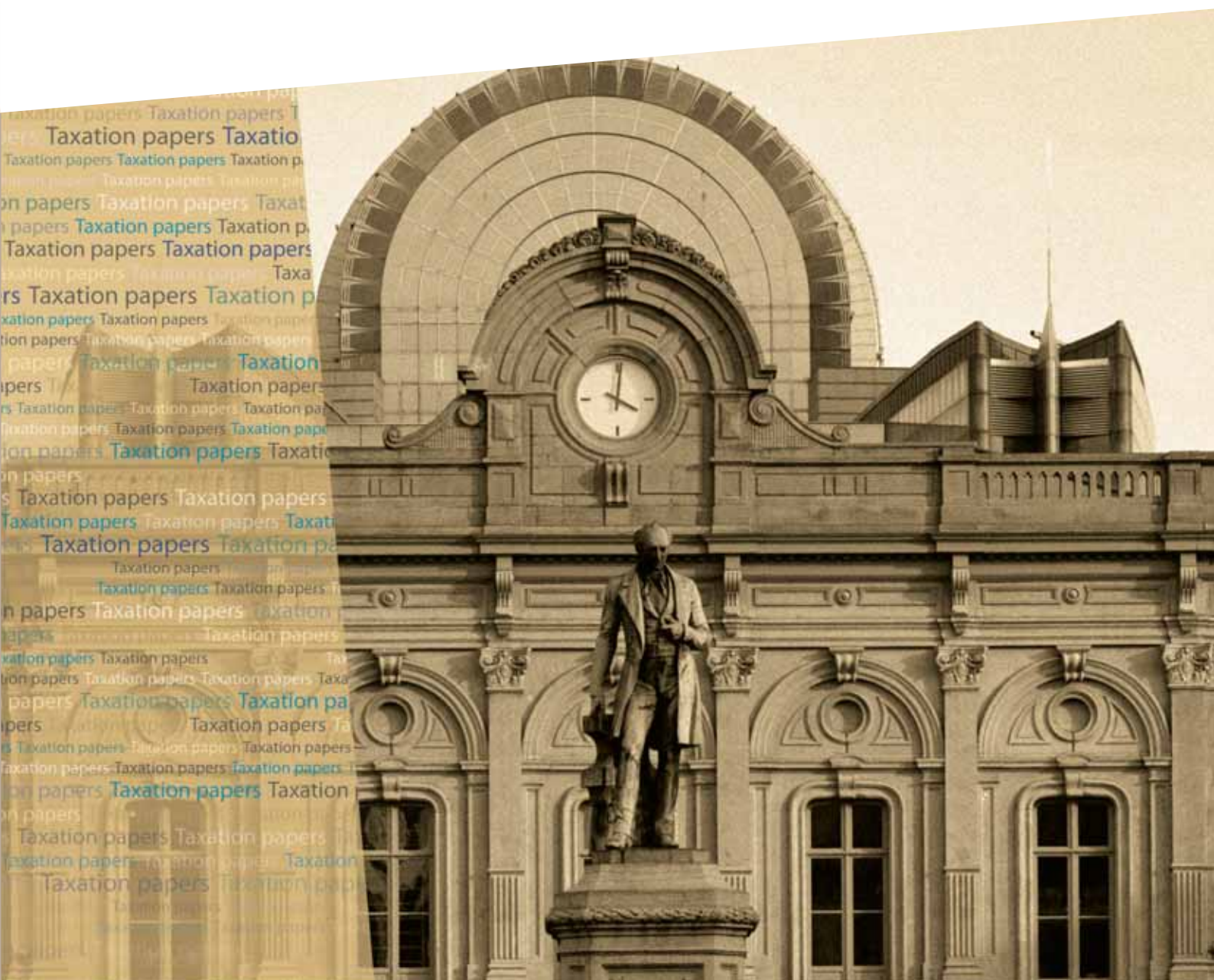




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*Study on reduced VAT applied to goods and services in the Member States of the European Union*



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# **Study on reduced VAT applied to goods and services in the Member States of the European Union**

**Final report written by Copenhagen Economics**

Thursday, 21 June 2007

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## Preface

Having agreed in February 2006 to prolong the experiment with reduced VAT rates on labour intensive services, the ECOFIN Council invited the Commission to provide a report on the impact of reduced rates on job creation, economic growth and the internal market. The report was to be built upon a study carried out by an independent consultancy. Copenhagen Economics was selected to carry out the study.

Based upon new empirical evidence, model simulations, theory and country experiences, the study concludes:

- There are strong general arguments for having just one VAT rate per member state. A single rate can improve economic efficiency, reduce compliance costs and smooth the functioning of the internal market.
- However, we agree that reduced rates in selective cases may have merit. It can (1) increase efficiency by increasing productivity or by reducing structural unemployment and/or (2) enhance equity by improving the income distribution or by making particular products more accessible to the entire population.
- We largely conclude that in the areas where efficiency or equity can be improved in a cost effective manner by way of reduced rates, adverse internal market effects such as distorted competition across borders are for the most part insignificant. In contrast, we define a number of other areas where reduced rates are detrimental to the internal market without having strong positive impacts on national objectives.
- Finally, we underline that targeted direct budget subsidies can often achieve better results at lower costs than reduced VAT rates, which should be factored into discussions on the use of reduced VAT rates.

Throughout the study, we propose some practical guidelines and tests that can be used to translate these conclusions into actual policy making including the balance between national and community objectives.

Professor Peter Birch Sørensen, University of Copenhagen, provided comments on chapters 1 and 3 of an earlier version of the report.

## Executive summary

Value Added Tax (VAT) in Europe is regularly subject to intensive debate. It is often argued that the current VAT system should be made more uniform to enhance economic efficiency and to protect the functioning of the internal market. But it is also regularly argued that extending reduced VAT to this or that particular product would create economic benefits such as more employment and less inequality. Which side has the upper hand?

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, this study also argues that 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.

This study examines the theoretical and empirical merits of four different arguments for reduced VAT rates. Two based on efficiency grounds: reduced VAT can increase *efficiency* by increasing productivity or by reducing structural unemployment. Another 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. The pros and cons of these arguments can be summarised as follows:

*First*, there is a *convincing theoretical and empirical argument* for extending reduced VAT rates (or other subsidies) to sectors whose services are easily substituted for do-it-yourself or underground work, e.g. locally supplied services and some parts of the hospitality sector.

The argument is that high tax wedges (high marginal income tax and high VAT rates) make it very expensive to buy these services on the market and more attractive to do yourself. The implication is that high skill professionals spend time on low skill work at home instead of spending time with their families or increasing their more productive labour supply. Lower VAT rates serve to counter this development. Simulations indicate that the gains in welfare, productivity and GDP are sizeable in all member states, even though the largest gains by far will accrue to member states with high tax wedges. Reduced VAT rates are not expected to have negative implications for the functioning of the internal market as the relevant products are typically not traded across EU-borders.

*Second*, we claim that there is a theoretical but not an empirical argument for extending reduced VAT rates to sectors employing many low skill workers in order to boost low skill demand, e.g. hotels, restaurants and locally supplied services. However, there may be a case for a limited, supplementary role via carefully targeted reductions in the context of a broader labour market reform.

The theoretical argument is that reduced VAT rates, by boosting demand for such services, stimulate demand for low skill workers, and push up their wages so that employment becomes a more attractive option than unemployment. The argument only holds in member states with rigid and non-flexible labour markets for low skill workers. In other member states the argument is not appealing, as increased demand may just stimulate wages for this segment of the labour market.

However, simulations indicate that the overall impact on demand for low skill workers is unimpressive because differences in low skill employment between industries are limited. Indeed, making standard VAT rates apply for all sectors currently benefiting from reduced rates is likely to create a similar sized demand boost for low skilled workers. If implemented, reduced VAT rates may have some limited implications for the functioning of the internal market, in particular through tourism.

*Third*, we claim that there is a *limited and contingent argument* for extending reduced VAT rates (or other subsidies) to sectors particularly favoured by low income households in order to improve the (post consumption) income distribution, but the argument *only* holds for member states with significant and stable consumption differences between high and low income groups. In reality, the only relevant sector is food.

The argument is simple. Reducing VAT rates on food which constitutes a larger share of consumption for low income households than for high income households implies a cost saving that is particularly beneficial for low income households. The larger the difference in consumption shares is, the more effective the argument becomes. Simulations show that the argument has some empirical support in member states, in particular those with high initial income inequality.

However, extending reduced VAT rates to food also brings about significant complications. Compliance costs seem to be particular large for the food sector due to its multitude of products, the enticing inclination to treat healthy and non-healthy food differently and the existence of a grey zone between sale of food and prepared food. In addition, reduced rates on food tend to make do-it-yourself-cooking economically more attractive relative to frequenting restaurants. For this reason, they tend to compound restaurants' disadvantage competing with home made meals even when VAT rates are similar and to offset any productivity gains to be gained from eventual reduced rates on restaurants, cf. above. Finally, it is not clear that the best instrument for improving the income redistribution is the VAT system, in particular not in member states with broad, well-developed social security systems. Reduced VAT rates on food are not likely to have significant consequences for the functioning of the internal market.

*Fourth*, we claim that there is a *limited and contingent argument* for extending reduced VAT rates (or other subsidies) to sectors that for some (good) reason are under-consumed. The motivation can be to make cultural (merit) goods more available for low income households or to stimulate consumption of goods with positive externalities. Examples of the former could be books, music and cultural events; of the latter energy saving appliances.

The argument is simple: demand can be boosted on any product by lowering VAT rates. However, it is often difficult to verify whether low income households in reality are induced to purchase more merit goods or whether the lower rates in reality serves as a subsidy to high income households initially consuming more merit goods. In addition, extending lower VAT rates to e.g. energy-saving appliances have limited effects on CO<sub>2</sub>-emissions if they are covered by other regulatory instruments such as emission trading schemes and may give rise to non-trivial complications for the functioning of the internal market. Furthermore, effects on total energy use are ambiguous: it may well switch consumption from less to more energy efficient hair dryers for example but may at the same time switch overall consumption in the



direction of energy intensive products (more hairdryers). Reduced rates on some merit goods such as books and music tend to create some serious tensions with the functioning of the internal market, primarily due to the ease of electronic trade.

The study also identifies a number of concerns that should be carefully evaluated in each specific case:

- Most arguments in favour of lower VAT are *equally valid* for other policy instruments, for example targeted subsidy schemes or targeted changes in income tax. However, this study does not evaluate whether lower VAT is the best instrument within the group of feasible instruments. For this reason, in any specific case it should be evaluated carefully whether lower VAT is the best instrument to achieve the desired effects or not.
- Empirical evidence indicates that compliance costs associated with lower VAT rates can be sizeable. Differences in VAT rates between similar products may in particular give rise to a substantial number of administrative and legal conflicts about the proper classification of specific goods. Swedish estimates indicate that such cases have very significant costs for the society.
- The key to an efficient application of lower VAT or any other subsidy is to keep low mechanical revenue losses. Mechanical revenue losses arise when lower VAT (or any other subsidy) is ceded to consumption that does not contribute to reaching the desired goal. For example, if lower VAT is ceded to food in order to improve the income distribution there will be a mechanical revenue loss because high income households will also benefit from lower VAT.
- The choice of financing scheme to secure budget neutrality should be carefully considered in the context of the goals to be achieved by reduced VAT rates. For example, if lower VAT on locally supplied services (in order to increase productivity) is financed by higher marginal income taxes, the desired effect may be nullified or reversed. If lower VAT on food (in order to improve the income distribution) is financed by higher VAT on items primarily consumed by high income households, the desired effects may be reinforced.

To summarise, there seems to be a strong argument for making the current VAT structure more simple and uniform, but also an argument for selective cuts in VAT rates primarily in locally supplied services and parts of the hospitality sector. We stress that the current study cannot be seen as a per se endorsement for further reductions in VAT. The devil is in the detail and we stress the need to consider each case on its own merits and to seriously appraise whether alternative non-VAT instruments may be preferable to reduced VAT rates.

## Chapter 1 Differentiated Value-Added Taxes – pros & cons<sup>1</sup>

VAT – the value-added tax – is ultimately a tax levied on goods and services purchased by end users. Imposing a VAT rate of 15 percent implies that the seller must add 15 percent to the sales price of the item in question and transfer this amount to the tax authorities net of any VAT paid by the seller.

VAT is a widely used tax instrument in the European Community.<sup>2</sup> It has to be used in all Member States, and today, total VAT revenues make up a significant 20 percent (European Commission (2006a)) of total tax revenue collected in the Community. VAT is praised for many practical advantages, and rightly so. It is easy to administer, it contains strong incentives for correct reporting of the underlying tax base, and it allows for (indirect) taxation of all types of income, irrespective of its source or legality. The popularity of the VAT system seems to be well-motivated.

In addition, many tax practitioners stress the benefits of having a single VAT rate, taxing all purchases of goods and services by the same uniform VAT rate. It is argued that a uniform rate avoids the significant administrative hassle of having to define for each and every good and service which rate to apply, it minimises the ability of tax-thinking, shifting sales from high rated to low rated sectors and it steepens the uphill slope for special interest groups seeking reduced VAT rates for their favourite sector or product.

While acknowledging the practical benefits of a uniform VAT rate, economists are on theoretical grounds sceptical towards the idea of a uniform VAT rate. They argue that an efficient VAT system necessarily must be non-uniform. Why is this so? The underlying problem is that the imposition of any tax<sup>3</sup> tends to reduce economic welfare. If a tax is levied on earned income, it becomes less attractive to work, and production goes down. If a tax is levied on a good, it becomes less attractive to buy this good drawing down demand and, in turn, production. In both cases, the imposition of a tax has a cost, a cost of reduced production or reduced economic welfare. Thus, an efficient tax system is a tax system minimising the costs of taxation, in other words, the deadweight loss.

In principle, this efficient VAT system is well-known. It is a tax system that changes consumers' buying decisions as little as possible. This again depends strongly on the price elasticity of the taxed goods and services. When the price elasticity is high, it means that even small price hikes slash demand significantly. In this case, levying VAT on top of the price may alter consumers' buying decisions significantly. Clearly, price elastic goods are *not* likely to be good

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<sup>1</sup> The argumentation in this chapter is much inspired by Sørensen (2007).

<sup>2</sup> All current basic Community legislation regarding VAT is laid down in the Council Directive 2006/112/EC of 28 November 2006 on the Common System of Value Added Tax – OJ L347, 11.12.2006, p 1 effective from 1.1.2007; hereafter called the VAT Directive.

<sup>3</sup> Except taxes motivated by Pigovian externalities and correcting for societal costs not captured by the market price.

candidates for high VAT rates in an efficient tax system. On the other hand, price inelastic goods may be good candidates for high VAT rates as they only modestly modify consumers' buying decisions. It follows from the above considerations that an economically efficient VAT system necessarily must be non-uniform, imposing higher VAT rates on price in-elastic rather than price elastic goods.

But even the most ardent believer in efficiency would admit that the practical problems of implementing an efficient VAT system *along these lines* would be gargantuan. Not only must the tax authority be able to estimate price elasticities for every product on the market (in each member state), it may also have to re-estimate these price elasticities regularly due to changes in preferences and the introduction of new goods on the market that may impact on price elasticities of goods already on the market. In short, the practical problems of implementing an efficient tax system along these lines seem overwhelmingly prohibitive.<sup>4</sup>

Instead, a consensus has emerged, that given the impossibility of measuring to any serious extent the required price elasticities, the best advice would be to opt for a single uniform VAT-rate.<sup>5</sup> This argument relies partly on the practical advantages of uniform VAT rates, partly on the insight that differentiating VAT rates without detailed knowledge of the underlying price elasticities is unlikely to lead to gains in efficiency and may even lead to sizable losses in efficiency as the 'wrong' goods or services are given reduced VAT rates.

However, the real, actually existing, VAT system within the European Community is far from uniform. Despite the consensus and insight described above, member states apply widely differing VAT rates creating a highly diversified and overwhelmingly complex VAT system. All but a single member state have opted for lower VAT rates on some goods and services and some of those have (implicitly) decided to relinquish tax revenue up to a significant 8 percent of total tax revenue in order meet the 'demand' for lower VAT rates. The standard rate covering about two thirds of total European consumption varies between 15 and 25 percent, while the remaining one third is subject to a vast array of different VAT rates varying between 0 percent and 25 percent. For example, Ireland has defined 2,500 subgroups of goods and services to implement a three-tier VAT system with standard (21.5); reduced (13.5) and zero rates. It even seems as though reduced VAT rates recently are becoming even more fashionable. Thus, no less than 18 member states have recently been allowed by the Council to apply lower VAT rates on very specific labour-intensive sectors of the economy.<sup>6</sup>

The high level of interest from Member States in reduced VAT rates is motivated by a range of different arguments. Some member states want to increase employment. Others want to promote particular products to boost the populations' cultural awareness or health. Again others are preoccupied with favouring underprivileged groups. Many of these arguments rely on the economic reasoning that lowering VAT actually will increase, not decrease, society's welfare (or achieve other worthy goals). That it will increase efficiency and *not* lower economic efficiency. It is quite evident that these arguments – if they have merit – challenge the ruling consensus that uniform VAT rates are to be preferred.

The key question is to what extent these arguments carry weight. First, to what extent do they truly increase economic efficiency such that they outweigh the distortionary loss? Second, to what extent can they be implemented in practice with reasonable administrative costs and sufficient degree of certainty?

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<sup>4</sup> In addition, an efficient tax system along these lines may also be less attractive due to equity considerations. The reason is that price inelastic goods typically are basic goods consumed in larger shares by low income households, while price elastic goods typically are luxury goods consumed in larger shares by high income households.

<sup>5</sup> This is equivalent to assuming that the price elasticities of all goods are the same.

<sup>6</sup> Council Decision 2006/774/EC: of 7 November 2006 and Council Decision 2007/50/EC of 30 January 2007.

For these reasons it seems to be prudent for the Council to have asked the Commission to prepare a report on an *'overall assessment of the impact of reduced rates applying to locally supplied services, including restaurant services, notably in terms of job creation, economic growth and the proper functioning of the internal market...'*<sup>7</sup>

As a response, the Commission put the requested study out to public tender and asked the successful bidder to prepare a study with the *'objective ... to increase understanding of the economic effects of applying the differentiated VAT rate system'*. Subsequently, the Commission commissioned Copenhagen Economics to carry out the study.

Ultimately, Copenhagen Economics has carried out an extensive study of VAT rates applied in Europe using multiple data and economic approaches, including case studies, econometric analysis, simulation models and other advanced techniques. This first chapter summarises the main insights of the study, whereas chapters 2-4 present the main results in greater detail. These four chapters are supplemented by a number of appendices documenting the economic analyses carried out.

### **1.1. Reducing VAT rates drives down prices and boosts demand**

It is important from the outset to stress that there is little doubt that permanently lowering the VAT rate on a particular good (or service) sooner or later will lead to a reduction in the price of the good more or less corresponding to the monetary equivalent of the lower VAT rate. If the VAT rate goes down by 10 percentage points on a good with a before tax price of €100, the price paid by the consumer will sooner or later drop by €10 for the vast majority of products. In economics jargon, there will be a strong tendency towards full pass-through.

There is also little doubt that as prices slide, consumers' demand for this particular good or service will sooner or later expand.<sup>8</sup> Consumers switch part of their demand towards the good with the lower tax rate because the price is lower than before. Production and employment in the sector producing the good will correspondingly expand to meet the higher demand. However, the strength and the swiftness of the production and employment response depend on a number of specific sector characteristics, which are discussed below.

#### *Strength*

The strength of the impact of lower VAT rates on production and employment depends significantly on the *consumer response to lower prices* and the *level of competition* within the sector. If consumers react only weakly to lower prices (if consumption is price in-elastic), production and employment will not increase significantly. This is typically the case for basic goods, for example food, as consumers prefer to preserve their level of food consumption and use the saved expenses to increase other types of less basic, more luxury expenses. In contrast, if consumers react strongly to new prices (if consumption is price elastic), production and employment may increase significantly. This is the case for less basic, high value goods as for example package holidays, books, and electronic equipment.

New empirical studies prepared for this study; cf. Appendix II, confirm these results, for example showing that food is indeed price in-elastic as one percent lower food prices expand food consumption by less than 0.5 percent. The same studies also reveal an asymmetric price response as higher VAT rates have a stronger and faster response on prices than lower VAT rates.

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<sup>7</sup> Tender description, Restricted invitation to tender no. TAXUF/2006/AO-001, A study on reduced rates of VAT applied to goods and services in the Member States of the European Union, Brussels, 2006.

<sup>8</sup> Some studies cf. Appendix II of minor actual VAT changes show more indeterminate results but this is not unexpected as these price changes were diminutive relative to the level of uncertainty in such studies.

If production is very labour-intensive there seems to be a stronger production and employment response of lower VAT rates in the industries affected. For example, new studies; cf. Appendix II, demonstrate that a 10 percent drop in prices, due to lower VAT rates, will lead to 10 percent higher employment in labour-intensive domestic dare, but to less than 1 percent higher employment in capital-intensive electricity production. However, we emphasise that these results are much more likely to be driven by the underlying differences in price elasticities than in labour intensities. It happens that many labour-intensive goods and services also are somewhat price elastic.

In sectors with limited competition, pass-through to prices may be less than full, and thus, the impact on production and employment may be muted. If the price initially has been set at a high monopolistic level, firms are not likely to adjust the price downwards to the full extent of VAT reduction, but will re-optimize in order to maximise profits, typically leading to a pass-through that is less than full.

### *Speed*

The *swiftness* of the production and employment response to lower VAT rates differs significantly between sectors depending on the *technology* and the *labour market*. If the technology is capital intensive or if the labour market is tight or rigid, there may be a delay before firms are able to adjust to the new market situation. It may take time, be costly or otherwise be problematic to buy and install more machinery or to hire and train qualified staff to meet the new demand. Correspondingly, new studies; cf. Appendix II, confirm that two years after a drop in prices, labour-intensive hairdressers have already hired staff corresponding to 90 percent of their total gain in employment, while capital-intensive electricity producers have only hired staff corresponding to 50 percent of their gain.

### *The VAT experiments: why they did not work?*

These conclusions might seem at odds with the conclusions drawn up by the Commission in their evaluation of the experiments of lower VAT rates to labour-intensive services in a number of member states since 1999. Here, the Commission concluded that no solid evidence could be identified to indicate that reducing VAT rates had a positive impact on employment, European Commission (2003).

We have reconsidered these experiments and their evaluations and – despite being different with respect to ambition and thoroughness – we find no major flaw in the evaluation of these experiments. For this reason we share the Commission's view that no solid evidence could be identified to indicate that reducing VAT rates have had a positive impact on employment. However, we would not expect to find any impact given the experimental character of the experiments.

All experiments were – by their very nature – experimental and, for this reason, temporary in nature, *not* permanent. If firms know that a lower VAT rate is temporary, why should they use time and money to expand production capacity and incur costs if they have to revert to their previous production level within a few years? By being experiments, the experiments by themselves begged to be ineffective with respect to job creation.

### *Financing reduced VAT rates*

When a member state decides to use reduced VAT rates in a specific sector, it also decides to give up tax revenue.<sup>9</sup> These amounts can be quite significant. Member states using lower VAT rates today already relinquish up to 8 percent of their total tax revenue. If budget neutrality is a relevant policy goal, the lost tax revenue must be compensated by raising other taxes. This can

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<sup>9</sup> Ruling out the possibility that tax revenue from higher sales may more than compensate the loss of tax revenue per sold item.

for example be achieved by raising VAT rates on other goods or increasing taxation of labour income.

We stress that budget neutrality is a highly relevant policy goal. Most member states are fiscally constrained because they have significant deficits<sup>10</sup> on the government budget today or because they can foresee significant deficits in the future due to population ageing. The agenda is budget neutrality rather than budget overrun.

For this reason, we will always examine the benefits of reduced VAT rates in the context of budget neutrality. It means that in order to finance reduced VAT rates in a particular sector we will, as a benchmark, increase the standard rate of VAT so that the combined effect on the government budget is zero. In addition we will examine whether other financing mechanisms, for example, higher income taxes will change the conclusions.

However, there is no reason to believe that higher VAT rates do not work just as well as lower VAT rates. Higher VAT rates suppress demand and employment as much as lower VAT rates stimulate production and employment cf. the analysis in Appendix II. So why bother pushing up production and employment in some sectors, while simultaneously depressing production and employment in other sectors? The most obvious effect of this exercise must be – in the best case – to nullify any impact on production and employment whatsoever.

For this reason, we strongly emphasise that one should not confuse the long term overall effect on total employment from the sum of short term industry specific impacts: A lower VAT rate on a price elastic good financed by a higher rate on a price in-elastic good may lead to a short term increase in total demand, but does not per se lead to long term increases in employment. In the absence of permanent effects on the labour market, such growth impulses will slowly peter out as higher employment triggers inflation, pressure on profit margins, higher interest rates; cf. the discussion in section 1.4.

#### *The remainder of the report*

The above observation makes it crystal clear that there is no point in twisting demand by introducing lower VAT rates on some goods and higher rates on other goods *unless* there are significant and important differences between the favoured and disfavoured goods. Apart from these differences, the only result will be distorted buying decisions leading to lower welfare within member states and in the Community without any economic enhancement, neither in job creation, economic growth or the functioning of the internal market. In the remainder of this report we will identify and quantify the importance of these differences. We proceed as follows.

*Section 1.2* tries to get a grasp of the overall current economic impact of having lower VAT rates on selected goods, in a sense trying to measure what we are up against. We have developed an economic model of Europe enabling us to measure to what extent the current VAT structure leads to losses in efficiency and consumer welfare. The model has been calibrated with the most recent econometric estimates of the relationship between changes in prices, VAT rates and demand, cf. Appendix II. In this setup, we will roughly estimate the gain in consumer welfare if member states decided to make changes to the current VAT structure.

*Section 1.3* discusses the consequences for the functioning of the internal market when some, but not all, member states apply lower VAT rates on selected goods and services. Lower VAT rates make it possible for some consumers to exploit differences in VAT rates between member states by engaging in cross-border shopping or distance shopping. Those product characteristics that are most supportive for this behaviour are identified.

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<sup>10</sup> In addition, foregone VAT revenue has alternative uses.

*Section 1.4* and *section 1.5* are the core sections dealing with the two key arguments member states apply when they pursue reduced VAT rates: efficiency and equity. Ultimately, we identify those member states and sectors for which reduced VAT rates are most likely to lead to societal gains based on the two arguments.

Efficiency proponents, cf. *section 1.4*, argue that lower VAT rates may:

- Increase overall productivity by inducing consumers to spend less time on Do-It-Yourself work and more time on their more productive ordinary jobs
- Reduce structural unemployment among low-skilled people expanding overall production.

Equity proponents, cf. *section 1.5*, argue that lower VAT rates may:

- benefit low-income households correcting an otherwise skewed income distribution
- broaden demand for merit goods, e.g. cultural goods, making them more accessible for all parts of the population

*Section 1.6* summarises and develops some practical guidelines for the design of good VAT systems.

## **1.2. Lower VAT rates have a cost of distortion and lower welfare**

Historically, there has been a strong consensus about the real-world superiority of a uniform VAT rate as argued in the beginning of this chapter. The consensus has partly been founded on the practical advantages, partly on the non-feasibility of ever being able to identify the optimal non-uniform VAT rates.

Despite the consensus, we are witnessing a highly diversified VAT system that we suspect carry potentially significant welfare costs because rates are not set according to efficiency considerations.

Two thirds of Europe is VAT rated at (varying) standard rates with an average rate of 19 percent. The remaining third is subject to a vast array of different VAT rates with an average rate of 7 percent, typically with lower rates for books, electricity, and food and higher rates up to 15 percent for locally supplied services.

There are major differences between member states. While the average EU-rate is about 15 percent, six low-VAT member states hover around 12 percent and six high-VAT member states have an average of 22 percent. The difference between member states is particularly prominent within food, books, cultural goods, electricity, heating and transport merit, much less so within surprisingly high rated locally supplied services.

There are also major differences within member states. For example, Ireland has defined 2,500 subgroups of goods and services in order to implement a three-tier VAT system with standard (21.5 percent), reduced (13.5 percent) and zero rates. Food alone has 89 subgroups such that nuts are zero rated, while roasted nuts are standard rated, cold pizza is zero rated, and warm pizza is reduced rated in a take-away.

### *Model Europe*

Before starting to discuss new arguments in favour of reduced rates, we would like to get an overview of the potential efficiency costs of the current VAT system. For that purpose we have developed a model Europe; a mathematical model of the European economy specifically constructed to provide insights into the best choice of VAT rates in Europe. The model is called the Copenhagen Economics VAT Model (CEVM) and it encompasses a detailed description anno 2007 of the economies of the 25 member states in 2006, including a very detailed

representation of the current VAT structure, cf. Box 1. The CEV-model can be used to simulate how the European economy would react to changes in the VAT system, and on this basis we can calculate the economic consequences in terms of consumer welfare and employment if VAT rates change.

### Box 1 Modelling differentiated VAT rates

The CEVM is a global, multi-regional, multi-sector, general equilibrium model, and is specially designed to study the economic effects of VAT policies. The model captures all linkages between the different sectors of the economy and it therefore allows for an economy-wide assessment of VAT policies. Specifically, the model captures both the direct effects on sectors targeted by the specific policy and the indirect effects on their suppliers, consumers and competitors. Therefore, the model is suitable for answering a question such as how large is the total economic cost of a VAT reduction when taking into account all spillover effects.

The model represents all current 27 EU Member States excluding Bulgaria and Romania. The rest of the world is aggregated into a single region labelled *Rest of the World*. Each of the regions has a representative consumer, a government and a production sector for each of the 13 sectors included.

The GTAP database, version 6, provides the majority of the data for the empirical implementation of the model. The database is the best and most updated source of internally consistent data on production, consumption and international trade by country and sector, and is based on detailed national accounts and balance of payments data from both national sources and international organisations. The CEVM therefore draws directly on the state-of-the-art in global databases for general equilibrium analysis.

Source: Copenhagen Economics

The CEV-model has an economic structure and an economic motor that together determine the outcome of the simulations we are going to conduct. The economic structure embraces 13 sectors that are selected such that they represent all sectors currently being targeted for derogations, and is organised in 6 groups such that sectors within each group are close to each other in economic terms, that is, being near-substitutes, cf. Table 1. The important sectors for our simulations are the sectors in groups 1-4 covering approximately 15 percent of EU25 value added.

**Table 1: The economic structure of the CEV-model, their share of total valued added and average VAT rates, EU25, 2007**

| Groups              | Sector                                   | Value added | VAT rate | Value added | VAT rate |
|---------------------|--|-------------|----------|-------------|----------|
| <b>1</b><br>Food    | Hotels (III)                             | 1.1         | 12.6     | 4.4         | 9.7      |
|                     | Restaurants (p)                          | 1.8         | 14.7     |             |          |
|                     | Foodstuff (III)                          | 1.5         | 8.0      |             |          |
| <b>2</b><br>Merit   | Medical & books (III)                    | 0.5         | 7.2      | 1.9         | 9.0      |
|                     | Culture & entertainment (III)            | 1.4         | 10.8     |             |          |
| <b>3</b><br>Network | Electricity & heating (p)                | 1.5         | 12.4     | 7.2         | 10.4     |
|                     | Postal, telecom & financial services (p) | 3.6         | 10.8     |             |          |
|                     | Passenger transport (p)                  | 1.7         | 3.7      |             |          |
|                     | Social housing (III)                     | 0.4         | 16.4     |             |          |
| <b>4</b> Local      | Locally supplied services (IV)           | 2.0         | 17.2     | 2.0         | 17.2     |
| <b>5</b><br>Public  | Government services                      | 17.7        | 4.1      | 17.9        | 5.2      |
|                     | Street cleaning (III)                    | 0.2         | 11.2     |             |          |
| <b>6</b> RoE        | Rest of the economy                      | 67.0        | 19.1     | 67.0        | 19.1     |
|                     | Total                                    | 100.0       | 14.7     |             |          |

Note: Sectors annotated (III) can use reduced rates according to Appendix III of the Directive. Sectors annotated (p) can provisionally use reduced rates according to the Directive. Sectors annotated (IV) can temporarily use reduced rates in locally supplied services according to Appendix IV of the Directive. The VAT rates for the groups are calculated using the consumption shares as weights.

Source: Council Directive 2006/112/EC and Copenhagen Economics VAT Model

The economic motor is a classical global, multi-sectoral, general equilibrium framework capturing both the direct effects on sectors targeted by VAT changes as well as the indirect



effects on their suppliers, consumers and competitors. Price elasticities are different between sectors and estimated on the basis of the econometric work carried out and documented in Appendix II.

#### *VAT scenarios*

We now set up a number of simulations where we measure the economic consequences of changing the VAT system in different ways. In each of the scenarios the VAT rate for the rest of the economy is adjusted to secure budget neutrality. We basically define three types of scenarios, cf. Table 2.

The first type of scenario, scenario A, applies a single uniform rate on all sectors except those sectors exempted from VAT. The second type of scenarios extends the use of reduced rates beyond what is used currently. This type of scenario exists in two variants, scenarios B and C. Scenario B extends reduced rates currently applied in some labour intensive service sectors in member states to the same sectors in all member states. Sectors concerned in scenario B are e.g. locally supplied services, hotels and restaurant. Scenario C extends reduced rates in all member states to those categories of goods or services to which only few member states currently apply reduced VAT rates in sectors not mentioned in appendix III. Sectors concerned in scenario C is beside locally supplied services also e.g. electricity and heat energy.

The third type of scenarios harmonises and to a certain extent confines the use of reduced rates compared to what is used currently. It also exists in two variants, scenarios D and E. Scenario D (lowest reduced rate) simplifies the structure of reduced rates by setting all rates (excluding exemptions) currently below the standard rate equal to the lowest reduced rate in each member state. Scenario E (EU15-III) confines the use of reduced rates to Appendix III sectors in EU15, thus excluding locally supplied services and sectors given provisional access to reduced rates as restaurants and certain utilities.

**Table 2 Simulation scenarios and their average EU VAT rates per group, EU25, 2007**

| Scenarios<br>Groups | Benchmark   | Uniform rates | Extending reduced rates |             | Simplifying reduced rates |             |
|---------------------|-------------|---------------|-------------------------|-------------|---------------------------|-------------|
|                     |             | A             | B                       | C           | D                         | E           |
| 1 Food              | 9.7         | 15.7          | 7.9                     | 7.1         | 10.4                      | 11.0        |
| 2 Merit             | 9.0         | 13.8          | 9.5                     | 9.6         | 9.8                       | 9.7         |
| 3 Network           | 10.4        | 12.3          | 10.9                    | 7.6         | 10.7                      | 11.8        |
| 4 Local             | 17.2        | 15.7          | 8.9                     | 9.1         | 16.9                      | 17.6        |
| 5 Public            | 5.2         | 7.0           | 5.4                     | 5.3         | 5.4                       | 5.6         |
| 6 RoE               | 19.1        | 15.7          | 20.4                    | 21.9        | 18.6                      | 17.9        |
| <b>Total</b>        | <b>14.7</b> | <b>14.7</b>   | <b>14.7</b>             | <b>14.7</b> | <b>14.7</b>               | <b>14.7</b> |

Notes: For a detailed description of each scenario refer to chapter 3

Source: Copenhagen Economics Vat Model

#### *Model results*

Our (rough) results show that moving towards a more uniform VAT system captured by scenario A where the standard rate applies in all sectors except those exempted will increase consumer welfare by 0.03 percent or about €1.3 billion cf. Table 3. Extending the use of reduced rates in scenarios B and C tends to reduce welfare by up to 0.02 percent or €0.7 billion, while limiting or simplifying somewhat the use of reduced rates may increase consumer welfare by up to 0.01 percent or €0.5 billion. Overall, the changes in welfare are modest.

**Table 3 Gains in consumer welfare going from the current VAT system to other VAT systems, EU25**

| Scenarios             | Uniform | Extending reduced rates |       | Simplifying reduced rates |       |
|-----------------------|---------|-------------------------|-------|---------------------------|-------|
|                       | A       | B                       | C     | D                         | E     |
| $\Delta W$ , pct      | +0.03   | [-0.00]                 | -0.02 | +0.01                     | +0.01 |
| $\Delta W$ , €billion | +1.3    | [-0.0]                  | -0.7  | +0.4                      | +0.5  |

Notes: Welfare is measured as Equivalent Variation. The welfare loss of Scenario B is likely to be underestimated due to technical properties of the model structure.

Source: Copenhagen Economics Vat Model and chapter 3

The intuition behind these results is logical. The smaller the variation in rates within a VAT system, the larger is the economic gain. To illustrate this point, we have developed a set of variability indicators that on different levels of detail capture the rate variability in each scenario; cf. Table 4. The measure of variability we use is the average (numerical) deviation from the average VAT rate for a set of VAT rates. For example, if VAT rates for two sectors are the same, the value of the indicator would be naught. If VAT is 8 percent in the one sector and 10 percent in the other similar sized sector, the value of the indicator would be 1, equal to the average numerical deviation from the mid-value of 9.

**Table 4 Variability in VAT rates in five scenarios, EU25**

|                   | Benchmark | Uniform | Extending reduced rates |     | Simplifying reduced rates |     |
|-------------------|-----------|---------|-------------------------|-----|---------------------------|-----|
|                   |           | A       | B                       | C   | D                         | E   |
| Within 13 sectors | 2.0       | 0.8     | 2.3                     | 1.8 | 1.8                       | 1.7 |
| Within 6 groups   | 1.2       | 0.7     | 0.7                     | 0.5 | 0.9                       | 1.4 |
| Between 6 groups  | 4.6       | 1.6     | 5.6                     | 6.9 | 4.1                       | 3.6 |

Notes: Variability is calculated as the weighted average deviation from the average VAT rate within each set of VAT rates. In section 3.2 a detailed description of the variability calculation is given.

Source: Copenhagen Economics Vat Model

It is clear from a comparison of Table 3 and Table 4 that there is a strong link between how much variability changes compared to the benchmark and the change in social welfare. For example, in scenario A with (almost) uniform VAT the gain in social welfare is highest and here the variability drops by 50 percent for all three levels of indicators. In scenarios B and C there is a significant increase in variability on all three levels and a correspondingly higher welfare loss from distortion to consumer choice.

In addition, there may to a varying degree be savings in compliance costs by having a less complicated VAT structure. This is in particular relevant for scenario A with a uniform rate and scenario D operating with a single reduced rate within each member state. Back-of-the-envelope calculations based on Swedish experiences indicate that gains in saved compliance costs in scenario A might dwarf the gains in consumer welfare by a factor of two. Also they do not incorporate the costs of handling widely different VAT schemes for firms active on markets in several member states. Thus, in particular scenario A, but also scenario D, is likely to be more attractive than revealed by Table 3 if savings in compliance costs are factored in.

These model simulations show that the current VAT structure with lower rates for some goods or services incurs economic costs for the Community and member states. For this reason, member states contemplating lower VAT rates should carefully consider the expected size and likelihood of benefits they hope to achieve by this move. And the Community should carefully examine the consequences for the functioning of the internal market, which will be the topic of the next section.

### 1.3. Community interest: Protecting the functioning of the internal market

When a member state lowers the VAT rate, it invites consumers in other member states to purchase the product in question in the low-VAT state rather than in their resident state, either by crossing the border to bring back the product or by ordering the product to be delivered on his home address. As for VAT differences *within* a member state, VAT differences *between* member states have the potential to distort consumers' buying decision and to cause an efficiency loss. In addition, VAT differences between member states have the potential to change the pattern of trade between member states and to redistribute VAT revenue between member states. For these reasons, the VAT structure has clear implications for the functioning of the internal market.<sup>11</sup>

#### *Two types of consumer sales between member states*

We distinguish between two types of consumer sales between member states: *cross-border sales and distance sales*.

Cross-border sales apply when the consumer physically moves to another member state and purchases a good or service, consuming it on the spot or bringing it back to his own member state. Tourism, wellness, dentistry and medical treatment are examples of services that must be consumed on the spot. Bags, clothes or electronic equipment bought back from shopping sprees in London, Paris or Berlin are examples of goods that can be brought back home.

Distance selling applies when the consumer residing in his own member state uses phone, mail or email to order a good or service in another member state subsequently having it brought back to his own member state by mail, parcel delivery or electronic transfer. Mail order or increasingly e-trade in books, music and other electronic products are the main examples of distance selling.

Differences in VAT rates can be exploited by consumers if they can purchase goods or services using in member states with lower VAT rates (in the country-of-origin) than the rates applicable in their own member state (country-of-destination). There are two possible ways. *First*, consumers can purchase goods and services in other member states with lower VAT rates that they *are* legally entitled to. *Second*, consumers can purchase goods and services in other member states with lower VAT rates that they *are not* legally entitled to.<sup>12</sup>

A review of EU VAT law reveals that the main source of concern up till now has been rooted in cross border sales. The country-of-origin principle is the main rule for cross border sales of goods and services, while it only applies exceptionally for distance sales; cf. Table 5.

However, as e-trade of country-of-origin taxed products such as telecom services and digital content services (electronic books and music) expands, future VAT policies need to reflect this development.

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<sup>11</sup> We assume that lower VAT rates lead to less uniform VAT rates. This is not necessarily so. A lower tax rate may actually lead to more uniform VAT rates, if many other member states already have lower VAT rates on the good in question. Lowering VAT rates still increases dispersion within-member state, but might actually decrease dispersion between member states, the latter in particular being relevant for the functioning of the Internal Market.

<sup>12</sup> This could be the case for distance selling of goods from large vendors hiding as small vendors or, in particular, distance selling of goods in electronic form (e-commerce) that cannot be easily identified and often competes directly with physical goods (music, books, film).

**Table 5 Applicability of VAT Origin and Destination principle on consumer purchases for goods and services, EU25**

|                    |          | Origin  | Destination  |
|--------------------|----------|---|--|
| Cross border sales | Goods    | Main rule   | Exception: New, expensive capital goods <sup>13</sup>  |
|                    | Services | Main rule when <i>consumers</i> (tourism, dentistry) or <i>physical products</i> (auto repair, repair of movable property) cross the border | Exception: When <i>service providers</i> (maintenance and repair of property) cross the border |
| Distance sales     | Goods    | Exception: Small vendors <sup>14</sup>  | Main rule  |
|                    | Services | Exception: Telecom & broadcasting, digital content products such as e-books and e-music.  | Other services   |

Note: Special rules apply for non-commercial legal entity such as associations and public authorities if the total buying - from other EU member states during the year - exceeds some threshold value, cf. Appendix VII. In this case, the legal entity loses the right of buying in other EU countries at lower VAT rates than the ones that apply in the destination country. When the client is an exempted small business, the same special rules apply as for non-commercial and public authorities

Source: European Commission, DG Taxation and Customs Union

### *Cross-border sales*

Very little is known about the extent of cross-border shopping, but the few existing studies indicate a significant potential for cross-border shopping (of goods). In a recent study by the Danish tax authorities, cross-border shopping at the Danish-German border was estimated to about 2 percent of total consumption in Denmark, even excluding alcohol and taxes (Danish Ministry of Taxation, 2006). This level of cross-border shopping is driven by a difference in VAT rates of 9 percent between the German standard VAT rate of 16 percent<sup>15</sup> and the Danish standard VAT rate of 25 percent.

The same study also made clear that the level of cross-border shopping was very unevenly distributed between sectors. Clothing, music and film and electronics with high value per unit score very high, while food, furniture and household items with low value per unit and (some) problems of perishability score low. Based on this study we tentatively conclude that the main characteristics of goods being particular suited for cross-border shopping are high price per unit weight/volume; low perishability (during transport) and limited cultural specificity.

The study also argues that the increase in German standard VAT rate from 16 to 19 percent is expected to cut down the level of Danish cross-border shopping by 10 percent, in particular expensive goods as for example caravans and kitchens. The level of German border trade in Denmark is expected to rise by a similar percentage. These numbers indicate rather high effectiveness of changes in the relative prices between member states as the implied elasticity is in the magnitude of 3.

Even less is known about cross-border shopping of services and we have to rely on more subjective assessments. Press clips seem to indicate that it takes place and is growing in areas as medical treatment, dentistry, restaurants and wellness. The volume is not known, but it is likely to grow as services become a still larger share of consumption, as consumers become more acquainted with quality standards abroad and as the internal market for services evolve. However, one can only speculate whether differences in VAT rates are the main determinant of the services mentioned above or whether (temporary) differences in labour costs are more important.

<sup>13</sup> Exceptions are new airplanes, new cars and certain motorbikes and new boats.

<sup>14</sup> Distance selling from vendors with low turnover per Member State of destination can optionally use VAT rates in the vendor's member state (the country of origin).

<sup>15</sup> Before 1 January 2007

### *Distance sales*

For distance selling to consumers in other member states, little is known but we would argue that the same characteristics as mentioned above are equally likely to be important for distance sales. High price per weight unit implies that transport costs would constitute a modest share of total costs. Low perishability is still needed for delivery per mail and limited cultural specificity is needed to attract demand in other member states. In addition, we would add that the inability to see and try the product before purchase would, in particular, be an advantage for branded up-scale products with a well-known and credible name. Thus, high brand credibility is likely to play a role for distance sales.

However, distance sales of goods and services are, in principle, of limited concern because they as a main rule are subject to the VAT rate in the country of destination (the consumers' member state) irrespective of the country of origin, cf. Table 5.

One potential exception is distance sales from vendors with a turnover below a certain threshold (per vendor per member state) who optionally can apply the vendor's, not the consumer's VAT rate. This exception may be economically important to the extent that a large share of distance selling takes place from small vendors or if these legal rules are circumvented. Another potential exception is distance sales of electronically delivered products (books, games, film, and music) all rated in the country of origin. The latter is likely to become much more important in the future as digital goods are currently experiencing very significant growth rates. For example, e-commerce is estimated to account for 6 percent of global music sales in 2005 against near zero in 2003 (Screen Digest et al 2006).

### *Overall applicability*

Overall, we point to the following characteristics of goods that in particular may create internal market problems in case of widely different VAT rates between member states for the same goods:

- High price per unit weight/volume
- Low perishability (during transport)
- Limited cultural specificity
- High brand credibility

Typical examples are branded clothing, hand tools, books, music CDs, movie DVDs, electronic equipment, durable household machinery, cosmetics, some food and some services such as restaurants. Note, however, that these characteristics apply for any type of VAT difference, both differences caused by varying standard rates and by differences caused by application of reduced rates.

However, in the context of experimenting with lower VAT rates there does not seem to be major reasons to worry about the consequences for the internal market for many goods and services, cf. Table 6. In particular, it is difficult to see any concern related to locally supplied services. Those sectors where concern may be well-motivated are books and medicine, restaurants, and culture and entertainment in the context of tourism.

**Table 6 Sectors and their inclination to create problems with the internal market, EU25**

| Group             | Sector                                     | Cross-border sales | Distance sales |
|-------------------|--|--------------------|----------------|
| 1 Food            | Hotels                                     | Tourism            |                |
|                   | Restaurants                                | Tourism            |                |
|                   | Foodstuffs                                 |                    |                |
| 2 Merit           | Medical, pharmaceutical, books, newspapers |                    | Books          |
|                   | Culture and entertainment                  |                    | Music          |
| 3 Network         | Electricity, district heating              |                    |                |
|                   | Post, telecom and financial services       |                    |                |
|                   | Passenger transport                        |                    |                |
|                   | Construction of social housing             |                    |                |
| 4 Local           | Locally supplied services                  |                    |                |
| 5 Public          | Government services                        |                    |                |
|                   | Street cleaning                            |                    |                |
| 6 Rest of economy | Rest of the economy                        |                    |                |

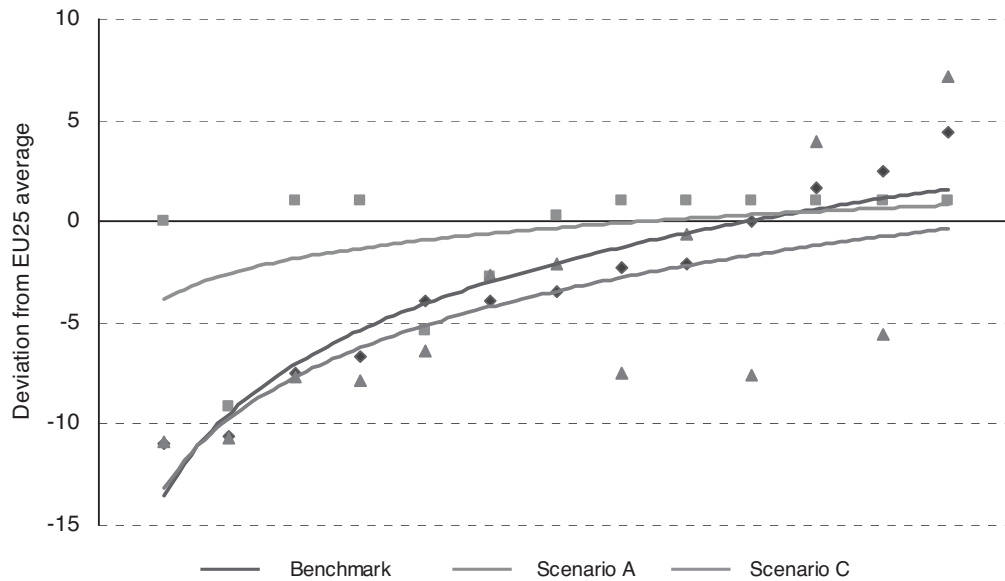
Note: Red colour indicate a potential problem for the functioning of the internal market, the more red, the worse.

Source: Copenhagen Economics

Differing VAT policies – as represented by the model scenarios A-E – have different implications for the likelihood that consumer cross-border and distance sales are going to have significant impact. We have calculated indicators of variability for each of the 13 sectors in the CEV-model such that they represent the variation in VAT rates between member states within the same sectors.

They show – despite their crudeness – that some of the same sectors that are likely to have relatively significant problems with widely differing VAT rates, e.g. books/medicals and culture/entertainment, are among those sectors with the highest variability of VAT rates between member states. The scenario that drives down this variability between member states is scenario A, the uniform scenario, even rather than Scenario C which is designed explicitly to level out the reduced rates between Member States, cf. Figure 1. The benchmark (blue line) indicates the current sectoral structure of variability. Making them uniform in scenario A (red line) clearly reduces variability, while extending VAT rates across member states in scenario C (green line) is not well suited to bring down variability.

**Figure 1 Sector variability in VAT rates for the benchmark, scenario A and scenario C.**



Note: The marking dots show the deviation from the EU25 average VAT rate for each sector in the scenarios, while the lines illustrate the regression line in logarithms for the scenarios. The flatter the line is the less is the variability.

Source: European Commission (2006b), IBFD VAT data base and Copenhagen Economics

#### 1.4. Member state interest: Promoting efficiency

Even though there are economic costs of having differentiated VAT rates, the widespread use and continued interest in using lower VAT rates indicate that this is not the full story. Indeed, it is not. There is little doubt that carefully designed reductions in VAT rates or equivalent direct support schemes for several reasons may improve member state and community welfare.

The goal of reducing VAT rates on some products is, mostly<sup>16</sup>, to induce consumers to shift their demand from some activities to other, and for various reasons, more beneficial activities. But this can only be advantageous if the higher standard VAT rate on all other goods required by budget neutrality<sup>17</sup> does not nullify the changes brought about in the first instance. For this reason, a necessary condition for lower VAT rates to be economically beneficial will be that there are *significant* and *important* differences between the products favoured by the lower VAT rates and all other products disfavoured by high VAT rates. If these differences are present, shifting activities between sectors might induce permanent changes in the economic structure of the member state.

We have identified two arguments supporting lower VAT rates on selectively chosen goods on the basis that it would increase the overall economic efficiency. These arguments accept that lower VAT rates may give rise to distortions as described in section 1.2, but proceed by arguing that there are additional considerations not taken into account that may lead to an overall gain in economic efficiency. They argue that lower VAT rates may:

- Increase overall productivity
- Reduce structural unemployment

<sup>16</sup> When the motive is to improve income distribution, the aim is not to induce switching of demand, but to subsidise existing demand

<sup>17</sup> See section 3.3 for a discussion of the impact of alternative financing schemes.

The first argument relies on the observation that some economic activities are by definition not taxable, for example do-it-yourself work (DIY-work) in private homes. By taxing what is taxable, for example labour income and consumption, it becomes more attractive for consumers to carry out DIY rather than buy the equivalent service on the market. We introduce a distortion that may lead skilled and highly productive persons to carry out DIY even though they are not very good at it. They choose to spend some hours on low productive DIY rather than on high productive activities in their job. Some of it may clearly be motivated by personal preferences, but some may be caused by taxation.

By lowering taxation, for example VAT, on sectors with a lot of DIY-activities and financing it by higher VAT rates on sectors with little potential DIY-activity, it might be possible to induce people to spend less hours on DIY and more on their job and, thus, increase labour supply and productivity.

The second argument relies on the observation that (structural) unemployment for the low-skilled is much higher and pervasive than unemployment for the high-skilled. Restrictive labour market regulation, high minimum wages, and hiring and firing regulation tend to have generated significant structural unemployment problems for the low-skilled in many member states.

By lowering taxation, for example VAT, on sectors primarily hiring low-skill workers and financing it by higher VAT rates on sectors using predominantly high-skill workers, it might be possible to increase demand for low-skill workers, increase their wage and draw them out of structural unemployment without harming employment possibilities for high-skilled workers on their more flexible labour markets.

Each of these cases relies on the argument that a member state's economic structure has given rise to an economically undesirable low efficiency situation and that a better situation can be created by tilting demand between sectors using reduced VAT rates. In what follows, we will go through each of the cases and discuss under which circumstances these arguments hold or not.

Three general considerations are worth mentioning before discussing the arguments in more detail.

*First*, even though lower VAT rates are the focus of this study, it is important to consider whether lower VAT rates are the proper approach and whether there are alternative policy tools available that are able to achieve the same goals with fewer costs. It is, for example, not immediately obvious that lower VAT rates to reduce structural unemployment is a better tool than direct subsidies to particular activities. The subsidy scheme may, for example, be better targeted, incur less compliance costs, and be more transparent<sup>18</sup>. On the other hand, it may be less credible as a permanent solution.

*Second*, compliance costs are often a concern in themselves. Ceding lower VAT rates to a narrow group of relevant goods may in principle be the best approach, but may be marred by conflicts between firms and authorities fighting over borderline cases, that is, higher compliance costs. Having a broader definition of the goods enjoying low VAT rates may ease compliance costs, but at the expense of a less well targeted VAT scheme with more revenue and deadweight loss. Our study suggests that compliance costs are not a trivial issue and need to be seriously considered when designing lower VAT rates.

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<sup>18</sup> Direct budget subsidies tend to be more transparent as few member states systematically account for the fiscal losses associated with beneficial tax treatment. This tends to strengthen ongoing policy evaluation in the budgetary policy process.



*Third, mechanical* revenue losses should be avoided arising whenever there is an initial high level of activity in the sector that is going to benefit from reduced VAT rates. The aim of lower VAT rates is to induce shifting of demand between sectors, not to subsidise activities already taking place. The more activities taking place initially, the higher will be the costs in terms of foregone VAT revenue in order to induce the desired shifting. Imagine two different sectors with the same scope for shifting. However, in the first sector initial turnover is €100m, in the second €200m. If the rate of VAT is lowered by 5 percentage points, the initial price tag before any benefits would have been achieved would be €5m in the first sector, €10m in the second.

#### *Increase overall productivity*

Lower VAT rates can increase overall productivity in a member state if they can induce consumers to spend fewer hours on DIY and more hours on their ordinary job. The reason is that a trained worker typically is more productive on his job than doing DIY. In addition, tax revenue is likely to increase.

The extent to which formally produced goods and services are replaced by DIY varies considerably across industries, and between member states. It is relatively easy to substitute a visit to a restaurant for domestic cooking, while few consumers would venture into producing their own PC. Other activities, particularly suitable for this type of substitution, might be cleaning, washing; gardening, window cleaning, domestic services, hairdressing, repair and maintenance of other consumer durables, in short locally produced services. In contrast, most manufacturing activities and many other services are much too complicated to be candidates for DIY.

The same productivity argument holds, albeit to a lesser degree, if lower VAT rates can induce consumers to spend less money in the underground economy. Productivity gains are probably more limited as many underground workers are the same workers that would carry out the work if the activity became white.<sup>19</sup> In particular, this is the case for construction and repair work. However, the gains in tax revenue are similar.

The productivity argument is intimately linked to the so-called tax wedge. The tax wedge is the number of hours a person has to work in order to earn sufficient money to pay another person for one hour's work, for example house cleaning, repair work, and babysitting. Assuming that the hourly fee is similar for both persons, the tax wedge  $w$  in its most simple form is defined as:

$$w = \frac{1 + VAT}{1 - T}$$

where VAT is the VAT rate applied on the good or service in question and  $T$  is the marginal income tax rate. Suppose that VAT is 20 percent and the marginal income tax rate is 50 percent, then the tax wedge is 2.4. The interpretation is that a person has to work for 2 hours and 24 minutes in order to have sufficient after-tax income to be able to pay another person doing one hour of work including VAT. Clearly, the larger is the tax wedge, the more inclined she is to do the job herself or to buy it underground.

However, when she chooses to do it herself, productivity will often be lower because she is not trained for the job in question. In addition, if she spends one hour on DIY, this hour cannot be used to increase her own working hours (her labour supply). Thus, there will lower productivity corresponding to the gap in productivity between the DIY-activity in which she is not trained and the job in which she is trained.

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<sup>19</sup> Productivity could be lower if the 'underground' worker did not have access to the same equipment and machinery as the 'white' worker

Accordingly, there might be a productivity gain to win if a member state reduces VAT rates (lowers the tax wedge) in sectors where the role of DIY and underground activities is significant and increases VAT-rates (increases the tax wedge) in sectors where the role of DIY and underground activities is trivial.

We have adapted a single-country general equilibrium model, Infosim, which is able to capture the interaction between the formal and the informal economy, DIY- and underground activities, described in Sørensen (1997). The model includes three types of markets: formal markets, underground markets and DIY-markets. In each of these markets several activities take place. Housing repair and locally supplied services take place in all types of markets, while other goods and services are only produced in the formal economy. Housing repair and locally supplied services are those activities that can be produced in the informal economy, the difference being in skill composition: high skills are needed in housing repair, low-skills in locally supplied services.

The model includes eight representative households with different socio-economic background with respect to skills and labour market status. Each household has to choose how to spend time between DIY, underground and formal sector activities. We apply the model on to two typical member states in EU25 that we call South and North.<sup>20</sup> These two countries are defined such that the tax wedge and the extent of DIY are larger in North than in South.

In this model, we have for illustrative purposes simulated the consequences of different reductions of VAT rates for housing repair and other locally supplied services in the South and North economy financed by higher VAT rates on all other goods and services in order to preserve budget neutrality.

*First*, our simulations show that there is a sound economic argument for lowering VAT rates on locally supplied services (and restaurants) in both South and North (see Chapter 3 and Appendix IV). In both types of member states, consumers shift about 2 percent of their man hours from DIY to formal work if VAT is lowered by 10 percentage points, the shift leading to a significantly higher productivity in the range of 0.5 percent, and to higher tax revenue in the range of 0.5 percent due to the large tax base.

*Second*, there is a significantly stronger argument for lowering VAT rates on locally supplied services (and restaurants) in member states looking like North rather than South. The higher marginal income taxes and the larger initial VAT rate (in short, a larger tax wedge) in North has driven more and less productive activity into DIY thus generating a larger potential in terms of hours to be shifted back to the formal economy, in terms of productivity growth to be gained, and in terms of extra tax revenue. It means that it is likely to be preferable to have lower VAT rates for locally supplied services (and restaurants) in member states of the Northern type than in the Southern type.

*Third*, there is a better argument for lower VAT rates for low-skill locally supplied services such as cleaning and washing than for high-skill locally supplied services such as housing repair. The reason is that skill requirements are much stronger in the latter sector, and DIY-activities play a correspondingly smaller role.

In another illustrative exercise, we have simulated the economic consequences of the five scenarios A-E explicitly taking into account the productivity argument as presented above. To do this we have built a link between the Infosim-model and the CEV-model allowing us to

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<sup>20</sup> North: Belgium, Denmark, Finland, France, Germany, Netherlands and Sweden. South: Italy, Spain, Greece, Portugal.

calculate the impact on productivity in the Infosim-model as a consequence of the VAT changes embedded in each scenario calculated in the CEV-model.

Lower VAT for locally supplied services and restaurants predictably boost demands for locally supplied services in all scenarios, but to a varying degree and for different reasons; cf. Table 7. Demand for locally supplied services grows significantly by more than 1.5 percent in the two scenarios B and C. In scenario B reduced rates are extended to all locally supplied services while scenario C extends reduced rates to the non-appendix III sectors where only few member state currently have reduced rates. It also grows, but less, in the uniform scenario A because locally supplied services on average benefit from lower VAT rates when all reduced rates are repealed.<sup>21</sup> Repeating reduced rates for restaurants in scenario E is likely to reduce activity slightly for these two industries as a whole.

**Table 7 Consumption changes in five scenarios in the CEV-model, EU25**

| Scenarios                               | Share of Consumption | Uniform    | Extending reduced rates |            | Simplifying reduced rates |            |
|---|----------------------|------------|-------------------------|------------|---------------------------|------------|
|   |                      | A          | B                       | C          | D                         | E          |
| Locally supplied services + restaurants | 10.9                 | 1.0        | 1.8                     | 1.6        | 0.1                       | -0.2       |
| Rest of the economy                     | 89.1                 | -0.1       | -0.2                    | -0.2       | 0.0                       | 0.0        |
| <b>Total</b>                            | <b>100.0</b>         | <b>0.0</b> | <b>0.0</b>              | <b>0.0</b> | <b>0.0</b>                | <b>0.0</b> |

Source: Copenhagen Economics Vat Model

Changes in consumption structure are under the surface hiding underlying changes in the observed GDP and in the non-observed overall productivity in the formal and non-formal sectors, cf. Table 8. The measured GDP increases by about 1 percent in scenarios B and C. It increases because some activities previously in the (non-measured) non-formal sector are now being carried out in the (measured) formal economy. The increase in GDP overstates the real change as the activities are measured as though they were not carried out previously. But it is still a very considerable number. A more targeted measure would be the model-calculated increase in overall productivity increasing by about three quarters of a percentage.

**Table 8 Changes in observed GDP and unobserved productivity in five scenarios in the combined Infosim/CEV-model, EU25**

| Scenarios, percent change                    | Uniform    | Extending reduced rates |            | Simplifying reduced rates |             |
|--|------------|-------------------------|------------|---------------------------|-------------|
|  | A          | B                       | C          | D                         | E           |
| $\Delta$ GDP North                           | 0.4        | 1.4                     | 1.4        | 0.0                       | -0.3        |
| $\Delta$ GDP South                           | 0.1        | 0.4                     | 0.4        | 0.0                       | -0.5        |
| <b><math>\Delta</math>GDP Total</b>          | <b>0.3</b> | <b>1.0</b>              | <b>1.0</b> | <b>0.0</b>                | <b>-0.3</b> |
| $\Delta$ Productivity North                  | 0.3        | 1.0                     | 1.0        | 0.0                       | -0.2        |
| $\Delta$ Productivity South                  | 0.1        | 0.3                     | 0.3        | 0.0                       | -0.4        |
| <b><math>\Delta</math>Productivity Total</b> | <b>0.2</b> | <b>0.8</b>              | <b>0.7</b> | <b>0.0</b>                | <b>-0.3</b> |

Notes: North is a representative member state in the north-western part of EU25. South is a representative member state in the southern part of EU25. Total is an estimated weighted average of the total change in EU25

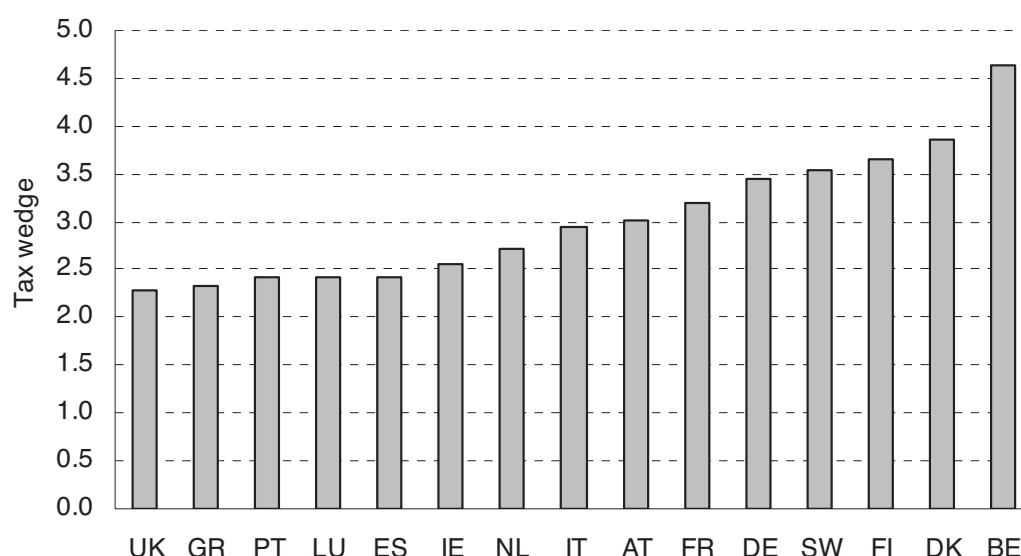
Source: Copenhagen Economics: Infosim and CEV-model

Overall, there seems to be a solid argument in favour of boosting productivity in member states by subsidising locally supplied services and, possibly, restaurants although we stress that the simulations presented here are only illustrative and cannot be taken as factual evidence of the actual size of the gain in productivity.

<sup>21</sup> This is reflected by the rather high initial VAT rate on locally supplied services in the EU25, cf. Table 2 on page 15.

The productivity argument is particularly strong in member states where high overall VAT rates and high marginal income taxes have inflated the tax wedge, cf. Figure 2. Member states as Belgium, Germany, and the Nordic member states are good candidates; less so with United Kingdom, Greece, and Portugal.

**Figure 2 Tax wedges in EU25**



Notes: The tax wedge reflects both the marginal income taxes and VAT and should be interpreted as the number of hours a person has to work in order to earn sufficient money to pay another person for one hours work. Data for CY, CZ, EE, HU, LT, LV, MT, PL, SI, and SK is missing.

Source: Danish Ministry of finance (2007) and the IBFD VAT database.

The productivity argument is, in particular, strong for activities with limited need for formal training and specialised machinery. Thus, domestic care, cleaning, home repairs and laundry – all examples of locally supplied services – are more attractive candidates for lower VAT rates than computer manufacturing. Such sectors are typically characterised by a high share of low-skill employment relative to the average share of low-skill employment, cf. Table 9. However, other sectors with equally high low-skill shares are less relevant as they are not obvious candidates for DIY-work, as for example hotels or street cleaning.

**Table 9 Average low-skill employment, EU25,**

| Groups    | CEVM-Sector                          | Value added share | Low-skill share | Relative low-skill share |
|-----------|--------------------------------------|-------------------|-----------------|--------------------------|
| 1 Food    | Hotels                               | 1.1               | 31.9            | 1.18                     |
|           | Restaurants                          | 1.9               | 30.5            | 1.17                     |
|           | Food                                 | 1.5               | 27.0            | 1.00                     |
| 2 Merit   | Medical & pharmaceutical             | 0.5               | 22.3            | 0.82                     |
|           | Books & newspapers                   |                   | 25.0            | 0.92                     |
|           | Culture & entertainment              | 1.4               | 25.0            | 0.92                     |
|           | Electricity & heating                | 1.5               | 23.2            | 0.85                     |
| 3 Network | Postal, telecom & financial services | 3.4               | 16.8            | 0.62                     |
|           | Passenger transport                  | 1.3               | 26.2            | 0.97                     |
|           | Social housing                       | 0.4               | 26.3            | 0.97                     |
| 4 Local   | Locally supplied services            | 2.1               | 32.1            | 1.18                     |
| 5 Public  | Government services                  | 17.6              | 14.9            | 0.56                     |
|           | Street cleaning                      | 0.2               | 32.3            | 1.19                     |
| 6. RoE    | Rest of the economy                  | 67.0              | 27.1            | 1.00                     |
|           | Total                                | 100.0             | 26.2            |                          |

Note: Relative low skill share are calculated as the relative deviation from the sector "Rest of the Economy"

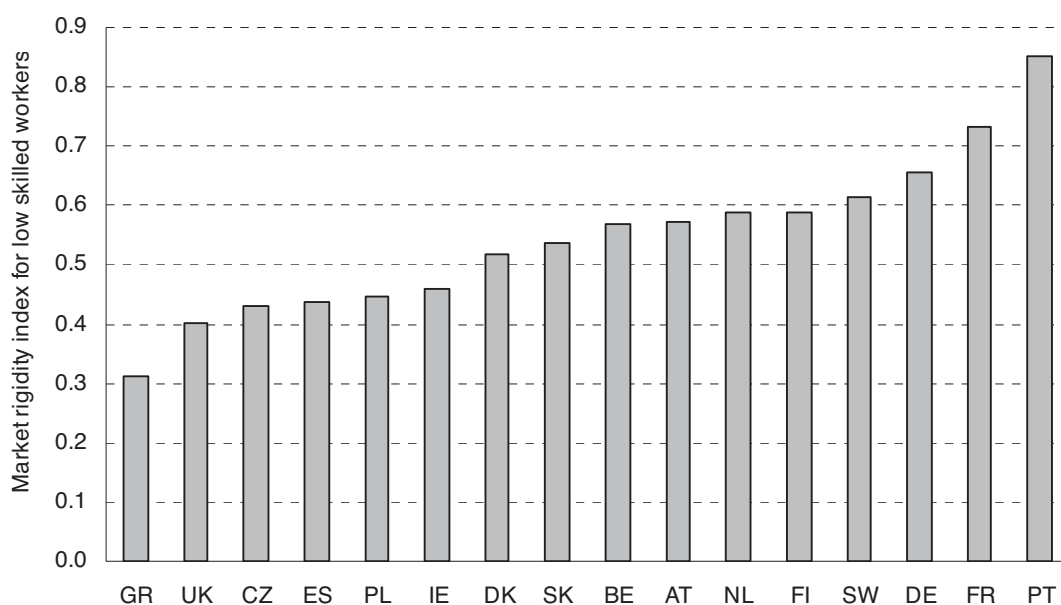
Source: Luxembourg Income Study (2007) and Copenhagen Economics

### *Reduce structural unemployment*

Lower VAT rates can reduce structural unemployment among low-skilled workers in a member state if they can induce consumers to shift their demand towards sectors employing more low-skilled workers than the rest of the economy, in this process boosting their wages and increasing incentives for employment on both sides of a rigid (low-skill) labour market.

The reduced structural unemployment argument is in particular strong in member states where the labour market for low-skill workers is markedly more rigid than for high-skill workers in terms of high replacement rate, high unemployment benefits, and high minimum wages, cf. Figure 3. If this is not the case, shifting of demand might increase employment in the low-VAT sectors, but would loose employment in a similar scale in the high-VAT sectors leading to no net job creation.<sup>22</sup>

**Figure 3 Average labour market rigidities in selected EU member states**



Notes: The market rigidity index is a simple weighted average of indices for the net replacement rate and hiring and firing costs. Unity corresponds to maximum rigidity and nought to total market flexibility. Data is missing for CY, EE, HU, IT, LT, LU, LV, MT and SI.

Source: OECD (2007)

The long-run task is very much about mitigating the adverse employment effects of having very high replacement rates and/or minimum wages. One would expect the largest positive affects in member states where replacement rates for median and high-skill workers is initially well below low-skill workers. What we are doing is boosting the demand for low-skilled workers at the cost of reducing the demand for higher skilled workers. The point is that boosting the demand for workers with a replacement rate of 90 percent has a larger effect on employment than reducing demand for workers with a replacement rate of 60.

Short term demand for labour may also be boosted by lower VAT rates. This may happen if the domestic production shares of products benefiting from a lower VAT rate are higher than for overall consumption (demand twists) and/or twisting demand in the direction of goods and services consumed by low income households that tends to have a lower short term propensity to save.

<sup>22</sup> Short term effects can be reached by shifting the demand away from import intensive to domestically produced goods, but these effects are by definition being followed by corresponding employment losses in other countries. As the EU25 as a whole is relatively closed economy, "other countries" pretty much means other EU member states.

However, none of these positive effects on net employment is likely to last beyond the relatively short term. In the absence of structural effects on unemployment, the boost to demand will over time just lead to higher wage inflation and crowding out of exports and import competing production.

The reduced structural unemployment argument is, in particular, strong in sectors with a high share of low-skill employment. The impact will be more pronounced the larger is the share of low-skill employment in the sector relative to the rest of the economy, cf. Table 9, and, in particular, if it is a non-tradable sector not very vulnerable to competition from abroad. Clearly, if the sectors were tradable, part of the increase in demand would go to increase imports boosting low-skill employment abroad and not in the member state as desired.

There is a clear interrelationship between the arguments for reduced unemployment and higher productivity to the extent that some of the sectors with a high share of low-skill employment are also sectors with activities that can be performed with little training and use of specialised machinery.

In order to gauge the size of the economic impact we have combined the CEV-model with a simple after-model of sectoral skill composition. We are not in a position to actually model the labour markets that may differ significantly between member states, but we can estimate the immediate change in the demand for low-skill labour by estimating the shift in consumption induced by lower VAT rates on sectors with an above average share of low-skill employment and calculating the ensuing shift in demand for low-skill labour.

Lower VAT for sectors with a high share of low-skill employment (hotels, restaurants, locally supplied services, and street cleaning) predictably boosts demands in all scenarios, but to a varying degree and for different reasons; cf. Table 7. Demand grows significantly in the two scenarios B and C, where reduced rates in respectively locally supplied and non-appendix III sectors are extended to all member states. It also grows, but less, in the uniform scenario A because locally supplied services on average benefits from lower VAT rates when all reduced rates are repealed.<sup>23</sup> In contrast, harmonising reduced rates in scenarios D and E is not likely to have any significant effect.

**Table 10 Changes in value added in five scenarios in the CEV-model, EU25**

| Scenarios                               | Share of Consumption | Uniform | Extending reduced rates |      | Simplifying reduced rates |      |
|---|----------------------|---------|-------------------------|------|---------------------------|------|
|   |                      | A       | B                       | C    | D                         | E    |
| Locally supplied services + restaurants | 10.9                 | +0.4    | 0.9                     | 0.7  | 0.1                       | -0.1 |
| Food                                    | 16.7                 | -1.0    | -0.3                    | -0.2 | -0.1                      | -0.1 |
| Rest of the economy                     | 72.4                 | +0.2    | -0.1                    | -0.1 | 0.0                       | 0.0  |
| Total                                   | 100.0                | 0.0     | 0.0                     | 0.0  | 0.0                       | 0.0  |

Source: Copenhagen Economics Vat Model

However, the changes in demand only induces a minuscule increase in the demand for low-skill labour when reduced rates are extended, and only on a scale similar to the increase in demand for low-skill labour arising from the uniform scenario A, cf. Table 11. Again, as a significant share of sectors employing low-skill labour to a larger degree than others initially have rather high VAT rates, the uniform scenario where the standard VAT rate is reduced when all derogations are repealed, leads to a similar increase in demand for low-skill labour.

<sup>23</sup> This is reflected by the rather high initial VAT rate on locally supplied services in the EU25, cf. Table 2 on page 15.

**Table 11 Demand changes for low-skill workers in five scenarios in the CEV-model, EU25**

| Scenarios    | Employment share | Uniform | Extending reduced rates |      | Simplifying reduced rates |       |
|--------------|------------------|---------|-------------------------|------|---------------------------|-------|
|              |                  | A       | B                       | C    | D                         | E     |
| Low-skill    | 26.2             | 0.01    | 0.01                    | 0.00 | 0.00                      | 0.00  |
| Medium skill | 51.5             | -0.02   | 0.00                    | 0.00 | -0.01                     | -0.01 |
| High skill   | 22.3             | 0.03    | -0.01                   | 0.00 | 0.01                      | 0.01  |
| Total        | 100.0            | 0.00    | 0.00                    | 0.00 | 0.00                      | 0.00  |

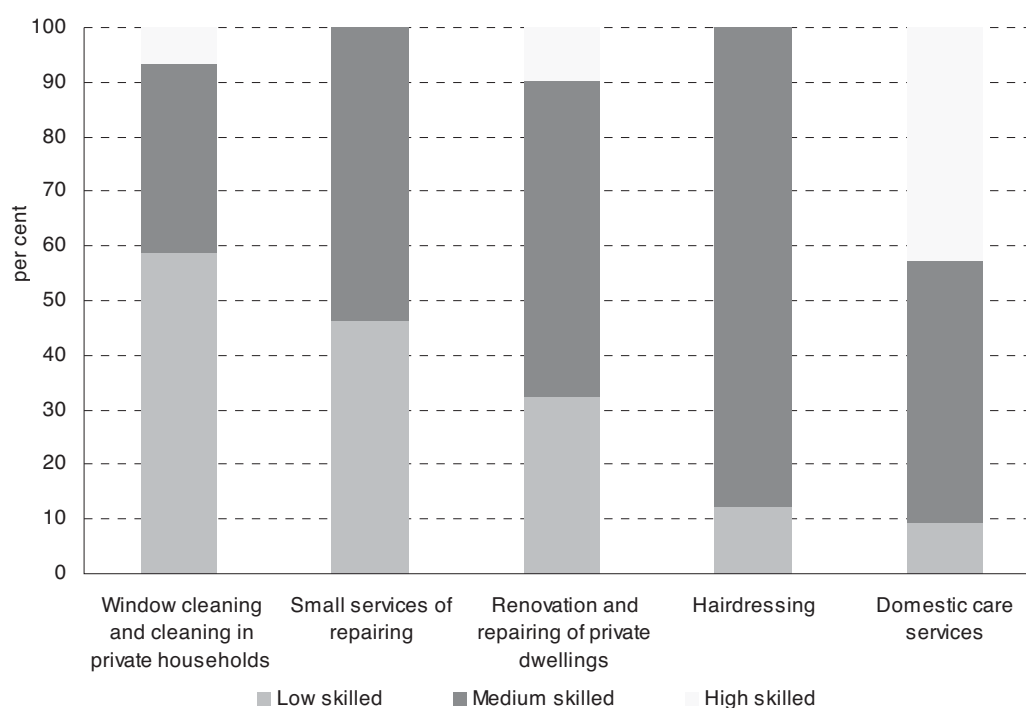
Source: Copenhagen Economics Vat Model

A second reason for the limited impact on demand for low-skill employment is the rather modest difference between employment shares for low-skill workers in sectors favoured by lower VAT rates and the rest of the economy. Whenever demand corresponding to 100.000 workers is shifted from the general economy to, for example, locally supplied services, the demand for low-skill labour only increases by 5.000 workers.

A final reason for the rather modest impact on demand for low-skill labour lies in the level of aggregation. It turns out that there are significant differences in low-skill employment within locally supplied services. For example, data from Denmark indicates that the share of low-skill employment in cleaning of private households is as high as 60 percent, while the similar share in hairdressing and domestic care services is about 10 percent, well below the share in the rest of the economy, cf. Figure 4.

This insight indicates that there may be a better argument for targeted reductions in VAT rates on carefully selected parts of locally supplied services rather than for general reductions for all locally supplied services.

**Figure 4 Distribution of skills within locally supplied services**



Source: Copenhagen Economics

### 1.5. Member state interest: Promoting equity

The widespread interest in using lower VAT rates is strongly motivated by efficiency considerations as presented in the previous section, but not only. It is also argued that carefully designed reductions in VAT rates (or equivalent direct support schemes) may solve other relevant policy concerns, mostly related to the question of equity. In these cases, the fundamental question is not whether lower VAT rates may improve overall efficiency, but rather whether they are an effective tool for reaching equity goals.

We have identified two arguments that lower VAT rates would improve overall equity for. They argue that lower VAT rates may:

- Create a more equal income distribution
- Promote consumption of merit goods

The first argument relies on the observation that lower VAT rates on selected goods can generate a more equal income distribution (after consumption) if they make cheaper goods and services that are mostly consumed by low-income groups, for example food or energy. The income distribution (after consumption) improves as the price of a typical consumption basket for low income groups goes down, while the price of a typical consumption basket for high income groups goes up.

The second argument relies on the observation that lower VAT rates on selected goods can promote consumption of (merit) goods that are deemed to have intrinsic societal values in excess of the consumption value for the individual consumer, for example cultural goods as books and tickets for museum and theatres. The argument could be that lowering prices for these merit goods makes them more affordable for low income groups thus spreading consumption possibilities to broader sections of the population. In some cases, this argument can also lend support from an argument about positive externalities, for example, promoting organic food may reduce health costs and promoting energy efficient household appliances reduces emission of carbon dioxide.

In what follows, we will go through each of the two cases and discuss under which circumstances the arguments hold or not. Again, three general concerns are worth mentioning before proceeding.

VAT rates are the pivotal policy tool of this study and naturally take centre stage. However, VAT rates are neither the only tool, nor necessarily the best tool to fulfil the desired policy goals. It is, for example, not immediately obvious that lower VAT rates is a better tool to achieve equity goals than targeted subsidies to particular households or labour market reforms improving employment possibilities for low-income households. For this reason, it is always important to seriously consider *alternative policy tools*, even in the situation where it is argued that lower VAT rates actually may improve equity.

In addition, *compliance costs* are a particular concern by itself, in particular in the food sector, which turns out to be the most obvious target for equity-based reduced VAT rates. Ceding lower VAT rates to a narrow group of relevant goods may in principle be the best approach, but may be marred by conflicts between firms and authorities fighting over borderline cases, increasing compliance costs. Having a broader definition of the relevant goods may ease compliance costs, but at the expense of a less well targeted VAT scheme with less impact for each Euro. Compliance costs are not a trivial issue and need to be seriously considered in any design for reduced VAT rates.



Finally, one should be aware of mechanical revenue losses having a somewhat different character in the equity context. When the aim is to subsidise particular goods favoured by specific parts of the population, the instrument will be well targeted if this population group has a high initial consumption of that product. Mechanical revenue losses arise to the extent that other parts of the population have similarly high levels of consumption. The more similar consumption patterns are between population groups, the higher the costs will be in terms of foregone VAT revenue in order to reach the desired equity goal.

#### *Create a more equal income distribution*

Lower VAT rates can generate a more equal income distribution (after consumption) if they can make goods and services which are mostly consumed by low-income groups cheaper. The income distribution (after consumption) improves because the price of a typical consumption basket for low income groups goes down while the price of a typical consumption basket for high income groups goes up.

The argument requires that low-income groups have stable consumption shares sufficiently different from high-income groups. If the products in question are solely consumed by low income households, lower VAT rates will be very well targeted. However, if they are consumed equally by low-income and high-income households, reduced VAT rates are not going to change the income distribution by any noteworthy amount. In addition, if consumption shares are not stable, it is questionable whether lower VAT rates are to be preferred to targeted subsidy schemes. Otherwise, VAT rates have to be constantly adjusted.

Calculating average EU15 consumption shares for household groups divided in quintiles (quintiles are from the lowest income to the highest income numbered from 1 to 5) for selected sectors show that consumption patterns are rather similar for most sectors, except for food and utilities like electricity and heating. For those sectors, low-income consumption shares are on average almost twice (1.83 and 1.71) the corresponding high income consumption shares. It means that ceding reduced VAT rates to the food sector will benefit high income households, but will be much more beneficial for low-income households because they spend a significantly larger share of their income on food.

**Table 12 Consumption shares for five income quintiles, EU15, 1999.**

| Groups    | CEVM-Sector                   | Q1    | Q2    | Q3    | Q4    | Q5    | Q1/Q5 |
|-----------|-------------------------------|-------|-------|-------|-------|-------|-------|
| 1 Food    | Hotels & restaurants          | 5.4   | 5.7   | 6.1   | 6.8   | 7.2   | 0.76  |
|           | Food                          | 21.3  | 18.8  | 16.7  | 15.0  | 11.7  | 1.83  |
| 2 Merit   | Medical                       | 6.8   | 6.8   | 6.7   | 6.6   | 6.6   | 1.02  |
|           | Books<br>Culture              |       |       |       |       |       |       |
| 3 Network | Electricity & heating         | 3.1   | 2.7   | 2.4   | 2.1   | 1.8   | 1.71  |
|           | Other network services        | 12.4  | 12.1  | 12.1  | 12.3  | 12.9  | 0.96  |
|           | Passenger transport           |       |       |       |       |       |       |
|           | Social housing                |       |       |       |       |       |       |
| 4 Local   | Locally supplied services     | 3.9   | 4.3   | 4.5   | 4.7   | 4.8   | 0.82  |
| 5 Public  | Government<br>Street cleaning | 2.8   | 2.9   | 3.2   | 3.2   | 3.9   | 0.73  |
| 6. RoE    | Rest of economy               | 44.2  | 46.6  | 48.3  | 49.4  | 51.1  | 0.89  |
|           | Total                         | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |       |

Note: Percentage shares of consumption per household income quintile.

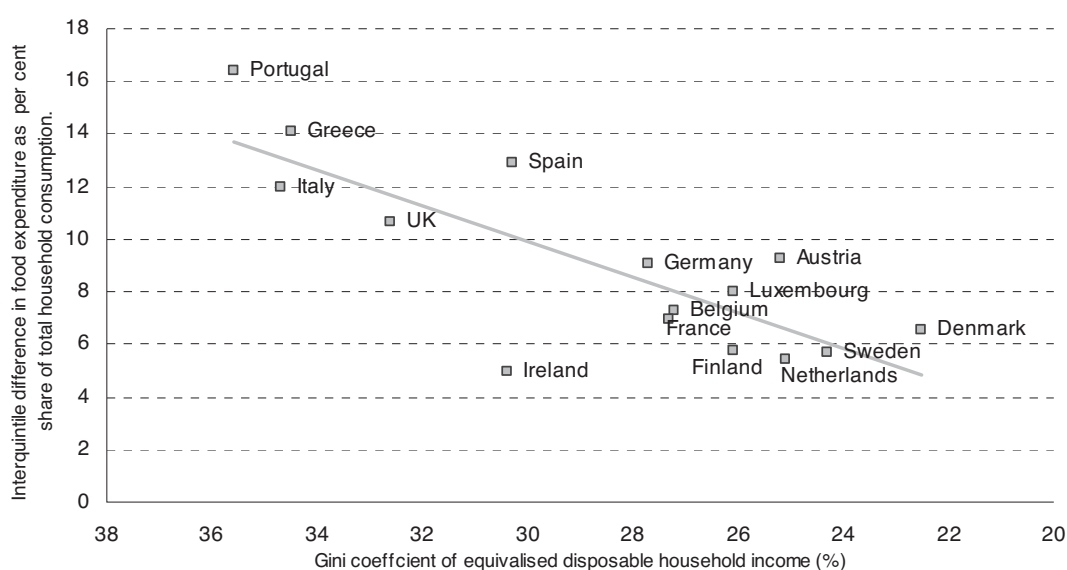
Source: Copenhagen Economics and Eurostat.

The equity argument is met in all member states, even in member states with very even income distributions. However, the effectiveness of reduced VAT rates is in practice linked to

the initial level of income distribution. The reason is that consumption patterns in the population tend to converge as equality increases. And the more similar consumption pattern, the less suitable are subsidies to specific consumption goods for improving income distribution. For example, the consumption share of food for the richest quintile in Sweden is only 5 percentage points larger than the consumption share for the poorest quintile. It means that subsidies on food, e.g. in the form of lower VAT rates, are almost equally beneficial for rich as poor. In Portugal, the same difference in consumption share would amount to 16 percentage points, cf. Figure 5.

The Swedish experience reveals that lower VAT rates on food can have a very limited impact on the income distribution and that the associated compliance costs probably dwarf the gain in income distribution (after consumption). There is ample practical evidence that compliance costs may be substantial in reduced VAT schemes. In Sweden, 20 percent of all VAT disputes between enterprises and tax authorities are linked to arguments about whether a particular product should be subjected to a low or high VAT rate. In Ireland, the differentiation between healthy and unhealthy foods has led tax authorities to define 89 different categories of food, including separate categories for healthy non-roasted almonds and unhealthy roasted almonds. In the UK, an enterprise won a legal case where tax authorities claimed that selling a warm Ciabatta sandwich was catering while the firm successfully held that it was just food and therefore subject to the lower rate of food.

**Figure 5 Differences in food consumption shares between rich and poor as a function of the initial level of income distribution, EU15, 1999.**



Note: 'Interquintile difference' is the difference of poorest and richest household quintile expenditures on foodstuffs. A large difference indicates a large disparity between the share of foodstuffs in total consumption expenditures between the quintiles. The Gini coefficient measures disparities in household disposable incomes.

Sources: Copenhagen Economics, Eurostat, Förster et al. (2005).

For these reasons, alternative tools are very relevant, in particular in member states with initially egalitarian income distribution. For a member state with a well developed and comprehensive social system including other schemes of targeted support, direct transfers to families in need are not unlikely to be more cost-effective with respect to compliance costs and have less distortionary effects on consumer welfare.

We now turn to analysing the distributional consequences of the five scenarios for VAT reform. For this purpose, we extend the Copenhagen Economics VAT Model with multiple households

with different income and consumption structures based on a very detailed, recent dataset from Eurostat.

The uniform scenario A is increases prices for low income households and lowers prices for high income households; cf. Table 13. Thus, scenario A is regressive making the income distribution more skewed. The reason is simple as all member states currently ceding lower VAT rates to food and utilities are instead required to use the higher standard rate.

**Table 13 Effect of scenarios on the price of the consumption basket, EU15 average.**

| Scenarios       | Uniform | Extending reduced rates |       | Simplifying reduced rates |       |
|-----------------|---------|-------------------------|-------|---------------------------|-------|
|                 | A       | B                       | C     | D                         | E     |
| Q1-low income   | 0.51    | 0.03                    | -0.07 | 0.10                      | 0.15  |
| Q2              | 0.16    | 0.02                    | -0.03 | 0.03                      | 0.04  |
| Q3              | -0.06   | 0.00                    | 0.02  | -0.01                     | -0.03 |
| Q4              | -0.21   | -0.03                   | 0.02  | -0.04                     | -0.06 |
| Q5- high income | -0.44   | -0.02                   | 0.07  | -0.08                     | -0.12 |

Note: For each country and VAT scenario, we calculate the difference in the % change in COICOP consumption expenditure between the poorest and richest income quintile households. We construct the EU15 average figures using the size of the final private household consumption expenditure (GTAP database) as weights. Germany and Sweden currently excluded.

Source: Copenhagen Economics and Eurostat

Scenarios B and C are similar by extending the use of reduced VAT rates but in two different directions that explains why scenario B is regressive, while scenario C is progressive. Scenario B extends reduced rates to sectors not currently benefiting from lower VAT rates. This is typically not sectors able to correct the income distribution as food and utilities. Scenario C extends reduced rates to other member states, thus extending the use of lower VAT rates on food to other member states. Both scenarios D and E are regressive to the extent that they tend to disfavour sectors better suited for redistribution purposes than other sectors.

We conclude that member states with relatively skewed income distributions initially have been able to reduce inequality *ex post* by ceding reduced VAT rates to sectors such as food and utilities. However, we judge that compliance costs are going to be significant and that it is highly recommendable to investigate alternative policy tools for income distribution before turning to the VAT system.

#### *Promotion of merit goods*

Lower VAT rates can promote consumption of products that are deemed to have intrinsic societal values in excess of the consumption value for the individual consumer. The argument could be that lowering prices for merit goods make them more affordable for low income groups thus spreading consumption possibilities to broader sections of the population; e.g. cultural goods such as books, newspapers, tickets for museum and theatres, and private education.

In some cases, this argument is also supported from positive externalities, for example, promoting organic food may reduce health costs and promoting energy efficient household appliances reduces emission of carbon dioxide.

There is hardly any doubt that reduced VAT rates on merit goods tend to increase total demand as shown by our econometric estimates and evidenced in the case study on reductions on VAT on books, cf. chapter 2. As merit sectors are very limited in size, the associated distortionary costs are not likely to be very significant, neither are other possible benefits associated to unemployment or DIY-work.

On publications, a large number of EU member states operate with rates on books, periodicals and newspapers which are well below the standard rates, but at the same time there is a bewildering multitude of solutions. Some countries tax the three types of publications at the same lower rates (Austria, Germany, Greece, Italy, and Luxembourg) and yet others make distinctions (Ireland, France, Finland, and Denmark). Yet, all countries apply the standard rate to CD-Rom and on-line products.

As regards merit goods there are a number of issues regarding compliance costs and VAT neutrality between substitutable products such as traditional books and digital content services.

The seriousness of compliance costs are proved by a number of UK court cases involving so-called mixed products. These are situations where a vendor simultaneously is selling two or more products and services that are subjected to different VAT rates. This may again create complicated situations where the supplier – to reap the most beneficial VAT treatment – needs to organise selling in a particular way. Sometimes the seller will benefit from invoicing and sending products as a total package, in other cases it may be worthwhile to organise selling in distinct groups.

The issue of neutrality hinges on the fact that there may be a high degree of substitution between normal books and, of increasing significance, e-books that normally should be subject to equal VAT treatment. This could for example be a common reduced VAT rate for both classical products and its present day digital content equivalent as many member states continuously want to subsidise such consumption for educational/cultural reasons.

As regards lower VAT rates on household appliances with proven high standards of energy efficiency, we suggest a few tentative conclusions relating to climate change and energy security objectives. On CO<sub>2</sub>-emissions, the current emission trading system (ETS) in place covers the bulk of network produced energy and heating in the member states, implying that changes in energy taxes in this area are likely to have relatively limited final effects on CO<sub>2</sub>-savings. The potential effects are larger for consumer products not covered by the ETS such as cars. As regards effects on overall energy savings, and hence also energy security, one should in all cases bear in mind the two opposing effects. Reduced rates will increase the share of energy efficient products within a certain group of products for example hairdryers but it will at the same time make a very energy consuming product less expensive relative to other consumer products, thus potentially shifting overall consumption towards more energy consuming goods. This in turn raises the question whether the way forward is to use the polluter pays principle and raise taxes on energy use or encourage savings by reducing VAT on energy efficient products etc.

Just as importantly, it may complicate the operation of the internal market. There is at present not a well defined and agreed framework for defining at an international level what is energy efficient products and the introduction of fiscal instruments at individual member state basis may lead to a proliferation of standards rather than promote progression on the standardisation front. Furthermore, as consumer appliances are relatively expensive, allowing reduced rates may induce an increase in cross-border trade largely for tax reasons.

We conclude that member states may be able to increase consumption of merit goods, but member states should seriously consider the economics of such moves in particular in an environment with other policy tools. Once again, we stress that compliance costs may be significant and that it is recommendable to investigate alternative policy tools before turning to the VAT system.

## 1.6. Evaluating proposals for reduced VAT rates

We now turn to the practical aspects of reduced VAT rates. In the introductory section we posed two questions. We now attempt to answer these questions.

We asked the following two questions:

- To what extent do lower VAT rates truly increase economic efficiency such that they outweigh the distortionary loss?
- To what extent can lower VAT rates be implemented in practice with reasonable administrative costs and sufficient degree of certainty?

First, we have shown that in some very particular sectors where reduced rate are currently either applied or not applied there seems to be rather compelling economic arguments for maintaining, introducing or even extending reduced VAT rates. This is *in particular* relevant for sectors competing forcefully with DIY-work as locally supplied services; it is to a *limited extent* relevant for sectors employing significant numbers of low skilled workers as locally supplied services, restaurants and hotels; and it is also to a *limited extent* relevant for sectors whose output is preferred by low income households, the archetypical example being food.

However, in all cases, the potential for reaping net economic benefits from reduced VAT rates does not rely solely on the characteristics of the sector but also on the particular economic environment of each member state. For example, extending reduced VAT rates to sectors employing significant numbers of low-skill workers requires rigid and non-flexible labour markets for low skilled and extending reduced VAT rates to food requires significant and stable differences in the consumption pattern of high income and low income households, the latter being something that is increasingly hard to ascertain as member states grow richer.

In addition, we stress the need for several reasons to seriously consider alternative instruments than lower VAT rates to accomplish the desired policy goals. First, lower VAT rates may not be the best instrument to reach the goal with lowest costs. Other instruments as targeted subsidies may have smaller mechanical revenue loss and a higher effectiveness. This is, in particular the case for the well-developed welfare states in the Community with comprehensive welfare systems already in place. Second, VAT rates are by definition a Community-issue to be resolved by the Community. Other targeted instruments may be designed and introduced by individual member states respecting the Community rules concerning state aid but without a need to go to the Council.

Second, in those sectors where the above arguments do not hold but where reduced rates are currently applied it is hard to find convincing economic arguments, either based on efficiency or equity, for maintaining reduced VAT rates. Instead there is an economic rationale for making rates more uniform in order to alleviate the distortions arising from differentiated VAT rates.

A particular concern is the potential conflict between community interests and member state interests. There might be cases where extending reduced VAT rates to particular sectors in particular member states would be economically beneficial for some member states but would compromise the functioning of the internal market. Is this likely to be an important concern?

We will argue that it is important for any member state contemplating to introduce or extend reduced VAT rates to particular sectors to think carefully about the ramifications for the internal market, but one should not overemphasize the potential problems for selectively reduced rates. We tend to believe that generally the implications of different *standard* VAT rates for the

functioning of the internal market are likely to dwarf any implications of *reduced* VAT rates in particular sectors.<sup>24</sup>

However, the concrete implications of a concrete proposal for reduced VAT rates for the functioning of the internal market should in any case be studied carefully, cf. Table 14.

**Table 14 Potential benefits and problems of extending reduced VAT rates to particular sectors, EU25**

| Group     | Sector                        | Prod.    | Jobs     | Income distrib | Merit | Cross border | Distance selling |
|-----------|-------------------------------|----------|----------|----------------|-------|--------------|------------------|
| 1 Food    | Hotels                        |          |          |                |       | Tourism      |                  |
|           | Restaurants                   |          |          |                |       | Tourism      |                  |
|           | Food                          |          |          |                |       |              |                  |
| 2 Merit   | Medical, books                |          |          |                |       |              | Books            |
|           | Culture and entertainment,    |          |          |                |       |              | Music            |
| 3 Network | Electricity, district heating |          |          |                |       |              |                  |
|           | Post, telecom & finance       |          |          |                |       |              |                  |
|           | Passenger transport           |          |          |                |       |              |                  |
|           | Social housing                |          |          |                |       |              |                  |
| 4 LSS     | Locally supplied services     | Cleaning | Cleaning |                |       |              |                  |
| 5 Public  | Government services           |          |          |                |       |              |                  |
|           | Street cleaning               |          |          |                |       |              |                  |
| 6         | Rest of the economy           |          |          |                |       |              |                  |

Note: Green indicates a member state potential for economic gains of reduced rates, the greener the larger potential. Red indicates a potential for compromising the functioning of the internal market, the more red the larger potential.

Source: Copenhagen Economics

The table clearly indicates that in those cases where you have strong economic arguments for extending reduced rates, there appear to be no significant problem for the functioning of the internal market. This is in particular the case for locally supplied services (group 4), less so for cross-border trade in restaurant services (in group 1).

The table also shows that in those cases where you have strong potential problems for the functioning of the internal market, it is not likely to find strong economic arguments for reduced rates based on efficiency. This is the case for reduced rates on books, music, cultural activities and other reduced rates based on merit grounds (all in group 2).

Many of these services can be traded in electronic form making it very difficult to distinguish between their content. This makes it particular difficult to apply different rates between the different types of goods or services and also between member states given the difficulty of deciding whether the country-of-origin or country-of-destination VAT principle should be applied. In addition, many of these services compete with physical books, physical CDs, physical DVD-discs where it makes sense to have uniform VAT rates. We predict that these types of consideration are going to grow significantly as electronic trade continues to soar.

In most other sectors, you are not likely to find significant conflicts regarding reduced VAT rates between member state interests and community interests regarding the functioning of the internal market. However, we emphasize that in most cases reduced VAT rates are not the only policy instrument that is able to achieve the desired member states goal and in many cases it is not even certain to be the best policy instrument.

<sup>24</sup> For example, the significant cross-border trade between Denmark and Germany is primarily driven by the nine percent point difference in standard rates rather than different applications of reduced rates (in addition to differences in excise taxes).

## **Chapter 2 The economic role, significance and direct industry impact of differentiated VAT rates**

In this chapter we explain the rationale for having a VAT system alongside an income tax system, underline the extensive use of differentiated VAT rates and review how reductions or increases of VAT rates for particular products and services impact on prices, demand, output and employment in the affected firms and industries.

First, we define the basic characteristics of the VAT system in the context of its historic and present role. We pinpoint that a proportional VAT rate on all goods and services shares important characteristics with a proportional tax on labour income. Despite having in place now well developed income taxes system, member states have nonetheless implemented parallel VAT systems since the 1960s for three main reasons. VAT is seen as a more fraud-proof supplement to pure taxes on labour income that brings in substantial amounts of revenue. Furthermore, it does not as income taxes affect the incentives to save and invest. Finally and central to this study, more easily than the income tax system, it facilitates the use of higher or lower rates of taxation across different goods and services which member states often want for the reasons spelled out in Chapter 3.

Second, we note that member states to a significant degree have used the options for differentiation of VAT allowed in the common EU VAT directives. The average tax loss from allowing lower rates of VAT than the standard rate of VAT is on average 0.9 percent of GDP, but with substantial cross-country variation. Thus not a trivial issue, seen in a macro context, given mounting fiscal pressures in member states.

Thirdly, we conclude that reducing – or increasing – VAT rates for a particular good or service has a notable impact for the sector concerned. VAT changes are likely to pass fully into consumer prices over time in the majority of industries, but more slowly in sectors with high capital intensity as it takes longer time for firms to adjust capacity to changes in demand. The effect of the lower prices on demand is large in household services, such as domestic care, while for example demand for food is less sensitive to price changes. Finally, VAT rate reductions announced from the start as being temporary have limited effect on outcomes precisely because producers will not expand jobs and investments when they know that demand falls back again, partly explaining the apparent weak effect so far from the VAT experiments which started in 2000.

In section 2.1 below the focus is on role of the VAT; in section 2.2 on the economic significance and a legal framework for differentiated VAT rates in the EU and in section 2.3 we review the impact of VAT rate changes in the industries concerning prices, demand, output and employment.

## 2.1. The character and role of the VAT system

The Value Added Tax – VAT – is as the name implies a tax on the value added at each stage of the production chain. Each trader applies the relevant VAT to each outgoing invoice. So, if the seller has net-of-VAT sales of 100 Euros and the rate for the goods and services the trader is selling is 20 percent, then the VAT due on the invoice is 20 Euros which the trader then collects from downstream customers being private consumers or another business. The trader has also paid incoming VAT on the goods and services being bought as inputs, including machinery, etc. Let us just assume that purchases are 80 Euros net of VAT. In that case the incoming VAT would be 16 Euro. The trader then only pays to tax authorities the difference between outgoing and incoming VAT, namely 4. That is exactly 20 percent of the 20 Euros of value added created by this trader.

It has no importance for the trader if upstream suppliers are allowed lower VAT. Let us just assume that in the case from before, the VAT rate on the goods and services used as input in the trader's production was reduced from 20 to 10 percent thus reducing the VAT inclusive price from 96 (80 plus 16) to 88 (80 plus 8). He keeps the unchanged price on his sales, and the amount of VAT in the price is, therefore, still 20 Euros. His incoming VAT is now reduced to 8 Euros, so his net VAT payments to government have been increased from 4 to 12. In other words, every Euro "saved" on incoming VAT is lost as increased net VAT payment.

The present VAT system was developed historically as a replacement to previous sales tax systems which often had the unfortunate characteristic that the total value of tax being paid on a specific good or service was positively related to the number of stages in the production process ("cascade" taxes). Each trader was being assessed by the level of sales with little or no ability to deduct incoming sales taxes. The VAT system is now in place in more than 80 countries across the globe (International Tax Dialogue, 2005).

In addition to being neutral relative to the number of transactions – i.e. not penalising subcontracting – it has been seen as an efficient way to extract large amounts of revenue and being a "safe" revenue source. It is for example less prone to fraud because it is not only the last person or trader in a long production process that is due to pay the tax. A trader that sells a final consumer good in the underground economy directly to a private consumer can avoid paying VAT on his/her own profit margin but may find it risky to claim refunding of incoming VAT as the reported profits may then look suspiciously low (too many inputs, too little sales). Over time, the VAT system has thus developed into one of the main revenue sources for OECD governments and constituting for EU countries a substantial part of total tax revenues.

Economically, a proportional tax is very much equivalent to a tax on income and has first of all the same effects on workers' incentive to work. A rational worker, when considering the incentive to work, will look at the net-of-tax real wage. She will be quite indifferent to whether she receives 100 Euros which can be used to buy goods which cost 50 Euros before VAT but is then subjected to 100 percent VAT, so that they cost 100 Euro, or to whether she receives a net-of-income tax salary of 50 Euro which can then be used to buy goods worth 50 Euros on which there no VAT is charged. In both cases, government receives half of the value of the gross salary of 100.

This leaves then the question what role a VAT system has in countries such as the EU members which have well developed income tax systems. There are three main answers to these. The first is that there may still be anti-fraud arguments in favour of keeping up such a system while they are probably weaker than they were when the VAT systems were instigated. The second is that the VAT system is neutral towards incentives to save or consume.<sup>25</sup>

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<sup>25</sup> If the pre-tax rate of return on an investment is 10 percent and there were no taxes but a VAT rate of 25 percent, then the post-tax return is also 10 percent. By saving 100 Euros now rather than spending, a person saves 20



The third answer is the one central to this study: you can deliberately choose to favour or disfavour various consumer products by providing them with rates that are higher or lower than the average VAT rate. Obviously, you can also to a certain extent operate with industry specific variations in the income tax system by letting the effective level of income taxation be depending on whether you either produce or consume specific goods and services. As demonstrated in Chapter 3, for example, countries use the income tax system to encourage the demand for household services. However, for most countries reduced VAT rates is the preferred instrument of choice to encourage demand and/or reduce the price of specific goods and services.

## 2.2. Reduced VAT rates: frequently used and economically significant

All EU countries exploit the opportunities for operating with reduced rates along side the standard rate. 23 countries use so-called reduced rates cf. Table 15. In most countries, the rates are in the range of 5-6 percent or 10 percentage points below the agreed minimum level of 15 percent for the standard rate. Four countries use the so-called "super" reduced rate (rates in range of 2-4 percent). Finally, a large number of countries apply zero-rating but typically for very small segments of the VAT base. The EU legal framework for the setting of standard and non-standard rates is defined in Box 2.

**Table 15: Use of non-standard rates VAT in EU25 and resulting revenue losses, 2006.**

|      |                    | Zero rating |    | Reduced rates |    | Super reduced rates |    | Revenue loss<br>Share of GDP |
|------|--------------------|-------------|----|---------------|----|---------------------|----|------------------------------|
|      |                    | Yes         | No | Yes           | No | Yes                 | No |                              |
| Gr 1 | DK                 | √           |    |               | √  |                     | √  | 0.0-0.1                      |
|      | SK                 |             | √  |               | √  |                     | √  |                              |
| Gr 2 | EE, LT, LV, DE     | √           |    | √             |    |                     | √  | 0.1-0.4                      |
| Gr 3 | CZ, AT, SI, FI, IR | √           |    | √             |    |                     | √  | 0.6-0.9                      |
|      | NL                 |             | √  | √             |    |                     | √  |                              |
| Gr 4 | SE, HU, UK, BE     | √           |    | √             |    |                     | √  | 1.0-1.2                      |
|      | FR, ES, LU, IT     | √           |    | √             |    | √                   |    |                              |
| Gr 5 | EL, PL,            | √           |    | √             |    | √                   |    | 1.3-1.7                      |
|      | PT, CY, MT         | √           |    | √             |    |                     | √  |                              |

Note: In 2007 SK is introducing a reduced rate

Source: European Commission (2006b) and Copenhagen Economics

Furthermore, in relation to the temporary options of reduced VAT rates on "*labour intensive*" services until 2010, 17 member states have indicated that they want either to continue their present use of such rates or have asked to be allowed to use such rates cf. Table 16. In total 8 countries have requested derogations for reduced VAT on small repair services, 7 countries for hairdressing, 7 for domestic care and 2 countries for different kind of repair work for household owned accommodation.

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Euro in VAT as the VAT on 100 Euros inclusive of VAT is 20 with a VAT rate of 25. Tomorrow the saver has accumulated savings of 110. If all is spent tomorrow, 22 Euros of VAT will be paid leaving 88 Euros to the saver. So the saver foregoes the equivalent of 80 Euros in real consumption in the first period and can spend 88 Euros in the second period, which gives a precise return on investment of 10 percent which is also the pre-tax rate of return.

**Table 16: Requests for derogation for labour intensive services**

| Activity                  | None                              | Continuation   | Introduction   |
|---------------------------|-----------------------------------|----------------|----------------|
| Minor repair work         |                                   | BE, EL, LU, NL | FI, HU, MT, PO |
| Hairdressing              |                                   | ES, LU, NL     | CY, FI, LV, PL |
| Cleaning in private homes | AT, DE, DK, EE, IE,<br>LT, SK, SE | FR, LU         | CZ             |
| Domestic care             |                                   | EL, FR, LT, PT | CZ, HU, MT     |
| Bricklaying for dwelling  |                                   | ES             |                |
| Painting of dwellings     |                                   | NL             |                |

Source: European Commission (2006b)

## Box 2: Legal framework for setting VAT rates

The main instrument defining the key features of the EU VAT system is Council Directive 2006/112/EC. The current structure dates from 1993. As regards the member states room for manoeuvre to determine the national VAT rates, the following key principles apply:

The current VAT rate structure derives from the package of measures taken for the abolition of controls at tax frontiers and the creation of the internal market in 1993. Under this system, Member States are required to apply a single standard rate which, until 31 December 2010, must be at least 15%, and may have a maximum of two reduced rates set no lower than 5%, which they may apply at their own discretion on goods and services listed in Appendix III of the VAT Council Directive 2006/112/EC.

### *Standard rates*

Each member state shall apply a standard rate of VAT which is currently fixed at a minimum of 15 percent and ranges in practice between 15 and 25. There are two main appendices plus some other derogations to the directive that determine the right of member states to apply rates lower than the standard rate in the relevant country.

### *Reduced rates*

Each member state is allowed to apply one or two reduced rates, though not lower than 5 percent. These reduced rates are restricted to the specific products defined in Appendix III of the directive. The Appendix mentions among others the following groups:

- Hotels and foodstuffs
- Pharmaceutical products, books/newspapers and some culture and entertainment
- Part social housing and street cleaning

Under certain conditions reduced rates are also allowed for non Appendix III products like natural gas, electricity and district heating

### *Derogations*

During a transitional period, Member states are authorised to maintain various measures concerning reduced rates which existed prior to 1991, or which were agreed on with the accession of countries to the EU. So they are not open to all countries. The provisions allow in certain cases lower rates than 5 percent (either super reduced rates or zero rates) or reduced rates for categories not included in Appendix III. The main industries concerned are:

- Restaurants
- Housing
- Children's clothing and footwear etc.

### *Exemptions*

Certain goods and services are entirely exempt from VAT because they are seen as of special general interest (schools, hospitals, museums) or for other reasons (banks, etc). The goods and services produced by these industries are in practice not free of VAT because the traders pay VAT but are not entitled to refunding of VAT. In this respect there is "hidden" VAT, and the VAT treatment is hence less beneficial than for zero rated products.

### *Temporary provisions for some labour intensive services*

Member states are allowed to apply reduced rates of VAT to certain labour intensive services by way of Council Decision 2000/185/EC, on an experimental basis. The experiment was prolonged to the end of 2010 in 2006. Appendix IV of the VAT directive specifies these industries as:

- Small services of repair (bicycles, shoes and leather goods, clothing and household linen)
- Renovation and repairing of private dwellings (excluding materials)
- Window cleaning and cleaning in private households
- Domestic care services (home help, care of the young, elderly, sick or disabled)
- Hairdressing

Leaving aside future use of reduced VAT rates, their application already today significantly lowers VAT revenues. The tax loss – measured as a share of GDP – ranges from over 1.3 percent of GDP in Greece, Poland, Portugal, Cyprus and Malta to less than 0.1 percent in Denmark and Slovakia. Given the magnitude of the fiscal losses and the potential for spillover effects between countries, a substantial review of the pros and cons of reduced VAT rates seems warranted. For most EU governments, public finances need to be improved to deal with structural deficits and the cost of ageing. Even for governments with fiscal room for manoeuvre there are alternatives to lower VAT rates such as reduced taxes on labour, more spending on public R&D, etc. If governments use reduced rates, they (may) forego the opportunity to obtain other objectives.

### **2.3. The industry impact: prices, demand, production and employment**

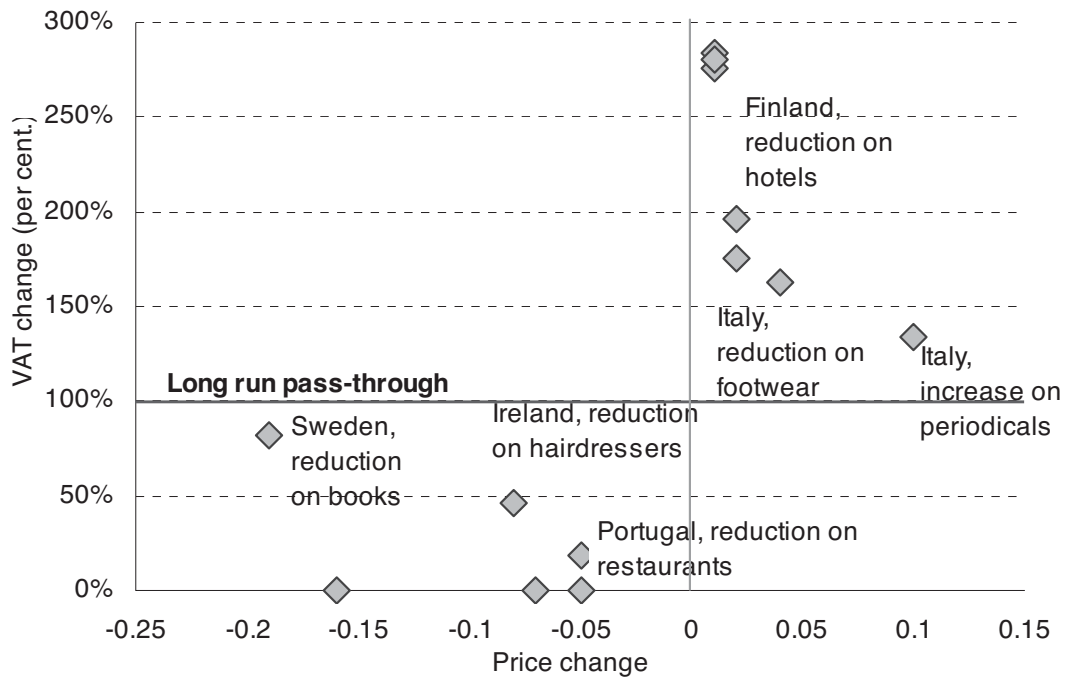
There is ample evidence that lower VAT rates in the industries subjected to lower VAT rates will be translated into lower consumer prices and subsequently higher demand, production and employment in those industries. The question is how much and how quickly.

#### *Pass-through to prices*

A change in VAT rates will generally be followed by equivalent adjustments in consumer prices. The total VAT paid on each product is strictly proportional to the level of sales: so if the VAT rate is reduced from for example 20 to 15 percent, the VAT payment falls by 25 percent. If the markets are characterised as having many producers – each having no influence on total prices and production – they will have an incentive to gain market shares by lowering prices to sell more products as sales have become much more profitable. This process stops when excess profits have again been eroded by competition.

The empirical evidence from major changes in VAT rates supports the conclusion that changes of VAT rates to a very large extent are passed on to consumers. A rise in the VAT rate on periodicals of 10 percentage points in Italy in 2002 led to a rise of prices of 14 percent, a reduction in the VAT rate on books in Sweden of 19 percentage points in 2001 led to a fall in book prices of 12 percent cf. Figure 6 and Case study 6. This corresponds to a pass-through to prices of 134 and 80 percent respectively. Given the uncertainty involved in the estimations this is close to a full pass-through.

**Figure 6: The effects on consumer prices due to VAT changes, historical episodes**



Note: Horizontal axis represent VAT changes and the vertical axis price changes.  
Source: Copenhagen Economics and Eurostat

If we include also the experience with much smaller changes of VAT rates, the picture becomes substantially more blurred. Looking at the five cases where selective VAT rates have been changed by just 1 percentage point, the estimated pass-through lies in the range of 200 to 1000 percent; i.e. meaningless numbers. Basically, this boils down to the fact that the impact of small VAT rate changes drowns in the effects of huge number of other factors influencing measured consumer prices, including the uncertainty related to a proper measurement of prices. Another issue is that it may be costly for producers and retailers to change price lists, etc. A minor change in the VAT rate may only affect price setting when the cumulative effect of costs changes warrants a new price. It may, however, also imply that a minor change in the VAT rate may be the trigger for a much larger price adjustment following other small cost changes.

While there is thus good and theoretical evidence for substantial pass-through from VAT rates to consumer prices in general, there are a number of industry and national characteristics that can determine both the size of the long term effect and in particular the speed with which effects are taking place. For industries with few firms, pricing policies may reflect that an expansion of the firm's production has some measurable impact on the industry price level: more goods can be sold only at the cost of lower prices. Reducing the VAT rate from 25 to 20 percent leads to a fall in marginal costs of nearly 5 percent, but allowing this cost reduction to pass-through fully to consumer prices may expand production and volume sales at the cost of decreased profit margins. Therefore, the optimal solution may be to pass on only a share of the fall in costs.

The timing of the pass-through is affected by the capital intensity of the industry involved as well as the rigidities of labour markets in the country concerned. If a firm uses a lot of capital – buildings, machinery – to produce goods and services, and initially is producing at close to or above normal capacity levels, it can be costly to expand production in the short run. It may require more overtime work, increased maintenance costs, etc. So full pass-through of lower/higher VAT rates will only take place as investment picks up sufficiently to bring the stock of capital in line with the increase in demand. Employment may also be less inflexible in

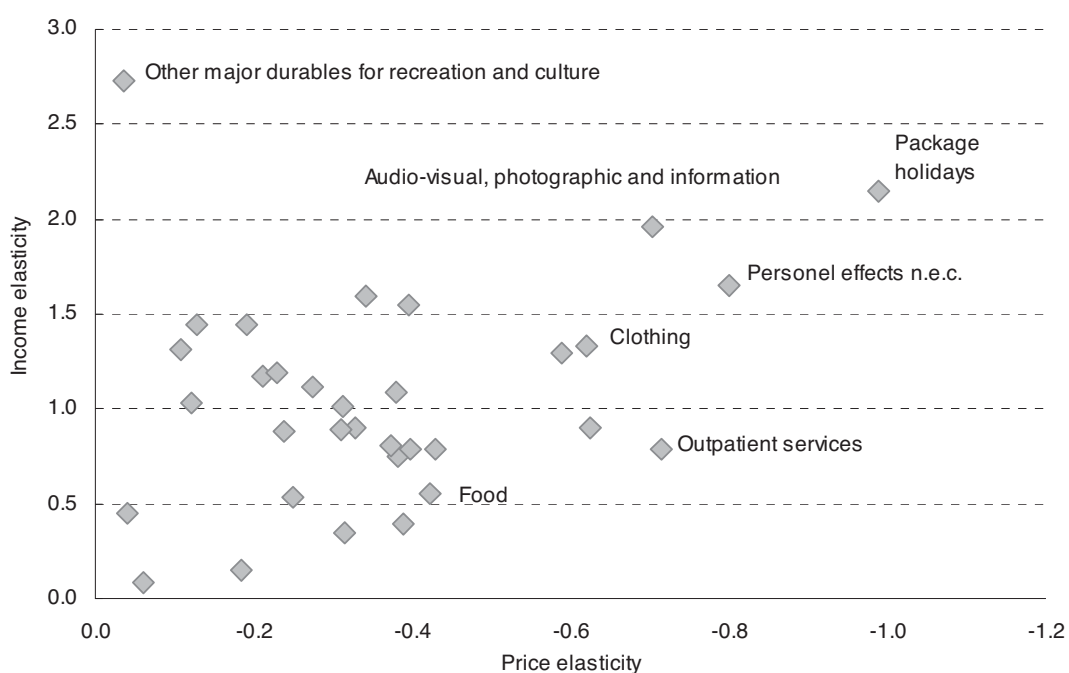
countries where high dismissal costs make employees a relatively fixed cost component: it is more expensive to adjust employment to fluctuations in demand.

Finally we conclude that producers are unlikely to respond strongly to VAT rate changes if they are perceived to be only temporary. It does not necessarily pay to adjust production capacity if the change in demand structure is only of short term nature. Producers may prefer to keep the capital stock as well as employment at more or less unchanged levels if demand is expected to return to its initial level given the argument provided in the previous paragraph.

#### *Pass-through to demand, production and employment*

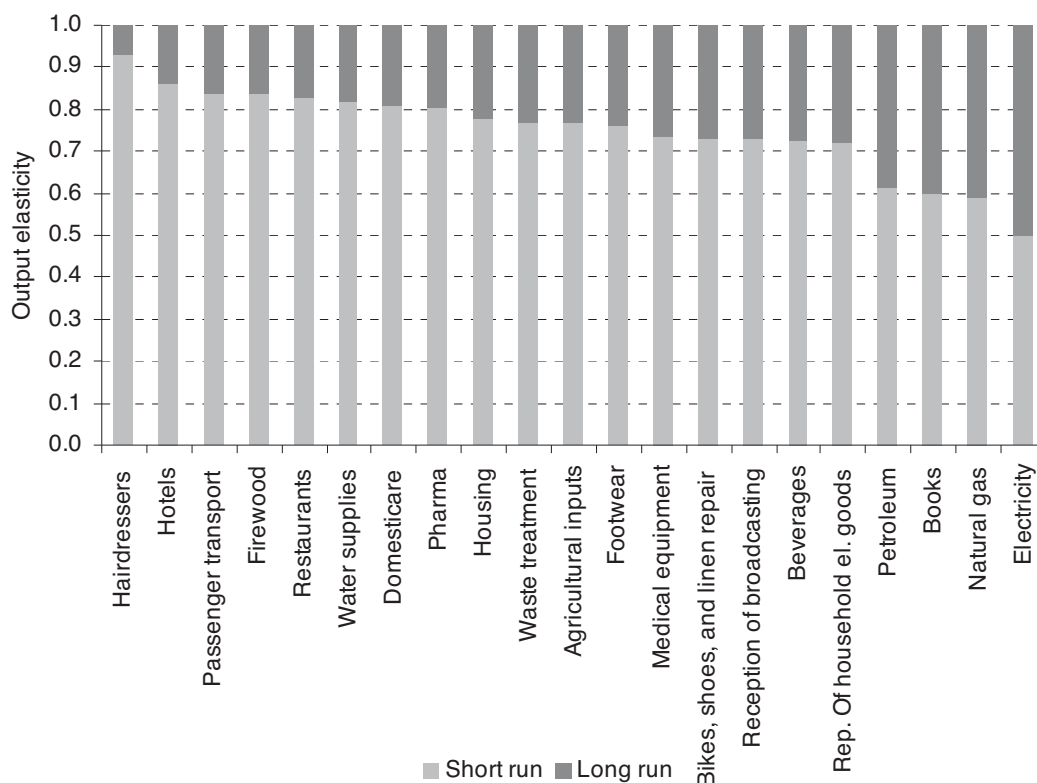
Given substantial evidence for full pass-through from VAT rates to consumer prices in the long run, the second step is to evaluate how lower consumer prices affect demand, production and employment. Based upon a number of new statistical studies (see Appendix II), we first find that any given change in prices has the smallest effect on demand for so-called “basic goods” like food, electricity, heating etc. For foodstuffs a rise in prices of 1 percent leads to a fall in demand of less than 0.5 percent on average cf. Figure 7. The logic is that when food prices go up, households are more likely to cut back on other less “necessary” goods than go to bed hungry. This is also reflected in the fact that such basic goods have as a whole a low elasticity of income. For luxury goods like package holidays, etc. the reverse pattern is clear as well: both price and income elasticities are at the high end.

**Figure 7: The link between income and price elasticities, EU25 2003**



Source: Eurostat and Copenhagen Economics

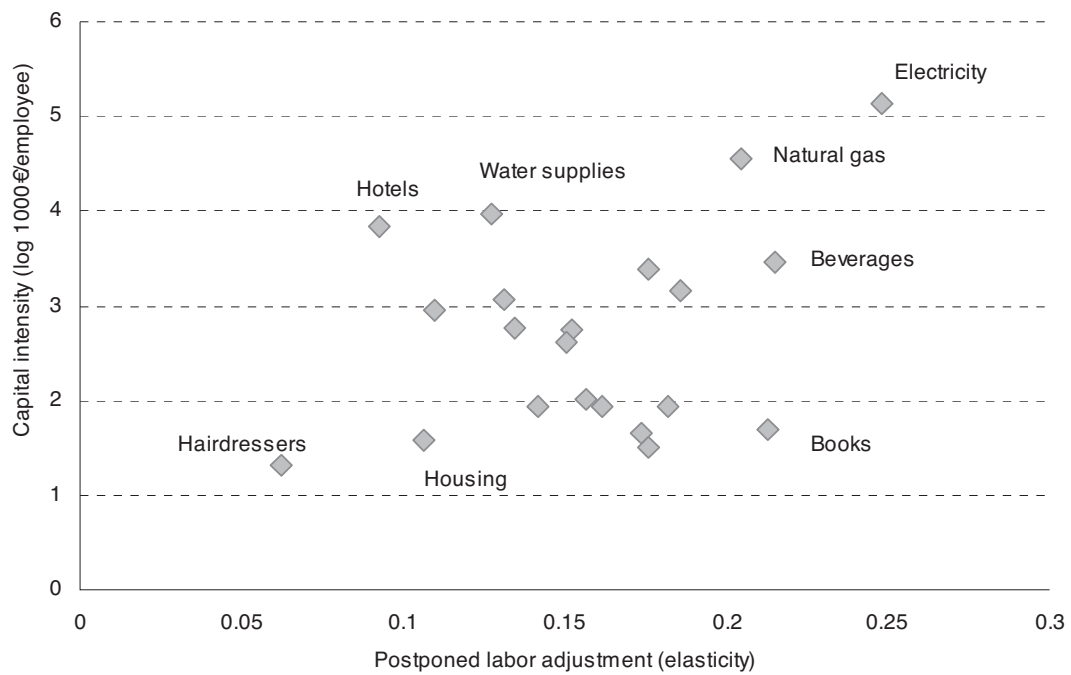
**Figure 8: The share of output response due to price changes in short and long run, EU25**



Source: Eurostat and Copenhagen Economics

In industries with high capital intensity, the response of employment to lower VAT rates is slower. Electricity has by far the slowest adjustment path to the long term employment effect with more than 50 percent of the increase occurring after 1-2 years cf. Figure 8. At the same time, the electricity sector is the industry with the highest ratio of capital to labour among the reviewed industries cf. Figure 9. At the other end are hairdressers, where more than 90 percent of the effect takes place within 1-2 years and this sector has at the same time the lowest rate of capital to labour ratio of the industries reviewed. The argument is the same as in the section on effect on prices: it takes longer time to adjust capacity and production and employment when a firm uses a high amount of machinery, buildings etc. to produce goods and services.

**Figure 9: Labour adjustments in industries ranked by capital intensity**



Source: Copenhagen Economics and Eurostat

Finally, we assess the overall impact from changes in VAT rates to employment in different industries. We find that labour intensive services to households, such as hairdressers, minor repairs, and domestic care see a relative high effect on employment from lower VAT rates. For domestic care, a reduction in the VAT rate equal to one percent of prices increases long term employment in that industry with nearly 1 percent. By contrast, the effect in petroleum production and electricity use is much smaller, just over 0.2 percent. These trends are very much driven by the fact that the link between prices and demand is strongest for the former group which tend to be more “luxury” and less “basic” in nature as discussed above. As discussed above, we would also find the effect to take place relatively quickly given the low capital intensity and high level of competition in the industries concerned.

## Chapter 3 Structural effects from differentiation of VAT rates at national level

The purpose of this chapter is to clarify which specific benefits can be obtained by selective VAT rate cuts and which characteristics are required for the given industry and country if this exercise is to improve economic and social performance at the member state level. In this context, we underline that operating with differentiated VAT rates creates administrative problems and resulting compliance costs for the private and public sector which need to be measured and factored into the decision on whether to use reduced VAT rates as a policy tool.

On the one hand, we conclude that the present extensive use of reduced VAT rates may have substantial costs. If it costs less to produce a pair of shoes than a sweater, but the VAT rate on the sweater is so low that the sweater is cheaper than the shoes, then at the margin it induces the consumer to buy a sweater while she would have preferred the shoes, which are less costly to produce. So consumers lose out from relative prices being distorted by differentiation of VAT rates. At the same time, a complicated system of differentiated VAT rates creates compliance costs for enterprises and tax authorities.

On the other hand, we recognise that there may be specific benefits from operating with reduced VAT for certain products and services that may be large enough to compensate for the resulting distortions of consumer choice and increased compliance burdens. In particular we investigate how and when selective reduction of VAT rates could:

- Improve *economic efficiency* in terms of higher overall productivity and/or lower structural unemployment.
- Attain *equity goals* such as a more even income distribution often in the context of promoting the consumption of certain goods deemed to have intrinsic high value (food, education, culture, health).

In the sections below we provide a more detailed and quantitative analysis of the trade-off between attaining the objectives by way of VAT rates. To help us addressing these questions we first define in 3.1 a number of scenarios that reflect some of the policy discussions currently taking place at national and European level to modify the VAT system. In section 3.2 we then review how these scenarios affect economic efficiency while we in section 3.3 examine effects on equity-related goals. In both of these sections we investigate whether alternative instruments may prove superior in efficiency, taking into account also compliance costs from differentiation of VAT rates. Finally in 3.4, we review the qualitative effects on efficiency and equity goals of using changes in lump sum transfers to households or income taxes rather than adjusting the standard rate of VAT to ensure unchanged fiscal positions.



### 3.1. Definition of scenarios, aggregation of products and key assumptions

To analyse the national effects, as well as internal market aspects of differentiation of VAT rates, we have defined a number of scenarios of possible changes to the present set of configuration of VAT rates in member states, which reflect both more general options as well as more specific changes that member states have put forward or considered either nationally or in the context of EU. The scenarios are at the same time linked closely to some of the present legal instruments that allow member states the option of operating with below standard rates which were defined in Box 2 in chapter 2.

We have at the same time used this policy context to define the aggregation of products/industries in our economic model. First, we have ensured that the present derogations as defined in Box 2 above that allow member states to reduce rates below the national standard rate are well defined relative to the chosen grouping of products. Second, we have grouped goods and services in a way that makes economic sense. Products that share similar characteristics in terms of consumer demand are placed “close” to another in aggregation of products/industries. For example, food bought to produce meals in household kitchens will be seen as near-substitute for going to a restaurant. So when prices of restaurants meals go up, the positive impact on the demand for foodstuffs is likely to be larger than the demand for financial services. Also hotels and restaurants are close products so these three industries are grouped together in our model. See Appendix III for a further discussion of this issue.

Five scenarios are being reviewed (three more in the Appendix IV). The point of these scenarios is that each country can only choose one VAT rate structure while it has a large number of economic and social policy objectives to pursue, including keeping public balances in order. As the examples below will show, using the VAT system to attain one policy objective will typically be at the cost of some other goals: the trick is to find the overall VAT configuration that in conjunction with other policy instruments best meets overall objectives, clearly involving policy trade-off issues as well as choosing other instruments than VAT differentiation.

The five scenarios are then in addition to the present **Benchmark scenario**:

- **A The uniform rate scenario** There is only one single standard rate applying to all sectors but those that are entirely exempt from the VAT system. We call this the scenario A or the “uniform rate” scenario. Adjustment of the standard rate of VAT has been used throughout this report as the benchmark for maintaining budget neutrality for the reasons explained below in the paragraphs about key assumptions. The expansion of tax revenues allows the EU average standard rate to be lowered from presently 19 percent to roughly 16 percent in EU25 cf. Table 17.

Then we have two scenarios B and C that extend the present use of reduced rates:

- **B Lowest reduced rate in each member state to be applied to locally supplied services (LSS) as well as on hotels, restaurants and social housing, other industries unchanged.** This scenario is intended to shed some light on the discussion at the national and EU level to help improve the job position of low-skilled workers and other labour market related issues. It allows for substantial average reductions on these services – between 5 and 8 percentage points – while leading to an increase in the standard rate of VAT to 20.4 percent.
- **C Extension of presently used lower rates more widely across EU.** If any one country presently is allowed to and use a reduced rate for a particular good or service, then every country that makes use of reduced rates, is also to apply the lowest

reduced rate in the same industry. However, this does not apply to reduced VAT rates with a legal base in Appendix III of the VAT directive as defined in Box 2 in chapter 2 which stay unchanged.

Finally we have two scenarios that attempt to simplify and limit the present use of reduced rates

- **D All reduced rates set at lowest level in each member state.** If the member states are not interested in the uniform rate scenario then this could potentially also achieve some simplification purposes.
- **E Standard rate to be applied in EU15 countries on all goods and services apart from products included in Appendix III.** The logic of this scenario is that it does away with all the derogations that are defined as “temporary” (Appendix IV of the VAT directive) or “transitory”.

**Table 17: Average and standard VAT rates in 13 industries for the different scenarios**

|              |                                      | Benchmark   | Uniform rates | Extending reduced rates |             | Simplifying reduced rates |             | Legal basis 1)   |
|--------------|--------------------------------------|-------------|---------------|-------------------------|-------------|---------------------------|-------------|------------------|
|              |                                      |             | A             | B                       | C           | D                         | E           |                  |
| 1<br>Food    | Hotels                               | 12.6        | 15.7          | 7.1                     | 14.1        | 12.2                      | 12.1        | A-III            |
|              | Restaurants                          | 14.7        | 15.7          | 7.1                     | 7.1         | 14.4                      | 17.4        | Transitory       |
|              | Foodstuff                            | 8.0         | 15.7          | 8.2                     | 6.8         | 9.0                       | 9.0         | A-III            |
| 2<br>Merit   | Medical & books                      | 7.2         | 15.7          | 7.4                     | 7.0         | 9.1                       | 9.3         | A-III            |
|              | Culture & entertainment              | 10.8        | 12.0          | 11.5                    | 12.1        | 10.4                      | 10.2        | A-III            |
| 3<br>Network | Electricity & heating                | 12.4        | 15.7          | 13.0                    | 7.2         | 12.4                      | 16.5        | Transitory/<br>E |
|              | Postal, telecom & financial services | 10.8        | 9.3           | 11.6                    | 8.3         | 10.6                      | 10.4        | Transitory/<br>E |
|              | Passenger transport                  | 3.7         | 14.7          | 3.7                     | 3.8         | 6.6                       | 6.5         | Transitory/<br>E |
|              | Social housing                       | 16.4        | 15.7          | 13.8                    | 18.7        | 16.1                      | 15.7        | A-III            |
| 4<br>Local   | Locally supplied services            | 17.2        | 15.7          | 8.9                     | 9.1         | 16.9                      | 17.6        | A-IV             |
| 5<br>Public  | Government services                  | 4.1         | 5.6           | 4.3                     | 4.0         | 4.2                       | 4.5         | E                |
|              | Street cleaning                      | 11.2        | 15.0          | 11.9                    | 12.6        | 12.2                      | 12.1        | A-III            |
| 6<br>RoE     | Rest of the economy                  | 19.1        | 15.7          | 20.4                    | 21.9        | 18.6                      | 17.9        | None             |
| <b>Total</b> | <b>EU 25 average</b>                 | <b>14.7</b> | <b>14.7</b>   | <b>14.7</b>             | <b>14.7</b> | <b>14.7</b>               | <b>14.7</b> |                  |

Note: The EU25 average rates have been weighted with the countries share of consumption expenditure. The VAT rates showed in the table are the average of the CEWRR from Appendix VIII. Since the sectors are a composite of several sub sectors the VAT rate can differ. For instance in group 4 the rate is 8.9 in scenario B and 9.1 in scenario C. This is caused by the fact that a sub sector in group 4 is applied with standard rate, which differs between the scenarios to keep the government budget balanced. 1) A-III refers to Appendix III, A-IV to Appendix IV, “other” to specific other reductions that often on a country-by-country basis has been allowed individual member states and “E” to exemption. Financial services are for example exempt from VAT in all member states. Source: European Commission (DOC/1829/2006-EN), IBFD VAT data base and Copenhagen Economics

In measuring the scenarios' effects on prices and real activity we have used the econometric estimations shown in chapter 2 and documented in Appendix II to create and calibrate the general equilibrium models documented in Appendix III and IV. Avoiding technical issues the following features of the calculations are worth underlining:

- We are measuring long term effects. However, as documented in chapter 2 for some VAT changes the full effects materialise quickly. We have pinpointed the policy implications of that in chapter 1 where relevant.
- We assume full pass-through of VAT changes to prices in all sectors. This stems mainly from two conclusions. First we find this to be by far the most likely reaction in most industries in a long term perspective as discussed in chapter 2 and Appendix II. Secondly, we do not possess sufficiently precise information that would allow us to define different levels of pass-through with any reasonable certainty.
- The chosen balancing of public finances when changing individual VAT rates is adjustment of the standard VAT for two reasons. First, it clarifies that the central issues here is the net benefits of having higher or lower VAT across different goods and services. Adjusting by way of income taxes, lump sum transfers etc raises larger issues about the most appropriate tax structure and the relations between parts of the tax system. However, we will in section 3.4 discuss, in qualitative terms, the merits and consequences of instead using lump sum transfers and income taxes as the balancing element.
- None of the standard VAT rates can be below 15% in the scenarios. For countries where this is the case the standard VAT rate is set to 15%.<sup>26</sup>

### **3.2. Efficiency concerns: Macro economic performance and economic welfare**

In this section we focus on how differentiation of VAT rates affects overall consumer welfare, productivity, structural unemployment, etc. First we start out by measuring how the variation of VAT rates distorts consumer choice and report some ball park estimates of the resulting compliance costs for enterprises and tax authorities and review how these estimates will be affected in the defined scenarios. Second, we discuss whether differentiation of VAT rates can be used to boost productivity by getting households out of low productivity do-it-yourself work (DIY). Thirdly, we review how differentiation of VAT can be used to shift the demand for labour in the direction of low-skilled workers who have more problems in getting jobs.

#### *Distortions to consumer choice and compliance costs*

Having uniform VAT rates, implies that all activities subjected to VAT are treated equally. This is generally considered the optimal solution from a consumer welfare point of view – with the caveats discussed in the subsequent sections – as it does not distort the consumers' choice between different products. Thus if the VAT rate is lower for clothing than for books, the consumer may at the margin buy a sweater rather than a new bestseller, even if they cost the same to produce and he/she had a preference for the latter given same price.

Standard welfare theory suggests a method to calculate the costs to consumers when the relative prices faced by consumers for two or more products are separated from the relative costs that producers have in producing these goods. Basically, we measure how much consumers would have to be paid to achieve the same level of utility as they would have had with relative prices unaffected by VAT differentiation. In so doing, we ensure that we compare situations where changes in VAT rates are budget-neutral thus not affecting the consumers' overall budget situation (so we are estimating what is called the excessive burden cf. Appendix V). In essence, losses increase when distortions to relative prices induce large changes to consumer choice – large change in relative spending on different goods – while they are more limited when reactions are small. In Appendix III we have described the model we use to

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<sup>26</sup> In the following countries the standard VAT rate has been revised upwards to 15% (Sc A: CY,CZ, EL, ES, FR, LU, MT, NL, UK), (Sc B: LU), (Sc C: none); (Sc D: CY, LU) and (Sc E: ES, LU). Fiscal neutrality is then reached by lump sum transfers.

predict the effect of changes in relative prices on consumer demand and economic activities in different industries throughout this report. Box 3 illustrates how changes in consumer welfare are calculated.

### Box 3: Consumer welfare change from replacing differentiated VAT rates with uniform rate

The basic idea is to evaluate the size of the gains consumers as group may reap if the relative prices between different consumer products are no longer distorted by a differentiation of VAT rates. In a longer term perspective, it is reasonable to assume that the economy is operating at normal capacity i.e. no spare capacity. In that situation, an expansion of one type of product due to lower VAT rates will always be at the cost of reductions in the production of some other product subjected to a relatively higher VAT rate. The basic premise is that consumers generally will benefit from a situation where the relative costs of producing two types of goods are reflected in consumer prices. If producing one more pair of shoes requires producing 10 fewer pairs of socks, then consumers are best off if socks cost exactly on tenth of a pair of shoes. This implies uniform rates on all products and services.

Imagine the reverse: if shoes were being made cheaper by a reduced VAT while socks were made more expensive by a higher VAT, then the relative prices between the two products would be shifted: one more pair of shoes would require consumers to buy for example 8 instead of 10 fewer pairs of socks for a given level of income. In economic terms, the opportunity costs of shoes have fallen. Consumers would then buy fewer socks and more shoes until the moment where they, at the margin, would be equally happy with one more pair of shoes and 8 more pairs of socks. However, this is evidently bad for society: while consumers are willing to give up one pair of shoes to get just 8 pairs of socks, producers are actually capable of producing 10 pairs of socks if shoe production was reduced by one pair. So sock production is too low!

What our calculations do is to calculate the size of the loss to consumers from this distortion in relative prices. We need to know how much better consumers would be in the above situation if we went back to the original position where the relative prices for consumers reflected the relative production costs for producers i.e. if VAT rates were uniform. In appendix III we have in more technical terms explained the calculations based upon a well defined mathematical description of how consumers react to changes in relative prices and how such changes affect consumer welfare. Technically, we use the so-called equivalent variation: how much monetary compensation should be paid to consumers in a situation with differentiated VAT rates to give them the same level of "utility" as with uniform VAT rates. We calculate this in a number of VAT scenarios where net disposable incomes to consumers are identical.

To give a feel for these calculations we have below provided a real example for our scenarios namely the effect from the low taxation of foods. Within the EU, the average EU consumer spends 16.7% of his entire household budget on food and 83.3% on other goods and services ("others" below). The average VAT rate for food is 8% and 17.3% for others. Using a Cobb-Douglas function for utility and setting the income to 100, total utility can be derived as:

- $U = \text{food}^{0.167} * \text{others}^{0.833}$  where food and others are measured in quantities.

Benchmark:

|        | Expenditure<br>% | Price incl. VAT | Quantity |  |
|--------|------------------|-----------------|----------|--|
| Food   | 16.7             | 1.080           | 15.46    | Income = 100                               |
| Others | 83.3             | 1.173           | 71.00    | $U_0 = 15.46^{0.167} * 71^{0.833} = 55.04$ |

In the scenario A, a uniform VAT rate of 15.7% is implemented. In the scenarios the VAT revenue as well as the households' income are kept constant, but the prices change. From the utility function the consumer's preferences are known and therefore it is possible to calculate his demand and level of utility.

Uniform VAT rates

|        | Expenditure<br>% | Price incl. VAT | Quantity |  |
|--------|------------------|-----------------|----------|--|
| Food   | 16.7             | 1.157           | 14.43    | Income = 100                               |
| Others | 83.3             | 1.157           | 72.0     | $U_1 = 14.43^{0.167} * 72^{0.833} = 55.05$ |

Using the benchmark prices and the utility levels from the two scenarios EV can be calculated:

$$EV = \text{income} * (U_1 - U_0) / U_0 = 100 * (55.05 - 55.04) / 55.04 = 0.014$$

The present large actual variation of VAT rates for all these levels of consumer choices suggests that deadweight losses can be non-trivial in EU. The average VAT rate for EU25 is 14.7 cf. Table 17. However, this reflects an underlying reality of roughly 2/3 of total consumption being subject to the standard rate – which is close to 19 percent on average in EU25– and the rest to a wide array of different VAT rates. Three main groups called 1, 2 and 3 are taxed on average in the range of 9-11 per percentage as documented in Table 17 and Table 3. These are essentially the sectors being allowed lower rates in the so-called Appendix III of the VAT directive or allowed as "transitory" derogations as described in Box 2 in chapter 2. Group 4 "locally supplied services" – covering industries such as housecleaning,

hairdressers, small repair work – is taxed also below the standard rates but higher than the first three groups (allowed in the so-called Appendix IV of the VAT directive). Group 5 – government services etc. – is less interesting in the context of VAT policies as a vast majority of the financing of these services typically come from the government itself, so VAT rates have typically no or little effect on behaviour or government finances.

But below this level further differences appear. Restaurants are being taxed higher on average than hotels and hotels on average higher than food. The variation goes further down: within the area of food for example, member states on average operate with 2-3 different rates. Ireland for example has for example three rates: a zero rate, a reduced rate of 13.5 and a “standard” rate of 21.5 percent. On average across members, each of the 13 types of consumer products included in Table 18 is composed of 1.5 products with different VAT rates.

To summarise this wealth of differentiation and gauge its overall importance, we have defined some measurements of the overall variation of VAT at three different levels of aggregation, cf. Table 18. Some intuition of the method can be gained by looking for our estimate of VAT variation within “foodstuffs” at the EU level. First, we estimate for each country how many rates that apply to foodstuffs and calculate the average VAT rate applying to foodstuffs. Then we calculate the (numerical) variation of rates within food by multiplying the share of each subgroup of food with its deviation from the mean of foodstuffs. So, if the average rate of food is 8.0 percent as in Table 17 and we have two subgroups with rates of, for example, 5.3 percent and 12.3 percent with weights of 25 and 75 percent, respectively, then variation within this group (level 1) is 3.9 percentage points<sup>27</sup>. As food accounts for 16.8 percent of total consumption, then this sector’s contribution to the total variation of VAT rates at the first level of aggregation is 0.7 percentage points<sup>28</sup>.

This exercise is then repeated for all groups and subgroups for each country and finally added up at the EU level by way of the country share of consumption. So, the first level of VAT variation relates to differences within food (live or dead chickens in Ireland for example), restaurants (lower rate of catering/take away than “traditional” full service restaurants), books (printed vs. electronic versions), energy sources (electricity from the grid against fuels bought directly by consumer) and so on. The second level variation then measures differences between restaurants, hotels and foodstuff which are deemed to be relatively close substitutes. Finally, third level variation is linked to differences between for example the main 6 groups. Essentially, it is these variations and changes in variations in the scenarios that drive our estimates of distortion to consumer choice and evaluation of changes to compliance costs.

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<sup>27</sup>  $(|5.3-8.0|*0.25+|12.3-8.0|*0.75)$ .

<sup>28</sup>  $(3.9*0.168)$ .

**Table 18: VAT variation in EU25 at three levels of aggregation**

| EU25 average |                                      | Sector | Share of consumption | 1. level | 2. level | 3. level |
|--------------|--------------------------------------|--------|----------------------|----------|----------|----------|
| 1<br>Food    | Hotels                               |        | 1.6                  | 0.0      | 2.5      | 4.6      |
|              | Restaurants                          |        | 6.1                  | 0.5      |          |          |
|              | Foodstuff                            |        | 16.7                 | 3.9      |          |          |
| 2<br>Merit   | Medical & books                      |        | 3.4                  | 2.7      | 1.9      |          |
|              | Culture & entertainment              |        | 3.6                  | 2.8      |          |          |
| 3<br>Network | Electricity & heating                |        | 2.1                  | 2.3      | 2.3      |          |
|              | Postal, telecom & financial services |        | 6.9                  | 9.1      |          |          |
|              | Passenger transport                  |        | 1.5                  | 2.3      |          |          |
|              | Social housing                       |        | 0.1                  | 2.5      |          |          |
| 4<br>Local   | Locally supplied services            |        | 4.8                  | 1.4      | 0.0      |          |
| 5<br>Public  | Government services                  |        | 4.2                  | 2.5      | 2.1      |          |
|              | Street cleanings                     |        | 0.0                  | 0.4      |          |          |
| 6<br>RoE     | Rest of the economy                  |        | 49.0                 | 0.0      | 0.0      |          |
| Total        |                                      |        | 100                  | 2.0      | 1.2      | 4.6      |

Note: 1. level = within 13 sectors; 2. level = within 6 groups; 3. level = between 6 groups

Source: Copenhagen Economics and IBFD VAT database

We find that the variation of VAT rates is substantial at all levels of aggregation. The weighted variation in VAT rates in the EU 25 at what we call the first level of aggregation within the 13 subsectors is quite substantial and roughly 40 percent of the variation of VAT rates between the 6 main groups of goods (4.6) and services cf. Table 18.

Reviewing the effects of the various scenarios, only the uniform scenario reduces the present VAT variation substantially cf. Table 19. Indeed, scenario A reduces variation at all levels with between 60 and 50 percent. Some reductions are also posted in the “simplification” scenarios D and E.

**Table 19: First, second, and third level variation of VAT rates in five scenarios**

|          | Benchmark | Uniform rates | Extending reduced rates |     | Simplifying reduced rates |     |
|----------|-----------|---------------|-------------------------|-----|---------------------------|-----|
|          |           | A             | B                       | C   | D                         | E   |
| 1. level | 2.0       | 0.8           | 2.3                     | 1.8 | 1.8                       | 1.7 |
| 2. level | 1.2       | 0.7           | 0.7                     | 0.5 | 0.9                       | 1.4 |
| 2. level | 4.6       | 1.6           | 5.6                     | 6.9 | 4.1                       | 3.6 |

Note: 1. level = within sectors; 2. level = within groups; 3. level = between groups

Source: Copenhagen Economics

The distortions to consumer choice can be reduced by an estimated 0.03 percent of private consumption or by €1.3 billion in the EU as a whole by going in the direction of a uniform rate cf. Table 20. Some improvements are also posted in D and E.

In scenario B with lower rates on locally supplied services, hotels and restaurants there is only slight increase in distortions to consumer choice despite more extensive use of reduced VAT rates. This is due to two facts. First, the VAT rates on hotels and restaurants will get closer to the rate on food as indicated back in Table 17. Second, the lower VAT rate on locally supplied services will imply that the relative average VAT rates for the whole group 1 (food and lodging) and group 4 locally supplied services will also become more close. As our model suggests that

these two groups are in sharp internal competition for consumer spending, this also in isolation reduces the distortions to consumer losses. This is almost offsetting the fact that the VAT rates on these two groups (group 1 and group 4) will be substantially below rates on other consumer goods.

Our direct model calculations can only capture a part of the overall distortions, namely those relating to second and third level of aggregation while we would argue that first level of aggregation may present also as important distortions. So in addition to model estimates, back-of-the-envelope calculations suggest consumers may see benefits go up by a further 0.1 percent of private consumption in the uniform rate scenario.

**Table 20: Welfare effect from change in consumer choice relative to private consumption, EU25**

|                         | Uniform rates | Extending reduced rates |       | Simplifying reduced rates |      |
|-------------------------|---------------|-------------------------|-------|---------------------------|------|
|                         | A             | B                       | C     | D                         | E    |
| Welfare change, %       | 0.03          | -0.00                   | -0.02 | 0.01                      | 0.01 |
| Welfare change, bill. € | 1.3           | -0.00                   | -0.7  | 0.4                       | 0.5  |

Notes: Welfare is measured as change in Equivalent Variation.

Source: Copenhagen Economic – CEV model

Compliance costs are also a significant issue. Due to the substantial economic consequences of activities being classified with different VAT codes, private agents and tax authorities constantly dispute borderline cases in countries with differentiated VAT rates. In Sweden, the latter constitute roughly 1/5 of all cases referred to their tax tribunal, and consuming, conservatively estimated, real resources in the public and private sector of 700 M SEK (Swedish Government, 2005) .

The issue of VAT differentiation at the detailed level, as opposed to between very different groups from Table 18, is central not only for consumer welfare issues but also for compliance costs: there are more borderline cases involved in deciding whether a take-away service is indeed a restaurant, and hence to be taxed at a higher rate, because there too many seats in which to eat the sandwich rather than borderline cases involving whether a chewing gum is a food item or a car. So for compliance costs, the issue is to focus on VAT variation at the first level of aggregation.

A move toward a more simple structure could thus contribute to the EU agenda of reducing administrative burdens and improving regulatory quality while the other scenarios are likely to leave compliance burdens unchanged or increased. This is based upon two set of calculations. We take it that Sweden is neither particularly good nor bad in administering their differentiated VAT system and factor in that Sweden has about the same variation of their VAT rates at the first level of aggregation as the EU25 average. This translates with a back-of-the-envelope calculation into a very heroic estimate for EU25 of nearly €4 billion per year in compliance costs for European enterprises and public authorities or 0.1 percent of EU25 private consumption. By definition, that would disappear in the uniform scenario. As the other scenarios leave the variation of VAT rates largely unchanged or increased, particularly at the important first level, we suggest they will not be affected much, with the possible exception of scenario B where foodstuffs, restaurants and hotels will face largely the same rates. Compliance costs are discussed further in section 3.3.

Looking at the relative effects from differentiated VAT rates in terms of their effects on distortions to consumer choice and compliance costs, the estimates suggest that the latter may merit more attention.

The variation across countries in terms of the impact of the scenarios is substantial and do not surprisingly reflect the underlying differences in VAT rate structure and the way the scenarios affect them. Top gainers in the uniform rate scenarios are Sweden<sup>29</sup>, United Kingdom, Ireland, Malta and France with gains close to 0.5 percent of the value of private consumption as they have the largest amount of variation of VAT rates. They should also gain the most in terms of the potential of cutting compliance costs. By contrast, countries such as Denmark, with a nearly uniform rate structure, have little to gain on either reduction of distortions or consumer choices or cuts in compliance costs.

#### *Boosting productivity and the informal economy*

Any tax on economic activity drives a wedge between what economic agents receive on a net basis for their efforts and the actual value to the consumer of the good and services produced. In this respect as explained in chapter 2 section 2.1, VAT just as well as an income tax, therefore, provides a systematic incentive to replace goods and services produced in the formal, market economy with either do-it-yourself activities (DIY) or goods and services bought in the underground economy, the latter in conflict with tax legislation. This means that they reduce formal, taxed work and shift their activities to repairing roofs, cleaning shirts and tending gardens even though their productivity in these fields is far below that in their chosen profession.

The extent to which formally produced goods and services are replaced by DIY activities varies considerably across industries and between countries. It is relatively easy to substitute a visit to a restaurant with domestic cooking while few households will venture into producing their own PC.

The same variation across industries applies very much to the informal economy: tax fraud in certain industries of the restaurant industry can be substantial while it is near impossible to develop, produce and market a PC in the informal economy.

Consumer surveys from Northern Europe confirm that use of DIY is widespread precisely in the context of repair work on household accommodation. In high tax countries such as Denmark, Norway and Sweden, DIY accounts for over 75 percent of all minor housing repairs while the equivalent number for major improvements, typically requiring more technical work, is somewhat lower cf. Table 21 and Table 22. Interestingly, the numbers for the UK is substantially lower, probably reflecting lower taxes rate as documented below.

**Table 21: Proportions of minor housing repairs and maintenance carried out as white, DIY and underground activities, in percent**

| Country | White | DIY | Underground |
|---------|-------|-----|-------------|
| Denmark | 20    | 75  | 5           |
| Norway  | 18    | 79  | 2           |
| Sweden  | 14    | 80  | 5           |
| Germany | 14    | 80  | 6           |
| UK      | 34    | 51  | 15          |

Source: Brodersen (2003)

<sup>29</sup> The welfare change for Sweden measured with CEVM is 0.07 percent. In the Swedish study (Swedish Government, 2005) they calculate the welfare change to be 0.1 percent with a uniform VAT rate.



**Table 22: Proportions of major improvements and changes carried out as white, DIY and underground activities, in percent**

| Country | White | DIY | Underground |
|---------|-------|-----|-------------|
| Denmark | 41    | 54  | 5           |
| Norway  | 29    | 69  | 2           |
| Sweden  | 36    | 58  | 6           |
| Germany | 50    | 46  | 5           |
| UK      | 67    | 23  | 10          |

Note: All figures are from Study no. 11, The Rockwool Foundation Research Unit

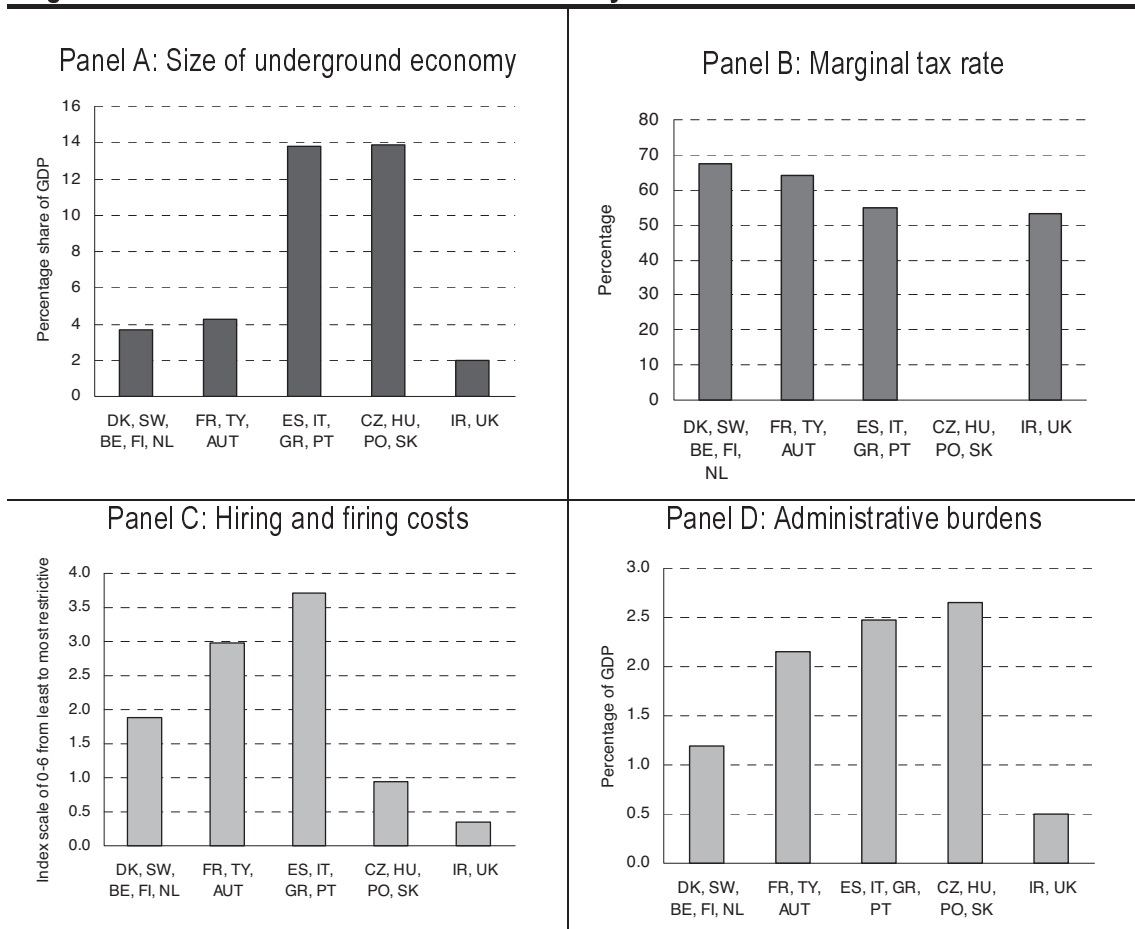
Source: Brodersen (2003)

Looking at the structural parameters that determine the size of DIY and underground activities, we suggest that the crowding out of formal activities to such activities may be widespread in the EU while the determinants in the various countries may well differ.

As regards do-it-yourself activities, marginal tax rates in Nordic countries, Belgium and the Netherlands are at the highest a relatively large group of 8 countries, just behind is such countries as Germany, Austria and France also having average marginal tax rates above 60 percent when the overall effects of income taxes, social security contributions and consumer taxes such as VAT are added up. Cross-country statistical studies do indeed confirm that DIY activities are boosted by high tax rates (Davis, 2004).

Focusing instead on the incidence of underground activities, it is in no way proportional to the size of marginal (or average) tax rates. It is tempting to suggest that the size of underground activities in countries such as Denmark, Finland and Sweden is mostly driven by high tax rates cf. Figure 10. By contrast, the main driver is countries such as Spain, Italy and Portugal are more burdensome labour and product market regulation as well as a weaker tax law enforcement (for literature review see also Appendix V). High hiring and firing costs make it costly for employers to employ workers, and the effects may be particularly pronounced in industries with volatile demand and many small firms with such as locally supplied services. High administrative burdens are also particularly important for that industry for the same reason.

**Figure 10: Size and drivers of informal economy**



Source: Marginal tax rates come from Danish Ministry of finance (2007). Other structural policy indicators come from OECD (2007). Share of black economy is from Renoy et al. (2004).

To sum up, equal VAT rates may have different impacts across industries on the displacement of activities towards do-it-yourself and black economy activities which may imply that equal VAT rates are not always the optimal solution. Moreover, such displacement effects may be a significant fact in many member states.

To illustrate the economics of the case at the EU-level, we have used an economic model<sup>30</sup> specifically developed to analyse the effects of changes in tax rates on DIY and underground activities on economic welfare, not the least effects on productivity cf. Box 4. Basically, we have divided EU countries into two main groups after their level of marginal tax rates and we then carry out two experiments. First, we demonstrate how the size in the increase in productivity of equal sized but selective VAT cuts in favour of industries with widespread use of DIY and underground activities crucially depend on the very different starting conditions in these two groups of countries. Starting conditions is first of all initial levels of marginal tax rates, the derived consequences for the prevalence of DIY and underground activities and the productivity in these two activities relative to the formal economy. Second, we estimate how EU-wide aggregates of formal GDP and A survey paper (IEA 2007) documents IEA member state experience with fiscal and other incentives to energy savings productivity may be affected in the specified scenarios. The issue here is that the effects both depend on these country specific differences described above and the fact that initial VAT structures are very different across countries.

<sup>30</sup> The model was originally developed by Peter Birch Sørensen, see Sørensen (1997), and has been modified to take into account more EU wide conditions as explained in appendix VI

#### **Box 4: Calibrating the INFOSIM model**

To illustrate the potential of increasing productivity by way of reducing low productivity DIY and non-taxed underground activities, we used the so-called INFOSIM model to capture some main features of the way first of all the tax system affects incentives to DIY and underground activities for two groups of countries designated after their levels of tax rates, see Sørensen (1997).

The INFOSIM model is specifically built for this purpose, by operating with simpler structure of consumer goods and services than our general CEV-model:

- Domestic services (cleaning, washing, gardening, window cleaning, domestic service, hairdressing, repair and maintenance of consumer durables (other than housing) plus restaurants
- Housing repair
- Rest of the economy

Based upon relative consumer prices, consumers then choose both how much they want to consume of these three types of consumer products and for domestic services and housing repair also whether the supply is to come from the formal economy, DIY-activities or the underground economy. In the model, the choice is on the margin determined by the price of these different products with the key feature that:

- DIY activities and underground activities are of course not taxed while formal activities are. The extent of DIY and underground activities are therefore strongly influenced by tax rates
- The possibility to “outsource” production to DIY and underground activities exists only for domestic services and repair work and not for the “rest of the economy”

In Appendix V we describe how INFOSIM has been calibrated to simulate the effects of changes in VAT rates in the two groups of countries using data for national marginal tax rates and VAT as well as rough guestimates of the relative levels of productivity in the formal economy, in DIY activities and underground economy. Moreover, we have ensured consistency between model assumptions in the CEVM and INFOSIM.

So in the first experiment both groups of countries are subjected to a cut in VAT rate that lowers the VAT rate on “locally supplied services” plus restaurants with 5 percentage points. This first sector includes activities such as cleaning, laundry, gardening, window cleaning, domestic services, hairdressing, repair and maintenance of other consumer durables see Box 4 above. Locally supplied services are industries where households have considerable scope for carrying out DIY or buying from the underground economy.

We finance the lower VAT on locally supplied services plus restaurants via a higher general VAT rate. Hereby, the overall total VAT rate – net of any dynamic effects – remains unchanged. Therefore, the twisting of the VAT rates does not in itself have any effects on the overall taxation of consumption or general incentive to work; see though Box 5.

#### **Box 5: The twisting of VAT rates and the effects on overall labour supply**

As regards the net effect on labour markets, the above calculations implicitly assume that the twisting of VAT rates has no effect on marginal tax rates as perceived by the work force. However, this implies that workers when earning more spread their purchases proportionally across all types of goods and services. I.e. that if they have already spent 5,000 euros on both food and housing, then earning 1,000 euros more would lead to spending being increased with 500 euros more for both these categories of spending. Technically, this is an assumption of equal income elasticities across different categories of spending.

However, estimates do suggest that the twisting of VAT rates may have some effect on marginal tax rates precisely because income elasticities differ. The counterpart to this effect is the effect on the income distribution. Largely, any positive effect on lower marginal tax rates would correspond to a less equal distribution of income.

The productivity effect we are looking for must be solely attributable to reallocation of working hours between the formal and the informal economy, and not to changes in the amount of capital or labour hours used in the production process. They could, for example, be employed as engineers in the manufacturing industry and help expand exports, most simply by working more hours in their present job.

We do not expect a major rise in productivity from the shift from underground to formal work, as the persons involved in underground economy typically have substantial experience with the specific activities in this sector. The greater part of the increase in productivity will come from the movement from do-it-yourself to formal activities. This is only partly offset by the more do-it-yourself and black activities in the rest of the economy following the raise of the general VAT rate – given the smaller incidence and scope for such activities in these other sectors. The model simulations are further explained in Appendix V.

We estimate the gains from reduced VAT rates to be substantially higher in the Northern Group (North) than the Southern Group (South). First the shift of the share of total man-hours worked from DIY and underground towards formal activities will be larger from a given cut in VAT rate with the same effect on the total marginal tax in the sector in North than South. This follows from the fact that more activities have been driven out there in the first place by higher taxes, so we expect an opposite sign. A marginal cut corresponding to a price fall of 10 percent moves an estimated 2.4 percentage points of total working hours from the informal economy to the formal economy in North against only 2.0 in the South cf. Table 23.

**Table 23: The effect on productivity and public finances due to an ex-ante fully financed 10% cut in VAT on LSS and restaurants**

| Country | Shift man hours, % points | Productivity, % | Public finance, % |
|---------|---------------------------|-----------------|-------------------|
| North   | 2.4                       | 0.7             | 0.6               |
| South   | 2.0                       | 0.6             | 0.4               |

Note: North: Belgium, Denmark, Finland, France, Germany, the Netherlands and Sweden. South: Italy, Spain, Greece and Portugal.

Source: Copenhagen Economics-Infosim.

Secondly, we expect each man-hour moved from the informal economy in the Northern-group to increase productivity by more than the same unit moved in the same direction in the Southern group. The argument is essentially the same. The higher taxes in the Northern Group have made it initially more attractive to undertake very low productivity tasks as DIY simply because it is un-taxed. As the shift in man hours at the same time is smaller, we estimate a 0.7 percent raise in the productivity in North against 0.6 percent in South. Thirdly, positive effects from the crowding-in of formerly non-tax activities to the formal, taxed economy are also higher in the North because tax rates there are higher. This implies that the compensating raise in the standard VAT rate to pay for the rate reduction is lower, and hence induces less other distortions. See Box 6 for an illustration of this effect based upon simulations with data calibrated to Denmark.

## Box 6: Fiscal dynamics of crowding-in formerly non-taxed activities, DK as an example

Given the high ratio between informal and formal activities for locally supplied services in conjunction with very high marginal tax rates in the reviewed example we may also see a net improvement in public finance from resources moving in the direction of formal and taxed activities. First, the so-called mechanical revenue losses tend to be smaller than for other sectors; that is the fiscal costs associated with reducing the tax rate from 62 to 57 percent on *existing activities* in the formal locally supplied services. The 62 and 57 percent rates are the sum of income and consumption taxes, including VAT. In our example, mechanical revenue loss corresponds to 0.31% of GDP cf. Table 24.

With marginal tax rates high, moving activity from the informal to the formal economy has a higher effect on revenues. In our example, the increased revenue from changed activity in the sector for locally supplied services amounts to 0.29% of GDP which comes largely from moving activities from a tax rate of zero in the DIY and black economy to 57 percent. The fiscal position is helped by the low degree of substitution between locally supplied services and other goods and services. This implies limited moves from higher taxed goods and services in the rest of the economy – now taxed at 66 percent – to the lower 57 percent rate on locally supplied services. As a result, the rise in the general VAT rate to bring about an ex ante neutral fiscal position will in this example provide a dynamic net gain just under 0.3 % of GDP.

**Table 24: The effect of public finance from fully ex-ante financed cut of the VAT rate from 25 to 15 percent on locally supplied services, share of GDP**

|                | Tax rates <sup>1)</sup> |                  | Tax base |      | Mechanical revenue  |                    | Tax loss           |
|----------------|-------------------------|------------------|----------|------|---------------------|--------------------|--------------------|
|                | Total                   |                  | Initial  | New  |                     |                    |                    |
| LLS            | Initial                 | New              | Initial  | New  |                     |                    |                    |
|                | 62 <sup>1)</sup>        | 57 <sup>1)</sup> | 6.1      | 6.7  | -0.31 <sup>2)</sup> | 0.29 <sup>3)</sup> | -0.02              |
| Imported goods |                         | 25               | 27       | 6.8  | 6.8                 |                    | 0.14 <sup>4)</sup> |
|                | 0.14                    |                  |          |      |                     |                    |                    |
| RoE            | 65                      | 66               | 24.0     | 23.9 |                     | 0.16 <sup>5)</sup> | 0.16               |
| <b>Total</b>   |                         |                  |          |      |                     |                    | <b>0.28</b>        |

Note: 1) Calculated as the tax loss on existing activities:  $(57\%-62\%)*6.1 = -0.31\%$  of GDP.

2) Calculated as the tax income on new activities:  $57\%*(6.7-6.1) = 0.29\%$  of GDP.

3) Calculated as the change in tax income caused by changed taxes and change in activities:  $27\%*6.8-25\%*6.8=0.14\%$  of GDP.

4) Calculated as the change in tax income caused by changed taxes and change in activities:  $66\%*23.9-65\%*24.0=0.16\%$  of GDP.

Source: Copenhagen Economics based upon INFOSIM see Appendix VI, Sørensen (1997)

In the second experiment, we simulate the effects of the defined scenarios and see how they affect the demand for products where DIY and underground activity is most relevant (locally supplied services and restaurants).

The uniform rate scenario A boosts these focus sectors for the EU25 as a whole. This positive net effect is the result of a number of factors pulling in opposite directions. For the large number of countries not currently using reduced rates for LSS, doing away with derogations favouring food etc. will finance a reduction in the standard. This more than compensates for the higher VAT rate on locally supplied services in the countries where locally supplied services currently benefit from lower rates, leading to a net average reduction at the EU25 level of the VAT rate of nearly 1 percentage point, cf. table 23. At the same time, the average VAT rate for the group “food and lodging” goes up – driven by higher rates for food and hotels – further boosting the relative demand for locally supplied services as we have assumed locally supplied services and Food and Lodging to be in sharp internal competition for consumers. All in all, this leads to an expansion of LSS activities of nearly 3 percentage points cf. Table 25.

**Table 25: Scenario effects: private consumption by consumer product for EU25, percentage change**

|                  | Share of consumption | Uniform rates | Extending reduced rates |            | Simplifying reduced rates |            |
|------------------|----------------------|---------------|-------------------------|------------|---------------------------|------------|
|                  |                      | A             | B                       | C          | D                         | E          |
| Restaurant       | 6.1                  | -0.4          | 0.6                     | 0.6        | 0.0                       | -0.4       |
| LSS              | 4.8                  | 2.7           | 3.3                     | 2.9        | 0.3                       | 0.2        |
| Restaurants +LSS | 10.9                 | 1.0           | 1.8                     | 1.6        | 0.1                       | -0.2       |
| Rest of economy  | 89.9                 | -0.1          | -0.2                    | -0.2       | 0.0                       | 0.0        |
| <b>Total</b>     | <b>100.0</b>         | <b>0.0</b>    | <b>0.0</b>              | <b>0.0</b> | <b>0.0</b>                | <b>0.0</b> |

Note: LSS=locally supplied services.

Source: Copenhagen Economics -CEV-model

Restaurants see a small fall back as the higher VAT rate on food is not large enough to compensate for a higher VAT rate on restaurants in the large number of countries currently operating with reduced rates. But on a net basis restaurants and locally supplied services may post a small increase in activity of 1 percent as a whole.

In scenario B, we explicitly favour locally supplied services, restaurants and hotels by introducing or maintaining reduced VAT rates in these industries in all the countries that currently use reduced rates keep other reduced rates unchanged while raising the standard rate. As evidenced in Table 24 this leads to a substantial lowering of average EU25 rates in these industries and a nearly 2 percent expansion of these sectors relative to the present situation as shown in Table 25; with LSS posting the largest gains.

In scenario C, locally supplied services and restaurants are also benefiting because there are a number of countries that do presently use reduced rates but not for LSS and restaurants. However, the effect is obviously smaller as also other industries in these scenarios benefit from lower rates. The last two scenarios have less relevance for the discussion on productivity in relation to DIY and underground activities locally supplied services as the incentives to buy locally supplied services and restaurant services are largely unaffected.

We have simulated the EU-wide effects using the set-up with North and South countries above and suggest a possible overall lift of EU GDP of just over 1 percent in scenarios B and C. GDP increases as man-hour effort are being shifted from non-recorded DIY and underground activities to the formal economy. However, the welfare gains to society are smaller and related to workers being more productive in the formal economy than in DIY and underground activities. We suggest that the true welfare gain coming from higher productivity from all working hours in the formal and informal economy could have a value of roughly 0.75 percent of GDP. We underline that our model simulations must be taken with a substantial amount of caution as also suggested by the very rounded numbers, but also that the effects are large enough to demonstrate the potential of instruments aiming at boosting productivity by reducing incentives to DIY and underground activities.

**Table 26: Scenario effects: formal economy GDP and global productivity for Northern Group, Southern Group and EU25, percentage change**

| Region | Effect       | Scenario A | Scenario B | Scenario C | Scenario D | Scenario E |
|--------|--------------|------------|------------|------------|------------|------------|
| North  | GDP          | 0.4        | 1.4        | 1.4        | 0.0        | -0.3       |
|        | Productivity | 0.3        | 1.0        | 1.0        | 0.0        | -0.2       |
| South  | GDP          | 0.1        | 0.4        | 0.4        | 0.0        | -0.5       |
|        | Productivity | 0.1        | 0.3        | 0.3        | 0.0        | -0.4       |
| EU25   | GDP          | 0.3        | 1.0        | 1.0        | 0.0        | -0.3       |
|        | Productivity | 0.2        | 0.8        | 0.7        | 0.0        | -0.3       |

Note: Figures show the percentage change in overall productivity within the given parts of EU (Northern countries, Southern countries and EU25). The aggregate productivity effects at EU level have been found by weighting the productivity effects from country North and country South with the shares of GDP representing the countries from each group taking into account how the VAT scenarios affect VAT rates in the rest of the countries, mainly EU10 countries. All figures are rounded.

Source: Copenhagen Economics: Infosim and CEV-model

As said above, we expect the net effect from these scenarios in terms of moving activities to the formal economy and boosting productivity to be quite different across countries. Indeed, the GDP increases and gains from productivity arise mainly from the Northern countries. This is partly because the potential for welfare gains from lower VAT rates on LSS etc., are higher in these countries partly because the scenarios imply very different changes in VAT rates with less favourable changes in VAT rates for LSS in scenario A, B and C for South-countries. Scenario D has only limited impact on LSS which is reflected in negligible effects on GDP and productivity, whereas the small but negative change in VAT on LSS in scenario E led to negative effects on GDP and Productivity.

The gains in productivity are a better measure of the welfare gains than changes in GDP. Essentially, the rise in productivity reflects the better use of resources that is possible by contracting out work to persons most qualified to do so, for example the carpenter does the roof rather than the surgeon. It is quite possible that the surgeon will convert some of that welfare gain to more leisure with his family as more formal work in the taxed economy. In fact the model used for these calculations predicts a certain increase in pure leisure.

#### *Use of alternative instruments*

First, one should separate somewhat the issues of do-it-yourself and informal economy activities. Unreported activities are illegal and can be addressed more directly by stricter enforcement of tax legislation and improved business regulation that reduces unnecessary compliance costs associated with work in the formal economy

The second issue is targeting. When using a government subsidy to favour any specific economic activity there is always a trade-off between tailoring the subsidy as narrowly to the defined objective as possible to avoid subsidising other activities *and* the need for having operational rules that can be implemented in law without major compliance costs for traders and tax authorities. This problem is universal in all subsidy schemes and thus per se not a discussion about whether to use VAT rate reductions or use more direct budgetary instruments favouring the same outcome.

As regards this targeting issue, the VAT base seems a good starting point as subsidy base if the aim is to mitigate the effects of a tax system that encourages do-it-yourself and undisclosed economy activities. The father working in the kitchen is neither taxed on his own work nor on the return of his dishwasher, oven and other capital equipment in the kitchen. So the subsidy should aim to lower the tax on the return of both capital and labour in the targeted sector which is precisely what a reduced VAT does: The VAT base is very close to a net value concept,

being the sum of total labour costs plus return on capital<sup>31</sup>. This ensures neutrality in terms of using labour or capital to produce goods and services.

However, there is a case for a more narrowly defined subsidy schemes which may also reduce the mechanical revenue losses associated with a general VAT reduction. Looking for example at repair work related to household accommodation, the likelihood is that larger projects are more difficult to carry out in the informal sector as the risk of detection is likely to be a growing function of the scale of the project. Also larger projects involving major renovation projects tend probably also to be carried out by professionals and not the household it-self. Thus a direct subsidy of 10 percent for construction work costing less than say 100,000 euros may present a lower initial budget loss than a cut in VAT rate representing a lower marginal subsidy of 8 percent but available for all construction work while the former may yet be most effective in reducing do-it-yourself and underground activities.

Targeting can also be helped within the field of domestic services by limiting the subsidy to such items as cleaning while avoiding subsidies to window cleaning, gardening etc. where mechanical revenue losses are larger as households in these areas are typically outsourcing a larger share of these services. However, in both cases users and suppliers of services will suffer higher compliance costs – you need to ensure hours spent cleaning windows are not billed as wiping floors – which need to be factored into the decision on the degree of targeting see also Case study 1 on “The Danish Hjemme Service subsidy scheme”.

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<sup>31</sup> This follows from the fact that the base is revenues minus all other expenditures than earnings, return on capital and depreciation. As investment expenditure can be deducted, and as investments and depreciations levels are by definition very close over the medium term, the concept of value added is closer to *net* value added rather than *gross* value added.



## Case study 1: The Danish Hjemme Service subsidy scheme

In 1994, the Danish government introduced a subsidy scheme to expand the market for domestic services. Households were offered a direct subsidy when employing providers of domestic services (cleaning, gardening, child care) in order to increase welfare for families with children and the elderly by reducing the amount of household work. Furthermore, the objectives were to increase employment opportunities among the low-skilled and to finally reduce the amount of undeclared activity, achieved in part by increased tax compliance, in part by crowding do-it-yourself activities previously performed by households to the declared economy.

Initially, the subsidy scheme was payable for the number of hours worked. In 1997, the subsidy was reduced to a percentage rate of the total bill instead of the number of performed hours, to promote productivity. In 2000 window-cleaning was removed from the scheme, leaving cleaning and gardening as the two major services supported.

Narrowing down the subsidy was motivated partly by the fact that window cleaning was an area where a relatively well functioning market was in place – implying that subsidy schemes were less effective in terms of supporting alone new activities – and that window cleaning to a larger extent employing skilled workers than cleaning and gardening.

Furthermore, interviews conducted with a sample of users revealed that about 12 % had switched to the new legal scheme of domestic services, where they before they had used unreported labour. The crowding-in effect was even more substantial, as 75 % of users were new to the market in 2000 in the sense that they before 1994 had done the work themselves.

Finally, employment of the low skilled workers was also increased. The firms specialising in the domestic services to a larger extent than average firms employed persons with long past periods of unemployment. Whereas in the rest of the economy, on average, 10 % of new employees had had a period of unemployment of over 5 years, the same figure among domestic service firms amounted to 19 % in 1998. This underlines the importance of the scheme in regard to employing the low-skilled workers.

Evaluation of the scheme showed that it reduced the amount of unreported labour. Persons, who had previously conducted domestic services themselves, spent extra spare time with families, friends, on hobbies and to a lesser extent at work.

The scheme was discontinued in 2002 as part of a major reduction of business subsidies. General labour market reforms during the 1990s led to a major reduction of low skilled unemployment, reducing somewhat the labour market motivation for the scheme. Introduction of an earned income tax credit and some lowering of marginal tax rates in addition for lower to mid-level earnings over the last years have also somewhat reduced the DIY argument for the subsidy, while marginal tax rates in Denmark nonetheless remain high.

Source: Copenhagen Economics, Danish Ministry of Business Affairs (2001)

Thirdly, a direct subsidy may be more *transparent* and hence also better evaluated if the subsidy appears on the budget. It will increase the likelihood that effects are more subjected to ongoing evaluation<sup>32</sup>.

Fourthly, major uncertainty about the effects of the subsidy may also suggest a more classical subsidy scheme. Uncertainty means it may be difficult to estimate in advance budget costs, effect on real activity, etc. This may call for an initial trial and error phase with for example some upper limits on the costs, which suggests the use of more traditional budget subsidies. It is, however, important that the scheme ends up with some stability to ensure full pass-through of the subsidy in actual economic activity, etc., as was argued in the initial sections as regards the effect of VAT reduction in a situation of uncertainty. In fact *if* VAT rates are perceived as being less reversible than direct budget subsidies, then a VAT reduction has stronger short term effects as argued in chapter 2.

Finally also *calibration* issues suggest a budgetary instrument. One issue that comes out of the above the examples with the North and South calculations, as well as simulations documented in Appendix VI, is that the optimal subsidy rate may in certain cases exceed the VAT rate in which case an expenditure model is preferable unless the VAT system allows negative VAT

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<sup>32</sup> This is related to the fact that very few member states systematically review the revenue losses following from privileged tax treatment, the so-called "Tax expenditures".

rates to be refunded in other VAT revenues or indeed negative VAT payments for a firm (like it is the case for highly export oriented firms).

Indeed, several member states already have in place a number of direct subsidy schemes or other tax expenditures than reduced VAT rates that favour labour intensive services to households such as household cleaning and repair of owner-occupied housing *cf. Table 27*. There are no surveys on the experiences of these programmes as a whole but there is little doubt that for example the rapid growth in French domestic services (child care, house cleaning, etc.) has to a large extent been driven by fiscal concessions reducing the costs of such services: employment has increased from under 800,000 in 1994 to over 1.6 million, in 2004 (see e.g. DARES, 2006). Presently 15-20 percent of French households use such services (Öberg, 2005).

**Table 27: Use of non-VAT instruments to favour labour intensive services to households and repair work in construction sector**

| Member State | Domestic care |  | Construction |                    |
|--------------|---------------|--|--------------|--------------------|
|              | Period        | Instrument   | Period       | Instrument         |
| Denmark      | (1994-2002)   | Subsidy  |              |                    |
| France       | (1992-)       | Tax allowance  | (1999-2002)  | Tax rate reduction |
| Germany      | (2006-)       | Service cheque combined with tax New +rate reduction |              |                    |
| Italy        |               |  | (2000-)      | Tax rate reduction |
| Sweden       | (2006-)       | Tax rate reduction                                   |              |                    |
| Finland      | (1997-)       | Tax rate reduction                                   |              |                    |
| Belgium      | (2000-)       | Pay cheque combined with tax rate reduction          |              |                    |

Source: Öberg (2005), OECD (2004); Swedish government (2006)

#### *Reducing structural unemployment*

A reduced VAT rate will inevitably expand employment in the industries benefiting from the rate cut – the magnitude was illustrated in section 2.3 – but generally that will tend to be offset over time by corresponding employment losses in other sectors in the absence of any structural effects on the functioning of the labour. The question is to identify what characteristics within the targeted industry that can generate net gains for the labour markets as a whole on medium- to long term basis. In addition to that, short term gains are also possible at the national or the EU level, but that is not the focus for this study, see also Box 7.

#### **Box 7: Short term effects on demand for labour by VAT induced demand twists**

Short term demand for labour may be boosted by a reconfiguration of VAT rates. This may happen if the domestic production shares of products benefiting from a lower VAT rate are higher than for overall consumption (demand twists) and/or twisting demand in direction of goods and services consumed by low income households that tend to have a higher propensity to consume.

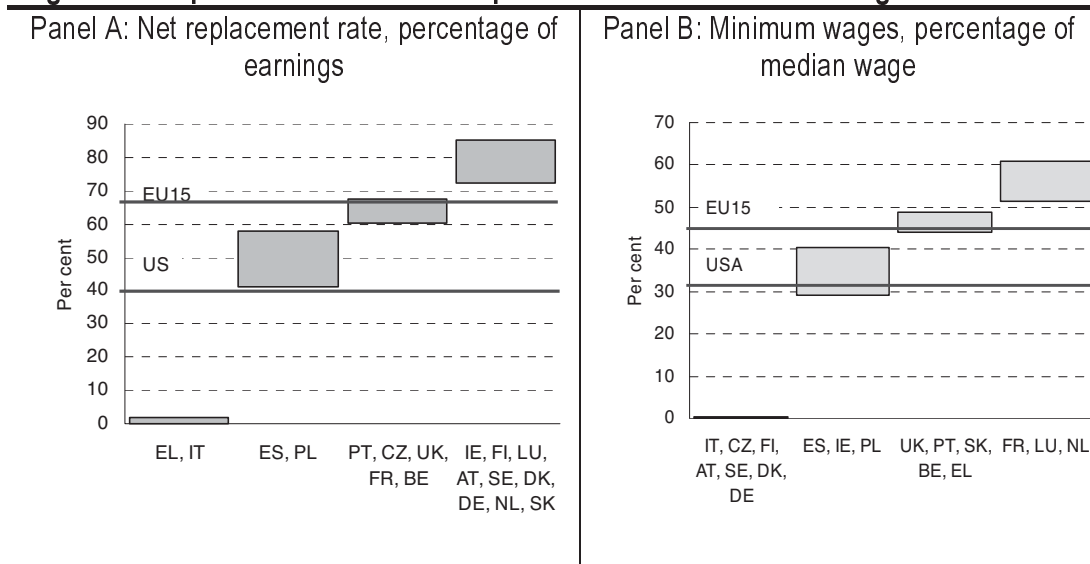
Neither of these positive effects on employment is likely to last beyond the relatively short term. In the absence of structural effects on unemployment, the boost to demand coming from either higher demand for domestically produced goods and services or raising the propensity to demand in disposable income, will over time just lead to higher wage inflation and crowding out of exports and import-competing production. Furthermore, reduced imports are largely at the cost of lower exports in other EU member states as the EU as a whole is a rather closed economy.

Some of the causes advanced for the higher incidence of unemployment among low-skilled workers – as documented in Figure 11 below – are minimum wage legislation, unemployment benefits, etc., that provide de facto floors. Job seekers cannot legally accept and employers not legally offer jobs remunerated below the minimum wage level. Moreover, benefit levels may be

set at a level providing little incentive to accept such job offers. This may lead to (registered) non-employment to the extent that the wage level ensuring “full” employment for such low-skilled workers is below such floors. The result may be that 1) these workers are not employed, or 2) only the underground economy offers a real opportunity. The latter market disregards legal wage constraints and it can combine a net-of-tax wage that can compete with the social security system while total labour costs are kept low as no VAT/income taxes/social security contributions being paid.

Such effects may be significant given the relative high level of minimum wages and benefit levels in a number of EU countries. Net replacement rates – net benefits received by unemployed as a share of previous net earnings – exceed 60 percent in most EU countries for person with below average earnings and typically above the level in US. This can be seen in the context of substantially higher unemployment rates in EU among low-skilled/low paid workers. For some countries such as France with legally enforced minimum wages – as opposed to minimum wages negotiated between the social partners – the rate has reached 60 percent but it also exceeds 50 percent in Luxembourg and Netherlands.

**Figure 11: Replacement rates for low paid workers and minimum wages**



Note: Notice that IT, CZ, FI, AT, SE, DK, DE have no minimum wages.

Source: OECD (2007)

Selective VAT reductions may help by tilting relative demand away from higher skilled jobs and towards lower skilled jobs. Put differently, it will allow producers to pay a higher wage for the same demand or employ more workers for the same wage Box 8. A higher demand for low-skilled workers and reduced for high skilled will thus help push up both relative and absolute wages for low-skilled workers. If the degree of substitution between the groups is limited, it requires a relative large increase in the wages and employment of low-skilled to bring about a new balance in labour markets. Such shifts have also been argued as being helpful in addressing a demand bias against low-skilled workers coming from trade. Trade is increasing with low wage countries exporting primarily low-skilled products to EU, though less than in the past (EPC 2005), and progress in technology that may favour high-skilled workers.

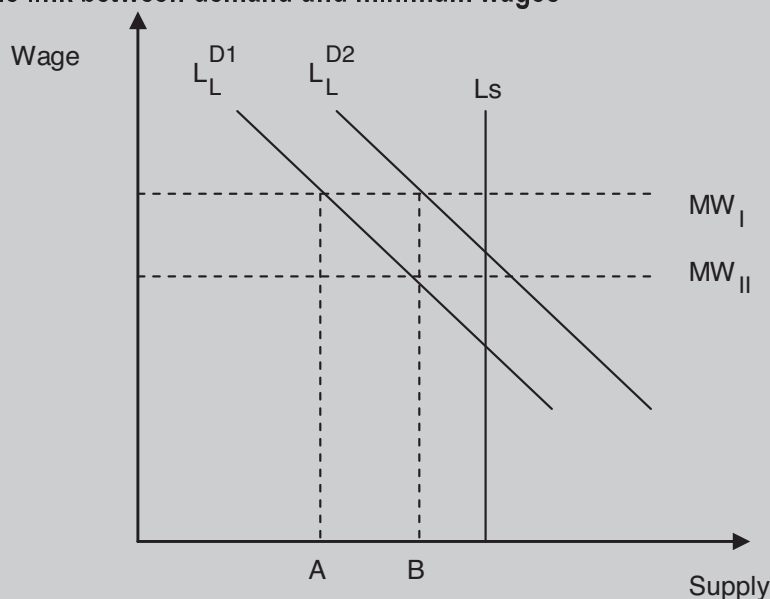
### Box 8 Reducing structural unemployment by expanding demand for low-skilled workers

The basic mechanism whereby increased demand may reduce unemployment for low-skilled workers is illustrated in the figure below. We start of with total demand for low-skilled workers being represented by  $L_L D^1$ . If there is minimum wage in place at  $MW_1$  – or high replacement rates with the same effect – that makes working at this wage level unattractive, then total employment will only be at A while labour supply will be at  $L^S$ . The distance between  $L^S$  and A is then a measure of the number of unemployed low-skilled workers.

Now we favour demand for low-skilled workers for example by reducing VAT on products produced particularly by low-skilled workers. This implies that we for a given wage will see a larger demand for low-skilled workers – a shift to the right of the demand curve to  $L_L D^2$  and in this simple model a reduction of unemployment as employment is now increased to B. In the illustration, we also show that the effect of tilting demand in the favour of low-skilled workers has the equivalent effect of reducing minimum wages – or replacement rates – from  $MW_1$  to  $MW_2$ . The difference is of course not least on the income distribution: in the first case all low-skilled persons in work or not see either no change or an improvement in incomes, in the latter case some workers may face lower minimum wages.

The illustration is simplistic not least in assuming that all low-skilled workers receive the same wage and are being paid either the minimum wage and in employment or not employed at all. In the real work, a substantial part of an increase in the demand for labour will translate into higher wages for low-skilled workers rather than higher employment rates for this group.

#### The link between demand and minimum wages



Source: Copenhagen Economics

However, the use of selective VAT rates for the purpose of boosting demand for low-skilled employment requires distinct differences in the incidence of low-skilled employment in different industries. The clearest candidates are hotels, restaurants and locally supplied services where the share of low-skilled workers in the work force is from 26 to 33 percent higher than the economy wide average (corresponding to indexes from 1.26 to 1.33) cf. Table 28. At the other end of the skill-demand scale we have postal services and government services that employ more highly skilled workers.

**Table 28: Skill type employment as a percentage of total employment across industries**

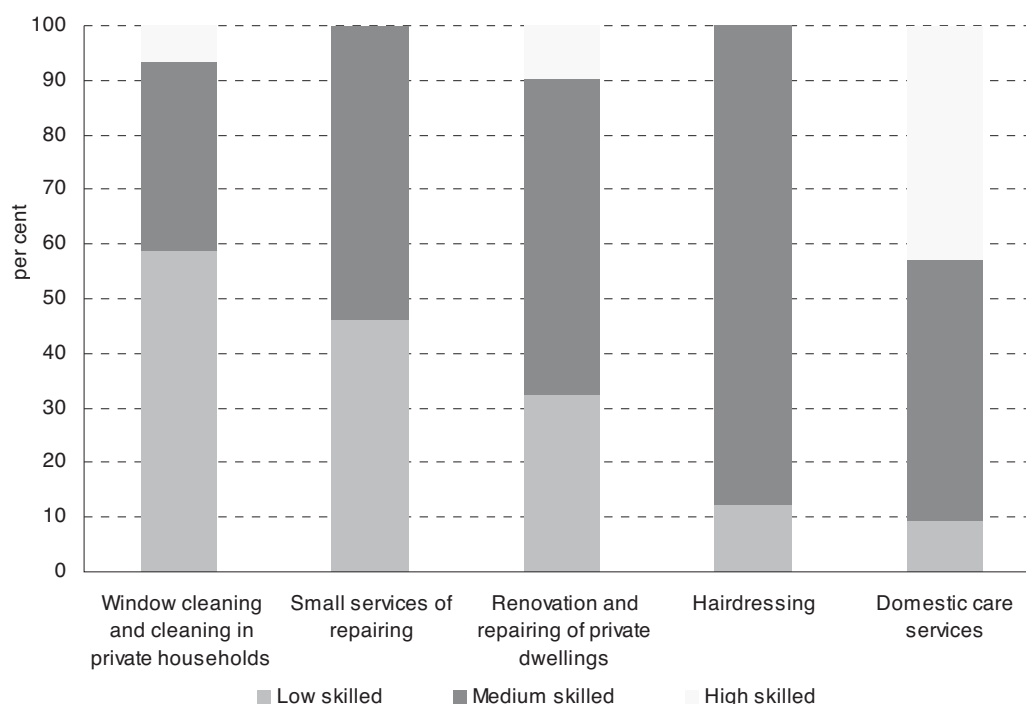
|                                       | Employment shares |                |              |
|---------------------------------------|-------------------|----------------|--------------|
|                                       | Low-skilled       | Medium skilled | High skilled |
| EU average %                          | 24.2              | 50.0           | 25.8         |
| Skill intensity index (EU average =1) |                   |                |              |
| Hotels                                | 1.32              | 1.12           | 0.47         |
| Restaurants                           | 1.26              | 1.15           | 0.46         |
| Foodstuff                             | 1.12              | 1.17           | 0.55         |
| Medical & books                       | 0.92              | 1.22           | 0.65         |
| Culture & entertainment               | 1.04              | 0.94           | 1.08         |
| Electricity & heating                 | 0.96              | 1.04           | 0.95         |
| Postal, telecom & financial services  | 0.70              | 1.13           | 1.04         |
| Passenger transport                   | 1.08              | 1.14           | 0.65         |
| Social housing                        | 1.09              | 1.11           | 0.71         |
| Locally supplied services             | 1.33              | 1.13           | 0.43         |
| Government services                   | 0.61              | 0.86           | 1.64         |
| Street cleaning                       | 1.33              | 1.11           | 0.48         |
| Rest of the economy                   | 1.12              | 1.01           | 0.86         |

Note: Data in this table is average data based on 69 subcategories (from the LIS study) which have been aggregated to match the CEVM sectors. Depending on subcategory, 3-11 countries contribute with data in the calculations of the various subcategory averages which are then aggregated to match the CEVM sectors.

Source: Luxembourg Income Study (2007), country specific data from latest available year.

However, a more detailed look into locally supplied services reveals how important it is to define precisely at what level of aggregation a subsidy is to be given. Using Danish data to illustrate the point, in cleaning services to households the share of low-skilled is nearly 60 percent while it is only 10 percent in domestic care and 33 percent in the renovation and repair of private dwellings *cf.* Figure 12. As cleaning services in households is one of the industries where the incidence of do-it-yourself work and underground activities is the highest – even within locally supplied services – it does suggest that this sector is the potentially best overall candidate for a reduced VAT rate, scoring well both in terms of its productivity potential and boosting the demand for unskilled-labour.

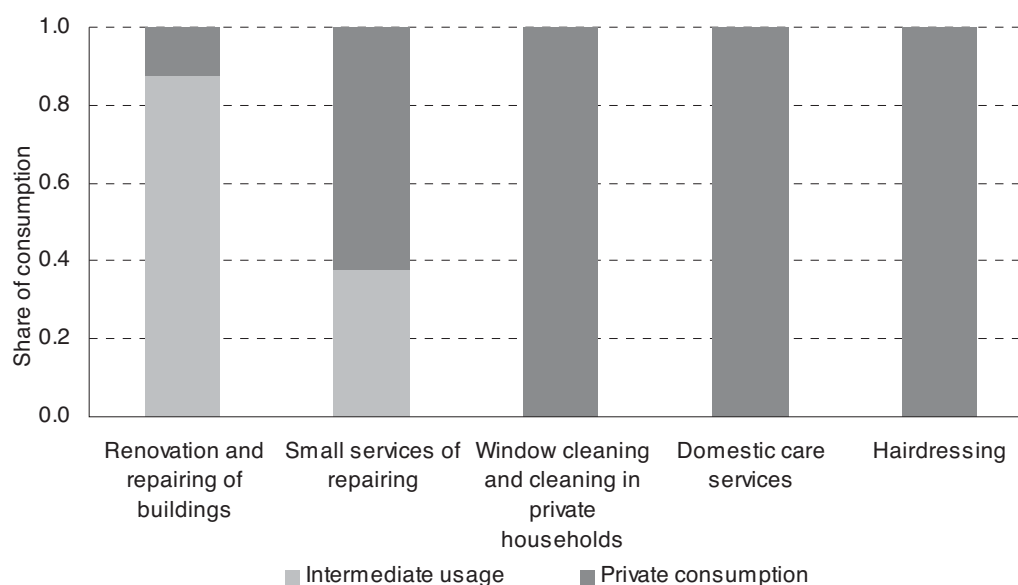
**Figure 12: Distribution of skills within locally supplied services**



Source: Statistics Denmark and Copenhagen Economics

A second issue that arises is that for some industries employing many low-skilled workers, only a small proportion of total production goes directly to private consumers. For the renovation and repairing of buildings that is less than 20 percent *cf.* Figure 13. For this and other industries with a large share of business-to-business sales, their turnover is being determined as much by business conditions in other industries as the VAT rate applying to the goods they sell directly to private customers. So a VAT rate cut on renovation and cleaning services financed by a higher standard rate will adversely affect the renovation sector's sales to all other businesses. Basically, it may be difficult to boost employment in such sectors by selective VAT cuts as their overall sales depend on business conditions in a large number of sectors.

**Figure 13: Total consumption within locally supplied services split on destination**



Source: Statistics Denmark and Copenhagen Economics.

The potential of a more “low-skilled friendly” VAT configuration can be illustrated by how much the scenarios shift demand in favour of low-skilled industries. In this regard, there are three factors that imply that overall results are very modest. The first factor to note is that scenario B leads to only a modest rise of 1 percent in value added in the targeted sectors: hotels, restaurants and locally supplied services. That is partly due to the factor mentioned above, namely that their substantial sales to other businesses do not benefit from the selective VAT cut on the targeted industries. On the contrary, business-to-business sales actually suffer from the rise in the standard rate of VAT to finance this cut.

**Table 29: Scenario effects: value added by sector grouped by skill level, in percent**

| Skill level of sectors  | Share of low-skilled workers | Uniform rate | Extending reduced rates |             | Simplifying reduced rates |             |
|-------------------------|------------------------------|--------------|-------------------------|-------------|---------------------------|-------------|
|                         |                              | A            | B                       | C           | D                         | E           |
| Low-skilled             |                              |              |                         |             |                           |             |
| LSS hotels, restaurants | 6                            | +0.4         | +0.9                    | +0.7        | +0.1                      | -0.1        |
| Foodstuffs              | 5                            | -1.0         | -0.3                    | -0.2        | -0.1                      | -0.1        |
| Rest of economy         | 63                           | +0.2         | -0.1                    | -0.1        | +0.0                      | +0.1        |
| Medium skilled          |                              | -0.1         | -0.1                    | -0.1        | +0.0                      | +0.0        |
| Higher skilled          | 18                           | -0.1         | -0.0                    | +0.1        | -0.0                      | -0.1        |
| <b>Total</b>            | <b>100</b>                   | <b>0.0</b>   | <b>0.0</b>              | <b>-0.3</b> | <b>0.9</b>                | <b>-0.1</b> |

Note: LSS=locally supplied services.

Source: Copenhagen Economics

The second point to note about scenario B is that this modest rise is happening in an industry that only employs 6 percent of all low-skilled workers, thus providing a direct boost to low-skill demand from this sector of just 0.5 percent. The third point to note is the importance of the large “rest of the economy” sector for overall results. This sector is taxed entirely at the standard rate of VAT, employs the bulk of low-skilled workers – 63 percent – and is in fact using a larger share of low-skilled workers than the average industry. So a higher standard VAT rate leads to a fall in demand for low-skilled workers from this sector that almost neutralises the positive effects from more low-skill employment in the targeted sectors (very small percentage fall but applied to a very large sector). The same arguments apply with even stronger force to scenario C where all reduced rates, not just on hotels, restaurants and locally supplied, are being extended to other countries using reduced rates, which therefore also see a stronger rise in the general VAT rate.

Perhaps the most striking feature of the scenarios is that the uniform scenario A provides basically as large a rise in the demand for low-skilled labour as B. This result is being driven by two factors. First, there is a modest rise in value added in hotels, restaurants and locally supplied services, though smaller than in B. Second, the reduced standard rate financed by imposing standard rates on industries using more medium and high skilled labour, allows the sector “rest of the economy” to grow, pulling up demand for low-skilled workers.

With these figures in mind, it is hardly surprising that none of the scenarios, including the scenario B that explicitly favours low-skilled industries, has a significant impact on relative demand for low-skilled labour. We estimate that the increase in the demand for low-skilled workers may increase by only 0.01 percent in the scenario B and – for the reasons explained above – as much in the uniform scenario A cf. Table 30.

**Table 30: Scenario effects: changes in the demand for workers with different skills, change in percent, 2005**

| Skill level  | Share of employment | Uniform rate | Extending reduced rates |             | Simplifying reduced rates |             |
|--------------|---------------------|--------------|-------------------------|-------------|---------------------------|-------------|
|              |                     | A            | B                       | C           | D                         | E           |
| Low          | 26.2                | 0.01         | 0.01                    | 0.00        | 0.00                      | 0.00        |
| Medium       | 51.5                | -0.02        | 0.00                    | 0.00        | -0.01                     | -0.01       |
| High         | 22.3                | 0.03         | -0.01                   | 0.00        | 0.01                      | 0.01        |
| <b>Total</b> | <b>100.0</b>        | <b>0.00</b>  | <b>0.00</b>             | <b>0.00</b> | <b>0.00</b>               | <b>0.00</b> |

Note: The data do not include detailed information for GR, FR, AT, IT, SK and does not include information at all for CZ.

Source: Copenhagen Economics

#### *Alternative instruments*

The potential positive effects on structural employment and income distribution should again be measured against the distortion arising from favouring the industry with lower VAT rate and the potency of more general labour market policies such as reforms of tax/benefit systems, employment protection legislation, educational policies raising educational attainment levels, etc.

While low-skilled groups still face tougher employment conditions than other groups, their relative position has improved markedly since the mid-1990s reflecting a number of factors. In 2004, the average unemployment rate for low-skilled workers – those without a secondary education – was 8 percent in the EU15 and more than double the rate for high skilled workers, but the rate has declined substantially from its peak in the mid 1995 and low-skilled workers are the only group that have seen their unemployment rates fall over the last 10 years cf. Figure 14a. This does not only reflect that they are leaving the labour market by way of early retirement etc., as also their employment rates have gone up over this period while other groups have posted minor falls or just stable levels cf. Figure 14b.

**Figure 14: Unemployment and employment rates by educational attainment (1991-2004)**

Panel A: EU19 - Unemployment rates by educational attainment (pop. aged 25-64)



Panel B: EU-19 - Employment rates by educational attainment (pop. aged 25-64)

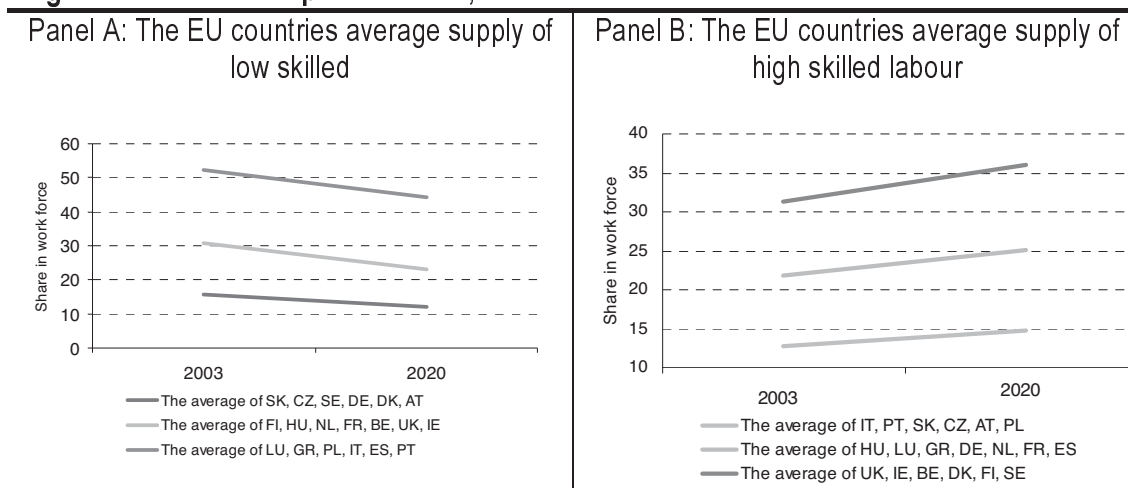


Source: OECD (2006a)

This improvement is the result of a number of factors which underlines the need to review demand twist policies in favour low skilled workers against a range of alternative policies also helping the employment of low-skilled workers. First, the net supply of low skilled workers has fallen by roughly 500,000 per year in EU15 over the last decade (EPC, 2005): each new group of young workers entering the job market has substantially higher educational attainment than the older workers that they replace. Over the decades, the net supply of low skilled workers will fall further in the EU. In the six countries where they today account for 54 percent that may fall to 46 percent by 2020 if the present attainment levels among new entrants to the labour market is maintained cf. Figure 15. At the same time, the net supply of high skilled will increase for the same reason.



**Figure 15: Skill developments in EU, 2003 – 2020**



Note: Un-weighted averages of country groups.  
Source: Delozier et al. (2007).

So one central question is whether the position of low-skilled workers and welfare of the society as a whole are better off by introducing new measures to further reduce the supply or instead to expand the demand for this group of workers. In the first case, you spend resources on raising skills to match a labour demand potentially biased in the direction of high skilled while in the second case you increase demand for low-skilled. The latter policy may in itself reduce incentives to raising skill attainment and thus adversely affecting low skilled workers' employment situation in a medium term perspective.

This is a question that cannot be answered in the abstract but depends on a large array of factors that cannot be addressed in this survey but underlines the need to review the trade-offs involved in targeting subsidies towards specific groups at the labour market and evaluating their cost-effectiveness against other policy instruments.

#### *Summing up the macro economic case for lower VAT rates*

Summing up on macro economic performance, the most promising scenario would be to move in the direction of a more uniform scenario as much to reduce compliance costs as for removing consumer distortions. The calculated distortions to consumer choice are relatively small which is first of all linked to the fact that despite a bewildering array of rates the effective rates are within a relatively narrow range for most countries: no VAT rate exceeds 25 percent in the EU community and very few activities are taxed below 5 percent; roughly 2/3 of all consumption is taxed at the standard rate. Nonetheless, the differentiation of rates creates substantial administrative costs because the incentives for traders to obtain a lower rate for a specific good or service can be considerable, thus encouraging disputes, and delineation is in a number of cases very difficult as demonstrated by various examples throughout the report.

There are also for a number of countries and for a identified, small number of services a good case for boosting productivity by implementing instruments to reduce DIY which could probably be welfare enhancing even taking compliance costs into account. The illustrative calculations come up with quite sizeable gains essentially because productivity is so much lower in DIY activities than in normal, paid work for those engaged in such activities. It therefore requires only modest shifts of man hours out of DIY and into the formal economy to generate significant effects on productivity, GDP and welfare. However, we note that a number of countries already have instruments in place to reap such benefits and our calculations do not factor in the existence of these schemes. As the marginal benefits – as demonstrated – are falling from adding still more subsidies, our calculations cannot be used to advocate additional measures.

We find that the devil is very much in the detail, with seemingly similar LSS in fact being very different industries and that the real case for subsidies (VAT or otherwise) need to be considered at a rather detailed industry level and taking into account also diverging national factors not the least the effects and potential of other policies with the same aim. A number of key characteristics for this purpose have been identified as being critical.

By contrast, we find the macro-economic effects from boosting the demand for low-skilled labour by reducing VAT rates in industries having above average use of low-skilled workers in the actual scenarios to be so small as to be de facto with no macro-economic relevance. Partly that can be solved by providing a much larger stimulus to a better selected industry but that will have to be considered in the view of the resulting distortions of consumer choice and of course other instruments. This conclusion suggests that for more general labour market issues, in particularly the situation of low-skilled labour, more traditional labour market reforms have more potential.

### **3.3. Micro economic goals (equity and merit goods)**

Reality is that VAT rates in member states are much more geared towards meeting micro economic goals than macro-economic performance which may not be surprising given the evaluation above. In the sections below we review then two main types of micro-economic goals, namely the effectiveness of using reduced VAT rates to achieve:

- a more even income distribution
- promotion of the consumption of certain goods that governments deem to have an intrinsic value that goes beyond what the individual consumer is willing to pay at normal VAT rates.

These goals are sometimes connected. In a number of cases the stated aim of reduced VAT rates is to make certain goods and services which are deemed to have specific “merit” affordable for low income families. However, the goals may in certain case be in internal conflicts e.g. when reducing VAT on cultural events are mostly bought by higher income households. In other cases they are internally consistent e.g. when reducing VAT on basic foods that represents a larger relative part of the household budget for low income families.

We examine these issues further in the sections below. First, we review how the present VAT system as well as the alternative scenarios effect the income distribution and examine the effectiveness of using VAT rates for redistributinal policies across member states. Second, we take a closer look at the effects and arguments for using reduced rates to promote consumption of certain goods and services seen from a national perspective. Box 9 includes some additional arguments from the literature on differentiated taxes on goods and services, which we have not found so relevant for this survey and therefore excluded from our examination.

### Box 9: Other micro economic arguments for differentiated taxes on consumer goods and services

- If consumption of a particular good or service brings benefits and/or costs excessive to that born by the consumer that may warrant a rate different from the standard (*externalities*) to ensure that private marginal costs equate marginal social costs. This is an argument used for example as an argument for higher VAT rates or excise duties on alcohol, CO<sub>2</sub>, etc. However, as this study is not charged with studying environmental or health policies, this issue is not further analysed and is not in any case linked to the issue of reduced VAT rates but linked to arguments for higher levels of taxation.
- There may also be some role for governments to affect different levels of competition between markets by the use of taxes (Auerbach and Hines, 2001). Lowering the VAT for the imperfectly competitive industry, has the potential to expand output without reducing corporate profits, which can provide the means to achieve a reduction in dead weight loss. Nevertheless, VAT reductions imply a number of drawbacks besides that of budget neutrality, including problems with setting the right VAT level as the level of competition is hard to measure; an entry effect that may create an inefficient allocation of resources; and a possible increase in the total deadweight loss due to a higher share of imperfectly competitive industries in the total economy

#### Pure equity goals

Consumption patterns do vary across households with different income levels. The households earning income in the bottom 20 percent range – first quintile of income – spend over 20% percent of their income on food against just about 12 percent for the income groups with the highest 20 percent incomes (the fifth quintile of income) cf. Table 31. Low income families also spend a larger share of their consumption on electricity/heating namely about 3 percent against below 2 percent for high income households. In addition, to these two groups being areas with the largest difference in spending between high and low income households, they also represent big proportions of overall spending. For most other groups, the relative and absolute differences in spending shares are minor.

**Table 31: Consumption shares for five income quintiles, EU15, 1999.**

| Groups    | CEVM-Sector                   | Q1    | Q2    | Q3    | Q4    | Q5    | Q1/Q5 |
|-----------|-------------------------------|-------|-------|-------|-------|-------|-------|
| 1 Food    | Hotels & restaurants          | 5.4   | 5.7   | 6.1   | 6.8   | 7.2   | 0.76  |
|           | Food                          | 21.3  | 18.8  | 16.7  | 15.0  | 11.7  | 1.83  |
| 2 Merit   | Medical                       | 6.8   | 6.8   | 6.7   | 6.6   | 6.6   | 1.02  |
|           | Books<br>Culture              |       |       |       |       |       |       |
| 3 Network | Electricity & heating         | 3.1   | 2.7   | 2.4   | 2.1   | 1.8   | 1.71  |
|           | Other network services        | 12.4  | 12.1  | 12.1  | 12.3  | 12.9  | 0.96  |
|           | Passenger transport           |       |       |       |       |       |       |
|           | Social housing                |       |       |       |       |       |       |
| 4 Local   | Locally supplied services     | 3.9   | 4.3   | 4.5   | 4.7   | 4.8   | 0.82  |
| 5 Public  | Government<br>Street cleaning | 2.8   | 2.9   | 3.2   | 3.2   | 3.9   | 0.73  |
| 6. RoE    | Rest of economy               | 44.2  | 46.6  | 48.3  | 49.4  | 51.1  | 0.89  |
|           | Total                         | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |       |

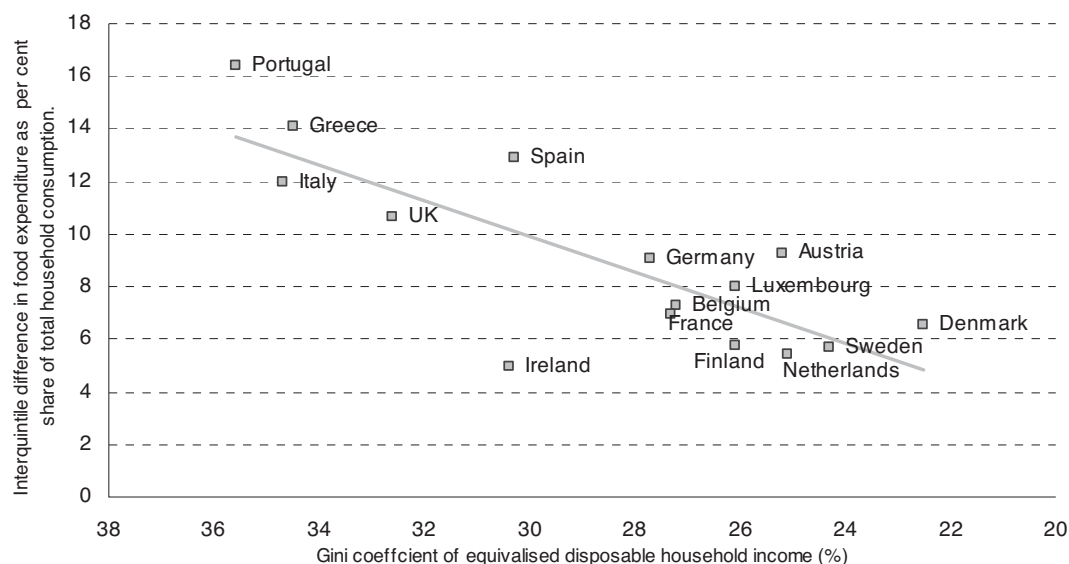
Note: Percentage shares of consumption expenditure, per household income quintile (Q).

Source: Copenhagen Economics and Eurostat

At the same time, we can observe that some of the most economically important reduced rates tend to be in areas where spending shares of low income families are higher than for higher income families, first of all food, where the average VAT rate is 6 percentage points below the average VAT across all consumer groups.. Indeed given the structure of consumption shares across households and the present VAT rate structure, the VAT rate on food will drive the effect on distribution in the scenarios below.

However, consumption patterns across households tend to be relatively equal in countries where the overall distribution of income is relatively even. So for the three countries - Sweden, Denmark and the Netherlands – with the measured lowest dispersion in real incomes, the difference between the shares of total consumption that the first and fifth quintile spends on food is 6 percentage points. By contrast, that difference exceeds 12 percentage points in the three countries – Greece, Italy and Portugal – with the highest measured dispersions in real incomes.

**Figure 16: The link between disposable income and food expenditure across countries**



Note: Note: 'Interquintile difference' is the difference of poorest and richest household quintile expenditures on foodstuffs. A large difference indicates a large disparity between the share of foodstuffs in total consumption expenditures between the quintiles. The Gini coefficient measures disparities in household disposable incomes.

Sources: Copenhagen Economics, Eurostat, Förster et al. (2005).

The facts above suggest that the outlined scenarios should have some effects on the purchasing power of different households groups but also that the effects are likely to be more muted in countries with a relatively even distribution of incomes. For EU15, moving from the present configuration of VAT rates to a uniform rate scenario will lead to a rise of the overall price of goods and services bought by the first income quintile incomes of 0.5 percent while lowering overall prices for the fifth income quintile by roughly the same level, thus providing an overall difference in relative price developments of 1 percent, cf. Table 32. This is driven very much by the higher average rate on foods stuffs which mainly affects low income families and the lower standard rate which to a larger extent benefits high income families. Scenarios B and C which maintain a standard rate on food leaves the income distribution largely unaffected. Scenario D leads also to a slight widening of income differentiation, and more so scenario E broadly neutral on the income distribution relative to the current situation. Perhaps the most striking feature is the relatively limited overall impact on the total income distribution by doing away with all derogations in A.

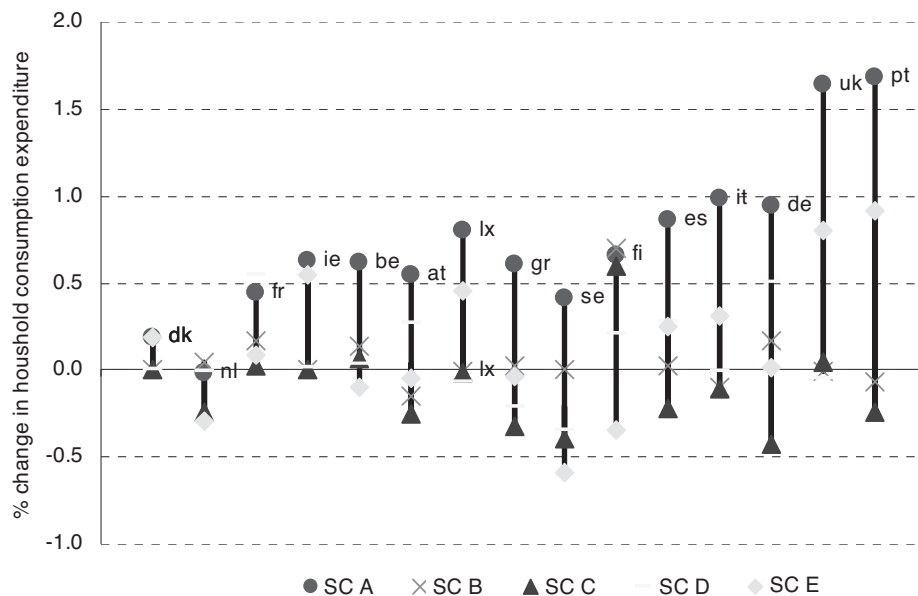
**Table 32: Effect of scenarios on the price of the consumption basket, EU15 average**

|                        | Uniform rate | Extending reduced rates |       | Simplifying reduced rates |       |
|------------------------|--------------|-------------------------|-------|---------------------------|-------|
|                        | A            | B                       | C     | D                         | E     |
| Q1                     | 0.51         | 0.03                    | -0.07 | 0.10                      | 0.15  |
| Q2                     | 0.16         | 0.02                    | -0.02 | 0.03                      | 0.04  |
| Q3                     | -0.06        | 0.00                    | 0.02  | -0.01                     | -0.03 |
| Q4                     | -0.21        | -0.03                   | 0.02  | -0.04                     | -0.06 |
| Q5                     | -0.44        | -0.02                   | 0.07  | -0.08                     | -0.12 |
| Diff price change Q1-5 | 0.95         | 0.05                    | -0.14 | 0.18                      | 0.27  |

Note: For each country and VAT scenario, we calculate the difference in the % change in COICOP consumption expenditure between the poorest and richest income quintile households. We construct the EU15 average figures using the size of the final private household consumption expenditure (GTAP database) as weights. Germany and Sweden currently excluded.

Source: Copenhagen Economics and Eurostat

However as expected, the impacts on the consumption budget for high and low income households are very different across countries. In countries such as Portugal, the United Kingdom, Germany and Italy where low income families spend a much larger share of the budget on food than high income families, and which currently use lower rates on foods, low income families (first quintile) experience a relative increase in the cost of consumption that is 1-2 percent higher than high income for families (fifth quintile) in the scenario with uniform tax rates. By contrast, they are smaller in countries such as Denmark, France, Ireland, Belgium and Austria where shares of spending on food do not differ markedly between households with different income levels.

**Figure 17: Effects on distribution across countries due to a VAT change, five scenarios**

Note: For each country and VAT scenario, we calculate the difference in the percentage change in COICOP consumption expenditure between the poorest and richest income quintile households. We rank the countries with respect to the dispersion of the differences calculated in the four VAT scenarios.

Source: Copenhagen Economics and Eurostat

The effects of VAT rate changes on the income distribution should be put into perspective in relation to five dimensions namely:

- What is the purpose of the VAT reduction?
- Conflicting objectives make rational VAT structure difficult.
- The considerable compliance costs issues involved in having reduced VAT rates on food.
- Static versus a dynamic approach.

- The overall effectiveness in reaching objectives via reduced rates.

If the aim is to reduce the size of the informal and underground economy, then *a priori* an unchanged income distribution is probably the desired outcome. If equity is reduced by a substantial degree by selective VAT cuts benefiting mainly higher incomes, the question is whether this can be remedied by other instruments, not sacrificing the employment gains achieved in the first place. As an obvious example, member states may choose to use some of the revenues from the removal of derogations to compensate some losing income groups rather than decreasing the standard rate of VAT. This is discussed in section 3.4 below.

Second, conflicting objectives and constraints can make it difficult to obtain a rational VAT structure that both serves to create a more equal income distribution and have fiscal neutrality between competing products. One clear example is taxation of fuels as opposed to network delivered electricity, district heating etc. Seen from a fiscal point of view – and forgetting in the first place about the complications of drawing in the effects of the EU's Emission Trading System – it would be natural to levy the same VAT on these goods and services as they can all serve to warm up domestic residences. Furthermore, if member states in view of the fact that such utility services weigh more heavily on low income households want to reduce VAT rates on energy products, it would from a first reading seem natural to grant options to lower VAT on all these products. However, the present VAT directive does not allow this for fuels: the logic for this exemption to the derogation, is that fuels can be bought by households in other member states and secondly it can be used as fuel not only for heating, but also in cars.

## Case study 2: Differentiation of VAT rates on energy sources: internal market context

The structure of VAT on energy sources is highly differentiated. Broadly speaking, we can distinguish between network-delivered energy, such as electricity, gas or district heating and fuels (solid and liquid) bought by the consumer directly. The VAT directive allows reduced VAT on network delivered energy" while the standard rate applies to the rest of energy sources, primarily used for transport, such as diesel fuel.

There are though certain exceptions for individual countries where reduced rates have been allowed also apply to non-network supplies of energy sources directly to households:

- Belgium (various coal based products)
- Estonia (peat, fuel briquettes, coal and firewood)
- Hungary (coal, coal-brick and coke, firewood and charcoal)

Taxing energy at reduced rates is largely motivated by distributional concerns with some member states wishing to reduce the costs of heating and electrical energy which, as discussed in this chapter, account for a larger share of total budget of low income families.

In terms of internal market effects, a distinction needs to be between non-network and network sources as the latter can in practice only be bought in practice at domestic VAT rates. Moreover, network energy sources can typically not be converted to other purposes than those for which they are intended, namely heating and electricity use in households. So reduced rates on network based heating and electricity does not give rise to internal market problems.

For fuels the situation is in principle almost the same: the distance selling scheme obliges the application of the rate of the Member State of destination, even if fuel is bought in another Member State. However, maintaining differentiated VAT on fuels gives rise to significant compliance costs in the EU25. Moreover, it gives rise to fraud. As an example, heating oil is subject to reduced VAT rate in the UK (by derogation), but the otherwise very similar diesel oil is standard-rated. According to one estimate, hydrocarbons fraud amounted to some £850 million in 2003 in foregone tax receipts in the UK alone (HM Customs and Excise (2005)). Casual evidence suggests that misuse of reduced-VAT fuel is fairly widespread. Differentiated VAT on liquid fuels provides incentives for traders to acquire low-VAT rated fuels, like heating oil, and illegally resell them at prices including the VAT standard rate, e.g. as diesel oil, cashing in the difference between the standard and the reduced VAT.

The overall conclusion is thus that providing reduced rates on network based services for heating and electricity does not present distortions of competition while reduced rates on other energy types such as fuel in particular raise risk of encouraging tax-driven cross border trade and conversion to other uses of energy such as transportation not meant to benefit from the reduced rate.

However seen from a community perspective, the overall effect of reduced VAT rates of network based heating and electricity will increase demand for energy which as discussed in the text with the emission trading system in place, and will lead to higher prices of emission allowances. So lower prices for electricity and heating for households mean higher electricity prices for industries, potentially harming external competitiveness for energy intensive industries exposed to sharp non-EU competition. However, the fact that VAT is deductible by businesses, it is probable that the impact of excise duties is more important than that of VAT in this respect.

Source: Copenhagen Economics

So, as discussed also below in the context of the distinction between electronic and printed books, here is a case where fiscal neutrality between like products is difficult to reconcile with other objectives, including a well functioning and non-distorted internal market.

The third issue – compliance costs – is a massive problem in relation to the reduced VAT on food which is the only item that really affects the income distribution presently (but also for other groups). The use of reduced VAT rates on food for distributional purposes is being complicated by the fact that member states at the same time want to operate standard VAT rates on "unhealthy" food as well on catering and restaurants which in turn gives rises to huge delineation problems. Ireland for example operates with three rates, a zero rate, a reduced rate of 13.5 and a "standard" rate of 21.5 for different kinds of food. So foodstuffs is not just 'food', there are 89 subgroups. Natural almonds and nuts are zero rated as food, while "unhealthy" roasted nuts and almonds are rated at the standard rate of 21 percent. Cold pizza is rated at zero while warm pizza is rated at 13.5 if sold as take-away. The baby nappies case exemplifies these issues further, cf. Case study 4.

Even with very detailed guidance on the appropriate VAT rates to be applied on each potential food-like product, it will not prevent a large number of borderline cases being disputed between

enterprises and tax authorities. A UK retailer sells heated ciabatta to consumers: is that to be categorised as food and hence zero-rated or is it a catering service which is subjected to VAT rate of 13.5 percent? Obviously, it makes a substantial difference to the retailer, customer and tax authorities. As described in Case Study 3, the baker won, getting the VAT tribunal to rule that it was indeed food and not catering. The 89 subgroups for food in Ireland, the UK ciabatta example, and the extensive discussion in the Swedish study referred to above, underline the constant delineation problems linked to making distinctions between food and take-away and again between take-away and restaurants.

### **Case study 3: A UK case: Why heated ciabatta is food and not catering**

*UK VAT Tribunal says ciabatta melts were kept warm for their aroma and freshness*

Appellant is a retail baker with 30 outlets in North and West Yorkshire. Dispute concerns a product known as 'ciabatta melts', on which the Appellant accounted for output tax for three years after their introduction, but then submitted a claim for overpaid output tax on the grounds that the product was zero-rated.

The case focuses on why the ciabatta melts, having been cooked in the bakery at 85 degrees, were kept in the shops on hotbeds at a temperature of 63 degrees, which is above ambient air temperature. HMRC argued that the reason was to enable customers to consume the ciabatta melts at that particular temperature, which was a supply of catering and standard rated. The Appellant argued that the reason was to hold the ciabatta melts at a controlled temperature of optimum freshness, and use them to create an appealing aroma of fresh bake in the shops. The Appellant further argued that it had no interest in, nor control over, the temperature at which the customer chose to consume the ciabatta melts after purchasing them in the shop.

The Chairman concluded that the dominant purpose of placing the ciabatta melts on the hotbeds was as argued by the Appellant. The appeal was thus allowed.

The Appellant had also sought to draw a comparison with its sales of sausage rolls and pasties, which had always been accepted by HMRC as zero-rated. This caused HMRC to argue at the Tribunal that the sausage rolls and pasties should be standard-rated, which raised a question of jurisdiction as no assessment had been raised by HMRC. Nevertheless the Chairman commented, probably as an aside, that the production process and sale from the hotbeds of these products did not appear to differ materially from the ciabatta melts.

Source: HM Customs and Excise (2005).

The fourth issue is the distinction between short term, static effects and dynamic effects. The distributional effects from a more equal distribution of incomes from higher employment and potentially change in relative wages to the benefit of low-skilled workers should be factored into the overall evaluation on equity. Persons with low earnings are largely persons with low-skills: for persons at or below the median wage, more than 50 percent has only primary school education. For person earning more than 1.5 times the median wage more than 50 percent has a tertiary education (OECD, 2006a).

As regards the fifth dimension of the effectiveness of explicit policies to achieve a more even income distribution, the most pertinent question is whether selectively reduced VAT rates is the most appropriate tool for any particularly country involving again the issue of targeting versus fiscal and compliance costs, exemplified further by the cases of baby nappies, cf. Case study 4 and social housing, cf. Case study 5.

Arguably there is a case to be made for countries with well developed transfer systems to co-ordinate distributional policies within the systems of income taxation and transfer systems rather than with rather poorly targeted and compliance costly VAT derogations.



#### **Case study 4: What is a baby diaper and what happens when the Vat rate is cut?**

In 2006 there has been a debate in the EU over proper classification of nappies for VAT purposes, in the framework of possible infringement procedures. The EC argued that baby nappies not mentioned in Appendix III and cannot, therefore be subject of reduced rates. On the other hand, nappies for adult people have been classified as pharmaceutical products alongside cf. Appendix III of the VAT Directive, therefore, subject to reduced rates, on grounds of public interest.

But should baby nappies be still subject to the standard rate or should they be also treated as pharmaceutical items and, therefore, be subject to reduced VAT or zero-rated altogether? Britain and Ireland have special agreements with the EU, allowing them to zero-rate baby nappies, alongside other children's items, like clothes or shoes. In response to this, five EU countries have been taxing baby nappies with reduced rates, claiming no difference between baby and adult versions of a diaper, except for their user.

What is the economics behind the diaper dispute? Firstly, since cross-border trade and distance sales of nappies are negligible, VAT differentials are not likely to distort internal market trade. Thus, on grounds of trade alone, introducing a harmonised VAT appears unnecessary.

Next, as there are few substitutes for nappies, the demand for the product is price in-elastic. Consumers may be driven by quality considerations, but overall the product is a necessity rather than a luxury. Demand is then shaped by the number of children, rather than the price. Furthermore, adjusting the aggregate cost of nappies by lowering VAT is not likely to boost the fertility rate. Greater supply of nappies will not give rise to more children and more demand. The pricing of nappies does not affect family planning decisions!

Nevertheless, the cost of nappies can be considerable for low income families with young children. Governments used this argument lowering for the VAT. However, with respect to supporting low income families with children, a direct budgetary support appears a more sensible option, with the added benefit that it can be means-tested, if necessary. This suggests taxing nappies at the standard rate, with additional direct transfers to families in need. Applying the standard rate would also help solve the delineation issue (baby vs. adult nappies). Reimbursement of costs for adult persons with a doctor's prescription for nappies is likely be more efficient than a selective VAT reduction, eliminating the delineation dispute altogether.

Source: Copenhagen Economics

## Case study 5: Lower VAT on social housing?

Across the EU, the social housing sector provides accommodation for more than 16 million people, and is thus an important part of the community housing policies. Promotion of social housing has been affirmed as being in line with the EC treaties in multiple cases of the ECJ, Commission Communications and Council Rulings, etc. The VAT directive allows for a reduced VAT on social housing provided as part of social policy, describing it as a 'first-necessity good' whose provision is in line with fulfilling social objectives. In this sense, the main aim is to maintain the prices of social housing below market prices. A reduced VAT on social housing is in force in most of the EU 15 member states, with the exception of Denmark, the Netherlands, Austria, Finland and Sweden.

The case for reduced VAT rates can be considered from both a national and community level.

On the national level, the case for using reduced VAT on social housing to achieve social objectives is not very strong. Undoubtedly, a lower rate of VAT allows construction costs to be lower, and hence also reduced rent costs for the families being housed. However, as for any other reduced VAT rate used for social policy reasons, the question arises whether governments reach well targeted income distribution purposes by other and better means. A significant part of the families living in social housing buildings would not otherwise qualify for government income support as their earnings are too high. General rent subsidies to low income families could achieve the same effect and would discriminate between families living in different segments of the housing markets (private or social). One reason for maintaining a specific social housing segment, nonetheless, is the possibility of typically local government to dispose of accommodation reserved for families in urgent need.

A second issue is whether the government per se wants to expand the supply of social housing beyond the effects that rent subsidies may imply. A key issue is what effect a reduced VAT rate exerts on rental costs and decisions to construct housing. This depends on a number of issues, including the financial arrangements between housing associations and central government, the latter typically the recipient of VAT revenues and the extent to which the expansion of housing supply is decided by the private or semi-private sector.

On the other hand, there is a strong case for applying a uniform VAT to the whole set of social housing activities, including construction, maintenance, repair, restoration, re-construction and demolition. A harmonised VAT rate on a country level, standard or reduced, will provide equal incentives for both construction and restoration of existing housing, the latter contributing to preservation of urban cultural heritage.

On the community level, reduced VAT on social housing can be fully consistent with internal market concerns. The first issue is the importance attached to private, including foreign, "landlords" being present in the market for supplying low rent housing. If this is considered important, then reduced VAT rates should not only be open to typically national run, semi-public housing associations as this will shield this segment of the housing market from private/foreign competition. Direct, means-tested rent subsidies to families do not have these side-effects, so may have some comparative advantage from both a national and community perspective.

Finally, it is worth underlining the fundamentally different objectives behind reduced rates on social housing and reduced VAT on repair work in private household accommodation. In the first case, it is about reducing rents and increasing supply of low costs accommodation for social policy reasons. A lower rate on repair work is, as argued at length in this study, about improving the overall productivity by reducing the incentives to DIY and underground activity. Social housing is not constructed by doctors moonlighting.

Source: Copenhagen Economics

### *Promotion of merit goods*

Presently, there are two main areas where reduced VAT rates could be argued to be in place primarily to support the promotion of merit goods given that the effects on the income distribution are either neutral or tending to widen differences, such as lower rates on publication, newspapers, cultural events and private education. These areas, as demonstrated above, account for a very small part of total consumption. Most recently, the climate debate has also triggered a discussion on the merits of promoting energy saving via reduced VAT rates on household appliances with low energy use.

On publications, a large number of EU member states operate with rates on books, periodicals, newspapers which are well below the standard rates, but at the same time with a bewildering multitude of solutions cf. Table 33. Some countries tax these three types of publications at the same lower rates (Austria, Germany, Greece, Italy, Luxembourg, Netherlands, Portugal, Sweden, UK), other makes distinctions (Belgium, Ireland, France, Finland, Denmark, Spain, Sweden). Yet, all countries apply the standard rate to CD-Rom and on-line products.

**Table 33: VAT rates for publications in Western Europe**

| Country        | Books      | Periodicals      | Newspapers       | CD-ROM/online | Standard VAT Rate |
|----------------|------------|------------------|------------------|---------------|-------------------|
| Austria        | 10.0       | 10.0             | 10.0             | 20.0          | 20.0              |
| Belgium        | 6.0 / 21.0 | 0.0 / 6.0 / 21.0 | 0.0 / 6.0 / 21.0 | 21.0          | 21.0              |
| Denmark        | 25.0       | 25.0             | 0.0              | 25.0          | 25.0              |
| Finland        | 8.0        | 0.0 / 22.0       | 0.0 / 22.0       | 22.0          | 22.0              |
| France         | 5.5 / 19.6 | 2.1 / 19.6       | 2.1 / 19.6       | 19.6          | 19.6              |
| Germany (*)    | 7.0        | 7.0              | 7.0              | 16.0          | 16.0              |
| Greece (**)    | 4.5        | 4.5              | 4.5              | 19.0          | 19.0              |
| Ireland        | 0.0        | 13.5             | 13.5             | 21.0          | 21.0              |
| Italy          | 4.0 / 20.0 | 4.0              | 4.0              | 19.0          | 20.0              |
| Luxembourg     | 3.0        | 3.0              | 3.0              | 15.0          | 15.0              |
| Netherlands    | 6.0        | 6.0              | 6.0              | 19.0          | 19.0              |
| Portugal       | 5.0        | 5.0              | 5.0              | 21.0          | 21.0              |
| Spain          | 4.0 / 16.0 | 4.0 / 16.0       | 4.0 / 16.0       | 16.0          | 16.0              |
| Sweden         | 6.0        | [ex] / 6.0       | 6.0              | 25.0          | 25.0              |
| United Kingdom | 0.0        | 0.0              | 0.0              | 17.5          | 17.5              |

Note: (\*) Germany: since 01.01.2007, standard rate = 19 %, reduced rate = 7 %

(\*\*) Greece: since 01.04.2005, standard rate = 19 %, reduced rate = 9 %, super-reduced rate = 4.5 %

Source: Screen Digest et al. (2006).

Reduced VAT rates on books, periodical and newspapers will tend to increase total demand as shown by our econometric estimates and evidenced in Case study 6.

As regards the objective of trying to promote merit good such as books and magazine by lower rates, there are number of serious both compliance costs and issues of neutrality between “traditional” old books and new electronic products (“digital content services”).

The seriousness of compliance costs are proved by a number of cases involving so-called mixed products. These are situations where a vendor is selling at the same time two or more products and services that are subjected to different VAT rates. This may again create complicated situations where the supplier – to reap the most beneficial VAT treatment – need to organise selling in a particular way. Sometimes the seller will benefit from invoicing and sending products as a total package, in other cases it may pay to organise selling in distinct groups as described in Case study 6.

## Case study 6: The publishing industry: reduced VAT in Sweden 2001 and some compliance problems

### The cut in VAT on publications in Sweden in 2001

Throughout the '90s Sweden had been applying its standard VAT rate of 25% to books. At the same time, newspapers and cultural events enjoyed a reduced 'culture VAT' of only 6%. Because of the high VAT, books appeared more expensive to the consumer, relative to other cultural products. Furthermore, arguing for a lower VAT in their industry, publishers expressed the view that high prices on books lowered turnover and margins. Concurrently, the internet made it possible to purchase books from low VAT countries. Small bookstores in remote areas were deemed to be particularly affected, prompting the state to hand out subsidies (SEK 10 million in 2002). Lowering the VAT on books in Sweden was intended to lower prices and increase sales, in order to promote readership, quality of books and the variety of content.

In 2002 a decision was reached to bring down the level of VAT on books to 6%. The VAT reduction was immediately reflected in lower prices. According to different sources, the long-run pass-through was close to full, cf. Ahlmark (2003). Modelling Eurostat price indices we measured 80% pass-through in the long-run, cf. Figure 4. The year following the VAT decline, sales were 16% higher, also confirming earlier estimates of books' price elasticity of demand being close to -1. And the effect had been persistent, with 2005 being described as bumper year in the industry.

The benefits of greater volume partly spilled over to the rest of the value chain. The VAT reduction had been equivalent to a sectoral subsidy, costing the government some SEK 600 million in foregone tax receipts, according to one estimate (Ahlmark (2003)). Greater turnover seems to have eliminated the need for bookstore subsidies in remote regions. It had consequently been dismantled in 2002. Similarly, greater turnover brought a number of small publishers to the market, specialising in quality or niche content. Yet, despite greater sales, there is no conclusive evidence that readership has more widespread. Anecdotal evidence suggests that lower prices did not foster readership among those who had not read already.

### **When to split**

Telewest Communications supplied cable television services to subscribers, plus a listings magazine. Following the BSkyB case, Telewest accepted that it did not make a separate zero-rated supply of the magazine, and sought to find a way to do just that. Its solution was to show that the magazine should be supplied by a different party from the one that supplied the television services. HM Customs & Excise challenged this and so Telewest appealed to the VAT Tribunal and High Court and lost. A further appeal was then made to the Court of Appeal.

The attitude of the Court of Appeal seemed to start from the point that Telewest had every right to change the contractual arrangements as it did to secure the VAT position it sought. As a result, the Court of Appeal has allowed Telewest's appeal. The contract with existing suppliers was effectively partially innovated by Telewest – the subscriber completed his part of the bargain by continuing to pay charges under the contract. And whilst if made by a single supplier, the television services would have been dominant, that principle could not extend to affect supplies made by a separate supplier. Moreover, the authorities did not support the proposition that the principle of economic neutrality required two separate supplies to be treated as a single supply simply because the suppliers were related parties and their supplies were linked.

### **When to go for joint supply**

*In UK*, the basic position is that the printing of a letter is standard rated, while the printing of a leaflet is zero-rated. HMRC has a published concession that relates to packages of 'printed matter'. Under the concession, a package of printed matter is treated as a 'mixed' supply of goods, with the VAT liability determined by the predominant element. For example, if the package consists of four leaflets and a covering letter, the leaflets are predominant, thereby making the whole package zero-rated.

In the case of Charterhall Marketing Ltd, the appellant produced two different 'packages' of material for Halifax plc. One consisted of a personalised letter advertising an insurance product, a second package consisted of a personalised letter and two leaflets. HMRC contended that both items were standard rated as the letter was the principal item. Both parties accepted that the first item consisting of only a letter would be standard rated, but the taxpayer contended that the second package was zero-rated as it consisted predominantly of zero-rated leaflets.

The Tribunal noted that the ultimate consumer of the printed matter was not Halifax but the recipient of the mail pack, and that there was no taxable supply between Charterhall and the ultimate customer. Charterhall's reasoning was, therefore, an important consideration. It followed that whatever documents had to be read together and the cross-references that existed between them, became less significant. The Tribunal found, therefore, that rather than a mixed supply being made, there was a multiple supply of a letter and two leaflets. Accordingly, they found that the letter was standard rated, and that the two leaflets were zero-rated on the basis that the letter and the leaflets were of equal importance.

Source: VAT Tribunal records 2005-2005, UK customs

Sources: Ahlmark, 2003.

The second issue regarding neutrality is that there may be a high degree of substitution between for example normal books and increasingly important e-books which at the member

state level triggers the question whether neutrality of competition would not call for equal VAT treatment. The issue resembles very much the issue of whether to grant fuels the same preferential VAT rates as electricity and districting heating.

There are several options at the table if member states want to address this issue of neutrality. The first would be to extend the reduced rate also to digital content products. The advantage would be more fiscal neutrality and potentially also reduced compliance costs. It would however entail as explained in chapter 4 internal market complications because e-books etc are easily sold across borders and subjected to origin based taxation. Some industry participants have suggested to solve this internal market problem more generally by changing to a principle of country of destination for the taxation of such digital content services (Screen Digest et al, 2007). However, while this may reduce distortions between distributors in different countries, the issue is here whether sellers can in practice assess effectively the destination country of such services sold over the net. Discussing this proposition in more detail though beyond this study's focus on reduced rates within the current VAT system while being central to recent discussions for example in the context of the OECD and the ECOFIN Council.

The second option – less problematic in an internal market context – would be standard rates for both “classical” products and its present day “digital content” equivalents while member states might increase spending on direct budgetary instruments encouraging the creation and distribution of cultural and educational products and services. This is somewhat the reverse cause of what the Swedish Government did in 2001 see case study 6.

On the granting of lower VAT rates on energy efficient household appliances, cars, etc. to reduce CO<sub>2</sub>-emissions and encourage energy security through energy savings, we will just provide a few tentative conclusions. The interest for this issue should for example be seen in the light of residential electricity consumption accounting for 31 per cent of total electricity consumption in the OECD area, with nearly half of that driven by consumption from household appliances such as white goods, home entertainment, cooking appliances and office equipment, with the remainder largely coming from heating and cooling of space and water (OECD, 2006b). So policies that could encourage the diffusion of more energy efficient products in this field – as well as development of new technology in a longer term perspective – have an important role to play.

In reviewing the issue we focus first on the more narrow effects on CO<sub>2</sub> emissions and energy savings and secondly on a more general internal market and industrial policy perspective.

On CO<sub>2</sub>-emissions, the first conclusion is that with an emission trading system (ETS) in place that covers the bulk of network produced energy and major industrial industries directly using fossil fuels – responsible for nearly 50 percent of all CO<sub>2</sub> emissions in the EU – the EU has a system that ensures that CO<sub>2</sub> emissions are fixed from the sources covered. So for ETS-covered use such as the electricity consumption from household appliances, changes in energy taxes added on top have limited final effects on CO<sub>2</sub> emissions.

For consumer purchases of energy intensive products not covered by the ETS, reduced VAT rates can have a stronger effect on CO<sub>2</sub> emissions as well as energy consumption. As regards household “appliances”, the most relevant issue here is transportation vehicles.

However, leaving aside more specific issues of selecting the most efficient instruments, it is not a priori given whether reducing VAT on energy intensive products that have passed certain energy tests will reduce or increase energy use. VAT reductions will provide incentives to substitute to more energy efficient products, for example cars with low gasoline consumption

but also to use more energy by making such cars cheaper to buy.<sup>33</sup> To have more certain positive net effects on savings, the overall tax system would need to make less efficient cars more expensive as well and suggest in any case careful design of fiscal incentive programmes.<sup>34</sup> This leads to a related question: is the way forward is to use the polluter pays principle and raise taxes on energy use or encourage savings by reducing VAT on energy efficient products or other regulation mechanisms?

As regards internal market effects, allowing reduced rates on energy efficient appliances presents a number of problematic features. The first complication is that the international community is far from having a systematic international framework for how to test the energy efficiency of products (OECD, 2006b). So the first precondition for moving forward would be more progress on this front: if not, there would be a risk of proliferation of national-endorsed standards prevailing with EU that were boosted by use of fiscal instruments. This is an important point as trade in household appliances both within EU countries and between EU and the rest of world is very substantial and rapidly growing (OECD 2006b). Second, by linking preferential VAT treatment to any particular standard or group of standard would add a further complication to already substantial difficulties of advancing on the standardisation of test procedures. It may make more sense to agree on a number of generally and mutually agreed standards that allowed consumers to focus on the key test values that were most relevant to his or her particular circumstances (warm or cold climate, large or small house etc.). Third, household appliances belongs to the group of products – relatively expensive relative to weight and size – that makes them natural candidates for cross-border trade. Some countries use of reduced rate while others maintained standard rate treatment may thus lead to a substantial amount of tax driven consumer purchases in other countries.

#### *Summing up the micro economic case for lower VAT rates*

The income distributional effects of differentiated VAT rates are modest, particularly in countries with a relatively equal distribution of income, relative to the resulting compliance costs and distortions of consumer choice. For this group of countries it would seem advisable to deliver more targeted transfer systems. For countries with less comprehensive transfer systems and more unequal distribution of incomes, the effect are larger, but still we would argue that more targeted effects and reduced compliance costs could also be attained at lower costs to society.

It is mainly VAT rates on food that has any impact on distribution and it is difficult to claim that lack of spending on food is a problem in many household, the present day issues in these field is more about the quality of nutrition and how that can be encouraged. Given the already substantial problems with delineation problems is this area, going further down the road by making distinctions between “healthy” and “non-healthy” food in VAT system does not seem advisable.

We find the issue of conflicts between the desirability of fiscal neutrality between like products and protecting a well functioning internal market to be an issue of probably rising importance (printed books against electronic, fuels bought directly by households against network based deliveries of heat and energy etc.).

For energy taxation, the effect of reduced VAT rates needs to be seen in the context of the functioning of the community ETS, including its coverage, to ensure efficient abatement of CO<sub>2</sub>

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<sup>33</sup> In empirical work, increased energy efficiency for such consumer goods as cars, white goods etc. through the lower price of using such goods may is shown to lead to an increased demand, the so-called “rebound” effect, thus reducing the size of energy savings (Gotttron 2001) and (OECD 2006b). The rebound effects are typically in the range of 10-30 per cent for automobiles and space heating, with a higher range for space cooling and lower range for household appliances,

<sup>34</sup> A survey paper (IEA 2007) documents IEA member state experience with fiscal and other incentives to energy savings

and reaping of energy savings.<sup>35</sup> In any case use of reduced VAT rates on consumer products meeting energy efficiency requirements require a clear evaluation of net effects given the a priori ambiguous effects on energy consumption: it will encourage a shift to efficient products and development of new technology but also more use of energy intensive consumption.

Internal market considerations suggest that reduced VAT rates on energy efficient appliances can be problematic. There are not presently agreed standards, and fiscal incentives in individual countries may in this situation lead to distortions of competition and a more complicated process for moving forward on the standardisation front. At this juncture, more emphasis should be on moving forward on the standardisation front and providing information to consumers. Furthermore, individual countries being allowed to use reduced rates may encourage a mainly tax driven cross-border sales in such appliances given the relatively expensive nature of many of these appliances.

### **3.4. Alternative financing instruments to a standard rate of VAT**

As a benchmark, we have used adjustments of the standard rate of VAT to balance the budget throughout chapter 3. In the following, we first review the logic and consequences of using other balancing instruments scenario by scenario. Second, we briefly link the discussion of differentiation of VAT rates to the wider issue of the merits of shifting taxes on labour (income taxes, social security contributions) towards general consumption taxes.

The different scenarios have different effects on consumer welfare, compliance costs, productivity, structural unemployment, income distribution and the promotion of merit goods. It is, therefore, natural to consider the logic of the financing mechanisms in terms of how it affects these objectives also. We do this scenario by scenario.

However, before doing the scenario review, it is worth quickly recapping the essential differences between two of the balancing instruments: a change in the standard rate of VAT as opposed to changes to the rates of income taxes, including social security contributions.

Seen from a labour market perspective, as underlined in chapter 2, a tax on consumption is also a tax on labour, indeed a proportional VAT rate is equivalent to a proportional income tax. However, there is an important difference in the fact that all consumers – recipients of public transfers, workers, shareholders – pay VAT while the income tax has a narrower base. So budget neutral shifting of taxes from income taxes (or lower social security contributions) towards VAT rates obviously has positive effect on the labour market through two effects. First, the net income from having a job relative to being unemployed goes up, increasing incentives to job seeking, etc. Second, lower marginal tax rates may also induce more work effort, longer working hours etc.

These effects are relatively trivial in the sense of being equivalent to a cut in gross transfer payments and the effects will also vary very considerable across countries. In Nordic countries, Denmark in particular, all transfer income is subjected to income taxes. In other countries, income taxes are levied on a smaller part of total income so shifting revenues from income taxes to consumption taxes have much stronger effects both on the labour market and the income distribution in the latter countries.

This makes general conclusions above the merits of shifting between revenue sources less relevant and also implies that modelling such effect requires micro-simulation models at country levels capturing very specific features of national tax and benefits systems.

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<sup>35</sup> The need to review the interaction of energy taxation with the EU-ETS is also underlined in the recent EU Commission "Green paper on market-based instruments for environment and related policy purposes".

Based upon this broad description of the differences between the main two tax instruments in terms of effects, we now return to the scenarios.

In **scenario A**, we go in the direction of a uniform VAT system. The arguments for this are essentially:

- a reduction of distortions to consumer choice
- reduced compliance costs
- the intended effect on income distribution and or promotion of merit goods can be delivered in a more cost-effective way
- less prone to conflicts between the aim to ensure fiscal neutrality between like projects and for example internal market concerns.

The logical balancing instrument is then to combine a reduction of the standard rate of VAT with lump sum transfers to households – all households get the same pot of money irrespective of income – to neutralise the effect on the income distribution and potentially increased budget subsidies to cultural activities etc. cf. Table 34.

Using the proceeds instead for lowering of income tax rates would boost labour market performance with the effect depending on which rates are being cut as well as the national characteristics of tax benefit systems. However, it would lead to a further widening of the dispersion of incomes mostly coming from higher VAT rates on food. This latter scenario thus makes most sense if there is a political will to boost labour market performance at the cost of increased dispersion of real incomes.

**Table 34: Pros and cons for using lump sum transfers or income taxes as the alternative balancing instruments.**

| Scenarios   | Lump sum transfers  | Income and social security taxes  |
|---|---|---|
| A: Uniform rate   | A mix of lump sum transfers and reduced VAT rate natural choice given the possible need to compensate losers from particular higher VAT rate on food                | Using revenues to lower income taxes can boost labour market somewhat, but will compound adverse effects from income distribution                             |
| B: Extending reduced rates on locally supplied services | Effect on income distribution relatively modest and partly offset by better employment performance among long skilled workers: A higher standard rate seems natural | Higher income tax would tend to nullify all or most of the positive gains on productivity and employment though depending a lot on form and country positions |
| C: Extending reduced rates                              | These scenarios have little effect on any macro or micro economic variables including net revenues.<br>So balancing instrument of little importance                 |   |
| D: Simplifying reduced rates                            |   |   |
| E: Simplifying reduced rates                            |   |   |

Source: Copenhagen Economics

In Scenario B we lower VAT rates on locally supplied services, hotels and restaurants. The effects on income distribution are relatively minor as demonstrated above. There is a minor increase in the dispersions of incomes but on the other hand also a very slight increase in low-skilled employment and relative wages, suggesting net effects must be very minor. Compensating the loss by way of higher income taxes makes little sense as the whole rationale for the industry subsidy is to compensate for the adverse effect from high taxes on labour and as all consumers benefit from the VAT rate cut.

In scenario C, we extend the existence of lower rates across EU. As a whole it leads to a slightly more even income distribution but also higher VAT rates for the goods and services that consumes spend more on when their income goes up.



In scenario D and E, the overall effect at EU level on real activities is very small but the income distribution tends to be more even and real economy is so small that the issue of financing mechanism has little importance. In Scenario D, all rates lower than the standard rate are set the lowest reduced rate in that country, the underlying objective being to reap some simplification gains, including cuts in compliance costs.

In summary, we suggest that the mix of instruments to balance budgets logically should reflect the effects of the scenarios on the key policy objectives and the underlying motivation to move in a particular policy direction.

## **Chapter 4 National objectives against internal market and community performance**

As demonstrated in Chapter 3, individual member states may in certain cases benefit from selective reductions in VAT rates financed by higher general VAT rates or other compensating fiscal measures. The purpose of this chapter is to review the community perspective focusing on spillover effects from member states operating different VAT systems.

First, we identify two main negative types of spillovers that can be generated by differences in VAT rates. The first relates to the incentives it creates for consumers. A lowering of a VAT rate in one country relative to other countries will all other things being equal, provide an incentive for consumers in all EU countries to buy more in that country. While competition among retailers is good for innovation and productivity, there is little reason to believe that trade driven by consumers exploiting differences in VAT rates should be beneficial for the community as a whole. It may 1) undermine retail operators who are highly competitive if they operated on a level playing field 2) encourage use of scarce real resources (travel costs for example) simply to save taxes 3) represent a fiscal loss for the other countries having a higher VAT rate. The second negative spillover, is related to the complexity it may create for trades having to operate in an internal market with a multitude of VAT rates which may make them more hesitant in expanding their operations beyond own border. This weakens competition, innovation and economics of scope and scale.

Second, we pinpoint the most important parameters in the legal framework which determine whether consumers can exploit VAT differences between member states when they purchase goods and services in other countries. For consumers that physically cross borders (in the following called 'cross-border trade'), they can with a few exceptions (airplanes, new cars, etc.) buy at the rate prevailing in the country where they source their purchase ('country of origin principle'). If on the other hand, they arrange the purchase from their resident country by way of telephone, fax, e-mail, and not least e-commerce, then it is legally most often the VAT rate in the country of residence that applies. The same applies to most services, as the principle here is to apply tax rate in the country in which the supply takes place and most services still require physical presence at the buyers' residence, etc. Exceptions are telecommunications services where it is the country of origin that applies, or repairs of movable items undertaken in country R and shipped back to their owner in country O.

Third, we identify the characteristics that determine the degree to which consumers are likely to exploit a given VAT difference to source purchases outside their own country. For cross-border trade in goods, weight and volume relative to price is a key: foodstuffs are low on the list, clothing, and sports equipment are more popular. For distance sales three dimensions are important. Again price per kilo/volume is an important dimension as a price bargain may disappear once transportation costs are taken account of. Second, is durability in transport. The third dimension is 'brand' quality: as goods or services cannot be inspected before

purchase, it is important that the item and trader has a well-established reputation as having a uniform high price/quality ratio and that the trader actually ships the goods once payment has been delivered. So not surprisingly, long distance selling of fresh food from small groceries appears at the bottom of the list, while sales of book bestsellers from market leaders of distribution appear at the top.

Fourth, we apply this grid of characteristics to the industries at a rather detailed level and we review how the VAT scenarios developed in chapter two affect community welfare and rank the outcomes based upon the effect on spillovers. For locally supplied services spillover effects are low. For other sectors, for example books, reduced rates for goods present substantially larger problems. Other services such as hotels, restaurants are in-between because they are mainly directed at domestic consumption, but may also affect distribution of tourism between member states and may have a non-negligible impact in border regions. Generally, we find that the present minimum rule of 15 percent for the standard rate becomes increasingly important given the increasing importance of e-commerce, distance sales and immaterial services.

Finally, we note that member states for reasons of both simplicity and more equal treatment between comparable products have considered putting for example electronic printed books, newspapers, etc., on an equal footing with their printed counterparts often taxed at reduced rates. While this might make sense from a national perspective as mentioned in Chapter 3, electronic versions are much easier to sell to a non-domestic audience – including in foreign languages – than printed versions, thus creating potential negative spillover effects for other member states. This raises a trade-off between national and community objectives: one solution would be to look at ways where member states provide subsidies to providers of e-books, art on a more selective basis rather than general VAT cuts for all books, newspapers, etc. In general, this tends to be accepted by state aid authorities and prevents leakage.

In the sections below, these points will be elaborated further. In section 4.1 we pinpoint the most relevant of the current rules regarding VAT treatment when consumers purchase goods and services from traders residing in other member states. In section 4.2 we identify the characteristics that determine the extent to which consumers are likely to exploit differences in VAT rates when they source their purchase. In section 4.3 we apply these characteristics to the consumption of goods and services at a relatively detailed level. We review how cross-border trade and distance selling is affected by the various scenarios which have been defined in Chapter 3 and rank the scenarios based upon their relative influence on VAT driven purchase in other member states. In section 4.4 we identify a number of cases where national and community objectives may clash and propose some rules-of-thumb to achieve solutions that provide member states with the room for manoeuvre to deal with legitimate national objectives while at the same time respecting the community dimension i.e. the spillover effects.

#### **4.1. VAT treatment of cross-border trade and distance selling**

For businesses there are very few cases where differences in VAT rates across countries can be exploited to reduce their own production costs so the focus in the following is on consumers, where there is a large variety of situations cf. Table 35.

**Table 35: Taxation rules for consumers: cross-border trade and distance selling of goods and services within EU situations**

|          | Product group   | Origin Principle   | Destination Principle  |
|----------|---|--|--|
| Goods    | Physical cross-border trade                                   | Conditions: <ul style="list-style-type: none"> <li>For own usage</li> <li>Transport by or on behalf of the customer</li> </ul>               | Specific capital goods such as new cars, other new motor vehicles, new big boats and new planes.<br><br><b>Always</b> for products subject to harmonised Excise duties (e.g. alcohol, wine, beer)<br><b>Always</b> if total sales of the seller to the Member State of destination are above country specific threshold value (€100,000 or €35,000) see table in Appendix VII).<br><b>Optional</b> if below threshold value. |
|          | Distance selling, for example E-Commerce and mail order       | In principle applicable when distance selling scheme is not applicable   |  |
| Services | Cross border sales  | If the consumer crosses the border: Typical example could be purchases autorepair work, dentistry, restaurant services etc.                  | If the service provider crosses the border: Typical examples repair work on house in consumers   |
|          | Distant sales, almost by nature so-called Immaterial services | For e-commerce services, such as e-books, e-music, telecommunication, radio- and television broadcasting by EU supplier to EU final consumer | All other services (education, entertainment etc.).  |

Source: European Commission, DG Taxation and Customs Union.

As regards goods, the country-of-origin applies to consumers provided they physically go to the other country and arrange purchase and transport from that other country themselves. However, this does not apply to purchases of new cars, new motorcycles, new, larger boats and new airplanes where the destination rule applies i.e. the VAT rate of the country that the consumers reside in. This rule prevents consumers exploiting the considerable costs savings that can be obtained for very expensive products. When goods are shipped as “distance selling”, the rule of destination applies to enterprises either specialising in e-commerce/mail order or having EU sales to consumers in other countries above a low limit.

For material services, the treatment of cross-border trade depends on where the supplier is. If the customer gets his car fixed across the border, then it is the VAT on the other side that applies. On the other hand, if the carpenter crosses the border to fix the roof, then it is the VAT rate in consumer's country that applies. For cross-border catering the country of origin principle also applies. This leaves room for legal exploitation of competition advantages due to differences in VAT rates through cross-border orders. For immaterial services for example telecommunications and e-commerce services (music and books), the rule of origin applies.

Purchases of alcoholic beverages have also been considerably affected by cross-border trade but that has more to do with substantial differences in excise duties than differences in VAT rates.

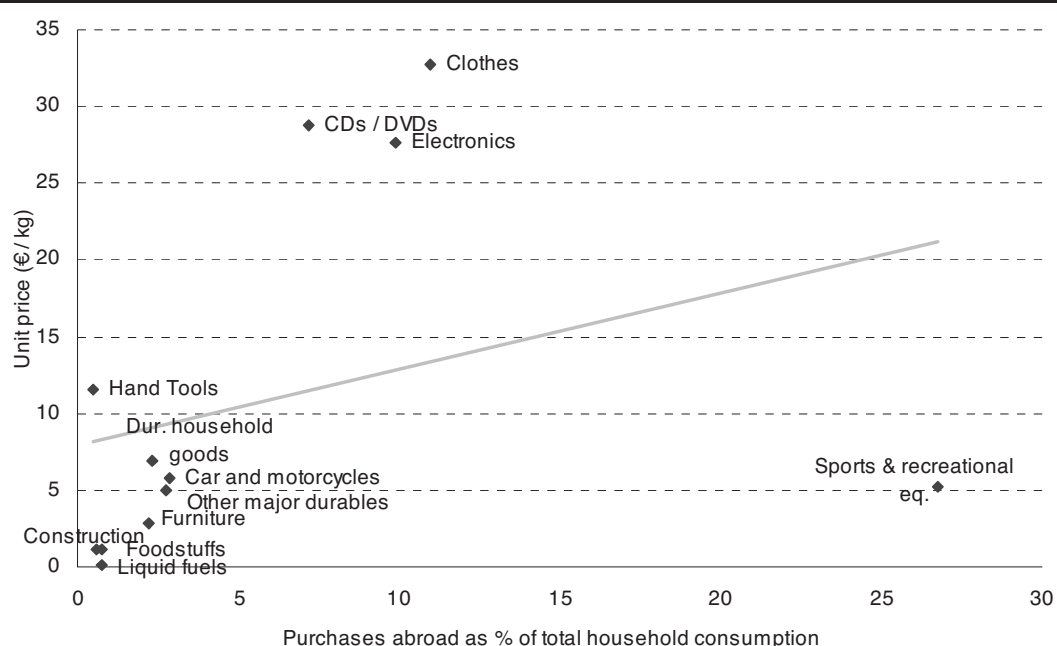
## 4.2. Characteristics driving cross-border trade and distance selling

This section defines the characteristics of a good or a service that gives it a high degree of tradability, i.e. consumers will be inclined to purchase to source a large share of their purchase outside their own country if a given price bargain can be obtained.

For *cross-border trade of goods*, where basically all trade is legal, we link tradability very much to one characteristic namely 'price per kilo': as consumers have to carry the goods, it is obvious that weight is an issue: VAT differentials are more likely to trigger trade in products with high intrinsic value and low weight.

The soundness of this approach is reasonably supported by the purchasing pattern of Danish consumers doing cross-border trade. The overall share of cross-border trade in total consumption is about 4.1 percent, but the incidence across categories varies considerably and confirms the importance of weight<sup>36</sup>. For foodstuffs, the share of total consumption purchased abroad is around 0.6 percent while for sports equipment and clothing it is above 25 and 10 percent, respectively, cf. Figure 18. At the same time, the average price per kilo – as measured by prices from foreign trade statistics – is many times higher for the two latter groups compared to food stuffs.

**Figure 18: Cross border trade incidence based on DK data, 2005**



Note: The VAT rate for foodstuffs is a COICOP-weighted average of constituent sectors

Source: Statistics Denmark, Danish Ministry of Taxation (2006) and Copenhagen Economics and Appendix VII

As the Danish consumers primarily do their cross-border trading in Germany, where both excise duties and VAT rates are lower, it is instructive to see that the reduced rate of VAT on food in Germany creating a larger VAT differential than for other goods is not able to compensate for the fact that food is simply not a natural candidate for cross-border trade cf. Table 36. This confirms the price per kilo issue is central.

<sup>36</sup> Trade in alcoholic beverages is excluded as it is driven by large differentials in excise duties vis-à-vis Germany, in particular

**Table 36: VAT rates: Denmark versus Germany 2005, in percentage**

| Sectoral VAT                      | Denmark | Germany |
|-----------------------------------|---------|---------|
| Foodstuffs                        | 25      | 7/16    |
| Clothes and footwear              | 25      | 16      |
| Sports and recreational equipment | 25      | 16      |
| Car and motorcycle equipment      | 25      | 16      |
| Furniture and carpets             | 25      | 16      |
| Durable household goods           | 25      | 16      |
| Construction materials            | 25      | 16      |
| Hand tools incl. electric         | 25      | 16      |
| Fuels (other than petrol)         | 25      | 16      |
| Other major durables              | 25      | 16      |
| Electronics                       | 25      | 16      |
| CDs / DVDs                        | 25      | 16      |
| Cosmetics                         | 25      | 16      |

Source: European Commission (2006b)

As regards *cross-border trade in services*, little hard core information exists. In this area we have had to rely on more subjective criteria to define tradability. We expect for example auto repair services to be relatively more important than legal services. A German BMW dealer close to the Danish border ought to be able to provide at least as good a service to a Danish owner of BMW as the Danish dealer with the possible difference of travelling distance. In contrast a lawyer established in the same German location would probably have to specialise in Danish law to be in the market for Danish customers. Also tourism services have been pinpointed as an area where differences in VAT rates across countries affects location, not the least in conjunction with differences in VAT rates on hotels and restaurants where some countries operated with reduced. Here VAT rates on restaurants/hotels while locally supplied clearly has a community dimension that VAT rates on domestic cleaning have not; see also Case study 7.

However, we do suspect that this could be an area of growth partly because services are increasing as a share of consumption partly because consumers may be increasingly confident that the quality of neighbouring countries' service providers match resident country standards. Moreover, the drive to create an internal market in services should provide an impetus in the same direction.

## Case study 7: Hospitality sector: national and community dimension

The hospitality sector, comprising restaurant and accommodation services, accounts for a significant proportion of value added in member state economies, especially among the countries whose receipts from tourism are double digit percentages of their GDP. The direct aspect of a VAT reform in the sector concerns its pass-through to prices, which affects both indigenous demand as well as competition in the internal market. Besides affecting prices, a VAT reform in the hospitality sector will evoke a number of spillover effects on the rest of the economy. While VAT pass-through measurement is already a complicated exercise investigated in a limited number of studies, studies measuring the latter are sparse. In what follows, we concentrate on pass-through effects and consider internal market issues.

Similarly to shop food, member states apply a wide variety of VAT rates on 'restaurant services', comprising restaurant meals, take-away and home delivery. Across the EU, restaurant VAT covers the full spectrum from 3% to 25%. Sixteen member states tax restaurants at their standard rates, above 15%. This makes restaurant VAT exceed foodstuffs VAT, on average by 7% (12 countries). Furthermore, restaurant VAT exceeds catering VAT, by as much as 13% on average (6 countries). Against this backdrop, accommodation services are subject to lower VAT. The standard rate is applied by only 6 of the EU27 member states, and there appear to be fewer delineation issues involved.

Studies mainly go in the direction of assuming that such VAT differentiation is largely passed fully on to prices. Caledonian Economics (2002), Hotrec (2007), argue that VAT pass-through in the hospitality industry close to complete, cf. the case of Ireland. Our estimates show that the extent of pass-through is more context-specific: ranging from 25% in Portugal (restaurants) to full in Finland (hotels). Obviously, the effect may be different across regions: in city areas where it is difficult to expand capacity even in a medium term perspective, a larger part of a VAT reduction may lead to higher profit margins. Demand for restaurants and hotels reacts relatively strongly to reduced prices.

This differentiation of VAT rates has at least two implications for economic welfare. Seen from a national perspective, it is obvious that member states here have a hard task. If you want to lower food prices by a lower selective VAT on food to promote equity as discussed in section 3.3, you further disadvantage catering and restaurants. Food may be purchased at a VAT rate of 5 percent while take-away food may sell at a rate of 15 percent. So the consumers may have the choice between buying the ingredients for food costing let say 2 Euros plus VAT that is a price 2.10. Or go to the caterer who has the same costs in buying the food namely 2 euros to which is added labour costs, etc., adding further 2 euros to the costs. However, the rate of 15 applies to the full price of the sold sandwich including the buying of ingredients. So, the price including VAT becomes 4 euros plus 15 percent in VAT, thus 4.60. The price difference between a home made and a purchased sandwich thus becomes 2.50, despite value added in the catering part being only 2. In result, this implies an "effective" rate of VAT of 25 percent on the value added in the take-away business given reduced rate on rate on food.

This in turn increases pressures to lower VAT on catering and restaurants. Indeed, all countries with reduced rates on take-away and restaurants do also have reduced rates on food. On economic grounds, take-away food is obviously a closer substitute to food than restaurants – "take away" is indeed often taken to the consumer's residence as a replacement for the home cooked evening meal – thus providing governments with a rationale for having lower rates on take-away services. But, the distinction between these three kinds of services in practice often depends on "split hair" differences. What is food and what is catering – see the box on Ciabatta – and when does take-away become a restaurants?

Tax fraud is a real issue in the restaurant area as also indicated in the report particular for small operators. Reduced rates on restaurants can reduce the benefits of underground activities and lure traders to report their incomes. Member states have a number of options on their table. Some countries – such as Denmark – have increasingly focused on unannounced inspections to check VAT and income tax records – and employment status of employees to reduce social security fraud – to make it more costly to underreport incomes. A reduction of VAT on all restaurants is also likely to reduce VAT – and income tax – fraud but may well be somewhat "overkill" for this purpose only as larger operations is less prone to fraud (more risk of detection). An option would be to use the UK system where the VAT obligation only arises for restaurants with a turnover in excess of 50.000 GBP per annum. This option does though introduce other distortions as well, including between small and large operators.

Seen from a Community perspective the hospitality industry differs from other locally supplied services in that a significant proportion of the demand stems from tourists. Accommodation and restaurants account for 50 percent of total spending from incoming tourism in Germany and Spain, (Ahlert (2004)), 35 percent in France (Vassille (2006)). Thus in addition to expanding domestic demand, lower VAT rates on will also induce more incoming tourists. A substantial part of this extra tourism is likely result in lower levels of tourism in other member states. However, the relative impact of lower VAT is likely to differ by orders of magnitude across member states: for large countries a larger part of the effect may be lower prices domestic consumers and some domestically generated additional activity, while for smaller and/or tourist oriented areas, relative effects may be stronger.

In this respect, international VAT differentials may at the margin be responsible for customers preferring one destination over another. Although for the international holidaymaker, a holiday in Lapland is hardly a substitute for holiday in Corsica, a holiday in Sardinia could be, especially as the Italian VAT on restaurants is lower than the French.

There is some anecdotal evidence of such cross-country differences and changes of VAT rates on hotels and restaurants have impacted on tourism:

- Ireland changed its VAT rates on hotels and restaurants from 23% to 10% in 1986 to adjust them upwards again in 1990 to 12.5% in 1990. Over the same period the falling trend in the number of international visitors was stopped and Irish holidaymakers began choosing Irish destinations over foreign ones. In 1991 they spent more on domestic tourism than international.
- The Isle of Man had similar experiences with boosting demand in the tourism sector, following the decline of VAT from 17.5% to 5% (accommodation)
- Differences in the VAT rate restaurants have been reported to distort competition between Portugal and Spain. Portuguese restaurants are taxed at 12%, which is 5% more than Spanish restaurants. Furthermore, while the Spanish tax law allows VAT deductions to commercial undertakings on hospitality services, the same is not available in Portugal. Taken together, the higher VAT and the tax non-deductibility make Portuguese restaurants more expensive vis-à-vis the Spanish.

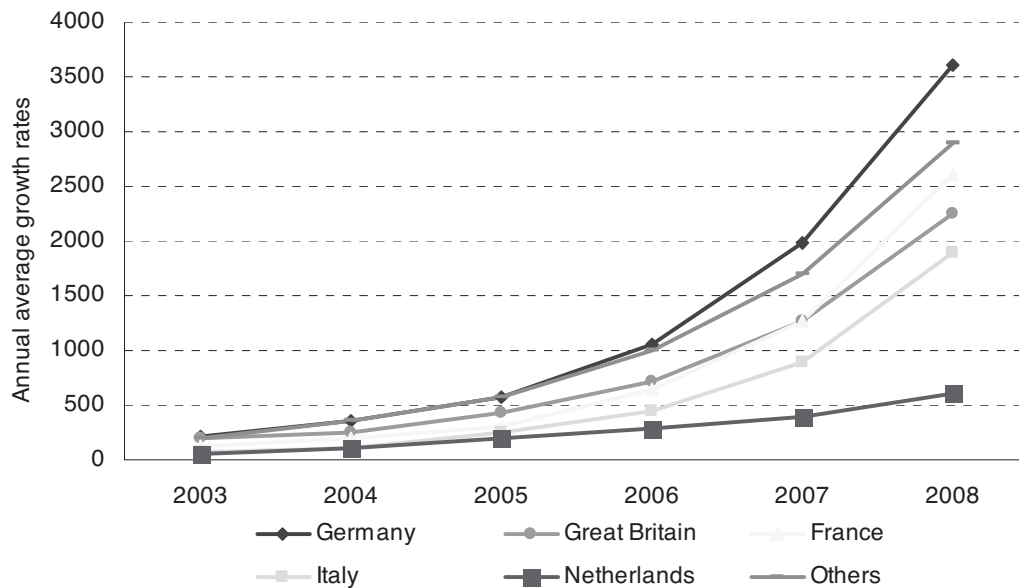
Source: Copenhagen Economics.

For *distance selling* of goods and services we define three characteristics as being the drivers of purchases in general and foreign sourcing in particular. First, as for cross-border trade of goods, 'price-per-kilo' is an issue as the potential price gains from sourcing purchases outside the local mall/outside the resident country tend to be eaten up if transportation is costly relative to the price of the goods. Second, even more so than for cross-border trade, long distance sales require that goods and services can endure transportation. Third, distance sales are based upon the concept that customers have faith in the product as they cannot control them physically before purchase: this implies that well-known products with a wide reputation for a good price-quality ratio should appear high on the list ('branded products').

For "digital content" services, distance selling in the form of e-commerce is *the* tool of delivery scoring at the very top on all three characteristics (low weight, durability and brand selling). In essence, the bit signals sent via the Internet constitutes the product being purchased and which are then being transformed into electronic books, music, films, games, TV-programmes, software tools for keeping track of households own economy etc. They are also likely to account for a larger share of e-commerce sales while at the same time being a key driver of the rapid historic and expected growth of that sector as a whole. In the US, digital sales by way of the Internet or mobile phones accounted for 10 percent of total music sales in 2005 against 2-4 percent in the main EU markets (OECD 2007). Globally, the share reached 6 percent in that year against near zero in 2003. Over the same period, total e-commerce trade may have expanded by several hundred percent for several European countries and with continued rapid expansion expected cf. Figure 19.



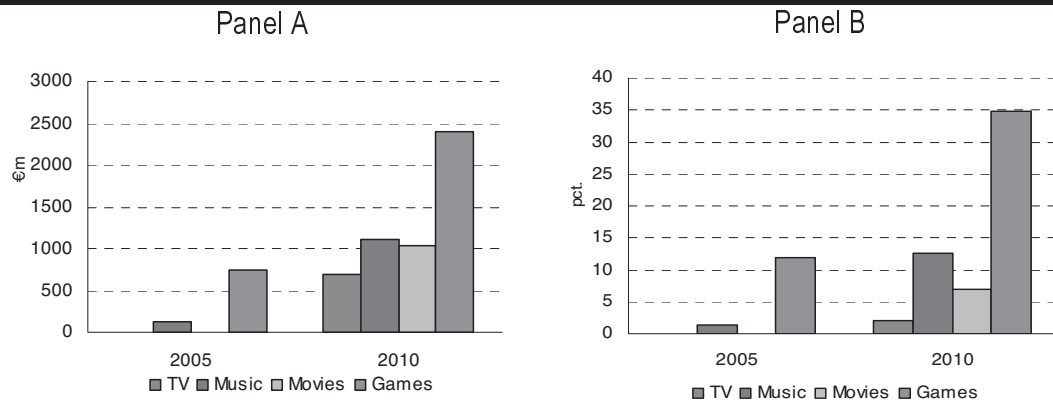
**Figure 19: Growth in e-commerce trade in selected EU-countries**



Source: Global Industry Analyst (2005).

While sales of on-line TV, music, games and movies were essentially non-existing a few years ago, they have been growing at the rapid pace in most recent years and projections suggest that this will continue. A recent study suggests that the combined total of on-line sales for these four categories may reach €5 billion in 3 years time and grow to between 2 to 35 percent of their relative markets with the highest shares to be reached for music which already today has a significant share as note above cf. Figure 20.

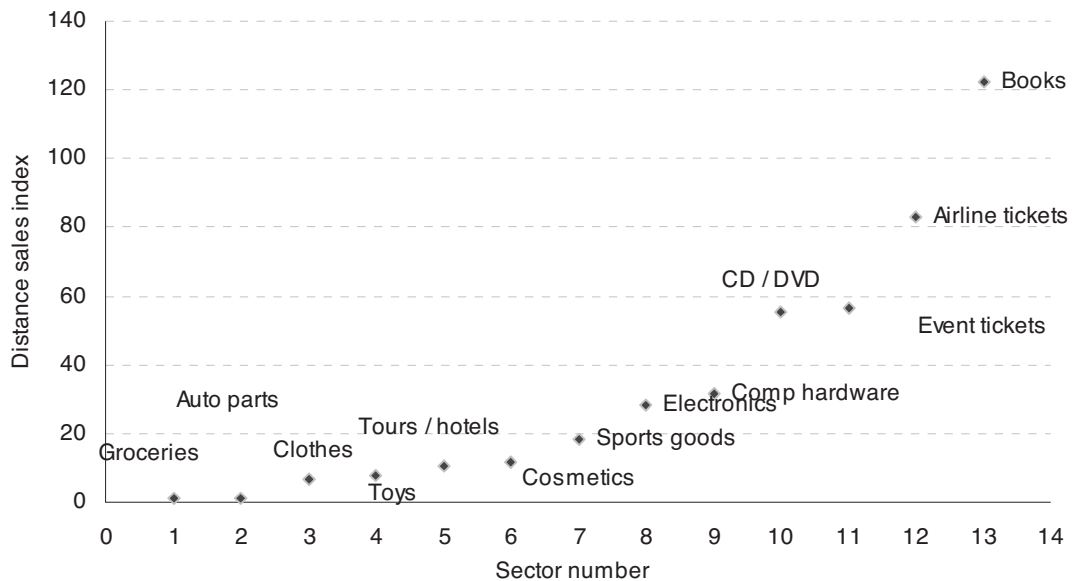
**Figure 20: Revenue measured in (€m) and revenue as share of total revenues**



Source: Screen Digest Ltd. et al. (2006).

Empirical evidence broadly supports these dimensions as being important. Books top the list of most surveys of e-commerce and are at the same time characterised as being (1) relatively expensive per kilo, (2) even a paperback lasts many years and escapes non-damaged from transportation and finally (3) a new P.D. James crime novel is completely identical across the globe. In our simplified approach, books are overrepresented by more than 10 times in e-commerce sales relative to its economic importance compared to for example grocery deliveries, auto parts etc. cf. Figure 21.

**Figure 21: Relative incidence of Internet sales**



Source: AC-Nielsen, Denmarks Statistic and own calculations, see Appendix VII.

### 4.3. Applying the characteristics in the VAT scenarios

We then combine our information about the drivers and the actual incidence of Internet trade with our description of the VAT rules applicable to distance sales between member states to determine which differences in VAT rates that are most likely to create spillover effects in terms of locating purchases outside the customer's country of residence. Two issues are important here. First, while distance sales from professional providers are subjected to VAT rates in the country of the customer, the risk of detection is precisely low in the sectors where the three dimensions suggest that distant sales should dominate: packages are small/light – in fact non observable for digital content products -- and they don't smell or otherwise attract the attention of mail providers. Second, for some telecommunication products, the rules of origin apply as stated above.

Based upon the approach described above, a broad ranking of the main consumer groups in terms of their relative exposure to cross border trade and distance selling have then been estimated (see Appendix VII). The actual ranking is based upon information at a deeper level of detail – 83 categories of consumption -- but some key features are worth pointing out here. Firstly, locally supplied services which are a key focus area in chapter two, are a non-tradeable sector in terms of consumers being able to exploit VAT difference cf. Table 37. Delivery of services requires that suppliers are in place in the customer's residence country and that they apply VAT rates of that country. Secondly, culture and entertainment goods and services – often with low rates on books and magazines – are significant and increasingly important in terms of cross border trade and distance sales, so VAT differences in this group matter, therefore the rank. Hotels and restaurants are primarily catering to resident customers but for some countries a substantial share of revenues originate from cross-border trade in the form of tourism.

**Table 37: Qualitative ranking of sectors in terms impact on differences in VAT rates on cross-border trade and distance sales**

| Group     | Sector                               | Cross-border sales | Distance sales |
|-----------|--------------------------------------|--------------------|----------------|
| 1 Food    | Hotels                               |                    |                |
|           | Restaurants                          |                    |                |
|           | Foodstuff                            |                    |                |
| 2 Merit   | Medical & books                      |                    |                |
|           | Culture & entertainment              |                    |                |
| 3 Network | Electricity & heating                |                    |                |
|           | Postal, telecom & financial services |                    |                |
|           | Passenger transport                  |                    |                |
|           | Social housing                       |                    |                |
| 4 Local   | Locally supplied services            |                    |                |
| 5 Public  | Government services                  |                    |                |
|           | Street cleaning                      |                    |                |
| 6 RoE     | Rest of the economy                  |                    |                |

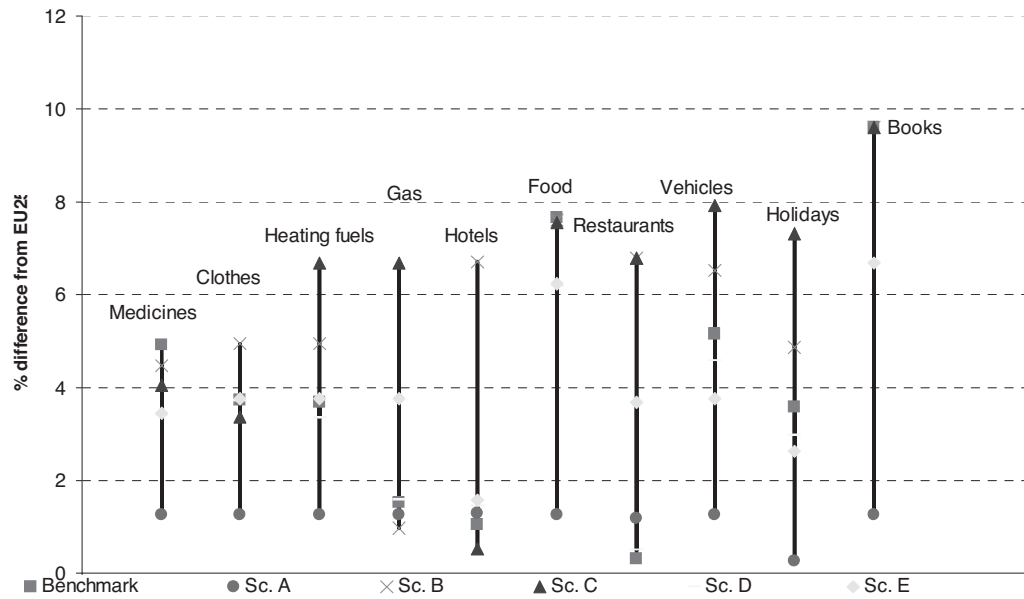
Note: Sectors ranked according to an ordinal scale from 10 to 0; 10 indicating most exposure, 0 the lowest.

Source: Copenhagen Economics

We then apply the benchmark, i.e. the existing VAT configuration as well as the defined main alternative scenarios and review how they affect the cross-country difference in VAT rates.

Our main conclusion is that the uniform rate scenario tends to the most beneficial seen from an internal market perspective. We focus on the cross-country differentials in VAT rates that actually matter for cross-border trade which, with the exception of books, are typically standard rated. In the present benchmark case, the average numerical difference between the 25 member states is now plus 5 percentage points and that goes in the scenario A with a uniform scenario down to 1 percentage points while increasing in scenario C to 7 percentage points. For books, the uniform rate scenario will provide a substantial narrowing of differentials, in fact much more narrow than the scenario D and E where lower rates on books are applied more widely cf. Table 37. The other sectors are typically of lower interest as cross-border trade significance – LSS, electricity, transportation, construction – or the variation in the scenarios relatively limited (post and telecommunications), cf. Figure 22.

**Figure 22: Cross-country effects due to variances in VAT across goods and services**



Source: IBDF data bank and Copenhagen Economics

### Barriers to entry

Without doubt, a bewildering set of different VAT rates across EU for the same products will create some barriers to the internal market as non domestic sellers will have to spend more time finding how about the proper VAT rate in other countries and therefore be at the margin more hesitant about marketing products in other countries. As for compliance costs, it is likely that such barriers are most important when the VAT variation is at the first level of aggregation, i.e. when you have to study very carefully what VAT to apply when you sell your goods and services to other countries.

However, most of the reduced VAT rates applied now and to be considered in this report applies to services where providers will tend predominantly in the market where the goods are to be consumed. This is clearly the case for LSS, restaurants, hotels, utilities etc.

### 4.4. Reconciling national objectives with community dimension: a decision making framework

In defining the community approach to member states using reduced VAT rates to reach national objectives, there are a number of issues to be considered.

First, a total grid exercise defining characteristics that determine positive effects at the national level and spillover effects at the community level can be used in a *proportionality test*. The larger the potential negative spillover effects at the EU-level, the higher the burden of proof for member states to clarify that desired objectives are legitimate and cannot be achieved by other means less detrimental to functioning of the internal market.

Second, from a community perspective, the legal approach to VAT reductions differs from a direct budgetary support mechanism. Any deviation from the standard VAT rate must be accepted by unanimity while expenditure programmes are simply subjected to state aid tests by the Commission whose rulings can then be tested by member states in the Court of Justice. A number of such programmes favouring specific economic activities, such as services delivered to households, have been in place in the Community for some years as demonstrated in Chapter 3 and they have generally been found not to be distorting trade between member states and therefore accepted. The stimulus will mainly be to domestic economic activities and the possible community cost will mainly come from reduced total

imports as compensating VAT rates make more trade-intensive products more expensive both in absolute and relative terms.

The review in Chapter 3 suggested that direct budgetary support from both a community and a national perspective is more effective. Both measures are more transparent, easier to target at national level, can better be designed to avoid negative spill over effects at the EU level and can quickly be reviewed if a change in market conditions arise potential conflict with state aid rules. This suggests that member states should present a good case for not using other instruments and less problematic instruments than selective VAT reductions.

For the areas where national arguments for reduced and/or targeted VAT rates make most sense, as demonstrated in Chapter 3, – in particular repair work, household cleaning etc. – the resulting effects on cross-border trade are clearly limited. However, the scope for cross-border trade may change with technology, and a budgetary programme can typically be better targeted to avoid spillover effects

Third, seen from a community as well as from a national perspective, there are benefits in moving to a system of more uniform VAT rates, such as scenario A, while at the same lowering the standard VAT rate as it tends to reduce tax driven cross-border trade while not really removing member states room for manoeuvre to fulfil existing national objectives by other means.

Fourth, the increasing tradability of segments of the culture, entertainment and educational services – largely driven by the expansion of e-commerce – may provide an added impetus towards less use of reduced rates in these areas generally. While member states for reason of neutrality between like products may want to reduce rates on the digital versions, this may create concerns at the community level given potential negative spillover effects. There may be a need for a new type of policies that can help attain the objectives that Member states are looking while being fully compatible with the functioning of the internal market.

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