of this distortion will simply depend on the differences in VAT tax rates between countries of the EU**. However, in contrast to the case of the flat rate scheme for farmers, **transportation costs might not be significant to art dealers exploiting VAT differentials**. This might be so given that the price of second-hand goods is quite high (basically, antiques or pieces of art) such that transportation costs might not be a big share of the total price of the transaction. Moreover, dealers in second-hand goods (and their agents) apply an origin basis for VAT, so may even be able to save consumers from incurring the usual travel costs associated with cross-border shopping.

In the above statement, we have adopted the clause "ceteris paribus". That is, for example, given  $m_R$ , differential VAT tax rates cause the distortion in the EU second-hand market. Implicitly, there is another factor behind that clause, which is the "agglomeration economies" in this market. There are some European capitals like London where tradition, other rules affecting the selling of second-hand goods (antiques or pieces of art), or simply the heavy density of suppliers (galleries) make differential VAT tax rates relatively less important.

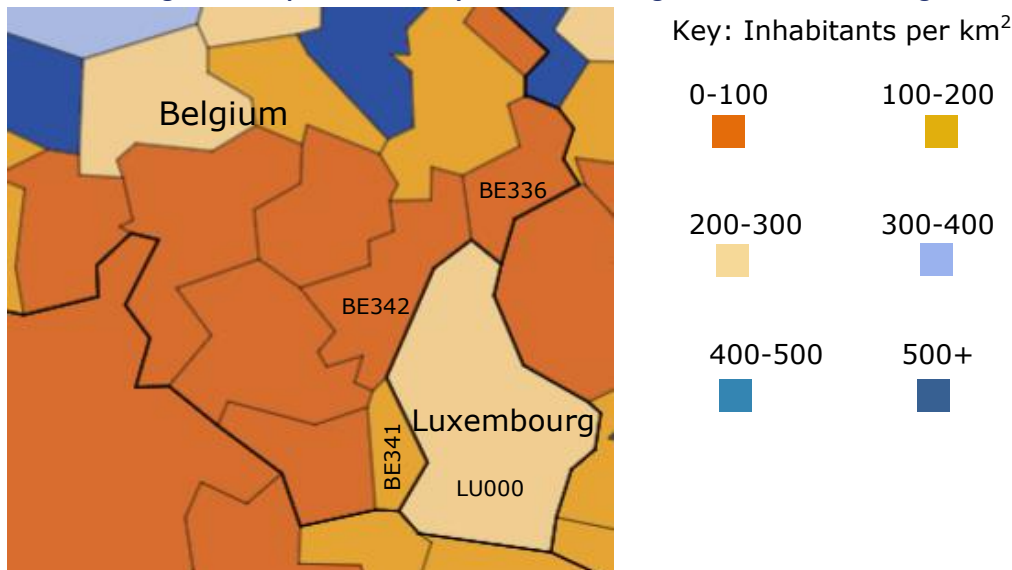
## Appendix VI: Additional analysis of cross-border shopping

### Luxembourg and Belgium

Indicator	Summary of findings
<b>Mapping travel time/ travel costs against potential VAT savings</b>	<ul style="list-style-type: none"> <li>The average return journey time between the geographical midpoints of Luxembourg, and the Belgian NUTS 3 regions bordering Luxembourg, is <b>0.95 hrs to 2.2 hrs</b>, costing about <b>€8.48 - €22.60 in fuel and operating costs</b>.</li> <li>Therefore, the amount spent on a shopping trip would have to exceed between <b>€178 - €475</b> for VAT savings to compensate for travel costs (assuming a VAT saving of 5%), and between <b>€42 - €113</b> (assuming a VAT saving of 25%).</li> </ul>
<b>Contextual factors</b>	<ul style="list-style-type: none"> <li>The Belgian regions bordering Luxembourg are relatively low income, meaning that any cross-border shopping is likely to be focused on relatively low value but frequently purchased goods, should large VAT differentials arise under enhanced flexibility.</li> </ul>

Luxembourg is bordered by three NUTS 3 regions of Belgium: Bezirk Verviers (BE336) to the North, Arlon to the North West (BE341) and Bastogne (BE342) to the West.

Figure 17: Population density in the NUTS 3 regions within Luxembourg and Belgium



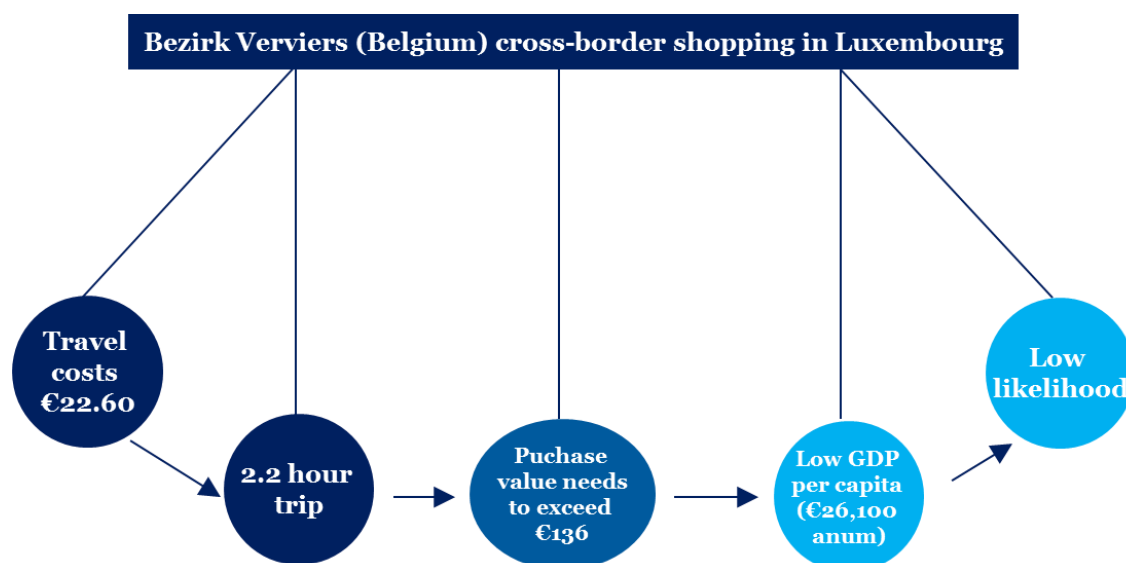
Source: Eurostat, Regions and Cities Illustrated (RCI)  
<http://ec.europa.eu/eurostat/cache/RCI/#?vis=nuts3.population&lang=en>

Table 64: Regional demographics – Luxembourg/Belgium border

Data type	Granularity	Region A (Luxembourg)	Region B (Belgium)		
		LU000	BE336	BE341	BE342
Travel time for a round trip from Luxembourg (mins)	NUTS 3		133	57	103
Estimated travel costs – round trip (EUR)	NUTS 3		22.60	8.48	18.62
Population (people)	NUTS 3	576,249	77,332	61,186	48,484
Population density (people/km <sup>2</sup> )	NUTS 3	220	91	192	46
GDP per capita (EUR)	NUTS 3	85,300	26,100	23,500	21,000
Annual disposable income per inhabitant (EUR)	NUTS 2	Not available	16,800	17,100	17,100

Sources: ESRI data, 2016; Author's own calculations; Eurostat data for 2013-2016 (most recent data point available as at March 2017). Note that travel costs have been calculated as a function of travel *distance* rather than travel *time*, so in some instances longer journeys (expressed in time) may have lower travel costs.

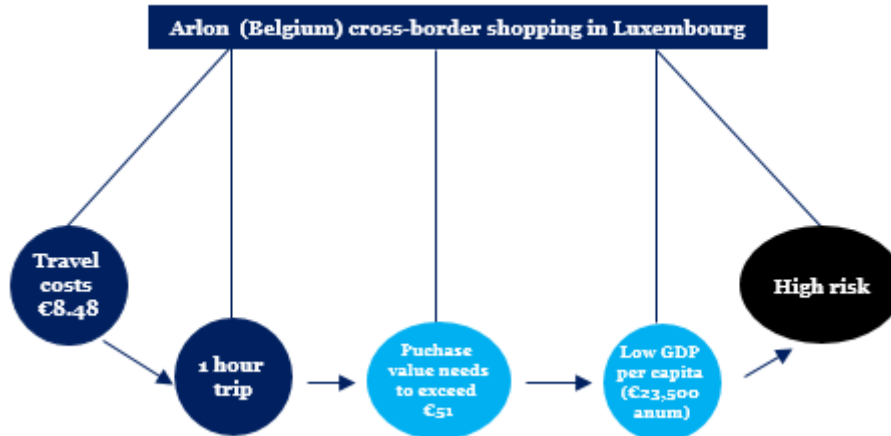
#### Luxembourg and Bezirk Verviers (BE336)



- **Mapping VAT differentials against travel costs**, we estimate the average return journey time between the centres of Bezirk Verviers and Luxembourg as circa 133 minutes (2.2 hrs), and the fuel and operating costs for a return trip at €22.60. Therefore, if the VAT differential were 20%, the amount spent on a shopping trip would have to exceed €136 to outweigh the expense of travel.
- **GDP per capita/Regional household income**. Bezirk Verviers has a relatively low GDP per capita (€26,100 annually in comparison to €85,300 in Luxembourg), meaning that any cross-border shopping will likely to be focused on everyday goods (e.g. foodstuffs) should large VAT variances arise under enhanced flexibility.
- **Propensity to engage in cross-border shopping**. As the value of purchases (assuming a 20% VAT differential) needs to exceed €136 to make the trip to

Luxembourg worthwhile, and given this equates to approximately 10% of the average monthly disposable income for individuals in this NUTS2 region, we anticipate a low risk of households in this region engaging in regular cross-border shopping.

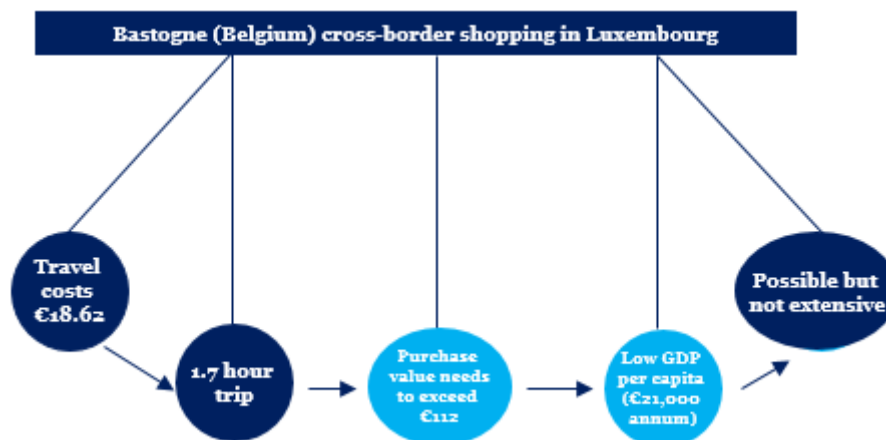
#### Luxembourg and Arlon (BE341)



- **Mapping VAT differentials against travel costs**, we estimate the average return journey time between the centres of Arlon and Luxembourg as circa 57 minutes (0.95 hrs) and the fuel and operating costs for a return trip at €8.48. Therefore, the amount spent on a shopping trip would have to exceed €51 if the VAT differential were 20%.
- **GDP per capita/Regional household income**. Arlon has a relatively low GDP per capita (€23,500 annually in comparison to €85,300 in Luxembourg), meaning that any cross-border shopping will likely to be focused on everyday goods (e.g. foodstuffs) should large VAT variances arise under enhanced flexibility.
- **Propensity to engage in cross-border shopping**. As mentioned above, assuming a 20% VAT differential, purchases in excess of €51 would be necessary to make a trip to Luxembourg economically rational. This constitutes about 4% of the average monthly disposable income for individuals in this NUTS2 region. Since this value is relatively low, it is conceivable that residents of Arlon could spend €51 or more on everyday goods in a single shopping trip to Luxembourg on a relatively regular basis. Large VAT differences could thus lead to a substantial degree of cross-border shopping between these two regions.

## Luxembourg and Bastogne (BE342)

Bastogne and Luxembourg share a border of approximately 30 km.



- **Mapping VAT differentials against travel costs**, we estimate the average return journey time between the centres of Bastogne and Luxembourg as circa 103 minutes (1.72 hrs) and the fuel and operating costs for a return trip at €18.62. Therefore, the amount spent on a shopping trip would have to exceed €112 if the VAT differential were 20%.
- **GDP per capita/Regional household income.** Bastogne has a relatively low GDP per capita (€21,000 annually in comparison to €85,300 in Luxembourg), meaning that any cross-border shopping will likely to be focused on everyday goods (e.g. foodstuffs) should large VAT variances arise under enhanced flexibility.
- **Propensity to engage in cross-border shopping.** As mentioned above, assuming a 20% VAT differential, purchases in excess of €112 would be necessary to make a trip to Luxembourg economically rational. This constitutes about 8% of the average monthly disposable income for individuals in this NUTS2 region. Since this value is relatively low, it is conceivable that residents of Bastogne could spend €112 or more on everyday goods in a single shopping trip to Luxembourg. Large VAT differences could thus lead to some degree of cross-border shopping between these two regions, though the €112 threshold just to break-even means cross-border shopping is unlikely to be extensive.

## Luxembourg and Germany

Indicator	Summary of findings
<b>Mapping travel time/ travel costs against potential VAT savings</b>	<ul style="list-style-type: none"> <li>• The average return journey time between the geographical midpoint of Luxembourg, and the German NUTS 3 regions bordering Luxembourg, is between <b>1.9 hrs to 2.5 hrs</b>, costing about <b>€17.42 - €23.64 in fuel and non-fuel costs</b>.</li> <li>• Therefore, the amount spent on a shopping trip would have to exceed between <b>€365.85 - €496.42</b> for VAT savings to compensate for travel costs (assuming a VAT saving of 5%), and between <b>€87.11 - €118.20</b> (assuming a VAT saving of 25%).</li> </ul>
<b>Contextual factors</b>	<ul style="list-style-type: none"> <li>• The German regions bordering Luxembourg are relatively low income, meaning that any cross-border shopping is likely to be focused on relatively low value but frequently purchased goods (e.g.</li> </ul>

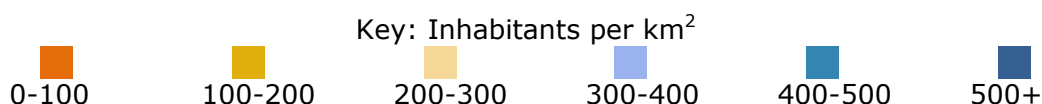
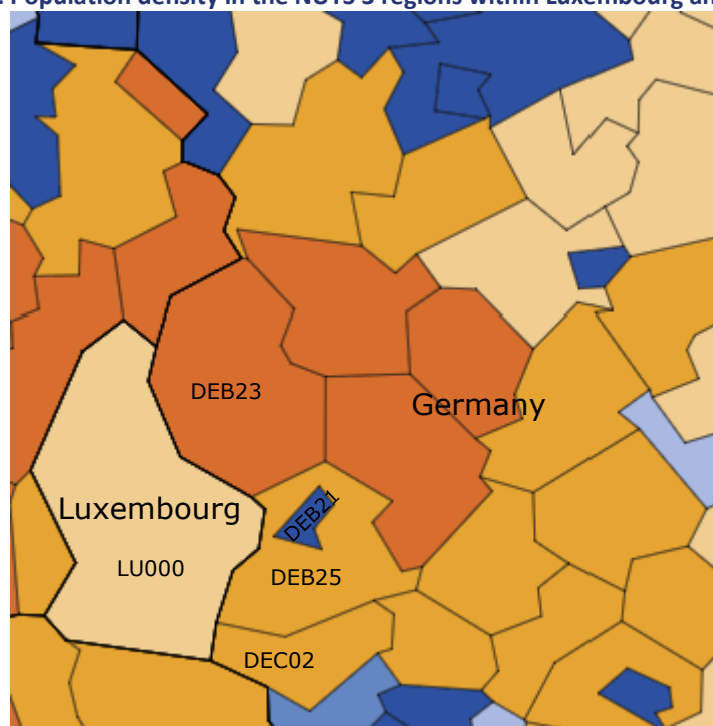


foodstuffs) should large VAT differentials arise under enhanced flexibility.

- The exception to this is the region DEB21 (Trier-Kreisfreie Stadt) where GDP per capita is somewhat higher. Higher population density in this region means that there may be more local shopping options (and thus less incentive to cross-border shop). Elevated GDP per capita increases the likelihood of cross-border shopping for higher value goods (e.g. consumer electronics) in addition to everyday items.

Luxembourg is bordered by three NUTS 3 regions of Germany: Eifelkreis Bitburg-Prüm to the North East (DEB23), Trier-Saarburg (DEB25) to the East, and Merzig-Wadern (DEC02) to the South East. The NUTS 3 region of Trier-Kreisfreie Stadt (DEB21) is wholly contained within Trier-Saarburg (DEB25).

Figure 18: Population density in the NUTS 3 regions within Luxembourg and Germany



Source: Eurostat, Regions and Cities Illustrated (RCI)

<http://ec.europa.eu/eurostat/cache/RCI/#?vis=nuts3.population&lang=en>

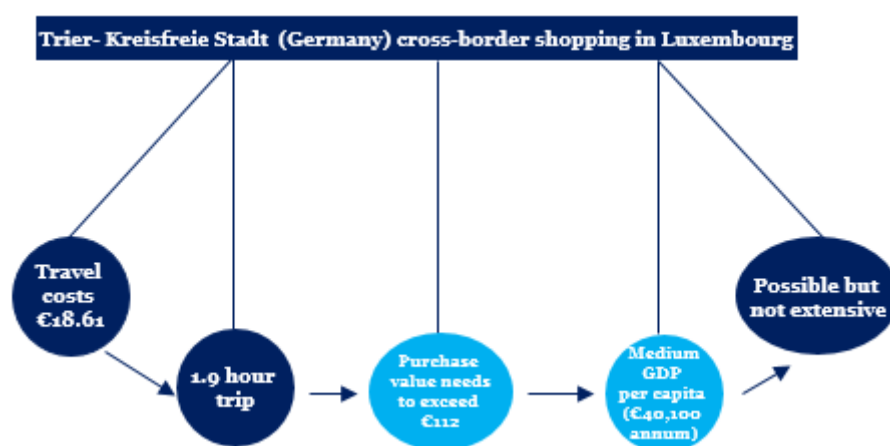
Table 65: Regional demographics- Luxembourg/Germany border

Data type	Granularity	Region A	Regional B (Germany)			
		(Luxembourg) LU000	DEB21	DEB23	DEB25	DEC02
<b>Travel time for a round trip from Luxembourg (mins)</b>	NUTS 3		116	115	152	112
<b>Estimated travel</b>	NUTS 3		18.61	17.51	23.64	17.42

costs – round trip (EUR)						
<b>Population (people)</b>	NUTS 3	576,249	114,914	97,180	147,999	103,997
<b>Population density (people/km<sup>2</sup>)</b>	NUTS 3	220	955	60	133	186
<b>GDP per capita (EUR)</b>	NUTS 3	85,300	40,100	28,300	17,700	24,900
<b>Annual disposable income per inhabitant (EUR)</b>	NUTS 2	Not available	21,200	21,200	21,200	19,600

### Luxembourg and Trier-Kreisfreie Stadt (DEB21)

Trier-Kreisfreie Stadt (DEB21) sits entirely within the Trier-Saarburg (DEB25) region, which we discuss in the next section. Even though Trier-Kreisfreie Stadt does not immediately border Luxembourg, its proximity to the Luxembourg border is comparable to that of the surrounding region. Therefore, we will analyse the propensity for Trier-Kreisfreie Stadt residents to make a trip to cross-border shop in Luxembourg.

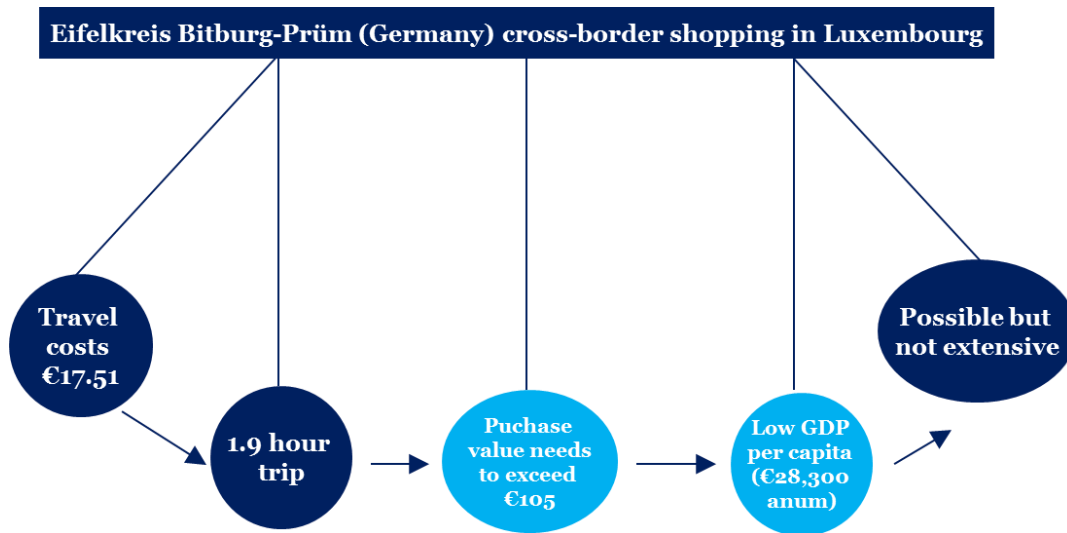


- **Mapping VAT differentials against travel costs**, we estimate the average return journey time between the centres of Trier-Kreisfreie Stadt and Luxembourg as circa 116 minutes (1.93 hrs) and the fuel and operating costs for a return trip at €18.61. Therefore, the amount spent on a shopping trip would have to exceed €112 if the VAT differential were 20%.
- **GDP per capita/Regional household income.** Trier-Kreisfreie Stadt has a moderate GDP per capita level for the region (€40,100 annually in comparison to €85,300 in Luxembourg), meaning that any cross-border shopping will be primarily focused on relatively low value goods (e.g. foodstuffs) should large VAT variances arise under enhanced flexibility, though there is a higher possibility of shopping for higher value goods than in other regions mentioned in this Appendix.
- **Propensity to engage in cross-border shopping.** Relatively high population density in Trier-Kreisfreie Stadt means that there are more likely to be a greater range of shopping opportunities within this region, acting as a disincentive to travel. As mentioned above, assuming a 20% VAT differential, purchases in excess of €112 would be necessary to make a trip to Luxembourg economically rational. This constitutes about 6% of the average monthly disposable income for individuals in this NUTS2 region. Since this value is relatively low, it is

conceivable that residents of Trier-Kreisfreie Stadt could spend €112 or more in a single shopping trip to Luxembourg. However, given this urban region will likely have higher income levels than some of the lower GDP per capita regions that surround it, residents may place a higher value on the time cost of travel necessary to make a physical round trip to Luxembourg. It is thus unlikely that extensive cross-border shopping will occur between these two regions.

#### Luxembourg and Eifelkreis Bitburg-Prüm (DEB23)

Luxembourg and Eifelkreis Bitburg-Prüm (NUTS 3 code: DEB23) share a border of approximately 60 km.

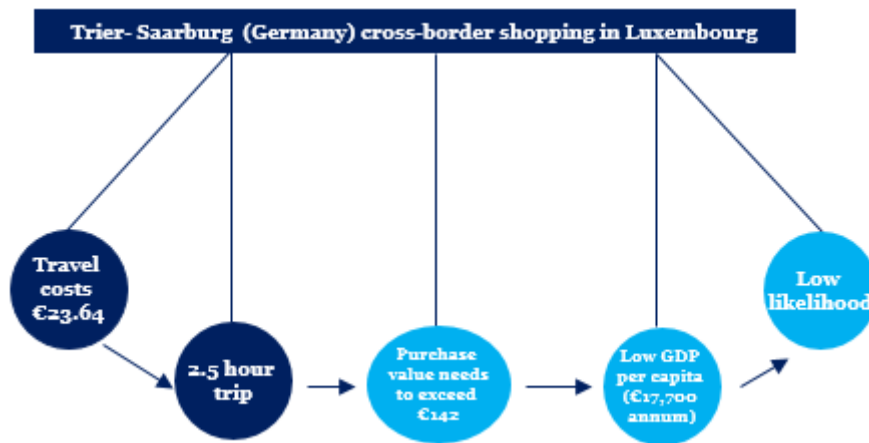


- **Mapping VAT differentials against travel costs,** we estimate the average return journey time between the centres of Eifelkreis Bitburg-Prüm and Luxembourg as circa 115 minutes (1.91 hrs) and the fuel and operating costs for a return trip at €17.51. Therefore, the amount spent on a shopping trip would have to exceed €105 if the VAT differential were 20%.
- **GDP per capita/Regional household income.** Eifelkreis Bitburg-Prüm has a relatively low GDP per capita (€28,300 annually in comparison to €85,300 in Luxembourg), meaning that any cross-border shopping will likely to be focused on everyday goods (e.g. foodstuffs) should large VAT variances arise under enhanced flexibility.
- **Propensity to engage in cross-border shopping.** As mentioned above, assuming a 20% VAT differential, purchases in excess of €105 would be necessary to make a trip to Luxembourg economically rational. This constitutes about 6% of the average monthly disposable income for individuals in this NUTS2 region. Since this value is relatively low, it is conceivable that residents of Eifelkreis Bitburg-Prüm could spend €105 or more on everyday goods in a single shopping trip to Luxembourg. Large VAT differences could thus lead to some degree of cross-border shopping between these two regions, though the €105 threshold just to break-even means cross-border shopping is unlikely to be extensive.

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### Luxembourg and Trier-Saarburg (DEB25)

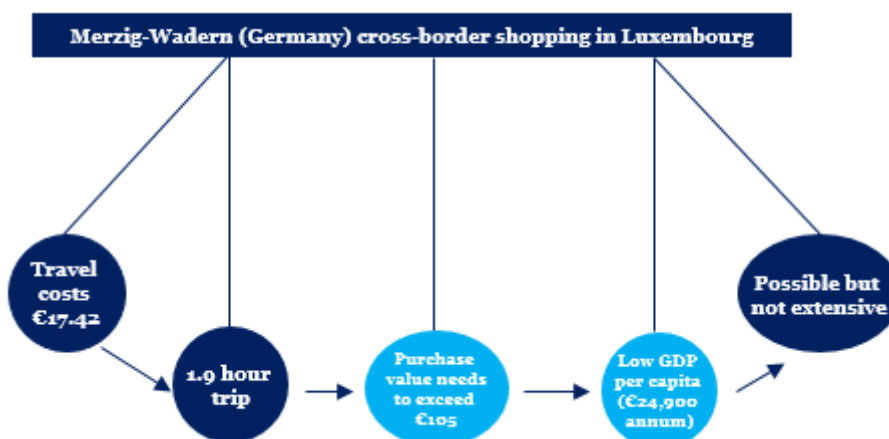
Luxembourg and Trier-Saarburg (DEB25) share a border of approximately 30 km.



- **Mapping VAT differentials against travel costs**, we estimate the average return journey time between the centres of Trier-Saarburg and Luxembourg as circa 152 minutes (2.53 hrs), and the fuel and non-fuel costs for a return trip at €23.64. Therefore, if the VAT differential were 20%, the amount spent on a shopping trip would have to exceed €142 to outweigh the expense of travel.
- **GDP per capita/Regional household income.** Trier-Saarburg has a relatively low GDP per capita (€17,700 annually in comparison to €85,300 in Luxembourg), meaning that any cross-border shopping will likely to be focused on everyday goods (e.g. foodstuffs) should large VAT variances arise under enhanced flexibility.
- **Propensity to engage in cross-border shopping.** As the value of purchases (assuming a 20% VAT differential) needs to exceed €142 to make the trip to Luxembourg worthwhile, and given this equates to approximately 8% of the average monthly disposable income for individuals in this NUTS2 region, we anticipate a low risk of households in this region engaging in regular cross-border shopping.

### Luxembourg and Merzig-Wadern (DEC02)

Merzig-Wadern (DEC02) is a NUTS 3 region of Saarland (DEC02) with a border adjoining Luxembourg of only 10 km.



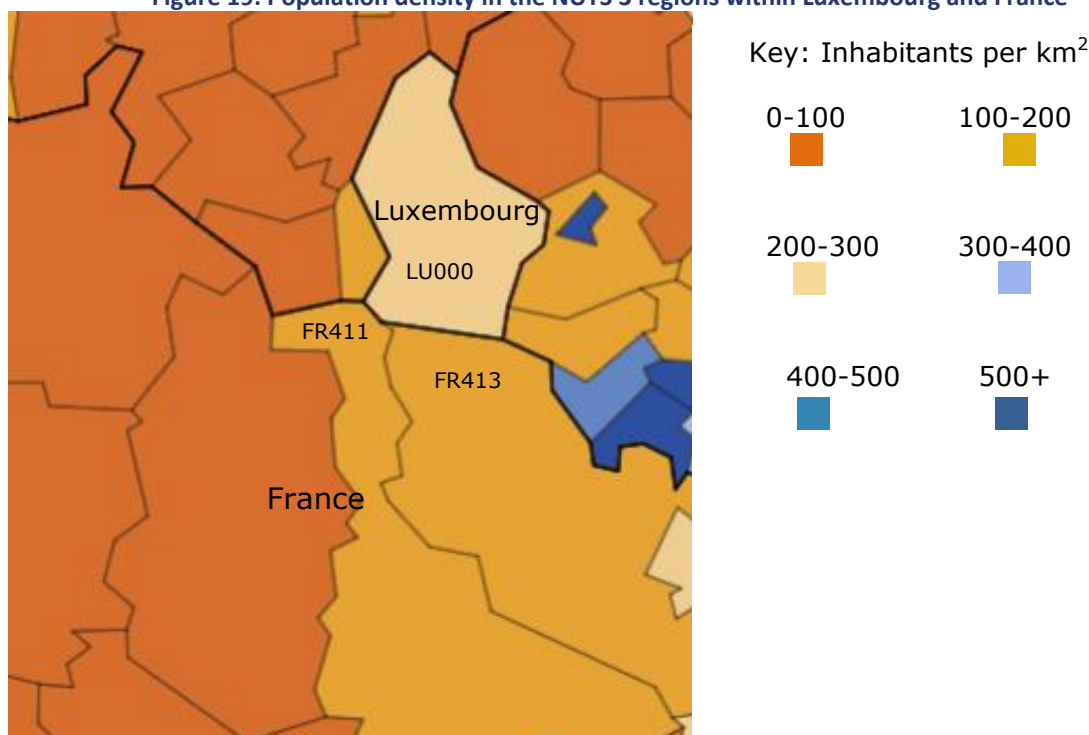
- **Mapping VAT differentials against travel costs**, we estimate the average return journey time between the centres of Merzig-Wadern and Luxembourg as circa 112 minutes (1.87 hrs), and the fuel and non-fuel costs for a return trip at €17.42. Therefore, if the VAT differential were 20%, the amount spent on a shopping trip would have to exceed €105 to outweigh the expense of travel.
- **GDP per capita/Regional household income**. Merzig-Wadern has a relatively low GDP per capita (€24,900 annually in comparison to €85,300 in Luxembourg), meaning that any cross-border shopping will likely to be focused on everyday goods (e.g. foodstuffs) should large VAT variances arise under enhanced flexibility.
- **Propensity to engage in cross-border shopping**. As mentioned above, assuming a 20% VAT differential, purchases in excess of €105 would be necessary to make a trip to Luxembourg economically rational. This constitutes about 6% of the average monthly disposable income for individuals in this NUTS2 region. Since this value is relatively low, it is conceivable that residents of Merzig-Wadern could spend €105 or more on everyday goods in a single shopping trip to Luxembourg. Large VAT differences could thus lead to some degree of cross-border shopping between these two regions, though the €105 threshold just to break-even means cross-border shopping is unlikely to be extensive.

#### Luxembourg and France

Indicator	Summary of findings
<b>Mapping travel time/ travel costs against potential VAT savings</b>	<ul style="list-style-type: none"> <li>• The average return journey time between the geographical midpoint of Luxembourg, and the French NUTS 3 regions bordering Luxembourg, is between <b>3.3 hrs to 3.8 hrs</b>, costing about <b>€36.04-€43.00 in fuel and operating costs</b>.</li> <li>• Therefore, the amount spent on a shopping trip would have to exceed between <b>€756.88 and €902.93</b> for VAT savings to compensate for travel costs (assuming a VAT saving of 5%), and between <b>€180.21 and €214.98</b> (assuming a VAT saving of 25%).</li> </ul>
<b>Contextual factors</b>	<ul style="list-style-type: none"> <li>• The French regions bordering Luxembourg are relatively low income, meaning any cross-border shopping is likely to be focused on relatively low value but frequently purchased goods (e.g. foodstuffs) should large VAT differentials arise under enhanced flexibility.</li> </ul>

Luxembourg is bordered by two NUTS 3 regions of France: Meurthe-et-Moselle (FR411) to the South West and Moselle to the South (FR413).

Figure 19: Population density in the NUTS 3 regions within Luxembourg and France

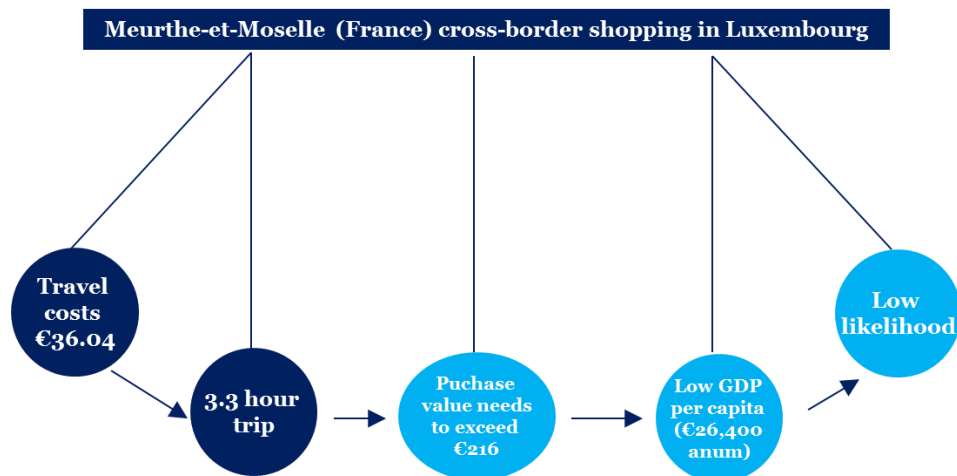


Source: Eurostat, Regions and Cities Illustrated (RCI)  
<http://ec.europa.eu/eurostat/cache/RCI/#?vis=nuts3.population&lang=en>

Table 66: Regional demographics - Luxembourg/France border

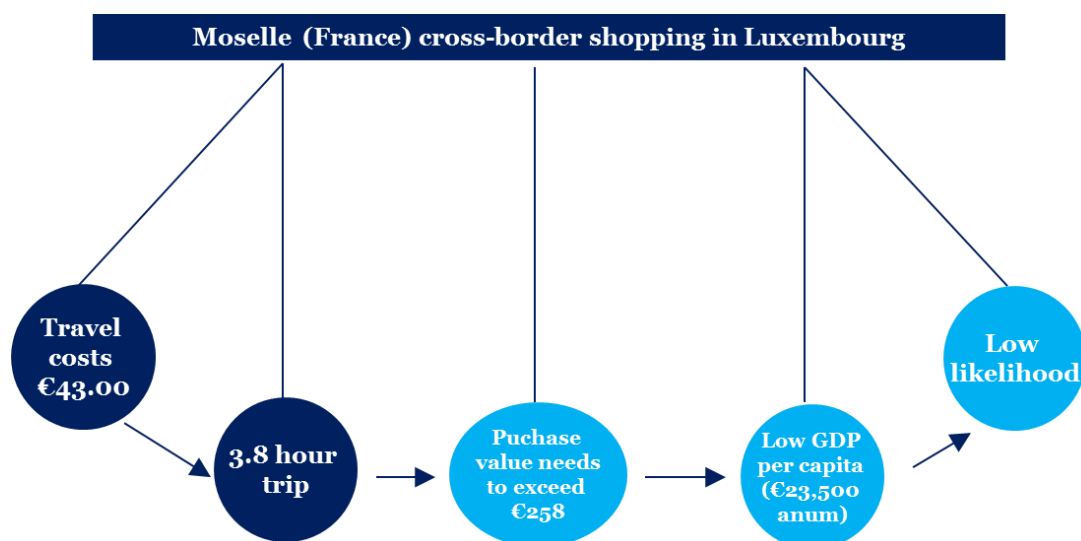
Data type	Granularity	Region A (Luxembourg)	Region B (France)	
		LU000	FR411	FR413
<b>Travel time for a round trip from Luxembourg (mins)</b>	NUTS 3		199	228
<b>Estimated travel costs – round trip (EUR)</b>	NUTS 3		36.04	43.00
<b>Population (people)</b>	NUTS 3	576,249	730,593	1,043,923
<b>Population density (people/km<sup>2</sup>)</b>	NUTS 3	220	139	168
<b>GDP per capita (EUR)</b>	NUTS 3	85,300	26,400	23,500
<b>Annual disposable income per inhabitant (EUR)</b>	NUTS 2	Not available	17,900	17,900

## Luxembourg and Meurthe-et-Moselle (FR411)



- **Mapping VAT differentials against travel costs**, we estimate the average return journey time between the centres of Meurthe-et-Moselle and Luxembourg as circa 199 minutes (3.3 hrs), and the fuel and operating costs for a return trip at €36.04. Therefore, if the VAT differential were 20%, the amount spent on a shopping trip would have to exceed €216 to outweigh the expense of travel.
- **GDP per capita/Regional household income**. Meurthe-et-Moselle has a relatively low GDP per capita (€26,400 annually in comparison to €85,300 in Luxembourg), meaning that any cross-border shopping will likely to be focused on everyday goods (e.g. foodstuffs) should large VAT variances arise under enhanced flexibility.
- **Propensity to engage in cross-border shopping**. As the value of purchases (assuming a 20% VAT differential) needs to exceed €216 to make the trip to Luxembourg worthwhile, and given this equates to approximately 14% of the average monthly disposable income for individuals in this NUTS2 region, we anticipate a low risk of households in this region engaging in regular cross-border shopping.

## Luxembourg and Moselle (FR413)



- **Mapping VAT differentials against travel costs**, we estimate the average return journey time between the centres of Moselle and Luxembourg as circa 228 minutes (3.8 hrs), and the fuel and operating costs for a return trip at €43.00. Therefore, if the VAT differential were 20%, the amount spent on a shopping trip would have to exceed €258 to outweigh the expense of travel.
- **GDP per capita/Regional household income**. Moselle has a relatively low GDP per capita (€23,500 annually in comparison to €85,300 in Luxembourg), meaning that any cross-border shopping will likely to be focused on everyday goods (e.g. foodstuffs) should large VAT variances arise under enhanced flexibility.
- **Propensity to engage in cross-border shopping**. As the value of purchases (assuming a 20% VAT differential) needs to exceed €258 to make the trip to Luxembourg worthwhile, and given this equates to approximately 17% of the average monthly disposable income for individuals in this NUTS2 region, we anticipate a low risk of households in this region engaging in regular cross-border shopping.







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