OECD Tax Policy Studies

The Distributional Effects of Consumption Taxes in OECD Countries

No. 22

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OECD
BETTER POLICIES FOR BETTER LIVES

KIPF
KOREA INSTITUTE OF PUBLIC FINANCE

Please cite this publication as:
OECD/Korea Institute of Public Finance (2014), *The Distributional Effects of Consumption Taxes in OECD Countries,* OECD Tax Policy Studies, No. 22, OECD Publishing.
http://dx.doi.org/10.1787/9789264224520-en

ISBN 978-92-64-22280-9 (print)
ISBN 978-92-64-22452-0 (PDF)

Series: OECD Tax Policy Studies
ISSN 1990-0546 (print)
ISSN 1990-0538 (online)

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Foreword

Recent OECD research highlights the potential growth benefits of shifting the tax mix towards consumption taxes. In particular, there is a strong case for countries to broaden their value-added tax (VAT) bases, not just to raise revenue, but to reduce the substantial compliance costs and distortions to consumption decisions that arise from multi-rate VAT systems. In practice, however, governments have often been reluctant to embrace VAT base broadening measures because of a range of concerns. Foremost of these is the widely held view that the poor are hit hardest by increases in standard and reduced VAT rates.

This report seeks to better inform this debate by examining the distributional effects of consumption taxes in 20 OECD countries. The analysis is based on consumption tax micro-simulation models constructed using household expenditure micro-data from national household budget surveys. It consists of two parts: a broad distributional analysis of the effects of current VAT and excise tax systems; and an examination of the effectiveness of reduced VAT rates at redistributing income towards poor households.

The broad distributional analysis shows that consumption taxes are regressive when measured as a percentage of household income, but are generally either proportional or slightly progressive when measured as a percentage of household expenditure. This confirms other recent analysis for several countries, and extends this analysis and these conclusions to a significant number of new countries.

Regarding reduced VAT rates, results tend to vary depending on the underlying policy rationale for introducing the reduced VAT rate. First, the results show that most, if not all, of the reduced rates that are introduced for the distinct purpose of supporting the poor, such as reduced rates on food and on energy products, do provide a proportionately greater benefit to the poor than to the rich. However, despite this progressive effect, these reduced VAT rates are still shown to be a very poor tool for targeting support to poor households: at best, rich households receive as much aggregate benefit from a reduced VAT rate as do poor households; at worst, rich households benefit vastly more in aggregate terms than poor households.

Second, reduced rates introduced to address social, cultural and other non-distributional goals often provide so large a benefit to rich households that the reduced VAT rate actually has a regressive effect – benefiting the rich more both in aggregate terms and as a proportion of expenditure. Examples include reduced rates on books, hotel accommodation, and on food consumed in restaurants. Overall, these results suggest the need for a careful, case-by-case reassessment of the relative merits of various reduced VAT rates in many countries.

This report is the result of a joint project between the OECD and the Korea Institute of Public Finance (KIPF).

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Acknowledgements

This report is the result of a joint project between the OECD and the Korea Institute of Public Finance (KIPF). Chapters 1-3 of the report were prepared by Alastair Thomas of the OECD Secretariat, drawing on information and comments received from Delegates to Working Party No 2 on Tax Policy Analysis and Tax Statistics and Working Party No 9 on Consumption Taxes of the OECD Committee on Fiscal Affairs. Chapter 4 was prepared by Sunghoon Hong of the KIPF. Additional funding from the European Commission is gratefully acknowledged.

The report has benefited from comments and suggestions provided by Piet Battiau, David Bradbury, Bert Brys, Stéphane Buydens, Florens Flues, Michelle Harding, Dimitra Koulouri, Pierre LeBlanc, Stephen Matthews and Kurt Van Dender of the OECD Secretariat, Yun Young Heo and Hyun Young You of the KIPF, John Creedy and Norman Gemmell of Victoria University of Wellington, and Erin Hengel of the University of Cambridge. Particular thanks are due to Jae-Jin Kim and Beom-Gyo Hong of the KIPF for initiating and guiding the project.

Thanks are also due to the National Statistical Offices of the following countries for the provision of, and assistance with, household budget survey micro-data: Austria, Belgium, Chile, the Czech Republic, Estonia, Germany, Greece, Hungary, Ireland, Italy, Korea, Luxembourg, the Netherlands, New Zealand, Poland, the Slovak Republic, Slovenia, Spain, Turkey and the United Kingdom.

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Executive summary

The OECD's 2008 *Taxation and Economic Growth* study highlighted the potential growth benefits of shifting the tax mix away from taxes on labour and corporate income towards consumption taxes. In particular, there is a strong case for countries to broaden their value-added tax (VAT) bases, not just to raise revenue, but to reduce the substantial compliance costs and distortions to consumption decisions that arise from multi-rate VAT systems. While a number of countries have recently increased their standard VAT rates, governments have been far more reluctant to embrace VAT base broadening measures because of a range of concerns. Foremost of these is the widely held view that the poor are hit hardest by consumption taxes, and particularly by increases in reduced VAT rates.

This report seeks to better inform this debate by examining the distributional effects of consumption taxes in 20 OECD countries. The analysis utilises consumption tax micro-simulation models that have been developed specifically for this project. The models are based on household expenditure micro-data from standardised versions of national household budget surveys, and follow a common methodology to ensure international comparability of results.

The first three chapters of the report present a cross-country analysis of the distributional effects of consumption taxes in OECD countries. This analysis consists of two parts: a broad distributional analysis of the overall effects of current VAT and excise tax systems; and an examination of the effectiveness of reduced VAT rates at redistributing income towards poor households. Chapter 4 then provides a more detailed examination of VAT and excise tax systems in Korea, including an analysis of their distributional effects utilising recently released data.

Overall results for the 20 countries covered in the report show that VAT systems are regressive when measured as a percentage of income, but are generally either proportional or slightly progressive when measured as a percentage of expenditure. This confirms other recent analysis for several countries, and extends this analysis and these conclusions to a significant number of new countries.

Total excise tax burdens (on alcohol, tobacco and transport fuels) are shown to be almost always regressive when measured as a percentage of income, and in most cases to be either regressive or roughly proportional when measured as a percentage of expenditure.

In interpreting these results, the report argues that an income-base approach may be of particular interest in analysing the immediate distributional effects of consumption taxes, especially if household consumption patterns are not strongly affected by borrowing and savings behaviour. However, the report also argues that an expenditure-base approach will provide a more reliable measure of the lifetime distributional effects

of a consumption tax. The results therefore challenge the general public perception that VAT systems are regressive, at least in a lifetime context. That said, results for Estonia, New Zealand and the Slovak Republic highlight that broad-based VAT systems that have few reduced VAT rates or exemptions can still produce a small degree of regressivity when expenditure is used as a proxy for lifetime income. In contrast, results for Chile, the Czech Republic, Korea and the Slovak Republic show that excise taxes can in some cases be progressive in a lifetime context.

Turning to the use of reduced VAT rates, these are introduced for a variety of reasons: while supporting the poor is generally the most often cited argument for their use, they are often also introduced to encourage consumption of certain cultural products or perceived social goods, as well as for broader reasons such as to support certain labour intensive industries. Irrespective of the rationale for introducing a reduced rate, it is important to be able to quantify its distributional impact in order to accurately weigh the benefits and costs of the concession.

To examine the distributional effects of reduced VAT rates, the micro-simulation models are first used to simulate the removal of all zero and reduced VAT rates. The simulated revenue figures from this "single-rate system" are then used as a benchmark against which to calculate the size of the tax expenditure relating to each reduced VAT rate in each country. A key assumption behind this analysis is that households do not alter their consumption patterns in response to an increase in reduced VAT rates. As some behavioural change can be expected in practice – with households shifting some consumption towards relatively cheaper substitutes – the results can be expected to overestimate to some extent the size of the actual tax expenditure.

The tax expenditure results tend to vary depending on the underlying policy rationale for introducing the reduced VAT rate. First, the results show that most, if not all, of the reduced rates that are introduced for the distinct purpose of supporting the poor – such as reduced rates on food, water supply and energy products – do have the desired progressive effect. For example, reduced rates for food provide significantly greater support to the poor than the rich, as a proportion of expenditure, in all countries where they are applied. However, despite this progressive effect, these reduced VAT rates are still shown to be a very poor tool for targeting support to poor households: at best, rich households receive as much aggregate benefit from a reduced VAT rate as do poor households; at worst, rich households benefit vastly more in aggregate terms than poor households.

Second, reduced rates introduced to address social, cultural and other non-distributional goals often provide so large a benefit to rich households that the reduced VAT rate actually has a regressive effect – benefiting the rich more both in aggregate terms and as a proportion of expenditure. For example, reduced rates on hotel accommodation and restaurant food benefit the rich vastly more than the poor, both in aggregate and proportional terms, in all countries in which they are applied. Similar results, but of less absolute magnitude, are also found for reduced rates on books, cinema, theatre and concerts.

Overall, these distributional results suggest the need for a careful, case-by-case reassessment of the relative merits of various reduced VAT rates in many countries.

Chapter 1

Taxing consumption in OECD countries

This chapter provides a brief introduction to how OECD countries tax consumption. The importance of consumption taxes as a revenue source is first discussed, before the main design features of value-added tax (VAT) and excise tax systems are briefly summarised.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

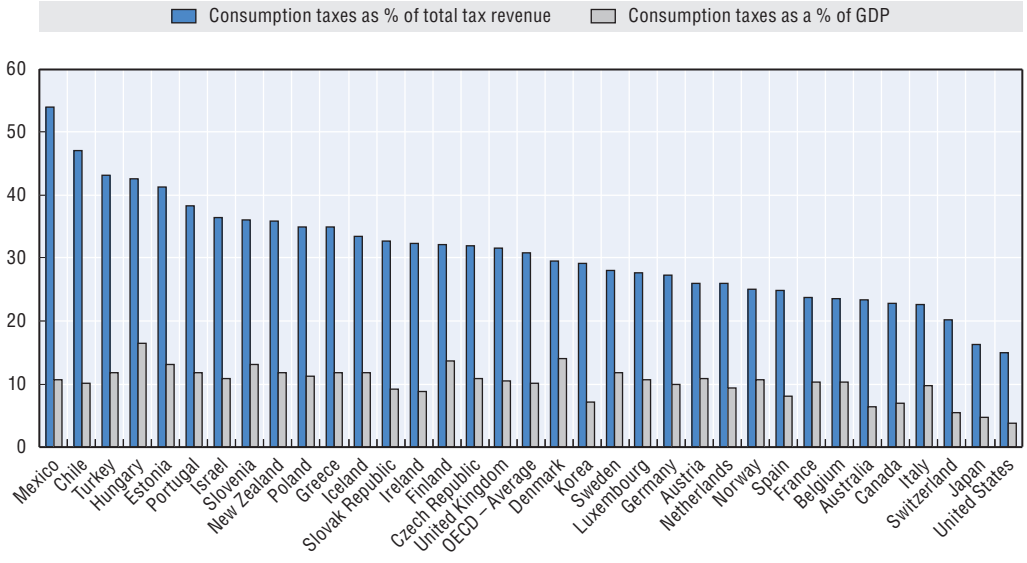
1.1. Introduction[1]

Taxes on consumption are an important source of tax revenue in all OECD countries – raising, on average, 31% of total tax revenues as of 2012. Most of these revenues are derived from value-added taxes (VAT), which are present in all OECD countries except the United States, with excise taxes on alcohol, tobacco and transport fuels raising the majority of the remaining revenue. This chapter provides a brief introduction to how OECD countries tax consumption as background information for the distributional analysis that follows in the subsequent chapters. The importance of consumption taxes as a revenue source is first discussed, before the main design features of VAT and excise tax systems are briefly summarised.[2] More detailed information on the design of VAT and excise tax systems can be found in the OECD's biennial *Consumption Tax Trends* publication – from which much of the information presented in this chapter comes.

1.2. Consumption tax revenues

Figure 1.1 presents consumption tax revenues as a percentage of both GDP and total tax revenue for each OECD country, as of 2012. These ratios range considerably across countries: from Japan and the United States where consumption taxes amount to less than 5% of GDP and 17% of total tax revenue, to Denmark and Hungary where they amount to more than 14% of GDP, and Chile and Mexico where they comprise more than 47% percent of total tax revenue. On average, they amount to 10% of GDP and 31% of total tax revenue.

Figure 1.1. **Consumption tax revenue as a percentage of total tax revenue and GDP, 2012**

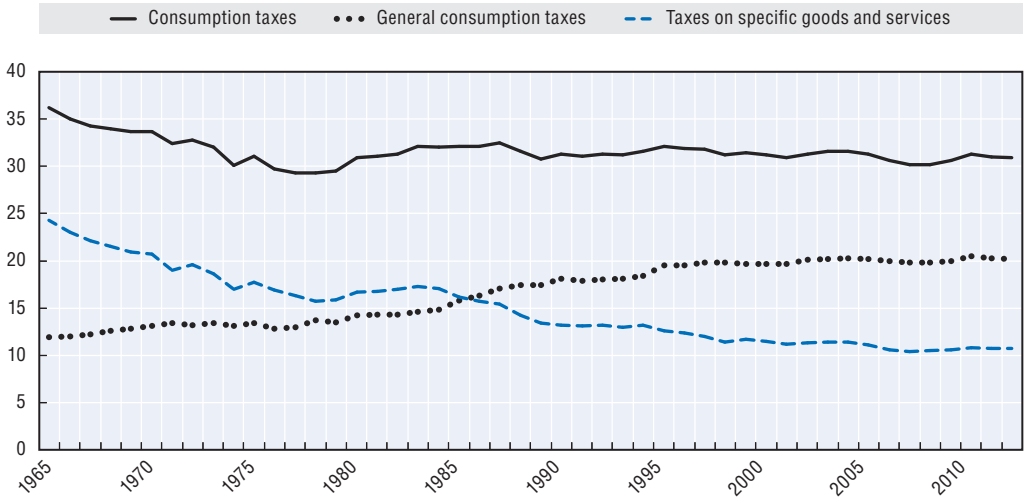


Source: OECD (2014b), *Revenue Statistics*, OECD Publishing, Paris.

While still a key source of revenue for governments, Figure 1.2 shows that since the 1960s, the reliance of OECD countries on consumption taxes has fallen slightly from 36% to 31%, on average. During this time, the composition of consumption taxes has also changed markedly – with countries relying far more now on general consumption taxes and far less on specific consumption taxes.

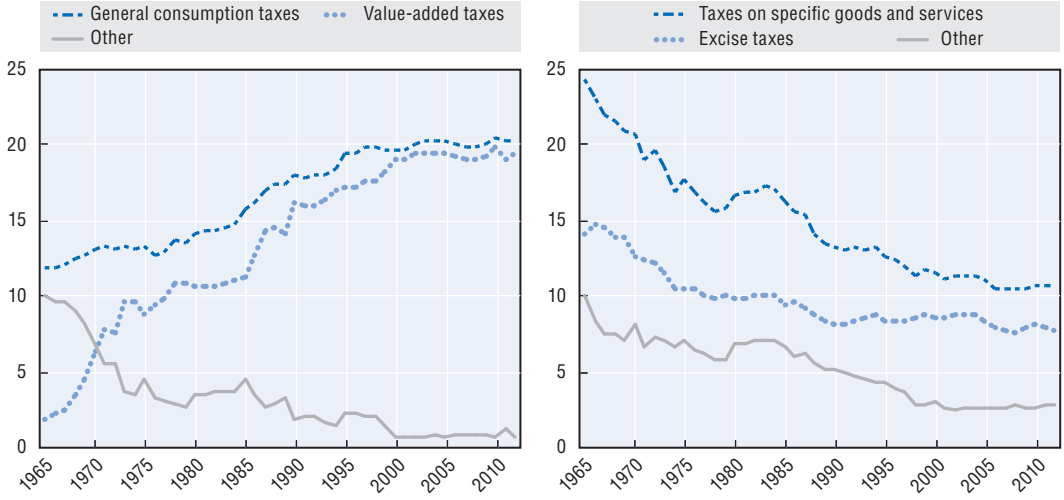
Figure 1.3 decomposes general and specific consumption taxes into their major components. The left hand panel highlights the rapid spread of VAT across the world since the late 1960s: in 1965, VAT represented, on average, just 2% of total tax revenue in OECD countries, but now constitutes, on average, over 19% of total tax revenue – almost all the revenue generated by general consumption taxes. The right hand panel shows that despite the overall trend reduction in revenue from specific taxes, excise taxes remain an

Figure 1.2. **Consumption tax revenue as a percentage of total tax revenue, OECD average, 1965-2012**



Source: OECD (2014b), *Revenue Statistics*, OECD Publishing, Paris.

Figure 1.3. **Decomposition of general and specific consumption taxes as a percentage of total tax revenue, OECD average, 1965-2012**



Source: OECD (2014b), *Revenue Statistics*, OECD Publishing, Paris.

important source of tax revenue (raising 8% of total tax revenue). The greater component of the reduction in revenue from specific taxes has instead come from a reduction in other specific taxes – such as customs and import duties, and taxes on specific services (such as insurance premiums and financial services) – which now contribute less than 3% of total tax revenue. As of 2012, 27% of total tax revenue in OECD countries, on average, comes from VAT and excise taxes, as compared to just 4% from other consumption taxes.

1.3. VAT

As of 2014 more than 160 countries have adopted a VAT. This includes 33 of the 34 OECD member countries – the exception being the United States which operates a range of state-level retail sales taxes instead. Although the general principles underlying each VAT system are the same, there are still significant differences in the systems implemented in different countries. Most notably, countries vary considerably in their rate structures and in the number of exemptions they apply.[3]

Box 1.1. **How does a value-added tax work?**

A value-added tax (VAT) is a broad-based tax levied on the sale of goods and services to consumers or businesses by registered businesses. In general, a business must be VAT-registered unless its turnover is below a minimum threshold (set so as to reduce administrative and compliance costs relating to very small businesses where the tax revenue foregone is perceived to be low).

The central design feature of a VAT, and the feature from which it derives its name, is that the tax is collected on the value added at each stage of production and distribution. Each business in the supply chain collects VAT from its customers on the value of its outputs and is entitled to deduct the tax it has paid on its purchases and must account and remit the difference to (or receive a refund from) the tax authorities. In this respect, the VAT differs from a retail sales tax which taxes consumption through a single-stage levy imposed in theory only at the point of final sale. However, as with a retail sales tax, the ultimate base of a VAT is final consumption.

There are two main approaches for operating the staged collection process:

- Under the ***invoice credit method*** (which is a "transaction based method"), each trader charges VAT at the rate specified for each supply and passes to the purchaser an invoice showing the amount of tax charged. The purchaser is in turn able to credit that input tax against the output tax it charges on its sales, remitting the balance to the tax authorities and receiving refunds when there are excess credits. This method is based on invoices that could, in principle, be cross-checked to pick up any overstatement of credit entitlement. By linking the tax credit on the purchaser's inputs to the tax paid by the purchaser, the invoice credit method is designed to discourage fraud. 32 of the 33 OECD countries employing a VAT use the invoice credit method.
- Under the ***subtraction method*** (which is an "entity based method"), the tax is levied directly on an accounts-based measure of value added, which is determined for each business by subtracting the VAT calculated on allowable purchases from the VAT calculated on taxable supplies. Of the OECD countries employing a VAT, only Japan uses the subtraction method.

Source: adapted from OECD (2014a), *Consumption Tax Trends*, OECD Publishing, Paris.

VAT rates

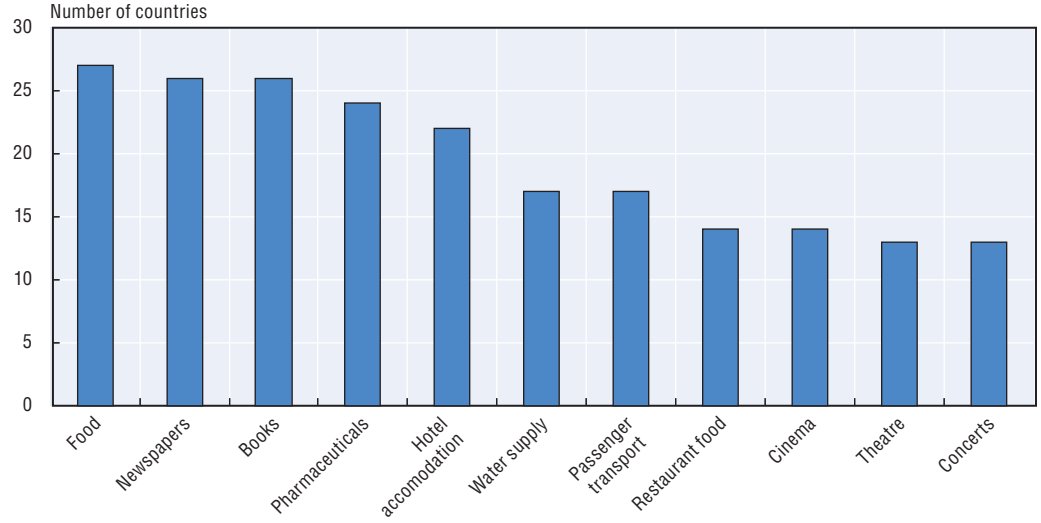
Most "older" VAT systems tend to adopt multi-rate systems, with one or more reduced rates (including zero rates[4] in some countries) applying to a significant number of goods and services. This is particularly the case in Europe where countries' VAT rate structures are guided by the EU VAT Directive which generally allows for up to two reduced VAT rates in addition to the standard VAT rate.[5] In contrast, other VAT systems – such as in Chile, Japan and New Zealand – apply a single rate to most, if not all, goods and services. The variation in rate structures is illustrated in Table 1.1.

For the many countries that do apply reduced VAT rates, the types of goods and services subject to these reduced rates also varies. Figure 1.4 highlights the goods and services most commonly subject to a reduced rate in OECD countries. The vast majority of countries (27 of 33) apply a reduced rate to either basic food products or, more often, to a very broad range of unprepared food products. The general rationale for providing such a reduced rate is to provide support to poorer households. Following a similar rationale, many countries also provide a reduced rate for pharmaceutical products, water supply, and public transport. Meanwhile, a smaller number of countries apply reduced rates to energy products and to children's clothing/shoes.

Most countries also use reduced VAT rates to encourage the consumption of certain goods and services with perceived social or cultural benefits. The most common examples are newspapers and books which are subject to reduced VAT rates in 26 of the 33 OECD countries that have a VAT. As Figure 1.4 shows, countries also often provide reduced rates for cinema, theatre and concerts. Less common examples include museums, zoos and sporting activities.

Many countries also provide reduced rates with a less clear rationale. The most common of these apply to hotel and other accommodation services and to restaurant food. Such concessions may have been introduced for a variety of reasons, such as to provide support to a specific industry, to encourage tourism, or – in the case of restaurant food – to offset the reduced rate applied to unprepared food. Less common examples include reduced rates for hairdressing, cut flowers, certain agricultural products, and for food (and sometimes even alcohol) consumed in bars and cafes.

Figure 1.4. **Common reduced VAT rates in OECD countries as at 1 January 2014**



Source: Author's calculations based on OECD (2014a), *Consumption Tax Trends*, OECD Publishing, Paris.

Table 1.1. **VAT rates in OECD countries as at 1 January 2014**

	Standard rate	Reduced rates
Australia	10.0	0.0
Austria	20.0	10.0/12.0
Belgium	21.0	0.0/6.0/12.0
Canada	5.0	0.0
Chile	19.0	-
Czech Republic	21.0	15.0
Denmark	25.0	0.0
Estonia	20.0	9.0
Finland	24.0	0.0/10.0/14.0
France	20.0	2.1/5.5/10.0
Germany	19.0	7.0
Greece	23.0	6.5/13.0
Hungary	27.0	5.0/18.0
Iceland	25.5	7.0
Ireland	23.0	0.0/4.8/9.0/13.5
Israel	18.0	0.0
Italy	22.0	4.0/10.0
Japan	5.0	-
Korea	10.0	0.0
Luxembourg	15.0	3.0/6.0/12.0
Mexico	16.0	0.0
Netherlands	21.0	6.0
New Zealand	15.0	0.0
Norway	25.0	0.0/8.0/15.0
Poland	23.0	5.0/8.0
Portugal	23.0	6.0/13.0
Slovak Republic	20.0	10.0
Slovenia	22.0	9.5
Spain	21.0	4.0/10.0
Sweden	25.0	0.0/6.0/12.0
Switzerland	8.0	0.0/2.5/3.8
Turkey	18.0	1.0/8.0
United Kingdom	20.0	0.0/5.0

Source: OECD (2014a), *Consumption Tax Trends*, OECD Publishing, Paris.

Country notes

Austria: A standard rate of 19% applies in Jungholz and Mittelberg.

Canada: The following provinces have harmonised their provincial sales taxes with the federal Goods and Services Tax and therefore levy a rate of GST/HST of: New Brunswick, Newfoundland and Labrador, Ontario: 13%; Prince Edward Island: 14%; Nova Scotia 15%. Québec applies GST at a rate of 5% and Québec Sales Tax at a rate of 9.975% (applied on the same tax base as the GST). Other Canadian provinces, with the exception of Alberta, apply a provincial sales tax to certain goods and services.

France: Rates of 0.9%; 2.1%; 10.0%; 13.0%; 20.0% apply in Corsica; rates of 1.05%; 1.75%; 2.1%; 8.5% apply to overseas departments (DOM) excluding French Guyana and Mayotte.

Greece: Rates of 5.0%; 9.0% and 16.0% apply in the regions Lesbos, Chios, Samos, Dodecanese, Cyclades, Thassos, Northern Sporades, Samothrace and Skiros.

Portugal: The standard VAT rate in the Islands of Azores is 18%. In the Islands of Madeira the standard rate is 22%; reduced VAT rates in Azores are 5% and 10%. In Madeira reduced rates are 5% and 12%.

Spain: Rates of 2.0%; 5.0%; 9.0%; 13.0% apply in the Canary Islands. Rates of 05.% and 4% apply in Ceuta and Melila.

Full details on the reduced VAT rates applied in each OECD country are available in the OECD's *Consumption Tax Trends* publication. The merits of providing these reduced rates, and their impact on the overall tax burdens faced by households (which depend not just on the tax rates but also on household consumption patterns), are examined in detail in the subsequent chapters of this report.

VAT exemptions

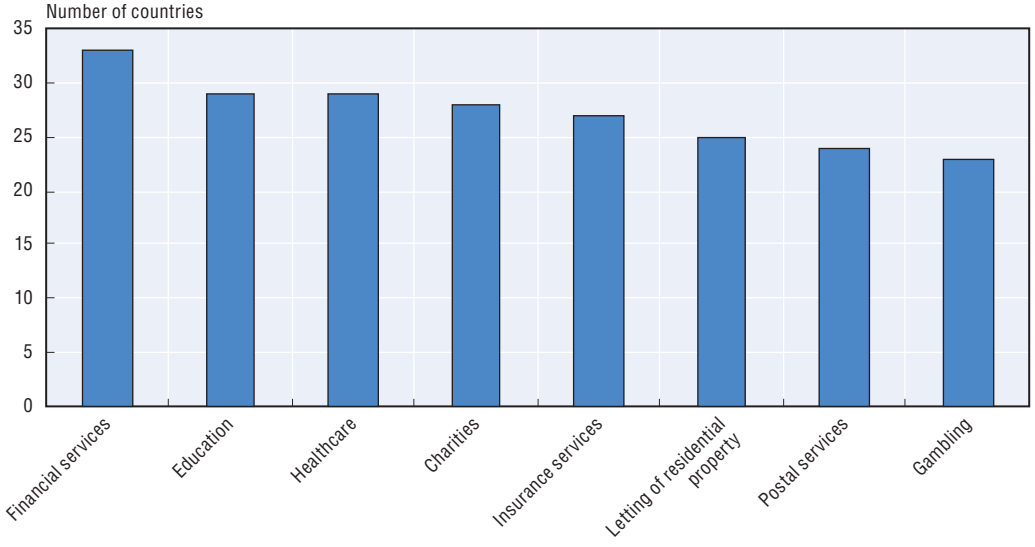
Countries also vary in the range of goods and services that are exempted (i.e. zero rated with no ability to deduct input tax) from VAT. Again it is European countries that tend to have the greatest number of exemptions, whereas Chile, Japan and New Zealand tend to have the fewest.[6]

Figure 1.5 highlights some of the most common exemptions applied in OECD countries. Most countries exempt goods and services supplied in certain sectors considered essential for social reasons – particularly health, education and charities. In other cases, practical reasons have led countries to use exemptions – for example, in every OECD country, most or all financial services are exempted due to the difficulty in determining the appropriate margin on which to apply VAT. Other sectors, such as postal services and the letting of immovable property, have often been exempted due to a variety of historical reasons.

Beyond these typical items, exemptions are often applied to a diverse range of goods and services such as cultural services, legal aid, precious metals, public transport and water supply. There is only limited consistency in the types of goods and services that countries apply exemptions to as opposed to applying reduced rates. For example cultural services, public transport and water supply are exempt in some countries but subject to reduced rates in others. This can even be the case for the most commonly applied exemptions – for example, Australia zero-rates rather than exempts education and healthcare. In contrast, Korea provides no reduced rates and instead uses exemptions to address the redistributive, cultural and social goals that many countries attempt to address through reduced VAT rates.

Full details of the exemptions present in the VAT system of each OECD country are available in the OECD's *Consumption Tax Trends* publication.

Figure 1.5. **Common VAT exemptions in OECD countries as at 1 January 2014**



Source: Author's calculations based on OECD (2014a), *Consumption Tax Trends*, OECD Publishing, Paris.

1.4. Excise taxes

All OECD countries levy excise taxes on transport fuels and on alcohol and tobacco products. This section discusses the main design features of these taxes. Most countries also levy excise taxes on at least some additional environmentally related expenditures (e.g. fuels for domestic heating or industrial use). Given their wide variation in application, this report does not cover such environmentally related excise taxes. However, forthcoming OECD work (Flues and Thomas, 2015) examines in detail the distributional effects of environmentally-related excise taxes.

Transport fuels

Excise taxes on transport fuels are relatively uniform in design across countries, although magnitudes vary significantly. Separate excise taxes are generally applied to different fuels based on technical specifications such as unleaded petrol, diesel, and LPG. All OECD countries apply an *ad quantum* excise tax to petrol for road use (i.e. based on the quantity of petrol used, generally measured in litres), while all countries except New Zealand – where a road user charge scheme exists – apply an *ad quantum* excise tax to diesel for road use. Most countries also impose an *ad quantum* tax on LPG for road use. Chile and Mexico apply price stabilisation mechanisms that can reduce, or even make negative, the effective tax rate applying to petrol and diesel in some years. In some countries, the *ad quantum* tax rate on petrol can vary depending on sulphur content or octane rating. Biofuels are often taxed at lower rates, or are even untaxed in some countries.

Alcohol products

Excise taxes on alcohol and tobacco products are often more complicated in their design than taxes on transport fuels. Regarding alcohol, excise taxes are generally applied separately to beer, wine, and spirits. In general, both *ad quantum* (either per volume unit of product or of alcohol) and *ad valorem* taxed are applied to beer. Chile and Mexico are the main exceptions where only *ad valorem* excise taxes are applied to beer (and to wine and spirits). Per volume unit of product *ad quantum* rates are often also graduated based on alcohol content. Additionally, beer produced by small brewers is often subject to a reduced excise tax rate.

Wine is most commonly subject to just an *ad quantum* (per volume unit of product) excise taxes, though a similar number of countries apply no excise tax at all, while a small number of countries apply an *ad valorem* tax instead. Different rates are often applied to still, sparkling, and low-alcohol wine.

Spirits are subject to an *ad quantum* excise tax (per volume unit of pure alcohol) in almost all countries, with the remainder imposing an *ad valorem* tax. In a few countries the *ad quantum* rate can vary based on the alcohol content. Several countries also apply a reduced rate for spirits produced by small distilleries.

Tobacco products

Turning to tobacco products, excise taxes are generally applied separately to cigarettes, cigars and loose/roll tobacco. As with beer, most counties impose both *ad valorem* and *ad quantum* (generally per cigarette or per pack of 20 cigarettes) excise taxes on cigarettes. In some cases, per cigarette *ad quantum* tax rates are graduated based on tobacco content. In contrast, countries tend to impose either an *ad valorem* or an *ad quantum* excise tax on cigars, with only a few countries applying both. Ad quantum taxes on cigars are generally based on the weight of tobacco in the cigar. The approach taken with loose/roll tobacco

varies considerably – with some countries only imposing an *ad quantum* excise tax (based on tobacco content), some only imposing an *ad valorem* tax, and others imposing both.

More detail on the excise tax regimes in place for transport fuels, alcohol and tobacco products in OECD countries is available in the OECD's *Consumption Tax Trends* publication.

As with VAT, the impact of these excise tax systems on the actual tax burdens faced by different individuals and households is impossible to assess from the rules alone as the tax burdens are driven by consumption patterns – i.e. the quantity consumed and expenditure incurred on the excise taxed products. The next chapter adopts a micro-simulation methodology based on household expenditure data to quantify these VAT and excise tax burdens, thereby enabling an analysis of the distributional effects of VAT and excise taxes.

Notes

1. This chapter draws heavily on Chapter 2 of OECD (2014a).
2. This report focuses on VAT and the three main types of excise taxes present in OECD countries – those on transport fuels, tobacco and alcohol. Many countries also apply excise taxes to certain environmentally related products. Given their wide variation in application this report does not cover such environmentally related excise taxes. However, forthcoming OECD work (Flues and Thomas, 2015) examines in detail the distributional effects of environmentally-related excise taxes. Retail sales taxes – relied on heavily in the United States – are not covered in this report.
3. Other differences include widely varying registration thresholds for businesses, the use of special taxation methods for specific supplies, and restrictions on the right to deduct VAT on specific inputs. OECD (2014a) discusses these in more detail.
4. The zero rating of a good or service can be distinguished from exempting that good or service as zero rating maintains the right to deduct input tax, whereas no such right exists when the good or service is exempt.
5. The EU VAT Directive requires the standard rate to be at least 15%. Reduced rates must be at least 5% and can only be applied to the set of goods and services specified in Annex III of the Directive. That said, a number of derogations are provided for in the Directive that allow some countries to maintain reduced rates on additional goods and services and/or at a rate lower than 5%, including a zero rate. For more detail, see: http://ec.europa.eu/taxation_customs/taxation/vat/how_vat_works/index_en.htm#vat_overview.
6. Unlike a zero rate, some VAT will still generally be payable on exempted goods and services. This is because the inability to deduct input tax will increase the cost, and hence the price, of the final good or service (unless the cost is fully borne by a party within the supply chain).

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Chapter 2

The distributional effects of consumption taxes

This chapter examines the distributional effects of value-added tax (VAT) and excise tax systems in 20 OECD countries. The analysis is based on consumption tax micro-simulation models constructed for each country using household expenditure micro-data. Results show that VAT systems are regressive when measured as a percentage of income, but are generally either proportional or slightly progressive when measured as a percentage of expenditure. Total excise tax burdens (on alcohol, tobacco and transport fuels) are shown to be almost always regressive when measured as a percentage of income, and in most cases to be either regressive or roughly proportional when measured as a percentage of expenditure. In interpreting these results, the report argues that an income-base approach may be of interest in analysing the immediate distributional effects of consumption taxes, but that an expenditure-base approach will provide a more reliable measure of the lifetime distributional effects. The results therefore challenge the general public perception that VAT systems are regressive, at least in a lifetime context. That said, results for Estonia, New Zealand and the Slovak Republic highlight that broad-based VAT systems that have few reduced VAT rates or exemptions can still produce a small degree of regressivity when expenditure is used as a proxy for lifetime income. Meanwhile, results for Chile, the Czech Republic, Korea and the Slovak Republic show that excise taxes can in some cases be progressive in a lifetime context.

2.1. Introduction

This chapter examines the distributional effects of consumption taxes in 20 OECD countries. The analysis is based on consumption tax micro-simulation models that have been constructed for each country using household expenditure micro-data (from national household budget surveys). The models follow a consistent methodology enabling cross-country comparison of results. The analysis covers both value-added taxes (VAT) and excise taxes imposed on alcohol, tobacco and transport fuels.[1]

Results for the 20 countries show that consumption taxes are regressive when measured as a percentage of income, but are generally either proportional or slightly progressive when measured as a percentage of expenditure. This confirms previous analysis for several countries by IFS (2011), and extends this analysis and these conclusions to a significant number of new countries. The chapter argues that an income-base approach may be of particular interest in analysing the immediate distributional effects of consumption taxes, especially if household consumption patterns are not strongly affected by borrowing and savings behaviour. The chapter also argues that an expenditure-base approach provides a more reliable measure of the lifetime distributional effects of a consumption tax, challenging the general public perception that consumption taxes are regressive. That said, results for Estonia, New Zealand and the Slovak Republic highlight that broad-based VAT systems that have few reduced VAT rates or exemptions can still produce a small degree of regressivity even in a lifetime context when expenditure is used as a proxy for lifetime income.

The chapter proceeds as follows: Section 2.2 sets out the details of the micro-simulation methodology. Section 2.3 discusses the relative merits of measuring consumption tax burdens relative to current income or expenditure. Average consumption tax burden results are then presented across income and expenditure deciles in section 2.4, and across various demographic characteristics in section 2.5. Some concluding comments are provided in section 2.6.

2.2. Methodology[2]

This section outlines the consumption tax micro-simulation model developed for this project, discussing first the data used, then the calculation of taxes and output of the model, and finally the underlying assumptions and limitations of the model.

Data

The micro-simulation model uses expenditure micro-data from household budget surveys (HBSs) to model consumption taxes. The HBSs are sample surveys of households carried out periodically by National Statistical Offices. They provide detailed information on household consumption expenditure on goods and services, possession of durable goods and housing. They also offer demographic and socio-economic characteristics, including disposable income.

To enhance consistency across countries, we use – where possible – standardised Eurostat-format HBS micro-data. For countries where data is not available in this format (e.g. non-European Union countries) national survey micro-data is adjusted as closely as possible to match the Eurostat format. This homogenised format also enables a standard model to be developed and applied to each country, rather than requiring separate models to be developed for each country. Micro-data for 20 OECD countries has been obtained.

The Eurostat-format HBS micro-data is provided by European Union countries to Eurostat once every five years. The data in the most recent data-provision cycle relates to various years from 2008 to 2012. This micro-data is in most cases not publically available, however data has been provided specifically for this project by the respective statistical offices of each country.[3] The countries for which Eurostat-format data have been obtained (with year in parenthesis) are: Belgium, the Czech Republic, Estonia, Greece, Hungary, Italy,[4] Luxembourg, Poland, the Slovak Republic, Slovenia, Spain (2010); Austria (2009); Germany (2008); Ireland and the Netherlands (2004). Data for the latter two countries relates to the previous Eurostat data-provision round. Non-Eurostat format micro-data has also been obtained for: New Zealand (2013);[5] Chile, Korea (2012); Turkey and the United Kingdom (2010).

Calculation of taxes

Three types of taxes are simulated: VAT, *ad valorem* excise taxes, and *ad quantum* excise taxes. The model is constructed by matching expenditure from the HBS data to its corresponding tax rates (VAT and excise taxes). A micro-simulation program then calculates the amount of VAT and excise taxes paid by each household by applying the tax rates to the corresponding expenditure amounts. Where excise duties are levied, the simulation order is: *ad quantum* excises, then *ad valorem* excises, and finally VAT. This is the approach taken by the countries covered, and means that each tax base includes the tax amounts of the previous tax(es).[6]

The model simulates two scenarios: one with the current tax rates (for the particular year modelled),[7] and one with "new" rates enabling estimation of the effect of a tax rate change on the consumption tax burden, both on individual households and in aggregate.

The model calculates tax burdens for individual households, the aggregate population, and also calculates average tax burdens across equivalised disposable income and (pre-tax) expenditure deciles, and can break results down across the following demographic characteristics: family type, gender, age, economic activity status, education level, population density. In most cases, these demographic factors are available for both the "household head" (defined as the higher earner) and partner.

To obtain aggregate revenue figures, the taxes paid by each household are adjusted according to population weights and then aggregated. However, the consumption tax revenue simulated from the weighted household samples does not correspond with the consumption tax revenue actually collected in the corresponding year (in general it is underestimated).

There are four main reasons for the inaccuracy of the micro-data: first, the underlying quality of the micro-data results in expenditure often being underestimated (and underestimated to different extents across expenditure types). Second, some inaccuracy arises from the imperfect application of VAT and excise rates to expenditure (this is discussed in more detail below). Third, fraud is not simulated, resulting in some overestimation of revenue. Finally, only consumption taxes paid by households are

simulated – meaning that VAT paid by the public sector, charities and businesses is not accounted for. As businesses can be expected to pass on the VAT to the final consumer this is generally not a problem. However, annual revenue figures may include some VAT paid by businesses that has not yet been passed on to the consumer (and not yet claimed back by the business) and this VAT will not be simulated by the model. Additionally, the modelling of exemptions as zero rates (see below) results in some tax that is "embedded" in exempt goods not being simulated in the model.

Assumptions and limitations

The micro-simulation modelling and resulting analysis are based on a number of assumptions and have several limitations. These are discussed below.

Tax incidence

The modelling makes the assumption that VAT and excise taxes are borne entirely by the final consumer. This is a standard assumption made in most similar studies (see, e.g. IFS, 2011; Leahy, Lyons and Tol, 2011; Decoster et al., 2010). However, it should be noted that VAT and excises may in some cases be less than fully (or even more than fully) passed on to consumers.[8]

Behavioural responses

The modelling assumes there are no behavioural responses to changes in tax rates when modelling "new" tax rates (as is done in Chapter 3). An implication of this is that, for a VAT rate increase (decrease), consumers spend more (less) money post-reform than pre-reform. By not incorporating behavioural responses, the modelling of large changes in VAT rates (where significant responses in consumption behavior are likely) may produce inaccurate results. The simulation results presented in chapter three should therefore be considered with some caution, and as indicative of patterns rather than precise values.[9]

Income data

Results based on HBS income data at low income levels may be misleading due to the presence of households with transitorily low income (Bozio et al., 2012; Decoster et al., 2010).[10] For example, many self-employed workers may have low income levels at certain stages of their businesses' development, but will continue to have unaltered (high) expenditure. Alternatively, some households may be drawing down savings to fund their consumption. In either case it is likely to be misleading to consider them "low-income" households for distributional analysis.

To mitigate this concern, we exclude households from the analysis where:

- the household reports negative or zero income; and/or
- the household has an expenditure-to-income ratio of four or greater.

Consumer durables and house purchases

Modelling consumer durables poses a problem as these are infrequent purchases and the HBS data only provides a snapshot of expenditure. For example, a car is likely to be owned for several years before being replaced, so it would be relatively arbitrary whether or not a car was purchased in the survey period (and therefore was included as expenditure). Ideally, we would want to apportion the cost of durables over their useful life in order to reduce any overstatement of expenditure for households that

have undertaken such purchases during the survey period (or any understatement for households that made such purchases outside the survey period). However, this would require accurate information on length of ownership and expenditure on durables (both purchased within and outside the survey period), and is therefore not a feasible option.

On the other hand, not modelling durables would underestimate consumption and tax revenue significantly. We therefore include consumer durables (with the exception of housing) in the modelling. Given that the basis of our analysis is the presentation of averages across decile groupings, we are effectively making the assumption that, within each decile group, the number of households that purchase durables in that period, and the number that do not, will "average out" – thereby reflecting approximately the same expenditure for that decile as would be modelled if we were able to apportion the expenditure across the useful life of the durable.

Housing is excluded from the modelling for two main reasons: first, housing expenditure is not available for all countries; and second, where it is available, it constitutes such an infrequent and extremely large expenditure that it is less likely than smaller durable purchases to "average out" within decile groups. A possible alternative to including the entire housing expenditure amount in the modelling would be to use imputed rental data to estimate the annual consumption value relating to the housing purchase (and the related return on investment). However, this data is not available for all countries and hence, in order to maintain a consistent methodology across all countries in the study, we do not adopt such an approach. A consequence of excluding housing is that VAT revenue will be underestimated in those countries where housing is subject to VAT (though this would always be the case for countries where the data is unavailable). Additionally, by not taking account of the imputed income from home ownership, the effective level of income of home owners compared to renters will be underestimated.

VAT exemptions

In the modelling, VAT exemptions are simulated as zero rates. Because some revenue is collected through the VAT embedded in exempt goods and services (tax paid by sellers that is not refunded to them), this assumption may also result in some underestimation of actual VAT revenue. Input-output tables could be used to estimate this embedded tax. However, such a resource intensive exercise is beyond the scope of this project.

Excise taxes

Excise taxes pose a modelling difficulty as they are often based on quantity rather than value (i.e. *ad quantum* rather than *ad valorem*). For several countries (Austria, Belgium, Estonia, Greece, Hungary, Poland, Slovenia and Spain) the HBS data includes quantity variables for alcohol products which are used to model the relevant excise taxes. For other excise taxes, and for other countries where quantity data is not available, we use average prices (generally provided by National Statistics Offices) for each product to estimate quantities from the HBS expenditure data in order to simulate these taxes.[11] Assuming both average prices and expenditure information are accurate, aggregate tax figures will also be accurate. However, some inaccuracy may result at the individual level. Specifically, for households that consume products that are more (less) expensive than average we will simulate higher (lower) taxes than they actually pay because we will be assuming that they consume higher (lower) quantities than they actually do.

Two additional assumptions are necessary. As beer and spirits are often taxed at different rates depending on their strength, we assume that all beer has 5% alcohol content (and assume this equals 12.5 degrees plato), and is not brewed by a small brewery (which often face concessionary rates). For spirits, we assume these have 40% alcohol content, and are not distilled in a small distillery (which again can have concessionary rates applied). We assume all wine is still, not sparkling.[12]

Bars and restaurants

In general, the HBS data does not differentiate between food and alcohol consumed in "bars and cafés", restaurants, and canteens (the exceptions are New Zealand and the United Kingdom). In order to model excise taxes (and different VAT rates, if applicable) on alcohol consumed in such establishments we apportion total expenditure between food and alcohol. These apportionments are based on Belgian VAT figures differentiating standard-rated alcohol from reduced-rated food.[13] Other countries are therefore assumed to have similar ratios of food to alcohol consumption in bars and cafés, restaurants, and canteens as in Belgium. We also assume that alcohol consumed in restaurants is wine, while alcohol consumed in bars and cafés and in canteens is beer.

Transport fuels

For most countries, the HBS micro-data only has one variable for transport fuels. In order to simulate excise taxes on petrol and on diesel (which often differ significantly) we therefore need to apportion expenditure on transport fuels between petrol and diesel.[14] This task is further complicated by the fact that relative expenditure on petrol and diesel is likely to vary across the income distribution. We follow four different approaches due to the differing levels of information available across countries.

For four countries – Chile, Korea, New Zealand, and the United Kingdom – a separate variable is available for both petrol and diesel in the HBS data. As such, no apportionment is necessary.

For Austria, decile averages for petrol and diesel expenditure were provided by the Austrian Statistical Agency, calculated from the separate petrol and diesel variables in the non-standardised version of the Austrian HBS data. These averages are used to apportion the single transport fuels variable in the standardised HBS data.

For Germany and the Netherlands, apportionment is based on estimates of the average expenditure on petrol and diesel consumed by different income bands (Germany) or income deciles (the Netherlands). These estimates are based on National Transport survey data.[15]

For all remaining countries, apportionment is based on the overall stock of petrol and diesel cars in each country. However, these figures are adjusted to account for the variation in petrol-to-diesel consumption across income quintiles based on the average variation shown in the more detailed data available for Austria, Germany, and the Netherlands.[16]

2.3. Base of analysis: income vs. expenditure

A key issue encountered when working with expenditure micro-data to examine the distributional effects of consumption taxes is how to present results. As IFS (2011) point out, there are two decisions that need to be made in determining the most appropriate

way to present distributional results: how should rich and poor be distinguished? And how should the magnitude of tax burdens be measured? The HBS data gives us the same two options for each question – income or expenditure, leaving four possibilities:

- Measuring tax as a percentage of income, presented across income deciles.
- Measuring tax as a percentage of income, presented across expenditure deciles.
- Measuring tax as a percentage of expenditure, presented across income deciles.
- Measuring tax as a percentage of expenditure, presented across expenditure deciles.

The decision on which approach to take is particularly important as the conclusions drawn can be strongly driven by the choice made.[17] For example, the often-made conclusion that the VAT is a regressive tax follows from the analysis of VAT burdens measured as a percentage of current income across the income distribution. Numerous European country studies (see Box 2.1) adopt this analytical approach, and as a result conclude the VAT is a highly regressive tax. In contrast, studies that present VAT burdens as a proportion of current expenditure across either the income or expenditure distribution (again, see Box 2.1) find that VAT systems are relatively proportional, or even slightly progressive.

Box 2.1. **Previous micro-data based studies of the distributional effects of consumption taxes**

A number of studies have examined the distributional effects of consumption taxes. These have most often been undertaken on an individual country basis, using household expenditure survey micro-data. Warren (2008) provides a broad review of the different approaches to modelling the distributional effects of consumption taxes. In this box we briefly summarise a number of studies that use household expenditure micro-data. We first discuss papers that favour analysing consumption tax burdens relative to current income, and then papers favouring a lifetime income approach – generally using expenditure as a proxy for lifetime income.

The most substantial cross-country study following the income-base approach is O'Donoghue et al. (2004). They incorporate household expenditure information into the EUROMOD income tax micro-simulation models for 12 European countries in order to compare the redistributive effects of consumption taxes with income taxes and social security contributions. The countries covered were Belgium, Finland, France, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom, drawing on household expenditure survey data from 1990-96, depending on the country. They present tax burdens as a percentage of both disposable income and pre-tax expenditure across equivalised income deciles (as well as income-based Kakwani progressivity index results). However, they favour measuring consumption tax burdens as a percentage of income, and consequently conclude that both VAT and excise taxes are strongly regressive. In contrast, they find benefits, pensions, and direct taxes to produce significant progressivity.

Leahy, Lyons and Tol (2011) make the same conclusion based on 2005 household expenditure survey data for Ireland. They also find that removing the reduced VAT rates on food and children's clothing would be regressive. Ruiz and Trannoy (2008) use 2001 household expenditure data for France, concluding also that consumption taxes are highly regressive (measured as a percentage of income across equivalised income deciles). They also simulate several reforms, including a revenue neutral move to a single-rate VAT system.

Box 2.1. **Previous micro-data based studies of the distributional effects of consumption taxes** *(continued)*

Their simulation results highlight that in each income decile there are both winners and losers from such a reform. They conclude that the income tax, rather than consumption taxes, should be used for addressing redistributive objectives. Barreix, Bes and Roca (2009) present the results of several studies undertaken in Latin American countries between 2000 and 2004 which find similar regressive results following an income-base approach.

Decoster et al. (2010) present results both as a proportion of income and expenditure, noting the case for each approach but not stating a definitive preference for either. Using 2003-05 household expenditure survey data for Belgium, Greece, Hungary, Ireland and the United Kingdom, they find consumption taxes to be regressive in all five countries when measured as a proportion of disposable income across income deciles, and proportional or progressive as a proportion of expenditure.

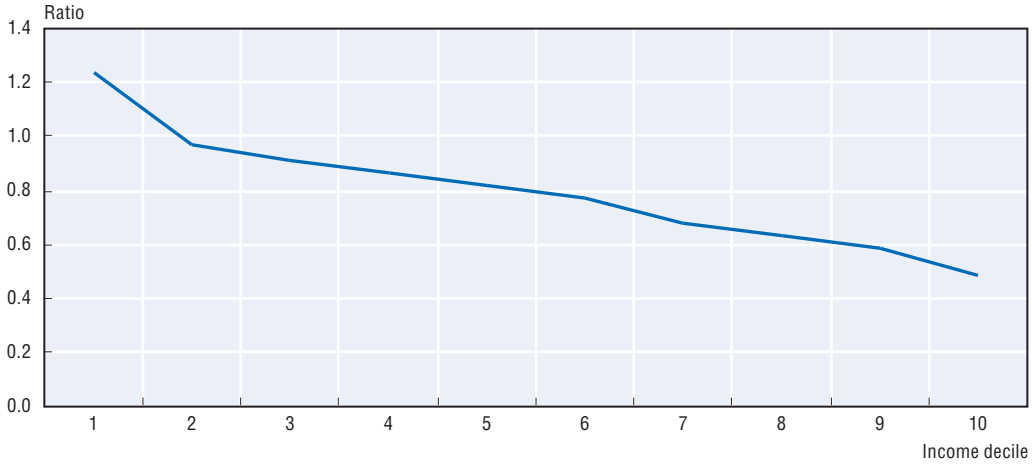
The only substantial cross-country study definitively favouring the expenditure-base approach is IFS (2011). They drew together nine different country-specific studies with broadly similar micro-simulation methodologies. The countries covered were Belgium, France, Germany, Greece, Hungary, Italy, Poland, Spain and the United Kingdom. The household expenditure survey data used ranged from 2004 to 2009, depending on the country. Like O'Donoghue et al., IFS present tax burdens as a percentage of both disposable income and pre-tax expenditure (but across both equivalised income and expenditure deciles). However, they argue that, due to the ability to borrow and save, measuring VAT as a percentage of income can create a misleading impression of the distributional effect of the VAT. As such, they conclude that expenditure-based results provide a better picture of the distributional effect of the VAT. Unsurprisingly, they find the VAT to be regressive in all nine countries when measured as a percentage of disposable income across income deciles. However, they found the VAT to be either roughly proportional or progressive in eight of the nine countries (Spain being the exception) when measured as a percentage of expenditure across equivalised income deciles. This progressivity was found to be driven by the presence of reduced VAT rates.

Metcalf (1994), with US household expenditure data for 1990, presents simulated VAT burdens measured as a percentage of both current income and expenditure. He concludes the VAT would be roughly proportional on a lifetime basis with expenditure used as a proxy for lifetime income. As with other studies, he finds the VAT would be regressive as a percentage of current income. Caspersen and Metcalf (1994) go further and attempt to estimate lifetime income using US panel income data that they then match with 1988 household expenditure data to simulate household VAT burdens as a percentage of lifetime income. They conclude a VAT in the United States would be slightly regressive based on their measure of lifetime income, and proportional using current expenditure as a proxy for lifetime income.

As has been highlighted by various authors (e.g. IFS, 2011; Creedy, 1998; Caspersen and Metcalf, 1994), the driver of the difference in results between these approaches is savings behaviour. Consider, for example, the broad-based single-rate New Zealand VAT: in the absence of savings, we could expect high-income and low-income households to pay relatively similar proportions of their income in tax. But the picture changes when households borrow and save. As is shown in Figure 2.1, savings rates tend to increase with income (with low-income households being net borrowers and high-income households

net savers, on average).[18] This means that higher income households will tend to have proportionately less of their income subject to VAT (in the current period) than lower income households, resulting in high-income households paying less VAT as a percentage of current income than low-income households. This savings pattern is an OECD-wide trend[19] – hence the regressive results of income based studies presented in Box 2.1.

Figure 2.1. **Expenditure-to-income: New Zealand (2012-13)**



Source: 2012-13 New Zealand Household Economic Survey.

Analysing the immediate distributional effect of consumption taxes

Which measure is preferable depends on the question being asked. If the analyst is interested in the immediate distributional effect of a VAT, then measuring VAT burdens as a proportion of current income across income deciles may be preferable. Furthermore, calculating the VAT burden as a percentage of income also enables the calculation of the total tax burden faced by households as a result of the entire (income plus consumption) tax system (see, for example, O'Donoghue et al., 2004). This is an important benefit because it is the distributional effect of the tax (and benefit) system as a whole that policy makers should be most concerned with when considering the merits of potential reforms as opposed to the impact of any one component.

Under this approach, however, it is important to also consider who the households are that fall within each decile. For example, some self-employed households and retired households in the bottom income decile may be funding additional expenditure by drawing down savings, while self-employed and students may be borrowing against future expected income. As such, these households may not necessarily warrant as much concern from a distributional perspective as other households in the bottom income decile that both earn and spend little. Despite this, their increased expenditure will make their VAT burden appear particularly high relative to their income, and increase the average tax burden faced by the entire decile. While such households are still of clear interest to policy makers, from a methodological perspective the exclusion of data for these households may improve the reliability of income-base results.

While, as we discuss below, there is a case for using expenditure deciles rather than income deciles to distinguish the lifetime poor from the lifetime rich, there would appear to be little merit in using expenditure deciles to distinguish the immediate poor

from the immediate rich. However, to preview the results of section 4, it is interesting to note that doing so vastly changes the conclusions of the analysis – suggesting the VAT is progressive. As with the regressive result across income deciles, this progressive result is also driven by savings behaviour: because low-expenditure households tend to be net savers in almost all countries, VAT burdens measured as a percentage of income appear relatively low. Meanwhile, because high expenditure households tend to be net borrowers, VAT burdens as a percentage of income appear relatively high.

These varying results across income and expenditure deciles when VAT is measured as a percentage of income highlight the impact that borrowing and savings behaviour can have on the results and suggest that a lifetime analysis – that takes into account the effects of borrowing and saving – may be preferable.

Analysing the lifetime distributional effect of consumption taxes

If the analyst is instead interested in the lifetime distributional effect of a VAT, then current expenditure is likely to be a better base than income. There are two reasons for this. First, expenditure can be expected to vary to a lesser extent over the lifetime than income, and hence is likely to be a better (though still imperfect) proxy for lifetime earnings.[20] That is, while income may vary significantly over a household's lifetime, the household can be expected to engage in some degree of consumption smoothing to account for its varying consumption needs at different times. For example, younger households (e.g. students) may save less or borrow in the expectation of higher future income, while middle-age households may save to fund consumption in retirement.

Second, irrespective of whether expenditure or income is a better proxy for lifetime income, adopting an expenditure base will provide a more reliable picture of the lifetime distributional effect of a consumption tax because it will remove the influence of borrowing and saving from the analysis. The key point to note here is that the ability to borrow and save means that there is not necessarily any direct link between the income earned and the VAT paid in a particular year, and this can lead to misleading results if an income base is adopted. For example, low current income households that borrow to finance higher current consumption will appear to face a particularly high VAT burden relative to their current income. However, this is simply because VAT is being paid both on their earned income and their borrowed income. The analysis ignores the fact that in the future the household will have to pay back the borrowed money, and hence will consume less and face a lower VAT burden. Conversely, households with high current income that are saving will appear to face a particularly low VAT burden relative to their current income.

More specifically, an analysis based on current income ignores the fact that the income that is saved by households in the current period will still be spent, and thereby incur VAT in the future,[21] or is being used to pay back debt-funded previous expenditure that has already incurred VAT. Likewise, part of the current year's VAT burden may relate to income that was earned in a previous year, but saved and only consumed now, or relate to future earnings that have been borrowed against.[22]

We consider the merits of using income and expenditure to both distinguish poor and rich, and to measure the magnitude of tax burdens, in a lifetime context in more detail below.

Income vs. expenditure distribution

With regard to ranking households from lifetime poor to lifetime rich, there is an arguable case for measuring tax burdens across both the income and expenditure distributions. For households that are not saving or borrowing, either measure is likely to be as good a proxy for lifetime income, and hence as good a means of ranking households. However, for households that borrow or save, income will be a better estimate of lifetime income for some households and expenditure a better estimate for other households. To see this, consider four stylised households engaging in borrowing/savings:

- *Lifetime rich, low current income, high current expenditure:* while many low- (current) income households will be lifetime poor households, some (e.g. students, self-employed, retirees drawing down savings) will actually have much higher lifetime incomes. These households may be spending more than they currently earn and paying higher VAT as a result. Such households are not likely to pose as large a distributional concern to governments as the lifetime poor, yet ranking by current income will do so. Current expenditure will therefore in this case be a better ranking method.[23]
- *Lifetime rich, high current income, low current expenditure:* for households with middle and higher lifetime income levels that are currently saving a significant portion of their income (e.g. for retirement, or for their children's education), ranking them by their expenditure may imply they are less well off than they in fact are. Current income in this case will be a better ranking method.
- *Lifetime poor, low current income, high current expenditure:* some lower income households may be living beyond their long-term means. However, such high expenditure will not be sustainable, and they will eventually have to reduce their expenditure to pay back the debt they are currently incurring. Ranking them by their expenditure may consequently overestimate their lifetime living standard. Current income will in this case be a better ranking method.
- *Lifetime poor, high current income, low current expenditure:* some households may temporarily be earning above their lifetime income level and be saving in expectation of a future fall in income (e.g. with the expectation of one partner leaving the workforce to care for children). Ranking by current income may therefore overestimate their long term living standard. Expenditure will in this case be a better ranking method.

Given the ambiguity illustrated above as to the best means of ranking different households, we adopt the approach taken by IFS (2011) and present results across both income and expenditure distributions in the subsequent sections of this report.

Income vs. expenditure base

With regard to the appropriate base for determining the relative magnitude of the tax, the case for preferring expenditure is clearer. Indeed, even when current income is a better proxy for lifetime income, it is still better to use expenditure as the base of the tax calculation. Consider, again, the same four stylised borrowing/saving households as above:

- *Lifetime rich, low current income, high current expenditure:* measuring the tax burden on transitorily low-income households relative to current (low) income may overestimate the magnitude of the tax burden relative to their higher lifetime income. Instead higher current expenditure will be a better base for assessing the lifetime impact of the tax on this household.

- *Lifetime rich, high current income, low current expenditure:* in contrast, measuring the tax burden on middle and higher income savers relative to current income may underestimate the magnitude of the tax burden relative to their lifetime income – even though income remains a better estimate of their lifetime income. This is because the reduced level of current expenditure also reduces the amount of tax currently paid. Measuring the temporarily lower VAT burden relative to temporarily lower expenditure will better reflect the lifetime impact of the tax on the household.

  For example, consider a household with lifetime income of EUR 100 000 that is currently saving for retirement and only spending EUR 50 000. With a VAT rate of 10%, they pay VAT of EUR 5 000 this year. VAT measured as a percentage of current income is 5%, while VAT as a percentage of expenditure is 10%. It is the 10% figure that better reflects the long-run magnitude of the VAT burden on this household. That is, over their lifetime they will earn, on average, EUR 100 000 per year, and will pay 10% – not 5% – of this in VAT.

- *Lifetime poor, low current income, high current expenditure:* measuring the tax burden relative to current (low) income may overestimate the magnitude of the tax burden relative to their (low) lifetime income – even though, as above, current income remains a better proxy for lifetime income. This is because they will eventually have to reduce their expenditure to pay back the debt they are currently incurring, thereby reducing their long term VAT burden also. Measuring the temporarily higher VAT burden against temporarily higher expenditure will better reflect the lifetime impact of the tax on this household.

- *Lifetime poor, high current income, low current expenditure:* again, measuring the tax burden on transitorily high-income households relative to current (high) income may underestimate the magnitude of the tax burden relative to their lower lifetime income. Instead, lower current expenditure will be a better base for assessing the lifetime impact of the tax on this household.

In examining the distributional effects of consumption taxes in a lifetime context, therefore, we conclude that it is preferable to focus on results presented as a proportion of expenditure.

To foreshadow the results of the next section, analysing VAT as a proportion of expenditure unsurprisingly shows countries VAT systems to be roughly proportional or even slightly progressive, in a lifetime context, depending on the country. However, this does not necessarily mean they are fair. Assuming diminishing marginal utility of consumption, a proportional tax will still have a greater negative impact on the welfare of the poor than of the rich. At the extreme, it may reduce the consumption of necessities by the poor, but just the consumption of luxuries by the rich. A proportional tax may also have a greater welfare cost on credit constrained households than on those with full access to finance. However, these are not reasons to consider a consumption tax regressive. Rather, they are reasons to consider increasing the progressivity of the tax/benefit system as a whole (whether that progressivity is introduced through consumption taxes, income taxes, or the benefit system). The ability of a VAT to provide such progressivity is the focus of Chapter 3.

2.4. Distributional effects across income and expenditure deciles

This section presents basic distributional results from the micro-simulation models for the 20 countries covered. The overall distributional picture is first presented, with average household[24] VAT, and excise tax burdens reported separately across equivalised income and equivalised expenditure deciles.[25] Further depth to the distributional analysis is provided in the following section by examining how these results vary with different demographic characteristics.

VAT

Tables 2.1-2.2 present the average VAT payments faced by households as a percentage of disposable income and as a percentage of pre-tax expenditure, respectively, across equivalised income deciles. Tables 2.3-2.4 present the same calculations across equivalised expenditure deciles. The overall trends are summarised in Figure 2.2 which presents the simple averages across all countries of the results presented in Tables 2.1-2.4.

Figure 2.2. **Household average VAT burdens: all-country simple average**

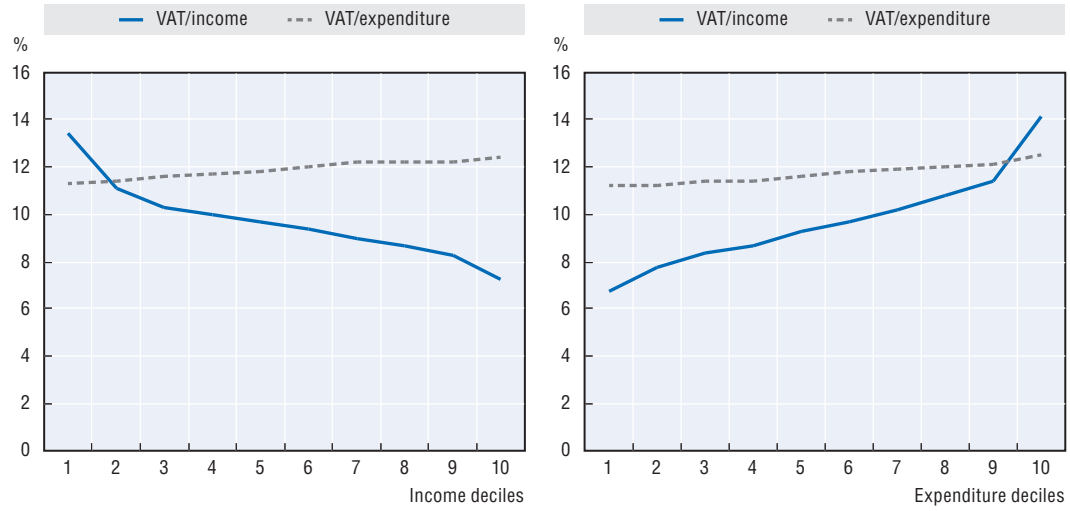


Table 2.1 (and the left hand panel of Figure 2.2) shows VAT payments as a percentage of disposable income decreasing as income increases in all countries. For example, tax burdens faced by the top income decile are roughly half that faced by the bottom income decile in Austria, Chile, Estonia, Greece, Hungary, Ireland, New Zealand[26] and Spain. Smaller differences are observed in the Czech Republic, Germany and the United Kingdom, but VAT clearly still has a regressive effect in all 20 countries. This trend is confirmed by the strongly downward sloping 20-country average shown in the left hand panel of Figure 2.2.

As the averages in Figure 2.2 highlight, the results presented in Tables 2.2-2.4 strongly contrast with the regressive trend in Table 2.1. Table 2.2 shows VAT payments as a proportion of pre-tax expenditure to be either roughly proportional, or slightly progressive in almost every country – though not increasing continuously from decile to decile (i.e. not monotonically increasing) in any country. Estonia and Hungary are the only countries to show any degree of regressivity – and only in the form of a very slight fall in tax burden from the lowest decile to the middle of the income distribution. In Germany the average VAT burden shows a slight peak in the upper middle of the income distribution, though

the average VAT burden is still higher for the top income decile than the bottom. The regressive and proportional/progressive results from Tables 2.1 and 2.2 are consistent with the patterns found by IFS (2011)[27] for nine countries, Decoster et al. (2010) for five countries, and O'Donoghue et al. (2004) for 12 countries.

Turning to the expenditure decile results, Table 2.3 shows a highly progressive trend – with VAT burdens measured as a percentage of income increasing in every country as expenditure increases. This strong progressive trend is confirmed in the right hand panel of Figure 2.2. As with the highly regressive pattern in Table 2.1, this highly progressive result is driven by the misleading effect of borrowing and saving: at low expenditure levels, households tend to be net savers, so VAT burdens as a percentage of income appear relatively low. Meanwhile, because high expenditure households tend to be net borrowers, VAT as a percentage of income appears relatively high. Consequently, there is unlikely to be significant merit in basing conclusions on the results in Table 2.3. In contrast, when measured as a percentage of expenditure – which excludes the influence of borrowing and saving – the VAT appears far less progressive, though still progressive.

The all-country average in Figure 2.2, however, hides significant variation across countries. While the majority of countries presented in Table 2.4 show a slightly progressive pattern across the expenditure distribution, several countries do not. In Chile, the Slovak Republic and Turkey, the result is roughly proportional, while in Estonia, Hungary and New Zealand VAT burdens (as a proportion of expenditure) fall slightly as expenditure increases.

This result provides two interesting insights: First, low spending households in these countries do not benefit significantly from reduced VAT rates. On close consideration, this result is not surprising: Chile, Estonia, New Zealand and the Slovak Republic each have very few, if any, reduced rates in comparison to the majority of countries covered in this study. Hungary also has relatively few reduced rates, and importantly the vast majority of food products (which make up a substantial proportion of total household expenditure) are subject to the standard rate. Second, higher spending households in these – and presumably other – countries spend a greater proportion of their total expenditure on items that are either untaxed or exempt from tax (for example, financial services, international air travel).

Overall, the immediate impact of the VAT, as illustrated by the income-base results in Table 2.1, is regressive in almost every country. Focusing instead on the expenditure-base results in Tables 2.2 and 2.4, we can conclude that, in a lifetime context, the VAT in most of the countries covered is either roughly proportional or slightly progressive. This confirms other recent analysis for several countries by IFS (2011), and challenges the general public perception that consumption taxes are regressive. That said, the results for Estonia, New Zealand and the Slovak Republic (countries not covered in the IFS study) highlight that broad-based VAT systems that have few reduced VAT rates or exemptions can still produce a small degree of regressivity, even in a lifetime context when expenditure is used as a proxy for lifetime income.

Nevertheless, an important conclusion from the (albeit only slightly) progressive trends shown in Tables 2.2 and 2.4, is that reduced VAT rates do tend to have a progressive impact: as income and expenditure increase, households tend to spend a greater proportion of their total expenditure on goods and services taxed at the standard rate rather than reduced rates of VAT. Whether these reduced rates are achieving this progressive effect efficiently is another question – one we will turn to in Chapter 3.

Excise taxes

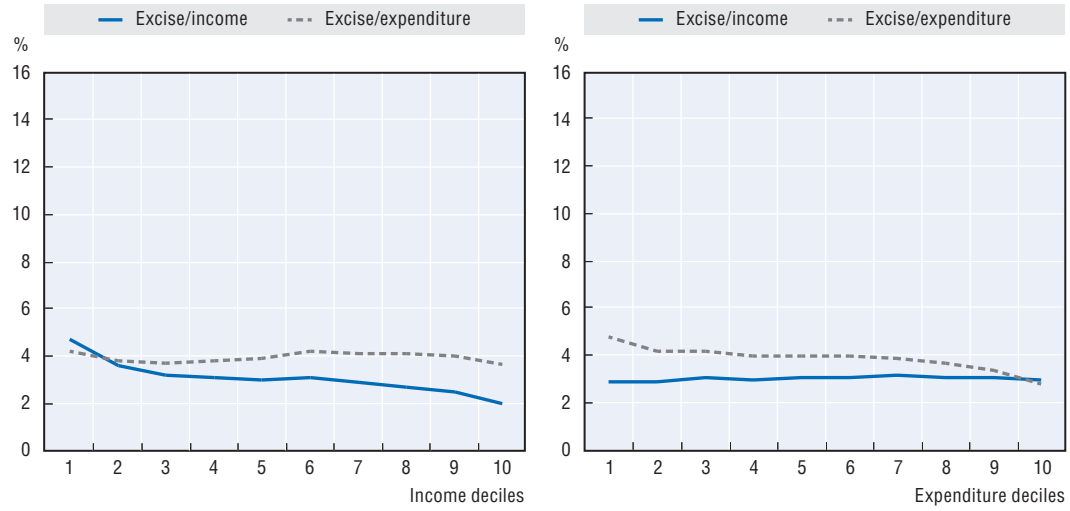
This section covers the three main types of excise taxes present in OECD countries – those on alcohol, tobacco, and transport fuels.[28] Results are aggregated together to calculate the total excise tax burdens faced by households. Tables 2.5-2.8 present the same results for total excise tax burdens as were presented for VAT burdens. The overall trends are also summarised in Figure 2.3 which presents the simple averages across all countries of the results presented in Tables 2.5-2.8.

Table 2.5 shows a similar regressive pattern to that in Table 2.1. Average excise tax burdens are almost always regressive, at least in the sense that the excise tax burden on the highest decile is less than that on the lowest decile, though excise burdens do not generally fall continuously from decile to decile across the income distribution. The one exception is the Czech Republic, where the excise burden faced by the top decile is slightly higher than that faced by the bottom decile (although it peaks in the middle of the income distribution).

This general regressive result implies that as a household earns more they spend a smaller proportion of their income on alcohol, tobacco and transport fuels. Irrespective of any distorting effect due to savings behaviour, this result is perhaps unsurprising given the addictive nature of alcohol and tobacco (suggesting a similar quantity will be consumed irrespective of income).

The left hand panel in Figure 2.3 highlights this general regressive trend of excise taxes measured as a percentage of income (across income deciles). The left hand panel in Figure 2.3 also suggests that excise taxes are roughly proportional when measured as a percentage of expenditure. However, a closer look at Table 2.6 shows that this is not generally the case. In fact, the results in Table 2.6 vary considerably. The majority of countries still in fact exhibit a regressive pattern (though generally less so than in Table 2.5), while others are roughly proportional. Meanwhile four countries show a progressive pattern: Chile, the Czech Republic, Korea and the Slovak Republic.

Figure 2.3. **Household average excise tax burdens: all-country simple average**



Across expenditure deciles, results again vary. When measured as a percentage of income (Table 2.7), only three countries (Belgium, Ireland and Turkey) clearly present regressive patterns, with others either presenting roughly proportional or progressive patterns. When measured as a percentage of expenditure (Table 2.8), the vast majority of countries once again present a regressive pattern. The latter result suggests that as a household spends more in total, it spends a smaller proportion of its additional expenditure on alcohol, tobacco and transport fuels. In contrast, as higher spending households tend to be net borrowers, their increased expenditure on alcohol, tobacco and transport fuels may still be a similar proportion of their income.

In all countries, results measured as a percentage of income across income deciles are more regressive (or less progressive) than when measured as a percentage of expenditure. Equally, results measured as a percentage of income across expenditure deciles are less regressive (or more progressive) than when measured as a percentage of expenditure. This implies that some of the influence of savings behaviour that was seen on VAT burdens is also reflected in excise tax burdens, though to a lesser extent given the less direct relationship between total expenditure and excise tax burdens, as compared to VAT burdens.

With regard to individual countries, the results for Chile and the Czech Republic contrast to the greatest extent from other countries. While excise taxes in Chile are regressive when measured as a proportion of income (in Table 2.5), they appear progressive when measured as a proportion of expenditure – both across income and expenditure deciles. In the Czech Republic excise taxes always appear either progressive or proportional. Regarding individual excise taxes, transport fuel excises often have a progressive impact,[29] particularly when measured as a percentage of expenditure, while alcohol and tobacco taxes tend to have a regressive impact, though this is not always the case (for example, Chapter 4 shows that tobacco taxes in Korea can exhibit progressivity).

Overall, while results vary significantly, the immediate impact of excise taxes can be seen to be almost always regressive, as illustrated by the income-base results in Table 2.5. Focusing instead on the expenditure base results we can conclude that excise taxes tend to be either regressive of roughly proportional in a lifetime context, though results are clearly more country specific than the VAT results. In particular, the results for Chile, the Czech Republic, Korea and the Slovak Republic show that excise taxes can in some cases have a progressive effect in a lifetime context.

Table 2.1. **Average VAT as a percentage of disposable income across income deciles**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	NLD	NZL	POL	SLV	SVK	TUR
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2004)	(2013)	(2010)	(2010)	(2010)	(2010)
Poorest	15.3%	11.5%	19.3%	10.9%	9.6%	13.6%	20.6%	8.8%	14.3%	20.5%	12.2%	-	7.2%	8.2%	14.2%	11.4%	14.0%	16.3%	14.8%	11.9%
2	11.5%	11.3%	15.2%	10.8%	9.0%	11.5%	14.7%	7.5%	11.7%	17.0%	10.0%	-	5.1%	7.2%	9.8%	9.7%	11.9%	12.3%	13.7%	10.3%
3	11.3%	11.0%	13.1%	10.6%	9.1%	10.0%	12.1%	7.1%	9.5%	15.7%	10.1%	-	4.5%	7.0%	9.0%	9.2%	11.3%	12.4%	12.6%	10.1%
4	10.5%	11.0%	11.8%	10.4%	9.4%	9.8%	13.0%	7.1%	10.0%	14.9%	9.2%	-	4.2%	6.9%	10.0%	8.3%	10.9%	11.0%	12.5%	9.0%
5	10.7%	10.4%	11.3%	10.4%	9.0%	10.0%	12.1%	6.4%	9.6%	14.1%	9.0%	-	4.1%	6.8%	8.8%	8.0%	10.8%	11.1%	12.4%	8.9%
6	9.9%	10.7%	11.2%	10.2%	8.9%	9.1%	11.3%	6.2%	8.7%	13.6%	8.2%	-	4.0%	6.2%	9.3%	7.8%	10.4%	10.8%	12.1%	8.9%
7	9.7%	10.2%	9.8%	9.6%	8.6%	9.1%	11.5%	6.4%	8.5%	13.5%	7.4%	-	3.6%	6.3%	8.6%	6.7%	10.0%	10.7%	11.7%	8.2%
8	9.2%	9.9%	9.2%	9.4%	8.5%	8.5%	10.8%	5.8%	8.8%	12.6%	6.5%	-	3.3%	6.6%	9.1%	6.1%	10.0%	10.6%	11.2%	8.1%
9	8.7%	9.3%	8.9%	9.0%	7.9%	8.1%	10.4%	5.8%	8.7%	12.3%	5.5%	-	3.1%	5.7%	9.0%	5.6%	9.7%	10.0%	10.9%	7.7%
Richest	8.0%	6.8%	7.3%	8.4%	6.9%	7.3%	10.0%	5.2%	7.7%	10.7%	4.4%	-	2.8%	4.5%	7.8%	4.7%	8.6%	9.8%	9.8%	7.0%

Table 2.2. **Average VAT as a percentage of pre-tax expenditure across income deciles**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	NLD	NZL	POL	SLV	SVK	TUR
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2004)	(2013)	(2010)	(2010)	(2010)	(2010)
Poorest	12.2%	9.2%	10.7%	13.9%	8.3%	9.7%	20.8%	8.7%	11.5%	23.0%	8.2%	-	5.4%	5.7%	9.0%	10.4%	13.7%	9.8%	14.7%	9.7%
2	11.9%	9.7%	11.1%	14.1%	8.8%	9.8%	19.8%	8.8%	11.6%	22.4%	7.7%	-	5.8%	6.0%	8.8%	11.6%	13.9%	9.7%	15.0%	10.2%
3	12.3%	10.0%	10.8%	14.6%	9.4%	10.0%	19.3%	9.0%	11.5%	22.1%	8.6%	-	6.0%	6.2%	8.7%	11.7%	14.1%	10.2%	14.8%	10.4%
4	12.2%	10.1%	11.2%	14.5%	9.8%	10.1%	19.4%	9.5%	11.6%	21.9%	8.9%	-	6.2%	6.2%	9.0%	11.0%	14.3%	10.3%	15.1%	10.2%
5	12.7%	10.3%	11.2%	15.0%	10.0%	10.3%	19.0%	9.5%	12.1%	21.8%	9.2%	-	6.3%	6.4%	9.0%	11.2%	14.5%	10.5%	15.5%	10.3%
6	12.4%	10.6%	11.4%	15.3%	10.2%	10.4%	19.1%	10.0%	12.3%	21.9%	9.6%	-	6.5%	6.4%	9.4%	11.5%	14.7%	10.8%	15.5%	10.4%
7	12.8%	10.8%	11.3%	15.3%	10.4%	10.3%	19.3%	10.5%	12.8%	22.2%	9.7%	-	6.4%	6.4%	9.5%	11.4%	14.9%	10.9%	15.8%	10.4%
8	12.7%	11.1%	11.1%	15.4%	10.4%	10.6%	18.9%	10.5%	12.7%	22.3%	9.8%	-	6.5%	6.8%	9.9%	11.0%	15.2%	11.1%	15.8%	10.5%
9	12.8%	11.4%	10.9%	15.4%	10.3%	10.4%	18.7%	10.7%	12.9%	22.3%	9.8%	-	6.7%	6.5%	10.0%	10.9%	15.3%	11.3%	15.9%	10.4%
Richest	12.7%	11.4%	10.8%	15.8%	10.1%	10.8%	18.8%	10.9%	13.0%	22.1%	10.1%	-	6.5%	6.5%	10.2%	11.3%	15.8%	11.9%	15.9%	10.9%

Table 2.3. **Average VAT as a percentage of disposable income across expenditure deciles**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	NLD	NZL	POL	SLV	SVK	TUR
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2004)	(2013)	(2010)	(2010)	(2010)	(2010)
Poorest	5.2%	6.7%	8.6%	7.9%	6.6%	5.5%	5.7%	3.5%	5.6%	11.4%	6.0%	-	3.9%	3.8%	6.7%	6.4%	7.8%	8.1%	10.3%	7.5%
2	6.7%	7.3%	9.4%	8.7%	7.2%	7.3%	9.1%	4.6%	7.4%	12.3%	6.8%	-	3.7%	4.5%	8.1%	7.7%	8.6%	9.1%	10.6%	8.3%
3	7.4%	8.1%	11.3%	9.2%	7.5%	8.3%	10.9%	5.2%	8.4%	12.8%	8.0%	-	4.0%	5.1%	7.9%	7.3%	9.1%	9.4%	11.1%	8.4%
4	8.1%	8.4%	11.9%	9.6%	7.9%	8.5%	10.7%	5.2%	8.4%	13.3%	8.1%	-	3.9%	5.3%	8.5%	8.2%	9.6%	9.8%	11.1%	8.7%
5	8.8%	9.0%	12.7%	9.9%	8.2%	9.2%	12.1%	6.3%	9.2%	14.2%	8.7%	-	4.1%	5.6%	8.7%	8.1%	10.0%	10.7%	11.5%	8.8%
6	10.3%	9.6%	13.2%	10.0%	8.6%	9.7%	12.6%	6.5%	10.5%	14.0%	8.3%	-	4.1%	6.6%	9.4%	7.9%	10.5%	10.7%	11.8%	9.0%
7	11.4%	9.7%	13.4%	10.3%	8.9%	10.3%	14.1%	7.3%	11.2%	15.3%	8.6%	-	4.1%	7.0%	9.6%	7.8%	10.9%	11.3%	12.4%	9.2%
8	12.9%	11.4%	13.2%	10.4%	9.3%	11.0%	15.8%	7.4%	11.2%	16.1%	8.5%	-	4.3%	7.9%	10.2%	7.8%	11.9%	13.3%	12.7%	9.5%
9	14.6%	12.5%	11.8%	11.0%	9.7%	12.1%	16.4%	8.6%	12.0%	16.9%	8.7%	-	4.5%	9.2%	11.9%	7.7%	12.8%	14.3%	13.1%	9.6%
Richest	19.5%	19.6%	11.7%	12.7%	13.0%	15.0%	19.5%	11.7%	13.9%	18.6%	11.0%	-	5.2%	10.5%	14.6%	8.8%	16.4%	18.3%	16.9%	11.2%

Table 2.4. **Average VAT as a percentage of pre-tax expenditure across expenditure deciles**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	NLD	NZL	POL	SLV	SVK	TUR
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2004)	(2013)	(2010)	(2010)	(2010)	(2010)
Poorest	11.1%	8.6%	10.4%	14.5%	8.3%	9.9%	21.4%	8.4%	11.6%	23.6%	8.4%	7.0%	5.7%	5.2%	8.3%	13.0%	13.7%	10.0%	15.4%	10.0%
2	11.3%	9.0%	10.8%	14.8%	8.8%	9.9%	19.8%	8.7%	12.0%	22.7%	7.9%	7.5%	6.3%	5.8%	8.3%	11.3%	14.0%	9.7%	15.7%	10.3%
3	11.5%	9.4%	11.1%	14.7%	9.3%	10.1%	19.7%	9.4%	12.0%	22.3%	8.2%	7.8%	6.5%	6.0%	8.4%	11.1%	14.2%	9.9%	15.6%	10.4%
4	11.8%	9.9%	11.2%	14.5%	9.6%	10.0%	19.4%	9.4%	11.8%	22.1%	8.7%	8.1%	6.5%	6.0%	8.8%	10.6%	14.3%	9.8%	15.3%	10.5%
5	12.1%	10.0%	11.4%	14.9%	9.8%	10.1%	19.0%	9.8%	11.6%	22.0%	9.1%	8.4%	6.5%	6.1%	9.0%	11.2%	14.5%	10.2%	15.4%	10.5%
6	12.6%	10.5%	11.5%	15.1%	9.9%	10.2%	18.9%	10.3%	12.4%	21.9%	9.3%	8.7%	6.5%	6.3%	9.5%	11.4%	14.7%	10.4%	15.3%	10.5%
7	12.9%	10.7%	11.5%	15.1%	10.1%	10.3%	18.9%	10.3%	12.2%	21.8%	9.7%	9.0%	6.3%	6.5%	9.8%	11.3%	14.9%	10.7%	15.3%	10.5%
8	13.2%	11.2%	11.0%	15.0%	10.2%	10.4%	19.0%	10.4%	12.6%	22.0%	9.8%	9.3%	6.3%	6.8%	9.9%	10.8%	15.1%	11.3%	15.3%	10.4%
9	13.7%	11.7%	10.9%	15.1%	10.4%	10.5%	18.7%	10.7%	12.6%	21.8%	10.1%	9.8%	6.2%	7.1%	10.5%	10.7%	15.3%	11.6%	14.9%	10.2%
Richest	14.5%	13.5%	10.7%	15.7%	11.2%	10.9%	18.5%	10.7%	13.1%	21.7%	10.6%	11.2%	5.4%	7.1%	11.2%	10.6%	15.9%	12.7%	15.7%	10.2%

Table 2.5. **Average excise tax as a percentage of disposable income across income deciles**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	NLD	NZL	POL	SLV	SVK	TUR
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2004)	(2013)	(2010)	(2010)	(2010)	(2010)
Poorest	4.4%	2.8%	2.0%	1.8%	2.5%	7.3%	8.2%	4.9%	6.4%	4.4%	7.0%	-	3.7%	2.3%	4.8%	2.6%	4.2%	5.2%	3.1%	11.8%
2	2.8%	2.8%	1.7%	1.7%	2.3%	4.9%	4.4%	3.5%	4.7%	3.1%	5.0%	-	3.2%	2.1%	3.8%	1.9%	2.8%	3.1%	2.8%	11.2%
3	2.9%	2.5%	1.4%	2.0%	2.4%	3.9%	2.2%	2.9%	3.8%	2.7%	5.4%	-	3.1%	1.8%	2.4%	1.7%	2.7%	3.5%	2.6%	10.1%
4	2.6%	2.7%	1.4%	2.2%	2.4%	3.8%	2.7%	2.8%	3.5%	2.5%	4.8%	-	3.1%	1.7%	3.4%	2.0%	2.6%	2.6%	2.7%	8.7%
5	2.5%	2.5%	1.5%	2.4%	2.4%	4.3%	2.2%	2.4%	3.7%	2.5%	4.1%	-	3.0%	1.6%	3.1%	1.5%	2.7%	3.3%	2.9%	8.7%
6	2.4%	2.4%	1.8%	2.7%	2.3%	3.8%	3.1%	2.5%	3.5%	2.7%	3.8%	-	3.1%	1.4%	3.5%	1.5%	2.7%	3.1%	3.0%	8.6%
7	2.2%	2.4%	1.5%	2.6%	2.2%	3.3%	3.1%	2.4%	3.2%	2.8%	3.4%	-	2.6%	1.3%	3.4%	1.4%	2.7%	3.1%	3.2%	7.6%
8	2.1%	2.0%	1.6%	2.3%	2.1%	3.3%	2.5%	2.2%	3.2%	2.7%	2.9%	-	2.5%	1.4%	3.0%	1.2%	2.7%	2.7%	3.2%	7.1%
9	1.8%	1.8%	1.5%	2.3%	1.8%	2.5%	3.1%	1.9%	3.1%	2.7%	2.2%	-	2.3%	1.2%	3.1%	1.1%	2.6%	2.4%	3.2%	6.2%
Richest	1.4%	2.3%	1.2%	2.0%	1.3%	2.0%	2.6%	1.5%	2.3%	2.3%	1.5%	-	1.8%	0.8%	2.1%	0.7%	2.2%	2.3%	2.8%	5.0%

Table 2.6. **Average excise tax as a percentage of pre-tax expenditure across income deciles**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	NLD	NZL	POL	SLV	SVK	TUR
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2004)	(2013)	(2010)	(2010)	(2010)	(2010)
Poorest	4.1%	2.4%	1.1%	2.2%	2.3%	5.4%	8.7%	5.4%	5.4%	5.3%	5.3%	-	2.6%	1.7%	3.2%	2.7%	4.7%	3.1%	3.2%	10.6%
2	3.2%	2.7%	1.3%	2.3%	2.4%	4.3%	6.1%	4.5%	4.7%	4.3%	4.3%	-	3.6%	1.8%	3.5%	2.3%	3.6%	2.5%	3.3%	12.2%
3	3.5%	2.5%	1.2%	3.0%	2.7%	4.1%	3.6%	4.3%	4.9%	4.0%	5.0%	-	4.3%	1.7%	2.4%	2.3%	3.7%	3.0%	3.3%	11.7%
4	3.5%	2.7%	1.3%	3.2%	2.8%	4.2%	4.2%	4.2%	4.1%	3.8%	5.1%	-	4.7%	1.6%	3.3%	2.9%	3.8%	2.6%	3.5%	10.7%
5	3.4%	2.7%	1.4%	3.7%	2.9%	4.8%	3.4%	4.1%	4.8%	4.0%	4.8%	-	4.9%	1.5%	3.5%	2.2%	3.9%	3.2%	4.1%	11.0%
6	3.5%	2.6%	1.9%	4.4%	3.0%	4.6%	4.7%	4.6%	5.2%	4.5%	5.0%	-	5.3%	1.6%	3.8%	2.3%	4.1%	3.3%	4.1%	11.1%
7	3.3%	2.2%	1.8%	4.4%	3.0%	4.2%	4.9%	4.5%	5.3%	4.7%	4.8%	-	4.9%	1.4%	4.0%	2.4%	4.3%	3.3%	4.7%	10.6%
8	3.5%	2.5%	2.0%	4.0%	2.9%	4.5%	4.6%	4.5%	5.1%	4.9%	4.7%	-	5.3%	1.6%	3.5%	2.4%	4.5%	3.1%	4.8%	10.2%
9	3.1%	2.4%	1.9%	4.1%	2.5%	3.6%	5.1%	4.1%	4.9%	5.0%	4.2%	-	5.2%	1.4%	3.7%	2.3%	4.4%	3.0%	5.0%	9.4%
Richest	2.6%	2.1%	1.8%	4.0%	2.1%	3.2%	4.7%	3.7%	4.3%	4.8%	4.0%	-	4.8%	1.2%	2.8%	1.8%	4.4%	3.1%	5.1%	9.0%

Table 2.7. **Average excise tax as a percentage of disposable income across expenditure deciles**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	NLD	NZL	POL	SLV	SVK	TUR
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2004)	(2013)	(2010)	(2010)	(2010)	(2010)
Poorest	2.3%	3.5%	1.1%	1.7%	2.2%	3.2%	2.7%	2.5%	2.6%	2.9%	4.7%	-	1.9%	1.2%	3.0%	1.4%	3.1%	2.9%	3.0%	9.8%
2	2.4%	2.2%	1.0%	2.0%	2.2%	3.7%	2.3%	2.6%	3.2%	2.5%	4.2%	-	2.5%	1.4%	3.4%	1.8%	2.6%	2.8%	2.8%	9.9%
3	2.3%	2.2%	1.3%	2.2%	2.3%	4.0%	4.3%	2.6%	4.0%	2.4%	4.7%	-	2.8%	1.5%	3.1%	1.7%	2.6%	2.8%	3.1%	9.4%
4	2.4%	2.4%	1.4%	2.1%	2.4%	4.0%	2.1%	2.6%	3.7%	2.5%	4.5%	-	3.0%	1.5%	2.7%	1.7%	2.5%	2.6%	2.8%	9.5%
5	2.4%	2.2%	1.7%	2.3%	2.3%	4.3%	2.8%	3.0%	3.7%	2.6%	4.3%	-	3.2%	1.5%	3.0%	1.8%	2.6%	3.2%	2.8%	8.8%
6	2.6%	2.4%	1.5%	2.2%	2.3%	4.2%	2.8%	2.9%	4.2%	2.6%	4.2%	-	3.1%	1.6%	3.9%	1.7%	2.7%	3.3%	2.9%	8.6%
7	2.7%	2.3%	1.9%	2.4%	2.2%	4.1%	3.5%	2.8%	4.8%	2.9%	3.8%	-	3.1%	1.6%	3.3%	1.7%	2.8%	3.4%	3.0%	8.0%
8	2.8%	2.4%	2.1%	2.4%	2.2%	4.0%	4.1%	2.9%	3.9%	3.2%	3.5%	-	3.1%	1.7%	3.1%	1.4%	2.8%	3.5%	2.9%	7.6%
9	2.8%	2.1%	1.9%	2.4%	2.0%	4.0%	4.3%	2.6%	4.0%	3.1%	3.3%	-	3.1%	1.7%	3.9%	1.3%	3.1%	3.3%	3.0%	7.0%
Richest	2.6%	2.5%	1.7%	2.4%	1.7%	3.5%	4.9%	2.6%	3.2%	3.6%	2.9%	-	2.6%	1.8%	3.2%	1.2%	3.1%	3.1%	3.2%	6.5%

Table 2.8. **Average excise tax as a percentage of pre-tax expenditure across expenditure deciles**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	NLD	NZL	POL	SLV	SVK	TUR
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2004)	(2013)	(2010)	(2010)	(2010)	(2010)
Poorest	5.0%	2.4%	1.4%	3.3%	2.9%	5.2%	8.5%	5.9%	5.1%	6.1%	6.8%	3.7%	3.0%	1.6%	3.9%	2.6%	5.9%	3.5%	4.7%	14.4%
2	4.2%	2.7%	1.3%	3.7%	2.9%	4.9%	4.4%	4.8%	4.9%	4.8%	5.2%	3.6%	4.6%	1.8%	3.6%	2.7%	4.4%	3.0%	4.5%	13.2%
3	3.9%	2.7%	1.3%	3.8%	3.0%	4.9%	5.2%	4.8%	5.9%	4.3%	4.9%	3.5%	5.1%	1.7%	3.3%	2.8%	4.2%	3.1%	4.5%	12.4%
4	3.5%	2.9%	1.5%	3.4%	3.0%	4.7%	3.4%	4.7%	5.2%	4.2%	4.9%	3.5%	5.2%	1.7%	3.0%	2.4%	3.9%	2.8%	4.1%	12.3%
5	3.4%	2.5%	1.6%	3.6%	2.9%	4.7%	4.3%	4.7%	4.9%	4.2%	4.7%	3.4%	5.3%	1.7%	3.3%	2.7%	4.0%	3.0%	4.1%	11.1%
6	3.3%	2.7%	1.4%	3.6%	2.8%	4.4%	4.2%	4.8%	5.1%	4.3%	4.8%	3.4%	5.2%	1.5%	4.0%	2.6%	4.0%	3.4%	4.1%	10.5%
7	3.1%	2.5%	1.8%	3.7%	2.6%	4.2%	4.9%	4.2%	5.3%	4.2%	4.5%	3.3%	5.0%	1.5%	3.4%	2.4%	4.0%	3.3%	4.1%	9.5%
8	2.9%	2.4%	1.9%	3.6%	2.5%	3.7%	5.1%	4.0%	4.6%	4.5%	4.2%	3.1%	4.7%	1.4%	3.1%	2.0%	3.9%	3.1%	3.9%	9.1%
9	2.6%	2.0%	1.9%	3.4%	2.2%	3.5%	5.0%	3.4%	4.4%	4.2%	4.0%	2.8%	4.4%	1.3%	3.4%	1.9%	3.9%	2.9%	3.7%	7.8%
Richest	2.0%	1.8%	1.6%	3.2%	1.7%	2.6%	4.6%	2.5%	3.2%	4.3%	3.1%	2.2%	3.0%	1.2%	2.7%	1.4%	3.4%	2.3%	3.3%	6.3%

2.5. Distributional effects across demographic factors

The results presented in section 2.4 are averages over a decile, and therefore do not necessarily reflect the effect on all sub-groups within a decile. Below we examine a number of sub-groups determined by various demographic characteristics as a percentage of both disposable income and pre-tax expenditure. Results are further broken down across both these demographic factors and income/expenditure deciles in Annex A.

Household type

Most obviously, different household types are likely to face different tax burdens. For example, a larger household is likely to incur more expenditure (and save less) and pay more tax than a smaller household. However, they may also benefit from economies of scale and therefore spend less (and pay less tax) as a proportion of total household income (though not necessarily as a percentage of expenditure). The presence of children may have two different effects. First it will result in increased expenditure, thereby increasing the tax burden as a percentage of income (but not necessarily as a percentage of expenditure). Second, households may be likely to alter some of their consumption towards reduced-rated goods such as basic foods, children's clothing and pharmaceuticals, thereby lowering the tax burden as a percentage of income and expenditure.

Tables 2.9 and 2.10 present the average tax burden in each country as a proportion of income and expenditure, respectively, for six different household types: one adult, two adults, and more than two adult households, each with and without children. Table 2.9 shows that, as a percentage of income, tax burdens are generally quite similar across household types. Overall, households with children tend to face slightly higher tax burdens than households without children. The main outlier is Korea where all three households with children face lower tax burdens than households without children. Meanwhile, in a number of countries (e.g. Chile, the Czech Republic, Hungary, Poland, Slovenia, the Slovak Republic) households with more than two adults (with or without children) face slightly lower tax burdens as a percentage of income than smaller households – suggesting some economies of scale over these smaller households. This is not the pattern for all countries though. For example, single individuals without children face the lowest tax burden in five countries (Germany, Greece, Spain, Luxembourg and the United Kingdom).

As a percentage of expenditure (Table 2.10), tax burdens vary more than when measured as a percentage of income. Households with children still tend to face higher tax burdens than households without children in a number of countries (e.g. Chile, Spain, Hungary, Italy, Slovenia); but tend to face a lower tax burden in others (e.g. Korea); while other countries present mixed results. As a percentage of expenditure, single individuals (with and without children) tend to face lower tax burdens than other households.

Looking across income and expenditure deciles (in Annex A), results tend to follow the same broad patterns as above. Nevertheless, there are generally some deciles within each country that produce different patterns to the overall result. For example, in Hungary, while middle income households with children tend to pay more tax than single individuals (both as a percentage of income and expenditure), high and low income households with children tend to pay less tax. In Ireland, while poorer (low earning and/or low spending) households with children tend to pay more tax as a percentage of their expenditure than poorer households without children, richer households with children tend to pay less tax than richer households without children. No clear cross-country patterns emerge regarding such cross-decile differences.

Age (of household head)

As discussed in the previous section, tax burdens can be expected to vary across age. Like income, but to a lesser extent due to consumption smoothing behaviour, consumption can be expected to peak in middle age and be lower for younger and older workers. Measured as a percentage of income, tax burdens can then be expected to be higher for younger and older workers than for middle-age workers. However, this is not borne out in the total tax burden results that are broken down by the age of the "household head" (the higher earning partner) in Table 2.11. Tax burdens tend to be relatively similar for both younger and middle-age households, with a significant drop generally only occurring for households where the household head is aged 70 or over (suggesting these older households are not drawing down savings). Chile, Estonia, Hungary and the United Kingdom arguably peak in middle age, although the differences in tax burdens are small. (For example, Belgium and the United Kingdom are the only countries where at least one "middle age" group – albeit the second oldest group – faces a tax burden that is at least one percentage point higher than that faced by the lowest or highest age group). Several countries more clearly appear to peak for younger households – with the tax burden faced by the youngest age range at least one percentage point higher than that for any other age range in Greece, Korea and Slovenia. The biggest outlier is New Zealand where tax burdens increase with age. As New Zealand Treasury (2009) point out, this may relate to the high rate of home ownership in New Zealand, with (untaxed) rental expenses constituting a falling proportion of income (and expenditure) as age increases.

Results are similar when presented as a percentage of expenditure (Table 2.12). In most countries tax burdens are relatively similar for both younger and middle-age households, with a significant drop occurring only for the oldest households. Several countries however now more clearly appear to peak in middle age – Chile, Estonia, Greece, Hungary and the United Kingdom. This result implies that reduced-rated goods and services are being consumed in greater proportions by younger and older households in these countries. The tax burden now appears to peak for younger households in Ireland, while New Zealand, once again is the major outlier, with tax burdens increasing with age.

Results across income and expenditure deciles vary considerably. However, as with the overall results, tax burdens are generally lowest for the oldest households across all deciles. Also, more often than not, tax burdens are highest in individual deciles for the same age range as for the overall results. There are numerous exceptions. For example, in Chile, Hungary, Poland and the United Kingdom, high spending old (70+) households face the highest tax burdens as a percentage of income. In New Zealand, for several income and expenditure deciles, households aged 50-69 face higher tax burdens than households aged 70+.

Population density

Where a household lives may also affect consumption patterns and tax burdens. In particular, households living in rural areas may face increased transportation costs, and consequently higher VAT and fuel excise burdens as compared to those living in cities. In contrast, underlying food prices may be more expensive in large cities carrying with it increased VAT burdens on staple purchases. Location will also affect consumption patterns, for example with some more remote areas potentially requiring increased heating expenditure.

Tables 2.13 and 2.14 present the average tax burden in each country as a proportion of income and expenditure, respectively, broken down by population density. Table 2.13 shows that in 10 of 12 countries (for which data are available) households living in sparsely

populated areas face a higher consumption tax burden than those in densely populated areas, although in the Slovak Republic the highest burden falls on those in intermediate areas, while in Greece the lowest tax burden falls on households in intermediate areas. Only in Luxembourg and Slovenia do households in sparsely populated areas face a lower tax burden than those in densely populated areas, although in Luxembourg the highest burden falls on households living in intermediate areas.

Table 2.14 provides similarly strong results. In 11 of 13 countries households living in sparsely populated areas face a higher consumption tax burden than those in densely populated areas. Only in Austria do households in sparsely populated areas face a lower tax burden than those in densely populated areas. In Luxembourg, households in sparsely and densely populated areas face the same tax burdens, with once again the highest tax burden falling on households in intermediate areas.

Looking across income and expenditure deciles, results tend to be broadly consistent with the above results, though more so when measured as a percentage of expenditure than income. Several countries (e.g. Austria, Belgium and Luxembourg) provide mixed results with higher tax burdens for households living in sparse areas at some income/expenditure levels and lower tax burdens for them at other income/expenditure levels. Additionally, in a number of countries poor households are affected more by where they live than richer households – particularly when measured as a percentage of income. For example, in Germany, Hungary and Spain, low-income households living in sparsely populated areas face significantly different tax burdens (as a percentage of income) than those in densely populated areas, whereas high-income households face far more similar tax burdens wherever they live.[30] Meanwhile, a similar pattern can be found in Austria and the Slovak Republic when measured as a percentage of expenditure (across income and expenditure deciles).

Smoker vs non-smoker

Finally, we present results for smokers vs non-smokers in Tables 2.15 and 2.16. Unsurprisingly, Tables 2.15 and 2.16 show that smoking households (any household reporting positive expenditure on tobacco products) face a considerably higher tax burden than non-smoking households in all countries.

This result is also borne out across income and expenditure deciles. Notably though, poor smoking households tend to face a particularly high tax burden relative to poor non-smoking households, whereas rich smoking households tend to pay only slightly more tax than rich non-smoking households. This result holds whether measured as a percentage of income or expenditure, and across both income and expenditure deciles.

2.6. Summary and conclusions

This chapter has examined the distributional effects of consumption taxes in 20 OECD countries. The analysis has been based on average tax burden calculations derived from consumption tax micro-simulation models constructed using household expenditure micro-data for each country. The models have followed a consistent methodology enabling cross-country comparison of results.

Average tax burden results across income and expenditure deciles show that VAT systems are regressive when measured as a percentage of current income, but are generally either proportional or slightly progressive when measured as a percentage of expenditure. This confirms previous analysis for several countries by IFS (2011), and extends this analysis and these conclusions to a significant number of new countries.

Table 2.9. **Average consumption tax as a percentage of income across household type**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	POL	SLV	SVK	TUR
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2010)	(2010)	(2010)	(2010)
1 adult	12.8%	12.5%	13.6%	11.8%	10.6%	10.4%	17.2%	8.7%	11.5%	18.7%	12.7%	-	7.3%	7.8%	13.8%	16.9%	14.9%	11.4%
2 adults	12.3%	13.5%	13.0%	12.2%	11.4%	12.6%	14.4%	9.5%	11.7%	16.6%	12.2%	-	7.2%	8.0%	13.3%	13.7%	14.9%	16.2%
>2 adults	13.5%	12.3%	12.4%	10.8%	11.0%	14.2%	14.8%	9.6%	13.3%	15.5%	12.7%	-	7.4%	8.1%	12.8%	12.1%	14.5%	18.2%
1 adult + ch	13.7%	12.5%	14.1%	11.9%	10.8%	15.1%	16.6%	10.4%	14.8%	19.0%	13.9%	-	6.4%	8.8%	14.2%	17.9%	15.5%	11.0%
2 adults + ch	13.7%	11.8%	14.3%	12.7%	10.6%	15.5%	16.3%	9.4%	16.4%	17.9%	11.3%	-	6.7%	8.3%	14.0%	14.8%	15.7%	18.3%
>2 adults + ch	14.0%	13.0%	13.0%	11.8%	10.9%	16.9%	15.8%	10.6%	14.7%	15.9%	12.3%	-	6.4%	9.1%	12.9%	12.3%	14.6%	18.7%

Table 2.10. **Average consumption tax as a percentage of expenditure across household type**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	POL	SLV	SVK	TUR
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2010)	(2010)	(2010)	(2010)
1 adult	15.4%	12.2%	10.6%	16.6%	11.5%	12.2%	25.0%	12.7%	14.3%	24.2%	12.4%	10.4%	10.8%	7.4%	17.6%	12.6%	16.0%	14.3%
2 adults	15.7%	13.4%	12.3%	19.4%	12.9%	14.0%	24.1%	14.8%	17.1%	26.4%	13.9%	11.4%	11.0%	8.0%	18.9%	13.3%	19.0%	19.2%
>2 adults	16.9%	13.1%	12.6%	19.6%	14.2%	16.1%	24.1%	15.8%	19.9%	28.7%	15.8%	12.9%	12.5%	8.2%	19.8%	14.0%	21.5%	22.5%
1 adult + ch	14.9%	12.9%	10.8%	15.9%	11.9%	13.0%	21.9%	13.3%	13.8%	25.8%	13.6%	12.5%	8.0%	7.3%	17.5%	13.9%	17.4%	12.5%
2 adults + ch	16.2%	13.6%	13.4%	19.8%	13.1%	15.3%	24.0%	14.6%	17.3%	28.0%	13.9%	13.5%	10.2%	8.1%	19.3%	14.7%	21.1%	21.3%
>2 adults + ch	17.2%	12.3%	13.3%	19.1%	13.9%	16.5%	24.5%	15.7%	19.1%	29.5%	14.8%	13.4%	10.1%	8.3%	19.5%	14.3%	21.1%	22.6%

Table 2.11. **Average consumption tax as a percentage of income across age**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	NLD	NZL	POL	SLV	SVK
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2004)	(2013)	(2010)	(2010)	(2010)
20-29	14.4%	12.1%	13.5%	12.4%	11.2%	15.3%	17.5%	9.2%	17.0%	17.6%	13.1%	-	9.2%	9.3%	14.6%	8.5%	14.0%	17.6%	15.5%
30-39	13.5%	12.0%	13.3%	12.5%	10.5%	13.9%	16.5%	8.7%	15.8%	17.8%	11.0%	-	7.4%	8.5%	13.0%	8.3%	13.8%	15.7%	15.2%
40-49	13.6%	12.4%	14.1%	12.5%	10.6%	15.4%	17.7%	9.9%	15.4%	18.2%	12.0%	-	6.7%	8.4%	13.6%	8.7%	13.8%	14.9%	15.6%
50-59	13.7%	12.7%	13.4%	12.3%	11.1%	14.8%	18.0%	9.9%	14.6%	18.3%	12.7%	-	7.1%	8.0%	13.6%	9.3%	14.3%	15.0%	15.6%
60-69	13.4%	13.9%	12.7%	12.3%	11.5%	13.0%	15.4%	10.9%	12.4%	17.0%	13.8%	-	6.9%	8.0%	12.4%	10.6%	13.4%	13.9%	15.1%
70+	9.7%	12.7%	12.4%	11.1%	10.6%	10.3%	12.1%	7.6%	9.1%	15.1%	11.5%	-	6.7%	6.0%	8.9%	10.7%	11.6%	12.3%	13.2%

Table 2.12. **Average consumption tax as a percentage of expenditure across age**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	NLD	NZL	POL	SLV	SVK
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2004)	(2013)	(2010)	(2010)	(2010)
20-29	17.6%	13.5%	12.5%	19.6%	13.6%	15.3%	24.5%	13.4%	16.5%	25.6%	15.7%	13.5%	12.0%	8.8%	13.0%	11.5%	19.4%	15.1%	20.4%
30-39	16.7%	13.5%	13.5%	19.8%	13.2%	15.1%	23.8%	14.4%	16.8%	27.7%	14.7%	13.8%	11.7%	8.4%	13.0%	11.6%	19.7%	14.9%	20.9%
40-49	16.7%	13.3%	13.0%	18.7%	13.0%	15.7%	26.2%	15.2%	17.7%	29.0%	14.3%	13.4%	10.4%	8.0%	13.3%	13.0%	19.8%	14.9%	20.8%
50-59	16.6%	12.9%	12.8%	19.1%	12.8%	15.5%	25.1%	15.4%	19.3%	28.2%	14.6%	13.2%	12.1%	8.1%	13.8%	14.5%	20.1%	14.1%	20.4%
60-69	15.4%	12.9%	12.3%	18.3%	11.6%	14.1%	24.1%	15.0%	17.8%	26.1%	13.5%	11.7%	10.5%	7.4%	12.3%	14.9%	18.0%	12.6%	18.0%
70+	12.4%	11.7%	11.1%	15.9%	10.6%	12.0%	22.4%	11.7%	14.6%	22.6%	10.6%	8.8%	7.8%	6.2%	10.0%	15.7%	15.3%	10.9%	15.3%

Table 2.13. **Average consumption tax as a percentage of income across population density**

	AUT	BEL	CZE	DEU	ESP	EST	GRC	HUN	ITA	LUX	POL	SLV	SVK
	(2009)	(2010)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)
Dense	12.3%	12.3%	11.7%	10.4%	12.8%	14.4%	13.5%	16.5%	-	8.2%	13.2%	15.2%	14.3%
Intermediate	13.4%	13.2%	12.4%	11.3%	14.1%	16.9%	13.0%	17.4%	-	8.5%	13.5%	15.1%	15.4%
Sparce	13.5%	13.2%	12.5%	12.3%	14.9%	17.5%	13.6%	18.0%	-	7.1%	14.0%	14.8%	15.3%

Table 2.14. **Average consumption tax as a percentage of expenditure across population density**

	AUT	BEL	CZE	DEU	ESP	EST	GRC	HUN	ITA	LUX	POL	SLV	SVK
	(2009)	(2010)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)
Dense	15.9%	12.6%	17.2%	12.0%	13.9%	22.3%	16.5%	25.4%	11.1%	7.8%	18.5%	13.6%	17.9%
Intermediate	15.9%	13.3%	18.7%	12.8%	15.1%	23.8%	17.0%	26.8%	12.6%	8.0%	18.5%	14.0%	19.4%
Sparce	15.6%	14.1%	19.6%	13.7%	15.4%	26.0%	17.9%	27.8%	13.5%	7.8%	19.2%	14.0%	20.3%

Table 2.15. **Average consumption tax as a percentage of disposable income for smokers and non-smokers**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	NLD	NZL	POL	SLV	SVK	TUR
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2004)	(2013)	(2010)	(2010)	(2010)	(2010)
non-smoker	11.5%	12.1%	12.1%	11.4%	10.3%	10.8%	14.0%	8.3%	10.4%	15.8%	10.4%	-	6.4%	7.3%	11.7%	8.9%	12.1%	13.5%	14.1%	10.7%
smoker	15.8%	14.2%	15.9%	13.7%	12.6%	16.3%	22.6%	12.7%	17.4%	19.5%	15.5%	-	8.6%	10.8%	15.4%	11.2%	16.7%	17.1%	17.0%	22.8%

Table 2.16. **Average consumption tax as a percentage of expenditure for smokers and non-smokers**

	AUT	BEL	CHL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	KOR	LUX	NLD	NZL	POL	SLV	SVK	TUR
	(2009)	(2010)	(2012)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2012)	(2010)	(2004)	(2013)	(2010)	(2010)	(2010)	(2010)
non-smoker	13.8%	12.3%	11.4%	16.9%	11.5%	12.0%	21.3%	12.5%	13.5%	23.6%	11.5%	10.5%	9.7%	7.3%	11.5%	12.8%	16.3%	12.3%	17.4%	12.1%
smoker	19.8%	15.1%	15.3%	21.5%	15.0%	17.0%	33.5%	19.7%	21.5%	31.4%	18.0%	15.4%	13.4%	9.9%	15.4%	16.9%	24.3%	16.6%	23.2%	27.9%

Total excise tax burdens (on alcohol, tobacco and transport fuels) are shown to be almost always regressive when measured as a percentage of income, and in most cases to be either regressive or roughly proportional when measured as a percentage of expenditure, although results are more country specific than for VAT.

In interpreting these results, the report has argued that an income-base approach may be of particular interest in analysing the immediate distributional effects of consumption taxes, especially if household consumption patterns are not strongly affected by borrowing and savings behaviour. However, the report has also argued that an expenditure-base approach will provide a more reliable measure of the lifetime distributional effects of a consumption tax. The results therefore challenge the general public perception that VAT systems are regressive, at least in a lifetime context. That said, results for Estonia, New Zealand and the Slovak Republic highlight that broad-based VAT systems that have few reduced VAT rates or exemptions can still produce a small degree of regressivity when expenditure is used as a proxy for lifetime income. In contrast, results for Chile, the Czech Republic, Korea and the Slovak Republic show that excise taxes can in some cases be progressive in a lifetime context.

Results across demographic factors are often mixed but still highlight a number of trends. For example, households with children tend to face slightly higher tax burdens than those without children. Additionally, average tax burdens tend not to vary significantly across age, with the exception of the oldest households who pay less. Households living in sparsely populated areas tend to face higher consumption tax burdens than those in densely populated areas. Finally, smoking households always face considerably higher tax burdens than non-smoking households, with burdens particularly high for the smoking poor.

The decile results also highlight that reduced VAT rates have had a small progressive effect on VAT burdens – reducing the VAT burden on the poor to a greater extent than the rich, whether measured across income or expenditure deciles. The ability of reduced VAT rates to target poor households is examined in more detail in the next chapter.

Notes

1. As was noted in Chapter 1, this report focuses on VAT and the three main types of excise taxes present in OECD countries – those on alcohol, tobacco, and transport fuels. Many countries also apply excise taxes to certain environmentally related products. Given their wide variation in application this report does not cover such environmentally related excise taxes. However, forthcoming OECD work (Flues and Thomas, 2015) examines in detail the distributional effects of environmentally-related excise taxes.
2. The micro-simulation methodology adopted in this report builds on the methodology developed by Thomas and Picos-Sanchez (2011). As such, this section draws, in part, on that paper.
3. Eurostat plans to make anonymised HBS micro-data available to researchers in the near future.
4. Note that the data for Italy does not include an income variable which limits some of the analysis that can be undertaken for this country.
5. Access to the New Zealand data used in this study was provided by Statistics New Zealand under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. The results presented in the study are the work of the author, not Statistics New Zealand.
6. Note that *ad valorem* taxes on tobacco products are calculated as a percentage of the total resale price (which is set by government), inclusive of all taxes (including VAT). The exception is New Zealand where *ad valorem* taxes on tobacco products are imposed on the aggregate of the pre-tax price and *ad quantum* tax amount (as with other *ad valorem* taxes).

7. Current tax rates have been taken from the OECD *Consumption tax trends* and EC *VAT Rates Applied in the Member States of the European Union* publications, and have been, or are in the process of being, confirmed by WP9 country Delegates.

8. See IHS (2011) for a detailed discussion of the theoretical and empirical literature.

9. An alternative to assuming no behavioural responses would be to estimate behavioural elasticities through the construction and estimation of demand systems for each country (based on price and household expenditure information). Such elasticity estimates were, for example, estimated for five countries by IFS (2011). Such a significant empirical exercise, however, is beyond the scope of this project. Furthermore, as IFS (2011) highlight, there remain many methodological limitations regarding the estimation of demand systems that impact on the reliability of the elasticity estimates produced.

10. The reliability of income data is an issue across all income levels. Previous studies (e.g. Decoster et al., 2010) suggest that income is generally under-reported to at least some extent in household budget surveys. There is also evidence to suggest that income may tend to be under-reported to a greater extent for some income sources (e.g. self-employment income) than others (see, for example, Hurst et al., 2014).

11. Taking the monetary expenditure as a starting point, this is divided by the average price to obtain an estimate of the quantity purchased. The *ad quantum* rate is then applied to this estimated quantity to estimate the tax paid.

12. In most countries excise taxes on tobacco can be separately modelled for cigarettes, cigars and roll tobacco, while excise taxes on alcohol can be separately modelled for beer, wine and spirits. However, due to data limitations, all tobacco expenditure is assumed to be on cigarettes in Chile, the Czech Republic, Estonia, Italy, and Turkey. In Slovenia, expenditure on roll tobacco is assumed to be on cigarettes, while in Poland and the Slovak Republic expenditure on cigars is assumed to be on cigarettes. In Germany, all tobacco expenditure is assumed to be on cigarettes, and all alcohol expenditure on beer.

13. The ratios (food:alcohol) are as follows: 60:40 for restaurants; 20:80 for bars and cafés; and 50:50 for canteens.

14. Small quantities of other fuels (predominantly LPG) are also used for road transport in many countries. These are effectively modelled as petrol or diesel according to the apportionment discussed in this section, with the exceptions of Chile, Korea, New Zealand and the United Kingdom where separate LPG expenditure data is available.

15. For Germany and the Netherlands, the respective National Transport Surveys (Bundesministeriums für Verkehr, Bau und Stadtentwicklung, 2010; and Ministerie van Verkeer en Waterstaat, 2005) provide information on the average distance driven by petrol and diesel vehicles across either income deciles or fixed income bands. These averages are then multiplied by average fuel efficiency rates (Destatis, 2010; and Verbruiksmonitor, 2014) and average price figures (European Commission, 2011) to estimate the average expenditure on petrol and diesel across income deciles or bands. Note that the same data is also available for the United Kingdom (Department for Transport, 2011, Department for Transport, 2013 and European Commission, 2011), and is utilised as described in note 16.

16. To separate total expenditures on transport fuels into separate expenditures on petrol and diesel by households' incomes three steps are undertaken. First, average ratios by income quintile of the ratio of petrol to diesel expenditures by income quintile to the overall ratio of petrol to diesel expenditures are calculated for Austria, Germany and the United Kingdom. Second, the three-country averages of these ratios are multiplied by the country-specific overall ratio of petrol to diesel cars to obtain an imputed ratio of petrol to diesel expenditure by income quintiles. Third, the imputed ratio of petrol to diesel expenditure by income quintiles is used to apportion total transport fuel expenditure into separate expenditures on petrol and on diesel by income quintiles.

17. Most studies referred to in this section focus particularly on VAT. However, the arguments are similarly applicable to other consumption taxes. For ease of reference, therefore, we refer to VAT and consumption taxes interchangeably throughout the section.

18. Some of the excess of expenditure over income at low income levels may be explained by the under-reporting of income. That said, some under-reporting of income can be expected across the entire income distribution, particularly for certain household types (see note 10).

19. An analysis of the HBS data shows that expenditure-to-income ratios for the other 19 countries follow a similar pattern to that exhibited in Figure 2.1.

20. Ideally we would present lifetime consumption tax burdens, measured as a percentage of lifetime income, across lifetime income deciles. However, it is an exceptionally difficult task to estimate lifetime income, let alone tax burdens. As such papers following this approach (refer Box 2.1) tend to present current tax burdens as a percentage of current expenditure where current expenditure is used as a proxy for lifetime income. That said, some papers have attempted to estimate lifetime income. For example, Fullerton and Rogers (1993) estimate lifetime tax burdens and incomes. Caspersen and Metcalf (1994) estimate lifetime income and compare this with simulated VAT based on current expenditure data.

21. In NPV terms, the future VAT will be equivalent to the VAT on immediate consumption, assuming tax rates and bases stay the same over time, and savings is not taxed. If savings are taxed, income saved may incur higher taxation than income immediately spent. Expenditure patterns may also change over time and, if this involved a shift towards less or more heavily taxed goods, then this would also alter the NPV of the future VAT payments.

22. Income could also be received or given in the form of a bequest, which when spent will also incur VAT. In a lifetime context, we would include bequests received in the lifetime resources of the recipient, and correspondingly exclude bequests given from the lifetime resources of the giver.

23. Furthermore, this group can often be particularly significant. For example, in Spain, students, the self-employed (including farmers) and retirees make up 37% of bottom decile households with expenditure-to-income ratios in excess of two.

24. The unit of analysis is the household, not the individual. While there are the same number of households in each decile, the total number of individuals will differ across deciles.

25. Equivalisation – to take account of differing levels of need – is based on the OECD-modified scale. This scale gives a weighting of 1 to the first adult household member, 0.5 to the second and additional household members aged 14 and over, and 0.3 to each child under 14. Pre-tax income or expenditure is divided by the total family weight to determine the family's "equivalised" income or expenditure.

26. Note that the base for the New Zealand calculations is gross rather than net income. This increases the regressive appearance of the New Zealand VAT (GST) in Table 2.1, because, as income increases, the base includes increasingly larger income tax payments that will not be consumed and subject to VAT.

27. IFS (2011) find VAT payments in Spain to be slightly regressive as a proportion of expenditure across the income distribution.

28. Forthcoming OECD work (Flues and Thomas, 2015) examines in further detail the distributional effects of transport fuel excise taxes as well as additional environmentally-related excise taxes.

29. While transport fuel tax burdens (measured as a percentage of expenditure) often increase across the majority of the income and expenditure distributions, they also tend to fall again at the top ends of these distributions.

30. Part of the difference is likely to be driven by the larger magnitudes for tax burdens at low income deciles compared to high income deciles when measuring tax burdens as a percentage of income. Nevertheless the results still suggest that in the short run, at least, poor households are more affected by location than rich households. In contrast, in a smaller number of countries, when measured as a percentage of income, high-expenditure decile households tend to be more affected by location than low-expenditure decile households. As noted previously, the significant increase in tax burdens as a percentage of income at higher expenditure levels is driven by savings behaviour and leads us to place less emphasis on these results.

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Chapter 3

The effectiveness of reduced VAT rates as a redistributional tool

This chapter uses the micro-simulation models developed in Chapter 2 to investigate how effective reduced value-added tax (VAT) rates are at supporting poor households. The micro-simulation models are used to estimate the tax expenditures received by different households from different reduced VAT rates by simulating the revenue effects of removing these concessions. The results show that most, if not all, of the reduced VAT rates that are introduced for the distinct purpose of supporting the poor – such as reduced rates on food, water supply and energy products – do have the desired progressive effect. However, despite this progressive effect, these reduced VAT rates are still shown to be a very poor tool for targeting support to poor households: at best, rich households receive as much aggregate benefit from a reduced VAT rate as do poor households; at worst, rich households benefit vastly more in aggregate terms than poor households. Furthermore, reduced rates introduced to address social, cultural and other non-distributional goals – such as reduced rates on books, restaurant food and hotel accommodation – often provide so large a benefit to rich households that the reduced VAT rate actually has a regressive effect. These results suggest the need for a careful, case-by-case reassessment of the relative merits of various reduced VAT rates in many countries.

3.1. Introduction

This chapter uses the models developed in Chapter 2 to investigate how effective reduced VAT rates are at supporting poor households. Chapter 2 highlighted that reduced VAT rates have had a small progressive effect on average VAT burdens, reducing the VAT burden on the poor to a greater extent than the rich, whether measured on an income or expenditure basis. However, reduced rates can be expected to be a relatively blunt instrument with which to target the poor. As eligibility for the concessional rate is based solely on the decision to consume the particular item subject to the reduced rate, rich households can be expected to benefit to some extent from reduced rates as well as poor households.

To the extent that reduced rates are targeted at consumption items that make up a greater proportion of the expenditure of poor households than rich households (e.g. inferior goods), reduced rates can be expected to have a progressive effect in that they give a greater relative tax reduction to the poor than to the rich. However, because richer households consume more in aggregate terms than poorer households, rich households can still be expected to gain more in aggregate terms from a reduced VAT rate (though still less in relative terms). Furthermore, if a reduced rate is provided for goods or services that the rich consume proportionately more of than the poor then that reduced VAT rate will actually have a regressive effect. In practice, the size of the tax reduction from a reduced VAT rate will depend on the actual consumption patterns of households – which are of course captured in the HBS data.

Simulation results show that, depending on the particular product subject to the reduced rate, all of the above possibilities can be true: The results show that most, if not all, of the reduced rates that are introduced for the distinct purpose of supporting the poor – such as reduced rates on food, water supply and energy products – do have the desired progressive effect. However, despite this progressive effect, these reduced VAT rates are still shown to be a very poor tool for targeting support to poor households: at best, rich households receive as much aggregate benefit from a reduced VAT rate as do poor households; at worst, rich households benefit vastly more in aggregate terms than poor households. Furthermore, reduced rates introduced to address social, cultural and other non-distributional goals – such as reduced rates on books, restaurant food and hotel accommodation – often provide so large a benefit to rich households that the reduced VAT rate actually has a regressive effect (benefiting the rich more both in aggregate terms and as a proportion of expenditure). These results suggest, at the very least, the need for a careful, case-by-case reassessment of the relative merits of various reduced VAT rates in many countries.

The chapter proceeds as follows: Section 3.2 briefly outlines the simulation methodology. Section 3.3 then presents the simulation results, first for all reduced VAT rates combined, and then individually (grouped according to the policy rationale for their introduction). Section 3.4 provides some concluding comments.

3.2. Methodology

To investigate the distributional impact of reduced VAT rates, we use the micro-simulation models described in Chapter 2 to simulate the imposition of the standard VAT rate on all items currently subject to reduced, super-reduced, or zero VAT rates (referred to jointly as "reduced rates"). We then calculate the monetary difference between this simulated VAT revenue and the actual VAT collected from each household for each expenditure item.[1] This amount is referred to as the "tax expenditure" arising from the particular reduced rate. Effectively, the standard VAT rate in each country is being used as the benchmark against which to calculate the size of the tax expenditure.

The underlying assumption made with this simulation is that if the standard rate were imposed there would be no alteration in households' consumption bundles (i.e. no behavioural response). While this would be an unreasonable assumption to make for an increase in the VAT rate on one particular item due to the ability to shift consumption towards relatively cheaper substitutes, where VAT rates are increased across the board it is likely that tax-induced shifts will be smaller (IHS, 2011). Nevertheless, as there would still likely be some behavioural response to the removal of reduced rates, the results presented below are likely to overestimate to a small extent the size of the actual tax expenditure.

While we treat exemptions as zero rates in the modelling, we do not present results for the tax expenditures derived from exemptions in this report. This is due to the added complexity associated with the likely presence of some tax embedded in the production/supply chain (due to the inability to claim input tax credits for exempt goods). As a result, any modelling would underestimate the amount of tax currently collected from exempt goods, thereby further overstating any estimate of the size of the tax expenditure.

3.3. Simulation results

We first consider the overall effect of all reduced VAT rates before then considering specific reduced rates in three groups defined by policy intent:

- Reduced rates on consumption items typically introduced in order to provide support to poor households. This includes: food; children's clothing and shoes; pharmaceutical products; energy products; and water supply.
- Reduced rates introduced to support cultural activities and social goods. This includes: books; newspapers and magazines; cinema, theatre and concerts; and museums and zoos.
- Reduced rates introduced to support other non-distributional and non-cultural/social goals. This group includes: hotel and other accommodation; food in restaurants; food in cafes and bars; and international air transport.

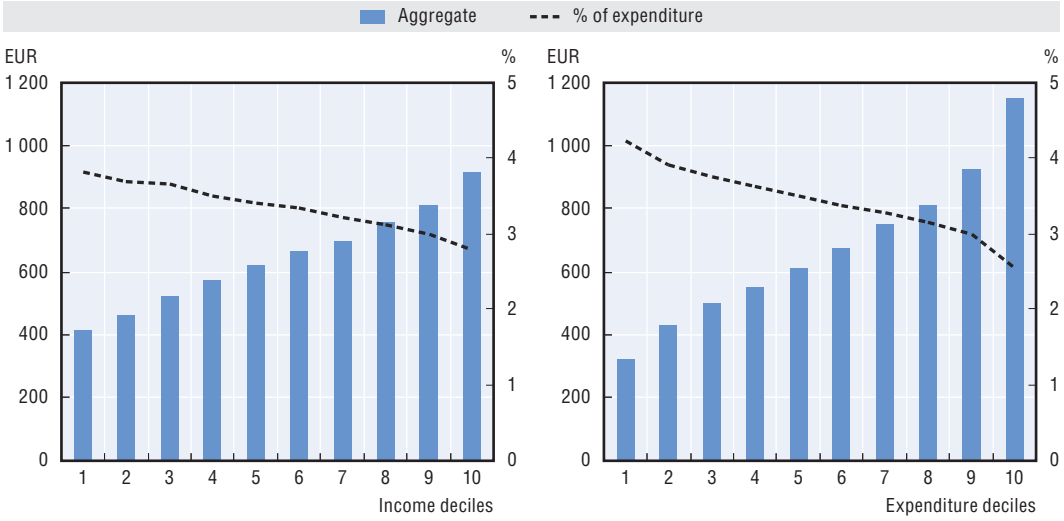
Simple averages of the tax expenditure results across all countries are presented in the main text, with the detailed country-specific results presented in Annex B.

All reduced rates

Figure 3.1 summarises the tax expenditure results for all reduced VAT rates: solid bars present the all-country simple average of the household average tax expenditure across income deciles (left hand panel) and expenditure deciles (right hand panel). The dotted lines present the same results as a percentage of household expenditure. Individual country results are presented in Tables B.1 and B.2 in Annex B. The results cover 17 of the

20 countries included in this study: Chile, Korea and New Zealand are excluded as they do not provide reduced rates.[2] Note that many of the goods and services typically subject to reduced rates in the countries considered below are instead exempted in Korea. Chapter 4 discusses the VAT system in Korea in further detail.

Figure 3.1. **All-country average of average tax expenditure per household from all reduced rates**



Considering first the aggregate tax expenditure results, Figure 3.1 shows a clear pattern with higher income/expenditure deciles benefiting from successively larger tax expenditures. This conclusion is supported when looking at the individual country data in Tables B.1 and B.2. In all 18 countries, every decile gains from reduced VAT rates. Furthermore, in all 17 countries, a tax reduction is provided to the top decile households which is significantly larger than the reduction provided to bottom decile households. This difference tends to be greater across expenditure deciles than income deciles. In almost all countries, the top income (expenditure) decile received a tax expenditure that is more than double (triple) what the bottom income (expenditure) decile received. The difference is most explicit in Estonia, where the top income (expenditure) decile receives a tax expenditure that is around six (27) times the tax expenditure gained by the bottom income (expenditure) decile.

While these differences are large, looking at their size relative to household expenditure nevertheless shows that the poor still gain proportionately more than the rich – confirming the result from Chapter 2 that reduced rates do have a progressive effect. This can be clearly seen from the downward sloping lines in Figure 3.1.

Reduced rates generally aimed at supporting the poor

Figure 3.2 presents the same simple averages of tax expenditure results as above, but this time just for the reduced rates on food. Individual country results are presented in Tables B.3 and B.4 in Annex B. Most countries (15 out of the 20 covered in this report) provide a reduced rate for some or all unprepared food products, though the extent varies. For example, Hungary only provides a reduced rate for certain basic food types (bread, dairy, butter). In comparison, Spain provides a super-reduced rate for some basic foods (rice, bread, some dairy, fruits, vegetables), and a reduced rate for others.

Figure 3.2. **All-country average of average tax expenditure per household from reduced rates on food**

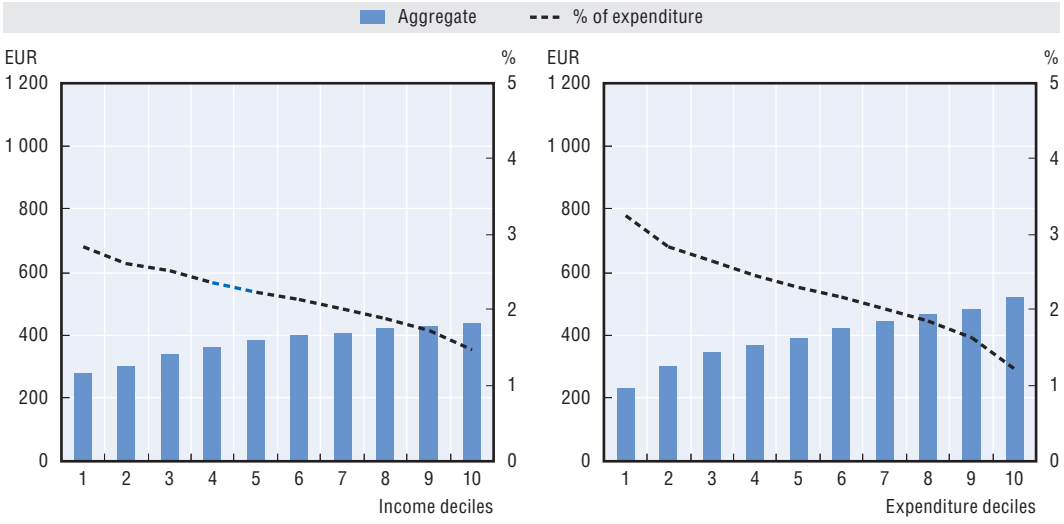


Figure 3.2 shows a similar pattern to Figure 3.1, though with the (all-country average) aggregate tax expenditure not increasing as substantially as before. Tables B.3 and B.4 confirm this: in every country a larger tax expenditure is provided to higher income and higher expenditure households – though the difference is not as marked as was the case for all reduced rates. As before, the difference tends to be greater across expenditure deciles than across income deciles. The largest differences are in Germany and Slovenia (where both the top income and expenditure deciles receive a tax expenditure around twice the size received by the bottom deciles). Looking at the relative size of the tax expenditures we see that the poor gain considerably more than the rich as a proportion of expenditure.

Overall, given the significant tax expenditure provided across the entire income/expenditure distributions, reduced rates for food are clearly not well targeted at poor households. However, they still have a progressive effect. Furthermore, comparing these results with the results for all reduced rates, it is clear that reduced rates on food are a key part of most multi-rate VAT systems as they tend to provide the majority of support received by low-income and low-spending households. They are also clearly less poorly targeted than many other reduced rates given the smaller increases in the tax expenditure provided to higher income and higher spending households.

A similar pattern emerges for pharmaceuticals, as shown in Figure 3.3 (and Tables B.5 and B.6 in Annex B). There are also 15 countries that provide reduced rates for pharmaceutical products. Higher income and expenditure deciles tend to gain more than lower deciles. Once again, this is more pronounced across expenditure deciles than income deciles. For example, the tax expenditure received by the top income (expenditure) decile in the United Kingdom is more than three (eight) times that gained by the bottom decile. However, as a proportion of expenditure, the reduced rates on pharmaceuticals still tend to benefit lower rather than higher income/expenditure households. That said, in several countries, including Estonia, Hungary, the Netherlands, Poland and the United Kingdom, middle income/expenditure households tend to benefit the most proportionately. This can be seen in the all-country averages in Figure 3.3, where the proportionate tax expenditure peaks at the third income decile, and roughly between the second and fifth expenditure decile.

Figure 3.3. **All-country average of average tax expenditure per household from reduced rates on pharmaceuticals**

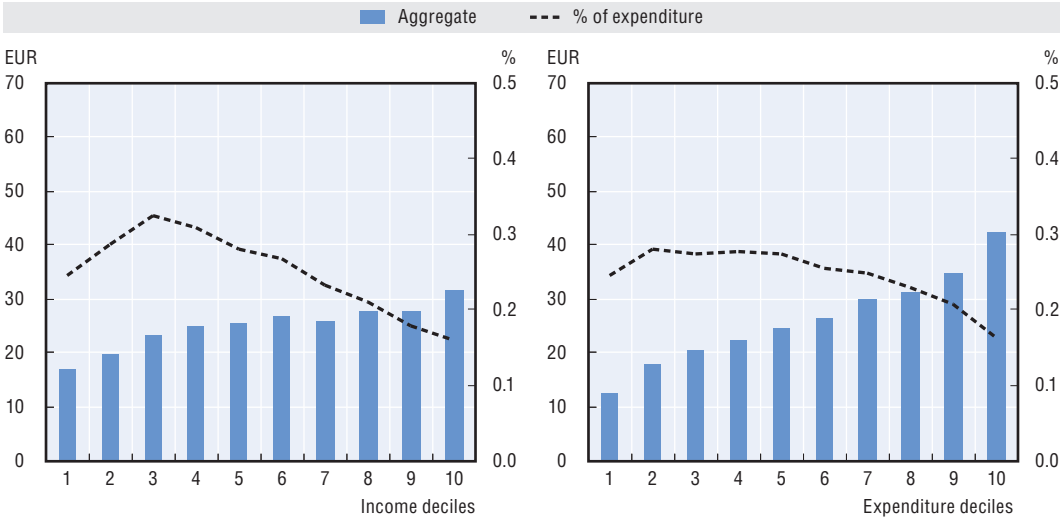
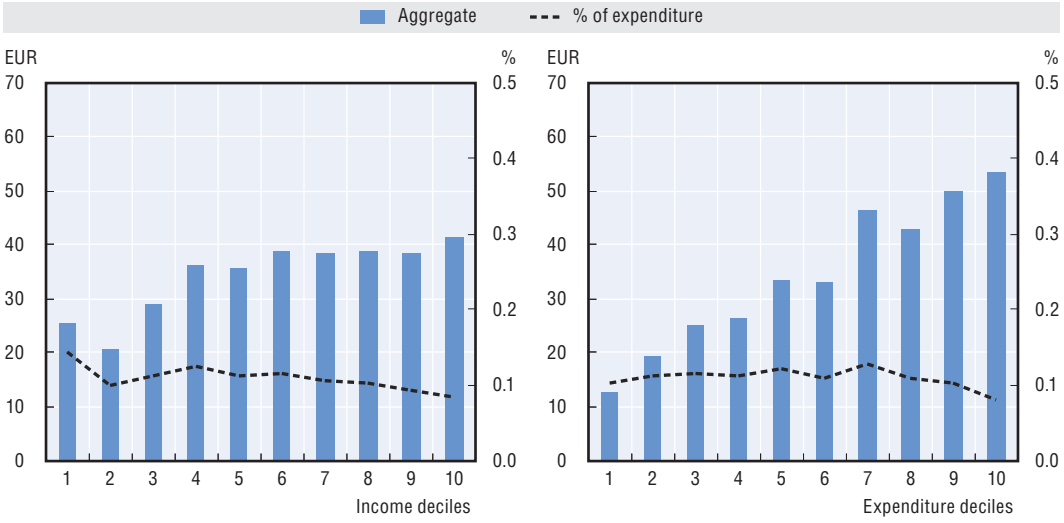


Figure 3.4 (and Tables B.7 and B.8 in Annex B) present the tax expenditure results for reduced rates on children's clothing and children's shoes. Five countries have reduced rates for both children's clothing and children's shoes: Ireland, Luxembourg, Poland, Turkey, and the United Kingdom.

Figure 3.4 suggests a relatively proportional result for children's clothing and shoes. However, these averages mask considerable variation across the five countries. In Luxembourg, the aggregate tax expenditure is greater for low than high income households, and only moderately greater for high than low expenditure households. However, for Ireland the tax expenditure is vastly larger for high income/ expenditure households than low income/ expenditure households. The differences are so substantial that the reduced rate actually has a regressive effect – that is, the tax expenditure measured as a proportion of household

Figure 3.4. **All-country average of average tax expenditure per household from reduced rates on children's clothing and shoes**



expenditure increases across both income and expenditure distributions. The other three countries are within those extremes, though with the difference always greater across expenditure deciles than income deciles. Proportionately, the tax expenditures in these three countries are either roughly proportional of fall across the income and expenditure distributions.

Figures 3.5 and 3.6 (and Tables B.9-B.12 in Annex B) present results for energy products. The only two energy products for which more than three countries provide reduced rates are natural gas (Greece, Luxembourg, Italy and the United Kingdom) and electricity (Greece, Luxembourg, Ireland, Italy and the United Kingdom). A similar pattern to food and pharmaceuticals arises here, with higher income/expenditure deciles benefiting from larger tax expenditures than lower income/expenditure deciles. Proportionately, though, the poor still benefit to a greater extent than the rich, with this being more the case for electricity than for natural gas (as the respective gradients of the dotted lines in Figures 3.5 and 3.6 illustrate).

Figure 3.5. **All-country average of average tax expenditure per household from reduced rates on natural gas**

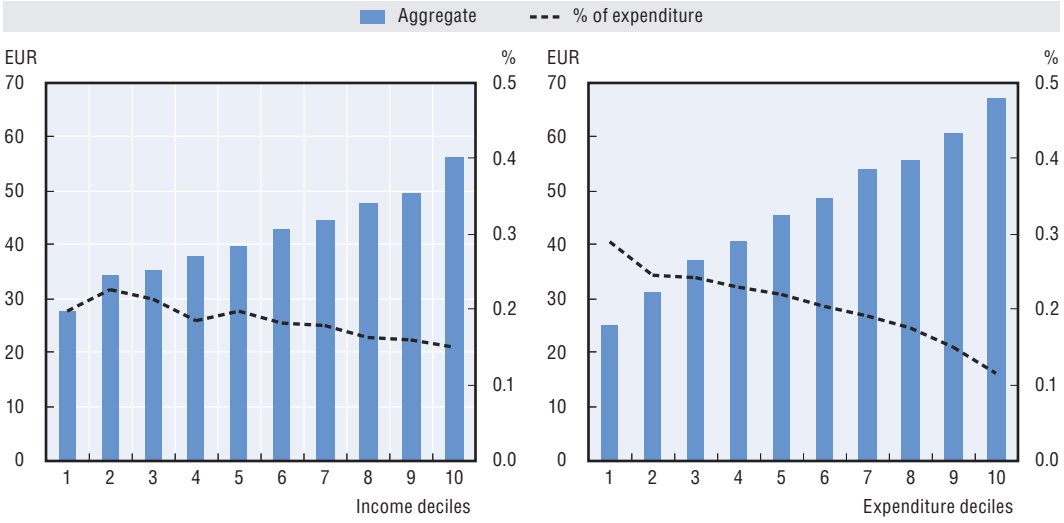
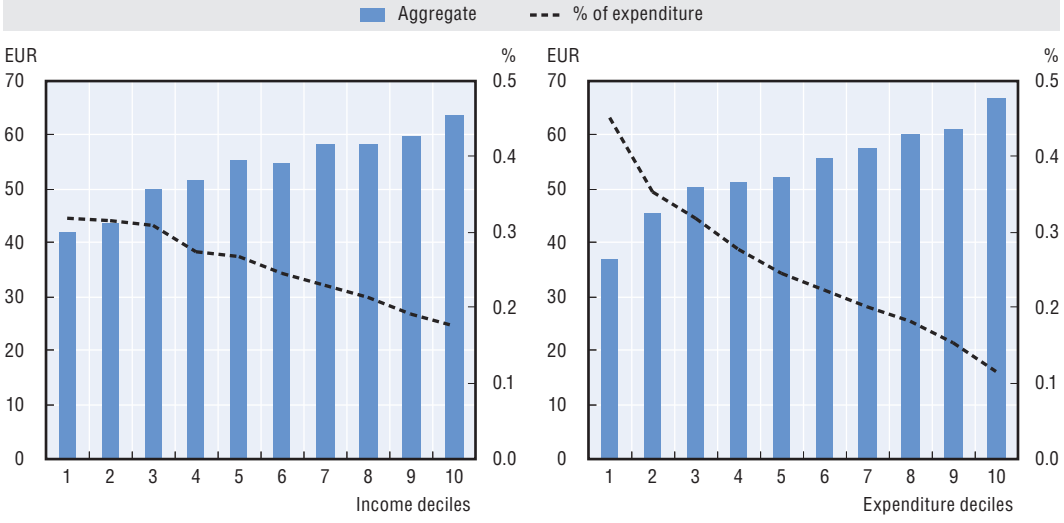
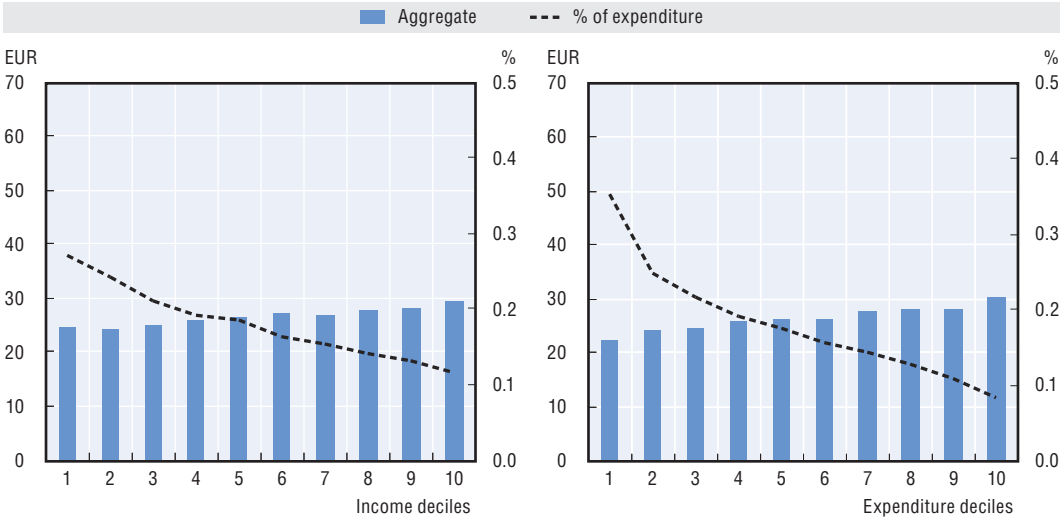


Figure 3.6. **All-country average of average tax expenditure per household from reduced rates on electricity**



In contrast, the aggregate tax reduction from the reduced VAT rate on water supply (Figure 3.7 and Tables B.13 and B.14 in Annex B) is relatively evenly distributed across the income/expenditure distributions in most of the nine countries providing reduced rates. Unsurprisingly then, as a proportion of expenditure, the reduced rate on water supply strongly favours low income/expenditure deciles.[3]

Figure 3.7. **All-country average of average tax expenditure per household from reduced rates on water supply**



Reduced rates generally aimed at supporting cultural activities and social goods

Other reduced VAT rates are not necessarily introduced specifically to support poor households. For example, a number of reduced rates are aimed at supporting cultural activities and social goods. However, these concessions may still have a significant impact on the income (and expenditure) distribution if they favour some groups over others. In order to develop coherent economic policy, it is important to be able to quantify the distributional effects of such concessions so that the impact on distributional goals can be weighed against the merits of supporting such cultural objectives or encouraging consumption of social goods.

Figures 3.8-3.11 (and Tables B.15-B.22 in Annex B) present results for the four most common HBS categories of expenditure that are supported for broader social and cultural reasons: books; newspapers and periodicals; cinema, theatre and concerts; and museums and zoos. Reduced rates are present for these consumption categories in 17, 16, 10 and 8 countries, respectively, of the 20 countries covered in this study.

There is a very consistent theme with these reduced rates across all countries. While the absolute magnitudes of the tax expenditures are greatest for books, and for newspapers and periodicals, the aggregate tax expenditures increase substantially as income/expenditure increases for each expenditure category in each country. The tax expenditure received by the top income/expenditure decile is at the very least double that received by the bottom decile, and in most cases substantially more. For example, in Estonia, the reduced rate on books provides 19 times the tax expenditure to top income decile households as it provides to bottom income decile households. Across expenditure deciles the difference is even starker as the lowest spending households in Estonia spend

almost nothing on books. Focusing on the top three income/expenditure deciles, these households receive 69% and 82%, respectively, of the total tax expenditure provided in Estonia by the reduced rate on books. Similarly, in Greece, the reduced rate on newspapers and periodicals provides nine (22) times the tax expenditure to top income (expenditure) decile households as it provides to bottom decile households. The top three income/expenditure deciles receive 56% and 60%, respectively, of the total tax expenditure from the reduced rate on newspapers and periodicals.

These aggregate results are so strong that the tax expenditures also tend to favour high income/expenditure households as a proportion of expenditure. For virtually all countries the reduced rates are regressive for books; cinema, theatre and concerts; and museums and zoos. (The exceptions being Luxembourg for books and the Netherlands for museums and zoos – where the reduced rates have a roughly proportional effect).

Figure 3.8. **All-country average of average tax expenditure per household from reduced rates on books**

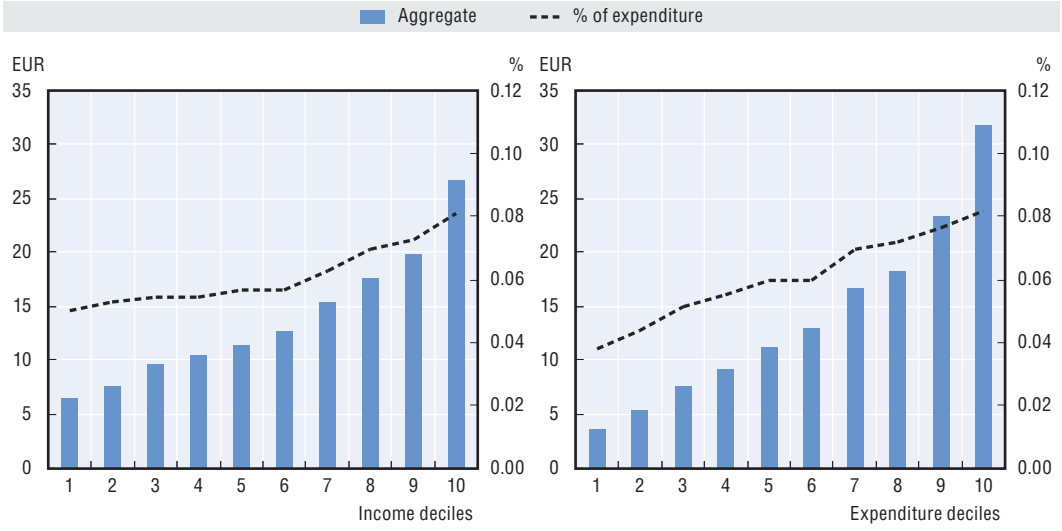
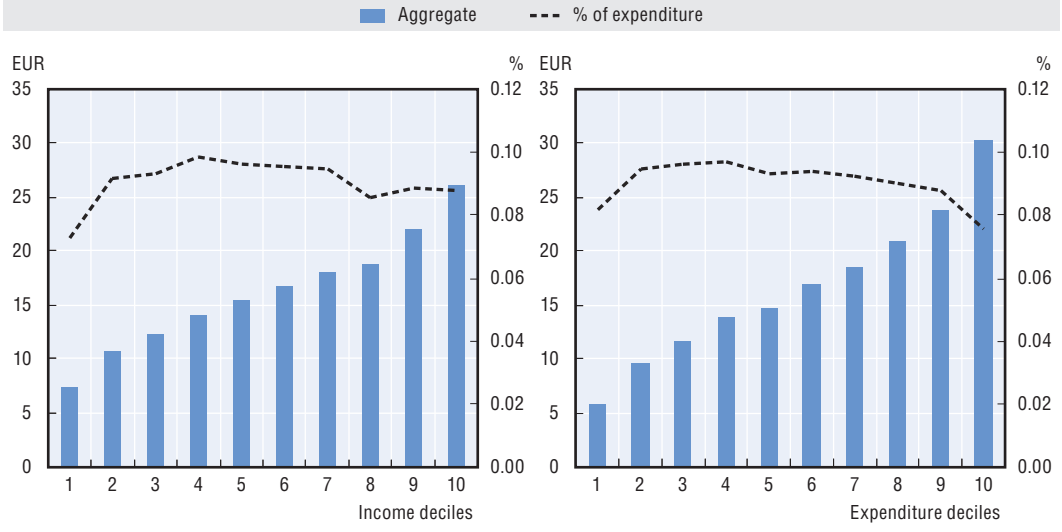


Figure 3.9. **All-country average of average tax expenditure per household from reduced rates on newspapers and periodicals**



The proportional results for the reduced rate on newspapers are more mixed, as highlighted by the comparatively flat lines in Figure 3.9. In the majority of countries the reduced rate still has a clearly regressive impact. However, it has a progressive effect in the Czech Republic and Ireland, and a roughly proportional effect in Austria. Meanwhile, households in the lower-to-middle part of the income/expenditure distributions tend to benefit most in Estonia, Slovenia and the United Kingdom.

Figure 3.10. **All-country average of average tax expenditure per household from reduced rates on cinema, theatre, concerts**

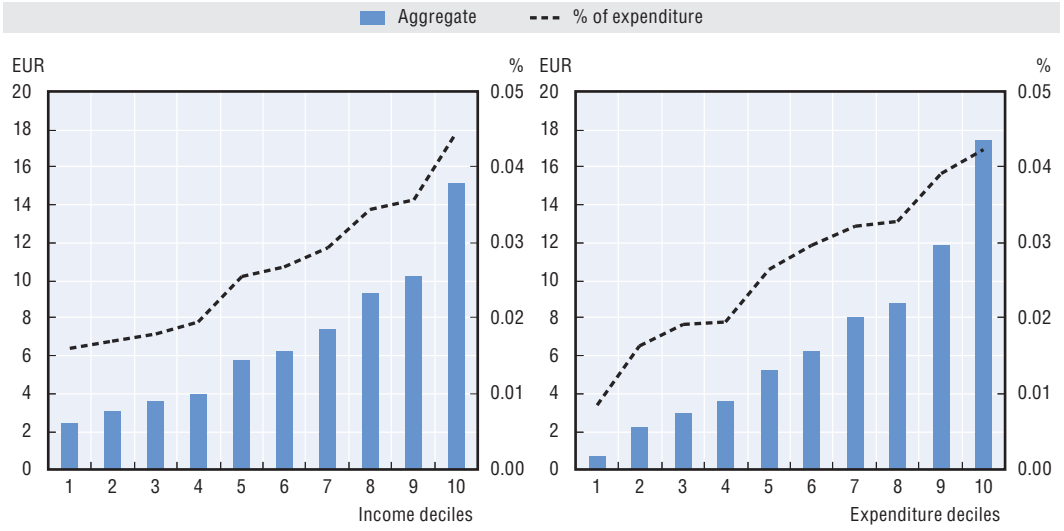
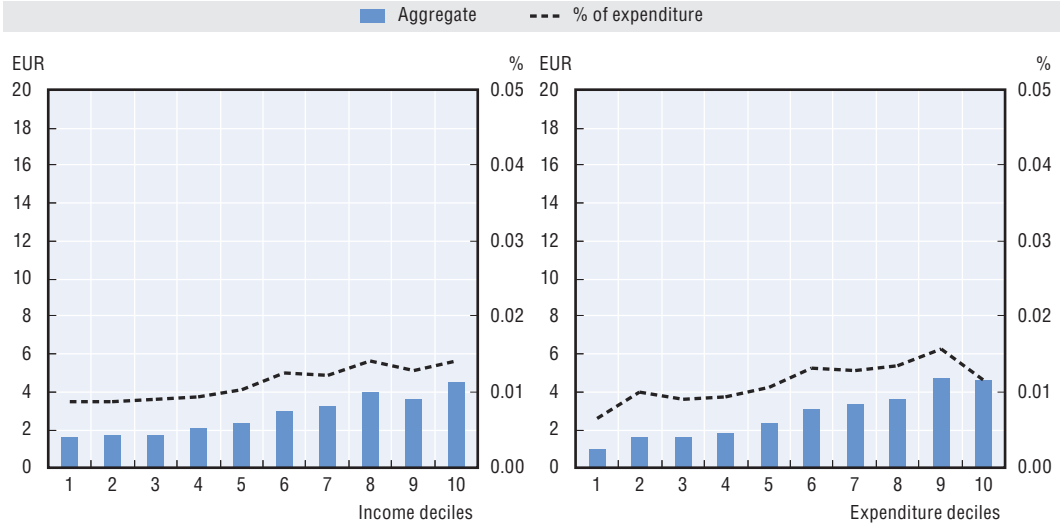


Figure 3.11. **All-country average of average tax expenditure per household from reduced rates on museums and zoos**



Reduced rates introduced for non-distributional, non-cultural purposes

Many more expenditure items are subject to reduced VAT rates, with varying policy rationales (e.g. to support industries with predominantly low-skilled workers).[4] For example, reduced rates are often applied to expenditure in restaurants, bars and cafés (normally just food), on hotel accommodation, and for transport services. Again, it is

important to be able to quantify the distributional effects of such concessions in order to accurately weigh the benefits and costs of the concessions.

Figures 3.12-3.14 (and Tables B.23-B.28 in Annex B) present the results for reduced rates on expenditure in restaurants (food only, with the exception of Italy, Luxembourg and Spain who also apply a reduced rate to alcohol); in bars and cafés (food only, except Italy, Luxembourg and Spain); and on hotel and other accommodation services. Reduced rates are present for these consumption categories in 11, 10 and 14 countries, respectively, of the 20 countries covered in this study.

Once again, these reduced rates all provide substantially greater tax expenditures for high-income/expenditure households than for low-income/expenditure households. For restaurants and hotels, in particular, the difference is often vast as rich households spend far more money on restaurants and hotels than poor households. At the extreme, 82% and 88%, respectively, of the total tax expenditure from the reduced rate on restaurant food in Poland goes to the top three income and expenditure deciles. Similarly, in Estonia and Turkey over 80% of the total tax expenditure from the reduced rate on hotel and other accommodation goes to the top three income and expenditure deciles.

Unsurprisingly, as a proportion of expenditure, the results also favour high income/expenditure households. For all countries, the reduced rates on restaurant food and hotel and other accommodation are strongly regressive. The more proportional result illustrated in Figure 3.13 for the reduced rate on cafes and bars hides a slightly mixed picture. While most countries do show either a roughly proportional pattern or one that slightly favours middle income/expenditure deciles, some countries exhibit regressive (e.g. Poland) or progressive (e.g. Turkey, across expenditure deciles) patterns.

In comparison with the cultural and social activities (e.g. books) that also exhibit a regressive pattern, the absolute magnitude of the tax expenditures received by the rich are significantly greater for restaurant food and for hotels and other accommodation services. This is particularly the case for restaurant food, where the average tax expenditure is EUR 136 for the top income decile and EUR 161 for the top expenditure decile. In contrast, the average tax expenditure for the bottom income decile is just EUR 25 and EUR 10 for the bottom expenditure decile.

Figure 3.12. **All-country average of average tax expenditure per household from reduced rates on restaurant food**

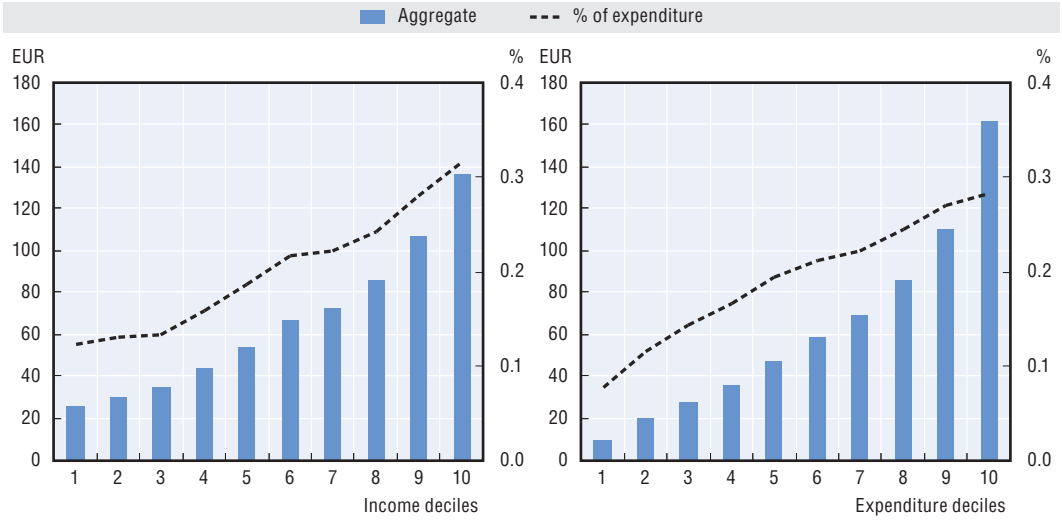


Figure 3.13. **All-country average of average tax expenditure per household from reduced rates on cafes, bars, and the like**

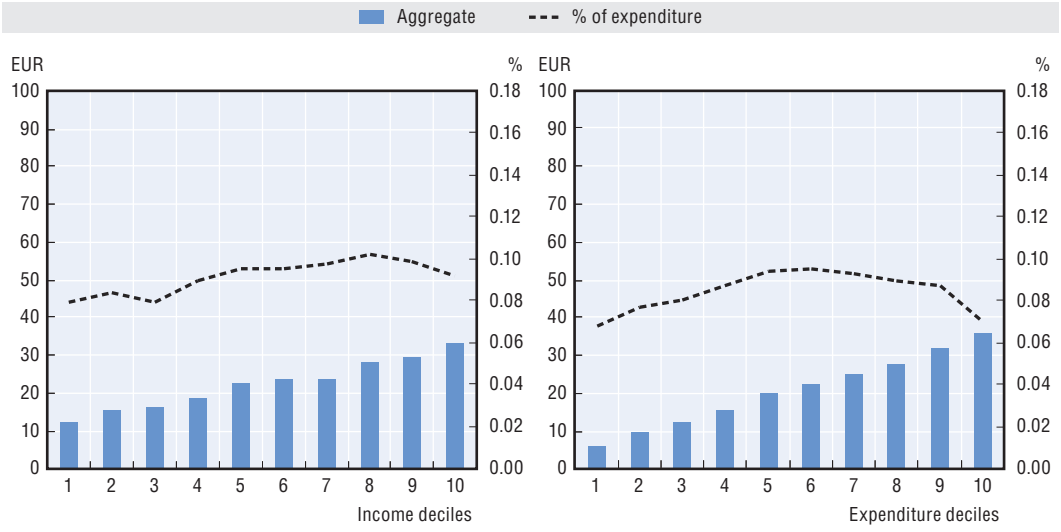
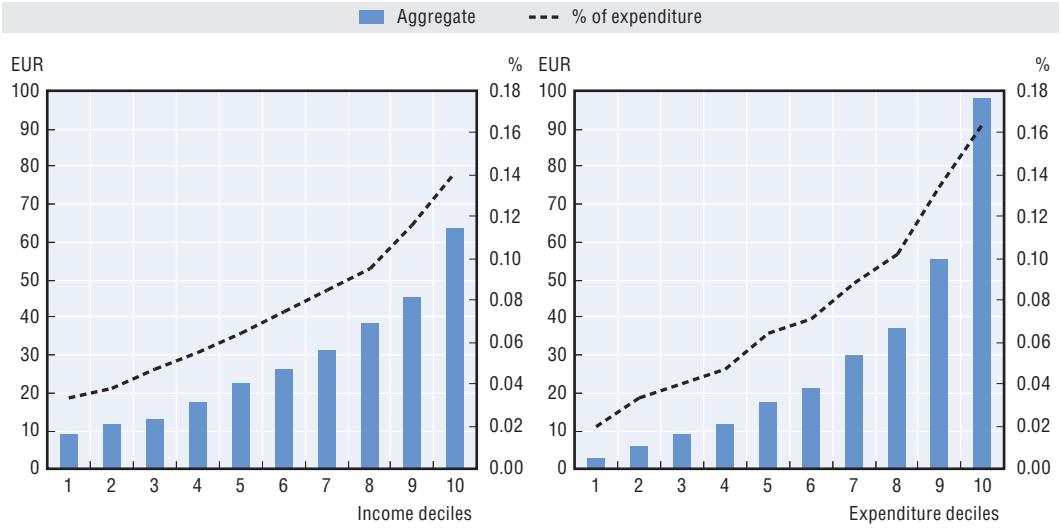


Figure 3.14. **All-country average of average tax expenditure per household from reduced rates on hotels and other accommodation services**



The final results presented are for air transport. 10 countries provide a reduced rate for domestic air transport, while all 20 countries covered in this report provide a zero rate for international air transport. Unfortunately, expenditure data distinguishing between domestic and international air travel is only available for two countries, New Zealand and the United Kingdom. Consequently we present results in two parts.

First, in Figure 3.15 (and Tables B.29 and B.30) we present results for air transport generally. This involves modelling all expenditure reported in the HBS data as being subject to the reduced rate legally applied to domestic air transport (with the exception of the United Kingdom where we only model domestic air travel expenditure). While accurately modelling the tax expenditure on the domestic component of air transport expenditure, this will clearly underestimate the tax expenditure on international air

transportation. Second, to capture a better picture of the tax expenditure on international air transport, we report separately the tax expenditure results for international air transport for New Zealand and the United Kingdom.

The results in Figure 3.15. show a clear regressive trend, with higher income/expenditure households benefiting substantially more in aggregate terms, and as a proportion of expenditure, than low income/expenditure households. Indeeed, in every country except Luxembourg, the bottom income and expenditure deciles receive virtually no benefit from the reduced rates on air transport.

Figure 3.15. **All-country average of average tax expenditure per household from reduced rate on air travel**

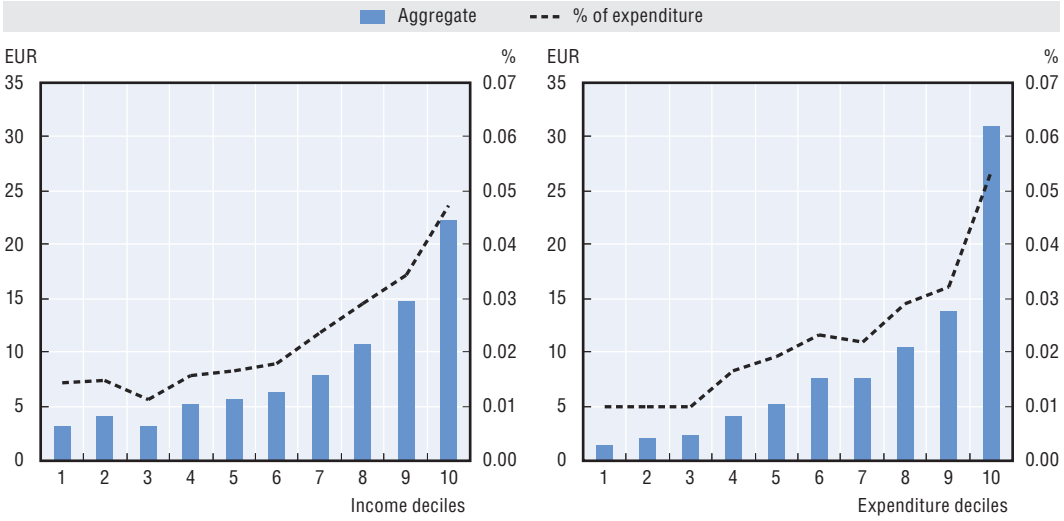
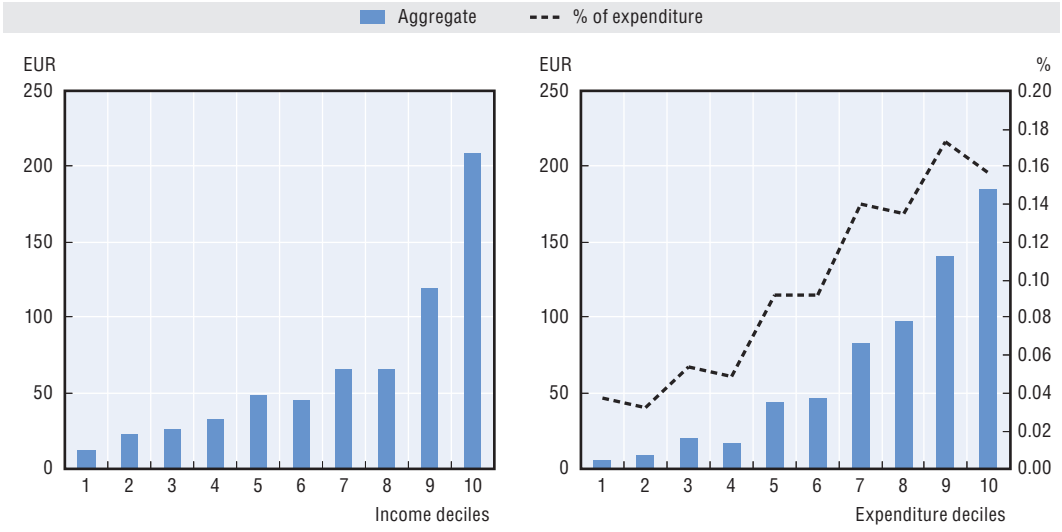


Figure 3.16 presents the results for international air transport for New Zealand, while figure 3.17 presents the same results for the United Kingdom. (The same results are reproduced in tabular form in Tables B.31 and B.32).[5] In both countries there is a similarly regressive effect to that shown in Figure 3.15. This is particularly the case across expenditure deciles in the United Kingdom.

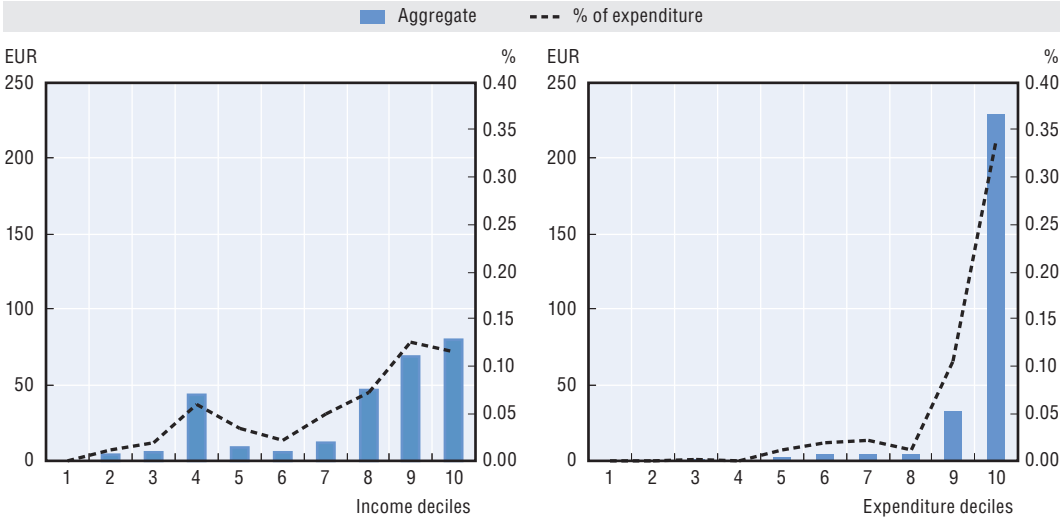
For conciseness, the analysis in this section has not covered every single reduced rate available in the 20 countries covered in the report. For example, reduced rates are often also provided for mass transport services by road or rail. These tend to provide a relatively even level of benefit across the income and expenditure distributions, and have a progressive impact when considered as a proportion of expenditure. Similarly a few countries provide reduced rates for expenditure in canteens. In some countries (e.g. Austria) the tax benefit is relatively similar across the income/expenditure distributions suggesting canteen food may be an inferior good in Austria, whereas in Greece, Spain and Slovenia the tax benefit gained is similar to that for restaurants. Countries also provide reduced rates for various other consumption items, including pets and vets, hairdressing, refuse and waste collection, gardens and plants, and sporting and recreational services. These generally involve small amounts of expenditure and/or are only present in a small number of countries.

Figure 3.16. **Average tax expenditure per household from zero rate on international air travel: New Zealand**



Note: It was not possible to report the tax expenditure as a percentage of expenditure across income deciles.

Figure 3.17. **Average tax expenditure per household from zero rate on international air travel: United Kingdom**



3.4. Summary and conclusions

This chapter has examined the effectiveness of reduced VAT rates as a redistributional tool. The analysis has been based on average tax expenditure estimates for reduced rates on different goods and services in 17 OECD countries. Tax expenditure estimates were derived by simulating the removal of all reduced VAT rates using the consumption tax micro-simulation models described in Chapter 2.

The simulation results tend to vary depending on the underlying policy rationale for introducing the reduced VAT rate. They show that most, if not all, of the reduced VAT rates that are introduced for the distinct purpose of supporting the poor – such as reduced

rates on food, water supply and energy products – do have the desired progressive effect. For example, reduced rates for food provide significantly greater support to the poor than the rich, as a proportion of expenditure, in all 15 countries where they are applied. However, despite this progressive effect, these reduced VAT rates are still shown to be a very poor tool for targeting support to poor households: at best, rich households receive as much aggregate benefit from a reduced VAT rate as do poor households; at worst, rich households benefit vastly more in aggregate terms than poor households.

Furthermore, reduced VAT rates introduced to address social, cultural and other non-distributional goals often provide so large a benefit to rich households that the reduced rate actually has a regressive effect – benefiting the rich more both in aggregate terms and as a proportion of expenditure. For example, reduced rates on hotel accommodation and restaurant food benefit the rich vastly more than the poor, both in aggregate and proportional terms, in all countries in which they are applied. Similar results, but of less absolute magnitude, are also found for reduced rates on books, cinema, theatre and concerts.

Some caution needs to be taken with these results as they do not take account of any behavioural responses to the removal of reduced VAT rates – which may result in some overestimation of the actual tax expenditures. Nevertheless, the results still strongly suggest the need for a careful, case-by-case reassessment of the relative merits of various reduced VAT rates in many countries.

Furthermore, given that redistribution is one of the prime rationales for having reduced VAT rates, the above results also provide support for theoretical arguments for a move towards a single rate VAT system (with its consequent efficiency and compliance cost benefits). These arguments are predicated on the view that targeting can be better achieved through more direct mechanisms such as income-tested cash transfers to low-income groups. Follow up work to this report will consequently investigate the ability of targeted cash transfers to compensate poor households for the removal of reduced VAT rates.

Notes

1. Recall that the VAT rates that have been modelled correspond to the year of the HBS data (most often 2010). Some rates will have changed since this time. For example, in Spain, cinemas, theatres, concerts, and hairdressers were subject to a reduced VAT rate in 2010, but since 2013 have been subject to the standard VAT rate.
2. New Zealand does provide a reduced (zero) rate for a very small number of expenditure items, however these are not identifiable in the HBS micro-data – with the exception of the zero rate applicable for international air transport. Chile and Korea also provide a zero rate for international air transport. However, international air transport is not identifiable in the HBS data for all other countries (except the United Kingdom), and hence is not modelled for any other country. For consistency, therefore, we do not include this zero rate for New Zealand in the "All reduced rates" tables. However, it is presented separately in Figure 3.16.
3. Though not presented here, refuse collection and sewerage collection are also taxed at reduced rates in two countries (Spain and Slovenia), and display only a relatively small increase in the tax reduction at higher income levels.
4. Theoretically, applying a reduced VAT rate to services provided by certain low-skill labour intensive industries could increase low-skill employment by boosting demand and wage levels for low-skilled workers and making employment more attractive to them than unemployment. However, empirical evidence in support of such concessions is difficult to find. For example, a recent study by Copenhagen Economics (2007) found reduced VAT rates to have minimal impact on demand for low-skilled workers.

5. This discussion abstracts from a key issue: what country should actually receive the VAT if it were charged on international air travel (e.g. if flying over several countries)? This complexity of this issue appears to be one of the main reasons for the current zero-rating approach.

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Copenhagen Economics (2007), *Study on reduced VAT applied to goods and services in the Member States of the European Union*, Report prepared for the European Commission.

IHS (2011), "The effect of VAT on price-setting behaviour" in IFS et al., *A retrospective evaluation of elements of the EU VAT system*, Report prepared for the European Commission.

Chapter 4

The VAT system in Korea: Measuring its burden and revenue ratios

This chapter introduces the value-added tax (VAT) and excise tax systems in Korea, examines VAT revenue ratios across OECD member countries, and estimates the VAT burden of Korean households utilising the Household Income and Expenditure Survey of Statistics Korea and the consumption tax micro-simulation model of the OECD. Korea's VAT revenue ratio is relatively high amongst OECD countries at around 70%, with this largely attributable to the single rate system with a low standard rate. Meanwhile, by comparing the VAT burden ratios to income or expenditure across income or expenditure deciles, we observe that the distribution of the burden ratios may vary significantly across different combinations of ratios and deciles. Therefore, it may be misleading to rely on a specific measure of the VAT burden ratio, such as the VAT burden ratio to income across income deciles. It is necessary to assess the policy effects of the VAT by comparing multiple measures of policy indicators.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

4.1. Introduction

In principle value-added tax (VAT) is a general consumption tax imposed on all goods and services that generate added value. In reality, however, some transactions are exempted from the tax for social fairness and the promotion of certain industries. In addition, as the destination principle is followed internationally, individual governments impose the tax only when final consumption takes place in their countries. For example, the Korean government imposes VAT on goods and services imported to and consumed in Korea but not on goods and services that are exported from Korea and consumed overseas.

VAT is an indirect tax in that tax payers are different from tax bearers. In general, there is a series of transactions from the production to the final consumption of goods and services. The tax bearers are end consumers, while the tax payers are businesses participating in each transaction. Under a VAT system without exemption and zero rating, the VAT amount borne by the end consumers is paid by the businesses participating in each transaction stage. The VAT amount that should be paid by each business is equal to the difference between the output tax and the input tax, or equivalently, to the amount of added value generated by the businesses multiplied by the tax rate.

Because the tax bearers and the tax payers are not identical under the VAT system, it is difficult to directly assess the amount of VAT borne by individual tax bearers, i.e. end consumers. To estimate the VAT burden of end consumers, a tax simulation model based on household-level consumption expenditure data can be constructed. In this chapter we will estimate the VAT burden of Korean households by utilising the Household Income and Expenditure Survey of Statistics Korea and the tax simulation model of the OECD. Based on this estimate we will analyse the VAT burden ratios to income and expenditure across income and expenditure deciles. Before this analysis we will give a brief introduction to the VAT system in Korea, and will examine the VAT revenue ratios across OECD member countries.

4.2. The Korean VAT system

The Korean government introduced its VAT system in 1977 as a replacement for its sales tax and commodity tax. When first introduced, the system had a flexible tax rate allowing adjustments of around 3 percentage points on top of the 13% standard tax rate. However, the tax rate was initially set at 10% and the 10% single rate has been maintained since the introduction. In 2010, the local consumption tax, which shares 5% of VAT revenue, was newly established. It is noteworthy that the local consumption tax was not established in addition to VAT. Instead, it was introduced in a way that distributes the existing VAT revenue between the central and local governments by a ratio of 95:5.

Exemption and zero rating

An exemption of the VAT makes certain transactions of goods and services exempt from VAT liability with no input tax deduction. When exempt businesses supply exempt goods or services, they receive no VAT, i.e. output tax, from the purchaser of the exempt items and no VAT deduction of input tax that they already paid in the previous transaction stage. Therefore, if exempt transactions occur in intermediate stages, there is an accumulation effect of the tax burden in the later stages, which is equal to the amount of input tax deduction that was not received in the exempt transactions. In Korea VAT exemptions are mainly applied to non-processed foods, passenger transport services, healthcare services, education services, financial services, real estate leasing services, cultural artworks, and print/broadcasting media.

Zero rating of the VAT system makes certain transactions of goods and services exempt completely from VAT burden by allowing input tax deduction. Under zero rating the output tax amount is set to be zero, and thus the VAT is not collected in the stage, and all input taxes paid in the previous transactions are refunded. Zero rating is mostly applied to export goods and services, based on the destination principle. In other words, when exporting goods, taxable businesses are completely free from the VAT burden as the output tax amount is zero and all input tax is deducted and refunded. Internationally, the destination principle is applied to general consumption taxes such as VAT. With the application of a zero VAT rate on export products, the tax burden in the exporting country is completely removed. The VAT will be imposed by the importing country, where the final consumption will take place. However, in Korea, there are a number of cases for which zero rating is applied on domestic consumption. Examples include zero rating on agricultural and fishing equipment, urban railway construction services, and national defence supplies.

Meanwhile, the Korean government annually reviews each tax expenditure item and provides estimated expenditure, or tax revenue foregone, due to each item. In this context, a tax expenditure item means a temporary reduction of certain tax liability, such as an exemption of the VAT, to motivate economic agents to engage in certain activities. Table 4.1 shows the ten largest VAT-related tax expenditure items in terms of expenditure amounts as of 2012.

Table 4.1. **Top VAT-related tax expenditure items**

Unit: billion KRW (Korean Won)

Rank	Tax expenditure items	Amount
1	Deduction of deemed input tax on agricultural and marine products	2 069.1
2	VAT credit based on the use of credit cards	1 440.5
3	VAT zero rating on equipment for the agriculture/forestry/livestock industry	1 344.2
4	Special case of VAT input tax credit on scrap materials for recycling	665.3
5	Exemption of indirect tax on fuel for the agriculture/forestry/fishery	427.8
6	VAT zero rating on urban railway construction services	235.8
7	VAT zero rating on national defence supplies	219.2
8	Special case of VAT refund on agricultural/fishing equipment	158.4
9	Reduction of VAT on taxi transport businesses	151.3
10	VAT zero rating on fishing equipment	69.4

Source: Korean Ministry of Strategy and Finance (2013), *Tax Expenditures Statement 2014*.

Tax revenue

VAT is the tax with the largest revenue in Korea. The total national tax revenue is KRW 203 trillion in 2012. Excluding the share of local consumption tax, the VAT revenue is KRW 55.6 trillion, accounting for 27% of national tax revenue. In comparison, personal income tax revenue was around KRW 45.7 trillion, and corporate income tax revenue stood at around KRW 45.9 trillion. When total tax revenue is defined as the sum of national and local taxes, the total tax revenue was around KRW 256.9 trillion in 2012. The VAT revenue including local consumption tax in 2012 was around KRW 58.6 trillion, accounting for around 23% of total tax revenue.

4.3. VAT revenue ratio

The VAT revenue ratio is defined as the ratio of actual tax revenue to the maximum possible tax revenue. In this section we will examine the annual trend of the VAT revenue ratio in Korea and the relationship between the standard tax rates and the VAT revenue ratios across OECD member countries.

Trend in VAT revenue ratio

Essentially, VAT is a tax imposed on the final consumption that takes place in a single country. Therefore, the maximum potential base of the VAT can be approximated with the final consumption expenditure of national accounts, which includes the consumption expenditure of households, non-profit organisations serving households, and government entities. However, because the final consumption expenditure also includes VAT paid, the final consumption expenditure minus the actual VAT revenue can be viewed as the maximum potential VAT base.[1] Imagine the following conditions for the hypothetical VAT system:

1. Zero rating is applied only on export goods and services.
2. There is no tax exemption.
3. There is no reduced rate, and a single rate is applied on all transactions.
4. There is no VAT fraud, and all imposed taxes are paid.

In the hypothetical VAT system satisfying all of the above conditions, tax revenue can be calculated by multiplying the tax rate on the potential tax base. However, in reality, the VAT system does not satisfy these conditions. As mentioned, in Korea alone, zero rating is applied not only on exports but also on some domestic consumption, and exemptions are applied to various items. In addition, presumably there is some VAT fraud regarding transactions of precious metals such as gold and silver. Fortunately, the Korean VAT system satisfies the third of the above conditions as it maintains a single rate system with no reduced rates.

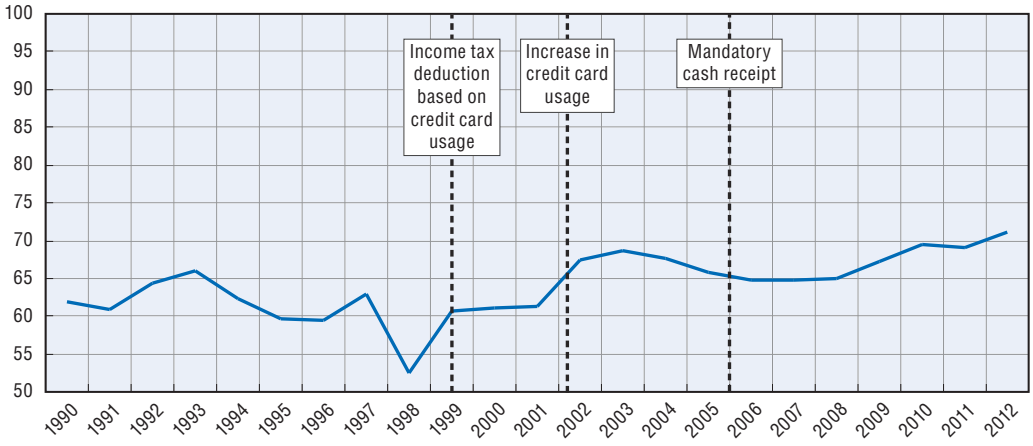
The VAT revenue ratio (VRR) is defined as the ratio between the tax revenue under the hypothetical VAT system and the actual tax revenue. Formally, the VRR is defined as follows:

$$VRR = \frac{VR}{(FCE - VR) \times r}$$

Here VR stands for the actual VAT revenue, FCE for the final consumption expenditure, and r for the standard VAT rate.

Figure 4.1 shows the trend of the annual VAT revenue ratio along with notable events. In recent years the VAT revenue ratio of Korea is around 70%. The VAT revenue ratio was around 60% before 2001, rose to and maintained at mid-60%, and recently increased to high-60% or 70%. It seems that the VAT revenue ratio gradually increased as people have actively used the income tax deduction based on credit card usage since 2000 and as the mandatory cash receipt rule was introduced in 2005. At the same time, there was little change in the tax revenue and the VAT revenue ratio during the global financial crisis in 2008 when the income tax deduction based on credit card usage and cash receipts were in force, while there were significant changes in the VAT revenue and the revenue ratio during the Asian currency crisis in 1997 when such systems did not exist.

Figure 4.1. **Trend in VAT revenue ratio with notable events**



Source: Hong, S. and M. Sung (2013), "Future Developments for Value Added Tax Policy in Korea," *Korea Institute of Public Finance Annual Report 13-02.*

International comparison of VAT revenue ratios

The international comparison of the VAT revenue ratios shows that Korea's VAT revenue ratio is relatively higher than those of other countries. Currently, there is a VAT system in all OECD member countries except the United States. Among the 33 OECD member countries with VAT systems, only six countries show their VAT revenue ratios higher than 65% as of 2012. These six countries are Luxembourg (113%), New Zealand (96%), Switzerland (71%), Estonia (70%), Japan (69%) and Korea (69%). Table 4.2 shows the annual VAT revenue ratio trends since 2005 across OECD member countries.

It is argued that the main reason for a higher VRR is to maintain a lower standard VAT rate with more limited tax expenditures, such as reduced rates, exemptions, and zero rating. However, it does not seem that these factors are directly related with the VRR. For example, among the countries with relatively high VRRs, Switzerland (standard rate of 8.0% in 2012), Japan (5%), and Korea (10%) are maintaining lower tax rates than those of other countries, while Luxemburg (15%), New Zealand (15%), and Estonia (20%) are not. Moreover, in Australia, the standard VAT rate is relatively low at 10% but the VAT revenue ratio is not high at 47%. However, Denmark has a high VAT rate (25%), while its VAT revenue ratio (59%) is not low. Other than standard VAT rates and tax expenditures, VAT compliance may also influence the revenue ratios. Mexico (31%), Italy (38%), Turkey (40%), and Spain (41%) show relatively low VRRs with respect to their standard VAT rates.

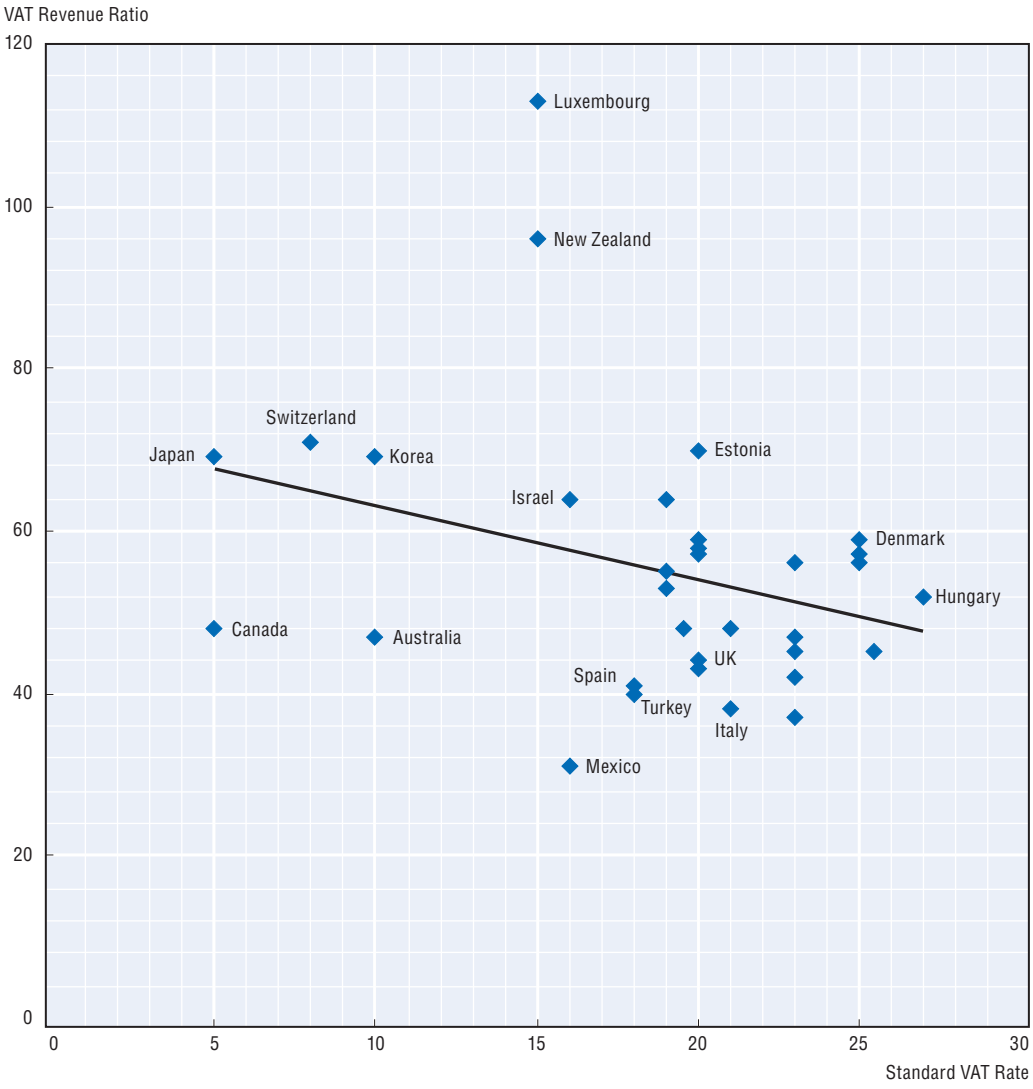
Table 4.2. **VAT revenue ratios**

	Standard VAT rate 2012	2005	2006	2007	2008	2009	2010	2011	2012
Australia	10.0	0.56	0.54	0.54	0.49	0.51	0.50	0.48	0.47
Austria	20.0	0.59	0.57	0.58	0.59	0.58	0.58	0.58	0.59
Belgium	21.0	0.50	0.52	0.51	0.48	0.47	0.48	0.48	0.48
Canada	5.0	0.50	0.47	0.51	0.51	0.49	0.49	0.48	0.48
Chile	19.0	0.67	0.64	0.67	0.70	0.59	0.62	0.63	0.64
Czech Republic	20.0	0.56	0.53	0.54	0.57	0.55	0.53	0.55	0.57
Denmark	25.0	0.63	0.65	0.65	0.62	0.59	0.58	0.59	0.59
Estonia	20.0	0.76	0.81	0.80	0.67	0.73	0.67	0.68	0.70
Finland	23.0	0.60	0.61	0.60	0.58	0.56	0.55	0.56	0.56
France	19.6	0.52	0.51	0.51	0.50	0.47	0.47	0.48	0.48
Germany	19.0	0.54	0.56	0.54	0.55	0.55	0.54	0.55	0.55
Greece	23.0	0.46	0.46	0.48	0.46	0.39	0.45	0.38	0.37
Hungary	27.0	0.48	0.55	0.59	0.57	0.62	0.53	0.52	0.52
Iceland	25.5	0.61	0.64	0.59	0.52	0.45	0.44	0.44	0.45
Ireland	23.0	0.66	0.67	0.63	0.55	0.47	0.49	0.47	0.45
Israel	16.0	0.62	0.62	0.66	0.65	0.65	0.65	0.65	0.64
Italy	21.0	0.39	0.41	0.41	0.39	0.36	0.40	0.40	0.38
Japan	5.0	0.71	0.70	0.69	0.67	0.67	0.69	0.69	0.69
Korea	10.0	0.64	0.63	0.63	0.63	0.65	0.67	0.67	0.69
Luxembourg	15.0	0.90	0.89	0.94	0.97	0.97	0.99	1.05	1.13
Mexico	16.0	0.30	0.33	0.33	0.34	0.30	0.32	0.31	0.31
Netherlands	19.0	0.59	0.58	0.59	0.57	0.52	0.55	0.53	0.53
New Zealand	15.0	1.03	1.04	0.96	0.98	0.99	1.12	0.95	0.96
Norway	25.0	0.57	0.61	0.63	0.57	0.54	0.56	0.56	0.57
Poland	23.0	0.46	0.50	0.52	0.49	0.45	0.47	0.47	0.42
Portugal	23.0	0.56	0.51	0.51	0.49	0.43	0.48	0.45	0.47
Slovak Republic	20.0	0.60	0.57	0.53	0.53	0.47	0.46	0.49	0.43
Slovenia	20.0	0.66	0.68	0.69	0.68	0.59	0.59	0.60	0.58
Spain	18.0	0.57	0.57	0.53	0.43	0.32	0.46	0.39	0.41
Sweden	25.0	0.55	0.56	0.57	0.58	0.57	0.59	0.58	0.56
Switzerland	8.0	0.72	0.74	0.73	0.74	0.70	0.72	0.71	0.71
Turkey	18.0	0.38	0.39	0.36	0.35	0.34	0.39	0.43	0.40
United Kingdom	20.0	0.46	0.46	0.46	0.44	0.44	0.44	0.44	0.44

Source: OECD (2014), *Consumption Tax Trends*, OECD Publishing, Paris.

Figure 4.2 shows the scatter plot of the standard VAT rates and the VAT revenue ratios in OECD member countries as of 2012. In this figure the solid line represents the linear trend line of the VAT revenue ratio with respect to the standard VAT rate.

Figure 4.2. **Standard VAT rates and VAT revenue ratios**



4.4. Distribution of VAT burden

To estimate the VAT burden on end consumers we will use the 2013 Household Income and Expenditure Survey of Statistics Korea and the tax simulation model of the OECD. The VAT burden of a household is estimated from data on the average monthly income and consumption of the household, and it is converted to the ratios to income and expenditure across income and expenditure deciles. Here income means equivalised disposable income while expenditure means pre-tax expenditure, which excludes VAT and other main consumption duties, such as transport fuel tax, liquor tax, and cigarette tax.[2]

VAT burden ratio

The VAT burden ratio can be defined in two ways. One is the ratio of VAT burden amount to income and the other is to expenditure. Furthermore, households can be classified into income decile groups and expenditure decile groups, and each burden ratio can be calculated as the average of each decile group. Therefore, the VAT burden ratio can be measured in four different ways. Here all burden ratios are presented in

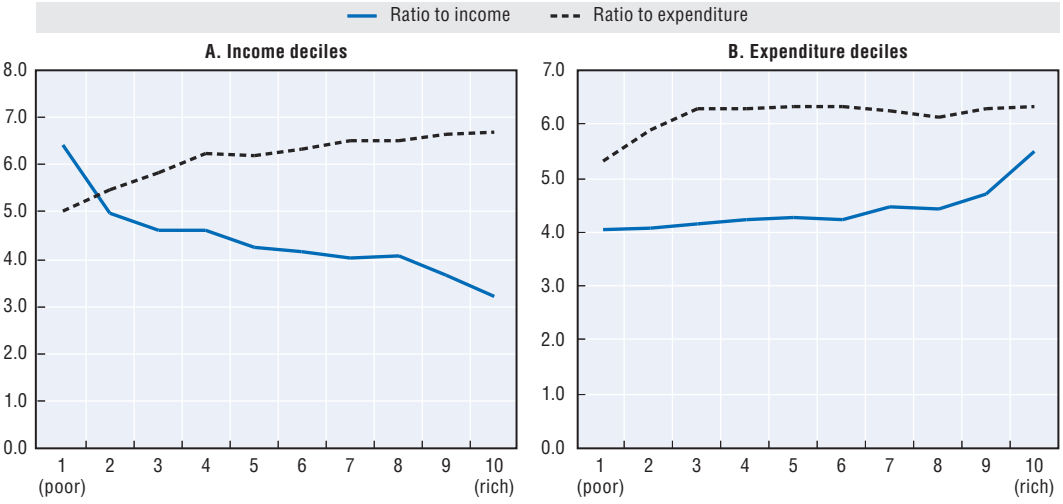
percentages (%). Table 4.3 shows the estimated VAT burden ratios. Table 4.3 (a) shows the burden ratios across income deciles and (b) shows the burden ratios across expenditure deciles. Figure 4.3 illustrates the distribution of the VAT burden ratios across income and expenditure deciles.

Table 4.3. **VAT burden ratios**

(a) Income deciles		
Deciles	Ratio to income	Ratio to expenditure
1 (poor)	6.4	5.0
2	5.0	5.5
3	4.6	5.8
4	4.6	6.2
5	4.3	6.2
6	4.2	6.4
7	4.0	6.5
8	4.1	6.5
9	3.7	6.7
10 (rich)	3.2	6.7

(b) Expenditure deciles		
Deciles	Ratio to income	Ratio to expenditure
1 (poor)	4.0	5.3
2	4.1	5.9
3	4.1	6.3
4	4.2	6.3
5	4.3	6.3
6	4.2	6.3
7	4.5	6.2
8	4.4	6.1
9	4.7	6.3
10 (rich)	5.5	6.3

Figure 4.3. **Distribution of VAT burden ratios**



The VAT burden ratio to income across income deciles indicates that the burden ratio for the first decile (poorest) group is the highest at 6.4%, and the ratio for the tenth decile (richest) group is the lowest at 3.2%. However, the opposite result is found in the burden ratio to expenditure across income deciles. The burden ratio is the lowest for the first decile group at 5.0%, and the ratio is the highest for the tenth decile group at 6.7%. In addition, similar results are found in the ratio to income across expenditure deciles. The first decile group shows the lowest burden ratio at 4.0%, and the tenth decile group shows the highest ratio at 5.5%. Meanwhile, the ratio to expenditure across expenditure deciles shows that the burden ratios are low for the first two decile groups but they are at a similar level of around 6.3% for the other groups.

The total consumption tax burden is the sum of the estimated liquor tax, cigarette tax, and transport fuel tax burden plus the VAT burden. In Korea the liquor tax is an *ad*

valorem tax and thus its burden can be estimated directly from household expenditure data on each liquor item. Including the education tax added on the liquor tax, the tax rates are set at 93.6% for soju, beer and whisky, 33% for wine, and 5.5% for rice wine.

However, the cigarette tax and the transport fuel tax are *ad quantum* taxes and their burdens cannot be estimated directly from household expenditure data, which provide only expenditure amounts but not consumed quantities. Here consumed quantities are indirectly estimated by dividing expenditure amounts by annual average prices. The price of a pack of 20 cigarettes is assumed to be KRW 2 500, and including the education tax and other charges added on the cigarette tax, the tax rate is set at KRW 1 322.50 per pack. For the transport fuel tax, the annual average consumer prices and tax rates differ across gasoline, diesel and liquefied petroleum gas (LPG). The annual average consumer prices are assumed to be KRW 1 986 per litre of gasoline, KRW 1 806 per litre of diesel, and KRW 1 573 per litre of LPG. Including the education tax and the vehicle tax added on the transport fuel tax, the tax rates are set at KRW 745.89 per litre of gasoline, KRW 528.75 per litre of diesel, and KRW 316.25 per litre of LPG.

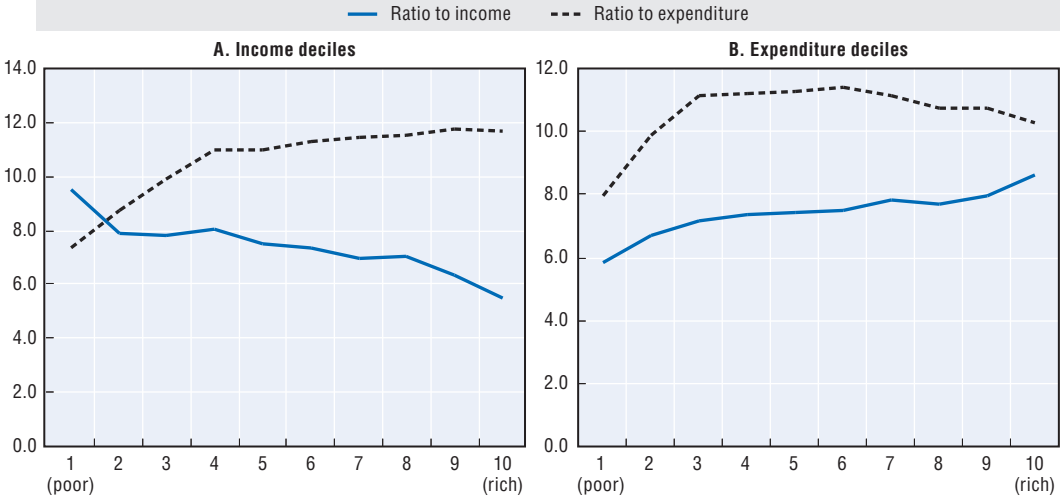
As in the comparison of the VAT burden ratios, there can be four different combinations of ratios and deciles, and these results are shown in Table 4.4 and Figure 4.4. Moreover,

Table 4.4. **Total consumption tax burden ratios**

(a) Income deciles		
Deciles	Ratio to income	Ratio to expenditure
1 (poor)	9.6	7.4
2	7.9	8.7
3	7.8	9.9
4	8.1	11.0
5	7.5	11.0
6	7.3	11.3
7	7.0	11.5
8	7.1	11.5
9	6.4	11.8
10 (rich)	5.5	11.7

(b) Expenditure deciles		
Deciles	Ratio to income	Ratio to expenditure
1 (poor)	5.8	7.9
2	6.7	9.9
3	7.1	11.1
4	7.3	11.2
5	7.4	11.3
6	7.5	11.4
7	7.8	11.1
8	7.7	10.8
9	7.9	10.8
10 (rich)	8.6	10.3

Figure 4.4. **Distribution of total consumption tax burden ratios**



the burden ratios can be compared for each of the liquor tax, cigarette tax, and transport fuel tax, which are shown in Annex C.

The comparison of the total consumption tax burden ratio to income across income deciles shows that the first decile (poorest) group has the highest burden ratio at 9.6%, and the tenth decile (richest) group has the lowest ratio at 5.5%. However, the opposite result is found in the comparison of the total consumption tax burden ratio to expenditure across income deciles. The total consumption tax burden ratio to income across expenditure deciles shows a similar result. While the first decile group shows the lowest ratio at 5.8%, the tenth decile group shows the highest ratio at 8.6%. Meanwhile, the total consumption tax burden ratio to expenditure across expenditure deciles is relatively low for the first two decile groups, and the ratio is maintained at a similar level around 11% for the other groups. Interestingly, the burden ratio peaks for the sixth decile group and gradually declines afterwards.

VAT burden and household characteristics

The VAT burden ratio across income and expenditure deciles and across household characteristics is estimated in this section. First we estimate the VAT burden ratio across household compositions. Households are classified into six groups as follows: households of one adult, two adults, three or more adults, one adult with a child, two adults with a child, and three or more adults with a child. Here a child means a household member 16

Table 4.5. **VAT burden ratio to income by household compositions and income deciles**

Income deciles	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch	Average
1 (poor)	5.9	6.3	7.5	9.4	9.0	7.3	6.4
2	4.7	4.8	5.2	5.7	5.8	5.0	5.0
3	4.3	4.3	4.6	5.1	5.2	4.6	4.6
4	4.2	4.3	5.2	4.8	4.9	4.4	4.6
5	3.8	4.2	4.4	3.7	4.6	4.2	4.3
6	4.1	4.5	3.8	3.8	4.3	3.9	4.2
7	3.9	4.0	3.9	3.7	4.2	4.0	4.0
8	4.3	3.8	4.2	3.8	4.2	3.7	4.1
9	3.7	3.6	3.5	3.8	3.8	3.6	3.7
10 (rich)	3.1	3.2	3.5	3.2	3.2	3.2	3.2
Average	4.4	4.4	4.3	4.6	4.5	4.3	4.4

Table 4.6. **VAT burden ratio to expenditure by household compositions and expenditure deciles**

Expenditure deciles	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch	Average
1 (poor)	5.0	5.4	6.1	5.4	6.2	6.7	5.3
2	5.6	5.6	6.8	6.0	6.7	6.0	5.9
3	6.0	6.3	6.9	6.3	6.3	6.4	6.3
4	6.3	6.5	6.6	5.1	6.3	5.9	6.3
5	6.2	6.7	6.8	5.2	6.3	5.8	6.3
6	6.4	6.3	6.7	5.6	6.3	6.0	6.3
7	6.1	6.6	6.5	5.9	6.2	5.8	6.2
8	6.2	6.2	7.0	5.3	6.1	5.5	6.1
9	6.5	6.7	5.9	5.5	6.3	5.6	6.3
10 (rich)	6.5	6.2	6.5	6.0	6.4	6.0	6.3
Average	5.9	6.2	6.6	5.6	6.3	5.9	6.1

years old or younger. Note that there is no distinction between households with one child and those with two or more children.

Table 4.5 shows the estimated VAT burden ratio to income across household compositions and income deciles. Across household compositions, the burden ratio for households of one adult with a child is the highest at 4.6%. Regardless of having a child or not, households of three or more adults show the lowest burden ratio at 4.3%. When the burden ratios are compared across household compositions and income deciles, the burden ratio for households of one adult with a child in the first decile (poorest) group is the highest at 9.4%. For households of one adult in the tenth decile (richest) group, the burden ratio is the lowest at 3.1%.

Table 4.6 shows the estimated VAT burden ratio to expenditure across household compositions and expenditure deciles. Across household compositions, the burden ratio for households of three or more adults is the highest at 6.6%, and for households of one adult with a child, the burden ratio is the lowest at 5.6%. When compared across household compositions and expenditure deciles, the burden ratio is the highest at 7.0% for households of three or more adults in the eighth decile group, and the ratio is the lowest at 5.0% for households of one adult in the first decile group.

Next we examine the VAT burden ratio across income and expenditure deciles and ages of household heads. The head of a household is the household member with the highest income, and households are categorised into seven groups depending on ages of their household heads as follows: 0-19, 20-29, 30-39, 40-49, 50-59, 60-69, and 70+. These groups will be referred to as age groups.[3]

Table 4.7. **VAT burden ratio to income by age groups and income deciles**

Income deciles	20-29	30-39	40-49	50-59	60-69	70+	Average
1 (poor)	10.6	11.4	8.8	8.4	6.8	5.2	6.4
2	10.9	5.4	6.2	5.5	4.5	3.9	5.0
3	4.5	5.2	5.1	4.8	4.1	3.6	4.6
4	4.7	5.0	4.7	4.9	4.1	3.3	4.6
5	5.3	4.8	4.2	4.5	3.5	2.8	4.3
6	4.5	4.6	4.2	4.1	3.6	3.4	4.2
7	4.4	4.4	4.2	3.8	3.7	3.1	4.0
8	8.0	4.2	4.3	3.8	3.3	2.9	4.1
9	4.3	4.0	3.7	3.5	3.1	3.2	3.7
10 (rich)	2.8	3.4	3.3	3.1	3.0	2.4	3.2
Average	5.8	4.6	4.4	4.3	4.3	4.2	4.4

Table 4.8. **VAT burden ratio to expenditure by age groups and expenditure deciles**

Expenditure deciles	20-29	30-39	40-49	50-59	60-69	70+	Average
1 (poor)	7.6	6.6	6.7	6.1	5.4	4.9	5.3
2	6.3	6.7	6.7	6.4	5.8	4.9	5.9
3	7.5	7.0	6.5	6.6	6.0	4.9	6.3
4	7.1	6.7	6.2	6.6	6.1	5.0	6.3
5	7.6	6.8	6.1	6.4	6.3	5.2	6.3
6	7.5	6.8	6.2	6.5	5.9	5.2	6.3
7	7.5	6.6	6.2	6.2	5.8	4.5	6.2
8	6.7	6.7	5.9	6.3	6.2	3.9	6.1
9	6.2	6.9	6.1	6.2	6.1	5.3	6.3
10 (rich)	7.8	6.9	6.2	6.3	5.7	4.7	6.3
Average	7.3	6.8	6.2	6.4	5.9	4.9	6.1

Table 4.7 shows the estimated VAT burden ratio to income across age groups and income deciles. Across age groups, the VAT burden ratio to income is the highest at 5.8% for the 20-29 age group, and the lowest at 4.2% for the 70+ age group. When compared across age groups and income deciles, the VAT burden ratio is the highest at 11.4% for households in the 30-39 age group and in the first decile (poorest) group, and it is the lowest at 2.4% for households in the 70+ age group and in the tenth decile (richest) group.

Table 4.8 shows the estimated VAT burden ratio to expenditure across age groups and expenditure deciles. Across age groups, the VAT burden ratio to expenditure is the highest at 7.3% for households in the 20-29 age group, and the lowest at 4.9% for households in the 70+ age group. When compared across age groups and expenditure deciles, the VAT burden ratio to expenditure is the highest at 7.8% for households in the 20-29 age group and in the tenth decile (richest) group. It is the lowest at 3.9% for households in the 70+ age group and in the eighth decile group.

Lastly we estimate the VAT burden ratio across income and expenditure deciles and economic activity types of household heads. Households are classified into five categories depending on economic activity types of their heads, such as working, unemployed, self-employed, no compensation, and others.[4]

Table 4.9 shows the estimated VAT burden ratio to income across economic activity types and income deciles. Across economic activity types, the VAT burden ratio for unemployed households is relatively high at 4.8%, and the ratios for working and

Table 4.9. **VAT burden ratio to income by economic activity types and income deciles**

Income deciles	Working	Unemployed	Self-employed	Other	Average
1 (poor)	6.7	6.3	6.6	6.6	6.4
2	5.4	4.5	5.2	4.0	5.0
3	4.5	4.4	4.9	5.2	4.6
4	4.7	4.1	4.7	5.2	4.6
5	4.3	3.5	4.4	5.1	4.3
6	4.2	4.0	4.3	4.6	4.2
7	4.1	3.6	3.9	4.0	4.0
8	4.1	3.9	4.1	3.9	4.1
9	3.8	3.3	3.4	3.6	3.7
10 (rich)	3.2	2.8	3.3	3.3	3.2
Average	4.3	4.8	4.4	4.2	4.4

Table 4.10. **VAT burden ratio to expenditure by economic activity types and expenditure deciles**

Expenditure deciles	Working	Unemployed	Self-employed	Other	Average
1 (poor)	5.7	5.0	6.0	5.9	5.3
2	6.3	5.2	6.2	6.2	5.9
3	6.5	5.4	6.5	7.1	6.3
4	6.5	5.2	6.5	7.6	6.3
5	6.5	5.5	6.2	6.4	6.3
6	6.5	5.6	6.3	6.4	6.3
7	6.4	5.1	6.4	6.4	6.2
8	6.3	4.7	6.1	6.3	6.1
9	6.4	5.5	6.3	5.8	6.3
10 (rich)	6.4	5.6	6.6	6.5	6.3
Average	6.4	5.2	6.3	6.5	6.1

self-employed households are relatively low at around 4.3% and 4.4%, respectively. When compared across economic activity types and income deciles, the VAT burden ratio is the highest at 6.7% for working households in the first decile (poorest) group, and the lowest at 2.8% for unemployed households in the tenth decile (richest) group.

Table 4.10 shows the estimated VAT burden ratio to expenditure across economic activity types and expenditure deciles. Across economic activity types, the VAT burden ratio is relatively high for working and self-employed households at around 6.4% and 6.3%, respectively, and it is relatively low at 5.2% for unemployed households. When compared across economic activity types and expenditure deciles, the VAT burden ratio is the highest at 6.6% for self-employed households in the tenth decile (richest) group. For unemployed households in the eighth decile group, the ratio is the lowest at 4.7%. Also, the VAT burden ratio is relatively low at 5.0% for unemployed households in the first decile (poorest) group.

Estimated VAT burden ratio to expenditure across income deciles and ratio to income across expenditure deciles based on household characteristics are presented in Annex D.

4.5. Conclusion

If the single rate system is maintained, the VAT is a relatively efficient tax with less economic distortion compared to other taxes. However, in reality, there are a number of VAT reductions, such as reduced rates, exemptions, and zero rating. The VAT revenue ratio and the VAT burden ratio can be used to assess the policy effects of the tax system. Korea's VAT revenue ratio is relatively high at around 70%. This is mostly attributable to the single rate system with a low standard rate. Meanwhile, by comparing the VAT burden ratios to income or expenditure across income or expenditure deciles, we observe that the distribution of the burden ratios may vary significantly across different combinations of ratios and deciles. Therefore, it may be misleading to rely on a specific measure of the VAT burden ratio, such as the VAT burden ratio to income across income deciles. It is necessary to assess the policy effects of the VAT by comparing multiple measures of policy indicators.

Notes

1. For detailed information, see Chapter 3, "Measuring performance of VAT", in OECD (2014).
2. An introduction to this model can be found Chapter 2.
3. However, there are few observations (8 out of 9896 households in total) in the 0-19 age group, which is not considered when comparisons are made across age groups.
4. There are few observations (4 out of 9896 households in total) for no-compensation households. This type of households is not considered when comparisons are made across economic activity types.

References

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ANNEX A

Demographic breakdowns by decile

Table A.1. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and household type**

AUT	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	18.4%	20.4%	26.3%	17.8%	20.5%	18.2%
2	12.9%	14.0%	16.0%	14.8%	15.4%	16.9%
3	13.5%	14.6%	14.0%	14.2%	14.9%	14.5%
4	12.3%	13.0%	12.1%	14.1%	14.6%	na
5	13.8%	12.8%	13.4%	11.5%	13.2%	13.2%
6	12.8%	11.4%	10.1%	na	12.9%	11.0%
7	12.6%	11.5%	11.8%	12.1%	11.6%	12.4%
8	10.9%	11.9%	10.4%	na	12.4%	11.7%
9	10.3%	10.8%	10.1%	na	10.5%	na
10	9.6%	9.4%	8.6%	na	9.8%	na

AUT	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	16.1%	15.6%	18.4%	15.1%	15.9%	17.2%
2	14.2%	14.8%	16.3%	14.0%	16.3%	16.9%
3	15.3%	15.3%	16.0%	15.6%	16.9%	17.0%
4	15.5%	14.5%	18.4%	15.6%	16.7%	na
5	16.4%	15.4%	17.2%	14.7%	16.4%	16.5%
6	15.6%	15.8%	15.0%	na	16.5%	17.6%
7	16.0%	16.1%	16.6%	15.6%	15.6%	18.5%
8	15.2%	17.4%	16.7%	na	16.4%	17.6%
9	15.0%	16.2%	17.1%	na	16.1%	na
10	14.9%	15.6%	16.8%	na	14.8%	na

BEL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	13.8%	16.9%	16.3%	11.4%	13.5%	14.8%
2	13.7%	15.1%	14.8%	14.1%	13.1%	na
3	13.3%	14.8%	13.5%	13.9%	12.9%	11.5%
4	13.9%	14.5%	10.9%	13.2%	13.5%	12.9%
5	13.3%	13.2%	12.6%	10.9%	13.0%	12.5%
6	12.7%	14.1%	14.6%	13.5%	12.3%	11.1%
7	11.8%	13.0%	11.7%	na	12.4%	na
8	11.6%	12.6%	9.1%	na	11.7%	na
9	11.4%	11.6%	10.1%	na	10.6%	na
10	7.3%	12.0%	na	na	7.9%	na

BEL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	10.9%	12.1%	11.7%	11.6%	12.3%	12.3%
2	11.8%	12.6%	12.6%	13.1%	13.0%	na
3	11.6%	13.3%	12.5%	13.3%	13.0%	12.3%
4	12.2%	13.3%	12.2%	12.9%	13.9%	13.1%
5	12.6%	12.6%	14.3%	12.8%	13.8%	13.5%
6	12.7%	13.5%	13.6%	14.0%	13.7%	12.6%
7	12.1%	13.8%	13.9%	na	13.9%	na
8	12.6%	14.2%	12.5%	na	13.8%	na
9	13.7%	14.0%	13.8%	na	13.6%	na
10	12.9%	13.6%	na	na	14.0%	na

CHL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	19.6%	20.2%	23.4%	20.2%	23.9%	19.8%
2	16.5%	17.2%	17.2%	13.6%	19.0%	15.9%
3	14.4%	14.5%	16.1%	12.3%	14.8%	13.5%
4	13.7%	14.1%	12.7%	13.0%	13.6%	12.4%
5	13.1%	13.0%	12.9%	11.2%	13.0%	12.6%
6	13.2%	12.9%	12.0%	na	13.6%	13.6%
7	12.2%	11.7%	10.4%	na	13.1%	10.5%
8	10.5%	12.3%	9.7%	11.4%	12.0%	9.8%
9	11.9%	10.5%	9.9%	9.8%	11.3%	9.2%
10	9.2%	8.6%	8.7%	na	8.1%	8.4%

CHL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	8.7%	10.5%	12.2%	10.9%	13.3%	12.8%
2	10.0%	12.1%	12.1%	10.6%	13.5%	13.0%
3	9.7%	10.9%	12.7%	10.2%	13.3%	13.0%
4	10.8%	12.2%	12.1%	11.1%	12.7%	13.4%
5	10.5%	11.9%	12.5%	12.1%	12.9%	13.4%
6	11.4%	12.9%	12.9%	na	13.9%	14.3%
7	10.6%	12.7%	12.3%	na	14.8%	13.9%
8	10.7%	12.8%	12.9%	11.4%	14.3%	13.4%
9	11.9%	13.1%	12.8%	10.9%	13.3%	12.5%
10	12.4%	13.1%	12.6%	na	12.5%	12.5%

Table A.1. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and household type** *(continued)*

CZE	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	9.8%	na	na	10.5%	10.4%	na
2	11.1%	na	na	10.9%	11.6%	na
3	11.4%	10.9%	na	na	11.5%	na
4	11.3%	11.8%	na	na	12.2%	na
5	12.1%	11.9%	na	na	12.6%	na
6	12.0%	12.9%	na	10.6%	12.3%	na
7	12.7%	12.5%	na	na	13.1%	na
8	12.9%	12.7%	na	na	13.2%	na
9	13.0%	13.3%	na	na	14.0%	na
10	15.2%	15.4%	na	na	15.2%	na

CZE	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	16.0%	na	na	15.6%	21.6%	na
2	17.0%	na	na	14.8%	20.7%	na
3	16.3%	20.1%	na	na	19.7%	na
4	15.1%	19.2%	na	na	20.2%	na
5	16.9%	19.0%	na	na	20.0%	na
6	16.6%	19.4%	na	15.9%	19.6%	na
7	17.0%	19.0%	na	na	20.1%	na
8	16.9%	19.3%	na	na	19.3%	na
9	16.8%	19.4%	na	na	19.1%	na
10	18.0%	19.5%	na	na	18.9%	na

DEU	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	11.5%	13.8%	15.1%	11.5%	13.4%	na
2	10.7%	12.6%	11.1%	10.8%	12.3%	14.0%
3	10.9%	12.5%	12.5%	11.3%	11.8%	10.9%
4	11.3%	12.5%	12.2%	11.0%	11.9%	12.2%
5	10.9%	12.1%	11.8%	10.6%	11.3%	11.1%
6	10.9%	11.8%	11.7%	10.5%	11.0%	10.8%
7	10.4%	11.4%	11.1%	10.4%	10.5%	10.8%
8	10.5%	11.2%	10.7%	10.3%	9.7%	10.6%
9	9.3%	10.3%	10.1%	9.7%	9.0%	9.8%
10	7.7%	8.5%	8.7%	7.7%	7.6%	8.5%

DEU	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	10.1%	11.1%	12.8%	10.8%	12.4%	na
2	10.3%	11.8%	12.5%	11.6%	12.9%	14.0%
3	11.1%	12.5%	13.5%	12.2%	13.3%	13.1%
4	11.8%	12.7%	14.5%	12.5%	13.7%	14.5%
5	12.1%	13.1%	14.2%	12.4%	13.7%	13.9%
6	12.5%	13.3%	15.1%	12.6%	13.8%	14.0%
7	12.7%	13.6%	14.7%	12.6%	13.4%	14.3%
8	12.8%	13.7%	14.6%	12.1%	13.0%	14.0%
9	12.3%	13.3%	14.2%	11.6%	12.4%	14.0%
10	11.5%	12.6%	13.3%	11.6%	11.9%	13.3%

ESP	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	14.7%	18.0%	22.8%	19.2%	24.0%	24.5%
2	10.7%	15.7%	17.0%	16.8%	19.3%	19.1%
3	8.9%	12.5%	17.4%	15.6%	17.1%	19.4%
4	11.3%	12.9%	14.8%	13.3%	16.0%	16.2%
5	10.9%	12.7%	14.8%	14.2%	16.0%	14.3%
6	10.6%	11.2%	13.0%	12.7%	14.5%	14.2%
7	10.7%	12.8%	13.0%	13.9%	13.4%	12.8%
8	10.7%	11.6%	11.8%	12.4%	12.3%	12.9%
9	9.4%	10.7%	10.7%	9.8%	11.4%	10.6%
10	8.9%	9.1%	9.0%	na	9.7%	9.8%

ESP	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	11.5%	13.9%	17.3%	11.8%	16.1%	17.3%
2	10.9%	13.0%	15.6%	12.7%	15.8%	17.2%
3	10.7%	12.4%	17.6%	13.8%	16.1%	17.5%
4	12.2%	14.1%	16.9%	13.4%	15.6%	16.4%
5	12.4%	13.9%	16.3%	12.5%	15.6%	15.6%
6	13.2%	13.8%	16.2%	13.0%	15.4%	16.3%
7	13.4%	14.3%	15.9%	14.8%	15.7%	15.7%
8	14.3%	15.0%	15.9%	14.2%	14.7%	15.8%
9	12.4%	14.2%	15.3%	13.6%	14.3%	15.7%
10	12.9%	14.3%	15.0%	na	13.7%	14.9%

EST	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	35.9%	21.0%	23.9%	19.5%	27.5%	25.5%
2	18.6%	21.3%	17.2%	na	19.6%	16.3%
3	13.0%	na	na	na	15.8%	na
4	16.0%	13.5%	15.5%	na	16.2%	na
5	13.9%	14.2%	12.8%	na	15.2%	16.4%
6	na	na	na	na	15.7%	na
7	14.5%	13.4%	14.6%	na	15.7%	12.0%
8	12.2%	12.9%	12.3%	na	14.7%	na
9	na	na	na	na	14.6%	na
10	14.3%	na	na	na	11.7%	na

EST	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	36.4%	26.8%	22.5%	22.9%	24.5%	25.9%
2	26.8%	26.5%	25.0%	na	24.6%	24.6%
3	22.3%	na	na	na	24.0%	na
4	23.8%	23.9%	22.5%	na	22.9%	na
5	20.3%	23.2%	22.5%	na	24.1%	25.1%
6	na	na	na	na	24.7%	na
7	25.3%	23.2%	25.9%	na	23.9%	23.7%
8	22.3%	25.2%	23.5%	na	23.8%	na
9	na	na	na	na	23.3%	na
10	23.2%	na	na	na	23.6%	na

Table A.1. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and household type** *(continued)*

GBR	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	13.4%	16.8%	na	11.2%	15.4%	na
2	8.0%	14.6%	na	11.5%	12.9%	na
3	8.5%	10.3%	na	10.0%	11.0%	na
4	8.7%	10.4%	13.0%	9.7%	9.7%	na
5	7.5%	10.0%	10.4%	na	8.5%	na
6	8.3%	9.2%	10.1%	na	8.1%	na
7	8.2%	8.8%	9.0%	na	8.7%	10.7%
8	7.1%	8.6%	8.1%	na	7.6%	na
9	7.1%	7.8%	9.0%	na	7.4%	na
10	5.7%	7.1%	6.1%	na	7.4%	na

GBR	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	13.2%	15.6%	na	13.3%	16.4%	na
2	10.8%	15.9%	na	13.8%	14.8%	na
3	11.8%	13.6%	na	13.0%	14.5%	na
4	12.4%	14.2%	16.6%	12.1%	14.1%	na
5	11.7%	14.1%	17.6%	na	14.2%	na
6	13.8%	14.5%	16.3%	na	14.3%	na
7	15.0%	14.6%	16.4%	na	15.0%	15.7%
8	14.0%	15.2%	15.6%	na	15.1%	na
9	14.2%	15.1%	16.0%	na	14.1%	na
10	14.0%	15.2%	14.6%	na	13.4%	na

GRC	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	14.8%	21.3%	na	na	23.9%	na
2	13.6%	14.1%	na	na	20.3%	na
3	9.4%	10.2%	14.8%	na	18.4%	na
4	10.1%	11.3%	na	na	19.2%	na
5	11.7%	11.9%	14.5%	na	15.2%	na
6	10.4%	10.6%	13.1%	na	14.2%	na
7	10.5%	10.4%	11.4%	na	13.8%	na
8	11.5%	11.5%	11.9%	na	12.5%	na
9	10.9%	11.0%	11.6%	na	12.5%	na
10	9.7%	9.2%	10.2%	na	10.5%	na

GRC	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	13.5%	18.0%	na	na	17.6%	na
2	12.9%	16.5%	na	na	17.1%	na
3	11.8%	16.1%	21.1%	na	18.3%	na
4	12.7%	15.7%	na	na	17.9%	na
5	14.5%	16.2%	20.1%	na	17.2%	na
6	14.8%	16.4%	21.3%	na	17.2%	na
7	16.1%	18.2%	19.3%	na	18.8%	na
8	16.5%	18.4%	19.7%	na	16.8%	na
9	16.7%	18.0%	19.7%	na	16.9%	na
10	17.0%	17.9%	19.7%	na	15.4%	na

HUN	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	28.4%	25.6%	24.7%	23.8%	22.8%	21.8%
2	19.7%	20.6%	19.9%	21.3%	20.8%	17.4%
3	18.8%	18.2%	18.2%	18.3%	18.5%	16.2%
4	17.5%	16.9%	17.1%	18.0%	18.4%	16.3%
5	16.6%	16.4%	15.7%	17.3%	18.0%	15.1%
6	16.9%	16.5%	15.1%	na	16.8%	14.2%
7	17.0%	16.1%	16.1%	17.7%	16.8%	15.2%
8	15.7%	15.1%	15.1%	15.1%	15.5%	14.5%
9	17.4%	14.8%	12.6%	13.9%	15.4%	13.2%
10	15.3%	12.8%	11.1%	12.1%	12.7%	na

HUN	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	27.4%	28.4%	29.6%	26.3%	28.3%	32.1%
2	23.8%	27.1%	29.4%	25.8%	28.5%	28.9%
3	23.3%	25.5%	28.7%	25.3%	28.5%	29.6%
4	22.7%	25.1%	28.9%	25.9%	27.6%	29.5%
5	22.9%	25.5%	26.3%	26.2%	28.1%	28.4%
6	23.4%	26.2%	28.2%	na	27.6%	28.5%
7	24.1%	26.7%	29.8%	25.4%	27.8%	28.7%
8	23.5%	26.3%	29.9%	26.2%	28.1%	30.5%
9	25.9%	26.6%	28.5%	24.9%	28.1%	30.3%
10	26.6%	26.6%	27.8%	24.7%	27.0%	na

IRL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	17.1%	24.6%	na	19.3%	20.8%	na
2	12.7%	16.9%	27.0%	na	16.5%	na
3	14.5%	14.8%	19.4%	12.8%	16.4%	17.0%
4	11.9%	13.7%	15.1%	13.2%	14.6%	15.5%
5	12.1%	13.7%	14.2%	11.2%	12.5%	13.2%
6	13.1%	11.5%	12.4%	na	11.5%	12.3%
7	10.3%	10.8%	11.8%	na	10.2%	10.7%
8	9.5%	9.4%	10.5%	na	8.6%	8.5%
9	7.7%	7.6%	8.5%	na	7.3%	6.9%
10	6.1%	5.9%	6.2%	na	5.6%	5.6%

IRL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	12.6%	15.0%	na	16.0%	15.1%	na
2	10.4%	13.6%	18.7%	na	14.6%	na
3	12.1%	13.1%	16.3%	13.2%	13.9%	15.8%
4	11.8%	13.2%	16.2%	13.1%	14.5%	16.1%
5	12.3%	13.8%	15.9%	11.9%	13.8%	14.5%
6	14.5%	13.9%	15.7%	na	13.8%	15.3%
7	13.8%	14.8%	15.4%	na	13.9%	14.6%
8	13.6%	14.3%	16.5%	na	13.6%	13.4%
9	13.6%	13.9%	15.4%	na	13.3%	14.0%
10	14.5%	14.0%	14.7%	na	13.5%	13.8%

Table A.1. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and household type** *(continued)*

KOR	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	9.7%	11.0%	12.9%	na	15.5%	11.4%
2	6.9%	8.1%	10.8%	7.0%	9.0%	9.4%
3	7.4%	7.0%	8.1%	7.9%	8.5%	7.2%
4	7.1%	6.5%	8.1%	na	8.1%	6.3%
5	7.6%	6.8%	7.6%	na	6.9%	6.6%
6	8.4%	6.6%	6.7%	4.9%	6.6%	6.9%
7	6.8%	6.1%	6.2%	5.5%	6.1%	6.0%
8	6.0%	6.2%	5.9%	na	5.8%	5.0%
9	5.5%	5.7%	5.1%	na	5.3%	5.4%
10	4.9%	5.0%	4.6%	5.1%	4.4%	3.6%

KOR	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	7.0%	8.9%	10.1%	na	8.6%	8.7%
2	8.6%	9.5%	11.3%	7.0%	9.1%	10.4%
3	10.2%	9.9%	11.3%	9.1%	10.7%	9.9%
4	10.8%	11.0%	13.1%	na	10.6%	9.6%
5	12.0%	12.0%	13.6%	na	9.9%	9.6%
6	13.2%	11.8%	12.6%	7.5%	10.5%	11.0%
7	12.8%	11.6%	12.9%	8.6%	9.6%	10.6%
8	12.9%	13.3%	13.1%	na	10.2%	10.1%
9	12.8%	12.7%	13.5%	na	10.5%	10.3%
10	12.3%	12.3%	12.0%	9.4%	10.4%	9.7%

LUX	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	10.0%	11.7%	12.1%	na	9.9%	13.2%
2	9.8%	8.3%	9.6%	na	9.3%	8.9%
3	7.9%	9.5%	7.6%	na	9.5%	8.8%
4	9.0%	8.4%	9.5%	na	8.3%	7.7%
5	8.1%	8.0%	8.9%	na	9.2%	na
6	7.4%	7.8%	7.0%	na	7.8%	na
7	7.2%	8.0%	7.4%	na	7.6%	na
8	8.7%	7.9%	7.6%	na	7.3%	na
9	6.5%	7.8%	5.6%	na	6.3%	na
10	4.7%	5.8%	4.4%	na	5.5%	na

LUX	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	6.9%	7.4%	8.2%	na	7.7%	8.0%
2	7.6%	6.9%	8.0%	na	8.3%	7.8%
3	6.9%	8.2%	8.2%	na	8.1%	9.3%
4	7.4%	7.6%	8.8%	na	8.0%	8.1%
5	7.3%	7.8%	8.5%	na	8.5%	na
6	7.5%	7.9%	8.1%	na	8.1%	na
7	7.4%	8.1%	8.0%	na	8.2%	na
8	8.4%	8.3%	8.2%	na	8.5%	na
9	7.4%	8.5%	7.9%	na	7.9%	na
10	7.0%	8.0%	7.9%	na	8.2%	na

POL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	17.5%	19.7%	19.6%	16.7%	18.4%	17.6%
2	14.0%	15.7%	15.0%	14.5%	15.1%	14.2%
3	13.5%	14.0%	13.5%	15.0%	15.1%	12.9%
4	12.9%	14.2%	12.9%	14.1%	14.1%	13.0%
5	13.4%	13.1%	13.5%	14.3%	14.3%	12.4%
6	13.4%	12.9%	12.0%	13.3%	14.0%	11.5%
7	13.1%	12.6%	11.8%	13.8%	13.3%	11.5%
8	13.5%	12.7%	11.6%	12.9%	13.3%	11.3%
9	12.9%	12.4%	10.7%	12.7%	12.7%	11.0%
10	11.7%	11.1%	9.6%	11.5%	10.8%	8.8%

POL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	19.1%	18.6%	19.6%	16.2%	17.7%	18.7%
2	15.7%	18.3%	19.3%	16.8%	18.2%	18.9%
3	15.8%	17.6%	19.4%	17.8%	19.4%	18.9%
4	16.5%	18.0%	18.7%	16.6%	19.3%	19.6%
5	16.6%	18.0%	20.3%	18.1%	19.3%	19.8%
6	18.1%	18.3%	19.6%	17.7%	19.5%	19.5%
7	18.4%	18.5%	20.1%	18.2%	19.7%	20.1%
8	19.1%	19.3%	20.1%	17.9%	20.0%	20.0%
9	19.4%	19.7%	19.8%	18.5%	19.8%	20.2%
10	20.0%	20.7%	20.9%	18.1%	19.9%	20.3%

SLV	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	22.0%	19.6%	19.8%	na	22.7%	na
2	15.3%	13.7%	14.9%	na	17.9%	16.1%
3	15.7%	16.1%	14.8%	na	16.4%	12.9%
4	13.0%	13.1%	13.4%	na	15.0%	12.6%
5	17.0%	12.9%	13.0%	na	14.3%	12.3%
6	16.1%	13.5%	12.5%	na	14.0%	11.1%
7	na	12.7%	10.5%	na	13.8%	11.3%
8	na	12.8%	10.2%	na	15.1%	10.2%
9	na	12.0%	10.2%	na	12.8%	10.5%
10	14.1%	12.9%	9.6%	na	12.0%	na

SLV	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	12.9%	12.0%	13.8%	na	14.0%	13.0%
2	10.7%	11.7%	13.0%	na	14.8%	15.2%
3	12.2%	13.4%	14.5%	na	14.2%	12.8%
4	11.2%	12.2%	13.6%	na	14.6%	13.6%
5	13.4%	12.5%	14.5%	na	14.3%	14.8%
6	13.4%	12.8%	14.8%	na	15.1%	14.0%
7	na	13.3%	13.6%	na	14.3%	14.3%
8	na	14.1%	13.7%	na	14.7%	15.0%
9	na	14.0%	13.4%	na	15.2%	14.8%
10	13.9%	15.5%	14.4%	na	15.1%	na

Table A.1. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and household type** *(continued)*

SVK	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	16.8%	19.6%	18.5%	15.9%	18.7%	16.8%
2	15.6%	16.5%	16.6%	15.4%	17.4%	16.9%
3	13.7%	14.5%	17.4%	15.9%	16.6%	15.6%
4	15.2%	14.2%	14.9%	15.6%	16.4%	14.4%
5	15.1%	15.4%	15.6%	na	15.3%	13.9%
6	14.0%	15.3%	16.0%	15.3%	15.4%	14.2%
7	15.4%	15.0%	13.9%	na	15.6%	14.2%
8	14.2%	14.3%	13.1%	na	15.0%	14.6%
9	14.8%	14.4%	13.2%	na	14.5%	13.0%
10	11.6%	12.6%	13.1%	na	12.4%	na

SVK	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	15.5%	18.6%	20.4%	15.9%	19.4%	19.6%
2	15.5%	17.1%	19.8%	16.7%	20.3%	22.5%
3	14.4%	17.8%	20.9%	17.7%	21.4%	21.1%
4	15.7%	17.7%	20.5%	18.7%	21.5%	20.1%
5	16.7%	18.5%	22.4%	na	21.2%	20.8%
6	16.3%	18.5%	21.4%	17.1%	21.2%	21.5%
7	17.1%	19.3%	22.1%	na	21.7%	21.6%
8	18.0%	19.4%	21.3%	na	21.7%	21.2%
9	18.4%	20.8%	21.4%	na	21.7%	20.6%
10	18.9%	20.7%	22.9%	na	20.8%	na

TUR	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	8.8%	22.2%	27.1%	8.3%	27.1%	23.7%
2	14.4%	22.7%	21.5%	na	22.2%	21.6%
3	10.9%	19.8%	23.0%	na	20.0%	20.4%
4	11.6%	16.8%	20.7%	na	17.5%	17.6%
5	11.7%	17.6%	18.9%	na	18.6%	16.6%
6	10.1%	18.0%	19.2%	na	17.6%	17.3%
7	13.5%	14.4%	17.2%	na	16.7%	15.6%
8	11.3%	15.5%	16.0%	na	15.8%	15.0%
9	11.9%	14.1%	14.9%	na	13.9%	13.1%
10	10.6%	11.6%	12.3%	na	12.6%	12.0%

TUR	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	8.1%	16.6%	20.9%	8.0%	22.5%	21.8%
2	12.7%	22.5%	21.8%	na	22.4%	24.0%
3	12.0%	20.4%	23.3%	na	21.6%	24.1%
4	12.7%	18.0%	23.8%	na	21.1%	22.2%
5	16.6%	20.7%	22.2%	na	21.6%	21.5%
6	12.9%	19.4%	24.2%	na	21.1%	23.5%
7	17.0%	18.2%	23.7%	na	20.9%	22.4%
8	14.2%	20.0%	22.2%	na	20.8%	22.5%
9	15.7%	18.4%	21.0%	na	20.5%	20.8%
10	17.0%	18.7%	21.4%	na	20.4%	21.4%

na = data not available or result based on less than 30 observations for that cell.

Table A.2. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and household type**

AUT	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	7.0%	6.5%	7.6%	na	8.7%	9.3%
2	9.5%	7.3%	8.9%	11.9%	9.2%	10.0%
3	9.0%	9.1%	10.1%	11.7%	10.7%	11.5%
4	10.0%	9.7%	10.5%	10.7%	10.9%	13.2%
5	11.0%	10.1%	12.7%	12.3%	11.4%	13.0%
6	12.1%	12.2%	14.7%	11.8%	13.3%	16.0%
7	14.0%	12.4%	17.3%	na	14.5%	na
8	14.3%	14.8%	17.9%	17.6%	16.6%	na
9	17.6%	14.8%	22.4%	na	18.0%	na
10	23.1%	21.4%	20.0%	na	21.9%	na

AUT	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	15.5%	15.1%	17.4%	na	17.4%	18.0%
2	15.5%	13.8%	15.8%	15.6%	17.4%	16.5%
3	14.2%	15.7%	16.2%	14.7%	16.4%	15.7%
4	14.5%	15.2%	16.6%	13.4%	15.4%	17.9%
5	15.2%	15.0%	17.3%	15.5%	15.7%	16.1%
6	15.3%	15.9%	17.6%	14.2%	15.9%	16.2%
7	15.3%	16.3%	16.8%	na	15.4%	na
8	15.4%	16.0%	16.7%	15.7%	16.8%	na
9	16.0%	16.0%	17.8%	na	16.3%	na
10	16.5%	16.7%	16.8%	na	16.5%	na

Table A.2. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and household type** *(continued)*

BEL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	8.0%	15.6%	9.4%	9.2%	9.0%	12.3%
2	9.3%	9.3%	10.0%	11.1%	9.1%	9.0%
3	10.0%	10.3%	10.8%	11.5%	10.5%	na
4	10.7%	10.7%	11.4%	12.6%	9.3%	15.1%
5	11.1%	11.8%	12.4%	12.3%	10.1%	na
6	12.2%	12.2%	11.6%	13.7%	11.4%	11.5%
7	13.3%	11.6%	10.3%	13.2%	11.1%	na
8	14.6%	13.9%	14.0%	na	12.6%	na
9	14.3%	14.9%	na	na	13.6%	na
10	21.8%	21.9%	21.5%	na	21.6%	na

BEL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	8.0%	8.8%	8.8%	9.5%	9.0%	8.6%
2	8.4%	8.9%	9.3%	9.3%	9.8%	9.8%
3	8.7%	9.5%	9.5%	9.9%	10.3%	na
4	9.2%	9.8%	10.0%	10.6%	10.3%	11.4%
5	9.4%	10.1%	10.5%	10.2%	10.6%	na
6	9.8%	10.5%	10.3%	11.3%	11.3%	11.2%
7	10.2%	10.7%	11.3%	11.1%	11.2%	na
8	10.7%	11.2%	11.7%	na	11.7%	na
9	10.9%	11.8%	na	na	12.5%	na
10	12.7%	13.5%	14.0%	na	14.3%	na

CHL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	7.7%	9.6%	8.0%	12.2%	11.8%	9.0%
2	10.7%	8.3%	9.3%	13.8%	12.3%	9.9%
3	14.5%	10.5%	10.2%	14.8%	15.8%	12.0%
4	13.0%	13.8%	12.2%	13.6%	14.0%	13.3%
5	13.3%	12.5%	12.3%	17.1%	16.6%	14.9%
6	15.0%	14.3%	13.3%	na	16.7%	14.5%
7	16.1%	15.9%	14.1%	na	15.5%	15.6%
8	13.7%	15.3%	15.4%	13.2%	15.3%	17.0%
9	14.3%	12.9%	13.4%	17.6%	14.0%	13.9%
10	14.2%	13.5%	13.3%	11.4%	12.3%	14.8%

CHL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	9.4%	10.7%	11.4%	10.0%	12.3%	12.8%
2	10.0%	10.7%	12.6%	10.8%	12.8%	12.7%
3	10.3%	11.2%	12.4%	10.5%	13.4%	13.1%
4	10.1%	12.4%	12.5%	11.5%	13.0%	13.4%
5	11.0%	12.6%	12.7%	11.8%	13.5%	13.9%
6	10.0%	12.4%	12.6%	na	14.3%	13.7%
7	10.6%	13.3%	12.8%	na	14.8%	13.9%
8	10.6%	13.0%	13.1%	10.3%	13.6%	14.1%
9	11.0%	12.4%	12.8%	12.5%	13.9%	13.1%
10	11.9%	12.9%	12.3%	10.0%	12.7%	12.1%

CZE	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	9.8%	8.0%	na	10.5%	10.4%	na
2	11.1%	9.4%	na	na	11.6%	na
3	11.4%	10.9%	na	na	11.5%	na
4	11.3%	11.8%	na	na	12.2%	na
5	12.1%	11.9%	na	na	12.6%	na
6	12.0%	12.9%	na	na	12.3%	na
7	12.7%	12.5%	na	na	13.1%	na
8	12.9%	12.7%	na	na	13.2%	na
9	13.0%	13.3%	na	na	14.0%	na
10	15.2%	15.4%	na	na	15.2%	na

CZE	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	16.0%	20.0%	20.9%	15.6%	21.6%	na
2	17.0%	19.4%	20.3%	na	20.7%	na
3	16.3%	20.1%	13.7%	na	19.7%	na
4	15.1%	19.2%	18.5%	na	20.2%	na
5	16.9%	19.0%	19.5%	na	20.0%	na
6	16.6%	19.4%	22.2%	na	19.6%	na
7	17.0%	19.0%	21.2%	na	20.1%	na
8	16.9%	19.3%	20.6%	na	19.3%	na
9	16.8%	19.4%	19.1%	na	19.1%	na
10	18.0%	19.5%	18.1%	na	18.9%	na

DEU	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	8.7%	8.8%	8.9%	8.5%	9.2%	8.1%
2	9.1%	9.5%	9.1%	9.9%	9.8%	9.8%
3	9.5%	10.0%	9.4%	10.6%	10.1%	9.5%
4	10.2%	10.4%	9.5%	10.9%	10.4%	10.2%
5	10.2%	10.9%	10.4%	11.2%	10.3%	10.3%
6	10.7%	11.2%	10.7%	11.6%	10.5%	10.8%
7	11.4%	11.2%	11.3%	11.7%	10.4%	11.1%
8	11.7%	11.9%	10.6%	11.8%	10.5%	11.4%
9	12.1%	11.8%	12.1%	11.9%	10.3%	13.0%
10	14.4%	14.5%	15.9%	19.2%	15.0%	16.4%

DEU	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	10.6%	11.4%	13.6%	10.7%	13.0%	13.3%
2	10.5%	12.3%	13.7%	11.6%	13.3%	14.3%
3	11.2%	12.7%	14.7%	12.4%	13.6%	13.4%
4	11.7%	12.7%	14.3%	12.2%	13.6%	13.6%
5	11.7%	13.0%	14.6%	12.1%	13.4%	14.2%
6	11.9%	13.1%	14.4%	12.6%	13.1%	13.7%
7	12.1%	13.1%	14.6%	12.1%	12.9%	14.1%
8	12.2%	13.2%	13.7%	12.2%	12.7%	13.7%
9	12.1%	12.9%	13.8%	12.2%	12.3%	14.0%
10	12.2%	13.1%	14.5%	13.0%	13.4%	14.7%

Table A.2. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and household type** *(continued)*

ESP	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	5.3%	7.3%	9.9%	9.7%	12.9%	14.3%
2	7.8%	9.3%	10.8%	12.2%	14.5%	15.2%
3	9.1%	10.7%	13.1%	12.8%	14.5%	17.6%
4	9.5%	11.3%	12.9%	17.0%	14.1%	15.6%
5	10.9%	12.0%	13.2%	14.4%	15.6%	16.4%
6	11.4%	13.2%	14.4%	14.9%	14.8%	17.1%
7	11.8%	13.2%	15.0%	16.1%	15.5%	17.4%
8	12.6%	13.4%	16.6%	18.0%	16.0%	18.2%
9	13.1%	15.2%	17.5%	16.1%	17.2%	19.5%
10	17.2%	18.5%	19.6%	22.0%	18.5%	20.5%

ESP	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	11.8%	13.9%	18.9%	13.9%	18.0%	18.9%
2	12.1%	14.4%	16.4%	13.1%	16.6%	16.3%
3	12.5%	13.9%	17.1%	12.7%	16.1%	18.3%
4	12.2%	14.3%	16.0%	13.1%	15.5%	17.4%
5	12.0%	14.3%	15.7%	12.9%	16.1%	16.4%
6	12.7%	14.2%	16.1%	13.5%	14.9%	15.6%
7	12.3%	14.2%	15.8%	13.5%	14.9%	15.3%
8	12.4%	13.8%	15.5%	12.5%	14.5%	14.8%
9	12.1%	13.8%	15.4%	12.1%	14.4%	15.5%
10	12.3%	13.6%	14.3%	13.0%	13.8%	14.1%

EST	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	10.2%	6.3%	6.3%	na	8.0%	6.8%
2	13.7%	8.6%	11.1%	na	9.2%	na
3	19.6%	10.5%	11.4%	na	12.2%	16.3%
4	14.0%	11.0%	11.3%	na	13.1%	13.9%
5	15.8%	11.6%	15.2%	na	14.6%	na
6	15.0%	13.8%	15.7%	na	17.1%	na
7	18.5%	16.9%	na	na	16.0%	na
8	23.1%	18.0%	18.1%	na	19.2%	na
9	19.7%	21.7%	na	na	20.6%	na
10	27.0%	23.9%	na	na	22.6%	na

EST	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	34.8%	27.3%	22.9%	na	26.5%	24.0%
2	25.7%	23.1%	22.4%	na	23.5%	na
3	26.3%	24.1%	23.6%	na	23.5%	24.4%
4	22.6%	23.0%	21.3%	na	22.7%	24.3%
5	23.3%	23.8%	23.4%	na	22.6%	na
6	21.8%	23.5%	26.3%	na	24.1%	na
7	23.0%	23.9%	na	na	24.3%	na
8	23.0%	24.8%	24.7%	na	24.9%	na
9	22.3%	24.5%	na	na	24.6%	na
10	22.8%	23.3%	na	na	23.2%	na

GBR	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	5.4%	5.6%	na	7.8%	6.9%	na
2	6.8%	6.5%	na	9.1%	7.9%	na
3	7.3%	7.3%	na	13.1%	8.2%	na
4	7.9%	7.4%	8.6%	na	7.6%	na
5	9.2%	8.9%	9.2%	10.2%	9.4%	na
6	9.5%	9.0%	9.6%	na	9.4%	na
7	11.0%	8.9%	9.8%	na	10.2%	na
8	10.2%	10.8%	9.7%	na	9.8%	na
9	11.1%	11.0%	11.3%	na	11.4%	na
10	15.8%	13.9%	13.9%	na	13.0%	na

GBR	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	12.2%	18.1%	na	15.1%	15.9%	na
2	11.8%	13.5%	na	13.0%	15.9%	na
3	12.7%	15.3%	na	14.5%	14.6%	na
4	12.9%	13.8%	18.8%	na	14.6%	na
5	12.9%	15.3%	17.1%	13.7%	14.6%	na
6	13.8%	15.3%	16.8%	na	15.6%	na
7	13.5%	14.5%	16.4%	na	14.3%	na
8	13.2%	15.4%	15.3%	na	13.8%	na
9	13.2%	14.5%	13.9%	na	14.2%	na
10	12.5%	13.9%	13.4%	na	12.5%	na

GRC	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	6.1%	6.5%	10.0%	na	17.5%	na
2	7.9%	9.4%	13.4%	na	14.1%	na
3	10.1%	10.5%	12.0%	na	15.7%	na
4	9.6%	10.0%	11.8%	na	16.3%	na
5	10.9%	12.3%	12.0%	na	15.0%	na
6	14.4%	13.5%	12.5%	na	16.4%	na
7	13.1%	13.9%	16.3%	na	18.4%	na
8	15.7%	13.7%	14.7%	na	15.8%	na
9	17.4%	14.9%	14.9%	na	16.5%	na
10	16.9%	18.9%	14.7%	na	17.0%	na

GRC	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	12.8%	16.4%	21.4%	na	21.8%	na
2	12.5%	17.0%	22.0%	na	18.0%	na
3	13.4%	18.0%	21.2%	na	18.7%	na
4	13.6%	16.9%	19.3%	na	17.7%	na
5	14.0%	16.5%	20.5%	na	16.1%	na
6	16.8%	16.0%	19.5%	na	18.2%	na
7	14.8%	18.8%	19.0%	na	17.7%	na
8	15.5%	17.1%	20.0%	na	16.9%	na
9	15.8%	17.3%	19.5%	na	16.6%	na
10	16.0%	17.4%	17.3%	na	15.6%	na

Table A.2. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and household type** *(continued)*

HUN	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	16.2%	13.4%	11.4%	16.5%	14.9%	14.2%
2	15.3%	13.2%	12.8%	15.6%	16.2%	14.8%
3	14.8%	14.3%	13.3%	17.0%	17.1%	15.5%
4	16.3%	14.8%	14.5%	18.0%	16.7%	15.3%
5	17.2%	15.7%	15.2%	21.2%	18.2%	15.1%
6	17.1%	15.5%	16.0%	18.9%	17.3%	16.6%
7	18.4%	16.9%	17.5%	20.9%	19.8%	17.9%
8	21.2%	18.2%	18.8%	21.4%	19.1%	18.6%
9	20.9%	18.8%	19.2%	23.2%	20.4%	na
10	24.6%	20.9%	19.7%	21.9%	21.5%	na

HUN	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	30.0%	29.8%	28.7%	27.1%	29.3%	31.4%
2	24.6%	27.2%	29.2%	25.0%	28.7%	30.0%
3	23.6%	25.8%	29.3%	26.0%	28.0%	28.6%
4	23.4%	25.5%	28.6%	26.2%	27.8%	28.7%
5	23.0%	25.8%	29.0%	26.3%	27.9%	28.2%
6	23.1%	25.8%	29.4%	24.1%	27.8%	29.2%
7	23.2%	26.0%	28.9%	25.6%	27.8%	28.2%
8	23.9%	26.6%	28.3%	27.6%	27.6%	28.4%
9	23.8%	26.0%	28.0%	25.8%	28.2%	na
10	25.3%	26.5%	26.7%	24.2%	26.2%	na

IRL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	9.7%	11.8%	12.3%	12.0%	10.8%	11.0%
2	10.2%	11.3%	10.9%	13.2%	11.3%	12.2%
3	13.2%	12.3%	13.5%	14.2%	11.4%	12.9%
4	14.3%	11.9%	12.9%	13.6%	11.4%	11.5%
5	14.5%	13.4%	13.2%	na	10.6%	12.7%
6	13.6%	13.3%	12.8%	na	10.8%	11.7%
7	15.2%	12.2%	12.3%	na	11.1%	11.3%
8	14.3%	10.9%	11.5%	na	11.2%	12.8%
9	13.1%	11.1%	12.8%	na	11.1%	12.7%
10	14.5%	13.5%	14.8%	na	13.2%	13.9%

IRL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	14.0%	16.0%	20.3%	15.7%	15.2%	16.5%
2	10.6%	13.3%	16.9%	13.2%	15.0%	15.8%
3	10.3%	13.0%	17.2%	13.3%	13.8%	15.6%
4	12.2%	13.1%	15.4%	13.2%	14.2%	15.2%
5	11.6%	13.9%	15.5%	na	13.8%	15.5%
6	12.3%	13.9%	15.8%	na	13.9%	14.7%
7	13.7%	13.9%	14.9%	na	14.2%	14.3%
8	13.8%	13.8%	15.1%	na	13.5%	13.7%
9	13.2%	14.1%	15.9%	na	13.5%	13.9%
10	13.3%	13.9%	14.6%	na	13.0%	13.5%

ITA	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	na	na	na	na	na	na
2	na	na	na	na	na	na
3	na	na	na	na	na	na
4	na	na	na	na	na	na
5	na	na	na	na	na	na
6	na	na	na	na	na	na
7	na	na	na	na	na	na
8	na	na	na	na	na	na
9	na	na	na	na	na	na
10	na	na	na	na	na	na

ITA	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	7.1%	10.1%	12.0%	9.9%	12.9%	13.0%
2	8.1%	10.4%	12.6%	12.0%	13.3%	12.4%
3	8.9%	10.7%	12.2%	11.5%	13.3%	13.7%
4	8.9%	10.9%	13.1%	12.0%	14.0%	13.8%
5	9.7%	11.6%	12.7%	13.4%	13.5%	13.8%
6	10.5%	11.5%	13.6%	12.7%	13.5%	13.6%
7	11.0%	12.0%	13.5%	12.6%	13.5%	14.4%
8	11.9%	11.5%	13.5%	12.8%	13.4%	13.3%
9	11.7%	12.4%	13.7%	13.3%	13.6%	13.3%
10	13.0%	12.8%	14.2%	13.7%	14.7%	14.2%

KOR	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	5.2%	6.7%	5.8%	na	6.6%	4.8%
2	6.3%	6.5%	6.0%	na	5.8%	5.4%
3	7.3%	7.0%	6.6%	na	6.1%	6.2%
4	7.1%	7.0%	7.1%	na	6.3%	6.4%
5	7.9%	7.2%	7.8%	na	7.0%	6.5%
6	8.1%	7.4%	7.8%	na	6.9%	5.9%
7	7.9%	7.7%	8.5%	6.1%	6.7%	6.5%
8	8.2%	7.8%	8.4%	6.9%	6.8%	6.6%
9	8.9%	8.0%	8.2%	6.8%	6.8%	7.1%
10	9.2%	8.0%	8.3%	6.8%	6.9%	7.6%

KOR	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	7.9%	9.3%	10.8%	na	11.3%	10.0%
2	10.3%	10.6%	13.1%	na	10.7%	10.4%
3	11.2%	11.7%	13.2%	na	10.6%	11.7%
4	11.8%	11.5%	13.9%	na	10.6%	11.2%
5	12.3%	12.0%	13.5%	na	11.0%	10.9%
6	12.7%	12.6%	13.1%	na	10.6%	10.3%
7	12.5%	12.7%	12.9%	7.6%	10.4%	9.5%
8	12.1%	12.3%	12.4%	7.9%	10.1%	9.5%
9	11.7%	11.0%	11.4%	8.4%	9.9%	9.3%
10	8.7%	8.6%	7.8%	8.4%	8.6%	7.0%

Table A.2. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and household type** *(continued)*

LUX	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	4.6%	4.3%	4.9%	na	5.5%	5.3%
2	5.2%	5.6%	5.3%	na	6.5%	6.8%
3	6.1%	6.2%	6.9%	na	7.0%	na
4	6.2%	5.5%	7.0%	na	7.8%	na
5	6.1%	7.1%	8.1%	na	7.3%	na
6	6.5%	7.9%	9.8%	na	9.3%	na
7	7.6%	8.1%	8.6%	na	9.6%	na
8	9.6%	8.6%	10.4%	na	9.7%	na
9	11.0%	10.4%	11.5%	na	10.7%	na
10	11.8%	11.6%	na	na	13.7%	na

LUX	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	6.2%	6.2%	7.9%	na	7.2%	7.7%
2	6.8%	7.6%	7.6%	na	8.1%	8.3%
3	7.1%	7.6%	8.4%	na	8.0%	na
4	7.5%	7.6%	7.8%	na	8.0%	na
5	7.4%	8.1%	8.2%	na	7.5%	na
6	6.9%	7.9%	8.7%	na	8.6%	na
7	7.8%	8.0%	7.8%	na	8.6%	na
8	7.6%	8.3%	8.9%	na	8.3%	na
9	8.3%	8.5%	8.5%	na	8.5%	na
10	7.8%	8.5%	na	na	9.3%	na

POL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	11.7%	10.4%	10.1%	11.2%	11.6%	10.1%
2	10.9%	10.4%	10.9%	12.0%	11.9%	11.0%
3	11.3%	11.0%	11.0%	12.6%	12.5%	11.7%
4	11.9%	11.5%	11.6%	13.3%	12.5%	12.3%
5	12.3%	11.8%	12.1%	14.0%	13.4%	13.0%
6	13.2%	12.1%	12.5%	13.6%	13.6%	14.2%
7	14.1%	12.8%	13.2%	13.8%	14.1%	14.9%
8	15.0%	14.0%	14.7%	16.1%	14.8%	15.9%
9	16.8%	15.1%	15.7%	15.9%	15.5%	17.4%
10	20.5%	19.0%	20.8%	19.3%	18.7%	20.1%

POL	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	20.8%	19.2%	20.2%	16.5%	18.8%	19.2%
2	17.0%	18.4%	19.8%	17.8%	18.6%	19.2%
3	16.6%	18.5%	19.5%	16.8%	19.2%	19.5%
4	16.3%	18.7%	19.4%	17.5%	18.8%	19.1%
5	16.3%	18.3%	19.8%	17.3%	19.5%	19.4%
6	16.8%	18.7%	19.9%	17.2%	19.6%	20.1%
7	17.6%	18.8%	19.6%	18.2%	19.4%	20.0%
8	17.5%	18.9%	20.2%	17.9%	19.7%	20.3%
9	18.3%	19.3%	19.9%	17.8%	19.6%	19.6%
10	18.8%	19.5%	19.7%	17.9%	19.5%	19.6%

SLV	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	12.5%	10.7%	9.9%	na	11.1%	9.3%
2	15.1%	10.1%	8.9%	na	12.3%	9.9%
3	14.3%	11.1%	10.5%	na	12.6%	11.9%
4	13.2%	12.5%	11.6%	na	12.0%	12.8%
5	14.9%	13.3%	10.0%	na	15.2%	12.8%
6	18.1%	11.8%	12.0%	na	13.8%	11.9%
7	17.9%	13.8%	12.3%	na	14.6%	13.6%
8	20.2%	14.6%	14.2%	na	16.5%	na
9	19.2%	16.5%	17.9%	na	17.2%	na
10	22.5%	20.5%	19.5%	na	21.1%	na

SLV	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	13.0%	12.5%	14.6%	na	14.6%	13.8%
2	11.4%	12.0%	12.6%	na	14.1%	13.7%
3	12.2%	11.3%	13.7%	na	14.3%	14.0%
4	10.1%	12.8%	13.5%	na	13.5%	15.0%
5	11.6%	12.6%	12.9%	na	15.0%	15.5%
6	13.5%	13.1%	13.8%	na	14.9%	14.3%
7	12.4%	13.8%	14.4%	na	15.0%	14.5%
8	13.8%	13.7%	14.5%	na	15.3%	na
9	13.5%	14.6%	16.0%	na	14.7%	na
10	13.9%	15.5%	15.2%	na	15.3%	na

SVK	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	13.2%	12.0%	13.8%	13.6%	14.0%	12.8%
2	11.7%	13.0%	12.4%	13.7%	14.4%	13.2%
3	15.0%	12.7%	13.4%	15.7%	15.2%	13.2%
4	13.2%	12.5%	14.3%	14.2%	14.9%	14.8%
5	13.0%	14.2%	12.6%	15.2%	15.5%	14.6%
6	15.0%	14.6%	13.5%	16.3%	15.0%	14.1%
7	15.4%	15.5%	15.1%	na	15.7%	na
8	15.4%	14.9%	15.6%	16.0%	16.7%	15.1%
9	16.3%	15.7%	15.7%	17.3%	16.6%	na
10	19.9%	19.9%	19.3%	19.8%	20.6%	na

SVK	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	17.6%	19.8%	23.3%	16.7%	21.0%	20.9%
2	14.5%	19.5%	20.9%	17.0%	21.6%	22.6%
3	17.5%	18.8%	20.4%	17.4%	22.2%	20.9%
4	15.4%	17.9%	23.3%	16.8%	21.1%	22.1%
5	14.6%	19.6%	20.5%	16.9%	21.8%	21.6%
6	16.1%	19.3%	22.3%	18.9%	20.8%	20.6%
7	15.7%	19.3%	21.6%	na	20.9%	na
8	16.5%	18.8%	21.6%	17.9%	20.6%	21.3%
9	15.9%	18.9%	19.8%	17.2%	20.2%	na
10	16.3%	18.8%	21.1%	17.8%	20.2%	na

Table A.2. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and household type** *(continued)*

TUR	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	7.4%	13.0%	17.8%	9.4%	19.0%	19.0%
2	7.7%	17.7%	18.6%	na	19.6%	18.7%
3	9.4%	16.1%	17.9%	na	18.3%	19.5%
4	11.6%	15.8%	18.9%	na	19.4%	18.2%
5	12.0%	15.2%	17.2%	na	18.5%	19.1%
6	12.6%	17.8%	18.7%	na	17.7%	18.0%
7	12.6%	16.5%	17.9%	na	18.0%	17.6%
8	12.7%	15.9%	17.2%	na	18.4%	18.6%
9	12.1%	15.3%	18.0%	na	16.8%	19.2%
10	12.8%	17.1%	19.7%	na	17.7%	18.9%

TUR	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch
1	14.5%	19.7%	26.5%	12.7%	25.9%	26.1%
2	10.8%	24.6%	25.2%	na	23.3%	24.5%
3	12.7%	21.8%	25.3%	na	22.9%	23.3%
4	16.2%	21.3%	25.3%	na	22.6%	22.9%
5	16.2%	19.4%	22.9%	na	22.1%	22.2%
6	15.6%	21.4%	23.2%	na	20.4%	21.2%
7	14.6%	19.6%	21.9%	na	19.9%	19.8%
8	14.6%	17.7%	20.7%	na	20.7%	20.2%
9	14.6%	17.3%	19.7%	na	18.8%	17.5%
10	13.3%	16.0%	18.4%	na	16.7%	16.8%

na = data not available or result based on less than 30 observations for that cell.

Table A.3. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and age**

AUT	20-29	30-39	40-49	50-59	60-69	70+
1	20.0%	20.8%	22.2%	22.3%	19.8%	14.2%
2	15.9%	16.7%	15.6%	16.1%	14.6%	9.4%
3	17.3%	14.8%	16.0%	15.7%	14.1%	9.7%
4	15.2%	14.5%	14.2%	14.8%	12.5%	9.0%
5	13.8%	12.9%	13.4%	14.0%	15.2%	10.1%
6	14.0%	13.4%	12.6%	12.6%	13.1%	8.9%
7	12.3%	12.2%	12.2%	12.0%	12.7%	8.9%
8	11.3%	11.5%	11.9%	12.1%	12.3%	8.0%
9	10.8%	10.4%	10.6%	11.3%	10.6%	8.6%
10	11.1%	8.4%	10.0%	9.7%	9.9%	7.3%

AUT	20-29	30-39	40-49	50-59	60-69	70+
1	18.5%	17.4%	17.6%	17.7%	16.8%	11.4%
2	16.1%	16.5%	16.6%	17.3%	14.0%	11.6%
3	18.4%	16.8%	17.7%	16.3%	15.6%	12.1%
4	17.8%	16.9%	16.5%	17.6%	14.8%	12.3%
5	18.4%	16.8%	17.5%	16.7%	15.2%	12.8%
6	17.9%	17.2%	16.7%	15.7%	16.0%	12.2%
7	17.9%	16.9%	17.0%	16.2%	15.3%	13.1%
8	16.8%	16.0%	16.4%	17.1%	16.1%	13.7%
9	17.1%	16.6%	16.2%	16.5%	14.9%	13.3%
10	16.4%	15.5%	15.2%	15.4%	15.6%	13.2%

BEL	20-29	30-39	40-49	50-59	60-69	70+
1	12.8%	11.8%	12.9%	15.1%	17.2%	16.1%
2	14.7%	13.3%	14.1%	13.9%	14.8%	14.3%
3	15.9%	13.5%	12.9%	13.2%	15.1%	12.8%
4	14.0%	12.5%	12.6%	14.6%	15.5%	13.4%
5	13.4%	12.8%	12.5%	14.0%	13.7%	11.7%
6	13.4%	13.5%	12.1%	14.7%	13.6%	11.4%
7	12.6%	12.7%	13.1%	12.9%	12.5%	12.0%
8	11.8%	13.1%	11.9%	11.3%	12.0%	10.1%
9	8.7%	11.6%	10.8%	10.3%	14.3%	11.3%
10	7.0%	7.7%	12.0%	8.9%	9.0%	7.1%

BEL	20-29	30-39	40-49	50-59	60-69	70+
1	11.0%	11.4%	12.2%	11.7%	12.2%	11.0%
2	13.1%	12.8%	13.1%	12.5%	12.4%	11.5%
3	14.5%	13.3%	13.0%	12.4%	12.0%	11.8%
4	12.7%	12.9%	13.2%	13.4%	13.3%	11.9%
5	13.7%	13.8%	13.4%	13.6%	12.9%	11.0%
6	13.9%	14.2%	13.1%	13.6%	12.9%	12.0%
7	14.2%	13.7%	13.8%	11.3%	12.5%	12.4%
8	13.7%	14.0%	14.3%	13.3%	13.2%	12.1%
9	13.3%	14.2%	13.7%	13.6%	14.4%	13.2%
10	14.9%	14.0%	13.0%	13.8%	13.3%	12.0%

Table A.3. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and age** *(continued)*

CHL	20-29	30-39	40-49	50-59	60-69	70+
1	23.0%	21.5%	22.3%	24.2%	18.0%	19.2%
2	17.4%	16.1%	17.4%	16.4%	17.9%	16.6%
3	14.8%	14.1%	16.1%	13.8%	14.4%	13.8%
4	12.1%	15.2%	13.1%	14.1%	12.0%	11.6%
5	11.8%	13.9%	13.2%	13.0%	12.7%	11.8%
6	13.5%	11.5%	14.8%	13.8%	11.7%	11.5%
7	12.9%	12.1%	12.1%	11.7%	10.2%	10.0%
8	11.8%	13.1%	10.8%	10.2%	10.0%	9.4%
9	9.0%	10.6%	11.1%	10.7%	10.2%	9.5%
10	8.7%	8.4%	8.6%	8.6%	8.5%	8.2%

CHL	20-29	30-39	40-49	50-59	60-69	70+
1	12.9%	12.9%	12.5%	12.2%	9.9%	10.2%
2	11.9%	13.3%	12.6%	12.3%	13.0%	10.9%
3	11.2%	13.4%	13.7%	12.1%	12.1%	10.2%
4	11.8%	13.1%	12.5%	12.9%	12.5%	11.9%
5	12.7%	13.2%	13.3%	12.8%	12.3%	11.4%
6	13.6%	13.0%	14.4%	13.6%	13.0%	11.8%
7	12.9%	14.5%	13.7%	13.2%	12.2%	11.6%
8	13.0%	14.6%	12.9%	13.0%	12.9%	11.3%
9	11.6%	13.7%	12.7%	13.4%	12.5%	11.1%
10	13.2%	13.0%	12.3%	12.5%	13.0%	10.8%

CZE	20-29	30-39	40-49	50-59	60-69	70+
1	na	13.5%	13.6%	15.1%	12.7%	10.7%
2	na	13.4%	13.6%	12.9%	13.0%	11.2%
3	na	13.8%	13.0%	13.4%	13.7%	11.3%
4	na	14.0%	13.3%	12.8%	12.8%	11.2%
5	na	13.4%	12.5%	13.4%	13.2%	na
6	na	13.6%	12.6%	13.6%	12.7%	na
7	na	12.3%	12.9%	12.1%	12.3%	na
8	na	11.7%	11.6%	11.8%	12.2%	na
9	na	11.0%	12.2%	11.5%	10.4%	na
10	na	10.3%	10.1%	10.7%	9.9%	na

CZE	20-29	30-39	40-49	50-59	60-69	70+
1	na	17.7%	16.2%	17.1%	16.3%	14.7%
2	na	18.0%	17.5%	16.8%	16.1%	15.5%
3	na	20.0%	17.9%	18.0%	18.0%	16.1%
4	na	20.1%	18.9%	18.2%	17.3%	15.9%
5	na	19.8%	19.0%	18.7%	18.9%	na
6	na	21.1%	18.8%	19.7%	19.3%	na
7	na	19.8%	20.1%	19.0%	20.5%	na
8	na	19.4%	19.1%	19.9%	19.3%	na
9	na	19.7%	20.1%	19.2%	19.1%	na
10	na	20.3%	19.1%	20.4%	19.0%	na

DEU	20-29	30-39	40-49	50-59	60-69	70+
1	11.9%	12.4%	12.4%	12.0%	12.4%	11.6%
2	11.5%	11.6%	11.6%	11.2%	11.4%	11.0%
3	11.2%	11.5%	12.0%	12.1%	12.2%	10.7%
4	12.0%	11.7%	11.7%	12.4%	12.3%	11.2%
5	11.4%	11.0%	11.3%	11.9%	12.3%	10.8%
6	11.8%	11.1%	11.2%	11.4%	11.5%	10.8%
7	10.6%	10.4%	10.7%	11.3%	11.6%	10.4%
8	10.7%	9.9%	10.3%	11.0%	11.4%	10.6%
9	9.7%	9.4%	9.3%	10.0%	10.5%	9.7%
10	9.0%	7.9%	7.6%	8.4%	8.9%	8.0%

DEU	20-29	30-39	40-49	50-59	60-69	70+
1	11.5%	11.3%	11.3%	10.9%	10.0%	8.8%
2	12.5%	12.1%	12.0%	11.5%	10.3%	9.7%
3	13.0%	13.1%	13.0%	12.5%	11.4%	10.2%
4	14.1%	13.6%	13.4%	13.4%	11.9%	10.9%
5	14.0%	13.5%	13.5%	13.4%	12.4%	11.2%
6	14.9%	13.7%	13.8%	13.8%	12.0%	11.3%
7	14.5%	13.9%	13.8%	13.8%	12.6%	11.4%
8	14.5%	13.7%	13.5%	13.7%	12.6%	11.4%
9	14.6%	13.3%	13.0%	13.2%	12.1%	11.0%
10	14.7%	12.6%	12.1%	12.4%	12.1%	10.8%

ESP	20-29	30-39	40-49	50-59	60-69	70+
1	25.7%	21.0%	23.7%	23.6%	20.0%	14.8%
2	19.8%	17.4%	19.5%	18.8%	17.5%	11.4%
3	14.9%	15.8%	17.3%	19.1%	13.2%	9.2%
4	15.4%	15.9%	15.8%	14.9%	13.0%	10.2%
5	14.2%	14.9%	15.8%	15.9%	14.1%	10.7%
6	14.8%	13.2%	14.5%	14.6%	11.7%	9.3%
7	14.5%	12.6%	13.6%	13.5%	12.2%	9.0%
8	12.4%	12.0%	12.7%	12.2%	11.0%	9.5%
9	11.0%	10.7%	11.2%	10.9%	10.6%	8.5%
10	9.4%	9.5%	9.8%	9.4%	8.6%	8.1%

ESP	20-29	30-39	40-49	50-59	60-69	70+
1	16.3%	14.6%	16.6%	16.8%	14.2%	12.3%
2	14.0%	14.8%	16.1%	15.2%	14.3%	11.7%
3	16.3%	15.7%	16.5%	16.5%	13.7%	10.8%
4	15.0%	15.5%	15.7%	15.6%	14.5%	12.0%
5	15.7%	15.5%	16.3%	15.9%	14.7%	12.8%
6	15.5%	15.2%	15.9%	16.1%	14.2%	12.8%
7	14.6%	15.6%	15.2%	15.6%	13.9%	12.2%
8	16.2%	15.4%	15.5%	15.5%	14.3%	13.3%
9	13.7%	14.5%	14.5%	14.7%	13.8%	11.8%
10	15.3%	14.4%	14.3%	14.2%	13.8%	12.1%

Table A.3. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and age** *(continued)*

EST	20-29	30-39	40-49	50-59	60-69	70+
1	34.5%	26.7%	31.4%	30.1%	23.4%	na
2	na	19.7%	23.8%	19.0%	18.8%	12.3%
3	na	na	17.1%	18.0%	13.8%	12.3%
4	na	na	15.5%	18.2%	18.1%	12.5%
5	na	16.4%	13.0%	14.3%	15.4%	11.8%
6	15.6%	14.8%	16.0%	17.8%	14.6%	11.3%
7	14.2%	14.2%	15.1%	16.3%	13.8%	10.9%
8	13.8%	12.6%	15.1%	14.0%	11.6%	na
9	15.1%	13.5%	14.1%	15.4%	na	na
10	13.0%	13.8%	11.2%	11.8%	11.2%	na

EST	20-29	30-39	40-49	50-59	60-69	70+
1	27.6%	27.7%	35.2%	27.9%	27.9%	na
2	na	26.0%	29.4%	25.2%	27.1%	22.7%
3	na	na	25.6%	25.7%	22.5%	22.2%
4	na	na	23.6%	25.3%	25.0%	22.8%
5	na	22.8%	22.1%	22.5%	22.5%	21.9%
6	24.6%	24.5%	24.0%	26.0%	22.9%	22.6%
7	28.6%	22.5%	23.6%	24.3%	25.3%	21.0%
8	24.1%	22.3%	24.4%	24.4%	23.4%	na
9	22.5%	22.2%	27.1%	25.9%	na	na
10	23.0%	23.8%	23.1%	24.3%	22.9%	na

GBR	20-29	30-39	40-49	50-59	60-69	70+
1	12.4%	13.1%	15.0%	14.5%	19.0%	9.1%
2	11.4%	13.7%	13.2%	13.6%	12.0%	8.0%
3	na	9.7%	11.7%	11.1%	12.9%	7.4%
4	9.4%	9.3%	10.0%	11.9%	12.1%	8.1%
5	8.0%	8.0%	9.4%	9.9%	10.3%	7.6%
6	8.8%	8.3%	9.3%	9.2%	9.9%	7.3%
7	8.4%	8.2%	10.1%	8.9%	9.5%	7.1%
8	6.8%	7.8%	8.2%	8.8%	9.4%	5.8%
9	8.3%	6.8%	7.8%	8.3%	7.6%	7.0%
10	na	6.1%	7.0%	7.3%	6.8%	6.4%

GBR	20-29	30-39	40-49	50-59	60-69	70+
1	14.2%	15.3%	15.3%	12.9%	15.5%	10.5%
2	13.4%	14.0%	14.9%	14.9%	14.3%	11.3%
3	na	12.7%	16.3%	16.5%	14.7%	10.7%
4	12.5%	13.7%	14.1%	15.5%	15.8%	11.7%
5	11.9%	13.4%	14.7%	15.9%	14.4%	12.1%
6	14.6%	13.6%	15.6%	15.9%	15.6%	12.5%
7	14.4%	15.8%	16.0%	15.5%	15.0%	12.8%
8	12.1%	15.7%	15.4%	16.5%	15.5%	11.4%
9	14.0%	14.4%	15.3%	15.5%	14.4%	13.7%
10	na	14.0%	14.5%	15.0%	15.6%	13.2%

GRC	20-29	30-39	40-49	50-59	60-69	70+
1	24.6%	19.2%	23.5%	25.3%	21.0%	11.9%
2	na	21.4%	18.9%	16.7%	17.6%	11.1%
3	na	18.0%	17.6%	15.0%	11.0%	8.9%
4	na	18.0%	17.4%	19.7%	11.7%	8.3%
5	na	15.6%	15.9%	15.4%	11.4%	8.0%
6	na	14.0%	13.9%	14.1%	10.9%	8.9%
7	na	11.8%	13.4%	12.6%	11.3%	8.6%
8	na	13.0%	12.3%	13.9%	10.6%	8.1%
9	na	13.9%	12.2%	11.8%	11.5%	8.7%
10	na	11.4%	9.6%	10.6%	9.4%	8.8%

GRC	20-29	30-39	40-49	50-59	60-69	70+
1	18.3%	14.7%	16.8%	20.6%	19.5%	12.4%
2	na	17.0%	17.7%	18.3%	18.1%	14.1%
3	na	17.6%	18.4%	19.4%	14.8%	14.7%
4	na	16.9%	18.6%	20.4%	16.2%	12.5%
5	na	16.4%	17.7%	20.2%	17.0%	14.3%
6	na	17.5%	17.6%	19.8%	18.5%	14.8%
7	na	17.7%	18.9%	19.4%	17.6%	16.5%
8	na	16.5%	18.1%	19.6%	17.3%	16.4%
9	na	17.0%	18.5%	17.8%	19.4%	16.6%
10	na	16.9%	15.5%	18.5%	18.3%	16.9%

HUN	20-29	30-39	40-49	50-59	60-69	70+
1	22.8%	24.3%	25.1%	25.7%	25.3%	23.3%
2	19.7%	20.8%	21.3%	21.0%	20.1%	17.4%
3	na	18.3%	18.4%	19.7%	19.6%	15.7%
4	na	18.1%	18.7%	19.2%	16.4%	15.8%
5	na	18.6%	17.5%	17.8%	16.9%	14.2%
6	14.5%	17.1%	17.2%	18.0%	15.8%	14.4%
7	na	17.2%	17.1%	17.7%	16.5%	13.1%
8	15.7%	15.6%	15.1%	16.0%	15.4%	13.5%
9	15.1%	15.8%	15.1%	15.4%	14.5%	13.1%
10	12.4%	13.5%	13.4%	12.7%	12.7%	11.8%

HUN	20-29	30-39	40-49	50-59	60-69	70+
1	27.0%	28.4%	30.6%	28.7%	27.0%	23.9%
2	24.3%	28.4%	29.6%	27.6%	26.4%	21.9%
3	na	27.9%	28.6%	28.3%	25.3%	21.8%
4	na	27.8%	28.2%	28.2%	24.8%	22.0%
5	na	28.1%	28.3%	27.7%	25.0%	22.4%
6	22.9%	26.9%	28.6%	28.7%	25.4%	23.4%
7	na	28.6%	29.2%	28.4%	26.7%	22.1%
8	24.5%	26.4%	29.3%	28.9%	27.0%	23.7%
9	26.1%	28.4%	28.7%	28.2%	26.8%	23.5%
10	25.2%	26.3%	27.9%	27.6%	27.0%	23.7%

Table A.3. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and age** *(continued)*

IRL	20-29	30-39	40-49	50-59	60-69	70+
1	26.9%	21.6%	21.0%	23.1%	17.7%	13.8%
2	na	15.4%	22.2%	19.4%	16.7%	12.1%
3	18.8%	14.3%	17.4%	16.8%	16.9%	12.3%
4	14.4%	14.9%	14.7%	15.4%	13.7%	9.3%
5	13.5%	12.7%	13.6%	13.8%	14.3%	10.0%
6	13.2%	11.9%	12.0%	12.2%	13.2%	7.8%
7	11.3%	10.5%	10.7%	10.9%	10.8%	10.8%
8	10.7%	9.8%	9.0%	9.3%	8.8%	na
9	8.2%	7.5%	7.4%	7.9%	8.1%	na
10	6.6%	6.1%	5.9%	5.6%	5.8%	na

IRL	20-29	30-39	40-49	50-59	60-69	70+
1	15.2%	15.7%	15.3%	16.5%	13.2%	9.3%
2	na	15.1%	16.6%	14.8%	12.9%	10.1%
3	16.1%	14.1%	14.5%	13.7%	13.9%	11.8%
4	14.9%	15.1%	14.4%	14.8%	13.0%	10.8%
5	17.0%	14.0%	14.0%	14.2%	13.7%	11.3%
6	17.0%	14.9%	14.3%	15.1%	13.7%	9.7%
7	15.0%	14.6%	14.7%	14.8%	13.7%	13.2%
8	16.1%	15.0%	14.2%	14.7%	13.1%	na
9	15.0%	14.1%	13.4%	14.2%	15.1%	na
10	15.1%	14.8%	13.9%	13.6%	12.9%	na

KOR	20-29	30-39	40-49	50-59	60-69	70+
1	na	20.9%	13.9%	14.8%	10.9%	8.4%
2	12.6%	10.8%	8.9%	10.0%	7.4%	5.9%
3	9.1%	8.8%	8.2%	7.9%	6.9%	5.5%
4	9.2%	7.9%	7.6%	6.9%	7.3%	5.5%
5	11.1%	7.6%	6.9%	7.5%	5.9%	5.2%
6	9.1%	8.0%	6.8%	7.9%	5.2%	5.5%
7	na	6.7%	6.3%	6.7%	5.2%	4.5%
8	na	6.1%	5.9%	5.7%	5.7%	4.6%
9	na	6.0%	5.1%	5.5%	4.5%	4.6%
10	na	5.3%	4.3%	4.5%	3.9%	na

KOR	20-29	30-39	40-49	50-59	60-69	70+
1	na	11.2%	8.8%	10.4%	8.5%	6.6%
2	11.3%	11.0%	9.4%	10.6%	9.4%	7.5%
3	10.1%	11.2%	10.6%	10.7%	9.9%	8.6%
4	11.7%	11.8%	10.0%	11.3%	11.8%	8.3%
5	15.2%	11.2%	10.3%	12.5%	11.1%	10.1%
6	12.8%	11.9%	11.0%	13.1%	11.1%	9.4%
7	na	11.4%	10.3%	12.4%	11.4%	11.1%
8	na	11.8%	10.9%	12.5%	12.6%	11.6%
9	na	12.2%	10.4%	13.5%	11.6%	11.2%
10	na	12.2%	10.6%	11.8%	11.0%	na

LUX	20-29	30-39	40-49	50-59	60-69	70+
1	na	9.4%	11.5%	10.2%	na	na
2	na	12.0%	8.4%	8.5%	9.0%	na
3	na	9.1%	9.3%	8.5%	8.8%	5.9%
4	na	9.1%	9.0%	9.0%	8.9%	5.9%
5	na	10.0%	9.2%	8.4%	7.9%	6.3%
6	na	8.7%	7.2%	8.2%	7.5%	5.3%
7	7.8%	8.0%	7.2%	7.7%	8.1%	5.9%
8	8.5%	8.2%	7.5%	9.1%	8.0%	na
9	7.1%	6.5%	6.9%	6.8%	8.0%	na
10	na	5.6%	5.6%	5.0%	5.2%	4.7%

LUX	20-29	30-39	40-49	50-59	60-69	70+
1	na	7.6%	7.8%	7.3%	na	na
2	na	9.2%	7.3%	8.0%	6.8%	na
3	na	7.9%	8.1%	8.8%	6.9%	5.6%
4	na	8.2%	8.1%	7.9%	7.3%	5.8%
5	na	8.6%	8.4%	8.0%	7.4%	6.6%
6	na	8.5%	8.1%	8.1%	7.6%	6.4%
7	8.7%	8.5%	8.1%	8.0%	7.6%	6.1%
8	9.2%	8.5%	8.4%	9.0%	7.9%	na
9	8.5%	8.2%	7.6%	8.0%	8.3%	na
10	7.6%	8.4%	8.0%	7.7%	7.4%	6.4%

NLD	20-29	30-39	40-49	50-59	60-69	70+
1	na	15.7%	22.3%	na	na	na
2	na	15.7%	na	na	na	na
3	na	na	13.5%	na	na	na
4	na	na	na	na	na	na
5	na	13.2%	12.9%	na	na	na
6	na	15.7%	11.6%	na	na	na
7	na	na	11.3%	14.4%	na	na
8	na	12.7%	11.9%	13.8%	na	na
9	na	10.1%	14.0%	12.7%	13.0%	na
10	na	9.0%	10.9%	9.8%	na	na

NLD	20-29	30-39	40-49	50-59	60-69	70+
1	na	11.4%	13.6%	na	na	na
2	na	13.1%	na	na	na	na
3	na	na	12.6%	na	na	na
4	na	na	na	na	na	na
5	na	13.2%	12.7%	na	na	na
6	na	14.4%	11.8%	na	na	na
7	na	na	13.0%	15.3%	na	na
8	na	13.8%	14.2%	13.9%	na	na
9	na	12.5%	14.3%	15.3%	13.0%	na
10	na	12.9%	13.4%	13.6%	na	na

Table A.3. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and age** *(continued)*

NZL	20-29	30-39	40-49	50-59	60-69	70+
1	11.1%	13.4%	12.3%	15.1%	17.4%	13.8%
2	na	na	11.6%	12.6%	12.8%	11.2%
3	na	8.5%	9.3%	11.3%	17.4%	11.4%
4	9.3%	8.9%	10.5%	11.3%	na	11.4%
5	9.6%	8.4%	8.8%	8.6%	11.7%	10.3%
6	8.6%	7.9%	9.7%	9.5%	9.5%	10.2%
7	7.4%	7.5%	7.9%	8.4%	8.9%	8.8%
8	na	7.2%	7.0%	7.9%	7.3%	8.1%
9	7.2%	6.5%	6.4%	6.8%	6.6%	na
10	na	5.0%	5.4%	5.4%	6.0%	na

NZL	20-29	30-39	40-49	50-59	60-69	70+
1	10.3%	12.2%	11.9%	14.9%	14.6%	14.2%
2	na	na	14.0%	12.1%	14.7%	15.4%
3	na	10.1%	12.9%	15.1%	18.4%	15.5%
4	11.9%	10.7%	13.7%	16.4%	na	15.3%
5	11.3%	12.1%	12.8%	13.1%	15.3%	16.2%
6	12.3%	12.0%	13.8%	14.6%	15.7%	15.3%
7	11.2%	12.3%	13.2%	15.6%	14.6%	17.2%
8	na	11.9%	12.8%	14.4%	14.2%	16.6%
9	12.0%	12.1%	12.9%	14.0%	13.3%	na
10	na	11.6%	12.7%	13.7%	14.2%	na

POL	20-29	30-39	40-49	50-59	60-69	70+
1	18.9%	19.2%	18.2%	19.2%	17.9%	15.2%
2	15.1%	15.2%	14.8%	16.5%	14.4%	12.5%
3	15.3%	14.9%	14.7%	14.9%	13.8%	11.6%
4	14.0%	14.2%	14.0%	14.4%	13.6%	11.5%
5	14.2%	14.3%	13.8%	14.7%	13.0%	11.4%
6	14.1%	13.5%	13.5%	14.2%	12.7%	10.5%
7	13.2%	13.5%	13.1%	13.0%	12.2%	10.9%
8	13.9%	13.2%	12.7%	13.1%	12.4%	10.5%
9	12.9%	13.0%	12.3%	12.2%	11.9%	9.8%
10	11.7%	11.1%	10.8%	10.5%	10.5%	9.3%

POL	0-19	20-29	30-39	40-49	50-59	60-69
1	15.3%	18.9%	18.8%	18.7%	19.5%	18.5%
2	14.6%	17.8%	18.9%	18.4%	19.3%	17.1%
3	15.6%	19.2%	19.5%	19.4%	19.3%	16.5%
4	14.1%	18.9%	19.3%	19.5%	19.4%	17.5%
5	18.4%	19.6%	19.8%	20.0%	19.9%	17.5%
6	18.1%	19.3%	19.4%	20.2%	20.7%	17.9%
7	16.5%	19.2%	19.9%	20.4%	20.2%	18.5%
8	14.8%	20.1%	20.1%	20.3%	20.7%	19.0%
9	14.2%	20.1%	19.9%	20.5%	20.5%	19.1%
10	14.4%	20.1%	20.3%	20.6%	20.9%	19.2%

SLV	20-29	30-39	40-49	50-59	60-69	70+
1	na	20.4%	23.3%	24.4%	19.5%	16.2%
2	na	17.3%	16.4%	17.5%	13.2%	14.3%
3	na	17.9%	17.3%	16.6%	17.7%	12.0%
4	na	15.1%	14.6%	14.5%	12.8%	10.1%
5	na	16.7%	14.5%	14.9%	14.3%	10.6%
6	na	16.3%	13.6%	14.8%	13.0%	10.2%
7	na	16.0%	13.9%	13.7%	13.0%	11.0%
8	na	15.4%	13.4%	11.9%	13.0%	10.5%
9	na	13.6%	13.2%	12.8%	10.2%	7.8%
10	na	12.7%	12.5%	11.3%	12.5%	na

SLV	20-29	30-39	40-49	50-59	60-69	70+
1	na	13.9%	13.4%	13.6%	12.4%	11.1%
2	na	14.2%	14.9%	12.8%	11.5%	10.5%
3	na	15.0%	15.2%	13.8%	13.1%	10.5%
4	na	15.4%	14.0%	12.6%	12.1%	10.2%
5	na	14.9%	14.7%	14.3%	13.1%	11.4%
6	na	15.4%	15.3%	14.5%	12.7%	10.8%
7	na	15.5%	14.7%	14.6%	12.8%	11.6%
8	na	15.0%	14.7%	14.5%	13.1%	11.0%
9	na	14.7%	15.3%	14.6%	12.0%	10.6%
10	na	14.8%	15.7%	15.0%	13.7%	na

SVK	20-29	30-39	40-49	50-59	60-69	70+
1	16.4%	18.0%	18.0%	19.8%	17.9%	14.0%
2	16.9%	17.7%	16.7%	17.7%	16.0%	14.5%
3	15.5%	16.5%	16.6%	16.0%	15.5%	12.6%
4	17.5%	16.6%	15.9%	15.1%	15.3%	13.1%
5	17.1%	15.6%	14.9%	15.8%	16.1%	13.5%
6	16.1%	14.4%	15.7%	15.7%	15.1%	13.5%
7	na	15.0%	15.0%	15.9%	14.7%	11.9%
8	14.8%	14.1%	15.6%	14.6%	13.4%	na
9	14.8%	14.3%	14.5%	13.9%	13.5%	na
10	12.5%	12.4%	12.9%	12.6%	13.6%	na

SVK	20-29	30-39	40-49	50-59	60-69	70+
1	16.9%	18.2%	18.9%	18.8%	17.2%	14.3%
2	18.5%	21.0%	20.1%	19.7%	16.6%	14.4%
3	21.1%	21.4%	20.4%	19.3%	16.6%	14.0%
4	21.2%	21.5%	20.8%	19.0%	17.3%	15.7%
5	22.0%	20.6%	20.9%	20.8%	18.1%	17.2%
6	20.5%	20.9%	20.6%	20.9%	17.7%	15.9%
7	na	21.5%	21.5%	21.3%	18.2%	16.3%
8	21.8%	21.6%	21.5%	20.5%	18.7%	na
9	21.6%	21.3%	21.5%	21.2%	19.3%	na
10	20.1%	21.0%	21.6%	20.9%	21.3%	na

na = data not available or result based on less than 30 observations for that cell.

Table A.4. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and age**

AUT	20-29	30-39	40-49	50-59	60-69	70+
1	10.1%	8.6%	8.2%	9.4%	6.3%	4.6%
2	9.6%	10.6%	11.2%	10.1%	7.7%	6.5%
3	10.0%	10.1%	11.0%	9.5%	9.8%	8.1%
4	10.5%	11.3%	10.9%	11.4%	9.8%	8.7%
5	13.9%	10.6%	11.8%	10.7%	11.3%	10.0%
6	14.6%	13.2%	12.5%	14.0%	11.8%	11.7%
7	16.0%	14.6%	14.5%	12.9%	13.9%	13.4%
8	16.6%	15.7%	15.7%	15.2%	15.8%	15.7%
9	19.7%	17.4%	17.5%	19.0%	16.8%	13.3%
10	27.4%	21.8%	21.6%	20.4%	24.7%	19.2%

AUT	20-29	30-39	40-49	50-59	60-69	70+
1	20.1%	19.5%	18.0%	18.3%	14.4%	11.1%
2	17.7%	16.9%	19.3%	16.7%	14.3%	11.1%
3	15.9%	16.6%	16.5%	16.3%	15.6%	12.0%
4	16.7%	16.2%	15.8%	16.4%	14.8%	12.0%
5	17.6%	15.7%	16.3%	15.5%	15.5%	12.8%
6	17.6%	15.9%	15.9%	17.1%	15.0%	13.4%
7	17.9%	16.1%	16.4%	15.9%	15.7%	13.9%
8	17.0%	16.5%	16.5%	16.2%	15.8%	14.1%
9	17.0%	17.2%	16.9%	16.8%	15.5%	13.3%
10	18.5%	16.9%	16.8%	16.7%	16.6%	13.8%

BEL	20-29	30-39	40-49	50-59	60-69	70+
1	8.8%	8.8%	13.3%	9.8%	8.9%	9.1%
2	9.0%	9.0%	10.8%	9.3%	9.2%	9.1%
3	10.3%	10.1%	10.3%	10.6%	10.8%	9.9%
4	9.6%	9.7%	11.1%	11.6%	11.5%	10.6%
5	10.5%	10.3%	10.8%	11.7%	11.9%	11.6%
6	11.6%	11.9%	11.6%	11.5%	13.0%	12.6%
7	11.2%	11.5%	11.5%	10.8%	13.3%	13.8%
8	12.3%	12.2%	12.5%	14.6%	15.0%	15.7%
9	15.5%	13.3%	14.5%	13.9%	14.8%	16.3%
10	26.3%	23.0%	19.0%	20.4%	24.2%	23.7%

BEL	20-29	30-39	40-49	50-59	60-69	70+
1	11.4%	11.4%	10.9%	9.6%	11.9%	12.1%
2	11.7%	12.1%	13.1%	12.0%	10.9%	10.3%
3	13.0%	12.6%	12.8%	11.9%	11.9%	10.9%
4	13.0%	13.3%	13.5%	13.2%	13.0%	11.0%
5	13.1%	13.1%	13.0%	12.9%	12.1%	11.1%
6	13.9%	14.0%	13.9%	13.4%	12.7%	11.8%
7	14.2%	13.7%	13.4%	13.1%	13.1%	12.5%
8	14.5%	14.0%	13.5%	14.0%	13.3%	13.0%
9	15.1%	14.3%	14.5%	13.6%	13.2%	12.3%
10	16.2%	16.5%	15.1%	15.1%	15.1%	14.1%

CHL	20-29	30-39	40-49	50-59	60-69	70+
1	12.1%	11.2%	10.7%	9.7%	7.8%	7.1%
2	10.6%	12.2%	12.1%	10.0%	9.9%	7.3%
3	12.1%	17.0%	14.7%	11.9%	10.2%	10.7%
4	14.0%	13.1%	13.6%	14.0%	13.0%	12.2%
5	15.0%	13.1%	16.1%	14.2%	13.5%	13.6%
6	15.1%	14.9%	14.3%	13.7%	15.8%	15.0%
7	15.7%	13.9%	14.7%	16.8%	15.0%	15.2%
8	13.3%	13.6%	17.0%	15.4%	14.9%	15.9%
9	13.3%	13.1%	14.6%	12.8%	15.1%	13.5%
10	13.6%	12.4%	13.1%	13.6%	14.0%	14.8%

CHL	20-29	30-39	40-49	50-59	60-69	70+
1	12.1%	12.3%	12.7%	11.7%	11.1%	10.5%
2	12.8%	13.0%	12.7%	12.5%	11.9%	9.9%
3	13.1%	13.0%	12.9%	12.6%	11.6%	11.5%
4	13.2%	13.2%	12.5%	13.1%	12.7%	11.6%
5	13.3%	13.3%	14.0%	12.9%	12.5%	11.9%
6	13.6%	13.8%	13.3%	13.0%	12.6%	11.5%
7	12.5%	14.9%	13.3%	13.9%	12.5%	11.5%
8	11.8%	14.2%	13.4%	13.3%	13.0%	11.1%
9	11.4%	13.7%	13.1%	12.9%	13.1%	10.9%
10	11.9%	13.3%	12.5%	12.2%	12.7%	10.3%

CZE	20-29	30-39	40-49	50-59	60-69	70+
1	11.0%	9.8%	10.7%	11.4%	9.4%	7.7%
2	na	10.9%	11.4%	10.3%	10.6%	10.3%
3	na	11.3%	11.8%	10.3%	11.6%	11.3%
4	na	12.1%	12.0%	11.6%	11.3%	11.8%
5	na	12.6%	12.2%	11.8%	12.6%	11.2%
6	na	12.1%	11.9%	12.0%	12.6%	12.9%
7	na	12.4%	12.9%	13.3%	12.7%	na
8	na	12.5%	13.3%	12.5%	12.8%	na
9	na	14.5%	13.3%	12.7%	13.0%	na
10	na	15.5%	14.6%	14.3%	16.2%	na

CZE	20-29	30-39	40-49	50-59	60-69	70+
1	19.2%	19.7%	17.9%	18.0%	18.9%	15.7%
2	na	20.1%	19.1%	19.7%	19.1%	15.8%
3	na	20.5%	18.1%	18.7%	19.0%	16.3%
4	na	20.0%	17.6%	19.0%	17.0%	16.4%
5	na	20.1%	19.2%	19.2%	18.3%	15.5%
6	na	19.9%	18.7%	19.5%	18.5%	16.3%
7	na	20.1%	19.2%	20.2%	18.7%	na
8	na	18.9%	19.5%	19.1%	17.6%	na
9	na	19.6%	18.7%	18.5%	17.7%	na
10	na	19.0%	18.6%	19.1%	18.8%	na

Table A.4. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and age** *(continued)*

DEU	20-29	30-39	40-49	50-59	60-69	70+
1	9.2%	8.8%	9.1%	9.4%	8.3%	7.0%
2	10.3%	10.0%	9.7%	9.7%	8.9%	7.8%
3	10.6%	9.8%	10.4%	10.1%	9.8%	8.4%
4	11.2%	10.2%	10.5%	10.4%	10.6%	9.4%
5	10.9%	9.9%	10.5%	11.1%	11.0%	10.0%
6	11.3%	10.1%	10.7%	11.0%	11.7%	10.7%
7	11.7%	10.4%	10.6%	11.2%	12.1%	11.5%
8	12.5%	10.6%	10.7%	11.5%	12.5%	11.9%
9	13.7%	10.5%	10.5%	11.4%	13.0%	12.7%
10	22.6%	14.5%	14.0%	14.0%	15.3%	14.5%

DEU	20-29	30-39	40-49	50-59	60-69	70+
1	12.2%	11.9%	11.8%	11.6%	9.9%	8.6%
2	12.9%	13.0%	12.5%	11.7%	10.1%	9.3%
3	13.6%	13.3%	13.4%	12.5%	11.0%	9.7%
4	14.1%	13.5%	13.4%	13.1%	11.7%	10.2%
5	14.1%	13.5%	13.4%	13.3%	11.6%	10.6%
6	14.0%	13.3%	13.2%	13.2%	11.8%	11.1%
7	14.2%	13.2%	13.2%	13.2%	12.2%	11.2%
8	13.8%	13.4%	13.1%	13.4%	12.2%	11.4%
9	14.3%	13.1%	12.7%	12.9%	12.3%	11.6%
10	15.8%	13.6%	13.2%	13.2%	12.7%	11.7%

ESP	20-29	30-39	40-49	50-59	60-69	70+
1	12.2%	11.0%	11.4%	11.7%	7.7%	5.9%
2	13.2%	12.6%	13.9%	12.5%	10.2%	7.8%
3	17.3%	12.0%	14.9%	14.1%	11.6%	9.3%
4	12.3%	13.0%	14.3%	13.5%	11.6%	10.1%
5	12.9%	13.2%	15.2%	14.7%	13.0%	11.3%
6	13.7%	13.4%	15.7%	14.2%	13.3%	12.7%
7	15.4%	13.5%	15.1%	14.9%	13.8%	14.4%
8	15.9%	13.7%	16.4%	15.3%	14.6%	13.9%
9	16.9%	15.4%	16.9%	16.2%	15.7%	16.0%
10	21.9%	18.8%	18.9%	17.9%	18.1%	16.8%

ESP	20-29	30-39	40-49	50-59	60-69	70+
1	21.3%	16.8%	18.1%	18.0%	14.8%	12.0%
2	16.1%	16.2%	17.0%	16.9%	14.8%	11.9%
3	17.0%	16.0%	16.4%	16.7%	15.0%	12.1%
4	14.6%	15.9%	15.8%	16.1%	14.4%	11.8%
5	15.7%	15.3%	16.5%	15.9%	14.1%	11.8%
6	15.1%	15.0%	15.6%	15.7%	13.6%	12.3%
7	14.2%	14.7%	15.1%	15.2%	14.1%	12.7%
8	15.0%	14.0%	14.7%	14.9%	13.7%	12.1%
9	12.8%	14.0%	14.6%	14.4%	13.8%	12.4%
10	13.5%	14.0%	14.0%	13.7%	13.2%	11.4%

EST	20-29	30-39	40-49	50-59	60-69	70+
1	6.1%	8.5%	12.7%	11.2%	6.5%	5.6%
2	9.5%	12.0%	14.6%	14.7%	10.8%	8.8%
3	30.1%	12.1%	17.5%	19.0%	11.7%	9.4%
4	na	15.7%	13.2%	14.0%	10.8%	11.6%
5	na	15.5%	14.7%	15.1%	17.1%	14.1%
6	na	13.8%	15.5%	18.2%	16.3%	14.4%
7	19.9%	16.8%	17.2%	16.7%	18.6%	15.8%
8	20.1%	18.3%	19.7%	19.7%	20.9%	20.2%
9	15.6%	17.9%	22.5%	22.9%	22.4%	na
10	22.1%	23.2%	26.6%	27.5%	24.5%	na

EST	20-29	30-39	40-49	50-59	60-69	70+
1	30.4%	31.3%	37.9%	28.2%	26.5%	26.7%
2	21.8%	23.5%	25.7%	23.6%	25.0%	24.3%
3	29.8%	23.5%	27.0%	28.1%	24.4%	20.8%
4	na	25.1%	24.5%	23.1%	21.8%	21.2%
5	na	23.1%	22.6%	25.7%	26.0%	21.7%
6	na	22.4%	23.3%	26.2%	23.5%	21.0%
7	26.7%	23.9%	25.5%	23.4%	23.4%	20.5%
8	25.1%	24.5%	25.5%	24.5%	24.2%	21.7%
9	23.2%	23.2%	25.3%	24.6%	22.5%	na
10	22.1%	22.7%	24.4%	24.1%	23.6%	na

GBR	20-29	30-39	40-49	50-59	60-69	70+
1	7.4%	7.4%	7.5%	6.9%	5.3%	3.6%
2	8.9%	8.5%	8.7%	8.1%	7.5%	4.7%
3	9.6%	7.2%	8.6%	9.3%	9.0%	5.8%
4	6.9%	7.5%	7.9%	7.4%	9.0%	7.9%
5	10.8%	8.2%	9.8%	8.9%	10.9%	8.3%
6	7.5%	9.0%	9.4%	9.8%	10.7%	9.4%
7	9.9%	8.4%	10.3%	10.8%	10.8%	10.1%
8	8.5%	9.3%	10.1%	10.0%	12.4%	11.8%
9	10.9%	9.4%	10.4%	11.9%	13.2%	11.7%
10	11.6%	11.2%	14.8%	13.5%	17.6%	18.0%

GBR	20-29	30-39	40-49	50-59	60-69	70+
1	15.3%	17.4%	16.8%	15.2%	14.9%	10.7%
2	15.3%	14.2%	15.2%	16.0%	14.2%	10.2%
3	16.5%	14.1%	15.3%	16.1%	15.4%	11.2%
4	11.4%	14.5%	15.6%	15.0%	14.9%	12.7%
5	14.9%	13.9%	15.9%	15.5%	15.4%	12.2%
6	10.9%	16.0%	16.2%	16.6%	15.7%	12.8%
7	13.7%	13.9%	14.9%	16.0%	15.1%	12.1%
8	11.7%	14.4%	15.2%	14.8%	15.3%	13.3%
9	13.9%	13.0%	14.2%	15.1%	14.9%	12.3%
10	10.8%	12.7%	13.5%	14.1%	14.2%	13.1%

Table A.4. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and age** *(continued)*

GRC	20-29	30-39	40-49	50-59	60-69	70+
1	na	na	13.0%	11.7%	8.1%	5.9%
2	na	na	11.4%	13.6%	11.9%	7.0%
3	na	14.9%	14.3%	12.4%	11.1%	8.9%
4	na	12.0%	14.8%	15.1%	11.5%	8.9%
5	na	14.3%	14.6%	12.1%	12.8%	9.6%
6	na	15.6%	15.9%	15.7%	12.6%	11.9%
7	na	17.1%	17.0%	15.3%	15.1%	11.4%
8	na	15.2%	15.9%	15.7%	13.3%	13.4%
9	na	16.8%	16.5%	15.0%	14.2%	15.1%
10	na	19.2%	15.9%	16.5%	16.2%	15.8%

GRC	20-29	30-39	40-49	50-59	60-69	70+
1	na	na	21.6%	19.2%	17.3%	15.0%
2	na	na	17.7%	21.6%	17.8%	13.4%
3	na	19.2%	20.2%	20.6%	17.9%	15.5%
4	na	15.9%	17.4%	21.2%	18.3%	14.2%
5	na	15.4%	17.8%	19.3%	17.2%	14.2%
6	na	17.8%	18.0%	19.2%	17.5%	14.5%
7	na	16.8%	17.7%	19.6%	20.5%	14.5%
8	na	16.2%	18.2%	18.7%	17.5%	14.3%
9	na	16.8%	16.3%	18.4%	17.5%	16.3%
10	na	16.8%	15.2%	16.6%	17.0%	16.0%

HUN	20-29	30-39	40-49	50-59	60-69	70+
1	15.3%	14.8%	15.6%	15.4%	13.1%	9.8%
2	15.8%	15.3%	16.2%	16.4%	14.1%	11.4%
3	na	17.4%	16.6%	16.3%	14.0%	12.5%
4	na	17.2%	17.1%	16.2%	15.3%	13.7%
5	na	17.7%	18.8%	16.9%	16.6%	14.2%
6	na	15.9%	17.0%	18.3%	16.0%	14.9%
7	15.1%	18.8%	19.4%	19.0%	18.3%	16.4%
8	16.7%	18.8%	21.3%	20.4%	19.3%	17.3%
9	20.4%	19.7%	20.7%	20.9%	18.7%	20.2%
10	20.3%	21.4%	21.9%	22.7%	22.2%	23.5%

HUN	20-29	30-39	40-49	50-59	60-69	70+
1	29.3%	29.3%	31.7%	31.1%	29.0%	24.0%
2	27.6%	28.4%	29.3%	29.3%	26.7%	23.9%
3	na	27.9%	29.1%	28.4%	25.2%	23.2%
4	na	27.6%	28.9%	28.0%	25.5%	21.9%
5	na	27.5%	28.6%	27.8%	26.2%	21.9%
6	na	27.2%	28.0%	28.1%	26.0%	22.0%
7	23.4%	28.1%	28.3%	27.2%	25.8%	22.2%
8	24.1%	27.8%	29.0%	27.7%	26.1%	22.9%
9	24.1%	27.1%	27.9%	27.9%	25.3%	22.5%
10	23.3%	26.5%	27.2%	26.9%	26.6%	22.0%

IRL	20-29	30-39	40-49	50-59	60-69	70+
1	11.2%	12.1%	12.1%	14.8%	10.5%	8.0%
2	12.4%	11.0%	11.1%	11.6%	12.9%	9.5%
3	13.9%	10.4%	13.3%	14.1%	14.7%	10.5%
4	13.4%	11.3%	11.7%	12.6%	15.0%	12.0%
5	14.0%	11.9%	10.8%	14.2%	13.9%	14.4%
6	12.2%	10.4%	11.6%	12.4%	14.6%	14.8%
7	13.8%	10.3%	11.1%	12.4%	13.7%	19.0%
8	11.9%	10.3%	11.6%	11.3%	13.6%	18.5%
9	12.6%	10.8%	12.0%	12.1%	13.1%	na
10	15.4%	11.7%	13.9%	12.7%	17.9%	17.1%

IRL	20-29	30-39	40-49	50-59	60-69	70+
1	18.7%	16.5%	16.2%	19.4%	15.7%	11.9%
2	17.9%	15.1%	14.1%	14.4%	13.8%	9.8%
3	15.8%	14.0%	15.5%	14.2%	12.1%	9.2%
4	15.8%	15.2%	14.1%	14.1%	13.2%	10.2%
5	15.5%	14.9%	14.2%	14.9%	12.4%	10.3%
6	14.9%	14.0%	14.4%	14.7%	13.7%	10.7%
7	15.9%	14.8%	14.4%	14.0%	13.3%	11.7%
8	14.8%	14.8%	13.4%	14.7%	12.6%	11.7%
9	15.1%	14.6%	13.9%	14.3%	13.3%	na
10	15.0%	13.6%	14.0%	13.3%	13.7%	11.5%

ITA	20-29	30-39	40-49	50-59	60-69	70+
1	na	na	na	na	na	na
2	na	na	na	na	na	na
3	na	na	na	na	na	na
4	na	na	na	na	na	na
5	na	na	na	na	na	na
6	na	na	na	na	na	na
7	na	na	na	na	na	na
8	na	na	na	na	na	na
9	na	na	na	na	na	na
10	na	na	na	na	na	na

ITA	20-29	30-39	40-49	50-59	60-69	70+
1	12.1%	11.3%	12.9%	12.9%	11.6%	7.8%
2	15.4%	13.6%	12.8%	12.1%	11.3%	8.1%
3	11.9%	13.7%	13.0%	13.1%	11.2%	8.5%
4	14.9%	14.0%	13.3%	13.3%	11.3%	8.1%
5	11.8%	13.7%	13.4%	13.2%	11.4%	8.8%
6	14.6%	13.8%	13.5%	12.9%	11.9%	9.1%
7	14.1%	13.8%	13.7%	13.3%	11.5%	9.2%
8	11.8%	13.7%	13.2%	13.5%	11.9%	9.8%
9	13.6%	14.0%	13.7%	13.2%	11.8%	9.9%
10	14.2%	15.4%	14.2%	13.8%	12.4%	11.0%

Table A.4. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and age** *(continued)*

KOR	20-29	30-39	40-49	50-59	60-69	70+
1	na	4.7%	4.7%	5.8%	6.0%	5.8%
2	na	6.6%	5.6%	6.0%	6.2%	6.5%
3	na	6.6%	6.6%	6.7%	7.1%	7.3%
4	7.4%	7.3%	6.5%	6.4%	7.1%	7.4%
5	7.6%	7.2%	7.2%	7.0%	7.7%	8.8%
6	na	7.4%	6.7%	7.7%	6.9%	8.6%
7	na	6.8%	6.8%	7.9%	7.4%	9.1%
8	12.2%	7.4%	6.9%	7.7%	7.6%	6.7%
9	11.7%	8.1%	7.1%	7.8%	7.3%	6.0%
10	10.0%	8.6%	7.3%	8.0%	7.8%	6.9%

KOR	20-29	30-39	40-49	50-59	60-69	70+
1	na	11.3%	11.2%	11.7%	9.5%	6.8%
2	na	13.1%	11.0%	11.8%	10.9%	8.3%
3	na	13.0%	11.5%	12.5%	11.3%	9.4%
4	12.2%	12.3%	11.3%	12.9%	11.3%	9.6%
5	11.7%	12.3%	11.2%	13.1%	11.4%	9.7%
6	na	11.9%	10.7%	13.5%	11.6%	8.3%
7	na	11.5%	10.4%	13.1%	11.0%	8.6%
8	14.2%	11.6%	10.3%	12.0%	10.3%	6.9%
9	12.0%	11.8%	9.9%	11.2%	9.0%	6.7%
10	9.0%	9.8%	8.3%	8.1%	6.9%	5.0%

LUX	20-29	30-39	40-49	50-59	60-69	70+
1	7.0%	5.0%	5.2%	4.8%	3.9%	2.8%
2	6.3%	6.9%	6.1%	5.9%	4.9%	4.5%
3	7.0%	6.6%	7.2%	7.1%	6.3%	4.5%
4	7.3%	7.1%	8.0%	7.0%	5.4%	4.7%
5	10.2%	7.0%	7.3%	7.5%	6.3%	5.0%
6	9.3%	8.4%	9.1%	8.6%	5.9%	6.2%
7	11.5%	8.7%	9.0%	8.2%	8.4%	6.6%
8	11.9%	9.8%	10.0%	8.8%	9.8%	7.7%
9	12.4%	11.3%	10.8%	10.7%	10.8%	10.3%
10	13.1%	14.1%	13.8%	11.8%	12.2%	8.0%

LUX	20-29	30-39	40-49	50-59	60-69	70+
1	6.8%	6.7%	7.1%	7.8%	6.2%	5.7%
2	8.7%	8.2%	7.6%	7.6%	7.5%	6.2%
3	8.3%	7.8%	8.3%	8.3%	7.6%	5.9%
4	8.8%	8.2%	7.8%	8.1%	7.1%	6.2%
5	10.1%	7.8%	7.6%	8.8%	6.9%	5.8%
6	8.2%	8.5%	8.3%	8.1%	6.1%	6.3%
7	10.0%	8.6%	8.0%	7.8%	7.7%	6.2%
8	10.0%	8.8%	8.3%	7.9%	8.2%	6.3%
9	8.9%	9.4%	8.2%	8.8%	7.9%	6.8%
10	9.2%	9.4%	8.9%	8.0%	8.0%	6.5%

NLD	20-29	30-39	40-49	50-59	60-69	70+
1	na	na	na	na	na	na
2	na	na	na	na	na	na
3	na	na	na	na	na	na
4	na	na	12.0%	na	na	na
5	na	11.6%	11.6%	na	na	na
6	na	13.5%	14.4%	12.4%	na	na
7	na	12.2%	13.4%	13.8%	na	na
8	na	12.3%	14.8%	14.4%	na	na
9	na	17.7%	14.5%	12.8%	18.0%	na
10	na	17.8%	17.7%	19.8%	17.9%	na

NLD	20-29	30-39	40-49	50-59	60-69	70+
1	na	na	na	na	na	na
2	na	na	na	na	na	na
3	na	na	na	na	na	na
4	na	na	12.5%	na	na	na
5	na	12.2%	12.6%	na	na	na
6	na	13.8%	13.2%	13.6%	na	na
7	na	12.8%	13.1%	15.4%	na	na
8	na	12.9%	13.8%	13.3%	na	na
9	na	14.2%	13.7%	13.8%	13.8%	na
10	na	14.4%	14.4%	14.4%	13.7%	na

NZL	20-29	30-39	40-49	50-59	60-69	70+
1	na	na	6.7%	9.4%	7.5%	6.6%
2	na	na	8.2%	9.2%	12.5%	8.8%
3	na	8.3%	10.8%	9.1%	9.5%	10.5%
4	8.3%	7.3%	8.7%	9.1%	11.0%	12.1%
5	9.3%	9.1%	7.8%	9.8%	10.3%	12.7%
6	8.8%	8.4%	9.2%	9.1%	10.5%	12.9%
7	na	7.8%	9.0%	8.9%	11.6%	14.3%
8	8.0%	8.1%	8.7%	8.8%	9.9%	na
9	na	8.2%	9.1%	10.5%	10.5%	na
10	na	9.3%	8.6%	9.2%	10.6%	na

NZL	20-29	30-39	40-49	50-59	60-69	70+
1	na	13.1%	14.4%	16.8%	14.9%	15.8%
2	na	10.9%	14.2%	17.0%	16.0%	15.0%
3	na	11.8%	13.9%	15.6%	15.6%	15.7%
4	10.4%	11.0%	12.8%	15.2%	14.7%	16.7%
5	12.3%	12.4%	12.9%	13.9%	15.7%	16.3%
6	11.2%	11.9%	13.7%	14.6%	16.0%	15.8%
7	na	12.3%	13.7%	14.1%	14.4%	15.3%
8	11.8%	11.1%	11.8%	13.8%	14.2%	na
9	na	10.8%	12.0%	13.1%	13.2%	na
10	na	11.2%	11.8%	12.3%	13.7%	na

Table A.4. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and age** *(continued)*

POL	20-29	30-39	40-49	50-59	60-69	70+
1	11.0%	11.1%	11.4%	12.6%	10.7%	7.8%
2	12.5%	11.5%	11.7%	12.1%	10.4%	9.1%
3	12.0%	12.0%	12.2%	12.7%	10.9%	10.1%
4	12.7%	12.0%	12.8%	12.7%	11.8%	10.4%
5	12.7%	13.1%	13.3%	13.5%	12.0%	10.8%
6	13.1%	12.9%	14.2%	13.7%	13.3%	11.3%
7	13.7%	13.4%	14.3%	14.7%	13.3%	12.7%
8	14.4%	14.4%	15.5%	15.3%	14.9%	13.6%
9	15.2%	15.1%	15.9%	16.5%	16.6%	15.5%
10	18.9%	18.2%	18.9%	20.1%	21.2%	21.3%

POL	20-29	30-39	40-49	50-59	60-69	70+
1	20.4%	19.9%	19.4%	21.7%	20.3%	15.4%
2	19.8%	19.6%	19.3%	19.3%	17.8%	15.1%
3	19.6%	19.6%	19.6%	19.9%	17.2%	15.0%
4	19.2%	18.9%	19.4%	19.6%	17.4%	15.2%
5	18.7%	19.7%	20.1%	20.1%	17.2%	14.6%
6	19.7%	19.5%	20.2%	19.9%	17.7%	15.0%
7	19.1%	19.6%	20.1%	20.2%	17.9%	15.6%
8	19.4%	19.8%	20.1%	20.2%	17.9%	15.3%
9	19.6%	20.3%	19.7%	19.8%	18.2%	16.1%
10	19.0%	19.7%	20.1%	19.9%	18.8%	16.3%

SLV	20-29	30-39	40-49	50-59	60-69	70+
1	na	11.5%	14.0%	10.8%	11.0%	9.0%
2	na	12.7%	11.8%	12.2%	10.0%	10.0%
3	na	12.0%	12.4%	12.9%	12.2%	11.2%
4	na	13.0%	12.5%	13.3%	11.1%	11.7%
5	na	14.4%	14.2%	13.7%	13.2%	12.3%
6	na	14.6%	14.5%	14.8%	13.3%	13.2%
7	na	12.6%	14.6%	14.5%	14.6%	12.6%
8	na	17.3%	16.8%	18.1%	15.0%	17.0%
9	na	18.0%	17.6%	17.6%	16.5%	na
10	na	23.6%	19.7%	21.7%	21.4%	na

SLV	20-29	30-39	40-49	50-59	60-69	70+
1	na	14.3%	16.2%	13.9%	12.9%	11.3%
2	na	15.2%	13.7%	13.5%	11.9%	9.6%
3	na	14.5%	14.2%	13.0%	12.2%	10.9%
4	na	13.3%	13.7%	13.8%	11.7%	10.6%
5	na	15.2%	15.2%	12.8%	12.5%	10.3%
6	na	15.5%	14.7%	14.5%	12.3%	10.8%
7	na	14.4%	15.0%	14.6%	13.1%	10.4%
8	na	15.4%	15.7%	15.2%	12.7%	12.0%
9	na	15.1%	15.3%	14.2%	12.9%	na
10	na	15.7%	15.1%	15.2%	13.8%	na

SVK	20-29	30-39	40-49	50-59	60-69	70+
1	14.0%	14.2%	13.9%	14.7%	11.7%	9.4%
2	13.1%	14.2%	14.2%	13.8%	11.7%	11.1%
3	14.6%	15.2%	15.3%	14.6%	13.2%	11.5%
4	15.5%	14.8%	14.5%	14.1%	13.3%	12.2%
5	14.0%	14.9%	15.0%	14.6%	13.3%	13.3%
6	na	14.2%	15.3%	15.1%	14.4%	14.0%
7	15.9%	14.8%	15.6%	16.3%	15.1%	14.8%
8	16.1%	15.4%	16.1%	15.3%	15.8%	15.1%
9	19.0%	15.9%	16.6%	16.1%	15.3%	16.4%
10	17.7%	18.9%	20.2%	20.1%	22.1%	na

SVK	20-29	30-39	40-49	50-59	60-69	70+
1	20.3%	20.2%	20.9%	21.1%	20.6%	16.8%
2	19.8%	22.1%	21.1%	20.5%	18.4%	15.9%
3	21.2%	22.5%	21.4%	21.0%	18.2%	15.6%
4	21.5%	21.2%	21.0%	20.5%	18.1%	15.0%
5	20.0%	21.9%	20.3%	20.5%	18.2%	15.0%
6	na	20.0%	21.4%	20.3%	18.5%	15.3%
7	20.7%	19.9%	21.4%	20.6%	18.1%	15.4%
8	20.7%	20.5%	20.0%	20.6%	17.4%	14.8%
9	20.8%	20.3%	20.2%	19.2%	16.9%	14.4%
10	19.4%	20.0%	19.9%	19.5%	18.0%	na

na = data not available or result based on less than 30 observations for that cell.

Table A.5. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and population density**

AUT	dense	intermediate	sparse
1	19.6%	20.7%	19.3%
2	14.4%	14.7%	14.0%
3	13.3%	15.0%	14.5%
4	11.9%	13.9%	13.5%
5	12.4%	13.6%	13.6%
6	11.4%	12.6%	13.4%
7	11.2%	12.8%	11.7%
8	11.0%	12.1%	11.3%
9	10.1%	11.3%	10.2%
10	9.3%	9.7%	9.2%

AUT	dense	intermediate	sparse
1	18.4%	15.7%	14.5%
2	16.1%	15.4%	14.1%
3	16.0%	15.5%	15.8%
4	15.7%	15.3%	16.1%
5	16.4%	16.0%	16.0%
6	15.4%	16.5%	16.0%
7	15.7%	16.3%	16.4%
8	15.7%	16.4%	16.5%
9	15.6%	16.1%	16.3%
10	14.9%	16.0%	15.3%

BEL	dense	intermediate	sparse
1	13.0%	16.6%	na
2	13.9%	14.5%	na
3	13.1%	14.4%	na
4	13.8%	13.4%	14.1%
5	12.8%	13.0%	na
6	12.9%	13.5%	11.3%
7	12.6%	12.9%	12.3%
8	11.8%	11.9%	11.6%
9	11.1%	11.1%	11.1%
10	8.0%	11.2%	8.5%

BEL	dense	intermediate	sparse
1	11.1%	12.4%	na
2	12.3%	12.4%	na
3	11.9%	13.3%	na
4	12.7%	12.9%	13.9%
5	12.7%	13.3%	na
6	13.1%	13.5%	13.5%
7	12.2%	13.9%	13.0%
8	13.5%	13.6%	14.7%
9	13.5%	14.2%	15.0%
10	13.5%	13.5%	15.2%

CZE	dense	intermediate	sparse
1	11.9%	13.4%	12.8%
2	12.4%	12.9%	12.4%
3	12.3%	12.0%	13.2%
4	12.5%	12.5%	12.8%
5	12.3%	13.1%	13.3%
6	12.8%	12.8%	13.0%
7	11.4%	12.4%	12.8%
8	11.5%	11.4%	12.3%
9	11.2%	11.7%	11.2%
10	9.9%	10.9%	10.6%

CZE	dense	intermediate	sparse
1	14.3%	16.8%	17.1%
2	15.5%	16.7%	17.2%
3	16.4%	17.6%	18.5%
4	16.8%	17.7%	18.9%
5	16.9%	18.9%	20.1%
6	18.5%	19.1%	21.0%
7	17.9%	20.7%	20.9%
8	17.9%	19.7%	20.6%
9	18.6%	20.0%	20.3%
10	18.4%	21.4%	21.0%

DEU	dense	intermediate	sparse
1	11.3%	12.7%	15.1%
2	10.5%	12.3%	13.8%
3	10.9%	12.3%	12.6%
4	11.2%	12.2%	13.5%
5	11.0%	11.6%	12.5%
6	10.9%	11.5%	12.1%
7	10.5%	11.0%	11.9%
8	10.3%	10.7%	11.4%
9	9.4%	9.9%	10.4%
10	8.0%	8.3%	8.5%

DEU	dense	intermediate	sparse
1	10.3%	10.8%	11.7%
2	10.6%	11.7%	13.1%
3	11.6%	12.5%	12.9%
4	12.2%	12.9%	14.1%
5	12.4%	13.1%	14.4%
6	12.7%	13.6%	14.2%
7	12.9%	13.5%	14.6%
8	12.8%	13.6%	14.6%
9	12.4%	13.1%	14.2%
10	11.9%	12.5%	13.5%

Table A.5. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and population density** *(continued)*

ESP	dense	intermediate	sparse
1	19.7%	21.2%	22.2%
2	15.7%	17.1%	16.6%
3	13.8%	14.3%	13.9%
4	13.0%	14.2%	13.9%
5	13.9%	14.8%	14.7%
6	12.6%	13.4%	13.1%
7	12.3%	11.9%	12.9%
8	11.4%	12.2%	12.5%
9	10.2%	11.3%	11.3%
10	9.0%	9.8%	9.6%

ESP	dense	intermediate	sparse
1	14.2%	15.2%	15.9%
2	13.0%	14.8%	15.0%
3	13.3%	14.7%	14.8%
4	13.7%	14.9%	15.0%
5	14.4%	15.8%	15.9%
6	14.3%	15.6%	15.8%
7	14.2%	14.9%	15.3%
8	14.6%	15.8%	15.7%
9	13.5%	15.2%	15.1%
10	13.6%	14.5%	15.3%

EST	dense	intermediate	sparse
1	21.2%	na	32.1%
2	17.8%	na	19.8%
3	14.0%	na	14.8%
4	16.3%	na	15.3%
5	14.2%	na	14.4%
6	12.9%	na	15.9%
7	13.4%	na	15.6%
8	12.2%	na	14.3%
9	12.6%	na	14.6%
10	13.3%	na	11.2%

EST	dense	intermediate	sparse
1	26.7%	na	31.1%
2	23.5%	na	27.1%
3	21.6%	na	24.5%
4	22.8%	na	23.8%
5	20.7%	na	24.0%
6	21.6%	na	26.2%
7	22.0%	na	26.0%
8	21.3%	na	25.9%
9	23.2%	na	24.9%
10	22.8%	na	24.6%

GRC	dense	intermediate	sparse
1	19.8%	21.9%	21.4%
2	17.4%	13.8%	16.1%
3	13.6%	12.7%	13.2%
4	14.4%	11.4%	12.9%
5	13.5%	14.4%	12.8%
6	12.4%	14.5%	10.9%
7	12.1%	11.0%	11.5%
8	11.9%	12.7%	11.6%
9	11.6%	12.2%	11.6%
10	9.8%	9.3%	10.5%

GRC	dense	intermediate	sparse
1	15.9%	16.0%	18.0%
2	16.3%	16.7%	16.2%
3	15.6%	14.9%	17.6%
4	15.5%	15.7%	16.2%
5	15.8%	16.8%	18.3%
6	16.8%	18.3%	18.0%
7	17.8%	17.6%	18.6%
8	17.5%	17.9%	18.2%
9	16.9%	18.0%	19.3%
10	16.4%	16.4%	19.1%

HUN	dense	intermediate	sparse
1	29.0%	24.2%	24.0%
2	21.4%	19.5%	19.9%
3	19.0%	17.8%	18.2%
4	17.4%	17.9%	17.3%
5	16.5%	16.9%	16.6%
6	16.6%	16.7%	15.7%
7	16.3%	16.1%	16.6%
8	14.8%	15.5%	15.6%
9	15.2%	15.3%	13.9%
10	12.8%	14.1%	12.1%

HUN	dense	intermediate	sparse
1	27.1%	27.5%	28.9%
2	24.8%	26.1%	27.5%
3	24.7%	25.9%	26.6%
4	23.8%	25.6%	26.7%
5	24.0%	26.6%	26.7%
6	24.9%	26.5%	27.6%
7	25.5%	26.8%	28.7%
8	25.7%	27.3%	29.1%
9	26.4%	27.4%	29.2%
10	26.0%	28.4%	28.7%

Table A.5. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and population density** *(continued)*

LUX	dense	intermediate	sparse
1	10.3%	12.0%	9.7%
2	9.9%	9.3%	7.8%
3	9.7%	8.9%	6.8%
4	8.7%	9.7%	7.0%
5	8.1%	9.2%	7.4%
6	7.5%	8.2%	6.5%
7	7.1%	8.2%	6.9%
8	8.2%	8.4%	6.3%
9	6.6%	7.1%	7.2%
10	5.1%	5.8%	4.6%

LUX	dense	intermediate	sparse
1	7.4%	7.6%	7.3%
2	7.7%	8.1%	7.3%
3	8.3%	7.5%	7.3%
4	7.6%	8.0%	7.8%
5	7.7%	8.2%	7.8%
6	7.8%	8.0%	8.0%
7	7.7%	8.1%	7.8%
8	8.2%	8.5%	8.3%
9	7.7%	8.0%	8.7%
10	7.5%	7.8%	8.2%

POL	dense	intermediate	sparse
1	18.2%	17.2%	18.5%
2	14.6%	14.7%	14.7%
3	14.1%	13.5%	14.0%
4	13.5%	13.0%	13.6%
5	13.5%	13.6%	13.4%
6	13.0%	12.8%	13.2%
7	12.8%	12.6%	12.5%
8	12.7%	13.4%	12.5%
9	12.2%	12.3%	12.2%
10	11.2%	10.7%	9.9%

POL	dense	intermediate	sparse
1	18.9%	17.4%	18.6%
2	17.1%	16.7%	18.0%
3	17.4%	17.4%	18.3%
4	17.4%	17.7%	18.8%
5	17.8%	18.6%	19.2%
6	18.3%	19.0%	19.5%
7	18.7%	19.5%	19.9%
8	19.1%	19.8%	20.6%
9	19.2%	19.6%	20.8%
10	19.8%	20.3%	21.5%

SLV	dense	intermediate	sparse
1	na	20.5%	22.2%
2	na	14.9%	15.4%
3	na	17.3%	14.1%
4	15.3%	13.0%	14.6%
5	14.6%	16.0%	12.9%
6	16.2%	14.4%	13.7%
7	14.0%	15.1%	12.5%
8	11.8%	13.7%	14.4%
9	12.5%	12.6%	12.0%
10	12.3%	13.9%	12.0%

SLV	dense	intermediate	sparse
1	na	12.5%	13.4%
2	na	11.6%	12.6%
3	na	13.0%	13.1%
4	11.5%	12.4%	14.2%
5	13.7%	14.4%	13.5%
6	13.6%	14.1%	15.1%
7	13.1%	14.9%	14.5%
8	13.0%	14.8%	14.7%
9	13.6%	15.1%	14.9%
10	14.3%	15.8%	16.1%

SVK	dense	intermediate	sparse
1	16.9%	18.3%	17.9%
2	15.3%	16.7%	16.6%
3	15.5%	15.2%	15.1%
4	15.2%	15.2%	15.2%
5	14.9%	15.8%	15.2%
6	15.4%	15.2%	14.9%
7	14.8%	15.5%	14.8%
8	14.4%	13.9%	14.6%
9	13.1%	14.6%	14.5%
10	11.9%	13.3%	13.2%

SVK	dense	intermediate	sparse
1	15.2%	17.5%	18.7%
2	15.4%	17.6%	19.1%
3	16.4%	17.6%	18.7%
4	16.4%	18.6%	19.4%
5	17.0%	19.4%	20.5%
6	17.5%	19.4%	20.8%
7	18.2%	20.5%	21.5%
8	19.0%	20.4%	21.7%
9	19.1%	21.0%	22.3%
10	19.5%	22.3%	22.0%

na = data not available or result based on less than 30 observations for that cell.

Table A.6. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and population density**

AUT	dense	intermediate	sparse
1	8.5%	6.4%	6.5%
2	9.6%	9.2%	8.4%
3	9.2%	10.2%	10.0%
4	10.0%	10.5%	11.0%
5	10.7%	10.5%	12.1%
6	11.7%	12.7%	14.3%
7	12.1%	13.7%	16.4%
8	14.4%	16.0%	17.1%
9	16.9%	16.4%	19.0%
10	19.4%	22.9%	26.0%

AUT	dense	intermediate	sparse
1	18.2%	15.2%	13.7%
2	16.4%	16.1%	14.3%
3	15.4%	14.9%	15.5%
4	15.0%	15.5%	15.4%
5	15.5%	15.3%	15.6%
6	15.6%	15.8%	16.2%
7	15.7%	16.2%	16.0%
8	15.5%	16.7%	16.5%
9	15.8%	16.5%	16.6%
10	15.9%	16.7%	17.3%

BEL	dense	intermediate	sparse
1	8.9%	13.2%	na
2	9.6%	9.2%	na
3	10.1%	10.7%	10.4%
4	10.5%	11.3%	na
5	11.1%	11.1%	12.7%
6	11.7%	12.6%	11.6%
7	11.8%	12.2%	na
8	14.1%	13.5%	13.2%
9	14.4%	14.8%	na
10	21.0%	24.0%	22.9%

BEL	dense	intermediate	sparse
1	10.5%	11.9%	na
2	11.5%	11.7%	na
3	11.8%	12.4%	12.9%
4	12.3%	13.5%	na
5	12.3%	12.8%	13.0%
6	12.9%	13.7%	14.2%
7	13.0%	13.5%	na
8	13.7%	13.7%	13.3%
9	13.5%	14.1%	na
10	15.0%	15.9%	15.3%

CZE	dense	intermediate	sparse
1	8.9%	10.1%	9.8%
2	9.2%	11.3%	11.2%
3	11.0%	11.8%	11.4%
4	10.7%	11.9%	12.4%
5	11.4%	11.7%	13.1%
6	11.9%	11.7%	13.0%
7	11.9%	12.9%	13.5%
8	12.5%	13.0%	13.1%
9	12.9%	14.3%	13.7%
10	14.1%	16.5%	16.3%

CZE	dense	intermediate	sparse
1	16.1%	18.1%	18.9%
2	16.1%	18.1%	20.0%
3	17.6%	18.6%	19.2%
4	15.7%	18.4%	19.3%
5	16.9%	18.3%	20.1%
6	18.1%	18.2%	19.5%
7	17.6%	19.1%	19.9%
8	17.6%	19.4%	19.1%
9	17.4%	19.7%	19.4%
10	17.9%	19.8%	20.4%

DEU	dense	intermediate	sparse
1	8.4%	9.1%	10.1%
2	9.1%	9.7%	10.8%
3	9.4%	10.1%	11.2%
4	9.8%	10.6%	11.5%
5	10.0%	10.8%	11.6%
6	10.4%	11.2%	11.9%
7	10.8%	11.3%	12.4%
8	10.9%	11.9%	12.9%
9	11.1%	12.1%	13.6%
10	13.6%	15.8%	18.8%

DEU	dense	intermediate	sparse
1	10.7%	11.6%	12.9%
2	11.1%	12.3%	13.3%
3	11.8%	12.7%	14.0%
4	12.1%	12.9%	13.6%
5	12.3%	12.9%	13.8%
6	12.3%	13.0%	13.7%
7	12.4%	13.0%	13.8%
8	12.4%	13.0%	14.2%
9	12.3%	12.8%	13.7%
10	12.6%	13.3%	14.4%

Table A.6. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and population density** *(continued)*

ESP	dense	intermediate	sparse
1	8.3%	9.5%	8.6%
2	10.0%	11.3%	12.1%
3	11.4%	12.2%	14.0%
4	11.4%	13.4%	13.8%
5	12.1%	14.3%	15.9%
6	12.4%	14.9%	16.3%
7	13.5%	14.6%	16.9%
8	13.8%	15.5%	17.8%
9	14.6%	16.9%	20.0%
10	17.1%	19.9%	22.5%

ESP	dense	intermediate	sparse
1	14.8%	15.9%	15.0%
2	14.2%	15.1%	15.5%
3	14.2%	15.4%	16.2%
4	14.0%	15.6%	15.6%
5	14.2%	15.5%	15.8%
6	13.9%	15.4%	15.4%
7	14.0%	15.0%	15.3%
8	13.7%	14.4%	14.9%
9	13.4%	14.6%	15.2%
10	13.0%	14.2%	14.4%

EST	dense	intermediate	sparse
1	6.4%	na	9.4%
2	9.8%	na	12.0%
3	10.5%	na	18.4%
4	10.3%	na	14.0%
5	13.0%	na	16.7%
6	13.9%	na	17.0%
7	14.9%	na	20.6%
8	18.7%	na	21.7%
9	18.3%	na	22.9%
10	21.2%	na	30.0%

EST	dense	intermediate	sparse
1	27.8%	na	31.2%
2	23.2%	na	24.6%
3	21.1%	na	27.2%
4	21.4%	na	23.8%
5	21.2%	na	25.3%
6	21.9%	na	24.3%
7	21.5%	na	26.4%
8	22.6%	na	25.9%
9	22.7%	na	24.5%
10	21.6%	na	25.6%

GRC	dense	intermediate	sparse
1	9.2%	7.7%	7.8%
2	9.9%	9.0%	11.5%
3	11.8%	14.5%	12.3%
4	11.2%	12.0%	13.3%
5	12.0%	11.0%	14.7%
6	14.9%	12.4%	15.0%
7	15.7%	16.4%	16.2%
8	14.5%	13.2%	17.3%
9	15.6%	14.5%	17.5%
10	17.1%	15.6%	18.3%

GRC	dense	intermediate	sparse
1	18.3%	14.8%	16.3%
2	15.8%	16.5%	17.7%
3	17.2%	19.4%	18.3%
4	16.2%	15.4%	18.6%
5	15.2%	17.3%	18.0%
6	17.1%	17.2%	18.3%
7	17.1%	18.2%	17.9%
8	16.0%	17.8%	19.1%
9	16.5%	17.1%	18.2%
10	16.0%	15.5%	17.5%

HUN	dense	intermediate	sparse
1	13.8%	13.7%	14.7%
2	13.0%	14.8%	15.4%
3	13.9%	14.7%	16.0%
4	14.3%	15.4%	17.1%
5	14.8%	16.0%	18.2%
6	14.2%	17.2%	18.4%
7	16.6%	17.5%	20.4%
8	17.0%	20.4%	21.7%
9	18.0%	21.3%	23.2%
10	20.7%	24.0%	26.2%

HUN	dense	intermediate	sparse
1	29.5%	28.6%	30.1%
2	26.3%	28.2%	27.8%
3	25.2%	26.1%	27.5%
4	25.5%	26.1%	27.0%
5	25.3%	25.4%	27.0%
6	24.9%	26.8%	27.1%
7	24.9%	25.6%	27.5%
8	25.2%	26.9%	28.0%
9	25.0%	27.1%	27.3%
10	25.4%	27.2%	27.3%

Table A.6. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and population density** *(continued)*

ITA	dense	intermediate	sparse
1	na	na	na
2	na	na	na
3	na	na	na
4	na	na	na
5	na	na	na
6	na	na	na
7	na	na	na
8	na	na	na
9	na	na	na
10	na	na	na

ITA	dense	intermediate	sparse
1	10.4%	10.7%	11.8%
2	10.0%	11.9%	12.1%
3	10.1%	12.1%	13.6%
4	10.3%	12.6%	14.2%
5	10.8%	12.6%	13.7%
6	11.1%	12.6%	14.4%
7	11.5%	12.9%	14.0%
8	11.5%	13.1%	14.6%
9	11.9%	13.2%	14.3%
10	12.8%	14.1%	14.3%

LUX	dense	intermediate	sparse
1	5.2%	4.7%	4.6%
2	6.4%	5.5%	5.4%
3	6.6%	6.9%	6.0%
4	7.3%	6.4%	6.3%
5	7.5%	6.9%	7.0%
6	8.4%	7.8%	7.7%
7	8.6%	8.6%	8.9%
8	9.5%	9.7%	8.8%
9	10.6%	11.2%	11.5%
10	11.2%	13.3%	13.3%

LUX	dense	intermediate	sparse
1	6.5%	7.0%	7.6%
2	7.5%	8.0%	7.5%
3	7.5%	8.1%	7.6%
4	7.7%	7.9%	7.6%
5	8.0%	7.7%	7.4%
6	7.8%	7.8%	7.7%
7	8.0%	8.2%	7.6%
8	8.2%	8.1%	8.4%
9	8.3%	8.6%	8.9%
10	8.0%	8.5%	9.0%

POL	dense	intermediate	sparse
1	11.1%	10.9%	10.8%
2	10.7%	10.4%	11.6%
3	11.0%	11.1%	12.3%
4	11.3%	11.9%	12.9%
5	11.6%	13.0%	13.5%
6	12.1%	13.4%	14.3%
7	12.6%	14.1%	15.3%
8	13.8%	15.1%	16.5%
9	14.6%	16.9%	18.0%
10	17.8%	20.9%	23.8%

POL	dense	intermediate	sparse
1	19.9%	18.5%	19.7%
2	18.3%	17.7%	18.6%
3	18.1%	17.7%	18.8%
4	18.2%	17.7%	18.4%
5	18.0%	18.4%	18.9%
6	18.2%	18.4%	19.4%
7	18.4%	18.8%	19.5%
8	18.6%	19.4%	19.5%
9	18.8%	19.1%	20.1%
10	18.9%	19.7%	20.3%

SLV	dense	intermediate	sparse
1	na	10.1%	11.5%
2	13.2%	10.7%	11.9%
3	10.6%	12.7%	13.4%
4	14.8%	13.2%	12.5%
5	11.9%	13.3%	16.0%
6	13.5%	14.1%	15.6%
7	13.7%	15.0%	15.8%
8	17.1%	15.5%	17.9%
9	15.8%	19.3%	19.5%
10	18.2%	23.1%	23.5%

SLV	dense	intermediate	sparse
1	na	12.4%	13.7%
2	12.3%	12.9%	12.5%
3	11.2%	13.2%	13.7%
4	13.5%	13.8%	12.4%
5	12.7%	13.5%	13.6%
6	12.4%	13.7%	14.7%
7	13.2%	14.7%	15.3%
8	14.4%	13.6%	15.3%
9	13.3%	15.4%	15.5%
10	13.9%	15.9%	16.3%

Table A.6. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and population density** *(continued)*

SVK	dense	intermediate	sparse
1	11.9%	12.4%	13.8%
2	12.0%	13.4%	13.6%
3	10.8%	14.7%	14.8%
4	12.2%	14.2%	14.4%
5	13.1%	14.2%	14.8%
6	13.5%	14.8%	15.2%
7	13.9%	15.9%	16.1%
8	14.6%	15.7%	16.3%
9	14.6%	17.0%	17.2%
10	18.5%	22.2%	21.0%

SVK	dense	intermediate	sparse
1	17.6%	18.9%	20.8%
2	17.8%	19.8%	20.7%
3	16.9%	19.8%	21.1%
4	18.2%	18.5%	20.2%
5	18.4%	18.9%	20.2%
6	18.6%	19.2%	19.9%
7	18.1%	20.1%	19.7%
8	18.4%	19.5%	19.5%
9	16.9%	19.6%	19.8%
10	18.0%	19.3%	20.0%

na = data not available or result based on less than 30 observations for that cell.

Table A.7. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and smoker/non-smoker**

AUT	non-smoker	smoker
1	16.4%	25.2%
2	12.5%	17.7%
3	12.1%	18.1%
4	11.8%	15.3%
5	12.0%	15.3%
6	11.4%	14.2%
7	11.0%	13.4%
8	10.2%	13.5%
9	9.8%	12.2%
10	8.6%	11.4%

AUT	non-smoker	smoker
1	12.7%	22.3%
2	12.8%	19.4%
3	13.4%	20.3%
4	13.3%	19.9%
5	14.0%	19.7%
6	14.0%	19.6%
7	14.6%	18.8%
8	14.1%	19.7%
9	14.5%	19.2%
10	14.0%	18.4%

BEL	non-smoker	smoker
1	13.3%	16.0%
2	13.4%	15.9%
3	13.2%	15.0%
4	13.2%	15.0%
5	12.4%	15.0%
6	12.7%	14.4%
7	12.5%	13.3%
8	11.5%	13.0%
9	10.8%	12.5%
10	9.1%	9.0%

BEL	non-smoker	smoker
1	10.4%	13.8%
2	11.3%	14.9%
3	11.8%	14.9%
4	12.0%	15.1%
5	12.2%	15.7%
6	12.7%	15.3%
7	12.3%	15.5%
8	13.0%	15.6%
9	13.3%	15.6%
10	13.2%	15.5%

Table A.7. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and smoker/non-smoker** *(continued)*

CHL	non-smoker	smoker
1	18.8%	28.7%
2	14.9%	22.2%
3	13.1%	18.4%
4	11.9%	15.6%
5	11.4%	15.6%
6	11.5%	15.4%
7	10.5%	13.4%
8	10.2%	11.9%
9	9.9%	11.7%
10	8.1%	9.5%

CHL	non-smoker	smoker
1	10.4%	15.8%
2	11.0%	16.0%
3	10.9%	15.7%
4	11.3%	15.0%
5	11.2%	15.5%
6	11.8%	15.9%
7	12.0%	15.3%
8	11.9%	15.2%
9	12.1%	14.5%
10	12.1%	13.9%

CZE	non-smoker	smoker
1	11.9%	15.4%
2	11.6%	15.1%
3	11.8%	14.5%
4	11.6%	14.6%
5	12.1%	14.5%
6	12.0%	14.1%
7	11.3%	13.6%
8	11.1%	12.9%
9	10.4%	12.6%
10	9.7%	11.3%

CZE	non-smoker	smoker
1	14.9%	19.9%
2	15.3%	19.7%
3	16.1%	21.1%
4	16.4%	20.3%
5	17.3%	21.5%
6	17.6%	22.7%
7	18.1%	22.2%
8	18.0%	21.9%
9	17.9%	21.8%
10	18.4%	21.9%

DEU	non-smoker	smoker
1	11.2%	14.0%
2	10.6%	13.3%
3	10.9%	13.3%
4	11.3%	13.3%
5	10.8%	12.8%
6	10.7%	12.7%
7	10.1%	12.6%
8	10.0%	12.1%
9	9.3%	10.9%
10	7.9%	9.1%

DEU	non-smoker	smoker
1	9.3%	13.4%
2	10.0%	14.2%
3	11.0%	14.6%
4	11.6%	15.5%
5	11.9%	15.5%
6	12.2%	15.9%
7	12.3%	16.0%
8	12.5%	15.6%
9	12.2%	15.0%
10	11.7%	13.9%

ESP	non-smoker	smoker
1	14.6%	25.8%
2	12.3%	20.5%
3	10.2%	18.6%
4	11.0%	16.4%
5	11.2%	16.6%
6	10.8%	14.5%
7	10.5%	14.3%
8	10.0%	13.3%
9	9.2%	12.0%
10	8.5%	10.0%

ESP	non-smoker	smoker
1	10.8%	18.3%
2	11.2%	17.1%
3	10.9%	18.1%
4	11.6%	17.4%
5	12.2%	17.3%
6	12.6%	16.8%
7	12.2%	17.0%
8	12.9%	16.9%
9	12.4%	15.9%
10	12.9%	15.2%

Table A.7. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and smoker/non-smoker** *(continued)*

EST	non-smoker	smoker
1	21.5%	40.0%
2	17.0%	24.8%
3	13.1%	20.0%
4	14.9%	20.2%
5	13.1%	19.6%
6	13.0%	19.3%
7	12.9%	19.0%
8	12.3%	16.7%
9	11.6%	18.0%
10	11.6%	15.5%

EST	non-smoker	smoker
1	20.1%	43.9%
2	21.5%	38.1%
3	20.6%	33.8%
4	21.2%	37.0%
5	20.8%	29.2%
6	22.1%	29.7%
7	21.7%	30.8%
8	21.9%	29.5%
9	21.2%	29.5%
10	21.9%	28.3%

GBR	non-smoker	smoker
1	10.7%	17.9%
2	9.5%	14.3%
3	8.5%	13.9%
4	9.2%	12.8%
5	8.3%	11.0%
6	8.0%	11.4%
7	8.5%	10.0%
8	7.5%	10.7%
9	7.4%	8.6%
10	6.6%	7.4%

GBR	non-smoker	smoker
1	9.3%	20.5%
2	10.6%	19.2%
3	10.6%	20.5%
4	12.1%	19.4%
5	12.0%	19.9%
6	13.0%	20.1%
7	14.0%	19.0%
8	13.9%	20.4%
9	13.9%	18.4%
10	13.9%	19.0%

GRC	non-smoker	smoker
1	14.5%	29.7%
2	12.0%	23.0%
3	9.7%	18.6%
4	9.3%	20.2%
5	10.1%	17.6%
6	9.3%	15.2%
7	9.7%	14.2%
8	9.7%	14.6%
9	10.4%	13.1%
10	8.3%	11.5%

GRC	non-smoker	smoker
1	12.1%	23.8%
2	12.3%	22.2%
3	12.2%	22.6%
4	12.3%	21.4%
5	13.4%	21.4%
6	13.4%	21.6%
7	14.7%	22.1%
8	14.8%	21.4%
9	15.3%	20.2%
10	14.9%	19.5%

HUN	non-smoker	smoker
1	22.5%	26.7%
2	18.1%	22.6%
3	16.8%	20.6%
4	16.0%	20.1%
5	15.7%	18.3%
6	15.4%	17.7%
7	15.0%	18.3%
8	14.2%	16.8%
9	14.4%	15.9%
10	12.5%	13.8%

HUN	non-smoker	smoker
1	23.0%	32.5%
2	22.4%	32.0%
3	22.4%	31.6%
4	22.6%	31.2%
5	22.9%	30.7%
6	23.5%	30.6%
7	23.8%	31.4%
8	24.5%	31.2%
9	24.9%	31.5%
10	25.3%	30.1%

Table A.7. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and smoker/non-smoker** *(continued)*

IRL	non-smoker	smoker
1	15.2%	25.9%
2	11.6%	21.7%
3	12.9%	19.6%
4	12.1%	16.5%
5	11.7%	15.5%
6	10.6%	14.1%
7	9.8%	12.5%
8	8.4%	11.3%
9	7.0%	9.0%
10	5.7%	6.3%

IRL	non-smoker	smoker
1	9.5%	20.2%
2	8.6%	19.0%
3	10.4%	18.4%
4	11.1%	18.1%
5	11.7%	17.7%
6	12.2%	17.8%
7	12.8%	17.5%
8	12.7%	17.8%
9	12.8%	16.5%
10	13.2%	16.4%

KOR	non-smoker	smoker
1	9.3%	17.2%
2	7.2%	11.5%
3	6.6%	9.8%
4	6.7%	8.7%
5	6.5%	8.0%
6	6.6%	8.3%
7	5.6%	7.5%
8	5.5%	6.5%
9	5.0%	6.6%
10	4.3%	5.5%

KOR	non-smoker	smoker
1	7.0%	12.0%
2	8.3%	12.7%
3	9.2%	13.0%
4	9.8%	13.2%
5	9.8%	13.5%
6	10.6%	14.1%
7	10.1%	13.6%
8	10.7%	13.7%
9	11.2%	13.9%
10	10.5%	13.7%

LUX	non-smoker	smoker
1	9.4%	13.3%
2	7.9%	12.7%
3	7.7%	11.3%
4	7.9%	11.0%
5	7.8%	10.8%
6	7.1%	9.8%
7	7.2%	8.9%
8	7.5%	10.1%
9	6.4%	9.2%
10	5.0%	6.7%

LUX	non-smoker	smoker
1	6.6%	9.5%
2	6.7%	10.2%
3	7.0%	9.9%
4	7.2%	9.7%
5	7.3%	10.2%
6	7.5%	9.9%
7	7.5%	9.5%
8	7.9%	10.3%
9	7.6%	9.8%
10	7.4%	9.7%

NLD	non-smoker	smoker
1	17.9%	21.0%
2	12.6%	15.7%
3	10.6%	13.3%
4	9.6%	18.8%
5	10.9%	14.6%
6	12.2%	14.2%
7	11.3%	13.5%
8	11.4%	13.8%
9	11.0%	15.4%
10	9.6%	10.7%

NLD	non-smoker	smoker
1	10.6%	14.9%
2	10.9%	15.4%
3	10.1%	13.5%
4	9.6%	16.1%
5	11.2%	15.9%
6	12.3%	15.3%
7	12.6%	15.8%
8	12.5%	15.4%
9	12.4%	17.5%
10	12.5%	14.5%

Table A.7. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and smoker/non-smoker** *(continued)*

NZL	non-smoker	smoker
1	13.4%	16.2%
2	11.1%	14.1%
3	10.4%	13.3%
4	9.5%	12.8%
5	9.1%	11.5%
6	8.9%	11.1%
7	7.8%	9.4%
8	7.0%	8.6%
9	6.5%	7.5%
10	5.4%	na

NZL	non-smoker	smoker
1	12.2%	16.5%
2	13.1%	17.6%
3	13.2%	17.7%
4	12.6%	18.2%
5	12.5%	18.1%
6	13.3%	17.1%
7	13.2%	16.5%
8	12.5%	16.5%
9	12.7%	15.1%
10	12.7%	na

POL	non-smoker	smoker
1	15.3%	23.8%
2	13.0%	18.4%
3	12.4%	17.6%
4	11.9%	17.0%
5	12.1%	16.7%
6	11.8%	15.9%
7	11.5%	15.3%
8	11.7%	14.9%
9	11.4%	14.1%
10	10.1%	12.6%

POL	non-smoker	smoker
1	14.4%	26.2%
2	14.8%	23.7%
3	15.1%	24.1%
4	15.5%	24.0%
5	15.9%	24.3%
6	16.5%	24.1%
7	16.8%	24.4%
8	17.5%	24.2%
9	17.9%	23.8%
10	18.5%	24.3%

SLV	non-smoker	smoker
1	18.9%	27.0%
2	14.0%	19.7%
3	14.2%	20.1%
4	12.7%	15.4%
5	14.0%	15.3%
6	12.8%	15.9%
7	12.3%	16.4%
8	12.4%	15.2%
9	11.7%	13.9%
10	11.6%	13.3%

SLV	non-smoker	smoker
1	11.2%	16.6%
2	10.7%	16.6%
3	11.5%	17.2%
4	11.5%	15.6%
5	12.7%	15.8%
6	12.9%	16.4%
7	12.6%	17.0%
8	13.0%	16.8%
9	13.2%	16.9%
10	14.0%	16.8%

SVK	non-smoker	smoker
1	16.1%	21.1%
2	15.2%	18.7%
3	13.9%	17.8%
4	14.1%	17.8%
5	14.3%	17.4%
6	14.1%	16.7%
7	14.1%	16.7%
8	13.2%	16.2%
9	13.2%	15.2%
10	12.1%	13.5%

SVK	non-smoker	smoker
1	15.5%	22.2%
2	15.9%	22.6%
3	16.0%	22.5%
4	16.7%	23.4%
5	17.3%	24.3%
6	17.7%	22.4%
7	18.6%	24.3%
8	18.7%	23.3%
9	18.9%	23.5%
10	19.3%	23.7%

Table A.7. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across income deciles and smoker/non-smoker** *(continued)*

TUR	non-smoker	smoker
1	12.5%	33.6%
2	11.4%	28.6%
3	11.7%	26.1%
4	11.0%	23.3%
5	11.0%	22.7%
6	10.6%	21.8%
7	10.1%	20.3%
8	10.0%	19.0%
9	9.8%	17.4%
10	9.4%	14.4%

TUR	non-smoker	smoker
1	9.9%	29.5%
2	11.1%	30.5%
3	11.5%	29.4%
4	12.2%	28.3%
5	11.8%	28.5%
6	12.1%	27.7%
7	12.3%	27.8%
8	12.7%	26.6%
9	12.8%	25.4%
10	14.6%	24.8%

na = data not available or result based on less than 30 observations for that cell.

Table A.8. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and smoker/non-smoker**

AUT	non-smoker	smoker
1	5.2%	11.2%
2	7.1%	12.5%
3	8.1%	12.4%
4	8.7%	13.9%
5	10.0%	13.6%
6	11.4%	15.7%
7	13.0%	16.1%
8	13.6%	19.8%
9	15.8%	20.7%
10	21.1%	24.6%

AUT	non-smoker	smoker
1	11.5%	23.8%
2	12.2%	21.4%
3	12.8%	19.7%
4	13.1%	19.4%
5	13.7%	19.2%
6	14.2%	19.0%
7	14.3%	18.7%
8	14.8%	18.8%
9	15.1%	18.6%
10	15.7%	18.6%

BEL	non-smoker	smoker
1	9.9%	10.6%
2	8.6%	11.7%
3	9.4%	13.1%
4	10.0%	13.5%
5	10.3%	14.0%
6	11.4%	14.3%
7	11.6%	13.7%
8	13.2%	16.0%
9	14.3%	15.9%
10	21.2%	25.6%

BEL	non-smoker	smoker
1	8.9%	14.1%
2	10.5%	14.4%
3	11.1%	15.0%
4	11.9%	15.7%
5	11.8%	14.8%
6	12.6%	15.4%
7	12.7%	15.5%
8	13.2%	15.4%
9	13.5%	15.2%
10	15.0%	16.5%

Table A.8. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and smoker/non-smoker** *(continued)*

CHL	non-smoker	smoker
1	8.4%	13.1%
2	9.6%	12.5%
3	11.1%	16.7%
4	12.1%	16.0%
5	12.9%	17.2%
6	14.0%	16.3%
7	13.9%	18.0%
8	14.0%	17.8%
9	12.9%	15.5%
10	12.9%	14.7%

CHL	non-smoker	smoker
1	10.1%	16.5%
2	10.7%	15.9%
3	11.1%	15.7%
4	11.1%	15.9%
5	11.6%	15.7%
6	12.0%	15.0%
7	12.3%	15.3%
8	11.8%	15.1%
9	12.2%	14.1%
10	11.9%	13.7%

CZE	non-smoker	smoker
1	8.7%	11.9%
2	9.8%	13.0%
3	10.4%	13.7%
4	10.9%	13.2%
5	11.4%	13.5%
6	11.6%	13.5%
7	12.2%	13.5%
8	12.3%	13.7%
9	12.6%	14.7%
10	14.8%	15.8%

CZE	non-smoker	smoker
1	15.9%	22.5%
2	16.4%	23.7%
3	16.4%	23.9%
4	16.3%	21.0%
5	16.9%	21.3%
6	17.2%	21.2%
7	17.6%	20.6%
8	17.5%	20.5%
9	17.2%	20.6%
10	18.0%	20.6%

DEU	non-smoker	smoker
1	7.4%	11.1%
2	8.4%	11.6%
3	8.9%	12.3%
4	9.6%	12.1%
5	9.8%	12.5%
6	10.3%	12.5%
7	10.6%	12.8%
8	11.0%	12.9%
9	11.3%	12.9%
10	14.2%	16.8%

DEU	non-smoker	smoker
1	9.3%	14.3%
2	10.2%	14.7%
3	11.0%	15.6%
4	11.5%	15.3%
5	11.7%	15.6%
6	11.9%	15.2%
7	12.1%	15.0%
8	12.1%	14.9%
9	12.1%	14.4%
10	12.5%	14.5%

ESP	non-smoker	smoker
1	5.4%	14.1%
2	8.0%	14.2%
3	9.1%	15.5%
4	9.6%	15.3%
5	10.6%	15.7%
6	11.3%	16.2%
7	12.4%	16.2%
8	12.6%	17.1%
9	13.9%	18.1%
10	17.2%	19.7%

ESP	non-smoker	smoker
1	10.6%	22.6%
2	11.5%	18.5%
3	11.6%	18.4%
4	12.0%	17.4%
5	12.2%	17.0%
6	12.3%	16.6%
7	12.5%	16.1%
8	12.4%	15.6%
9	12.5%	15.3%
10	12.5%	14.4%

Table A.8. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and smoker/non-smoker** *(continued)*

EST	non-smoker	smoker
1	5.7%	16.8%
2	8.5%	20.6%
3	10.0%	30.5%
4	10.8%	18.9%
5	13.1%	22.5%
6	14.0%	20.6%
7	16.0%	22.2%
8	19.0%	22.4%
9	20.3%	21.6%
10	22.8%	29.9%

EST	non-smoker	smoker
1	21.6%	56.1%
2	20.3%	36.0%
3	20.4%	37.9%
4	20.6%	29.3%
5	21.4%	31.8%
6	21.1%	30.0%
7	21.8%	30.0%
8	22.4%	29.3%
9	21.9%	27.8%
10	21.7%	27.8%

GBR	non-smoker	smoker
1	3.3%	10.4%
2	5.0%	12.5%
3	6.3%	11.9%
4	6.4%	12.1%
5	8.0%	13.5%
6	8.5%	12.5%
7	9.4%	12.5%
8	9.4%	13.9%
9	10.7%	13.6%
10	13.6%	18.6%

GBR	non-smoker	smoker
1	8.7%	23.9%
2	10.6%	20.5%
3	12.0%	19.9%
4	12.4%	19.4%
5	13.1%	19.0%
6	13.7%	19.8%
7	13.6%	17.6%
8	13.4%	18.2%
9	13.5%	17.0%
10	12.8%	16.5%

GRC	non-smoker	smoker
1	5.5%	15.2%
2	7.4%	17.7%
3	9.3%	16.3%
4	8.9%	16.1%
5	10.5%	16.3%
6	12.2%	17.4%
7	11.5%	20.1%
8	12.5%	17.8%
9	14.0%	17.5%
10	15.9%	18.3%

GRC	non-smoker	smoker
1	11.7%	29.4%
2	12.8%	25.8%
3	13.1%	24.0%
4	13.3%	21.7%
5	13.0%	21.5%
6	14.6%	20.7%
7	13.6%	21.1%
8	14.6%	20.0%
9	14.5%	19.2%
10	14.8%	17.7%

HUN	non-smoker	smoker
1	11.0%	16.4%
2	12.6%	17.1%
3	13.2%	17.5%
4	13.5%	19.2%
5	15.1%	19.4%
6	15.0%	19.2%
7	16.5%	21.2%
8	17.7%	22.3%
9	18.6%	23.1%
10	21.1%	24.8%

HUN	non-smoker	smoker
1	23.0%	33.8%
2	22.8%	32.6%
3	22.7%	31.3%
4	23.1%	31.0%
5	23.2%	30.9%
6	23.4%	31.0%
7	23.6%	30.6%
8	24.1%	30.9%
9	24.4%	29.7%
10	24.6%	29.3%

Table A.8. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and smoker/non-smoker** *(continued)*

ITA	non-smoker	Smoker
1	na	na
2	na	na
3	na	na
4	na	na
5	na	na
6	na	na
7	na	na
8	na	na
9	na	na
10	na	na

ITA	non-smoker	smoker
1	8.4%	16.3%
2	9.2%	16.1%
3	9.6%	16.2%
4	9.9%	15.7%
5	10.4%	15.6%
6	10.7%	15.2%
7	10.9%	15.2%
8	11.4%	14.7%
9	11.6%	14.7%
10	12.8%	14.8%

IRL	non-smoker	smoker
1	6.4%	15.8%
2	7.9%	15.8%
3	9.7%	16.9%
4	10.5%	16.4%
5	11.4%	16.2%
6	10.6%	15.4%
7	11.0%	14.9%
8	11.0%	13.9%
9	11.0%	14.0%
10	13.3%	15.3%

IRL	non-smoker	smoker
1	8.8%	22.9%
2	9.2%	19.2%
3	10.1%	17.7%
4	11.3%	17.7%
5	11.7%	17.8%
6	12.1%	17.3%
7	12.5%	17.3%
8	12.6%	16.6%
9	13.0%	16.2%
10	13.0%	15.3%

KOR	non-smoker	smoker
1	5.0%	8.8%
2	5.4%	7.9%
3	6.2%	8.1%
4	6.1%	8.5%
5	6.5%	8.9%
6	6.7%	8.6%
7	6.9%	8.0%
8	6.8%	9.0%
9	6.9%	9.3%
10	7.3%	9.3%

KOR	non-smoker	smoker
1	7.6%	14.1%
2	9.5%	14.0%
3	10.2%	14.6%
4	10.4%	14.5%
5	10.7%	14.1%
6	10.6%	14.2%
7	10.4%	13.1%
8	10.1%	13.0%
9	9.9%	12.3%
10	7.9%	9.7%

LUX	non-smoker	smoker
1	4.2%	7.1%
2	5.1%	8.6%
3	5.7%	9.4%
4	6.0%	9.4%
5	6.3%	10.6%
6	7.2%	11.2%
7	7.9%	11.6%
8	8.9%	12.4%
9	10.3%	13.4%
10	11.5%	15.6%

LUX	non-smoker	smoker
1	6.1%	9.2%
2	6.8%	10.6%
3	7.1%	9.8%
4	7.2%	9.8%
5	7.2%	10.0%
6	7.3%	9.3%
7	7.4%	10.7%
8	7.8%	9.7%
9	8.0%	10.2%
10	8.0%	9.5%

Table A.8. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and smoker/non-smoker** *(continued)*

NLD	non-smoker	smoker
1	7.9%	11.8%
2	9.8%	15.1%
3	10.0%	13.2%
4	10.0%	15.9%
5	10.4%	14.5%
6	12.2%	15.5%
7	12.3%	14.4%
8	12.6%	15.6%
9	14.7%	18.1%
10	16.1%	22.0%

NLD	non-smoker	smoker
1	9.2%	15.8%
2	10.1%	15.8%
3	10.6%	14.2%
4	10.5%	16.2%
5	11.1%	15.0%
6	12.3%	15.7%
7	12.3%	15.3%
8	12.3%	15.4%
9	13.0%	15.7%
10	13.4%	15.1%

NZL	non-smoker	smoker
1	6.4%	10.4%
2	8.7%	12.5%
3	8.9%	11.5%
4	8.8%	11.5%
5	9.3%	11.5%
6	9.5%	10.6%
7	9.6%	9.2%
8	8.7%	10.4%
9	9.5%	11.7%
10	9.5%	14.3%

NZL	non-smoker	smoker
1	13.9%	18.8%
2	13.5%	18.9%
3	13.1%	18.6%
4	12.4%	17.9%
5	13.1%	16.7%
6	13.3%	16.9%
7	13.0%	15.3%
8	12.1%	15.7%
9	12.0%	15.1%
10	12.0%	13.1%

POL	non-smoker	smoker
1	8.2%	15.5%
2	9.3%	14.6%
3	9.9%	15.2%
4	10.5%	15.7%
5	11.2%	15.8%
6	11.7%	16.4%
7	12.4%	17.0%
8	13.7%	17.6%
9	14.8%	18.3%
10	18.4%	22.1%

POL	non-smoker	smoker
1	14.4%	28.3%
2	15.0%	24.9%
3	15.4%	24.5%
4	15.7%	24.1%
5	16.0%	23.7%
6	16.4%	24.0%
7	16.8%	23.7%
8	17.2%	23.4%
9	17.6%	23.0%
10	18.1%	22.4%

SLV	non-smoker	smoker
1	8.9%	14.8%
2	10.4%	15.3%
3	10.6%	15.2%
4	11.5%	14.6%
5	12.8%	16.4%
6	13.1%	16.3%
7	13.7%	16.6%
8	15.7%	19.7%
9	16.5%	20.1%
10	21.0%	22.6%

SLV	non-smoker	smoker
1	11.2%	17.7%
2	11.1%	16.2%
3	11.3%	15.8%
4	11.1%	16.3%
5	12.1%	15.6%
6	12.4%	17.0%
7	12.8%	16.5%
8	13.2%	17.1%
9	13.4%	17.0%
10	14.3%	16.3%

Table A.8. **Average consumption tax as a percentage of net income (left) and pre-tax expenditure (right) across pre-tax expenditure deciles and smoker/non-smoker** *(continued)*

SVK	non-smoker	smoker
1	11.2%	16.0%
2	11.7%	15.8%
3	12.7%	16.4%
4	12.8%	16.1%
5	13.3%	16.1%
6	13.7%	16.9%
7	14.6%	16.8%
8	15.1%	16.9%
9	15.3%	17.7%
10	19.2%	22.1%

SVK	non-smoker	smoker
1	16.8%	24.5%
2	17.5%	23.9%
3	17.3%	24.2%
4	17.2%	23.6%
5	17.3%	23.6%
6	17.6%	23.3%
7	17.5%	22.5%
8	17.6%	23.2%
9	17.2%	21.3%
10	17.9%	21.2%

TUR	non-smoker	smoker
1	7.7%	24.9%
2	8.9%	24.5%
3	9.7%	23.5%
4	10.5%	22.9%
5	10.5%	22.9%
6	10.8%	22.8%
7	11.6%	21.7%
8	11.3%	21.7%
9	11.9%	20.8%
10	13.7%	21.4%

TUR	non-smoker	smoker
1	10.0%	35.8%
2	10.9%	32.0%
3	11.7%	30.5%
4	12.3%	29.2%
5	12.3%	28.7%
6	12.5%	27.4%
7	12.9%	25.6%
8	12.4%	25.2%
9	13.0%	22.8%
10	13.0%	20.0%

na = data not available or result based on less than 30 observations for that cell.

ANNEX B

Tax expenditure tables: Reduced VAT rates

Table B.1. **Average tax expenditure (in national currency) per household from all reduced rates: income deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	LUX	NLD	POL	SLV	SVK	TUR
	(2009)	(2010)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)	(2010)
Poorest	413 (2.5)	641 (3.9)	3 962 (3.8)	262 (2.4)	494 (4.5)	137 (0.3)	486 (6.8)	449 (4.9)	18 571 (2.1)	798 (5.4)	-	1 347 (3.6)	607 (3.1)	1 058 (8.9)	308 (3.3)	11 (0.2)	458 (5.4)
2	421 (2.4)	737 (3.9)	4 955 (3.6)	342 (2.4)	582 (4.4)	216 (0.4)	579 (6.8)	483 (4.6)	22 638 (2.4)	869 (5.1)	-	1 458 (3.6)	532 (2.9)	1 245 (8.3)	348 (3.2)	17 (0.3)	555 (4.9)
3	468 (2.3)	885 (3.9)	5 625 (3.6)	399 (2.3)	576 (4.3)	328 (0.7)	655 (6.4)	516 (4.8)	26 687 (2.7)	1 215 (5.1)	-	1 508 (3.5)	619 (3.0)	1 302 (7.9)	421 (3.1)	18 (0.3)	622 (4.7)
4	468 (2.2)	997 (3.9)	6 277 (3.5)	445 (2.3)	609 (4.2)	374 (0.7)	760 (5.7)	531 (4.5)	28 815 (2.7)	1 400 (4.6)	-	1 728 (3.6)	583 (2.7)	1 399 (7.7)	484 (3.2)	20 (0.3)	620 (4.5)
5	556 (2.2)	1 070 (3.8)	6 933 (3.5)	473 (2.2)	756 (4.0)	408 (0.6)	769 (5.8)	598 (4.3)	31 940 (2.7)	1 557 (4.3)	-	1 712 (3.4)	645 (2.8)	1 511 (7.4)	485 (2.9)	24 (0.3)	687 (4.4)
6	500 (2.1)	1 140 (3.7)	7 364 (3.3)	505 (2.1)	804 (4.0)	520 (0.6)	845 (5.4)	647 (4.3)	33 333 (2.7)	1 647 (4.1)	-	1 920 (3.7)	744 (2.8)	1 598 (7.2)	553 (3.0)	23 (0.3)	742 (4.3)
7	565 (2.0)	1 212 (3.6)	7 475 (3.2)	532 (2.1)	715 (3.8)	439 (0.5)	950 (5.2)	689 (4.0)	34 424 (2.4)	1 743 (3.9)	-	1 876 (3.4)	768 (2.8)	1 703 (6.9)	586 (3.0)	23 (0.3)	796 (4.2)
8	545 (2.0)	1 382 (3.7)	7 603 (3.1)	567 (1.9)	876 (3.8)	466 (0.4)	1 064 (5.2)	817 (3.9)	36 018 (2.4)	1 794 (3.6)	-	2 057 (3.4)	865 (2.7)	1 818 (6.5)	634 (2.8)	23 (0.2)	861 (4.1)
9	574 (1.9)	1 457 (3.7)	7 791 (3.0)	616 (1.8)	922 (3.7)	497 (0.3)	1 164 (4.9)	915 (3.6)	38 274 (2.2)	1 734 (3.4)	-	2 230 (3.5)	987 (3.0)	1 947 (6.1)	685 (2.8)	23 (0.2)	969 (3.9)
Richest	662 (1.8)	1 487 (3.6)	8 683 (2.8)	684 (1.5)	1 126 (3.5)	812 (0.4)	1 260 (4.5)	1 097 (3.2)	42 121 (1.9)	1 756 (3.1)	-	2 581 (3.6)	1 113 (2.8)	2 213 (5.4)	821 (2.8)	28 (0.2)	1 383 (3.7)

Table B.2. **Average tax expenditure (in national currency) per household from all reduced rates: expenditure deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	LUX	NLD	POL	SLV	SVK	TUR
	(2009)	(2010)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)	(2010)
Poorest	266 (2.8)	540 (4.0)	3 474 (3.9)	250 (2.5)	291 (5.0)	42 (0.2)	336 (8.3)	282 (5.9)	15 771 (2.2)	694 (6.2)	607 (6.0)	883 (3.8)	388 (2.7)	897 (9.4)	268 (3.4)	10 (0.2)	358 (5.3)
2	348 (2.5)	707 (4.0)	4 898 (3.7)	329 (2.4)	431 (4.6)	141 (0.5)	509 (7.1)	401 (5.4)	20 893 (2.4)	948 (5.2)	739 (5.4)	1 132 (3.6)	483 (2.9)	1 138 (8.5)	350 (3.2)	13 (0.2)	471 (4.9)
3	411 (2.4)	808 (3.9)	5 521 (3.6)	387 (2.4)	522 (4.4)	150 (0.4)	588 (6.5)	480 (4.8)	25 660 (2.7)	1 190 (5.0)	859 (5.2)	1 277 (3.5)	582 (3.0)	1 279 (8.2)	408 (3.1)	16 (0.3)	533 (4.6)
4	446 (2.3)	942 (3.8)	5 989 (3.6)	429 (2.3)	598 (4.2)	236 (0.5)	674 (6.0)	537 (4.6)	27 671 (2.6)	1 298 (4.6)	933 (4.9)	1 323 (3.4)	638 (2.9)	1 381 (7.8)	450 (3.1)	19 (0.3)	598 (4.5)
5	478 (2.1)	1 045 (3.9)	6 372 (3.4)	464 (2.2)	676 (4.1)	334 (0.7)	728 (5.6)	575 (4.1)	29 847 (2.6)	1 421 (4.3)	1 029 (4.8)	1 614 (3.6)	674 (3.0)	1 480 (7.5)	475 (3.0)	19 (0.3)	670 (4.4)
6	545 (2.1)	1 135 (3.9)	7 067 (3.4)	494 (2.1)	761 (4.0)	359 (0.5)	784 (5.0)	690 (4.1)	32 643 (2.6)	1 587 (4.1)	1 104 (4.6)	1 738 (3.5)	715 (2.8)	1 590 (7.2)	517 (3.0)	20 (0.3)	717 (4.4)
7	570 (2.0)	1 231 (3.8)	7 430 (3.3)	536 (2.0)	846 (3.8)	459 (0.6)	935 (5.1)	740 (3.8)	35 518 (2.6)	1 691 (3.8)	1 198 (4.4)	2 075 (3.6)	822 (2.9)	1 689 (6.8)	585 (2.9)	23 (0.3)	824 (4.3)
8	622 (1.9)	1 350 (3.8)	8 000 (3.2)	573 (1.9)	937 (3.7)	583 (0.6)	1 047 (4.8)	810 (3.5)	36 294 (2.3)	1 723 (3.5)	1 345 (4.3)	2 212 (3.5)	897 (2.9)	1 827 (6.4)	639 (3.0)	25 (0.3)	897 (4.1)
9	646 (1.7)	1 490 (3.6)	8 426 (2.9)	642 (1.8)	1 083 (3.5)	702 (0.5)	1 190 (4.5)	979 (3.2)	41 085 (2.3)	1 794 (3.1)	1 533 (4.1)	2 744 (3.5)	1 081 (2.9)	2 054 (5.9)	724 (2.8)	28 (0.3)	1 087 (4.1)
Richest	832 (1.5)	1 761 (3.0)	9 496 (2.5)	721 (1.3)	1 316 (2.9)	1 166 (0.5)	1 744 (4.0)	1 248 (2.7)	47 452 (1.8)	2 167 (2.7)	1 949 (3.5)	3 422 (3.4)	1 184 (2.5)	2 459 (4.7)	908 (2.5)	37 (0.2)	1 537 (3.4)

Table B.3. **Average tax expenditure (in national currency) per household from reduced rates on food: income deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	DEU	ESP	GBR	GRC	HUN	IRL	ITA	LUX	NLD	POL	SLV	TUR
	(2009)	(2010)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	257 (1.6)	407 (2.5)	2 677 (2.6)	208 (1.9)	303 (2.9)	282 (4.0)	289 (3.1)	6 171 (0.7)	623 (4.3)	-	462 (1.3)	320 (1.6)	824 (7.0)	188 (2.1)	344 (4.1)
2	247 (1.4)	432 (2.3)	3 160 (2.3)	262 (1.8)	346 (2.8)	329 (3.9)	301 (2.9)	6 026 (0.6)	691 (4.2)	-	481 (1.3)	275 (1.5)	923 (6.1)	203 (1.9)	393 (3.6)
3	267 (1.3)	517 (2.3)	3 630 (2.3)	302 (1.8)	334 (2.7)	355 (3.5)	319 (3.0)	6 203 (0.6)	926 (4.0)	-	485 (1.2)	342 (1.6)	955 (5.8)	241 (1.9)	437 (3.4)
4	257 (1.2)	548 (2.2)	4 072 (2.3)	327 (1.7)	348 (2.6)	400 (3.2)	314 (2.7)	6 448 (0.6)	1 031 (3.5)	-	522 (1.2)	295 (1.4)	1 008 (5.6)	263 (1.8)	417 (3.1)
5	295 (1.2)	584 (2.1)	4 418 (2.3)	343 (1.6)	401 (2.3)	404 (3.2)	347 (2.6)	6 674 (0.5)	1 122 (3.2)	-	494 (1.1)	320 (1.4)	1 078 (5.3)	258 (1.6)	451 (2.9)
6	259 (1.1)	602 (2.0)	4 605 (2.1)	360 (1.5)	415 (2.2)	436 (2.9)	372 (2.6)	7 042 (0.5)	1 170 (3.0)	-	496 (1.0)	347 (1.3)	1 135 (5.2)	296 (1.7)	467 (2.8)
7	298 (1.1)	639 (1.9)	4 684 (2.1)	373 (1.4)	346 (2.0)	478 (2.7)	384 (2.3)	7 501 (0.5)	1 216 (2.8)	-	522 (1.0)	357 (1.3)	1 184 (4.9)	294 (1.5)	490 (2.7)
8	263 (1.0)	699 (1.9)	4 636 (1.9)	388 (1.3)	411 (1.8)	490 (2.6)	412 (2.1)	7 750 (0.5)	1 215 (2.5)	-	524 (0.9)	388 (1.2)	1 227 (4.5)	315 (1.4)	509 (2.5)
9	265 (0.9)	703 (1.8)	4 513 (1.8)	407 (1.2)	391 (1.6)	519 (2.4)	432 (1.8)	7 940 (0.4)	1 172 (2.4)	-	497 (0.8)	426 (1.2)	1 276 (4.1)	325 (1.4)	532 (2.2)
Richest	273 (0.8)	706 (1.8)	4 905 (1.6)	421 (0.9)	419 (1.4)	508 (2.0)	476 (1.5)	8 470 (0.4)	1 124 (2.0)	-	537 (0.8)	422 (1.1)	1 294 (3.3)	363 (1.3)	579 (1.8)

Table B.4. **Average tax expenditure (in national currency) per household from reduced rates on food: expenditure deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	DEU	ESP	GBR	GRC	HUN	IRL	ITA	LUX	NLD	POL	SLV	TUR
	(2009)	(2010)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	173 (1.8)	361 (2.7)	2 417 (2.7)	206 (2.0)	198 (3.5)	198 (4.8)	190 (4.0)	5 509 (0.8)	558 (5.1)	452 (4.4)	353 (1.5)	222 (1.5)	723 (7.6)	161 (2.1)	278 (4.2)
2	211 (1.5)	452 (2.5)	3 291 (2.5)	262 (1.9)	277 (3.0)	298 (4.1)	260 (3.4)	5 876 (0.6)	748 (4.1)	535 (3.9)	442 (1.4)	252 (1.5)	873 (6.4)	206 (1.9)	351 (3.7)
3	246 (1.4)	490 (2.3)	3 674 (2.4)	297 (1.8)	323 (2.7)	343 (3.7)	307 (3.1)	6 193 (0.6)	917 (4.0)	610 (3.7)	454 (1.3)	304 (1.5)	963 (6.1)	235 (1.8)	379 (3.3)
4	251 (1.2)	564 (2.3)	3 938 (2.3)	322 (1.7)	343 (2.5)	382 (3.4)	333 (2.8)	6 474 (0.6)	995 (3.5)	653 (3.4)	435 (1.1)	333 (1.5)	1 018 (5.7)	258 (1.8)	415 (3.2)
5	264 (1.2)	594 (2.2)	4 134 (2.2)	339 (1.6)	370 (2.3)	417 (3.2)	350 (2.5)	6 764 (0.6)	1 054 (3.2)	700 (3.2)	495 (1.1)	312 (1.3)	1 072 (5.4)	263 (1.7)	442 (2.9)
6	296 (1.1)	624 (2.1)	4 474 (2.2)	351 (1.5)	402 (2.1)	443 (2.8)	400 (2.4)	6 943 (0.5)	1 161 (3.0)	725 (3.0)	490 (1.0)	349 (1.3)	1 133 (5.1)	274 (1.6)	459 (2.8)
7	289 (1.0)	666 (2.0)	4 754 (2.1)	373 (1.4)	417 (1.9)	490 (2.6)	411 (2.1)	7 315 (0.5)	1 187 (2.7)	769 (2.8)	554 (1.0)	391 (1.4)	1 173 (4.7)	302 (1.5)	518 (2.7)
8	306 (0.9)	678 (1.9)	4 836 (1.9)	387 (1.3)	442 (1.7)	538 (2.4)	431 (1.9)	7 972 (0.5)	1 194 (2.4)	813 (2.6)	562 (0.9)	406 (1.3)	1 243 (4.3)	322 (1.5)	534 (2.5)
9	303 (0.8)	694 (1.7)	4 742 (1.7)	417 (1.1)	465 (1.5)	527 (2.0)	466 (1.5)	8 209 (0.4)	1 185 (2.1)	887 (2.4)	602 (0.8)	453 (1.2)	1 323 (3.8)	342 (1.3)	594 (2.3)
Richest	341 (0.6)	711 (1.2)	5 045 (1.4)	436 (0.8)	478 (1.1)	565 (1.3)	497 (1.1)	8 971 (0.3)	1 291 (1.6)	964 (1.8)	632 (0.6)	470 (1.0)	1 381 (2.7)	384 (1.1)	648 (1.6)

Table B.5. **Average tax expenditure (in national currency) per household from reduced rates on pharmaceuticals: income deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	ESP	EST	GBR	GRC	HUN	ITA	LUX	NLD	POL	SLV	SVK	TUR
	(2009)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)	(2010)
Poorest	15 (0.09)	43 (0.28)	223 (0.24)	13 (0.10)	89 (0.19)	6 (0.08)	22 (0.32)	7 602 (0.92)	-	45 (0.12)	10 (0.05)	76 (0.68)	6 (0.06)	11 (0.21)	9 (0.12)
2	15 (0.08)	56 (0.31)	310 (0.24)	13 (0.09)	148 (0.31)	10 (0.10)	24 (0.32)	10 097 (1.15)	-	32 (0.09)	11 (0.07)	107 (0.81)	9 (0.08)	14 (0.26)	10 (0.09)
3	18 (0.10)	61 (0.29)	395 (0.27)	14 (0.10)	256 (0.56)	10 (0.10)	31 (0.41)	12 560 (1.32)	-	40 (0.10)	11 (0.06)	120 (0.81)	11 (0.08)	15 (0.26)	10 (0.08)
4	23 (0.11)	71 (0.29)	389 (0.23)	17 (0.11)	253 (0.51)	12 (0.09)	28 (0.33)	13 566 (1.29)	-	38 (0.08)	10 (0.06)	129 (0.78)	13 (0.09)	17 (0.26)	10 (0.08)
5	25 (0.10)	72 (0.27)	369 (0.20)	19 (0.09)	289 (0.42)	11 (0.09)	27 (0.24)	14 481 (1.27)	-	38 (0.08)	10 (0.04)	137 (0.73)	11 (0.07)	17 (0.24)	11 (0.07)
6	18 (0.08)	66 (0.23)	332 (0.16)	21 (0.10)	337 (0.43)	16 (0.09)	31 (0.26)	14 046 (1.15)	-	47 (0.10)	18 (0.10)	143 (0.69)	14 (0.07)	19 (0.23)	8 (0.05)
7	22 (0.07)	64 (0.20)	362 (0.16)	20 (0.10)	272 (0.31)	16 (0.09)	25 (0.16)	14 647 (1.06)	-	37 (0.07)	9 (0.03)	149 (0.63)	18 (0.10)	18 (0.20)	16 (0.07)
8	19 (0.07)	71 (0.20)	349 (0.15)	24 (0.10)	202 (0.19)	18 (0.09)	41 (0.17)	15 067 (1.00)	-	39 (0.07)	15 (0.05)	153 (0.57)	20 (0.09)	17 (0.18)	10 (0.05)
9	21 (0.07)	67 (0.17)	389 (0.15)	26 (0.10)	155 (0.09)	17 (0.07)	39 (0.14)	14 653 (0.83)	-	42 (0.07)	11 (0.04)	152 (0.48)	21 (0.09)	18 (0.16)	12 (0.05)
Richest	26 (0.08)	76 (0.18)	431 (0.14)	33 (0.11)	240 (0.13)	21 (0.08)	35 (0.11)	14 557 (0.64)	-	59 (0.08)	18 (0.05)	163 (0.39)	21 (0.07)	19 (0.15)	18 (0.05)

Table B.6. **Average tax expenditure (in national currency) per household from reduced rates on pharmaceuticals: expenditure deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	ESP	EST	GBR	GRC	HUN	ITA	LUX	NLD	POL	SLV	SVK	TUR
	(2009)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)	(2010)
Poorest	5 (0.06)	33 (0.26)	181 (0.22)	5 (0.07)	25 (0.12)	3 (0.07)	23 (0.54)	6 148 (0.91)	18 (0.19)	27 (0.12)	8 (0.07)	53 (0.62)	6 (0.08)	10 (0.22)	7 (0.12)
2	11 (0.09)	47 (0.29)	290 (0.24)	9 (0.10)	100 (0.36)	7 (0.10)	32 (0.49)	9 066 (1.12)	29 (0.22)	29 (0.09)	9 (0.06)	81 (0.72)	7 (0.06)	12 (0.21)	8 (0.09)
3	16 (0.10)	54 (0.28)	296 (0.21)	11 (0.09)	90 (0.28)	8 (0.10)	29 (0.33)	11 240 (1.25)	33 (0.21)	34 (0.10)	9 (0.05)	102 (0.74)	9 (0.07)	14 (0.24)	9 (0.08)
4	17 (0.10)	62 (0.27)	380 (0.24)	14 (0.10)	158 (0.37)	11 (0.10)	24 (0.24)	12 249 (1.23)	36 (0.20)	29 (0.08)	11 (0.06)	115 (0.74)	12 (0.09)	17 (0.26)	9 (0.07)
5	20 (0.10)	63 (0.25)	330 (0.19)	17 (0.11)	230 (0.46)	14 (0.11)	22 (0.18)	13 651 (1.25)	42 (0.20)	35 (0.08)	16 (0.09)	133 (0.77)	10 (0.07)	16 (0.22)	10 (0.07)
6	22 (0.09)	67 (0.24)	373 (0.19)	21 (0.11)	232 (0.35)	14 (0.09)	26 (0.18)	14 348 (1.19)	40 (0.17)	40 (0.08)	11 (0.05)	138 (0.69)	14 (0.08)	17 (0.23)	9 (0.06)
7	27 (0.10)	73 (0.23)	413 (0.19)	25 (0.11)	281 (0.38)	15 (0.08)	28 (0.15)	14 763 (1.09)	51 (0.19)	49 (0.09)	11 (0.04)	155 (0.69)	17 (0.09)	18 (0.22)	10 (0.05)
8	22 (0.07)	82 (0.24)	425 (0.18)	29 (0.12)	381 (0.42)	19 (0.09)	24 (0.11)	14 465 (0.93)	52 (0.17)	44 (0.07)	11 (0.04)	163 (0.61)	21 (0.11)	20 (0.22)	13 (0.06)
9	30 (0.09)	79 (0.20)	392 (0.14)	31 (0.10)	382 (0.28)	21 (0.08)	28 (0.10)	16 607 (0.95)	64 (0.17)	54 (0.07)	16 (0.05)	185 (0.57)	23 (0.09)	20 (0.19)	13 (0.05)
Richest	29 (0.06)	85 (0.15)	471 (0.13)	37 (0.09)	384 (0.18)	25 (0.06)	66 (0.14)	18 750 (0.72)	69 (0.13)	76 (0.07)	21 (0.05)	206 (0.42)	24 (0.07)	22 (0.15)	25 (0.06)

Table B.7. **Average tax expenditure (in national currency) per household from reduced rates on children's clothing/shoes: income deciles**

(% of expenditure in parentheses)

	GBR	IRL	LUX	POL	TUR
	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	30 (0.307)	28 (0.123)	56 (0.126)	7 (0.042)	13 (0.130)
2	22 (0.166)	25 (0.084)	43 (0.092)	9 (0.043)	15 (0.114)
3	27 (0.166)	52 (0.155)	52 (0.102)	10 (0.041)	16 (0.106)
4	26 (0.158)	83 (0.213)	57 (0.096)	10 (0.041)	17 (0.110)
5	29 (0.162)	89 (0.195)	45 (0.074)	10 (0.037)	17 (0.093)
6	39 (0.196)	84 (0.171)	52 (0.082)	10 (0.034)	20 (0.104)
7	34 (0.150)	91 (0.175)	49 (0.074)	12 (0.036)	20 (0.099)
8	40 (0.171)	90 (0.160)	44 (0.063)	12 (0.034)	21 (0.089)
9	36 (0.125)	92 (0.162)	43 (0.056)	15 (0.036)	23 (0.084)
Richest	42 (0.119)	91 (0.128)	44 (0.050)	18 (0.035)	38 (0.092)

Table B.8. **Average tax expenditure (in national currency) per household from reduced rates on children's clothing/shoes: expenditure deciles**

(% of expenditure in parentheses)

	GBR	IRL	LUX	POL	TUR
	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	11 (0.170)	15 (0.083)	31 (0.109)	5 (0.037)	9 (0.115)
2	23 (0.224)	29 (0.115)	34 (0.091)	7 (0.039)	11 (0.100)
3	22 (0.177)	52 (0.173)	40 (0.095)	8 (0.041)	12 (0.097)
4	25 (0.173)	57 (0.167)	35 (0.073)	9 (0.039)	15 (0.106)
5	34 (0.206)	66 (0.167)	51 (0.094)	10 (0.038)	18 (0.110)
6	30 (0.163)	76 (0.176)	43 (0.069)	11 (0.041)	18 (0.107)
7	43 (0.205)	104 (0.208)	63 (0.088)	11 (0.035)	21 (0.107)
8	46 (0.175)	96 (0.173)	50 (0.065)	15 (0.040)	22 (0.094)
9	43 (0.133)	104 (0.158)	75 (0.081)	16 (0.036)	31 (0.110)
Richest	48 (0.093)	128 (0.146)	58 (0.048)	22 (0.034)	40 (0.078)

Table B.9. **Average tax expenditure (in national currency) per household from reduced rates on natural gas: income deciles**

(% of expenditure in parentheses)

	GBR	GRC	ITA	LUX
	(2010)	(2010)	(2010)	(2010)
Poorest	26 (0.41)	3 (0.03)	-	49 (0.16)
2	38 (0.48)	4 (0.04)	-	55 (0.16)
3	42 (0.48)	3 (0.03)	-	54 (0.14)
4	48 (0.42)	3 (0.02)	-	55 (0.12)
5	53 (0.45)	3 (0.02)	-	55 (0.12)
6	56 (0.40)	3 (0.02)	-	60 (0.12)
7	63 (0.40)	4 (0.02)	-	57 (0.12)
8	61 (0.35)	5 (0.02)	-	67 (0.12)
9	65 (0.34)	8 (0.04)	-	64 (0.11)
Richest	72 (0.31)	9 (0.03)	-	75 (0.11)

Table B.10. **Average tax expenditure (in national currency) per household from reduced rates on natural gas: expenditure deciles**

(% of expenditure in parentheses)

	GBR	GRC	ITA	LUX
	(2010)	(2010)	(2010)	(2010)
Poorest	26 (0.63)	2 (0.04)	29 (0.30)	38 (0.19)
2	35 (0.53)	2 (0.02)	39 (0.29)	43 (0.14)
3	44 (0.51)	4 (0.03)	47 (0.30)	45 (0.13)
4	51 (0.48)	3 (0.03)	54 (0.30)	45 (0.12)
5	54 (0.43)	2 (0.02)	61 (0.30)	56 (0.13)
6	57 (0.37)	4 (0.03)	68 (0.29)	57 (0.13)
7	60 (0.34)	6 (0.03)	70 (0.26)	70 (0.13)
8	66 (0.32)	7 (0.04)	74 (0.25)	64 (0.11)
9	61 (0.24)	7 (0.02)	78 (0.22)	86 (0.12)
Richest	70 (0.18)	8 (0.02)	92 (0.18)	87 (0.09)

Table B.11. **Average tax expenditure (in national currency) per household from reduced rates on electricity: income deciles**

(% of expenditure in parentheses)

	GBR	GRC	IRL	ITA	LUX
	(2010)	(2010)	(2004)	(2010)	(2010)
Poorest	31 (0.44)	34 (0.40)	28 (0.21)	-	62 (0.20)
2	41 (0.56)	35 (0.37)	27 (0.17)	-	59 (0.17)
3	45 (0.51)	38 (0.38)	38 (0.16)	-	67 (0.19)
4	48 (0.41)	38 (0.35)	44 (0.16)	-	67 (0.16)
5	53 (0.46)	43 (0.34)	47 (0.14)	-	69 (0.16)
6	54 (0.40)	43 (0.30)	50 (0.13)	-	66 (0.14)
7	60 (0.37)	46 (0.30)	50 (0.12)	-	66 (0.14)
8	60 (0.35)	48 (0.26)	54 (0.12)	-	64 (0.12)
9	65 (0.31)	54 (0.23)	51 (0.11)	-	61 (0.11)
Richest	72 (0.31)	59 (0.19)	51 (0.10)	-	67 (0.11)

Table B.12. **Average tax expenditure (in national currency) per household from reduced rates on electricity: expenditure deciles**

(% of expenditure in parentheses)

	GBR	GRC	IRL	ITA	LUX
	(2010)	(2010)	(2004)	(2010)	(2010)
Poorest	25 (0.64)	29 (0.60)	26 (0.25)	45 (0.45)	58 (0.27)
2	38 (0.58)	34 (0.46)	35 (0.20)	45 (0.33)	68 (0.22)
3	45 (0.55)	39 (0.39)	38 (0.17)	47 (0.29)	69 (0.20)
4	48 (0.45)	43 (0.37)	41 (0.15)	47 (0.25)	61 (0.16)
5	54 (0.44)	41 (0.29)	43 (0.13)	48 (0.23)	60 (0.13)
6	57 (0.38)	47 (0.28)	49 (0.13)	49 (0.20)	60 (0.12)
7	60 (0.35)	44 (0.23)	51 (0.12)	52 (0.19)	65 (0.12)
8	62 (0.29)	48 (0.21)	52 (0.11)	54 (0.17)	68 (0.11)
9	64 (0.25)	53 (0.18)	52 (0.10)	55 (0.15)	67 (0.09)
Richest	74 (0.18)	61 (0.14)	55 (0.07)	63 (0.11)	72 (0.08)

Table B.13. **Average tax expenditure (in national currency) per household from reduced rates on water supply: income deciles**

(% of expenditure in parentheses)

	BEL	CZE	ESP	GBR	ITA	LUX	NLD	POL	SLV
	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)
Poorest	34 (0.23)	222 (0.21)	12 (0.13)	53 (0.93)	-	36 (0.11)	18 (0.10)	29 (0.24)	19 (0.20)
2	31 (0.18)	264 (0.20)	13 (0.12)	52 (0.81)	-	31 (0.09)	20 (0.12)	37 (0.25)	17 (0.17)
3	32 (0.15)	268 (0.17)	12 (0.11)	56 (0.67)	-	31 (0.08)	18 (0.09)	41 (0.26)	20 (0.17)
4	36 (0.15)	333 (0.19)	13 (0.11)	56 (0.52)	-	31 (0.07)	18 (0.09)	45 (0.26)	21 (0.15)
5	34 (0.13)	372 (0.19)	14 (0.09)	56 (0.52)	-	31 (0.07)	19 (0.09)	50 (0.26)	21 (0.13)
6	36 (0.13)	347 (0.16)	14 (0.08)	58 (0.43)	-	31 (0.06)	20 (0.08)	52 (0.24)	22 (0.13)
7	34 (0.11)	380 (0.17)	13 (0.08)	60 (0.40)	-	28 (0.06)	20 (0.08)	54 (0.23)	22 (0.12)
8	38 (0.11)	360 (0.15)	14 (0.07)	59 (0.36)	-	29 (0.06)	21 (0.07)	59 (0.22)	23 (0.11)
9	37 (0.10)	400 (0.16)	15 (0.07)	62 (0.32)	-	28 (0.05)	20 (0.06)	60 (0.20)	24 (0.11)
Richest	38 (0.10)	410 (0.13)	18 (0.06)	65 (0.28)	-	31 (0.05)	20 (0.05)	67 (0.18)	21 (0.08)

Table B.14. **Average tax expenditure (in national currency) per household from reduced rates on water supply: expenditure deciles**

(% of expenditure in parentheses)

	BEL	CZE	ESP	GBR	ITA	LUX	NLD	POL	SLV
	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)
Poorest	34 (0.27)	206 (0.22)	10 (0.18)	49 (1.38)	12 (0.12)	29 (0.13)	18 (0.14)	28 (0.28)	18 (0.23)
2	33 (0.19)	253 (0.19)	12 (0.13)	53 (0.78)	13 (0.10)	29 (0.10)	18 (0.12)	38 (0.29)	21 (0.19)
3	31 (0.15)	296 (0.19)	12 (0.11)	56 (0.66)	15 (0.09)	30 (0.08)	19 (0.10)	43 (0.28)	19 (0.15)
4	36 (0.15)	310 (0.19)	13 (0.09)	57 (0.53)	14 (0.08)	29 (0.08)	19 (0.09)	46 (0.27)	22 (0.15)
5	35 (0.13)	340 (0.18)	13 (0.08)	57 (0.46)	14 (0.07)	30 (0.07)	20 (0.09)	49 (0.25)	21 (0.14)
6	34 (0.12)	346 (0.17)	14 (0.07)	59 (0.39)	16 (0.07)	29 (0.06)	18 (0.07)	54 (0.24)	21 (0.12)
7	34 (0.11)	378 (0.18)	15 (0.07)	59 (0.34)	17 (0.06)	33 (0.06)	21 (0.07)	53 (0.22)	23 (0.12)
8	36 (0.10)	423 (0.17)	16 (0.06)	62 (0.30)	18 (0.06)	31 (0.05)	19 (0.06)	55 (0.19)	21 (0.10)
9	37 (0.09)	374 (0.13)	16 (0.05)	60 (0.24)	17 (0.05)	32 (0.04)	21 (0.06)	61 (0.18)	22 (0.08)
Richest	38 (0.07)	431 (0.12)	18 (0.04)	65 (0.17)	20 (0.04)	34 (0.03)	21 (0.04)	67 (0.13)	22 (0.06)

Table B.15. **Average tax expenditure (in national currency) per household from reduced rates on books: income deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	LUX	NLD	POL	SLV	SVK	TUR
	(2009)	(2010)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)	(2010)
Poorest	5 (0.025)	10 (0.056)	43 (0.038)	6 (0.052)	9 (0.065)	10 (0.014)	4 (0.050)	4 (0.027)	1 329 (0.122)	14 (0.069)	-	21 (0.054)	17 (0.084)	20 (0.107)	2 (0.021)	0 (0.008)	1 (0.011)
2	7 (0.031)	13 (0.064)	48 (0.030)	9 (0.065)	11 (0.063)	16 (0.026)	7 (0.059)	9 (0.051)	1 443 (0.119)	13 (0.048)	-	22 (0.048)	12 (0.053)	31 (0.134)	2 (0.015)	1 (0.018)	3 (0.020)
3	9 (0.035)	19 (0.070)	65 (0.039)	10 (0.059)	11 (0.058)	20 (0.025)	10 (0.076)	8 (0.048)	1 260 (0.095)	27 (0.076)	-	22 (0.048)	19 (0.082)	25 (0.110)	1 (0.010)	1 (0.015)	3 (0.021)
4	10 (0.036)	19 (0.070)	71 (0.035)	12 (0.060)	15 (0.067)	33 (0.069)	11 (0.062)	7 (0.031)	1 478 (0.103)	29 (0.066)	-	24 (0.044)	14 (0.060)	28 (0.109)	5 (0.023)	2 (0.021)	3 (0.019)
5	11 (0.043)	18 (0.058)	93 (0.043)	14 (0.067)	17 (0.077)	25 (0.023)	7 (0.058)	9 (0.039)	1 639 (0.109)	33 (0.079)	-	23 (0.045)	20 (0.079)	33 (0.115)	6 (0.037)	1 (0.016)	3 (0.017)
6	10 (0.035)	22 (0.064)	100 (0.041)	16 (0.067)	14 (0.061)	52 (0.046)	10 (0.056)	7 (0.029)	2 059 (0.140)	46 (0.102)	-	27 (0.047)	22 (0.068)	30 (0.102)	3 (0.014)	2 (0.020)	3 (0.016)
7	12 (0.038)	29 (0.083)	114 (0.048)	18 (0.069)	12 (0.054)	26 (0.016)	19 (0.082)	11 (0.045)	2 101 (0.114)	50 (0.099)	-	28 (0.049)	27 (0.088)	45 (0.134)	7 (0.032)	3 (0.030)	5 (0.023)
8	12 (0.040)	33 (0.082)	119 (0.047)	21 (0.072)	19 (0.067)	115 (0.090)	14 (0.070)	18 (0.058)	2 139 (0.118)	56 (0.108)	-	30 (0.052)	34 (0.104)	42 (0.125)	11 (0.045)	3 (0.022)	5 (0.020)
9	16 (0.048)	31 (0.077)	133 (0.050)	25 (0.073)	21 (0.076)	102 (0.073)	19 (0.068)	16 (0.051)	2 736 (0.134)	60 (0.116)	-	36 (0.060)	37 (0.110)	51 (0.134)	11 (0.041)	4 (0.035)	6 (0.022)
Richest	24 (0.063)	41 (0.102)	163 (0.048)	35 (0.078)	28 (0.085)	196 (0.085)	27 (0.089)	34 (0.072)	4 623 (0.173)	74 (0.112)	-	48 (0.069)	37 (0.088)	70 (0.149)	8 (0.025)	5 (0.034)	13 (0.028)

Table B.16. **Average tax expenditure (in national currency) per household from reduced rates on books: expenditure deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	LUX	NLD	POL	SLV	SVK	TUR
	(2009)	(2010)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)	(2010)
Poorest	1 (0.011)	7 (0.045)	30 (0.035)	5 (0.050)	4 (0.042)	0 (0.000)	1 (0.036)	0 (0.006)	1 083 (0.122)	7 (0.054)	3 (0.027)	15 (0.058)	8 (0.049)	10 (0.076)	2 (0.020)	0 (0.006)	1 (0.009)
2	3 (0.027)	11 (0.060)	42 (0.029)	7 (0.056)	6 (0.050)	1 (0.001)	3 (0.050)	2 (0.023)	1 378 (0.124)	10 (0.041)	6 (0.033)	19 (0.056)	10 (0.051)	18 (0.102)	2 (0.020)	1 (0.011)	1 (0.011)
3	5 (0.027)	14 (0.058)	59 (0.037)	10 (0.061)	8 (0.059)	13 (0.038)	7 (0.074)	2 (0.016)	1 268 (0.106)	18 (0.061)	7 (0.034)	23 (0.054)	20 (0.093)	20 (0.098)	3 (0.019)	1 (0.017)	2 (0.021)
4	8 (0.039)	17 (0.066)	63 (0.036)	12 (0.065)	12 (0.076)	11 (0.021)	7 (0.057)	5 (0.034)	1 617 (0.120)	21 (0.064)	9 (0.039)	23 (0.052)	23 (0.104)	25 (0.110)	2 (0.014)	1 (0.015)	3 (0.020)
5	8 (0.042)	21 (0.070)	87 (0.044)	14 (0.067)	12 (0.066)	26 (0.050)	9 (0.068)	8 (0.042)	1 410 (0.097)	33 (0.091)	16 (0.06)	21 (0.044)	22 (0.083)	30 (0.121)	3 (0.018)	2 (0.025)	4 (0.022)
6	10 (0.040)	22 (0.072)	89 (0.040)	16 (0.071)	14 (0.068)	17 (0.022)	11 (0.070)	8 (0.040)	1 635 (0.098)	41 (0.100)	17 (0.056)	29 (0.056)	22 (0.084)	35 (0.128)	4 (0.020)	2 (0.026)	4 (0.021)
7	15 (0.053)	30 (0.095)	111 (0.047)	18 (0.073)	18 (0.077)	40 (0.044)	16 (0.080)	16 (0.077)	2 094 (0.123)	55 (0.114)	23 (0.070)	31 (0.052)	26 (0.082)	38 (0.129)	6 (0.024)	2 (0.025)	5 (0.025)
8	16 (0.048)	34 (0.095)	133 (0.053)	21 (0.071)	22 (0.081)	63 (0.062)	18 (0.081)	14 (0.052)	2 249 (0.124)	49 (0.104)	25 (0.067)	34 (0.050)	30 (0.094)	47 (0.138)	11 (0.052)	3 (0.029)	4 (0.016)
9	19 (0.049)	38 (0.089)	145 (0.051)	27 (0.075)	28 (0.087)	104 (0.072)	19 (0.071)	23 (0.069)	2 704 (0.131)	82 (0.142)	31 (0.072)	38 (0.047)	34 (0.091)	60 (0.156)	11 (0.038)	3 (0.029)	7 (0.027)
Richest	29 (0.058)	42 (0.074)	189 (0.050)	37 (0.070)	33 (0.066)	314 (0.156)	36 (0.081)	46 (0.092)	5 370 (0.183)	87 (0.104)	39 (0.063)	47 (0.046)	44 (0.084)	92 (0.162)	13 (0.038)	6 (0.038)	13 (0.026)

Table B.17. **Average tax expenditure (in national currency) per household from reduced rates on newspapers: income deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	LUX	NLD	POL	SLV	TUR
	(2009)	(2010)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	10 (0.061)	13 (0.072)	83 (0.086)	11 (0.097)	4 (0.031)	33 (0.080)	12 (0.181)	5 (0.045)	785 (0.092)	14 (0.106)	-	5 (0.013)	21 (0.101)	6 (0.050)	7 (0.073)	0 (0.003)
2	11 (0.060)	28 (0.148)	108 (0.090)	14 (0.103)	6 (0.042)	37 (0.077)	22 (0.288)	5 (0.040)	1 237 (0.126)	17 (0.112)	-	8 (0.021)	22 (0.119)	7 (0.050)	9 (0.090)	1 (0.009)
3	13 (0.063)	36 (0.150)	135 (0.092)	17 (0.104)	6 (0.033)	43 (0.110)	21 (0.244)	7 (0.043)	1 472 (0.150)	20 (0.099)	-	11 (0.034)	23 (0.113)	9 (0.059)	12 (0.097)	1 (0.010)
4	16 (0.075)	35 (0.141)	145 (0.086)	20 (0.106)	8 (0.054)	62 (0.125)	23 (0.223)	9 (0.056)	1 607 (0.144)	23 (0.090)	-	15 (0.037)	28 (0.149)	12 (0.067)	14 (0.107)	2 (0.014)
5	19 (0.073)	36 (0.140)	140 (0.077)	21 (0.102)	11 (0.055)	74 (0.123)	25 (0.219)	12 (0.070)	2 020 (0.169)	26 (0.082)	-	14 (0.033)	28 (0.131)	13 (0.066)	13 (0.088)	3 (0.018)
6	17 (0.071)	41 (0.149)	137 (0.067)	23 (0.099)	12 (0.056)	97 (0.136)	25 (0.186)	15 (0.090)	2 172 (0.173)	26 (0.071)	-	18 (0.041)	28 (0.107)	16 (0.075)	16 (0.093)	3 (0.018)
7	21 (0.073)	42 (0.132)	148 (0.072)	24 (0.094)	10 (0.056)	91 (0.118)	29 (0.174)	18 (0.100)	2 392 (0.170)	28 (0.067)	-	16 (0.033)	36 (0.142)	18 (0.076)	15 (0.088)	4 (0.024)
8	19 (0.066)	41 (0.115)	146 (0.063)	26 (0.092)	14 (0.061)	83 (0.079)	24 (0.133)	24 (0.097)	2 418 (0.162)	29 (0.062)	-	16 (0.030)	37 (0.122)	22 (0.079)	18 (0.095)	6 (0.028)
9	18 (0.059)	64 (0.162)	142 (0.056)	30 (0.089)	14 (0.055)	85 (0.070)	28 (0.136)	29 (0.105)	2 722 (0.160)	29 (0.060)	-	19 (0.034)	44 (0.138)	24 (0.077)	21 (0.092)	9 (0.038)
Richest	29 (0.075)	52 (0.123)	185 (0.062)	36 (0.083)	21 (0.066)	102 (0.069)	32 (0.127)	40 (0.117)	3 277 (0.144)	28 (0.054)	-	21 (0.032)	62 (0.161)	32 (0.079)	23 (0.081)	14 (0.040)

Table B.18. **Average tax expenditure (in national currency) per household from reduced rates on newspapers: expenditure deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	DEU	ESP	EST	GBR	GRC	HUN	IRL	ITA	LUX	NLD	POL	SLV	TUR
	(2009)	(2010)	(2010)	(2008)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	6 (0.065)	8 (0.062)	71 (0.083)	8 (0.090)	2 (0.033)	15 (0.086)	11 (0.281)	2 (0.037)	763 (0.108)	13 (0.139)	5 (0.045)	6 (0.029)	15 (0.106)	5 (0.052)	7 (0.094)	0 (0.004)
2	10 (0.075)	18 (0.115)	94 (0.079)	12 (0.095)	5 (0.053)	32 (0.108)	18 (0.276)	5 (0.055)	1 132 (0.135)	18 (0.109)	9 (0.065)	11 (0.038)	23 (0.147)	7 (0.060)	10 (0.091)	1 (0.008)
3	9 (0.057)	27 (0.135)	141 (0.105)	15 (0.102)	6 (0.048)	40 (0.109)	21 (0.268)	5 (0.052)	1 500 (0.159)	20 (0.093)	12 (0.070)	12 (0.037)	23 (0.115)	9 (0.060)	13 (0.110)	2 (0.013)
4	12 (0.067)	36 (0.148)	127 (0.082)	18 (0.106)	8 (0.054)	53 (0.108)	23 (0.226)	8 (0.059)	1 639 (0.152)	23 (0.088)	16 (0.085)	13 (0.036)	31 (0.157)	11 (0.065)	13 (0.097)	2 (0.016)
5	12 (0.058)	39 (0.158)	134 (0.077)	21 (0.105)	9 (0.053)	56 (0.105)	22 (0.191)	11 (0.072)	1 879 (0.165)	25 (0.082)	19 (0.089)	14 (0.032)	26 (0.115)	13 (0.070)	15 (0.103)	2 (0.017)
6	16 (0.063)	45 (0.168)	154 (0.079)	22 (0.101)	10 (0.054)	74 (0.114)	24 (0.162)	16 (0.086)	2 004 (0.158)	26 (0.069)	22 (0.094)	12 (0.027)	33 (0.136)	15 (0.073)	15 (0.092)	4 (0.022)
7	20 (0.073)	44 (0.147)	149 (0.069)	25 (0.102)	13 (0.059)	86 (0.117)	27 (0.155)	19 (0.096)	2 214 (0.161)	28 (0.068)	26 (0.096)	16 (0.029)	34 (0.122)	16 (0.072)	16 (0.085)	5 (0.027)
8	23 (0.072)	46 (0.135)	168 (0.070)	28 (0.098)	13 (0.053)	94 (0.093)	29 (0.135)	23 (0.100)	2 422 (0.152)	28 (0.060)	35 (0.114)	18 (0.032)	39 (0.130)	21 (0.079)	19 (0.096)	6 (0.028)
9	25 (0.071)	53 (0.134)	153 (0.057)	33 (0.093)	17 (0.055)	124 (0.095)	32 (0.132)	32 (0.110)	2 853 (0.160)	29 (0.054)	38 (0.102)	17 (0.023)	48 (0.133)	26 (0.078)	17 (0.071)	8 (0.035)
Richest	39 (0.075)	71 (0.132)	178 (0.049)	39 (0.076)	21 (0.046)	127 (0.059)	34 (0.084)	43 (0.096)	3 696 (0.141)	31 (0.041)	52 (0.098)	25 (0.026)	57 (0.121)	34 (0.069)	23 (0.066)	13 (0.029)

Table B.19. **Average tax expenditure (in national currency) per household from reduced rates on cinema, theatre, concerts: income deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	ESP	GRC	LUX	NLD	POL	SLV	TUR
	(2009)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	3 (0.016)	3 (0.017)	35 (0.032)	4 (0.023)	2 (0.016)	4 (0.009)	7 (0.034)	1 (0.005)	1 (0.007)	0 (0.001)
2	7 (0.025)	6 (0.031)	50 (0.032)	4 (0.022)	2 (0.012)	4 (0.010)	4 (0.022)	2 (0.009)	1 (0.006)	0 (0.001)
3	6 (0.024)	9 (0.036)	60 (0.033)	6 (0.027)	1 (0.007)	3 (0.006)	7 (0.032)	2 (0.009)	0 (0.000)	0 (0.002)
4	7 (0.024)	11 (0.045)	60 (0.031)	5 (0.023)	3 (0.014)	4 (0.009)	7 (0.028)	2 (0.011)	1 (0.007)	0 (0.002)
5	12 (0.042)	10 (0.034)	80 (0.038)	10 (0.039)	4 (0.019)	7 (0.017)	11 (0.044)	4 (0.015)	1 (0.006)	0 (0.002)
6	11 (0.041)	14 (0.045)	106 (0.046)	9 (0.037)	4 (0.020)	6 (0.010)	11 (0.041)	4 (0.014)	2 (0.009)	1 (0.004)
7	10 (0.032)	22 (0.069)	97 (0.042)	8 (0.037)	4 (0.018)	8 (0.013)	13 (0.050)	5 (0.019)	2 (0.009)	1 (0.004)
8	14 (0.048)	24 (0.063)	128 (0.050)	11 (0.043)	6 (0.025)	9 (0.017)	18 (0.054)	11 (0.031)	2 (0.007)	1 (0.006)
9	18 (0.050)	18 (0.045)	140 (0.053)	14 (0.049)	10 (0.034)	13 (0.021)	15 (0.045)	14 (0.038)	4 (0.015)	2 (0.007)
Richest	35 (0.086)	27 (0.066)	167 (0.050)	21 (0.061)	11 (0.027)	18 (0.023)	19 (0.043)	28 (0.060)	4 (0.012)	7 (0.017)

Table B.20. **Average tax expenditure (in national currency) per household from reduced rates on cinema, theatre, concerts: expenditure deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	ESP	GRC	LUX	NLD	POL	SLV	TUR
	(2009)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	1 (0.008)	2 (0.015)	31 (0.033)	1 (0.011)	0 (0.001)	1 (0.005)	1 (0.008)	0 (0.004)	0 (0.000)	0 (0.000)
2	4 (0.020)	6 (0.035)	44 (0.031)	2 (0.020)	1 (0.011)	3 (0.010)	4 (0.027)	1 (0.007)	0 (0.002)	0 (0.001)
3	4 (0.027)	7 (0.033)	50 (0.031)	4 (0.026)	1 (0.014)	4 (0.013)	6 (0.030)	1 (0.008)	1 (0.007)	0 (0.002)
4	5 (0.024)	11 (0.042)	53 (0.029)	4 (0.026)	2 (0.018)	4 (0.009)	7 (0.031)	2 (0.010)	1 (0.004)	0 (0.002)
5	6 (0.025)	13 (0.047)	85 (0.043)	8 (0.042)	2 (0.013)	6 (0.014)	13 (0.060)	3 (0.013)	1 (0.003)	1 (0.005)
6	12 (0.047)	13 (0.051)	106 (0.049)	8 (0.041)	5 (0.025)	7 (0.011)	10 (0.039)	4 (0.018)	2 (0.013)	0 (0.002)
7	13 (0.045)	19 (0.057)	107 (0.045)	11 (0.046)	5 (0.021)	10 (0.018)	15 (0.050)	6 (0.026)	2 (0.007)	1 (0.004)
8	17 (0.057)	17 (0.047)	116 (0.045)	11 (0.041)	7 (0.027)	11 (0.019)	15 (0.048)	8 (0.028)	3 (0.011)	1 (0.006)
9	20 (0.060)	27 (0.069)	154 (0.053)	16 (0.050)	9 (0.030)	13 (0.016)	19 (0.056)	15 (0.041)	3 (0.010)	2 (0.007)
Richest	39 (0.072)	28 (0.055)	176 (0.047)	26 (0.059)	15 (0.033)	19 (0.019)	21 (0.044)	30 (0.055)	8 (0.024)	7 (0.015)

Table B.21. **Average tax expenditure (in national currency) per household from reduced rates on museums, zoos: income deciles**

(% of expenditure in parentheses)

	BEL	CZE	ESP	LUX	NLD	POL	SLV	TUR
	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	3 (0.014)	9 (0.007)	0 (0.001)	0 (0.000)	7 (0.038)	0 (0.000)	0 (0.000)	0 (0.000)
2	4 (0.018)	17 (0.011)	0 (0.001)	0 (0.000)	8 (0.031)	0 (0.000)	0 (0.000)	0 (0.000)
3	3 (0.013)	18 (0.011)	0 (0.001)	0 (0.000)	7 (0.036)	0 (0.001)	0 (0.001)	0 (0.000)
4	6 (0.021)	24 (0.013)	0 (0.002)	0 (0.000)	6 (0.026)	0 (0.001)	1 (0.001)	0 (0.000)
5	6 (0.021)	25 (0.011)	1 (0.004)	0 (0.000)	8 (0.032)	1 (0.003)	0 (0.001)	0 (0.000)
6	7 (0.023)	36 (0.015)	1 (0.002)	0 (0.000)	12 (0.045)	0 (0.002)	0 (0.001)	0 (0.000)
7	8 (0.024)	35 (0.014)	1 (0.003)	0 (0.000)	12 (0.040)	1 (0.003)	1 (0.003)	0 (0.000)
8	10 (0.029)	41 (0.016)	1 (0.003)	0 (0.000)	14 (0.044)	2 (0.005)	1 (0.003)	0 (0.000)
9	7 (0.018)	42 (0.015)	1 (0.003)	0 (0.000)	14 (0.045)	2 (0.006)	1 (0.003)	0 (0.000)
Richest	9 (0.021)	70 (0.021)	1 (0.004)	0 (0.000)	16 (0.040)	4 (0.008)	1 (0.003)	0 (0.001)

Table B.22. **Average tax expenditure (in national currency) per household from reduced rates on museums, zoos: expenditure deciles**

(% of expenditure in parentheses)

	BEL	CZE	ESP	LUX	NLD	POL	SLV	TUR
	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	2 (0.011)	7 (0.007)	0 (0.000)	0 (0.000)	4 (0.026)	0 (0.000)	0 (0.001)	0 (0.000)
2	3 (0.014)	15 (0.010)	0 (0.000)	0 (0.000)	7 (0.044)	0 (0.001)	0 (0.000)	0 (0.000)
3	4 (0.017)	20 (0.012)	0 (0.001)	0 (0.000)	7 (0.033)	0 (0.001)	0 (0.001)	0 (0.000)
4	4 (0.018)	18 (0.010)	0 (0.002)	0 (0.000)	8 (0.033)	0 (0.002)	0 (0.000)	0 (0.000)
5	6 (0.022)	28 (0.014)	1 (0.003)	0 (0.000)	8 (0.033)	0 (0.001)	0 (0.000)	0 (0.000)
6	8 (0.028)	34 (0.015)	0 (0.002)	0 (0.000)	11 (0.042)	0 (0.001)	0 (0.002)	0 (0.000)
7	7 (0.023)	28 (0.011)	1 (0.003)	0 (0.000)	13 (0.045)	1 (0.004)	1 (0.005)	0 (0.000)
8	10 (0.027)	43 (0.018)	1 (0.002)	0 (0.000)	12 (0.040)	1 (0.005)	1 (0.003)	0 (0.000)
9	11 (0.027)	58 (0.019)	2 (0.005)	0 (0.000)	17 (0.049)	3 (0.007)	0 (0.001)	0 (0.000)
Richest	9 (0.017)	66 (0.016)	2 (0.004)	0 (0.000)	16 (0.033)	4 (0.008)	1 (0.002)	0 (0.001)

Table B.23. **Average tax expenditure (in national currency) per household from reduced rates on restaurants: income deciles**

(% of expenditure in parentheses)

	AUT	BEL	ESP	GRC	IRL	ITA	LUX	NLD	POL	SLV	TUR
	(2009)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	21 (0.104)	12 (0.068)	19 (0.131)	21 (0.176)	12 (0.082)	-	110 (0.269)	48 (0.289)	1 (0.004)	7 (0.066)	4 (0.038)
2	23 (0.118)	21 (0.098)	30 (0.175)	28 (0.205)	16 (0.084)	-	134 (0.307)	35 (0.171)	1 (0.006)	9 (0.080)	9 (0.067)
3	31 (0.124)	26 (0.112)	35 (0.183)	30 (0.203)	29 (0.108)	-	145 (0.308)	36 (0.163)	1 (0.006)	11 (0.079)	8 (0.055)
4	31 (0.135)	42 (0.153)	39 (0.205)	40 (0.239)	34 (0.104)	-	191 (0.380)	41 (0.185)	2 (0.009)	17 (0.118)	9 (0.067)
5	45 (0.165)	41 (0.143)	64 (0.279)	48 (0.275)	48 (0.129)	-	213 (0.398)	61 (0.263)	6 (0.018)	18 (0.108)	13 (0.073)
6	52 (0.197)	51 (0.169)	80 (0.325)	56 (0.316)	56 (0.136)	-	269 (0.529)	74 (0.284)	7 (0.025)	20 (0.098)	14 (0.078)
7	52 (0.179)	52 (0.153)	83 (0.376)	65 (0.337)	70 (0.153)	-	284 (0.502)	76 (0.286)	10 (0.029)	26 (0.118)	18 (0.089)
8	57 (0.191)	76 (0.194)	108 (0.416)	82 (0.366)	76 (0.150)	-	318 (0.527)	91 (0.283)	20 (0.046)	35 (0.130)	25 (0.115)
9	70 (0.222)	80 (0.205)	138 (0.486)	119 (0.445)	86 (0.164)	-	407 (0.611)	113 (0.353)	27 (0.066)	36 (0.139)	31 (0.118)
Richest	90 (0.236)	98 (0.232)	207 (0.566)	148 (0.405)	114 (0.200)	-	443 (0.619)	144 (0.358)	73 (0.137)	63 (0.204)	76 (0.200)

Table B.24. **Average tax expenditure (in national currency) per household from reduced rates on restaurants: expenditure deciles**

(% of expenditure in parentheses)

	AUT	BEL	ESP	GRC	IRL	ITA	LUX	NLD	POL	SLV	TUR
	(2009)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	8 (0.092)	7 (0.048)	6 (0.082)	4 (0.070)	9 (0.089)	6 (0.049)	49 (0.193)	19 (0.132)	0 (0.002)	4 (0.053)	4 (0.049)
2	17 (0.123)	19 (0.108)	15 (0.153)	12 (0.145)	15 (0.082)	12 (0.081)	89 (0.298)	31 (0.201)	1 (0.005)	6 (0.046)	5 (0.050)
3	24 (0.145)	25 (0.120)	23 (0.183)	24 (0.242)	24 (0.097)	22 (0.120)	112 (0.302)	46 (0.266)	1 (0.005)	9 (0.067)	7 (0.059)
4	28 (0.145)	33 (0.142)	34 (0.230)	36 (0.292)	31 (0.108)	30 (0.142)	151 (0.415)	42 (0.198)	3 (0.014)	15 (0.110)	10 (0.073)
5	39 (0.179)	39 (0.151)	47 (0.281)	45 (0.304)	43 (0.134)	42 (0.184)	190 (0.448)	68 (0.326)	3 (0.013)	16 (0.098)	12 (0.078)
6	48 (0.182)	48 (0.169)	65 (0.342)	63 (0.351)	55 (0.143)	50 (0.197)	246 (0.519)	62 (0.249)	4 (0.018)	24 (0.136)	16 (0.090)
7	55 (0.194)	59 (0.186)	84 (0.379)	72 (0.371)	66 (0.152)	63 (0.225)	279 (0.505)	75 (0.271)	7 (0.029)	26 (0.133)	19 (0.095)
8	66 (0.210)	71 (0.203)	105 (0.409)	88 (0.389)	81 (0.170)	74 (0.234)	349 (0.575)	104 (0.338)	11 (0.042)	27 (0.129)	23 (0.103)
9	70 (0.187)	83 (0.206)	158 (0.510)	128 (0.434)	95 (0.176)	103 (0.272)	416 (0.547)	129 (0.355)	27 (0.073)	42 (0.170)	36 (0.139)
Richest	115 (0.211)	113 (0.193)	265 (0.573)	165 (0.367)	123 (0.158)	137 (0.252)	633 (0.646)	143 (0.299)	90 (0.145)	76 (0.199)	76 (0.165)

Table B.25. **Average tax expenditure (in national currency) per household from reduced rates on cafes, bars, and the like: income deciles**

(% of expenditure in parentheses)

	AUT	BEL	ESP	GRC	IRL	ITA	LUX	NLD	POL	TUR
	(2009)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)
Poorest	6 (0.032)	4 (0.024)	51 (0.388)	11 (0.108)	1 (0.003)	-	34 (0.114)	2 (0.012)	1 (0.014)	1 (0.016)
2	6 (0.029)	6 (0.031)	64 (0.414)	12 (0.098)	0 (0.002)	-	45 (0.130)	2 (0.013)	2 (0.017)	2 (0.021)
3	7 (0.028)	6 (0.027)	65 (0.389)	12 (0.092)	1 (0.004)	-	53 (0.128)	2 (0.010)	2 (0.014)	2 (0.020)
4	7 (0.033)	9 (0.035)	68 (0.421)	15 (0.102)	2 (0.005)	-	64 (0.148)	4 (0.021)	3 (0.019)	2 (0.018)
5	10 (0.038)	15 (0.038)	99 (0.493)	19 (0.117)	2 (0.005)	-	51 (0.107)	4 (0.020)	4 (0.018)	3 (0.021)
6	9 (0.036)	11 (0.039)	105 (0.493)	19 (0.106)	3 (0.007)	-	59 (0.122)	3 (0.012)	5 (0.023)	3 (0.020)
7	10 (0.035)	12 (0.035)	94 (0.480)	22 (0.119)	3 (0.006)	-	67 (0.142)	5 (0.018)	7 (0.027)	3 (0.018)
8	12 (0.044)	12 (0.034)	121 (0.525)	24 (0.107)	3 (0.007)	-	73 (0.130)	6 (0.021)	9 (0.033)	3 (0.018)
9	10 (0.035)	12 (0.034)	123 (0.495)	28 (0.108)	3 (0.006)	-	77 (0.128)	7 (0.024)	13 (0.039)	4 (0.017)
Richest	13 (0.037)	12 (0.031)	145 (0.447)	33 (0.089)	4 (0.008)	-	76 (0.128)	5 (0.014)	23 (0.052)	6 (0.021)

Table B.26. **Average tax expenditure (in national currency) per household from reduced rates on cafes, bars, and the like: expenditure deciles**

(% of expenditure in parentheses)

	AUT	BEL	ESP	GRC	IRL	ITA	LUX	NLD	POL	TUR
	(2009)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)
Poorest	2 (0.028)	3 (0.020)	25 (0.364)	4 (0.079)	0 (0.003)	8 (0.072)	24 (0.123)	1 (0.009)	1 (0.014)	1 (0.025)
2	4 (0.027)	5 (0.028)	42 (0.420)	9 (0.105)	1 (0.004)	12 (0.085)	35 (0.124)	2 (0.011)	1 (0.012)	2 (0.023)
3	6 (0.034)	6 (0.031)	58 (0.450)	11 (0.106)	1 (0.005)	16 (0.093)	37 (0.112)	2 (0.008)	2 (0.017)	2 (0.022)
4	7 (0.038)	8 (0.037)	72 (0.489)	13 (0.104)	1 (0.005)	22 (0.111)	41 (0.116)	4 (0.021)	3 (0.019)	2 (0.019)
5	8 (0.038)	8 (0.032)	86 (0.503)	16 (0.112)	2 (0.006)	25 (0.116)	65 (0.171)	4 (0.020)	4 (0.020)	3 (0.019)
6	9 (0.037)	11 (0.040)	98 (0.502)	23 (0.137)	3 (0.006)	27 (0.111)	68 (0.148)	4 (0.018)	4 (0.021)	3 (0.019)
7	11 (0.041)	11 (0.035)	116 (0.514)	24 (0.117)	3 (0.007)	33 (0.121)	70 (0.128)	6 (0.021)	7 (0.029)	3 (0.016)
8	12 (0.040)	12 (0.035)	126 (0.476)	25 (0.104)	3 (0.007)	38 (0.124)	78 (0.131)	6 (0.023)	10 (0.037)	3 (0.016)
9	14 (0.036)	14 (0.034)	148 (0.463)	31 (0.102)	3 (0.006)	43 (0.115)	89 (0.128)	7 (0.019)	13 (0.041)	4 (0.016)
Richest	16 (0.029)	22 (0.035)	164 (0.364)	38 (0.081)	4 (0.005)	53 (0.099)	90 (0.095)	6 (0.013)	24 (0.046)	6 (0.013)

Table B.27. **Average tax expenditure (in national currency) per household from reduced rates on hotels: income deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	ESP	EST	GRC	HUN	IRL	ITA	LUX	NLD	POL	SLV	TUR
	(2009)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	5 (0.015)	14 (0.057)	66 (0.046)	4 (0.022)	1 (0.001)	3 (0.018)	96 (0.007)	4 (0.018)	-	54 (0.095)	25 (0.111)	1 (0.006)	4 (0.034)	1 (0.004)
2	3 (0.009)	13 (0.052)	109 (0.049)	4 (0.018)	4 (0.002)	3 (0.021)	75 (0.005)	2 (0.009)	-	91 (0.155)	24 (0.090)	2 (0.012)	9 (0.062)	1 (0.008)
3	6 (0.018)	38 (0.127)	95 (0.047)	4 (0.023)	2 (0.001)	4 (0.025)	210 (0.010)	9 (0.029)	-	65 (0.119)	23 (0.090)	3 (0.011)	18 (0.105)	1 (0.008)
4	6 (0.017)	50 (0.153)	115 (0.053)	6 (0.031)	7 (0.010)	5 (0.031)	163 (0.010)	18 (0.042)	-	94 (0.161)	24 (0.088)	3 (0.013)	19 (0.099)	2 (0.012)
5	9 (0.021)	56 (0.171)	167 (0.062)	10 (0.040)	7 (0.008)	9 (0.049)	287 (0.014)	44 (0.081)	-	107 (0.145)	30 (0.115)	7 (0.023)	21 (0.102)	2 (0.009)
6	4 (0.011)	65 (0.187)	253 (0.087)	12 (0.048)	2 (0.001)	7 (0.037)	302 (0.014)	48 (0.079)	-	115 (0.184)	48 (0.165)	10 (0.034)	25 (0.117)	3 (0.016)
7	5 (0.012)	89 (0.236)	208 (0.079)	18 (0.059)	25 (0.023)	18 (0.069)	403 (0.017)	65 (0.099)	-	114 (0.182)	60 (0.194)	12 (0.038)	21 (0.090)	3 (0.014)
8	4 (0.013)	91 (0.202)	287 (0.096)	19 (0.071)	39 (0.029)	32 (0.101)	345 (0.015)	89 (0.125)	-	142 (0.198)	68 (0.202)	17 (0.048)	30 (0.119)	7 (0.027)
9	10 (0.025)	108 (0.224)	296 (0.096)	28 (0.103)	109 (0.065)	42 (0.121)	400 (0.016)	72 (0.092)	-	177 (0.250)	76 (0.227)	34 (0.082)	43 (0.154)	16 (0.046)
Richest	14 (0.030)	124 (0.246)	381 (0.102)	49 (0.125)	189 (0.077)	47 (0.113)	982 (0.028)	97 (0.133)	-	243 (0.313)	122 (0.277)	60 (0.108)	67 (0.206)	34 (0.076)

Table B.28. **Average tax expenditure (in national currency) per household from reduced rates on hotels: expenditure deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	ESP	EST	GRC	HUN	IRL	ITA	LUX	NLD	POL	SLV	TUR
	(2009)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2004)	(2010)	(2010)	(2004)	(2010)	(2010)	(2010)
Poorest	1 (0.004)	5 (0.026)	29 (0.029)	0 (0.005)	0 (0.000)	1 (0.009)	18 (0.002)	1 (0.008)	0 (0.002)	20 (0.069)	11 (0.070)	0 (0.003)	5 (0.040)	0 (0.005)
2	2 (0.006)	11 (0.051)	82 (0.049)	2 (0.016)	0 (0.001)	1 (0.016)	104 (0.009)	2 (0.009)	1 (0.005)	28 (0.080)	20 (0.100)	1 (0.007)	15 (0.109)	1 (0.009)
3	2 (0.007)	26 (0.098)	108 (0.056)	3 (0.022)	4 (0.007)	1 (0.016)	74 (0.006)	5 (0.020)	5 (0.024)	42 (0.108)	24 (0.106)	2 (0.010)	15 (0.089)	1 (0.007)
4	4 (0.015)	26 (0.100)	112 (0.053)	5 (0.033)	2 (0.004)	4 (0.036)	103 (0.006)	7 (0.023)	6 (0.024)	55 (0.129)	32 (0.132)	2 (0.012)	17 (0.090)	1 (0.008)
5	6 (0.020)	45 (0.149)	169 (0.066)	7 (0.039)	10 (0.016)	4 (0.032)	167 (0.009)	14 (0.043)	12 (0.045)	96 (0.193)	33 (0.136)	4 (0.018)	21 (0.114)	2 (0.013)
6	5 (0.016)	51 (0.166)	205 (0.082)	12 (0.061)	10 (0.014)	9 (0.057)	153 (0.009)	22 (0.054)	16 (0.059)	117 (0.207)	42 (0.148)	8 (0.031)	16 (0.072)	4 (0.021)
7	5 (0.013)	69 (0.217)	197 (0.070)	16 (0.072)	18 (0.017)	11 (0.055)	155 (0.009)	29 (0.070)	32 (0.096)	150 (0.227)	58 (0.190)	9 (0.034)	34 (0.147)	4 (0.020)
8	7 (0.019)	78 (0.210)	263 (0.093)	19 (0.073)	29 (0.025)	21 (0.078)	262 (0.013)	49 (0.102)	64 (0.171)	159 (0.227)	67 (0.203)	16 (0.054)	35 (0.134)	6 (0.028)
9	13 (0.033)	122 (0.294)	380 (0.117)	31 (0.096)	57 (0.039)	50 (0.144)	636 (0.027)	58 (0.105)	99 (0.239)	229 (0.277)	98 (0.254)	32 (0.087)	38 (0.125)	11 (0.040)
Richest	23 (0.036)	216 (0.344)	432 (0.104)	60 (0.123)	225 (0.081)	67 (0.141)	1 592 (0.045)	260 (0.272)	184 (0.274)	308 (0.285)	116 (0.220)	75 (0.119)	63 (0.166)	37 (0.069)

Table B.29. **Average tax expenditure (in national currency) per household from reduced rates on air transport: income deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	ESP	GBR	GRC	ITA	LUX	POL	SLV
	(2009)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)
Poorest	2 (0.006)	3 (0.019)	2 (0.001)	5 (0.038)	0 (0.000)	0 (0.007)	-	22 (0.070)	0 (0.000)	0 (0.002)
2	1 (0.003)	11 (0.040)	0 (0.000)	5 (0.030)	0 (0.001)	1 (0.011)	-	23 (0.062)	0 (0.000)	1 (0.002)
3	1 (0.004)	4 (0.015)	15 (0.008)	5 (0.025)	0 (0.001)	1 (0.005)	-	20 (0.043)	1 (0.008)	1 (0.003)
4	2 (0.005)	11 (0.036)	3 (0.001)	4 (0.027)	1 (0.005)	2 (0.010)	-	31 (0.063)	3 (0.006)	1 (0.003)
5	2 (0.003)	16 (0.052)	11 (0.006)	6 (0.026)	0 (0.002)	2 (0.015)	-	29 (0.056)	1 (0.001)	1 (0.003)
6	0 (0.000)	15 (0.044)	28 (0.008)	6 (0.033)	0 (0.000)	5 (0.023)	-	34 (0.069)	1 (0.003)	0 (0.001)
7	0 (0.002)	18 (0.054)	4 (0.002)	8 (0.041)	3 (0.023)	3 (0.017)	-	41 (0.080)	3 (0.008)	4 (0.014)
8	14 (0.030)	37 (0.095)	17 (0.006)	9 (0.043)	3 (0.014)	4 (0.017)	-	37 (0.072)	2 (0.005)	3 (0.007)
9	4 (0.005)	48 (0.104)	21 (0.008)	10 (0.046)	1 (0.003)	9 (0.036)	-	65 (0.101)	7 (0.017)	8 (0.022)
Richest	8 (0.017)	40 (0.083)	39 (0.011)	22 (0.062)	4 (0.011)	33 (0.078)	-	95 (0.130)	18 (0.034)	16 (0.049)

Table B.30. **Average tax expenditure (in national currency) per household from reduced rates on air transport: expenditure deciles**

(% of expenditure in parentheses)

	AUT	BEL	CZE	ESP	GBR	GRC	ITA	LUX	POL	SLV
	(2009)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)	(2010)
Poorest	0 (0.000)	1 (0.003)	1 (0.002)	1 (0.022)	0 (0.000)	0 (0.006)	0 (0.002)	14 (0.073)	0 (0.000)	0 (0.000)
2	0 (0.002)	4 (0.020)	2 (0.001)	2 (0.022)	0 (0.000)	0 (0.006)	1 (0.003)	16 (0.055)	0 (0.001)	0 (0.002)
3	0 (0.001)	6 (0.030)	1 (0.001)	3 (0.028)	0 (0.000)	0 (0.004)	2 (0.007)	13 (0.036)	0 (0.000)	0 (0.001)
4	0 (0.001)	9 (0.038)	9 (0.004)	6 (0.048)	0 (0.001)	1 (0.006)	2 (0.007)	25 (0.073)	0 (0.001)	0 (0.002)
5	0 (0.001)	14 (0.046)	6 (0.002)	6 (0.037)	1 (0.014)	3 (0.023)	4 (0.017)	28 (0.068)	1 (0.005)	0 (0.001)
6	3 (0.012)	16 (0.054)	6 (0.002)	7 (0.040)	2 (0.008)	2 (0.014)	6 (0.019)	48 (0.100)	1 (0.003)	0 (0.001)
7	0 (0.000)	15 (0.049)	2 (0.001)	10 (0.046)	0 (0.000)	5 (0.023)	9 (0.030)	44 (0.083)	1 (0.003)	2 (0.006)
8	5 (0.019)	29 (0.088)	16 (0.006)	10 (0.040)	0 (0.000)	10 (0.042)	10 (0.029)	47 (0.073)	3 (0.011)	3 (0.014)
9	2 (0.006)	34 (0.080)	33 (0.015)	12 (0.041)	5 (0.023)	9 (0.030)	16 (0.034)	64 (0.084)	4 (0.013)	8 (0.028)
Richest	24 (0.031)	74 (0.134)	65 (0.018)	22 (0.047)	5 (0.013)	30 (0.065)	61 (0.083)	96 (0.101)	25 (0.045)	20 (0.053)

Table B.31. **Average tax expenditure (in national currency) per household from zero rate on international air transport: income deciles**

(% of expenditure in parentheses)

	GBR	NZL
	(2010)	(2013)
Poorest	0 (0.000)	22 (na*)
2	3 (0.013)	43 (na*)
3	4 (0.018)	48 (na*)
4	38 (0.060)	61 (na*)
5	7 (0.033)	89 (na*)
6	5 (0.022)	85 (na*)
7	10 (0.050)	122 (na*)
8	41 (0.072)	122 (na*)
9	59 (0.126)	222 (na*)
Richest	68 (0.115)	386 (na*)

* It was not possible to report the tax expenditure as a percentage of expenditure across income deciles.

Table B.32. **Average tax expenditure (in national currency) per household from zero rate on international air transport: expenditure deciles**

(% of expenditure in parentheses)

	GBR	NZL
	(2010)	(2013)
Poorest	0 (0.000)	11 (0.073)
2	0 (0.000)	17 (0.063)
3	0 (0.001)	36 (0.102)
4	0 (0.000)	32 (0.086)
5	2 (0.011)	81 (0.167)
6	3 (0.019)	87 (0.175)
7	3 (0.022)	155 (0.259)
8	3 (0.011)	180 (0.255)
9	28 (0.106)	261 (0.321)
Richest	196 (0.339)	342 (0.289)

ANNEX C

Burden ratios of the Korean liquor, cigarette and transport fuel taxes

Table C.1. **Liquor tax burden ratios**

(a) Income deciles		
Deciles	Ratio to income	Ratio to expenditure
1 (poor)	1.6	1.2
2	1.5	1.7
3	1.7	2.1
4	1.7	2.3
5	1.6	2.4
6	1.6	2.5
7	1.5	2.6
8	1.6	2.7
9	1.4	2.7
10 (rich)	1.2	2.5

(b) Expenditure deciles		
Deciles	Ratio to income	Ratio to expenditure
1 (poor)	0.9	1.3
2	1.2	1.9
3	1.5	2.4
4	1.6	2.5
5	1.6	2.5
6	1.7	2.5
7	1.7	2.5
8	1.7	2.4
9	1.7	2.4
10 (rich)	1.7	2.1

Figure C.1. **Distribution of liquor tax burden ratios**

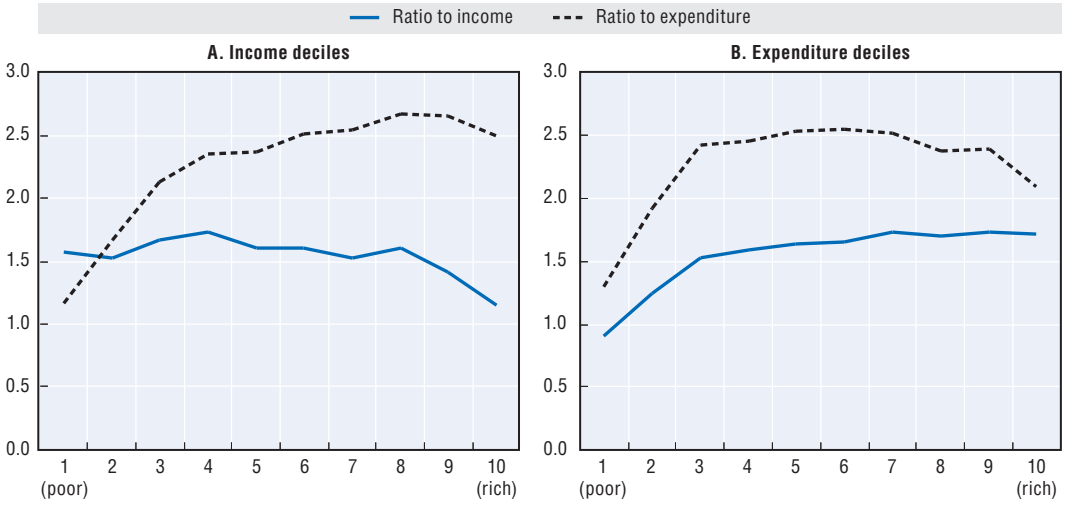


Table C.2. **Cigarette tax burden ratios**

(a) Income deciles		
Deciles	Ratio to income	Ratio to expenditure
1 (poor)	1.0	0.8
2	0.4	0.5
3	0.4	0.5
4	0.4	0.6
5	0.4	0.6
6	0.3	0.5
7	0.3	0.5
8	0.2	0.4
9	0.2	0.4
10 (rich)	0.1	0.2

(b) Expenditure deciles		
Deciles	Ratio to income	Ratio to expenditure
1 (poor)	0.5	0.7
2	0.6	0.7
3	0.4	0.7
4	0.4	0.6
5	0.4	0.5
6	0.3	0.5
7	0.3	0.4
8	0.2	0.3
9	0.2	0.3
10 (rich)	0.2	0.2

Figure C.2. **Distribution of cigarette tax burden ratios**

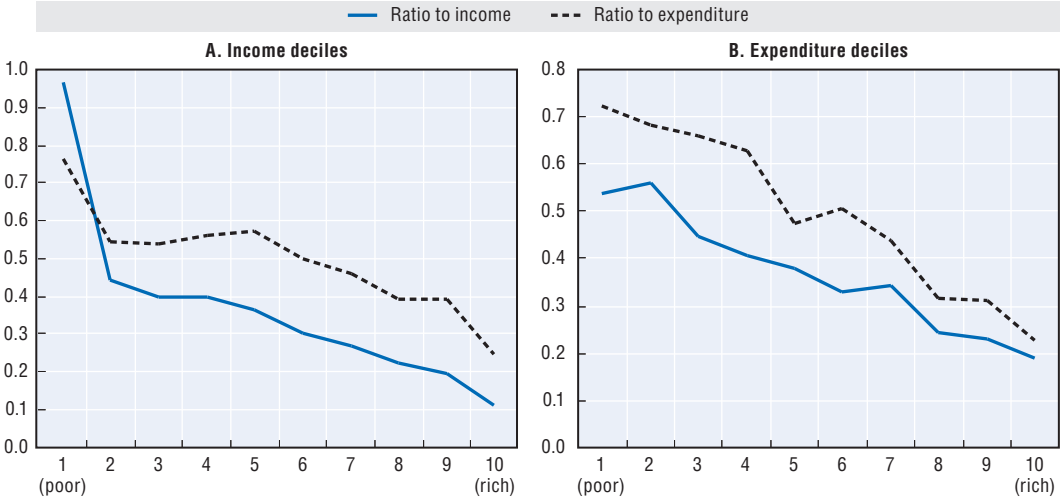
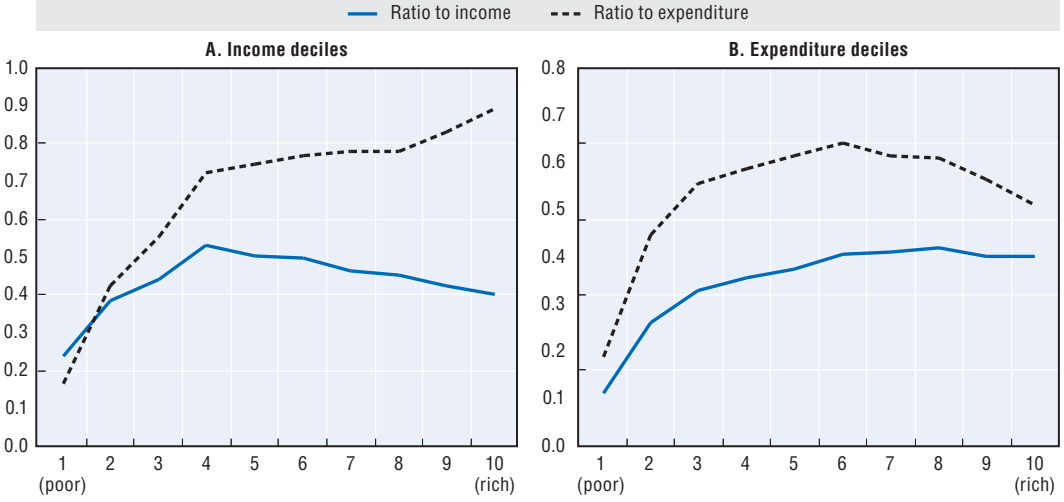


Table C.3. **Transport fuel tax burden ratios**

(a) Income deciles		
Deciles	Ratio to income	Ratio to expenditure
1 (poor)	0.6	0.4
2	1.0	1.1
3	1.1	1.4
4	1.3	1.8
5	1.3	1.9
6	1.2	1.9
7	1.2	2.0
8	1.1	2.0
9	1.1	2.1
10 (rich)	1.0	2.2

(b) Expenditure deciles		
Deciles	Ratio to income	Ratio to expenditure
1 (poor)	0.4	0.6
2	0.8	1.4
3	1.0	1.7
4	1.1	1.8
5	1.2	1.9
6	1.3	2.0
7	1.3	1.9
8	1.3	1.9
9	1.3	1.8
10 (rich)	1.3	1.6

Figure C.3. **Distribution of transport fuel tax burden ratios**



ANNEX D

Korean VAT burdens and household characteristics

Table D.1. **VAT burden ratio to expenditure by household compositions and income deciles**

Income deciles	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch	Average
1 (poor)	4.8	5.0	6.0	5.4	5.9	5.9	5.0
2	5.1	5.4	5.8	5.4	6.1	5.7	5.5
3	5.6	5.6	6.1	5.6	6.1	6.1	5.8
4	6.1	6.2	7.0	5.7	6.3	5.7	6.2
5	6.1	6.4	6.6	5.2	6.3	5.8	6.2
6	6.6	6.6	6.5	5.8	6.2	5.7	6.4
7	6.8	6.7	6.6	5.6	6.3	6.0	6.5
8	6.7	6.8	6.8	5.7	6.4	5.8	6.5
9	7.1	6.7	6.9	5.8	6.4	6.4	6.7
10 (rich)	6.9	7.0	6.9	5.8	6.4	6.3	6.7
Average	5.9	6.2	6.6	5.6	6.3	5.9	6.1

Table D.2. **VAT burden ratio to income by household compositions and expenditure deciles**

Expenditure deciles	1 adult	2 adults	>2 adults	1 adult+ch	2 adults+ch	>2 adults+ch	Average
1 (poor)	4.0	3.9	4.3	5.8	4.6	4.4	4.0
2	4.0	4.2	4.0	5.4	4.0	3.8	4.1
3	4.0	4.4	3.9	4.5	4.0	4.4	4.1
4	4.6	4.2	3.9	4.8	4.0	4.1	4.2
5	4.5	4.4	4.1	3.7	4.2	4.0	4.3
6	4.3	4.0	4.1	4.6	4.3	4.3	4.2
7	4.6	4.6	4.1	5.8	4.4	4.3	4.5
8	4.5	4.2	5.2	4.4	4.4	4.1	4.4
9	5.1	4.6	4.3	3.9	4.8	4.4	4.7
10 (rich)	6.1	5.2	5.6	4.3	5.5	5.0	5.5
Average	4.4	4.4	4.3	4.6	4.5	4.3	4.4

Table D.3. VAT burden ratio to expenditure by age groups and income deciles

Income deciles	20-29	30-39	40-49	50-59	60-69	70+	Average
1 (poor)	7.3	6.2	6.0	5.5	5.1	4.7	5.0
2	7.4	6.3	6.1	5.8	5.2	4.8	5.5
3	6.2	6.5	6.1	6.0	5.5	5.0	5.8
4	7.1	6.7	6.0	6.5	6.1	5.0	6.2
5	7.5	6.7	6.0	6.5	6.1	4.6	6.2
6	7.0	6.6	6.2	6.3	6.5	5.3	6.4
7	7.3	7.0	6.1	6.5	6.6	5.8	6.5
8	8.0	6.8	6.4	6.6	6.3	5.8	6.5
9	7.3	7.1	6.3	6.7	6.5	5.7	6.7
10 (rich)	6.7	7.2	6.5	6.6	6.8	6.5	6.7
Average	7.3	6.8	6.2	6.4	5.9	4.9	6.1

Table D.4. **VAT burden ratio to income by age groups and expenditure deciles**

Expenditure deciles	20-29	30-39	40-49	50-59	60-69	70+	Average
1 (poor)	5.4	3.7	4.1	4.6	3.8	4.0	4.0
2	4.1	4.3	4.2	4.2	3.7	4.2	4.1
3	6.0	4.2	4.1	4.1	4.0	4.2	4.1
4	4.2	4.2	4.0	4.1	4.7	4.5	4.2
5	4.3	4.2	4.2	4.2	4.3	4.5	4.3
6	4.7	4.4	4.3	4.1	4.0	4.0	4.2
7	6.0	4.4	4.5	4.3	5.1	4.2	4.5
8	4.5	4.7	4.2	4.5	4.8	3.7	4.4
9	4.0	5.1	4.7	4.5	4.6	4.2	4.7
10 (rich)	11.6	5.7	5.3	5.0	5.3	5.7	5.5
Average	5.8	4.6	4.4	4.3	4.3	4.2	4.4

Table D.5. VAT burden ratio to expenditure by economic activity types and income deciles

Income deciles	Working	Unemployed	Self-employed	Other	Average
1 (poor)	5.4	4.8	5.6	6.4	5.0
2	5.8	4.9	5.7	5.3	5.5
3	6.0	5.3	6.0	5.9	5.8
4	6.4	5.8	6.2	5.6	6.2
5	6.4	5.3	6.2	7.3	6.2
6	6.3	6.0	6.5	7.0	6.4
7	6.6	5.8	6.3	6.3	6.5
8	6.5	5.8	6.8	6.9	6.5
9	6.8	5.6	6.7	6.5	6.7
10 (rich)	6.7	6.4	6.7	6.7	6.7
Average	6.4	5.2	6.3	6.5	6.1

Table D.6. **VAT burden ratio to income by economic activity types and expenditure deciles**

Expenditure deciles	Working	Unemployed	Self-employed	Other	Average
1 (poor)	3.6	4.4	3.6	4.4	4.0
2	3.8	4.8	3.6	3.0	4.1
3	4.0	4.7	4.0	4.8	4.1
4	3.9	5.7	4.1	3.7	4.2
5	4.1	4.8	4.4	3.9	4.3
6	4.1	4.8	4.2	3.5	4.2
7	4.2	5.4	4.7	4.8	4.5
8	4.3	4.8	4.5	4.0	4.4
9	4.7	4.9	4.7	3.4	4.7
10 (rich)	5.3	6.3	5.6	6.3	5.5
Average	4.3	4.8	4.4	4.2	4.4

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(23 2014 47 1 P) ISBN 978-92-64-22280-9 – 2014

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ISBN 978-92-64-22280-9
23 2014 47 1 P