Further study on the affordability of alcoholic beverages in the EU

A focus on excise duty pass-through, on- and off-trade sales, price promotions and pricing regulations

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Preface

Policies related to alcohol pricing, promotion and discounts provide opportunities to address harms associated with alcohol consumption. However, there are important gaps in information and knowledge about various policy-relevant aspects of alcohol retail and pricing. This information could help governments to plan their alcohol strategies better and develop evidence-based policies.

To address these knowledge gaps, this report presents findings from our research, which focused on the following four areas of inquiry:

- the link between changes in excise duties and changes in alcohol consumer prices
- the trends in the ratio of on-trade to off-trade consumption of alcohol, and their drivers
- the scale of alcohol price promotions and discounts in the on- and off-trade across the EU
- regulations in Member States on price promotions and discounts, their compliance and effectiveness.

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This report will be of interest to public health policymakers and researchers, tax authorities, and those seeking to better understand tools for policy analysis.

The research described in this report was prepared for the European Commission. The opinions expressed in this study are those of the authors and do not necessarily reflect the views of the European Commission.

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Executive summary

The harmful and hazardous use of alcohol is a serious problem in the EU

The harmful and hazardous use of alcohol results in serious health, social and economic harms, and is the third-leading risk factor for death and disability in the European Union (EU) after tobacco and high blood pressure. Alcohol generates high costs to society; it was estimated that the costs in the EU of alcohol-related harms was around €125 billion in 2003, equivalent to 1.3 percent of GDP. Against this background, there is intense pan-European interest in developing and implementing measures to combat alcohol harms.

Evidence suggests that consumers respond to changes in alcohol prices, and increases in alcohol prices have been linked to reductions in consumption and positive health and social outcomes. We also know that price changes impact on what people drink or where they purchase their alcoholic beverages.

There are many types of pricing policies that governments have at their disposal to address alcohol harms. Taxes are one such policy, but others include restrictions on promotions and discounts, bans on below-cost sales and the introduction of minimum prices on a unit of alcohol.

However, there remain important gaps in our understanding of the various factors that affect how different pricing policy initiatives translate into actual price changes across the EU. At the same time, there is considerable opportunity to learn from the experiences of countries that implement various (non-tax) pricing policies.

This study aims to further our understanding of these issues by addressing the following specific questions:

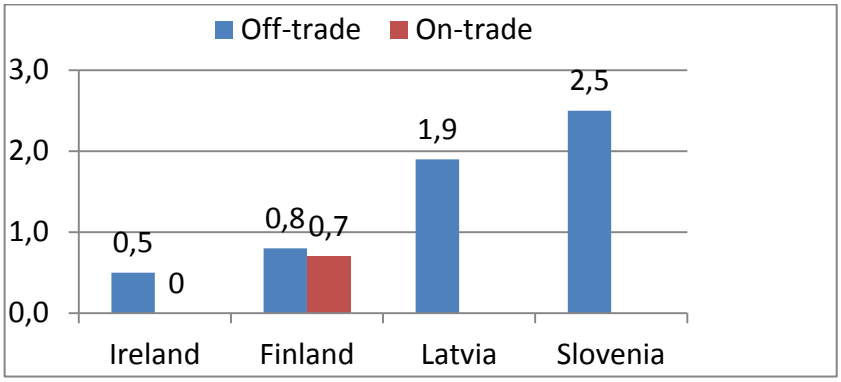
- To what extent have alcohol tax changes been passed through to consumer prices?
- What are the trends in the ratio of on-premise to off-premise sales of alcoholic beverages? What factors may be driving these trends?
- What are the trends in the use of on- and off-trade alcohol price promotions and discounts?
- What is the regulatory landscape in the EU with reference to non-tax alcohol pricing policy, and what lessons can we learn from the diversity of regulatory experiences?

There is heterogeneity in pass-through in different countries, for different beverages and in different types of premise

Extensive research has been conducted on the effect of changes in alcohol excise duties on alcohol consumption and harms. The mechanism by which taxation influences consumption is through its pass-through to prices. Pass-through refers to the extent to which taxes are passed through to the price the consumer pays. We estimated pass-through for four Member States that were able to provide relevant data: Finland, Ireland, Latvia and Slovenia. We performed regression analysis for beer and spirits taxes and prices for off-trade alcohol for each country, focusing on tax changes experienced in recent years. As we also obtained on-premise data from Ireland and Finland, we analysed pass-through in the on-trade in those two countries. We provide estimates of the change in real retail prices following a €1 increase in real excise duties. Full pass-through means that consumer prices change by the currency amount of the change in excise duty.

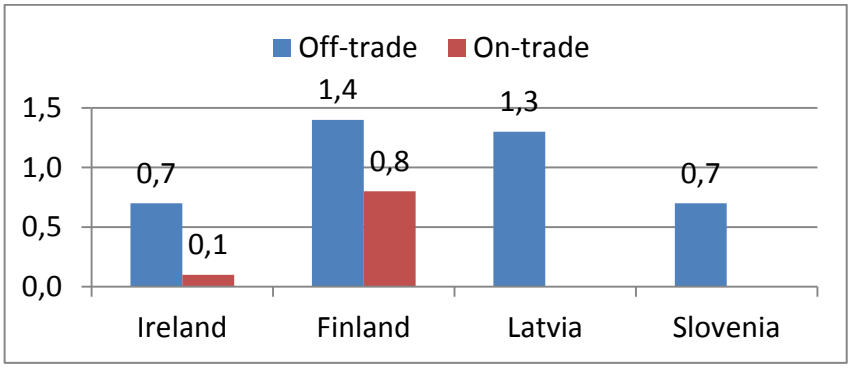
We found there is less than full pass-through in Ireland and Finland for beer excise duties both in the on- and the off-trade, whereas they are more than fully passed through in the off-trade in Latvia and Slovenia (Figure ES.1).

Figure ES.1: Pass-through for beer in Ireland, Finland, Latvia and Slovenia



For spirits, the picture is more diverse. We find less than full pass-through in the on-trade in Finland and Ireland, but more than full pass-through in the off-trade in Finland and Latvia. Ireland's and Slovenia's off-trade sectors did not pass on the full amount of excise duty change to prices of spirits (Figure ES.2).

Figure ES.2: Pass-through for spirits in Ireland, Finland, Latvia and Slovenia



It is possible that factors such as market structure, consumer preferences, other pricing policies (eg price floors such as Ireland's Grocery Order) and alcohol-related policies (eg changes in drink-driving legislation) affect the extent to which excise duty changes are passed on to consumers. Therefore, it is difficult to predict with precision the effect of changes in excise duty. In view of this, it is useful for policymakers to assess carefully prior responses to excise duty changes in their countries and the other key changes occurring in that environment before implementing new changes.

There is a trend towards more off-trade alcohol consumption in many EU Member States

Research suggests that in Belgium, the Netherlands, Portugal, Scotland and other EU countries the share of on-trade alcohol consumption is decreasing relative to the off-trade. We obtained data from six EU countries (Finland, Germany, Ireland, Latvia, Slovenia and Spain) to examine this trend in more detail. In all six countries the ratio of off- to on-trade consumption went up for at least one type of alcoholic beverage during the observed period. The ratio of off- to on-trade consumption indicates the litres of alcohol that are consumed in the off-trade for every one litre of alcohol consumed in the on-trade. In four countries out of six, ratios went up for all beverages, as Table ES.1 indicates.

Table ES.1: Ratio of off- to on-trade consumption of alcohol, by beverage, in six EU countries, 1997-2010

	All beverages	Spirits	Wine	Beer
Germany	↑	↑	↑	↑
Finland	↑	↑	↑	↑
Ireland	↑	↑	↑	↑
Latvia	Mixed	Stable	Stable	↑
Slovenia	Mixed	Stable	⇩	↑
Spain	↑	↑	↑	↑

Downward arrows indicate reduced consumption; upward arrows indicate increased consumption.

This is the case even in Ireland and Spain, which had traditionally higher consumption of on-premise alcohol. In those countries in our sample with traditionally higher off-trade alcohol consumption (Finland and Germany) the proportion of alcohol sold through the off-trade has also been increasing relative to on-trade alcohol sales. Latvia and Slovenia, where off-trade consumption has been higher than on-trade consumption since at least the mid-1990s, exhibit stability in the ratio of on- and off-trade sales for selected beverages, an exception in our sample of six countries. The only instance of a decrease in the ratio of off- to on-trade consumption is for wine consumption in Slovenia.

Both policy and social and economic changes may influence the movement of alcohol consumption between the on- and the off-trade sectors

Lower off-trade alcohol prices, driven in part by growing competition in the supermarket sector (and at least in some countries possibly driven by cross-

border consumption), may be causing at least part of the shift. Preventive alcohol policies as well as social, cultural, economic and demographic determinants also can play a large role in shift between on- and off-premise consumption of alcohol. In this report we conduct an exploratory analysis of the effect of a number of social, cultural, economic and demographic factors on alcohol consumption by premise. This is the first study we are aware of that attempts to analyse statistically the potential relationship between a variety of determinants. Results suggest that population density, broadband concentration and GDP per capita are statistically significant factors. The relationship is positive for population density and broadband penetration in which increases in those factors are associated with relatively more consumption in the off-trade; whereas the relationship with GDP per capita is negative, so increases in wealth are associated with shifts towards on-trade consumption. The economic downturn experienced in Europe in the last few years may have influenced the trends observed towards increased off-trade consumption.

Alcohol price promotions and discounts are prevalent in many EU Member States

There is some informative research on the impact of off- and on-trade price promotions and discounts, although the evidence base is not well developed. Existing data about the extent of alcohol price promotions and discounts across the EU are limited. A few studies suggest that in France, Ireland, Latvia, the Netherlands, Poland and the UK, price promotions and discounts are common in the off- and on-trade, but this has increasing significance for value in the off-trade.

Many different types of non-tax pricing regulations are used across the EU, but we know little about their effectiveness in reducing alcohol harms

The regulatory landscape in Europe is diverse, with most countries implementing at least one type of non-tax alcohol pricing regulation. Examples include off-trade retail monopolies (such as in Finland and Sweden), restrictions in off- and/or on-trade discounts and promotions (such as in parts of Germany and Spain), and bans on below-cost sales (such as the one recently abolished in Ireland). In theory, these policies should limit the availability of cheap alcohol; in fact, research shows that retail monopolies have been effective in curbing alcohol harms. However, in practice we know little about whether, and to what extent, the other policies actually achieve their aims. More research is needed in this area (focusing in part on implementation, enforcement and compliance) to assess which ones of these policies are promising and which ones should be improved.

Final remarks

In spite of extensive evidence that raising alcohol prices reduces alcohol consumption and harms, the real price of alcoholic beverages is decreasing across the EU. This trend has fuelled debate among policymakers, public health practitioners and other stakeholders across the EU about the opportunities, and challenges, of alcohol pricing policies. This study aims to contribute a robust evidence base to inform pricing policy in the region.

As alcohol-related harms continue to present a public health challenge across the EU, this study makes an important contribution to the evidence base on

alcohol pricing policy. In addition to the findings from its own analysis, this report also makes a strong case for improved data collection in a number of key areas (such as alcohol prices by beverage and premise type, on- versus off-trade consumption, and the use of price promotions and discounts) that would enhance research and policymaking in the region.

Our approach

We reviewed influences on alcohol prices and locations of alcohol purchases using a mixed-methods approach. Each research question required a particular approach.

Excise duty pass-through

In order to analyse pass-through, we obtained data on prices and excise duties from Finland, Ireland, Latvia and Slovenia. These were analysed by means of regression analysis to identify the relationship between excise duties and prices.

On- and off-premise sales trends

We obtained data from six EU countries (Finland, Germany, Ireland, Latvia, Slovenia and Spain) to examine the trend in off- and on-premise sales in more detail. We constructed a ratio of off- to on-premise sales volumes from 1997 to 2010. In order to explore potential factors influencing the off- and on-premise sales trends, we performed regression analysis of selected social and economic determinants of alcohol consumption that have been identified in the literature.

Promotions and discounts sales trends

Existing data and research about the extent of alcohol price promotions and discounts across the EU are limited. Nevertheless, we obtained data on the volume of alcohol sales through discounters (supermarkets selling mostly own-brand products or major brands at discounted prices) as an indication of trends in the retail of discounted alcohol in a small sample of EU countries. We also collected further data and information on alcohol retail practices and pricing regulations across the EU by means of an online survey of experts and policymakers, and interviews with key informants representing 23 national authorities and economic operators across ten Member States.

Alcohol pricing regulations

In collaboration with the European Commission Directorate General for Health and Consumers, we identified five regulations seen as of particular interest for more in-depth analysis. Research towards these case studies of non-tax pricing regulations included a review of relevant documents and materials, and key informant interviews.

Limitations

As with any research endeavour, there are limitations to the findings. The main constraints in this research are related to data. Analysis of pass-through required mean prices by beverage for at least one month and monthly price indices. Despite searches and requests for this data from Member States with potentially enough changes in excise duty to identify the pass-through relationship, we obtained data for only four countries. For the overall assessment across countries, improved accuracy and a fuller picture for the range of pass-through could be achieved with data from more countries.

In order to construct the ratio of on- to off-premise sales, data need to be purchased as publicly available information is not available. Resources for this

study only allowed for purchase of data on six countries and, again, a more comprehensive picture of the situation across Member States could be made with more data.

Responses to our online survey of EU alcohol experts and government representatives were limited. In order to improve our understanding of the nature and extent of alcohol price promotions and discounts, more systematic (and comparable) efforts to collect information are needed across the Member States. Finally, while there are numerous examples of non-tax price regulations across the EU, research on their effectiveness is scarce. Further research on this is desirable for countries to be able to learn from each other's good practice and use robust evidence as they develop approaches to tackling alcohol harm.

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Abbreviations

ABV	Alcohol by Volume
ÁTVR	Áfengis Og Tóbaksverslun Rýkisins – State Alcohol and Tobacco Company (Iceland)
BAC	Blood Alcohol Concentration
BSI	Bundesverband der Deutschen Spirituosen-Industrie und Importeure; Federal Association of the German Liquor Industry and Liquor Importers (Germany)
CA	Competition Authority (Ireland)
CEBR	Centre for Economics and Business Research
CEE	Central and Eastern Europe
CPI	Consumer Price Index
DG SANCO	Directorate-General for Health and Consumers, European Commission
EC	European Commission
EEA	European Economic Area
EU	European Union
EU-21	European Union of 21 Member States
EU-27	European Union of 27 Member States
EUROSTAT	Statistical Office of the European Communities
GDP	Gross Domestic Product
hl	Hectoliter
IMF	International Monetary Fund
IWSR	International Wine and Spirits Research
L/A	Litres of Alcohol
NHS	National Health Service (UK)
OECD	Organisation for Economic Cooperation and Development
PwC	PricewaterhouseCoopers
THL	Terveyden ja Hyvinvoinnin Laitos; National Institute for Health and Welfare (Finland)
UK	United Kingdom
US	United States of America
Valvira	Sosiaali-ja Terveysalan Llupa-ja Valvontavirasto; National Supervisory Authority for Welfare and Health (Finland)
VAT	Value Added Tax
Vol	Volume
WHO	World Health Organization

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All errors remain our own.

CHAPTER 1 Introduction

1.1 The European context

Harmful and hazardous use of alcohol results in serious health, social and economic harms, and is the third-leading risk factor for death and disability in the European Union (EU) after tobacco and high blood pressure. According to OECD data, Europe (which includes EU Member States and four non-EU countries) continues to have the highest proportion of drinkers and the highest levels of alcohol consumption per population in the world, with recorded alcohol consumption averaging around 10.8 litres of pure alcohol a year per adult (OECD, 2010). Young people are at particular risk: 19 percent of younger Europeans aged 15–24 binge drink, and more than one in four deaths among young men is due to alcohol (European Union Health & Consumer Protection Directorate-General, 2006). Some 55 million people are estimated to drink alcohol at harmful levels (four drinks or more a day for men and two or more for women) in the EU.

Alcohol thus generates high costs to society. It was estimated that the costs in the EU of alcohol-related harms was around €125 billion in 2003, equivalent to 1.3 percent of GDP (European Union Health & Consumer Protection Directorate-General, 2006). Harms to society from alcohol include ill-health, violence, crime, antisocial and risky behaviours, unemployment, absenteeism from work, family breakdown and social isolation.

Against this background, there is intense pan-European interest in developing and implementing measures to combat alcohol harms. The European Commission is actively involved in this agenda by carrying out a number of activities and actions in different areas. In the last few years, action at the European level on alcohol policy has gained significant momentum and resulted in a number of important initiatives. In 2006, the European Commission adopted an EU strategy to support Member States in reducing alcohol-related harm. Other recent developments include the establishment of structures to support the implementation of the EU Alcohol Strategy: the European Alcohol and Health Forum and the Committee on National Alcohol Policy and Action, both in 2007, and of the Committee on Alcohol Data, Indicators and Definitions in 2008.

1.2 The evidence for alcohol pricing policy

Both at EU level and within Member States, one of the areas of growing interest for alcohol policy is pricing policy. The EU Alcohol Strategy, for instance,

highlights pricing policy as an effective intervention to address alcohol-related harms (European Commission, 2006, p. 10). The European Alcohol and Health Forum provided impetus for a study on alcohol affordability and pricing policy in the EU (Rabinovich et al., 2009), funded by the European Commission and on which this report builds. Within Member States, various initiatives have also added momentum to discussions about the prospects, and challenges, of pricing policy. Scottish and English interest in minimum price and new regulations on alcohol retail promotions in Ireland, Spain and other countries are but some examples of European interest in the issue.

Research into and implementation of pricing policies to address harmful and hazardous alcohol consumption rests on an extensive body of evidence showing that consumers respond to changes in alcohol prices in much the same way as they respond to changes in the price of other commodities. That is, increases in the price of alcohol generally lead to decreases in consumption, and vice-versa (reviews of this evidence include Anderson et al., 2009; Babor et al., 2003; Chaloupka et al., 2002; Cook and Moore, 2002; Elder et al., 2010; Fogarty, 2006; Meier et al., 2009).

Much of this research originates in Australia, Canada and the US, although a growing number of studies are being produced in Europe. Recent "natural experiments" in Switzerland, Sweden and Finland (which experienced alcohol price decreases following liberalisation of alcohol control policies) have been extensively studied. Like the balance of international evidence, these European studies also find that alcohol consumption is responsive to changes in prices (see, for example: Heeb et al., 2003; Helakorpi et al., 2010; Kuo et al., 2004; Kuo et al., 2003; Mäkelä et al.; 2007, Mäkelä et al., 2009).

The finding that increases in alcohol prices are associated with decreases in alcohol consumption "concurs with a fundamental law of economics called the downward sloping demand curve, which states that as the price of a product rises, the quantity demanded of that product falls" (Chaloupka et al., 2002). This rule has been found to hold even for potentially addictive products such as alcohol, illicit drugs and tobacco. Numerous studies have clearly demonstrated that

> *even addictive behaviors are sensitive to changes in the full price of the substance being used, where the full price of a good reflects not only its monetary cost, but also the health costs, legal costs, and time costs involved in obtaining and using the good. When the full price of an addictive substance rises, consumption of that substance falls. As consumption falls, so do the negative consequences associated with excessive use and addiction* (Pacula and Chaloupka, 2001).

In addition to research examining the link between alcohol price and consumption, studies have also focused on the effect of price changes on various outcomes related to alcohol consumption such as liver cirrhosis mortality and other chronic health conditions, traffic accidents and deaths, violence and crime, and so forth. The balance of this research has found that increases in alcohol prices are linked to decreases in these types of harms, and decreases in prices are linked to increases in harms (recent reviews of this literature include Cook and Moore, 2002; Elder et al.; 2010, Meier et al., 2009; for individual European studies, see Helakorpi et al.; 2010; Herttua et al.; 2008; Koski et al. 2007; Kuo et al. 2004; Mäkelä et al. 2009). Moreover,

studies have shown that many of the negative outcomes of alcohol use that are strongly associated specifically with heavy drinking (such as liver cirrhosis and violence) are sensitive to changes in the full price of alcohol (Cook and Moore, 2002; Elder et al., 2010; Farrell et al., 2003; Pacula and Chaloupka, 2001).[1]

A related finding from the research is that hazardous and harmful drinkers tend to choose cheaper alcoholic beverages, as they seek to maximise ethanol intake for the money they spend. A study by Gruenewald et al. (2006) that examined a series of price adjustments by Sweden's alcohol monopoly Systembolaget between 1984 and 1993 shows that in response to general alcohol price increases, consumers substitute with cheaper alcoholic beverages, or purchase their drinks in cheaper venues. Using the empirical results from their study, the authors estimated the impact of changes in average beverage prices under different scenarios. They found that a 10 percent price increase that resulted in higher prices for all beverages would result in a 1.7 percent drop in alcohol sales, whereas a price increase that affected only lower-quality beverages would lead to a 4.2 percent drop in alcohol sales. This indicates that while price changes have an important effect in changing what people drink or where they purchase their drinks, increases in the price of the cheapest alcoholic beverages lead to reductions in consumption levels as consumers have no cheaper alcoholic alternative (for another study of effect of price changes on substitution for cheaper drinks in Sweden, see Ponicki et al., 1997). Similarly, research from the UK shows that changes in the price of cheaper alcoholic beverages sold in the off-trade have a stronger impact among hazardous than among non-hazardous drinkers, including young male hazardous drinkers whose consumption is also affected by higher prices for cheaper on-trade beverages (Meier et al., 2009).

Other studies echo these findings. In the US, it has been shown that the top 10 percent of drinkers spend about $0.87 per drink compared with $4.75 per drink for the bottom 50 percent of drinkers (Kerr and Greenfield, 2007). In Australia, a study shows that young drinkers often use standard drink labels on alcohol containers to calculate the cheapest way of getting drunk (Jones and Parri, 2009).

In spite of extensive evidence that raising alcohol prices reduces consumption and attendant harms, the trend in the real price of alcoholic beverages is decreasing in many countries, including in Europe (Rabinovich et al., 2009; WHO, 2004). This trend, coupled with the international evidence on the importance of price as a determinant of alcohol consumption and harms, has fuelled debate among policymakers, public health practitioners and other stakeholders across the EU about the opportunities, and challenges, of alcohol pricing policies.

[1] There are also a number of experimental studies examining how the cost of obtaining alcohol affects alcoholics' responses. They have found that "when there are immediate costs to obtaining a drink, alcoholics will moderate consumption" (see Cook, 2007, p. 77 for short descriptions of some of these studies). An experimental study from 1978 compared the price responsiveness of casual drinkers to that of heavy drinkers. It found that when faced with a "happy hour" situation in which prices were cut in half, both groups approximately doubled the number of drinks they consumed (Babor et al., 1978).

1.3 Objectives of this study

In 2008, the European Commission responded to a meeting of the European Alcohol and Health Forum in which alcohol pricing policy issues were raised, by commissioning a study on how alcohol affordability has developed in EU Member States, over time, the drivers of this, and the potential impacts of affordability on harmful use of alcohol (see: Rabinovich et al., 2009).

The present report is the result of research to further that first study, and its main objective is to generate more data and knowledge in four particular areas relating to the price consumers pay for alcoholic beverages. These areas are:

- the link between changes in excise duties and changes in consumer prices
- trends in the ratio of on- to off-trade sales of alcoholic beverages, and their driving factors
- the nature and scale of alcohol price promotions and discounts
- regulations on the price promotions and discounts, and their compliance, enforcement and effectiveness.

These issues are all under-examined yet central aspects of alcohol pricing, honing in on the retail level. The various areas of inquiry enable us to develop a more complete picture of alcohol retail practices and trends, which are key to alcohol pricing planning and implementation.

This report is organised as follows. Chapter 2 discusses the evidence on the effectiveness of alcohol excise duties to reduce alcohol consumption and harms, and analyses the effects of alcohol tax changes on the prices faced by consumers. Chapter 3 focuses on current trends on off- versus on-trade alcohol consumption across the EU, and examines their implications. Chapter 4 investigates the extent to which alcohol price discounts and promotions are used across the EU and what this means for public policy. Chapter 5 discusses non-tax pricing policies, and presents case studies of (non-tax) statutory regulation affecting alcohol prices in five different EU Member States.[2] Finally, Chapter 6 sets out some concluding remarks about the study's contributions to the research on alcohol pricing.

[2] Originally, we intended to examine both statutory and voluntary regulations affecting alcohol pricing. In view of a lack of suitable examples of voluntary regulations to use as case studies, we decided (jointly with the European Commission) to carry out case studies only of statutory regulations in the area of alcohol pricing.

CHAPTER 2 Pass-through of excise duties to alcohol prices

As with most commodities, the price of alcohol is dependent on a number of factors including marginal costs of production (driven by, among other things, input prices); the cost of transporting, distributing and retailing, as well as market structure. Excise duties and VAT are an additional component of the price consumers pay for alcoholic beverages.

Excise taxes on products such as tobacco, fuel and alcohol are usually levied by governments to discourage or control consumption of such goods, most often to compensate for the external costs associated with use of these goods (Cnossen, 2006; Kenkel, 1996). In the case of alcohol, these external costs borne by those not involved in the alcohol consumption (externalities) include those incurred through alcohol-related traffic accidents and deaths, violence and crime, health system costs and so forth. Alcohol excise duties specifically have been used in countries around the world, aiming to discourage consumption relative to non-alcoholic drinks or to shift consumption to alcohol products with lower alcohol by volume (ABV) and to raise fiscal revenue.

Nevertheless, a 2004 European Commission report found that only a minority of EU Member States (including Denmark, Estonia, Finland, Ireland and Sweden) reported explicitly taking health concerns into consideration when determining the alcohol excise duty rate, with the fiscal agenda remaining the main determinant (European Commission, Taxation and Customs Union, 2004).

While alcohol is generally subject to excise duty, which generates fiscal revenue, increases in this tax can sometimes be absorbed by retailers, such as supermarkets, so that price increases are not passed on to final consumers (for a brief description of how the prices of products are determined, and of the alcohol value chain, see Appendix E). When this happens, consumers continue to afford the same quantity of alcohol as before, and taxation thus has a minimal impact on public health and other alcohol-related outcomes. At other times, however, tax changes may be passed on to consumers by the same or higher amount as the excise duty imposed. Understanding the pass-through rate from tax increases to prices is a key pre-condition to shedding light on how tax changes would affect consumers, producers, retailers and society as a whole.

2.1 Evidence of the impact of alcohol taxes on consumption

Extensive research has been conducted on the effect of changes in alcohol excise duties on alcohol consumption and harms. Reviews of this literature exist which summarise the balance of evidence (for example Babor et al., 2003; Chaloupka et al., 2002; Elder et al., 2010; Ludbrook, 2004; Meier et al., 2008).[3]

The mechanism by which taxation influences consumption is through its effect on prices. Collectively, the balance of evidence on the effects of alcohol prices and taxation clearly indicates that increases in taxation and prices are associated with decreases in alcohol consumption and harms, and vice versa. Importantly, the research states that the real, and not just the nominal, price of alcohol must rise at or above the level of inflation for taxation to be effective in tackling alcohol-related harms (see, for example: Rehn, Room and Edwards, 2001).

While alcohol taxation can be seen as a blunt instrument (in that all consumers face the same level of taxation), research indicates that because the amount of tax paid is directly related to the amount of alcohol consumed, increases in alcohol excise taxes are disproportionately paid by harmful and hazardous drinkers, who also generate most alcohol-attributable economic costs (Elder et al., 2010; Freeman, 2000).

High duty rates on alcohol have been criticised on the basis that they may reduce drinking among middle-age and older consumers, for whom some health benefit from alcohol consumption has been found. Econometric research from the US, however, indicates that a tax increase resulting in a reduction in drinking lowers all-cause mortality in the short run (Cook et al., 2005).

An important and related consideration is whether taxes are levied *ad valorum* (as a sales tax based on value) or volumetrically (according to either total beverage volume or the volume of pure alcohol in a beverage). Research from Australia shows that an *ad valorum* method was adopted for wine taxation, which continued previous taxation arrangements that favoured cheap bulk and fortified wine products such as cask wine; the paper suggests that should a volumetric approach have been adopted instead, wine taxation would have actually increased the floor of alcohol prices occupied by those cheaper products and thereby reduced their consumption (Gray and Saggers, 2002).

Even though the overall finding is that taxation is effective in reducing alcohol consumption and harms, estimates of the size of the effect vary considerably. This may be explained by differences in the prevailing social, cultural and economic circumstances of the countries and regions where research has taken

[3] A number of studies, mostly originating in Scandinavia, were published recently which are not included in any of these reviews, published in earlier years. These studies examine the effects of tax changes on alcohol consumption and harms in Denmark, Finland and Sweden. For example, Bloomfield et al. (2009) analysed changes in a few alcohol harms in Denmark between 2003 and 2005 after changes in taxation of alcoholic beverages. The authors found that a reduction in spirit taxation was associated with a 26 percent increase in the number of acute alcohol intoxication hospitalisations among people 15 years and younger, although no statistically significant change on violent assaults and acute intoxication was revealed from the changes in taxation. Other studies, using self-report data on alcohol consumption and harms, did not find the theorised effect of alcohol policy changes on consumption and harms (for example: Grittner et al., 2009; Gustaffson, 2010).

place (Babor et al., 2003; Ludbrook, 2004). In spite of difference found in the size of the effect, the direction of the effect is always the same (for a brief discussion on the unintended consequences of alcohol tax and price changes, see Appendix I).

2.2 Excise duty pass-through

Policymakers may seek to reduce consumption of goods that are argued to produce harmful outcomes when consumed at relatively "high" levels, such as tobacco, alcohol and petrol. As literature suggests, increasing the price of alcohol is one way of achieving the aims of reducing harmful alcohol consumption; it is therefore important to understand the extent to which policy tools such as taxation lead to actual changes in retail prices.

This relationship between changes in taxation and changes in prices is what is known as "pass-through": the extent to which taxes are passed through to the price the consumer pays. There are a number of approaches to calculating pass-through (discussed later in this chapter), each of which takes into consideration the nature of the data and aspects of pass-through of particular interest.

In the remainder of this chapter we aim to understand how past changes in excise duty were associated with changes in retail prices by beverage type (beer, spirits and wine) and by premise (on-premise and off-premise) in EU Member States. For the purposes of this study, the following definitions for off- and on-premise or off- and on-trade are applied:

- Off-premise (also called off-trade) refers to establishments selling alcohol for consumption not within the premises, such as supermarkets, liquor stores and grocery stores.
- On-premise (on-trade) refers to establishments with a licence to sell alcohol for consumption within the premise, such as restaurants, bars and pubs. In this chapter, and throughout this report, we use the terms on-trade/on-premise and off-trade/off-premise interchangeably.

In what follows, we first describe excise duty pass-through and its uses for policymaking purposes. We also describe some approaches in the literature for calculating pass-through in order to provide an understanding of how to analyse data and generate a value of excise duty pass-through. This is then followed by analysis of pass-through for those Member States for which we obtained sufficient data, namely Finland, Ireland, Latvia and Slovenia.

The excise duty pass-through rate describes how much prices change when excise duty changes. Thus it refers to whether, and to what extent, tax changes are passed on to the customer, or whether the producers and/or retailers absorb this "cost". Pass-through is an important measure for understanding whether taxation is actually a useful tool for affecting prices. If changes in taxes do not result in changes of prices at the till, for example, then the objective of reducing consumption and thus harms to drinkers and others may not be fully met, even if state revenues increase.

Research on pass-through from excise tax changes to alcohol prices is extremely limited. The few available studies on pass-through from tax changes to alcohol prices have found that pass-through is not always one-to-one or 100 percent (Heeb, 2003; Kenkel, 2005; Young and Bielinska-Kwapisz, 2002). With respect

to alcohol in particular, as discussed in the review of literature, prices may change by more or less than the change in excise, or even not change at all.

Taxation on alcohol comes in two forms, Value Added Tax (VAT) and excise duty, which act in different ways. VAT is an *ad valorem tax*, meaning it is a percentage of the selling price. Therefore the amount paid in VAT increases as the price increases (CA, 2008). In the EU, alcohol excise duty is a specific amount charged on each item sold (see Box 2.1 for a description of alcohol excise duty in the EU). It is calculated on the quantity of pure alcohol per specified unit (as a percentage) sold, not the price at which it is sold. More concretely, an excise duty in Euros is the amount of Euros per hectolitre of beer, for example, where the amount in Euros differs depending on the alcohol content in the hectolitre of beer. In the case of wine and cider, excise duty rates are for alcohol content brackets; for spirits and beer, it is per unit of alcohol. For more details of EU alcohol excise duty practices, see text box 1.

Text box 1: Alcohol excise duty rates in the European Union

Alcohol excise duty rates in the European Union

Excise duty rates on alcoholic beverages are not harmonised across the EU. Rather, Council Directive 92/84/EEC sets a minimum excise duty rate for distilled spirits, beer, intermediate products (such as fortified wines) and fermented products other than wine and beer, and Directive 92/83/EEC harmonises the structures of excise duty on alcoholic beverages across the EU.

According to these directives, wine, fermented beverages and intermediate products are taxed by volume, and beer and spirits are taxed by alcohol content.

No minimum is set for wine and fermented beverages other than wine and beer. While the minimum rates are binding, Member States can set their own excise duty rates anywhere above this limit. The minimum rates set by the Directive have not been adjusted since 1992, which entails a reduction in their real value of around 25%.

Regarding the nature of excise duty to impact on retail prices, "[i]ncreasing excise duty has a direct impact on the selling price of alcohol, but only when increased beyond the rate of inflation" (CA, 2008, p. 12). For example, in an assessment of *ad valorem* versus specific excise taxes, Griffith et al. (2010) use a structural model to understand pass-through on butter and margarine prices in the UK and find pass-through of an excise tax is higher than an *ad valorem* tax and greater than 100 percent.

2.3 Theoretical understanding of the effects of excise duty on prices

The discussion about how indirect taxes (taxes on consumption) are passed on from the suppliers of a good to the consumers of that good has a long history (Fullerton and Metcalf, 2002). In essence, indirect taxation effects depend on factors involved in supplying the good and the nature of demand in the market.

On the demand side, whether increased taxation is passed on to the consumer relies on the elasticity of the demand curve – the preferences of consumers and their sensitivity to a range of prices. If consumers are completely insensitive to price changes (demand price elasticity is inelastic), then consumers would be willing to purchase the same quantity for even large changes in price. In such a

situation, taxation may have little effect on consumers and therefore suppliers are more likely to pass on tax changes through price hikes. The opposite would be the case when consumers are highly sensitive to price changes. In this case, firms have an incentive to try and absorb the price changes to maintain demand for their product.

This is also linked to the market structure and degree of competition. In a highly competitive environment, the price faced by consumers is very close to the costs of supplying the product; therefore, any increase in excise duty is likely to need to be passed on to the consumer or else the firm must pass the burden backward to the employees (in slower wage growth) or suppliers (in better negotiated prices).

In sum, there are many factors in the market for a good that can contribute to whether we observe changes in prices following a change in excise duties.

2.4 Overview of methods to calculate pass-through

In order to detect the relationship between price and excise tax empirically, it is required that there are changes in taxation – either increases or decreases – within the same jurisdiction over time. These changes must be substantial enough or occur in sufficient frequency to enable us to detect the statistical relationship. The necessary amount of variation, however, is not known *a priori* of analysis.

There are two approaches to calculating pass-through:

- calculate mathematical averages of price and tax indicators to understand associations between tax and price
- perform regression analysis controlling for other factors to isolate the effect of tax on price.

For those two approaches, various methods can be used. For the first approach, one method is to divide the price adjusted for inflation change (the "real" price) by the amount of the tax change for the beverage and quantity in question (Kenkel, 2005). In effect, this approach finds the proportion of excise duty that is passed on to prices. In order to identify the effect of excise duty changes on prices, this approach requires a "natural experiment" situation in which one can be sufficiently certain that the change in excise duty is independent of changes in price and the only changing factor of price.

In the second approach, researchers estimate prices as a function of excise duty (or the particular kind of pass-through such as exchange rates), controlling for other factors (Gopinath and Itskhoki, 2008). As there are other factors that may be related to both changes in price and changes in excise duty, it is necessary in this approach to control for these other factors to isolate the pass-through. It may be, for example, that some of the change in prices observed is due to increases or decreases in real prices that are irrespective of taxes. Results are generally reported as the change in price for a unit change in excise duties.

Another example of the second approach to estimating pass-through is to take the *net of tax price* and calculate the percentage change in the net of tax price for a 1 percent increase in duty (CEBR 2009; Oxford Economics 2009; PwC 2009). In this calculation, a positive value indicates greater than full pass-

through (over-shifting). In such a case, in addition to the duty increase, the pre-tax price also rises (by x percent) following a 1 percent increase in duty. A negative value indicates less than full pass-through, indicating firms (most likely retailers) are absorbing the tax increase. A key limitation of this approach is data; this approach requires using net of tax prices, which is a time-series not readily available.

In this chapter, we use both approaches for the analysis of pass-through, for comparison purposes. However, given that the first approach does not take into account other factors occurring during the time of excise duty changes and we do not have such detailed prices (as in Kenkel, 2005), we provide those results in Appendix C.

2.5 Empirical strategy

The approach taken in this chapter to estimate pass-through is based on case studies of four EU Member States: Finland, Ireland, Latvia and Slovenia. In order to identify potential case studies, we first considered the data and analytical needs for our regression analysis. As already mentioned, a condition to be able to analyse pass-through is the presence of changes in excise duties. Not all Member States experienced changes in excise duties over the same period for which pricing data were collected and/or reported, and therefore pass-through cannot be analysed for these countries.

Furthermore, the types of price data required for our analysis are not typically collected. Data on prices of alcoholic beverages, by type of alcohol and on- and off-premise dimension, are needed for this study. The EU harmonised price index cannot be used for excise duty pass-through analysis because the price is adjusted to conform to a basket of goods at the EU level. This makes the excise duty rates and the prices not comparable.

In order to locate the data we needed, we contacted national statistics offices of those Member States that exhibited variations in excise duty.[4] Most Member States do not collect or specify on- and off-premise alcohol prices; the only two countries that provided us with the required data were Finland and Ireland. As for data on different types of alcohol in the off-trade, this was provided by Finland, Ireland, Latvia and Slovenia, which are the four countries explored in detail in this chapter. For these, we perform regression analysis and provide a description of the approach utilised in this section. We provide more in-depth, technical details of the approaches for the interested reader in Appendix C. In addition, Appendix G provides a list of the alcohol price and retail data collection by all Member States.

2.5.1 Statistical testing to develop the empirical model

In order to isolate the relationship between prices and excise duties, it is important to identify statistically the true trend in each of the series. This is because sometimes two series, such as prices and excise duties, can appear to have a relationship that is statistically untrue. For example, if real prices are generally decreasing and real excise duties are generally increasing, it may seem

[4] The countries contacted were: Austria, Belgium, Estonia, Finland, Ireland, Latvia, the Netherlands, Norway, Poland, Slovenia, Spain, Sweden and the UK.

as though there is a negative relationship between the two; increasing excise duties is associated with decreasing prices. However, this may not be the reality and a researcher needs to go through a process of "de-trending" the data.

Trended data – the term for values based on previous levels or a time series that is persistent (tends towards one direction) – are common in variables, such as prices. This happens in the case of prices, for example, because people setting prices use information, such as prices yesterday, to set prices today. However, when seeking to establish a relationship between two variables, the researcher wants to eliminate this "part" of the price that is due to prices in the past (to de-trend the data) and keep the "part" of the price that may be due to the other variable of interest (eg excise duty). We perform a series of tests to better understand the statistical trends of the data and estimate a model that takes into account the past (for more on this testing process, see Appendix C).

2.5.2 Final models estimated

The empirical framework is the following:

$$p_{i,t} = x_{i,t} + x_{i,t-1} + + p_{i,t-1} + m_{i,t} + y_{i,t} + \varepsilon_{i,t},$$

for all beverages $i\epsilon(beer, spirit, wine)$ and time t, where $p_{i,t}$ is the price of alcoholic beverage i at time t and $x_{i,t}$ is the excise duty for beverage i at time t. In order to control for seasonality, $m_{i,t}$ is a month fixed effect for beverage i at time t such that $m\epsilon(1, \dots, 12)$. We control for annual shocks in prices over time with $y_{i,t}$, year fixed effects. Lastly, we include ε, the random error component.

The reason for including month effects is because alcohol prices have a seasonal component in which price changes during particular times of the year are observed, irrespective of changes in taxation (Hunt et al., 2010). For example, if an excise duty change occurs at a particular time of year, the observed change in price may be because of the season in which the tax change occurred rather than the tax itself. This is particularly important in Ireland, for example, where price changes are observed in January and previous research found alcohol prices to increase in January after the Christmas holiday discounts (Hunt et al., 2010). Furthermore, changes in other regulations (eg a ban on below-cost sales or the repeal of such a ban) may have an effect on prices. In order to account for this, we include month dummies in the analysis.

As discussed, there was correlation between observables (excise duties), which created inconsistency. One method for accounting for correlated, time-invariant heterogeneity without actually observing it is to take first differences (or $p_{i,t} - p_{i,t-1} = p_t^*$). By regressing differences in prices on differences in excise duties, time invariant heterogeneity is "differenced" out. The model to estimate is formally:

$$p_{it}^* = x_{it}^* + m_t + y_t + \varepsilon_t^*.$$

2.5.3 Sensitivity analysis

We conducted a series of tests of the final model in order to check for robustness. First, we conducted a "placebo" test for all countries to check whether observed findings are a result from the data or whether there is economic significance in the findings. To do this, we limited the estimation to a period of no change in excise duties, by type of beverage. If our results are robust, we should not observe a relationship between excise duties and price

when there were no changes in excise duties, and our results indeed found no association during a period of no changes in excise duties with changes in prices in this particular period. This indicates the likely appropriateness of our estimation strategy.

Second, to further investigate the effect of previous excise duty rates on current pass-through, we estimated lagged effects of excise duty changes separately and jointly (in combinations as well as all at once). The magnitudes of the effects in the joint regressions were closely in line with those from the separate regressions. We present results of the relationship between excise duties and prices and note if further lagged differences are included. Full regression results are presented in Appendix C.

In what follows, we present the results of our analysis for each of the countries under examination. A discussion of the limitations of our model is provided at the end of this chapter.

2.6 Ireland

2.6.1 Data description

We used the Irish National Statistics Office price data and Office of the Revenue Commissioners (Indirect Taxes Division, Excise Branch) tax data. We obtained monthly price index data by beverage groups (beer, spirits and wine and cider), as well as data on the average prices and volume of stout (a type of beer), lager, whiskey, brandy and wine in November 2008. This allows us to produce a price series in Euro prices, rather than a price index (for more details on how we constructed pricing data, see Appendix A). Further, we obtained data on the levels of excise duties for beer, spirits and wine.

Beer

Ireland experienced several changes in excise duties over the period investigated (January 1994 to January 2011). Table 2.1 shows how these changes occurred in 1994, 2002 and 2009, depending on the alcohol content per hectolitre (hl). Before 2008, there were two categories of excise duty for beer: below, or at/above 1.2 percent alcohol content. Then it was switched to three categories: at/below 1.2 percent, 1.2–2.8 percent and above 2.8 percent alcohol.

Table 2.1: Excise duty rate changes for beer (vol per hl as % of alcohol) in Ireland, 1993–2011

	Beer, 0.5% < 1.2%		**Beer, exceeding 1.2%**		**Beer, 1.2% < 2.8%***		**Beer, exceeding 2.8%***	
Date of change	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)
02/10/1993	11.51		11.51					
27/01/1994	12.33	7.1	12.33	7.1				
01/01/2002	19.87	61.1	19.87	61.1				
10/12/2009	0.00	−100.0			7.85	−60.5	15.7	−20.9

Source: Office of the Revenue Commissioners, Ireland.

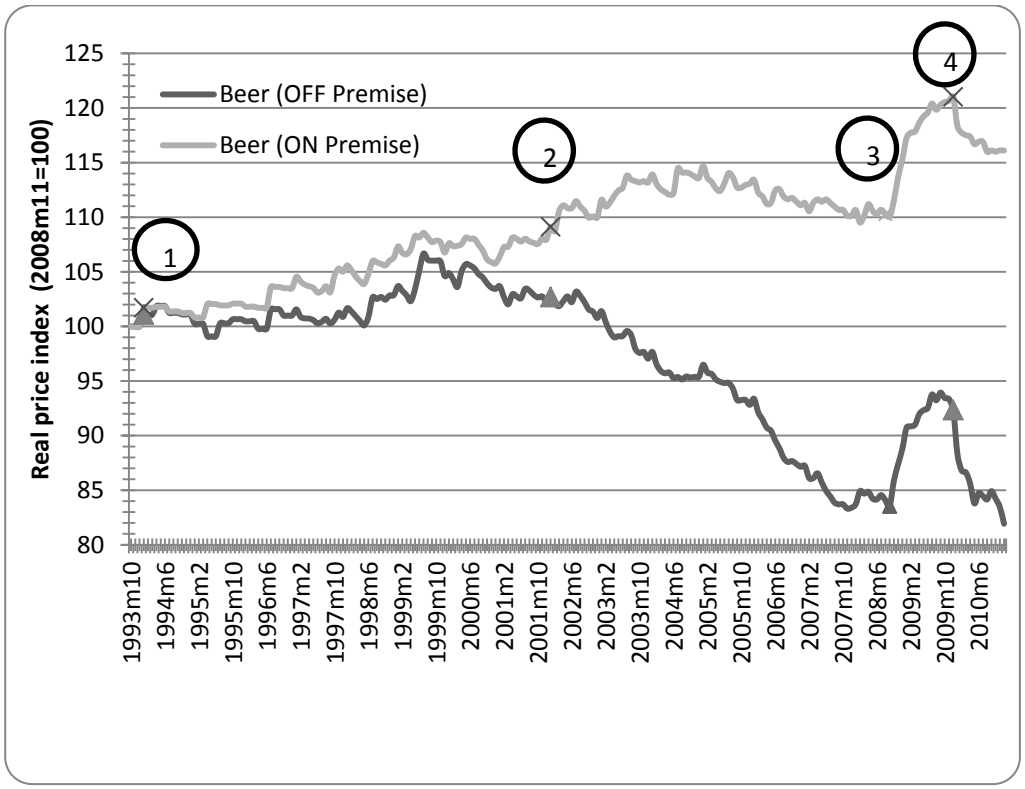
Note: * Excise duty rates for beer exceeding 1.2 percent (vol per hl of alcohol) split in 2008 to specific rates under 2.8 percent and over.

Figure 2.1 illustrates how the prices of beer in Ireland generally decreased in the off-trade and increased in the on-trade. In particular, the on-licence prices of beer were greater in 2010 than they were in 1993, while the opposite is true of off-licence beer prices.

The figure also presents the four points in time in which (nominal) excise duty rates changed. The first is January 1994 in which there was an increase in excise duties; the second and third points were in January 2002 and October 2008, respectively, in which there were increases; and the third point was December 2009 in which there was a decrease. Note that these were nominal changes in excise duties, which are not adjusted for inflation. In other words, since the overall price level increased in Ireland (there was inflation), the excise duties fell in real value.

The largest changes in excise duties on beer (an increase in January 2002 and a decrease in December 2009) were visibly accompanied by changes in price. This is especially clear from the trend in on-premise prices of beer. As one would expect under a scenario where taxes are passed to the consumers, the increase in duties was followed by the increase in price and the decrease in duties was followed by a decrease in price.

Figure 2.1: Consumer price index for beer in Ireland, 1993-2010 (deflated) and changes in excise duties



Source: Central Statistics Office, Ireland.

Note: Dates of changes in excise duties are as follows: (1) 27 January 1994 – increase, (2) 1 January 2002 – increase, (3) 15 October 2008 – increase, (4) 10 December 2009 – decrease.

Wine

Ireland experienced several changes in excise duties over the period investigated (January 1994 to January 2011). These changes occurred in 1994, 2002, 2008 and 2009, depending on the alcohol content per hectolitre (hl), as shown in Table 2.2.

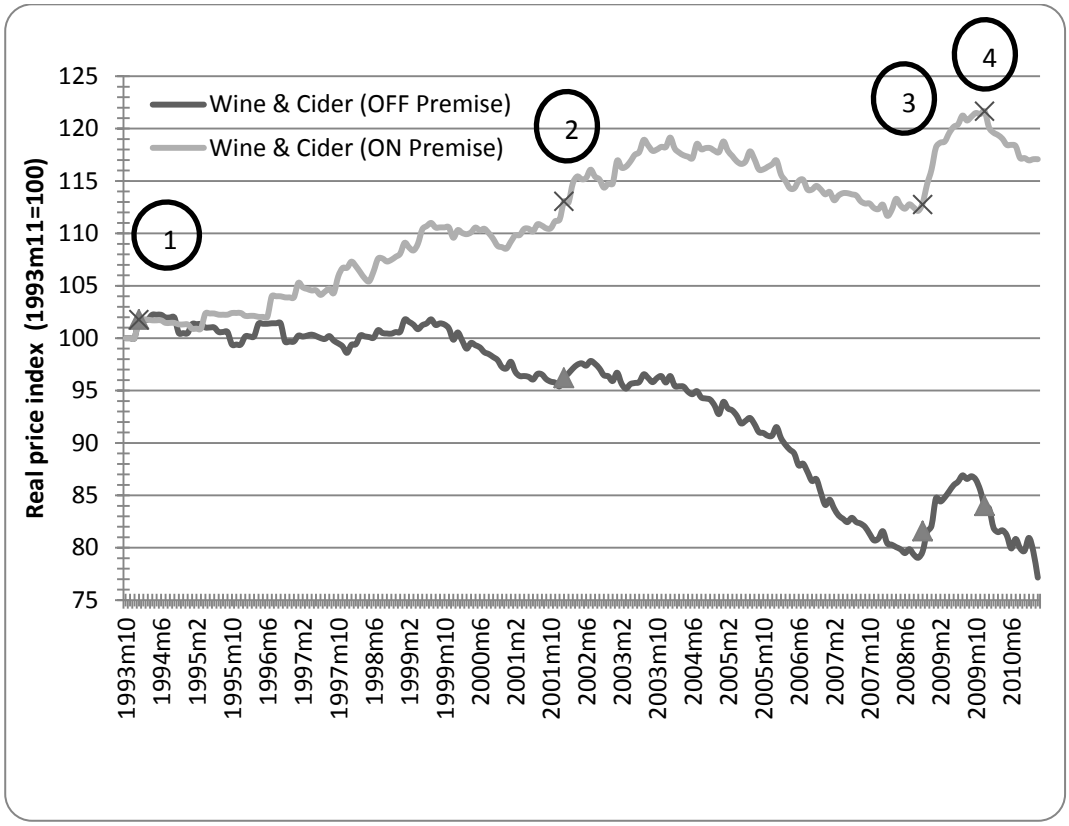
Table 2.2: Excise duty rate changes for wine (vol per hl as % of alcohol) in Ireland, 1993–2011

Date of tax change	Still & sparkling, not exceeding 5.5%		Still, 5.5% < 15%		Still, exceeding 15%		Sparkling, exceeding 5.5%	
	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)
25/02/ 1993	53.55		160.7		233.1		321.33	
27/01/ 1994	56.44	5.4	169.3	5.4	245.7	5.4	338.67	5.4
01/01/ 2002	90.98	61.2	273.0	61.2	396.1	61.2	546.01	61.2
15/10/ 2008	109.34	20.2	328.1	20.2	476.1	20.2	656.18	20.2
10/12/ 2009	87.39	−20.1	262.2	−20.1	380.5	−20.1	524.48	−20.1

Source: Office of the Revenue Commissioners.

Figure 2.2 presents trends in prices and specifies the points in time in which nominal excise duty rates were altered. Similarly to beer, the on-licence prices were greater in 2010 than they were in 1993, while the opposite is true for off-licence. Again, the off-licence prices fell relative to the on-licence prices. Two increases (January 2002, October 2008) and a decrease (December 2009) in excise duties on wine can also be linked to rises or drops, respectively in prices.

Figure 2.2: Consumer price index for wine in Ireland, 1993-2010 (deflated) and changes in excise duties



Source: Central Statistics Office, Ireland.

Note: Dates of changes in excise duties are as follows: (1) 27 January 1994 – increase, (2) 1 January 2002 – increase, (3) 15 October 2008 – increase, (4) 10 December 2009 – decrease.

Spirits

There were several changes in excise duties on spirits in Ireland over the period investigated (January 1993 to January 2011). Table 2.3 shows how these changes occurred in 1993, 1994, 1996, 2002, and 2009, depending on the litres of alcohol (L/A).

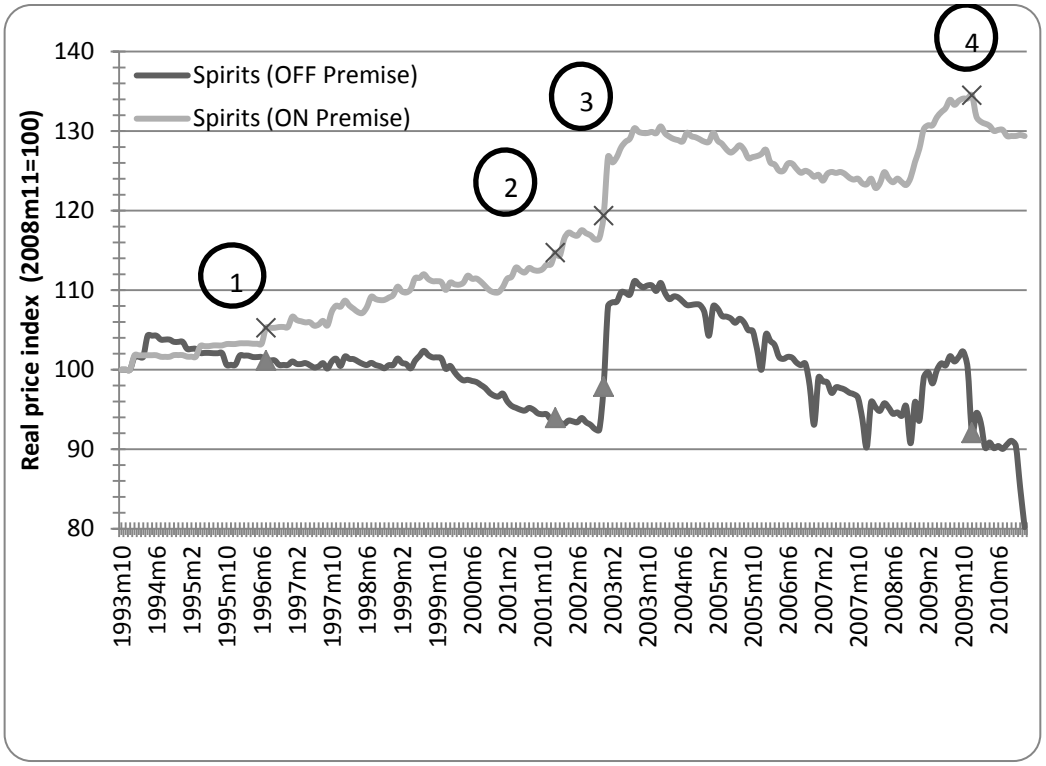
Table 2.3: Excise duty rate changes for spirits (vol per L/A as % of alcohol) in Ireland, 1993-2011

Date of tax rate change	Spirits, not exceeding 5.5%		Spirits, exceeding 5.5%	
	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)
01/01/1993	15.82		15.8	
27/01/1994	17.19	8.7	17.2	8.7
01/07/1996	12.33	-28.3	17.1	-0.3
01/01/2002	19.87	61.1	27.6	61.2
05/12/2002	39.25	97.5	9.2	42.2
10/12/2009	31.13	-20.7	31.13	-20.7

Source: Office of the Revenue Commissioners.

Figure 2.3 shows the relationship between changes in prices and changes in excise duties for spirits between 1993 and 2010, both for the on- and off-premise prices. It appears that prices may have increased as a result of the increase in excise duties in December 2002, although it seems prices may have been already changing before the excise duty increase.

Figure 2.3: Consumer price index for spirits in Ireland, 1993–2010 (deflated) and changes in excise duties



Source: Central Statistics Office, Ireland.

Note: Dates of changes in excise duties are as follows: (1) 1 July 1996 – increase, (2) 1 January 2002 – increase, (3) 5 December 2002 – increase, (4) 10 December 2009 – decrease.

2.6.2 Results

We obtained data for two "areas" of Ireland: Dublin, and the rest of Ireland. We analysed all of these data and included a factor to account for the different locations (a dummy variable for Dublin).

Beer

The results of the statistical analysis of the pass-through of beer excise duties on the price of stout and lager, off- and on-trade (Table 2.4), suggests that changes in duties are associated with same period changes in off-trade prices but not on-trade prices. The effect varies depending on the premise: a €1.00 increase in excise duty is associated with €0.45 and €0.37 increases in the price of a six-pack of stout and 500ml can of lager in the off-premise, respectively. Results were not statistically different from zero for both drink types in the on-trade, indicating no evidence of pass-through.

Table 2.4: Relationship between excise duty and price of beer, Ireland

Beverage	Change in price for €1 change in excise duty	
	Off-trade (€)	On-trade (€)
Stout	0.451***	0.162
Lager	0.370***	0.178

Note: Level of significance: 1 percent (***), 5 percent (**) and 10 percent (*). Estimations include time and month dummies. Quantity in the off-trade: stout 6-pack (6 x 250 ml), lager single can (500 ml); and in the on-trade: draught stout (1 pint), lager (1 pint). Number of observations: 374.

Spirits and wine

The results of the statistical analysis of the pass-through of spirits and wine excise duties on the prices in the off- and on-trade are presented in Table 2.5. Results are similar to beer and suggest changes in duties are associated with less than full pass-through in both premises, although there is greater pass-through in the off-trade than on-trade.

It may first seem as though the volume of the drink investigated directly influences these results and it may be necessary to adjust for different volumes in order to compare on- and off-trade pass-through (off-trade volumes are greater than on-trade so there may need to be some sort of adjustment factor). However, it is not the case because we use excise duties and prices relevant for each volume analysed and we investigate whether the amount of increase in excise is passed on to prices. The pass-through effect is greater for brandy than for whiskey in both premises. For whiskey, a €1.00 increase in excise duty is associated with a €0.09 increase in price for a single measure of whiskey on-premise and €0.57 increase for a bottle off-premise. For brandy, a €1.00 increase in excise duty is associated with a €0.10 increase in price for a single measure of brandy and €0.67 increase for a bottle in the off-trade. The results of the statistical analysis of the pass-through of wine excise duties on the price suggests that changes in duties are associated with same period changes in off-trade prices but not on-trade prices. Estimations are closer to beer with a non-statistically significant from zero finding for the on-trade and a €0.33 increase for a bottle of wine in the off-trade.

Table 2.5: Relationship between excise duty and price of spirits and wine, Ireland

Beverage	Change in price for €1 change in excise duty	
	Off-trade (€)	On-trade (€)
Whiskey	0.568***	0.091***
Brandy	0.665***	0.105***
Wine	0.330***	0.180

Note: Level of significance: 1 percent (***), 5 percent (**) and 10 percent (*). Number of observations: 408. Estimations include year and month dummies and dummy for Dublin. Results were not statistically different for Dublin.

For whiskey: in the off-trade, one bottle (70 cl), and in the on-trade, a single measure (half glass).

For brandy: in the off-trade, one bottle (70 cl), and in the on-trade, a single measure (half glass).

For wine: in the off-trade, one bottle (75 cl), and in the on-trade, a small bottle (187 ml).

2.6.3 Summary of pass-through in Ireland

Findings for Ireland demonstrate a divergence of trends in off- and on-licence premise prices, where on-premise prices increased in the 1990s and 2000s and off-licence prices decreased in the 2000s, particularly for beer. These trends for increases and decreases of prices extend to years beyond just those in which there were changes in excise duties. There are other factors than simply excise duties in the Irish market that may have affected drinking in those locations differentially (drink-driving policies, Groceries Order abolition, changes in taste or demand, and other market factors).

There is, however, some statistical correlation between changes in real excise duty and real prices. The magnitude of pass-through in the on-trade is dependent on the beverage type considered. Table 2.6 summarises the main results in which an increase in excise duty affects spirits prices relatively more than wine and beer. Generally, a €1.00 increase in excise duties results in increases of off-premise prices of €0.33–0.67 depending on the beverage. There is no statistically significant relationship between changes in excise duties and on-trade prices (in the same period) for beer. For spirits and wine, however, a €1.00 increase in excise duties is associated with a €0.10 and €0.18 increase in price respectively.

Table 2.6: Summary of results of pass-through for Ireland, by beverage, 1994-2010

Beverage	**Change in price for €1 change in excise duty:**	
	Off-premise (€)	On-premise (€)
Beer	0.37–0.45	0.00*
Spirit	0.57–0.67	0.09–0.10
Wine	0.33	0.18

* The analysis finds statistically insignificant results (or pass-through not different from zero Euros).

These findings suggest the market structure and consumer tastes in each of these beverages are distinct from one another. For all alcohol types, we found that excise duty was passed through in the off-premise. Pass-through is less for beer and wine than for spirits. Pass-through in the on-trade is limited, possibly because of the already high prices of alcoholic beverage in this sector. This analysis is not able to discern why we see pass-through of this magnitude or differentially for on- and off-premise, but it does raise important questions about why there are such differences between the on- and off-trade.

2.7 Finland

2.7.1 Data description

Beer

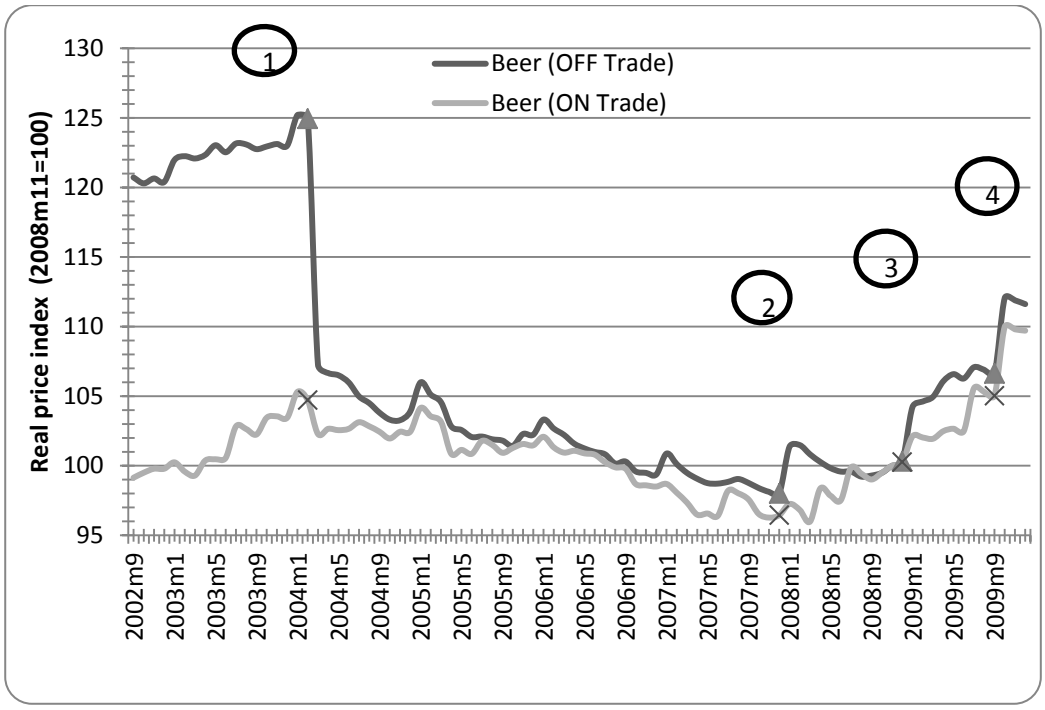
Finland experienced four changes in beer excise duties over the period investigated (September 2002 to April 2011); these changes occurred in 2004, 2008 and 2009 (twice), depending on the alcohol content per hectolitre (Table 2.7). Nearly all changes were increases, except in 2004 for higher alcohol content beer, which experienced a 32 percent decrease in the nominal excise duty rate.

Table 2.7: Excise duty rate changes for beer (vol per hl/°alcohol) in Finland, 2002-2011

Month of tax rate change	Beer, 0.5% < 2.8%		Beer, exceeding 2.8%	
	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)
09/2002	1.68		28.6	
03/2004	1.68	0.0	19.4	-32.0
01/2008	2.00	19.0	21.4	10.0
01/2009	2.00	0.0	23.6	10.3
10/2009	2.20	10.0	26.0	10.2

The most significant excise duty change in size was in 2004. Off-trade beer prices appear to have been more responsive to the 2004 excise duty change than to the other changes (Figure 2.4) and continued to respond to subsequent, smaller duty changes.

Figure 2.4: Consumer price index for beer in Finland, 2002-2009 (deflated) and changes in excise duties



Source: National Institute for Health and Welfare (THL), Finland; Maitkalu, Finnish Hospitality Association.

Note: Dates of changes in excise duties are as follows: (1) 1 March 2004 – decrease, (2) 1 January 2008 – increase, (3) 1 January 2009 – increase, (4) 1 October 2009 – increase.

Cider and wine

Finland experienced four changes in still and sparkling wine excise duties over the period investigated (September 2002 to April 2011); these changes occurred in 2004, 2008 and 2009 (twice), depending on the alcohol content per hectolitre (Table 2.8). Again, as with beer, nearly all changes were increases, except in 2004 for higher alcohol content wine and cider.

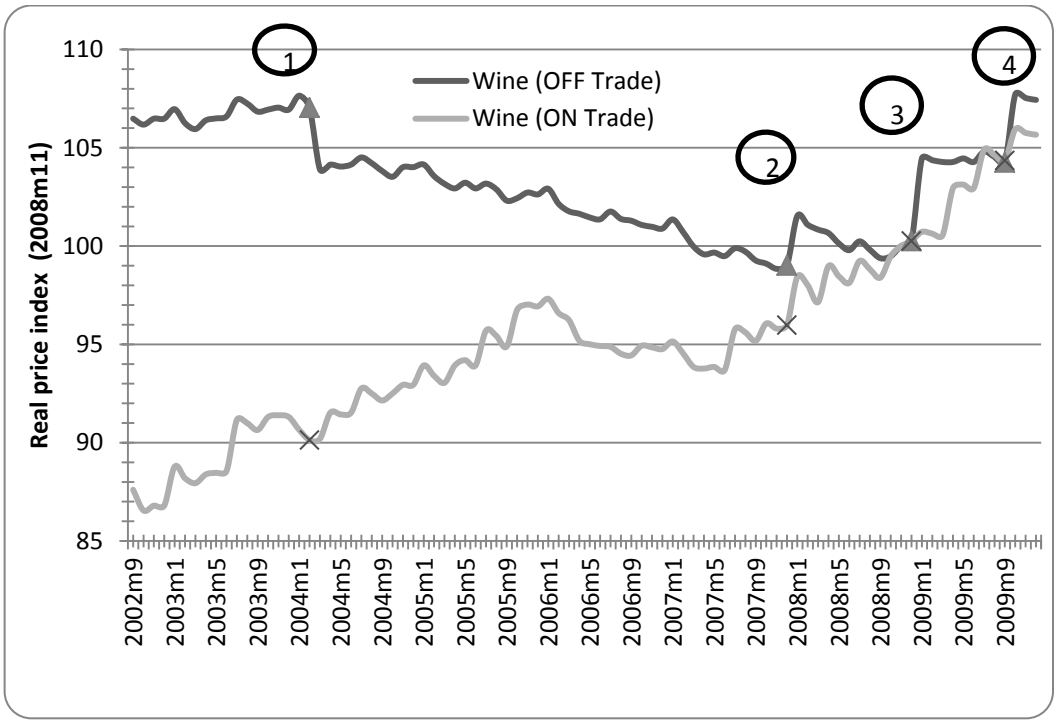
Table 2.8: Excise duty rate changes for wine and cider (vol per hl/°alcohol) in Finland, 2002–2011

Month of change	Wine and cider, 1.2% < 2.8%		Wine and cider, 2.8% < 5.5%		Wine and cider, 5.5% < 8.0%		Wine and cider, exceeding 8.0%	
	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)	Excise duty level	Change (%)
09/2002	4.54		134.55		185.00		235.46	
03/2004	4.54	0.0	103.00	−23.4	152.00	−17.8	212.00	−10.0
01/2008	5.00	10.1	113.00	9.7	167.00	9.9	233.00	9.9
01/2009	5.00	0.0	125.00	10.6	184.00	10.2	257.00	10.3
10/2009	5.50	10.0	138.00	10.4	203.00	10.3	283.00	10.1

Source: National Institute for Health and Welfare (THL), Finland.

The shift in 2004 wine prices does not appear to have been as sizeable as the shift in beer prices (see Figure 2.5). Similarly to beer, however, there does appear to be continued response to subsequent, smaller duty changes.

Figure 2.5: Consumer price index for wine in Finland, 2002–2009 (deflated) and changes in excise duties



Source: National Institute for Health and Welfare (THL), Finland; Maitkalu, Finnish Hospitality Association.

Note: Dates of changes in excise duties are as follows: (1) 1 March 2004 – decrease, (2) 1 January 2008 – increase, (3) 1 January 2009 – increase, (4) 1 October 2009-increase.

Spirits

Changes to excise duties of spirits occurred four times, as for beer and wine/cider, over the period investigated (September 2002 to April 2011); these changes occurred in 2004, 2008 and 2009 (twice), depending on the alcohol

content per hectolitre (Table 2.9). Again, as with beer, nearly all changes were increases, except in 2004 for higher alcohol content wine and cider.

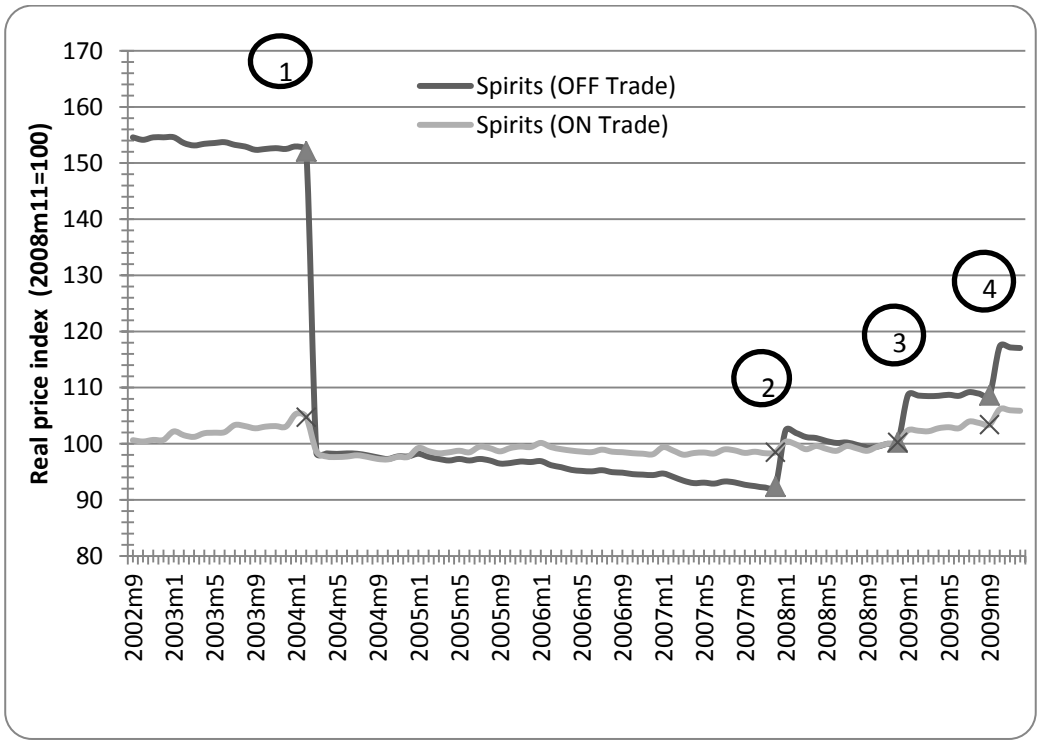
Table 2.9: Excise duty rate changes for spirits (vol per hl/°alcohol) in Finland, 2002-2011

Month of change	Ethyl alcohol,1.2% < 2.8%		Ethyl alcohol, 2.8% < 10.0%		Ethyl alcohol, exceeding 10.0%	
	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)
09/2002	168.00		4,457.00		5,046.00	
03/2004	168.00	0.0	2,825.00	-36.6	2,825.00	-44.0
01/2008	200.00	19.0	3,250.00	15.0	3,250.00	15.0
01/2009	200.00	0.0	3,580.00	10.1	3,580.00	10.1
10/2009	220.00	10.0	3,940.00	10.1	3,940.00	10.1

Source: National Institute for Health and Welfare (THL), Finland.

There appears to be a relationship between off-trade spirits prices and excise duties, particularly with the decrease of 2004 (see Figure 2.6). Equally, the excise duty increases in 2009 appear to coincide with changes in off-trade spirit prices. However, on-trade prices appear to be less responsive.

Figure 2.6: Consumer price index for spirits in Finland, 2002-2009 (deflated) and changes in excise duties



Source: National Institute for Health and Welfare (THL), Finland; Maitkalu, Finnish Hospitality Association.

Note: Dates of changes in excise duties are as follows: (1) 1 March 2004 – decrease, (2) 1 January 2008 – increase, (3) 1 January 2009 – increase, (4) 1 October 2009-increase.

2.7.2 Results

Data were acquired for both off- and on-premise prices of beer, spirits and cider. We were able to locate on-premise restaurant prices through the National Institute for Health and Welfare (THL Finland). In Finland, all restaurants that serve alcoholic beverages must have a serving licence. There are two types of serving licences: AB licences, which give a right to serve all alcoholic beverages (strong alcoholic beverages, wine and strong beer etc), and C licences, which give a right to serve only mild alcoholic beverages (with a maximum 4.7% ABV, such as cider, long drink, medium-strength beer). The restaurants with an AB licence tend to be more expensive than the restaurants with C licence, which are more often cafés, small (ethnic) restaurants or small pubs.

Both types of restaurants and off-premise across the three beverages are analysed and the results presented below.

Beer and cider (fermented beverages other than beer and wine)

Since beer and cider can be sold in restaurants with different licences and received price series for both types of restaurants, we present beer and cider results together here. Results of the statistical analysis of excise duty pass-through on beer and cider prices in the off- and on-premise are presented in Table 2.10.

Findings indicate that changes in duties are associated with same period changes in off-trade prices. Similar to the case of Ireland, the effect of excise duty changes on off-trade prices was detected statistically in Finland. The effect is close to full pass-through in that a €1.00 increase in excise duty (in the current period) is associated with a €0.77 increase in retail price of a 12-pack of beer (in the current period). The relationship is slightly less for on-trade (specifically restaurants) where a €1.00 increase in excise duty is associated with an approximately €0.50–0.65 increase in the prices for strong beer (5% ABV) in an AB licence restaurant and medium strength beer (3.5% ABV) in a C licence restaurant.

The results of the statistical analysis of the pass-through of cider excise duties in the on- and off-premise price of cider indicate that changes in duties are associated with same period changes in both the on- and off-trade prices. Results are the opposite of beer in that more than full pass-through is detected in the off-trade than on-trade. Specifically, a €1.00 increase in excise duty is associated with a €1.17 increase in the retail price of cider in the on-trade and an €0.44–0.58 increase in restaurants.

Table 2.10: Relationship between excise duty and price, beer and cider, Finland

Beverage	Change in price for €1 change in excise duty (in €)		
	Off-trade	On-trade (AB licence)	On-trade (with C licence)
Beer (12-pack)	0.773***	0.491**	0.654**
Cider	1.174***	0.578**	0.444***

Notes: Level of significance: 1 percent (***), 5 percent (**) and 10 percent (*).

For beer: volume in the off-trade (12-pack or 3960 ml) and on-trade (strong beer in AB licence and medium strength in C licence, 1 L); ABV assumed 5 percent in the off-trade and AB licence, 3.5 percent in C licence. Number of observations: 87.

For cider: volume in the off-trade (0.5 L) and in the on-trade (1 L). Number of observations: 87.

Spirits

The results of the statistical analysis of the pass-through of spirits excise duties on the on- and off-premise price of spirits (Table 2.11) indicate that changes in duties are associated with same period changes in off-trade prices. There is more than full pass-through in the off-trade, but not in the on-trade.

For off-trade changes in excise duties, the effect detected is greater for vodka than that for beer and more similar to cider. Specifically, a €1.00 increase in excise duty (in the current period) is associated with a €1.44 increase in retail price of a half litre of vodka (in the current period). Perhaps more interestingly, the relationship is smaller for on-trade (specifically restaurants) where a €1.00 increase in excise duty is associated with approximately €0.78 increase in the prices. However, in the on-trade, there is a statistically significant relationship between previous change in duty (the difference between the previous level and level before that), which influenced "current" changes in price.

Table 2.11: Relationship between excise duty and price of spirits (vodka), Finland

Beverage	Change in price for €1 change in excise duty (in €)	
	Off-trade†	On-trade
Spirits	1.444***	0.778***

Notes: Level of significance: 1 percent (***), 5 percent (**) and 10 percent (*).
Volume in the off-trade of Vodka Koskenkorva (0.5 L) and in the on-trade vodka (1 L). Number of observations: 86. Assumed 32% ABV in both the on- and off-trade.

2.7.3 Summary of pass-through in Finland

In Finland, as we found in Ireland, the magnitude of pass-through is highly dependent on the beverage and premise considered.

There is more than full pass-through in the off-premise for spirits and cider and less than full-pass through for beer. Conversely, in the on-trade, there is less than full pass-through for all drinks. Specifically, a €1.00 increase in excise duties resulted in increases of off-premise prices of €0.77 to €1.44 and on-premise prices of €0.44 to €0.78 across the beverages (Table 2.12).

Unlike Ireland, however, a change in excise duty rates in Finland affected spirits prices relatively more than beer prices in the off-trade. While this analysis does not shed light on why this pattern is found, it is worth noting that Finland has a monopoly on off-trade alcohol retail, which may impact excise duty pass-through rates.

Table 2.12: Summary of results of pass-through for Finland, by beverage, 2002-2011

Beverage	A €1.00 increase in excise duty is associated with an increase in retail price of:	
	Off-trade (€)	On-trade (€)
Beer	0.77	0.49–0.65
Spirit	1.44	0.78
Cider	1.17	0.44–0.58

2.8 Latvia

2.8.1 Data description

Beer and spirits

Latvia experienced three nominal changes in excise duties of beer and spirits (or ethyl alcohol) over the period investigated (January 2005 to April 2011); these changes occurred in 2006 and 2009 (twice) (Table 2.13). All changes were increases, although they varied in magnitude so that the largest increase for beer was in July 2009 and that for spirits in January 2009.

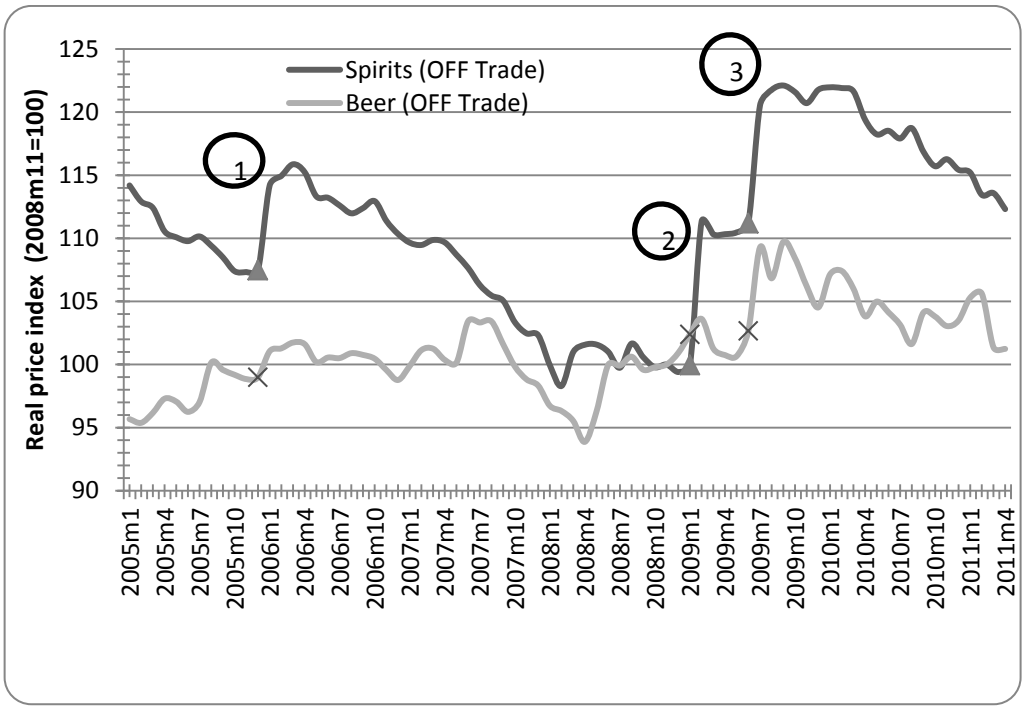
Table 2.13: Excise duty rate changes for beer and alcohol (vol per hl/°alcohol) in Latvia, 2005–2011

Date of change	Beer, exceeding 0.5%		Ethyl alcohol, hl of pure alcohol	
	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)
01/07/2005	1.22		550.00	
01/01/2006	1.30	6.6	630.00	14.5
01/01/2009	1.45	11.5	825.00	30.9
01/07/2009	2.18	50.3	890.00	7.9

Source: Ministry of Finance, Latvia.

Figure 2.7 illustrates that there may be an important relationship between off-trade spirits prices and excise duties since there appear to be marked increases in prices when excise duty rates were changed. The relationship with beer is less clear because there are several increases in prices not associated with times in which excise duty rates were adjusted.

Figure 2.7: Consumer price index for beer and spirits in Latvia, 2005–2011 (deflated) and changes in excise duties



Source: Central Statistical Bureau of Latvia; Ministry of Finance, Latvia.

Note: Dates of changes in excise duties are as follows: (1) 1 January 2006 – increase, (2) 1 February 2009 – increase, (3) 1 July 2009 – increase.

Wine

Latvia experienced two nominal changes in excise duties of wine over the period investigated (January 2005 to April 2011); these changes occurred in 2009 and 2010, and both were increases in duty of approximately 12–30 percent (Table 2.14).

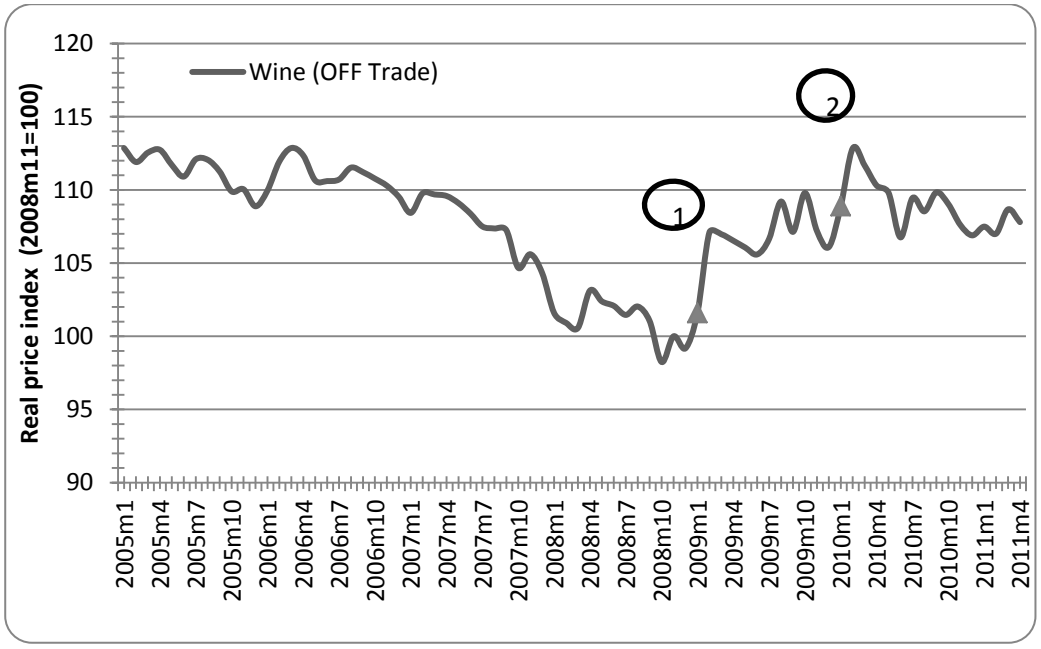
Table 2.14: Excise duty rate changes for wine (vol per hl/°alcohol) in Latvia, 2005-2011

Date of change	Wine, per hectolitre of pure alcohol	
	Excise duty level (€)	Change (%)
01/01/2006	30.00	
01/01/2009	40.00	33.3
01/07/2009	40.00	0.0
01/01/2010	45.00	12.5

Source: Ministry of Finance, Latvia.

When plotting these changes against wine's price trend, Figure 2.8 suggests that there may be an important relationship between off-trade wine prices and excise duties. The price appears to increase slightly after each excise duty increase. However, there are several, considerable increases in price observed and generally the relationship between wine prices and excise duties is not clear.

Figure 2.8: Consumer price index for wine in Latvia, 2005-2011 (deflated) and changes in excise duties



Source: Central Statistical Bureau of Latvia; Ministry of Finance, Latvia.

Note: Dates of changes in excise duties are as follows: (1) 1 February 2009 – increase, (2) 1 February 2010 – increase.

2.8.2 Results

Data were only located for off-premise prices of beer, spirits and wine. In testing the data, statistical problems were found for wine, which does not allow for the identification of pass-through for this beverage type. We therefore estimate pass-through for off-premise beer and spirits, the results of which are presented below.

The results of the statistical analysis of the pass-through of spirits excise duties, specifically brandy, indicate that changes in duties are associated with same period changes in the off-trade price of beer. There is more than full pass-through, although less than that observed for beer, such that a €1.00 increase in excise duty (in the current period) is associated with a €1.28 increase in retail price of a litre of brandy (in the current period). Perhaps important to note, which is different from all other countries investigated, is that previous changes in excise duties have a statistically significant effect on current price of beer (Table 2.15).

Table 2.15: Relationship between excise duty and price, for beer and spirits (brandy), Latvia

Beverage	Change in price for €1 change in excise duty
	Off-trade
Beer† (€)	1.911***
Brandy (€)	1.280***

Notes: Level of significance: 1 percent (***), 5 percent (**) and 10 percent (*).

For beer: volume (1 L); number of observations: 73.

For brandy: volume (1 L); number of observations: 75.

† Model includes previous and two months' previous change in duty, which are statistically significant at the 10 percent and 1 percent level, respectively.

2.8.3 Summary of pass-through for Latvia

In Latvia, a change in excise duty was more than fully passed through (over-shifting occurred) to beer and spirits prices in the off-trade; the magnitude is greater for beer prices than for spirits. Specifically, a €1.00 increase in excise duties resulted in increases of off-premise prices of €1.91 for beer and €1.28 for spirits.

Latvia demonstrates the importance of further statistical analysis to understand the relationship between prices and excise duty changes and not simply looking at trend lines. When plotting the real changes in prices and excise duty rates, it first appears that the relationship with excise duties is quite strong and positive for spirits and less so for beer (Figure 2.8). However, analysis that extracts previous real changes of prices and excise duty rates reveals that in fact beer prices in the current period respond to current changes in excise duties more than spirit prices.

2.9 Slovenia

2.9.1 Data description

Beer and spirits (or ethyl alcohol) prices in Slovenia appear to be highly volatile over the period investigated (January 2000 to December 2010). There were four changes in excise duties between 2000 and 2010 (see Table 2.16), all of which were duty increases. The magnitude varies, however; the greatest increase in excise duty of beer occurred in 2001 (50 percent) and for spirits it was the following year, 2002 (33.2 percent).

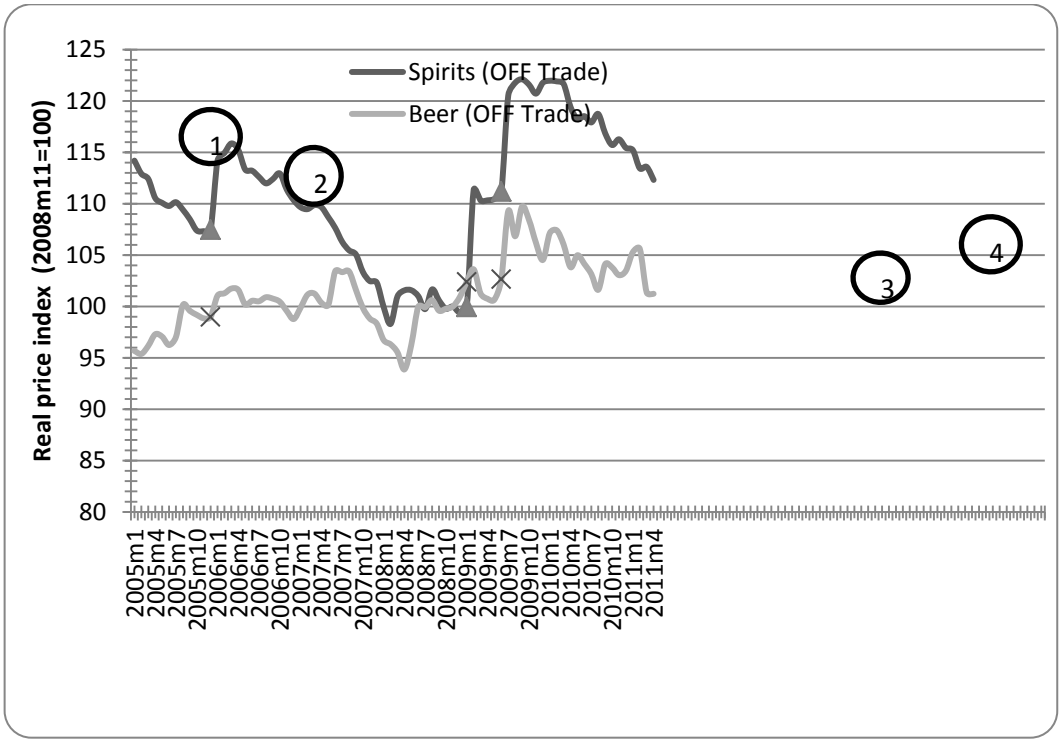
Table 2.16: Excise duty rate changes for beer and spirits (vol per hl/°alcohol) in Slovenia, 1999-2010

Date of change	Beer, vol per hl/°alcohol		Ethyl alcohol, per hl of pure alcohol	
	Excise duty level (€)	Change (%)	Excise duty level (€)	Change (%)
01/07/1999	4.17		417.29	
01/02/2001	6.26	50.0	521.62	25.0
05/04/2002	6.86	9.6	694.79	33.2
01/03/2009	9.00	31.2	911.00	31.1
01/07/2010	10.00	11.1	1,000.00	9.8

Source: Ministry of Finance, Slovenia.

An obvious relationship between prices and excise duties in Slovenia in the 2000s is not quite discernible from Figure 2.9; however, it appears that there may have been increases in the price of off-trade beer (except for the second excise duty change in which prices continued to fall after the excise duty change). The largest increase in beer price appears to correspond with the largest increase in excise duty in 2001, as explained above.

Figure 2.9: Consumer price index for beer and spirits in Slovenia, 2000–2010 (deflated) and changes in excise duties



Source: Eurostat; Ministry of Finance, Slovenia.

Note: Dates of changes in excise duties are as follows: (1) 1 February 2001 – increase, (2) 5 April 2002- increase, (3) 1 March 2009 – increase, (4) 1 July 2010 – increase.

2.9.2 Results

Data were only located for off-premise prices of beer and spirits. We therefore estimate pass-through for those beverages.

The results of the statistical analysis of the pass-through of beer and excise duties in Slovenia (Table 2.17) indicate that changes in duties are associated with same period changes in off-trade price of beer. There is more than full pass-through, such that a €1.00 increase in excise duty (in the current period) is associated with a €2.50 increase in retail price of half a litre of beer (in the current period).

For spirits, specifically brandy, changes in duties are associated with same period changes in off-trade price. Pass-through, however, is less than full. In particular, a €1.00 increase in excise duty (in the current period) is associated with a €0.66 increase in retail price of a litre of natural brandy (in the current period).

Table 2.17: Relationship between excise duty and price, beer (pale ale) and spirits (brandy), Slovenia

Beverage	Change in price for €1 change in excise duty (in €)
	Off-trade
Beer (€)	2.502***
Brandy† (€)	0.658***

Notes: Level of significance: 1 percent (***), 5 percent (**) and 10 percent (*).

For beer: volume of bottle of pale ale (0.5 L); number of observations: 131.

For brandy: volume of natural brandy (70 cl or 1 L); number of observations: 125.

† Model includes previous and two months' previous change in duty, with two months' previous change statistically significant at the 5 percent level.

2.9.3 Summary of pass-through in Slovenia

Similarly to Ireland and Latvia, although unlike Finland, a change in excise duty in Slovenia affected beer prices in the off-trade relatively more than spirit prices. The difference is more pronounced for Slovenia than for the other countries. In particular, a €1.00 increase in excise duties resulted in increases of off-premise prices of €2.50 (beer) and €0.66 (spirits) (Table 2.18). Therefore, there was more than full pass-through of beer excise duties and less than full pass-through for spirits (specifically natural brandy).

Table 2.18: Summary of results of pass-through for Slovenia, by beverage, 2000-2010

Beverage	A €1.00 increase in excise duty is associated with an increase in retail price of (€):
Beer	2.50
Spirits	0.66

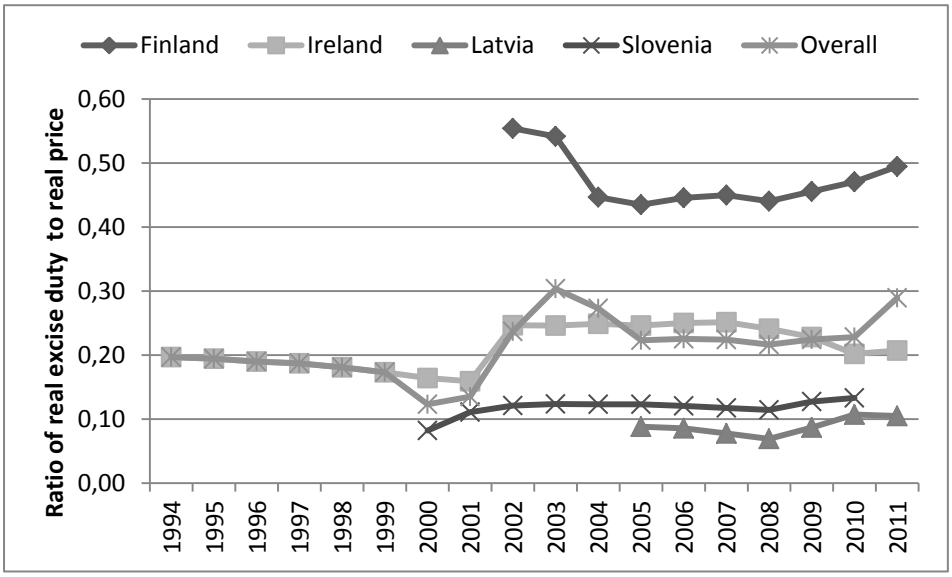
Similar to what we observed for Latvia, Slovenia illustrates how visual inspection of simple time trends might be misleading, establishing a relationship between prices and time when excise duty rates changed (Figure 2.9). While this appears to suggest there was an actual fall in prices during the second nominal change in excise duty rates, statistical analysis of the changes (or "first differences" in econometric terms) reveals that beer prices respond in a statistically significant and positive manner; the magnitude of the change is even greater than that for spirits. The latter observation is not immediately obvious from visual inspection of trends.

2.10 Cross-country analysis

Each of the analyses performed above indicate that countries display different levels of excise duty pass-through, measured in Euros. In order to consider whether there is generally an overall, average amount of pass-through across countries, we performed regression analysis in the off-trade (where we have data for all four countries) using the same data in the above sections.

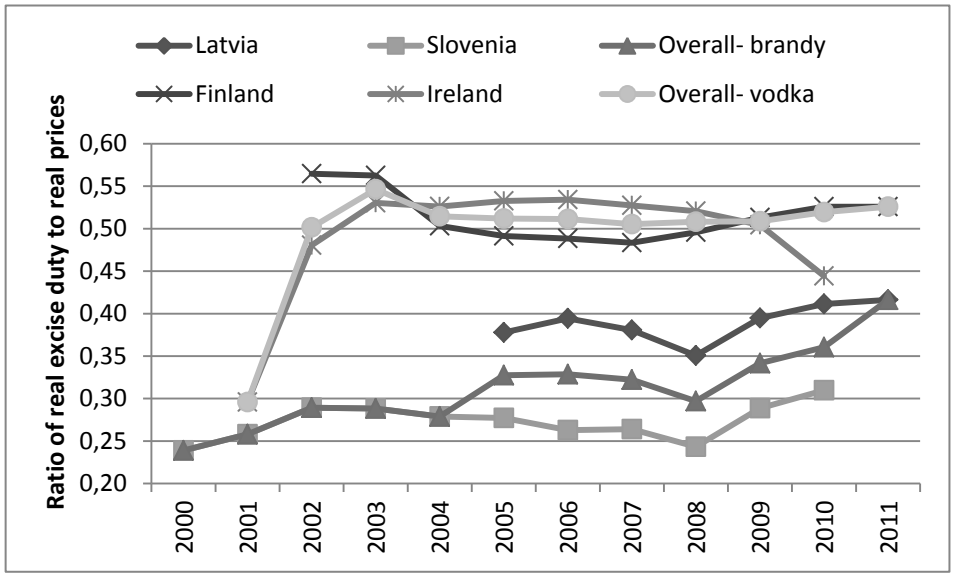
It is worth first setting the scene of the differences in excise duties and prices observed across countries. One way to measure this difference is the ratio of real excise duty value to real price. As can be seen in Figure 2.10, the level of taxation across countries, relative to prices, differs across the countries analysed and trends differ across countries as well. Finland shows the greatest ratio with excise duty rates set by government at a level of approximately half the price observed in the off-trade. Slovenia and Latvia show the lowest ratios of excise duty to price, at approximately 8–15 percent.

Figure 2.10: Ratio of real excise duty rate relative to real price of beer across countries, off-trade, 1994-2011



Turning to spirits, we analysed brandy for Latvia and Slovenia and vodka for Finland and Ireland to better understand possible differences within this category. The data show that the ratio of real excise duty to real prices of spirits was generally falling until 2008, particularly for brandy, and then increased (again, particularly for brandy) (see Figure 2.11).

Figure 2.11: Ratio of real excise duty rate relative to real price of brandy and vodka across countries, off-trade, 1994-2011



2.10.1 Overall pass-through across countries

The results in Table 2.19 show the mean pass-through across the countries is relatively similar for all beverage types. A €1.00 increase in excise duty is associated with a €0.8–0.94 increase in the price of alcohol in the off-trade. Put another way, 83–94 percent of the excise duty is passed on to the off-trade price of beer, vodka and brandy across the countries examined. As shown earlier, however, the pass-through in each country can vary substantially from the mean value.

Table 2.19: Overall pass-through in the off-trade across countries, 1994-2011

Beverage	Change in price for €1 change in excise duty (in €)
	Off-trade
Beer	0.831***
Vodka	0.938***
Brandy	0.841***

2.10.2 What pass-through may mean for consumption

The results above provide insights into the pass-through relationship of excise duty to prices. Excise taxation may have aims other than fiscal revenue; in the case of alcohol, it may be intended to curb alcohol consumption and reduce harms. Governments may therefore be interested to know how much consumption may change with changes in excise duty rates. Although this is outside the scope of this study, we consider it important to provide results in a way that allows researchers to translate pass-through findings into consumption. We therefore do not estimate potential changes in consumption but provide the percentage change in prices for a 10 percent change in excise

duties. This may be used with elasticities of demand – the percentage change in demand (or consumption) for a percentage change in prices – to understand the potential for excise duties to alter consumption.

We provide results on the overall, mean percentage change in prices for a 10 percent change in excise duties across the four countries (Finland, Ireland, Latvia and Slovenia); see Appendix F for results per country, beverage and premise.

From a research point of view, we were able to increase the statistical power of results (improve accuracy) by pooling data from the four countries into one analysis across countries. Results indicate that a 10 percent increase in real excise duties was associated with an overall increase in prices of 1.9 percent for beer, 5.8 percent for vodka and 2.7 percent for brandy (see Table 2.20). The changes in each country may be higher or lower than this depending on country-level factors, as we have seen in the analysis in the preceding sections.

Table 2.20: Overall percentage change in prices following a 10 percent increase in real excise duties, Finland, Ireland, Latvia and Slovenia, 1994–2011

Beverage	Change in price for 10% increase in excise duty (%)
	Off-trade
Beer	0.189***
Vodka	0.579***
Brandy	0.265***

2.11 Summary of findings and policy discussion

This chapter has analysed the relationship between changes in excise duty and retail prices by alcohol type and on- and off-premise. Analysing excise duty pass-through by type of alcoholic beverage and on- and off-premise dimensions across all Member States of the European Union as a whole is not feasible for two reasons. First, in some countries changes in excise duties are very modest or non-existent. Second, certain types of data, such as average price of alcoholic beverages or prices of beverages consumed on premise, are not collected or not reported in a number of Member States.

Given data limitations, we assessed pass-through by measuring Euro increases for a selection of Member States for which data were available and which had experienced excise duty changes. This analysis has provided useful insights into the phenomenon of pass-through in each of the countries investigated. It found that a €1.00 increase in excise duty rates was associated with the following range of change in off-trade prices across each of the four countries (Finland, Ireland, Latvia and Slovenia):

- €0.37–2.50 (beer)
- €0.57–1.44 (spirits).

A €1.00 increase in excise duty is associated with the following changes in on-trade prices across Finland and Ireland:

- €0.00–0.94 (beer)

- €0.09–0.78 (spirits).

2.11.1 Why are pass-through results for on- and off-trade different?

The difference between our findings for the on- and off-premise pass-through in Ireland and Finland is a result of various factors changing over the period and the reasons for these differences are unclear.

In Ireland, for example, there were considerable changes in real prices over the period observed, where off-trade prices decreased and on-trade prices increased. As we will see in the next chapter, patterns of consumption in the on- and off-trade sectors were different, with an apparent shift to the off-premise. In addition, there were policy changes over the period that directly affected the sales of alcohol (eg Ireland's Grocery Order, drink-driving laws). Furthermore, Ireland experienced economic growth as measured by GDP per capita over most of the period and then a dramatic fall in 2008. It is not possible from this analysis to discern which of these forces most affected the relationship between taxes and prices; however, in the next chapter, we examine in greater detail the shift between on- and off-premise consumption, which may have influenced the ability of each premise to pass on excise tax increases.

Finland is another country for which we located both off- and on-premise prices. Finland is similar to Ireland in there is a higher level of pass-through for spirits in the off-trade. For beer, in contrast, we found the reverse. Again, a reason offered for this may be the nature of consumer demand in Finland where consumers of different beverages have differing price sensitivity, making it difficult to pass on more than the change of the excise duties of cider in the on-trade, for example (noting that pass-through of prices in the off-premise for all beverages is close to one-for-one with the change in excise duty). On the supply-side, Finland is characterised by a monopoly on off-trade retail of alcohol, a state supplier which sets the price at which alcohol is sold (it is not left to the market to determine prices).

The reasons for the difference in pass-through in the off- and on-trade can provide important insights into the dynamics of alcohol retail and pricing strategies. Therefore, in the next chapter we focus on the issue of on- and off-premise consumption.

2.12 Limitations

The key limitation of our model is the assumption of exogeneity of excise duties – the idea that changes in prices do not affect changes in excise duty. The approach assumes that the change in excise duty is an exogenous shock, meaning that changes in excise duty are independent of changes in price. It may however be that when changes in prices of alcohol are regarded as too small (eg the price is not keeping pace with inflation) there is an increase in excise duty. However, the model implicitly assumes the reverse, that excise duty affects the price. This poses an immediate challenge in that the model aims to estimate the effect that current excise duty changes had on current prices, independently of the effect that prices can have on change in excise duties. This might explain why, for example, we have some countries where past changes in excise duties are related to prices. If it is the case that prices affect the changes in excise duty, then our estimates of pass-through are statistically biased because they include

the effect that prices have on excise duties. We may therefore have under-estimated the "true" effect that changes in excise have on prices.

Another limitation of our approach concerns the price series used for each of the countries. The prices are not necessarily the average price for the same brand over time; they are average prices over time where the brand may be changing. This is important because the average price of beverage type (eg beer) may be changing from one month to the next because people are consuming higher or lower quality or status products. Thus within a beverage type such as beer, people may begin to consume relatively more highly priced, higher status beers as their income increases. This would make it appear as if beer prices were increasing when it is simply that people consume more of the higher priced beer. This may be important in countries such as Ireland, which experienced large increases in wealth over the period investigated. Perhaps more importantly, excise duty changes may affect the type of alcohol consumed whereby tax increases are passed through to the price, but people switch to cheaper beer, wine or spirits. In this case, we would under-estimate the pass-through because we would be capturing prices of different products, rather than prices of the same product that actually increased. On the other hand, we use changes in price over a one-month period and it may be argued that this is a relatively short period of time for consumers to change their consumption patterns.

Lastly, a limitation may be "omitted variable bias" in which causal variables are not included. In such a case, the relationship between excise duty and price is over-estimated (or under-estimated) because the model attributes more (or less) effect of excise duty changes to price changes. First, it must be considered that each of the countries provided monthly data and the analysis was performed on monthly changes in price and excise duties. Other demand-side factors potentially influencing prices such as demographic change were not included. We accounted for other alcohol policy changes during the period with monthly and annual dummies but did not account for levels of demand (eg total volume of consumption) because the effect of increasing excise duty, for example, was to reduce demand, and firms responded by reducing price.

Each of our limitations would result in under-estimates of the effect of pass-through. Therefore, our results should be considered as conservative estimates.

2.13 Final remarks

While only providing pass-through analysis for four countries, this chapter makes a number of important contributions. First, it has developed an innovative model for estimating the pass-through from alcohol tax changes to prices, which builds on best practice in econometric models used previously in the alcohol and other fields. In particular, the model takes into account delays in the effect of excise duty changes and persistence in pricing strategies. This allows for better detection of the relationship between the changes in prices related to changes in excise duties.

As part of the description of the model, the chapter also outlines the kind of data that are required for this type of analysis. In particular, the approach requires a Euro price time-series by beverage and type of premise, covering a time span in which there were multiple excise duty changes. If the Euro price

series is not available, it is still possible to perform the analysis if the price indices and at least one, mean Euro price for the relevant premise are both available. As explained before, we were able to obtain suitable off-premise data from only four of the European countries in which there were multiple changes in excise duty (and from only two for on-premise data). While they may not be available at the present time, the collection and reporting of the data needed for this analysis is feasible at the national level, because in order to generate price indices, prices in the home country currencies are already being collected. This suggests the statistical offices obtain this data at some point. However, the price data may not be recorded; they are simply used to calculate a priced index. Furthermore, this may only be true for off-premise, as alcohol prices in some countries may only be collected in retail outlets.

In addition, the analysis in this chapter highlights an important finding: that the effects of a change in excise duty depend, to a large extent, on factors other than the change in duty itself. This is why we observe little one-to-one (or full) pass-through, and observe more than and less than full pass-through, as well as heterogeneity in the pass-through rates across countries. As mentioned previously, it is possible that factors such as market structure, consumer preferences, other pricing policies (eg price floors such as Ireland's Grocery Order) and alcohol-related policies (eg changes in criminal justice penalties for alcohol-related crimes such as drink driving) affect the extent to which excise duty changes are passed on to consumers. A key implication of this is that it is difficult to predict with precision the effect of changes in excise duty. There were many other significant changes occurring during the period in which countries changed excise duties and excise duties did not change that frequently (eg maximum of four times in countries analysed). In view of this, it is useful for policymakers to assess prior responses to excise duty changes in their countries and the other key changes occurring in that environment carefully before implementing new changes.

Finally, comparisons across countries can also be informative, as they indicate possible pass-through experiences given different countries' consumer preferences and market structure. The countries in this study experienced a range of legal, economic and social changes in the alcohol market and, therefore, can provide an interesting and valuable frame of reference for other countries considering changes to excise duties.

CHAPTER 3 On- and off-premise consumption of alcohol in the EU

The previous chapter presents analysis indicating that pass-through from excise duty to prices of alcohol can be different in the on- and off-trade. In this chapter, we explore trends in on- versus off-trade alcohol consumption across the EU. These trends matter to public policy because the on- and off-trade may react differently not only to tax changes but also to changes in other policies (such as bans on below-cost sales or the introduction of a minimum price). As a result, alcohol policy needs to take the trends in on- versus off-trade alcohol consumption into account, so appropriate measures can be used to curb hazardous and harmful alcohol use.

The chapter begins with a brief overview of existing research into trends in on- versus off trade alcohol consumption across the EU. It then presents findings from analysis of quantitative data on this trend from six EU Member States: Finland, Germany, Ireland, Latvia, Slovenia and Spain. Finally, the chapter explores possible social, economic and demographic drivers of the trends in on- versus off-trade consumption.

3.1 On- versus off-trade alcohol consumption in the EU

Our earlier study on alcohol affordability in the EU (Rabinovich et al., 2009) provided a few insights into the ratio of on- and off-premise sales of alcohol in the EU. As in the previous chapter, we use the following definitions for off- and on-premise or off- and on-trade:

- Off-premise (also called off-trade) refers to establishments selling alcohol for consumption not within the premises, such as supermarkets, liquor stores and grocery stores.
- On-premise (on-trade) refers to establishments with a licence to sell alcohol for consumption within the premise, such as restaurants, bars and pubs. In this chapter, and throughout this report, we use the terms on-trade/on-premise and off-trade/off-premise interchangeably.

Through a questionnaire, stakeholders in a number of EU countries indicated there has been a trend towards more off-trade alcohol consumption in recent years. These countries included Finland, Ireland, Latvia, the Netherlands, Sweden and the UK; similar trends were also reported for Norway.

We identified only little research examining the shift from on- to off-trade alcohol consumption in the EU, suggesting low prices in off-trade retailing have been one of the main reasons for an observed increase in off-trade alcohol consumption (Rabinovich et al., 2009, p. 19). We found price differentials between the on- and off-trade to be substantial:

- In Norway, beer, wine and spirits were three to four times more expensive in the on-trade.
- In Finland, alcohol sold in the on-trade was over three times more expensive.
- In Latvia, prices were approximately three times higher in the on-trade.
- In Ireland, prices in the on-trade were more than twice the price in the off-trade.

Other reports also provide indications of the trends in off- versus on-trade alcohol consumption in selected EU countries. For instance, a recent report by the Dutch Institute for Alcohol Policy (van den Wildenberg, 2010) reported that consumers in the Netherlands purchase approximately 93 percent of off-trade beverages in supermarkets, and that in 2009 the supermarket sector captured approximately 90 percent of the off-trade market for beer, much of which is sold at a discount (see Chapter 4 of this report). The report goes on to indicate that both the regular price per litre of beer, as well as the promotion price per litre of beer, were systematically higher at the liquor store than at the supermarket (van den Wildenberg, 2010).

A report from NHS Health Scotland states that "[o]ff-trade sales of pure alcohol per person aged 16 and over in Scotland have increased by 0.6 litres over the past five years" whereas "on-trade sales decreased by 0.7 litres" (Robinson et al., 2010, p. 12). The volumes of sales have been higher in the off-trade than in the on-trade over that period; 7.4 and 8 litres sold per person in the off-trade in 2005 and 2009, respectively, versus 4.6 and 3.9 in the on-trade (van den Wildenberg, 2010. The report also indicates that the average price per unit of alcohol increased more rapidly in the on-trade than in the off-trade (17 percent between 2005 and 2009 in the on-trade and 10 percent in the off-trade in the same period), with the former price still higher than the latter. According to this NHS Health Scotland report, very similar trends are observed also in Wales and England. Consistent with this, the affordability of off-trade alcoholic beverages grew much faster in the last ten years than the affordability of on-trade alcoholic beverages (van den Wildenberg, 2010). The data for this study were obtained from Nielsen and CGA Strategy.

There are very few sources of information covering the EU as a whole. A recent study by Ernst and Young for the European Spirits Organisation (CEPS) reports that in the case of spirits alone, approximately 27 percent of the sales volume is sold in the hospitality sector (bars, restaurants and so on), with the remaining 73 percent being sold in the off-trade. The 27 percent sold in the on-trade amounts to "58% of the total value of spirit drinks sales" (Poel et al., 2010). This suggests that prices are relatively higher in the on-trade, whereas volumes are higher in the off-trade. The report also provides the data for the volume and value of spirit sales through the on- and off-trade for each individual Member State of the EU. These data were obtained from national associations

representing the producers of spirit drinks and the International Wine and Spirits Record (IWSR).

The issue of prices (and in particular of price promotions and discounts) is discussed in greater depth in the next chapter. In this chapter, we provide additional insights on the trends in off- versus on-trade alcohol consumption from various countries in the EU.

3.1.1 Findings from questionnaire to Member State governments and economic operators

As part of the study, we circulated a short questionnaire among national authorities in EU Member States, alcohol economic operators, trade associations, research institutes and non-governmental organisations working on alcohol and public health (more details on this questionnaire are provided in Appendix H). While response rates were low, we did obtain information from a seven European countries regarding current trends on alcohol sales in the on- and off-trade sectors. Table 3.1 summarises the responses.

Table 3.1: Summary of questionnaire responses: trends in on- and off-trade alcohol consumption in several European countries, 2006-2011

	Information provided by	Share of consumption on-trade	Change in on-trade share of consumption 2006-2011
Belgium	Trade association	48% of alcohol sold in on-trade	Decreased by approximately 10%
Estonia	National authority	No information provided	Decreased – no figure provided
Finland	Trade association	10%	Decreased by 15%
	National authority	14%	Decreased by 12%
Germany	Research institute	14%	Decreased by 17.65% between 1993 and 2008
Ireland	Non-governmental organisation	48%	Decreased – no figure provided
	Non-governmental organisation	45%	Decreased – no figure provided
Portugal	National authority	11%	Increased by 10%
UK	Trade association	33.1%	Decreased – no figure provided

It is important to note that while the questionnaire was sent out only to individuals with knowledge in the area of alcohol retail, we cannot confirm or verify the accuracy of the information provided. As a result, information provided in Table 3.1. should be taken as an indication of the relative scale of on- and off-trade alcohol consumption, and the direction of change in this distribution.

3.2 Trends in the ratio of on- and off-premise consumption: selected case studies

It is challenging to acquire data on the ratio of on- and off-trade alcohol consumption. Very few governments in Europe make any attempt to collect data that would allow for this kind of analysis; Finland is one notable exception. Ireland is collecting data on revenue of alcoholic beverages by on- and off-trade dimension, including, for example, the total monetary value per beverage. It does not, however, produce data on quantities consumed or sold in the on- and off-trade. This is consistent with data searches performed for the analysis in Chapter 2, in which relevant pricing data in the on- and off-trade were possible to obtain for Finland and Ireland, but not the other Member States. While it is possible that other countries are collecting this type of data as well, we do not at present have this information.

Some market research companies do gather data on alcohol sales in the on- and off-trade, although not all of them have time-series data that would allow us to understand the trend in on- versus off-trade alcohol consumption across the region. In the context of this study, we contacted three such companies: Euromonitor, Nielsen and International Wine and Spirit Research (IWSR). Specialised market research company IWSR has only been collecting data on alcohol consumption that disaggregate into on- and off-trade since 2009. Nielsen only has on- versus off-trade alcohol consumption data for a few European countries: Bulgaria, Ireland, Portugal, Spain and the UK.[5]

As a result of the extremely limited scope and relevance of publicly available data, it is difficult to draw reliable conclusions about ratio of on- and off-trade alcohol consumption across the Member States, or the way in which this has evolved in recent years, without recourse to commercially available data produced by private market research companies. The reminder of this chapter presents data for six European countries: Finland, Germany, Ireland, Latvia, Slovenia and Spain. We only explore these six countries in detail as data on off- versus off-premise consumption trends are not publicly available for all countries. As a result, we purchased the relevant data from Euromonitor, a market research company, for countries that provide a useful illustration of the trends and implications of off- versus on-premise alcohol consumption. Purchasing data for a larger number of countries was not within the scope of this research.

This selection of case studies covers countries also examined either in the analysis of pass-through rates (Chapter 2) and/or in an overview of regulation of alcohol sales through discounts and promotions (Chapter 5). The objective of this chapter is to provide a more comprehensive picture of alcohol consumption and regulatory policies in the individual countries used as case studies throughout this report.

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[5] It is worth noting that commercial, market research data is usually harmonised when it is collected for different countries. Individual governments, on the other hand, often collect data differently, which makes cross-country comparisons more difficult. Harmonisation of the data from different statistical offices is time-consuming (and not possible in some cases). Moreover, market research companies often respond more quickly to the emergence of new data, and begin collecting it sooner than governments' statistical offices do. This makes commercial data a useful, if sometimes costly, alternative to government data that is typically freely available.

All data except for those from Finland were provided by Euromonitor International, a market research company, which collects data on prices and quantities of alcoholic beverages sold across the globe relying on desk research as well as on field work.[6] Finnish data were provided by the National Institute for Health and Welfare in Finland.[7] We conducted a reliability test for data supplied by Euromonitor International by comparing the data for Finland produced by the company to the data from the National Institute for Health and Welfare. The trends and levels of consumption between the two sources were relatively consistent and we found only insignificant differences. This provides us with some confidence in the reliability of the data used.

We obtained data on litres of alcoholic beverage (henceforth "alcohol") for Germany, Ireland, Latvia, Slovenia and Spain, and litres of pure alcohol (henceforth "pure alcohol") for Finland. The data are for *recorded* consumption.

While not covering every Member State, the data presented below aim to offer insights, from geographically dispersed and cultural diverse countries, into how the ratio of on- to off-trade consumption has changed over time. This case study analysis also attempts to shed some light into whether and how understanding this phenomenon is important to policymaking.

3.3 Germany

In 2007 consumption of alcohol in Germany was approximately 12 litres of pure alcohol per person per year (World Health Organization, 2011a, 2011b). Beer was the most consumed alcoholic beverage in Germany accounting for 53 percent of total pure alcohol consumed in 2005. Wine and spirits accounted for 27 percent and 20 percent of consumed pure alcohol, respectively. Since the 1960s, alcohol consumption in Germany has been relatively stable. Some increases in consumption of all three types of beverages were observed during the 1970s; however, since then consumption of all beverages declined somewhat, with a more pronounced decline for beer and spirits and a small decline for wine (World Health Organization, 2011a).

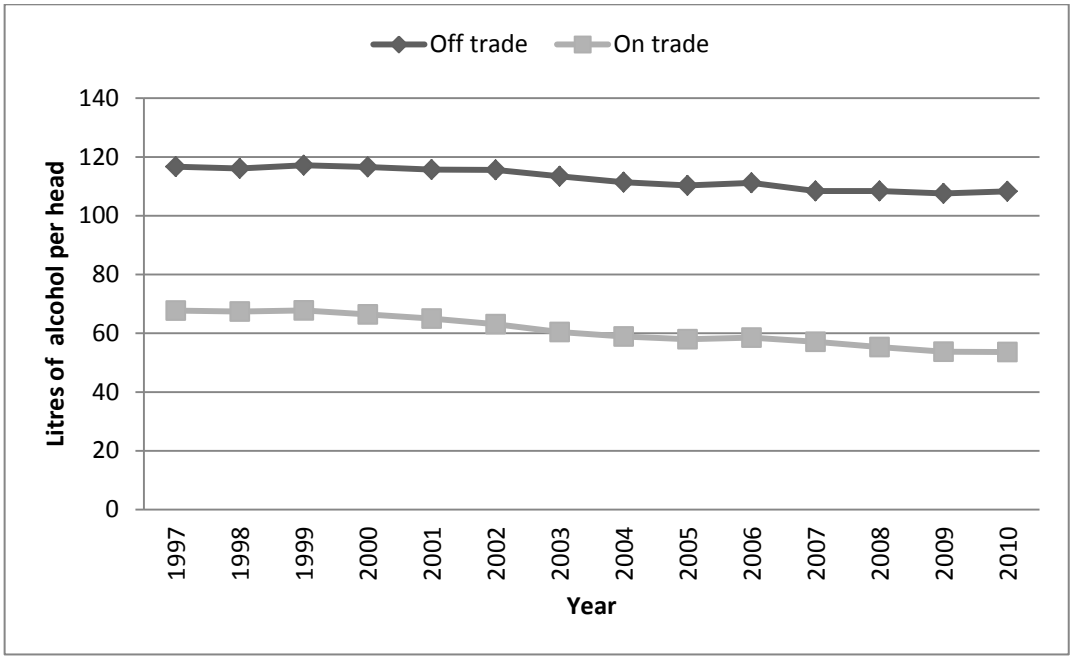
3.3.1 Volumes consumed in the on- and off-trade

Figure 3.1 shows the amount of alcoholic beverages (not of pure alcohol) consumed in the off- and on-trade. In the 2000s total consumption of alcoholic beverages in Germany was in the range of 160–180 litres of alcohol (not pure alcohol) per person per year, for persons aged 15 years and above. According to Euromonitor data, recorded consumption of alcohol in Germany decreased by 12 percent between 1997 and 2010, with the decrease in on-trade consumption (21 percent) greater than the decrease in off-trade consumption (7 percent).

[6] For more information, see http://www.euromonitor.com/ (last accessed July 2011).

[7] For more information, see http://www.thl.fi/en_US/web/en/Home (last accessed July 2011).

Figure 3.1: Consumption of alcohol off- and on-trade in Germany, litres per head, 1997-2010



Source: Euromonitor International.

Note: Reference population is all those aged 15 years and over.

At least since the mid-1990s, off-trade consumption of alcohol in Germany was higher than on-trade consumption: in all years under examination (1997 to 2010) the share of off-trade consumption was never below 60 percent. The gap between the two types of consumption widened slightly over time: the share of off-trade consumption increased from 63 percent of total consumed alcohol in 1997 to 67 percent in 2010.

Data disaggregated by type of alcoholic beverage are presented in Table 3.2. The table shows the roles of different alcoholic beverages in shaping the overall trends of decrease in off-trade consumption and on-trade consumption in the course of the 2000s.

Table 3.2: Consumption of alcohol off- and on-trade in Germany, by type of beverage, litres per head, 1997-2010

	Off trade consumption			On trade consumption		
	Spirits	Wines	Beer	Spirits	Wines	Beer
1997	5.6	22.3	88.8	1.6	6.7	59.4
1998	5.5	22.3	88.3	1.6	6.8	59.0
1999	5.5	22.8	88.9	1.5	6.9	59.4
2000	5.4	23.6	87.6	1.5	7.0	57.9
2001	5.4	24.2	86.1	1.5	7.0	56.5
2002	5.4	24.6	85.6	1.5	6.2	55.4
2003	5.4	25.2	82.8	1.5	6.0	52.9
2004	5.3	25.2	80.9	1.5	5.9	51.5
2005	5.3	24.9	80.1	1.5	5.8	50.7
2006	5.3	25.0	80.9	1.5	5.7	51.3
2007	5.3	25.0	78.1	1.5	5.7	49.9
2008	5.2	25.0	78.2	1.4	5.7	48.2
2009	5.2	24.7	77.7	1.4	5.6	46.7
2010	5.2	24.7	78.4	1.4	5.6	46.6
change between 1997/1998 and 2009/2010 (%) *	-6.3	10.8	-11.9	-12.5	-17.0	-21.2

Source: Euromonitor International.

Note: Reference population is all those aged 15 years and over. * measured as the difference between the mean of 2009 and 2010 and the mean of 1997 and 1998, expressed as a proportion of the 1997/98 mean.

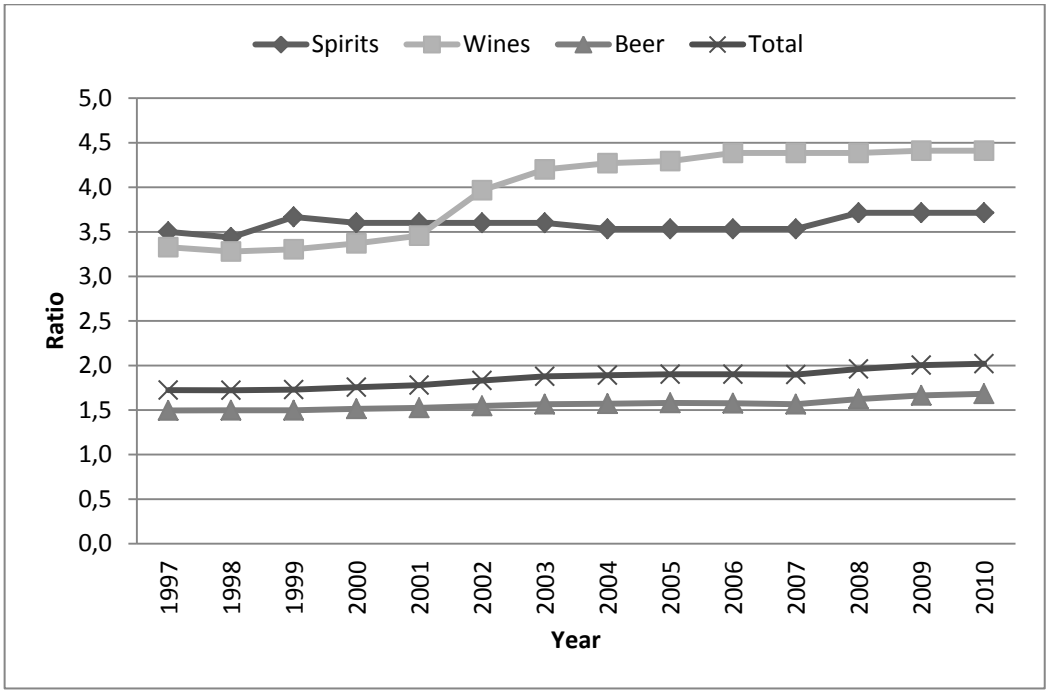
Table 3.2 shows that on-trade consumption decreased for all alcoholic beverages, with the steepest decrease in the consumption of beer (21 percent). The decrease in off-trade consumption was observed in beer (12 percent) and in spirits (6 percent), whereas off-trade consumption of wine increased by 11 percent.

3.3.2 Ratios of off- and on-trade consumption

In this section, further insights are offered by analysing the ratios of off- and on-trade consumption. Ratios are calculated with litres of alcohol consumed off-trade divided by litres of alcohol consumed on-trade; a value above one indicates more consumption in the off-trade and a value of less than one indicates more consumption in the on-trade.

In 2010 total off-trade consumption was more than two times higher than total on-trade premise consumption (Figure 3.2). This is an increase from 1997, when off-trade consumption was 1.7 times higher than on-trade consumption.

Figure 3.2: Ratios of off- and on-trade consumption of alcohol in Germany, by type of beverage, 1997–2010



Source: Euromonitor International.

Note: Reference population is all those aged 15 years and over.

The differences between various types of beverages are notable. First, wine and spirits were approximately 3–4 times more frequently consumed in off- than in on-trade settings. Beer has the lowest ratios: 1.5–2 times more beer is consumed off-trade relative to on-trade. Second, while an increasing trend of the ratios was observed for all three types of beverages it was strongest in wine, rising from 3.3 in 1997 to nearly 4.5 in 2010. It was less pronounced for beer and spirits.

In summary, in Germany all beverages are more likely to be consumed in the off-trade (1.5 to 4 times more depending on the beverage). The extent of this preference for off-trade consumption has been increasing since the mid-1990s, especially for wine.

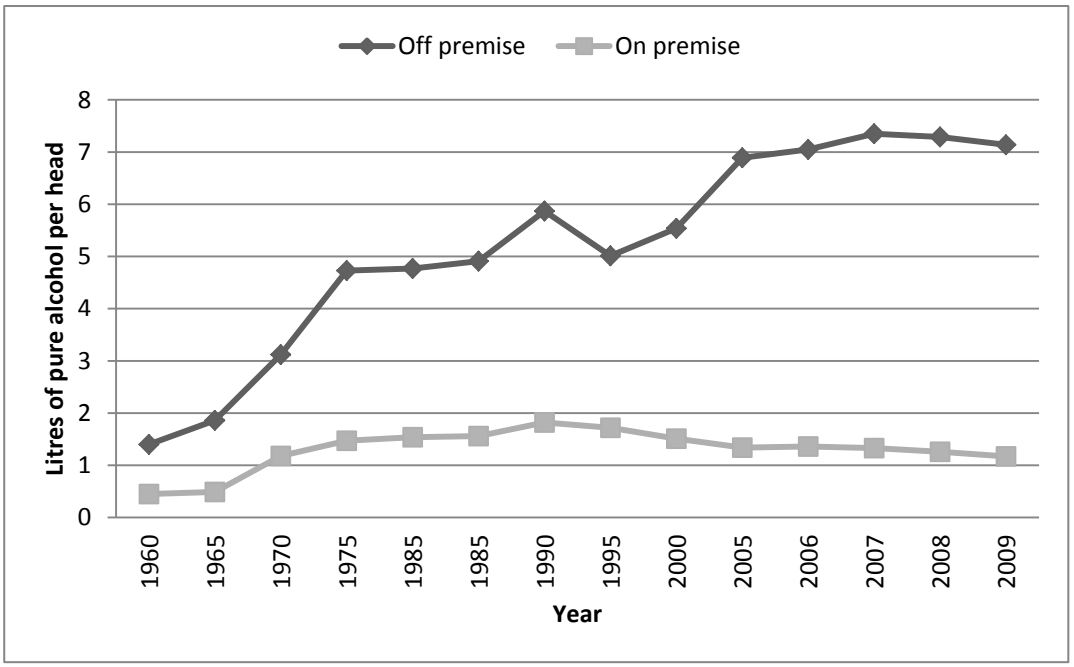
3.4 Finland

In 2008 the consumption of pure alcohol in Finland was at a level of 10 litres of alcohol per person per year (World Health Organization, 2011a, 2011b). Beer was the most consumed alcoholic beverage in Finland accounting for 46 percent of total pure alcohol consumed in 2005. Consumption of alcohol in Finland increased gradually since the late 1960s. The increase was driven by the increases in consumption of beer and wine, whereas consumption of spirits decreased sharply in the 1980s and has remained stable in the last decade (World Health Organization, 2011a).

3.4.1 Volumes consumed in the on- and off-trade

Figure 3.3 shows the amount of alcoholic beverages consumed (of pure alcohol) in Finland between 1960 and 2009 in the off- and on-trade. As Figure 3.3 shows, in the 2000s total consumption of alcohol in Finland was in the range of 7–8 litres of pure alcohol per person, for persons aged 15 years and above. Consumption of alcohol increased between 1960 and 2009. In the 2000s it was almost two times the levels observed in the 1970s. Most of the rise in overall alcohol consumption in Finland was driven by increases in off-trade consumption. The extent to which the most recent trend for a decrease in consumption in both the on- and off-trade, not necessarily shifting from one to the other, is associated with economic slowing is an interesting empirical question. We perform some analysis later in this chapter to begin to understand this relationship.

Figure 3.3: Recorded consumption of alcohol in Finland, litres per head of pure alcohol, 1960s-2000s



Source: National Institute for Health and Welfare (2010), Finland.

Note: Reference population is all those aged 15 years and over.

Historically, off-trade consumption of alcohol in Finland was higher than on-trade consumption; in all years under examination (1960 to 2009) the share of off-trade consumption was never below 75 percent. As Figure 3.3 shows, the gap between the two types of consumption widened over time, with off-trade consumption showing a steady increase since the 1960s, with only very recent stabilisation, and the on-trade consumption exhibiting a gradual decrease since the early 1990s.

The National Institute for Health and Welfare in Finland, which provided the data used in this case study, collected data on on- and off-trade consumption of all alcohol from 1960. However, data disaggregated by type of alcoholic beverage have only been collected since 2000. Table 3.3 documents the roles of different alcoholic beverages in shaping the overall trends of increase or

stabilisation in off-trade consumption and decrease in on-trade consumption in the course of the 2000s.

Table 3.3: Consumption of alcohol off- and on-trade in Finland, litres per head, 2000-2009

	Off trade consumption			On trade consumption		
	Spirits	Wines	Beer	Spirits	Wines	Beer
2000	3.6	8.4	63.0	0.5	0.9	22.7
2001	3.8	9.3	65.9	0.6	0.9	22.1
2002	3.8	10.2	67.5	0.6	0.9	21.8
2003	3.9	11.0	67.9	0.5	0.9	20.7
2004	4.7	10.8	73.8	0.5	0.9	19.4
2005	4.6	11.0	75.9	0.5	1.0	18.4
2006	4.6	11.5	76.6	0.6	1.1	17.6
2007	4.6	12.1	81.1	0.6	1.1	16.7
2008	4.3	12.3	80.9	0.5	1.2	15.2
2009	4.0	12.3	80.7	0.4	1.1	14.0
change between 2000/2001 and 2008/2009 (%)*	11.5	38.9	25.4	-15.5	31.4	-35.0

Source: National Institute for Health and Welfare, Finland (2010).

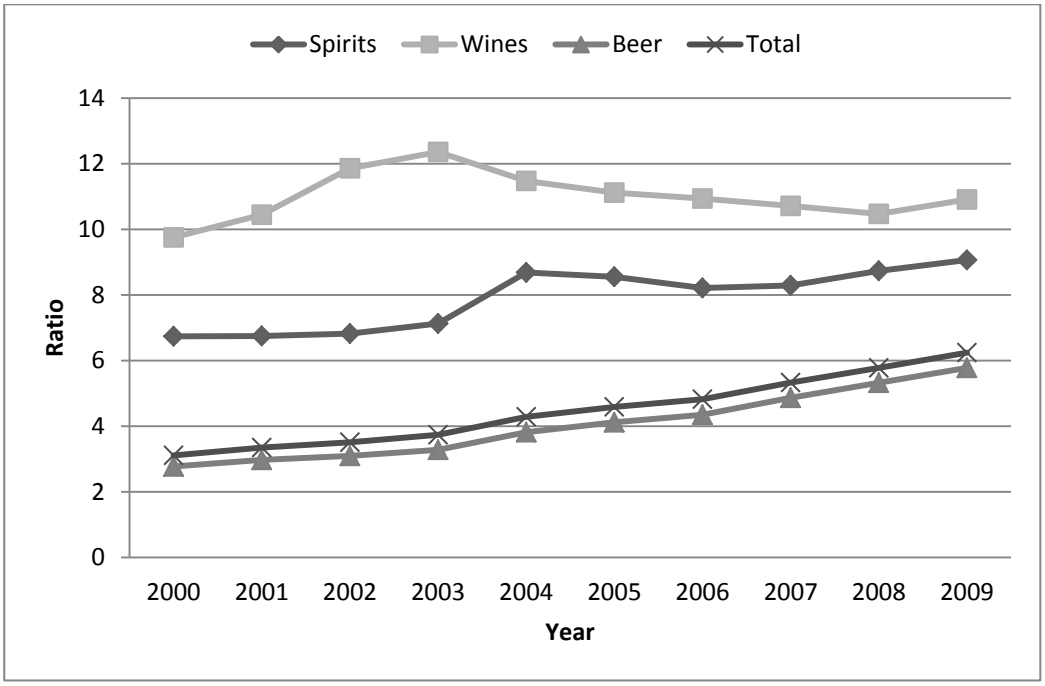
Note: Reference population is all those aged 15 years and over. * measured as the difference between the mean of 2009 and 2010 and the mean of 1997 and 1998, expressed as a proportion of the 1997/98 mean.

Table 3.3 shows that although off-trade consumption in Finland increased for all alcoholic beverages, the steepest increase was in the consumption of wine (39 percent) and beer (25 percent). The decrease in on-trade consumption was observed in beer (35 percent) and in spirits (15 percent), whereas on-trade consumption of wine increased noticeably (31 percent). This suggests a shift in preferences, whereby consumption of wine is growing in both the on- and off-trade, whereas spirits and beer consumption has shifted from the on- to the off-trade.

3.4.2 Ratios of off- and on-trade consumption

In 2009 total off-trade consumption in Finland was six times higher than total on-trade consumption. In contrast, in 2000 it was approximately four times higher (Figure 3.4).

Figure 3.4: Ratios of off- and on-premise consumption of alcohol in Finland, by type of beverage, 2000-2009



Source: National Institute for Health and Welfare, Finland (2010).

Note: Reference population is all those aged 15 years and over.

The differences in the patterns observed for each beverage over time are interesting. First, patterns of wine consumption exhibit the largest ratios of off-trade, with over ten times more wine being consumed in off- than in on-trade settings. Beer has the lowest ratios: depending on period, approximately 4–6 times more beer is consumed off-trade relative to on-trade. Spirits occupy an intermediate position. Second, the trend in the increase in ratios of off- to on-trade consumption was observed for all three types of beverages. It was most noticeable in beer, which had an increase from a ratio of 3 in 2000 to a ratio of 6 in 2009, and in spirits with an increase from 7 to 9. It was less pronounced in wine.

In sum, in Finland all beverages are more likely to be consumed in the off-trade (three to ten times more depending on the beverage and time period), particularly wine. The extent of this preference for off-trade consumption has been increasing since 2000, with differing patterns in this increase across beverages.

3.5 Ireland

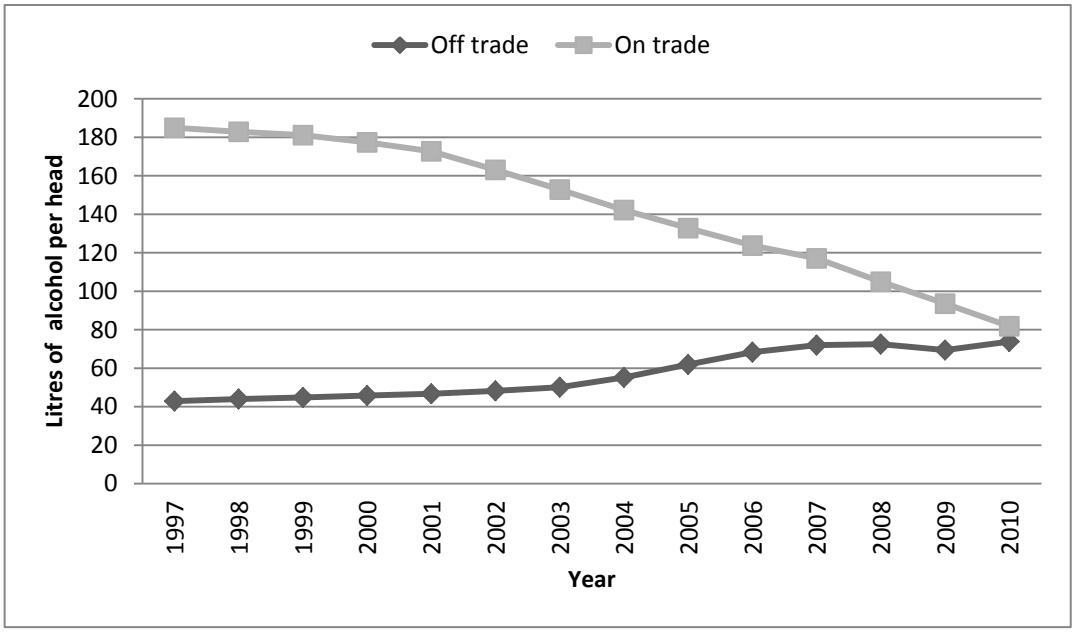
In 2006 the consumption of pure alcohol in Ireland was approximately 13 litres of alcohol per person per year (World Health Organization 2011a; World Health Organization 2011b). Beer was the most consumed alcoholic beverage in Ireland accounting for 53 percent of total pure alcohol consumed in 2005. Consumption of alcohol in Ireland increased from 6 litres of pure alcohol per person in the mid-1960s to almost 14 litres in 2005. The increase was observed

in all major types of alcoholic beverages: beer, spirits and wine (World Health Organization, 2011e).

3.5.1 Volumes consumed in the on- and off-trade

Figure 3.5 shows the amount of alcoholic beverages consumed (not of pure alcohol) in Ireland in the off- and on-trade. In the 2000s total consumption of alcohol in Ireland was in the range of 150–220 litres of alcohol per person per year, for persons aged 15 years and above. Between 1997 and 2010 consumption of alcohol in Ireland decreased by 32 percent. This was due to a 56 percent decrease in on-trade consumption while off-trade consumption actually increased by 72 percent.

Figure 3.5: Consumption of alcohol off- and on-trade in Ireland, litres per head, 1997-2010



Source: Euromonitor International.

Note: Reference population is all those aged 15 years and over.

At least since 1997 (the first year for which we have data for Ireland) off-trade consumption of alcohol in Ireland was lower than on-trade consumption: in all years under examination (1997 to 2010) the share of off-trade consumption was always below 50 percent. However, the gap between the two types of consumption narrowed considerably over time: the share of off-trade consumption increased from 18 percent of total consumed alcohol in 1997 to 47 percent in 2010.

Data disaggregated by type of alcoholic beverage are presented in Table 3.4. The table also shows the roles of different alcoholic beverages in shaping the overall trends of decrease in off-trade consumption and on-trade consumption during the 2000s.

Table 3.4: Consumption of alcohol off- and on-trade in Ireland, by type of beverage, litres per head, 1997-2010

	Off trade consumption			On trade consumption		
	Spirits	Wines	Beer	Spirits	Wines	Beer
1997	3.4	7.6	31.9	3.8	3.1	178.0
1998	3.4	8.9	31.7	3.7	3.4	175.8
1999	3.4	9.8	31.6	3.7	3.8	173.6
2000	3.4	10.9	31.5	3.7	4.2	169.5
2001	3.4	11.8	31.5	3.7	4.6	164.4
2002	3.4	13.2	31.6	3.7	5.0	154.4
2003	3.3	13.6	33.2	2.9	5.8	144.1
2004	3.4	14.4	37.4	2.7	6.6	132.9
2005	3.6	15.1	43.2	2.6	6.6	123.6
2006	4.0	16.0	48.3	2.6	6.6	114.5
2007	4.1	16.7	51.2	2.5	6.5	108.1
2008	4.0	16.9	51.6	2.3	6.0	96.6
2009	3.7	16.7	49.0	2.0	4.9	86.6
2010	3.9	17.5	52.4	1.8	4.3	75.7
change between 1997/1998 and 2009/2010 (%)*	11.8	107.3	59.4	-49.3	41.5	-54.1

Source: Euromonitor International.

Note: Reference population is all those aged 15 years and over. * measured as the difference between the mean of 2009 and 2010 and the mean of 1997 and 1998, expressed as a proportion of the 1997/98 mean.

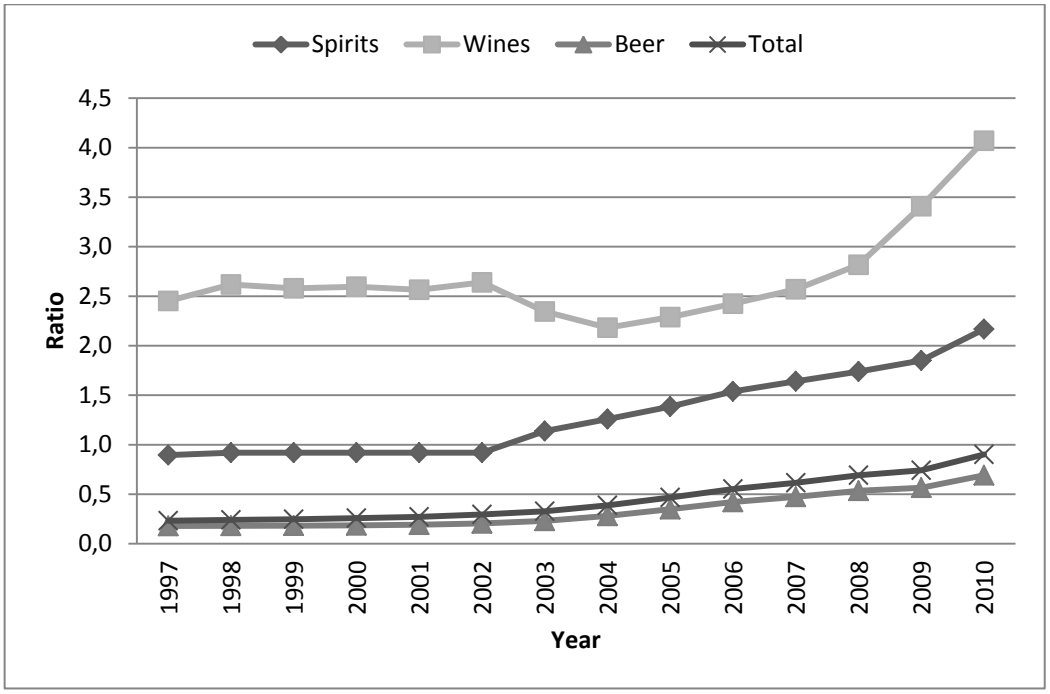
On-trade consumption strongly decreased for all beer and spirits (approximately by 50 percent), while it increased by 42 percent for wine. The increase in off-trade consumption was observed in all beverages but was especially pronounced in wine (over 100 percent increase) and beer (59 percent increase).

Given the relatively high levels of beer consumption in the on-trade in the late 1990s, the large decrease in the on-trade consumption of beer (54 percent) appears to be an important driver of the overall decrease in alcohol consumption over the period.

3.5.2 Ratios of off- and on-trade consumption

In 2010 total off-trade consumption in Ireland was approximately at the same level as on-trade consumption (Figure 3.6). This is a new situation that has evolved over the last decade. In 1997 only 20 percent of all alcohol was consumed off-trade.

Figure 3.6: Ratios of off- and on-trade consumption of alcohol in Ireland, by type of beverage, 1997-2010



Source: Euromonitor International.

Note: Reference population is all those aged 15 years and over.

The trend of increase in ratios of off- to on-trade consumption in Ireland was observed for all three types of beverages. However, there were important differences between various types of beverages in levels of ratios and pace of increase. At all times since 1997 consumption of wine was more than two times higher off-trade, and it was four times higher in 2010. Consumption of spirits was almost equal off- and on-trade in 1997 and two times higher off-trade in 2010. There has always been a preference for on-trade consumption for beer, although this has decreased since the early 2000s. Off-trade consumption of beer was around 20 percent in 1997 and 70 percent in 2010 of the amount consumed in the on-trade.

In summary, in Ireland, unlike the other countries analysed thus far, more beer is consumed in the on- than off-trade, yet similar to other countries, spirits and wine since the early 2000s were more consumed in the off-trade. Generally, there has been a shift towards more consumption in the off-trade across all beverages, particularly for spirits and wine.

3.6 Latvia

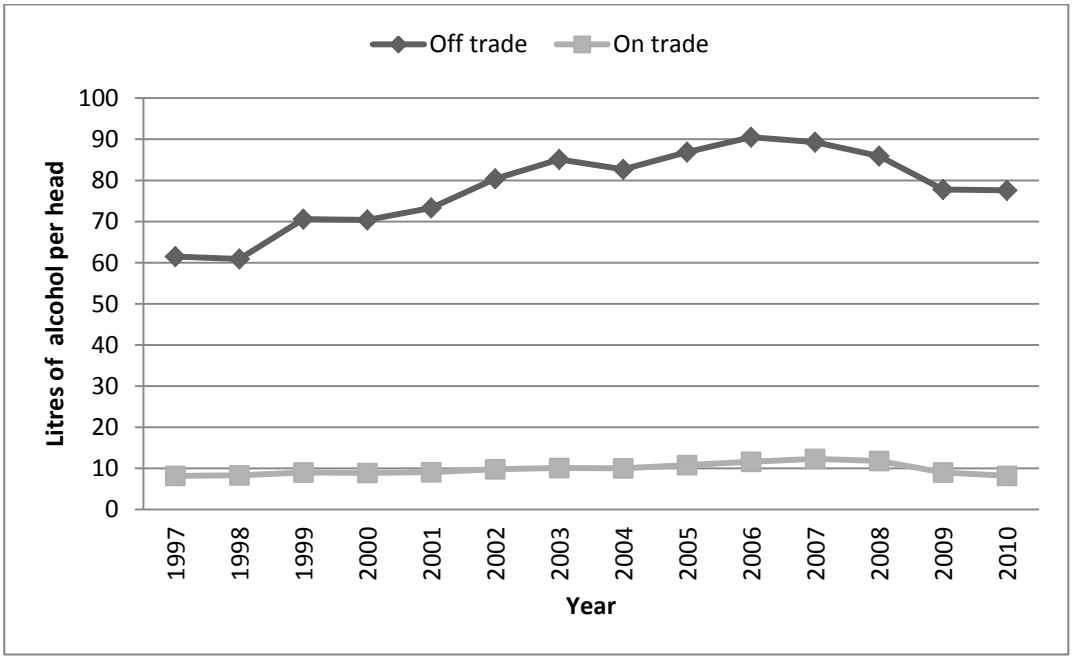
In 2006 recorded consumption of alcohol in Latvia was 11 litres of pure alcohol per person per year (World Health Organization, 2011a; World Health Organisation 2011b). Spirits are the most consumed alcoholic beverage in Latvia, with a share of 56 percent of total pure alcohol consumed in 2005. Consumption of beer and wine are at 33 percent and 10 percent of total pure alcohol consumed, respectively. Trends in consumption of alcohol are only

traceable from the mid-1980s, and they are somewhat erratic most probably because of the political and social transition unfolding since the early 1990s. Consumption of spirits in Latvia increased between the mid-1980s and the late 1990s and decreased somewhat afterwards. None of the other types of beverages displayed an increase of this order of magnitude: consumption of wine remained stable and consumption of beer increased slightly (World Health Organization, 2011f).

3.6.1 Volumes consumed in the on- and off-trade

Figure 3.7, shows that in the 2000s total consumption of alcohol in Latvia was in the range of 86 litres of alcohol per person per year (not pure alcohol), for persons aged 15 years and above. Between 1997 and 2010 consumption of alcohol in Latvia increased by 23 percent. All of this increase was accounted for by increase in off-trade consumption, while on-trade consumption remained relatively stable.

Figure 3.7: Consumption of alcoholic beverages off- and on-trade in Latvia, litres per head, 1997-2010



Source: Euromonitor International.

Note: Reference population is all those aged 15 years and over. Litres of alcohol refer to total alcohol, *not* pure alcohol.

At least since 1997 (the first year for which we have data) off-trade consumption of alcohol in Latvia completely dominated over on-trade consumption: in all years under examination (1997 to 2010) the share of off-trade consumption was around 90 percent. Interestingly, there does appear to be a more recent (from 2006) shift away from off-trade consumption. With recent economic slowing, one might expect reduced consumption in the on-trade (eating out at restaurants) generally and thus reduced alcohol consumption in the on-trade. This does not appear to have resulted in shifting consumption to the off-trade, however.

Data disaggregated by type of alcoholic beverage are presented in Table 3.5. The table also makes clear the roles of different alcoholic beverages in shaping the overall trends of decrease in off-trade consumption and on-trade consumption in Latvia in the course of the 2000s.

Table 3.5: Consumption of alcohol off- and on-trade in Latvia, by type of beverage, litres per head, 1997-2010

	Off trade consumption			On trade consumption		
	Spirits	Wines	Beer	Spirits	Wines	Beer
1997	10.7	4.4	46.4	4.9	1.3	2.0
1998	10.1	4.7	46.1	4.8	1.4	2.1
1999	10.0	5.1	55.5	4.8	1.5	2.7
2000	9.0	5.3	56.1	4.3	1.6	3.0
2001	7.8	5.7	59.8	3.7	1.7	3.7
2002	7.0	6.3	67.1	3.4	1.8	4.6
2003	6.7	6.3	72.1	3.2	1.9	5.0
2004	6.9	6.5	69.3	3.3	1.9	4.8
2005	8.4	6.6	71.9	4.0	2.0	4.8
2006	9.5	7.0	74.0	4.5	2.1	5.0
2007	10.5	7.6	71.2	5.1	2.2	5.0
2008	10.3	7.3	68.3	4.9	2.3	4.6
2009	7.0	6.0	64.8	3.2	1.9	3.9
2010	6.2	5.6	65.8	2.8	1.8	3.6
change between 1997/1998 and 2009/2010 (%)*	-36.5	27.5	41.2	-38.1	37.0	82.9

Source: Euromonitor International.

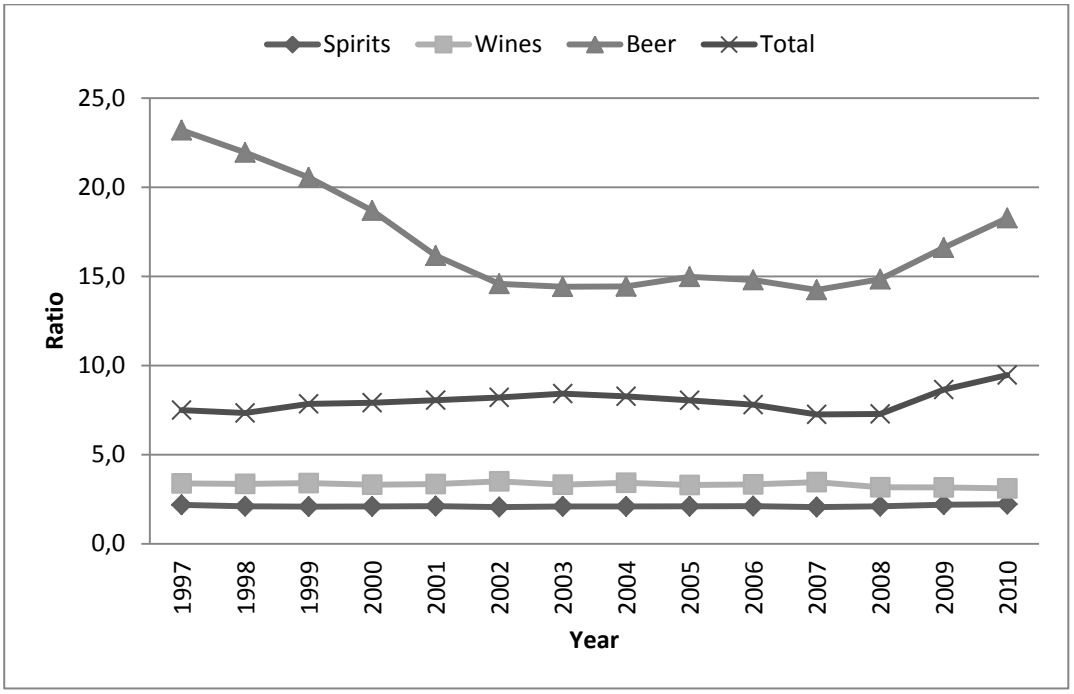
Note: Reference population is all those aged 15 years and over. * measured as the difference between the mean of 2009 and 2010 and the mean of 1997 and 1998, expressed as a proportion of the 1997/98 mean.

Table 3.5 shows that from 1997 to 2010 on-trade consumption in Latvia decreased for spirits, but increased for wine (37 percent) and beer (83 percent). The decrease in off-trade consumption was observed in spirits (37 percent) while increases were observed in off-trade consumption of wine and beer, by 28 percent and 41 percent, respectively.

3.6.2 Ratios of off- and on-trade consumption

In 2010 total off-trade consumption was over ten times higher than total on-trade premise consumption (Figure 3.8). In 1997 it was nearly eight times higher. The increase in the ratio of off- to on-trade overall consumption occurred largely between 2007 and 2010. The relative stability of the ratio may appear counterintuitive given the apparently large changes in the ratio for beer. This is due to levels of consumption of each beverage in each premise.

Figure 3.8: Ratios of off-trade and on-trade consumption of alcohol in Latvia, by type of beverage, 1997-2010



Source: Euromonitor International.

Note: Reference population is all those aged 15 years and over.

Practically no change in ratios of off- and on-trade consumption was observed for wine (approximately ratio of 3) and spirits (ratio of 2). Specifically for beer, a beverage with the highest ratio throughout the entire period, the ratios declined from 23 to 15 in 1997 and 2002, respectively; although total consumption of beer increased by 48 percent over that period. At first glance, it may seem that the overall ratio should be higher given there is much greater consumption of beer; however, 50 percent more spirits than beer (in volume) are consumed in the on-trade (in 1997). This "pulls down" the overall ratio so that it is less closely aligned with the ratio for beer than spirits and wine.

In summary, more alcohol is consumed in the off-trade than in the on-trade in Latvia, particularly beer. Until recently, the shift had been towards on-trade consumption for beer and no change for wine and spirits. The late 2000s showed a shift in preferences back towards off-trade consumption of beer.

3.7 Slovenia

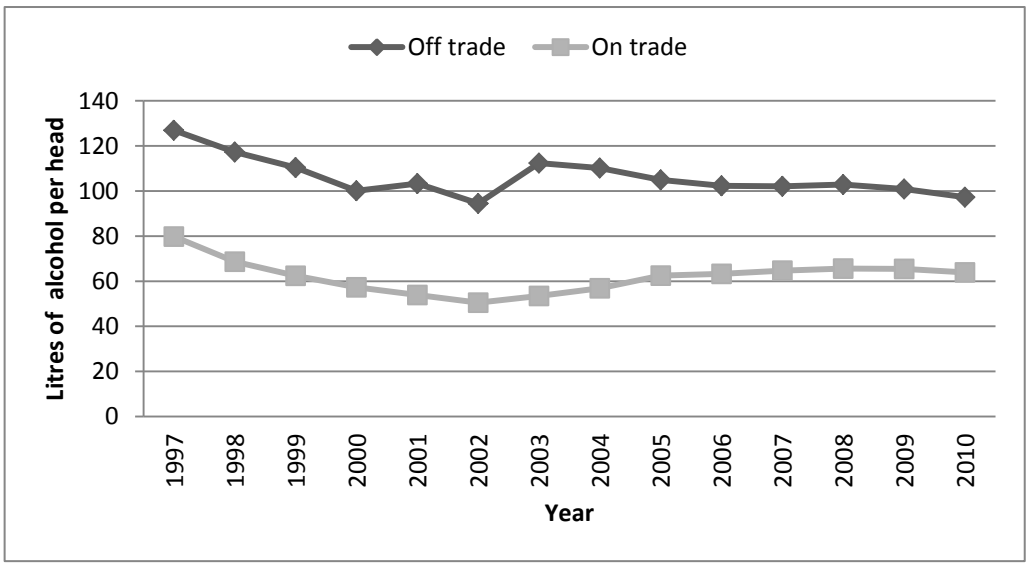
In 2006 recorded consumption of alcohol in Slovenia was 12 litres of pure alcohol per person per year – somewhat lower than in most countries of western and central Europe, but still among the highest levels of alcohol consumption in the world (World Health Organization, 2011a; World Health Organization 2011, Global Status Report on Alcohol and Health). Trends in consumption of alcohol are only traceable from the early 1980s, and they are somewhat erratic most probably as a result of the political and social transition unfolding since the early 1990s. Consumption of wine and spirits in Slovenia

declined significantly between the early 1980s and the mid- to late 1990s and recovered somewhat afterwards, although it never reached the levels observed in the early 1980s. Consumption of beer remained stable between the early 1980s and the early 1990s, when it rose and stabilised at a new level (World Health Organization 2011g).

3.7.1 Volumes consumed in the on- and off-trade

Figure 3.9 shows that in the 2000s total consumption of alcohol in Slovenia was in the range of 160–209 litres of alcohol per person per year (not pure alcohol), for persons aged 15 years and above. Between 1997 and 2010 consumption of alcohol in Slovenia decreased by 22 percent. Both on- and off-trade consumption declined, by 19 percent and 23 percent, respectively. The decrease is a net outcome of two processes: a pronounced decrease in consumption between 1997 and 2002 and an increase thereafter.

Figure 3.9: Consumption of alcohol off- and on-trade in Slovenia, litres per head, 1997–2010



Source: Euromonitor International.

Note: Reference population is all those aged 15 years and over.

While consumption of alcohol in the on- and off-trade seems to follow similar trajectories, off-trade consumption of alcohol in Slovenia has been higher than on-trade consumption at least since 1997 (the first year for which we have data). In all years under examination (1997 to 2010) the share of off-trade consumption was always above 60 percent. It changed little since 1997.

Data disaggregated by type of alcoholic beverage are presented in Table 3.6. The table also makes clear the roles of different alcoholic beverages in shaping the overall trends of decrease in off- and on-trade consumption during the 2000s.

Table 3.6: Consumption of alcohol off- and on-trade in Slovenia, by type of beverage, litres per head, 1997-2010

	Off trade consumption			On trade consumption		
	Spirits	Wines	Beer	Spirits	Wines	Beer
1997	5.9	53.5	67.5	4.2	22.2	53.4
1998	5.1	50.2	62.0	3.8	22.1	42.8
1999	4.6	39.9	65.9	3.3	17.9	41.2
2000	4.1	24.4	71.6	3.1	13.8	40.4
2001	3.5	34.0	65.8	2.7	14.7	36.5
2002	2.9	28.0	63.6	2.1	14.0	34.4
2003	2.4	40.1	69.9	1.7	13.6	38.2
2004	1.8	42.6	65.8	1.2	15.6	40.1
2005	2.0	37.2	65.7	1.2	18.2	43.1
2006	2.0	33.3	67.0	1.2	17.8	44.3
2007	2.1	31.7	68.3	1.3	17.8	45.6
2008	2.2	30.6	70.1	1.4	18.1	46.1
2009	2.1	28.6	70.2	1.4	17.6	46.5
2010	2.0	26.9	68.4	1.4	17.2	45.3
change between 1997/1998 and 2009/2010 (%)*	-62.7	-46.5	7.0	-65.0	-21.4	-4.6

Source: Euromonitor International.

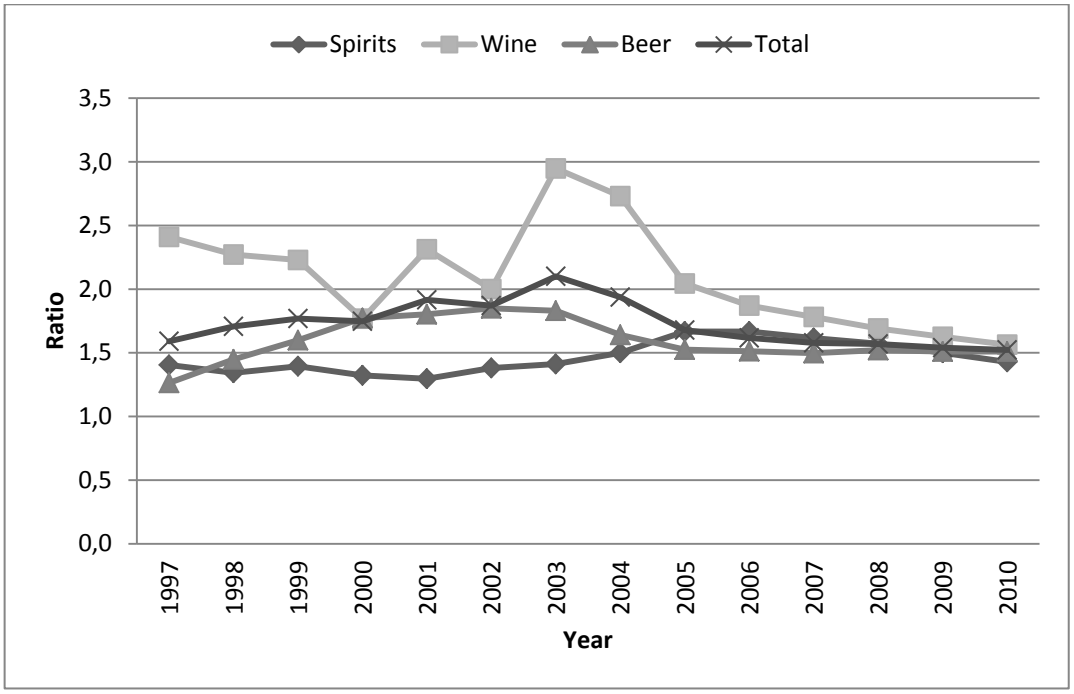
Note: Reference population is all those aged 15 years and over. * measured as the difference between the mean of 2009 and 2010 and the mean of 1997 and 1998, expressed as a proportion of the 1997/98 mean.

Table 3.6 shows that on-trade consumption decreased for all alcoholic beverages, with the steepest decrease in the consumption of spirits (65 percent). The decrease in off-trade consumption was observed in spirits (63 percent) and wine (47 percent) whereas off-trade consumption of beer increased by 7 percent.

3.7.2 Ratios of off- and on-trade consumption

For all alcoholic beverages and at all times on-trade consumption falls short of off-trade consumption in Slovenia (Figure 3.10), which presents a picture of relative stability in patterns of consumption. The overall ratio of off-trade to on-trade consumption was approximately 1.5 in 1997 and 2011. Early on in this period, from 1997 to 2003, the ratio increased from approximately 1.5 to 2.2, and a decrease in ratio was observed subsequently.

Figure 3.10: Ratios of off- and on-trade consumption of alcohol in Slovenia, by type of beverage, 1997-2010



Source: Euromonitor International.

Note: Reference population is all those aged 15 years and over.

All alcoholic beverages followed this general pattern, with differences of level (wine was the beverage with the highest ratio) and timing (spirits reached a peak of increase around 2005 and stabilised afterwards).

In summary, more alcohol is consumed off- than on-premise in Slovenia. Since 2005, all beverage types appear to converge to approximately 50 percent more off-trade than on-trade consumption.

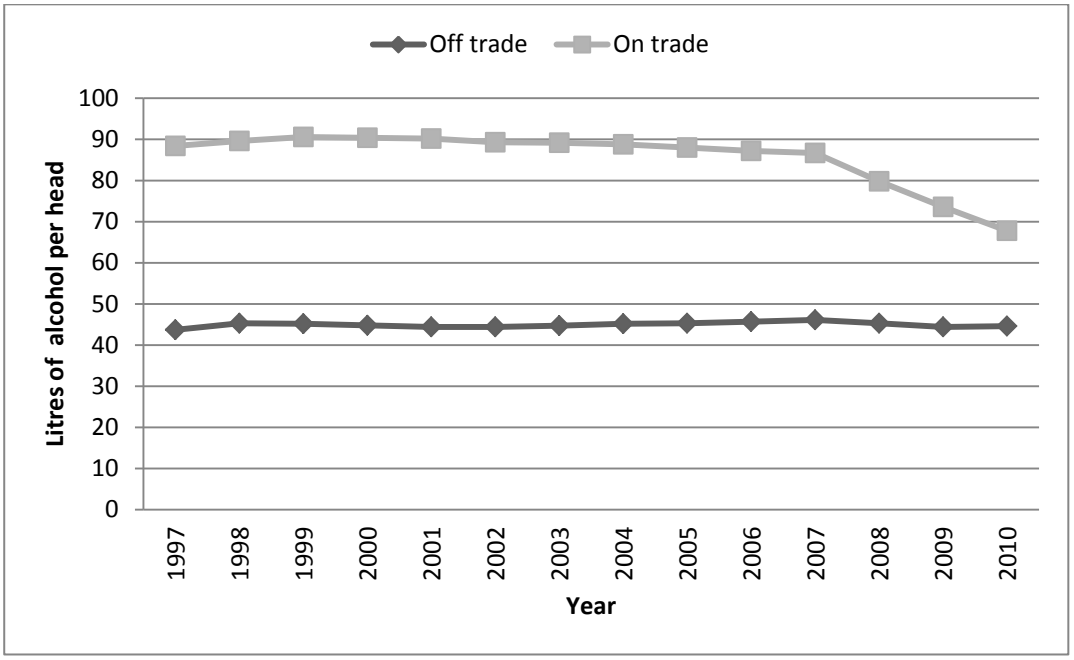
3.8 Spain

In 2006 recorded consumption of alcohol in Spain was at 10 litres of pure alcohol per person per year (World Health Organization, 2011a). Beer and wine are the most consumed alcoholic beverages in Spain with shares of 45 percent and 36 percent, respectively, of total pure alcohol consumed in 2005. Consumption of spirits was at 13 percent of total pure alcohol consumed. Total consumption of alcohol in Spain decreased since the mid-1970s. The overall trend, however, conceals important differences between different types of alcoholic beverages. Specifically, consumption of wine decreased from the level of above 10 litres of pure alcohol per person per year in the mid-1970s to less than 5 litres in 2005. Over the same period, consumption of beer increased from 2.5 litres of pure alcohol to nearly 5 litres, while consumption of spirits remained relatively stable (World Health Organization, 2011h).

3.8.1 Volumes consumed in the on- and off-trade

Figure 3.11 shows that in the 2000s total consumption of alcohol in Spain was in the range of 110–130 litres of alcohol per person per year (not pure alcohol), for persons aged 15 years and above. Between 1997 and 2010 consumption of alcohol in Spain decreased by 15 percent. The decrease in on-trade consumption (23 percent) since 2007 was effectively responsible for the overall decrease. This may have been the result of falling incomes during the economic recession and consumers reducing eating and drinking in restaurants and bars. However, off-trade consumption changed very little over this period. Consumers did not appear to have shifted from on- to off-trade consumption; rather they reduced consumption overall.

Figure 3.11: Consumption of alcohol off- and on-trade in Spain, litres per head, 1997-2010



Source: Euromonitor International.

Note: Reference population is all those aged 15 years and over.

At least in the last 15 years or so, off-trade consumption of alcohol in Spain has been less than on-trade consumption. In all years under examination (1997 to 2010), off-trade consumption was always greater than 40 litres.

Data disaggregated by type of alcoholic beverage are presented in Table 3.7. The table also details the roles of different alcoholic beverages in shaping the overall trends of decrease in off- and on-trade consumption for most beverages (with off-trade beer consumption increasing), during the 2000s.

Table 3.7: Consumption of alcohol off- and on-trade in Spain, by type of beverage, litres per head, 1997-2010

	Off trade consumption			On trade consumption		
	Spirits	Wines	Beer	Spirits	Wines	Beer
1997	3.2	18.0	22.5	5.1	22.7	60.6
1998	3.2	18.4	23.7	5.0	23.4	61.2
1999	3.2	17.5	24.5	5.0	23.3	62.3
2000	3.1	16.6	25.1	4.9	22.4	63.1
2001	3.1	15.8	25.5	4.9	22.2	63.1
2002	3.1	15.3	26.0	5.0	22.0	62.3
2003	3.0	14.9	26.8	4.9	21.5	62.8
2004	3.0	14.7	27.5	4.9	21.1	62.8
2005	2.9	14.3	28.1	4.8	20.3	62.9
2006	2.9	13.9	28.9	4.7	19.2	63.3
2007	2.8	13.5	29.8	4.6	18.3	63.8
2008	2.7	12.9	29.7	4.3	16.6	58.9
2009	2.5	12.0	29.9	3.9	15.8	53.9
2010	2.4	12.1	30.1	3.5	14.4	49.9
change between 1997/1998 and 2009/2010 (%)*	-23.4	-33.8	29.9	-26.7	-34.5	-14.8

Source: Euromonitor International.

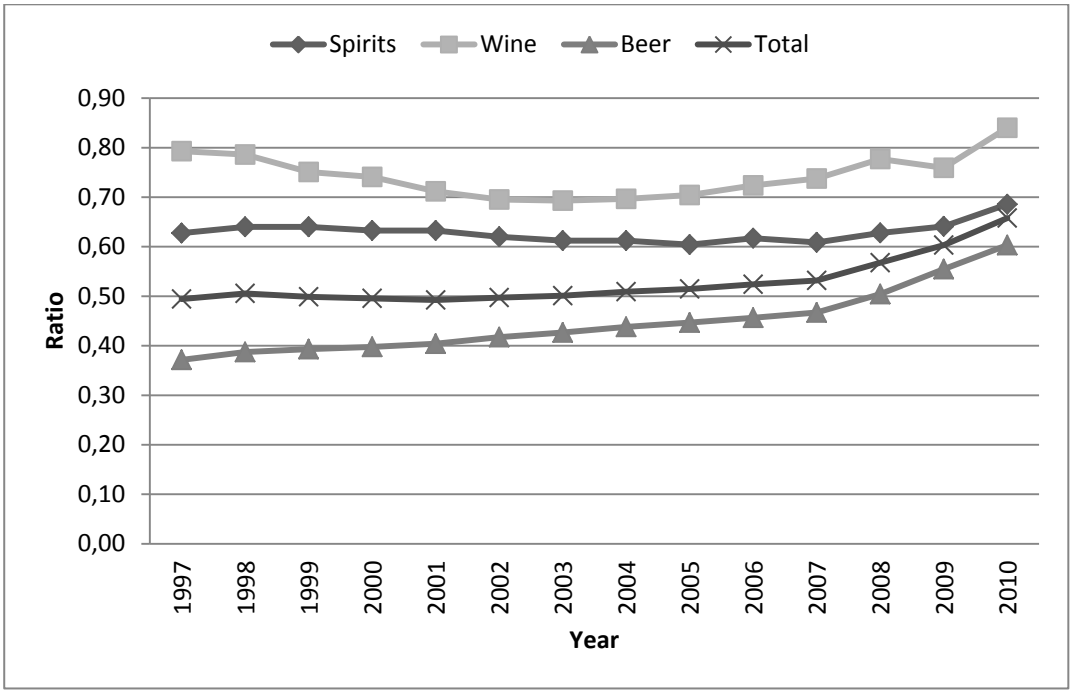
Note: Reference population is all those aged 15 years and over. * measured as the difference between the mean of 2009 and 2010 and the mean of 1997 and 1998, expressed as a proportion of the 1997/98 mean.

Table 3.7 shows that on-trade consumption decreased for all alcoholic beverages, with the steepest decrease in the consumption of wine (35 percent). The decrease in off-trade consumption was observed in spirits (23 percent) and wine (34 percent), whereas off-trade consumption of beer increased by 30 percent from 1997 to 2010.

3.8.2 Ratios of off- and on-trade consumption

For all alcoholic beverages and at all times, off-trade consumption falls short of on-trade consumption (Figure 3.12). Wine and spirits possess the largest ratios of off-trade consumption, and beer has the lowest ratios. For all beverages, the ratios are rising since 2004 onwards. Unlike all other countries investigated, the patterns in the ratios appear fairly similar across all beverage types.

Figure 3.12: Ratios of off-trade and on-trade consumption of alcohol in Spain, by type of beverage, 1997-2010



Source: Euromonitor International.

Note: Reference population is all those aged 15 years and over.

The trend of increasing consumption in the off- relative to on-trade was observed for all three types of beverages, although with different intensity. It was strongest in wine with an increase from ratios of 0.7 in 2004 to a ratio of nearly 0.85 in 2010, and beer with an increase from ratios of 0.4 to ratio of 0.6. It was less pronounced for spirits.

In summary, more alcohol is consumed on- than off-premise in Spain. Since 2005, all beverage types have been shifting towards off-premise although consumption levels still remain greater on-premise.

3.9 Exploring potential determinants of on- and off-premise shifting

In a recent review of determinants of the levels of alcohol consumption, Allamani et al. (2011) identified two overarching types of factors that influence alcohol consumption levels across countries: preventive alcohol policies, and social, cultural, economic and demographic determinants.

Preventive alcohol policies aim to curb alcohol consumption and harms and include, for example, stricter drink-driving legislation, such as reducing the blood alcohol concentration (BAC) level allowed, minimum legal drinking ages and restrictions in the retail of alcohol. However, the authors did not investigate non-alcohol policies that may have implications for levels of alcohol consumption, such as bans on smoking.

Both changes in alcohol policy and changes in social, cultural, economic and demographic factors can also affect consumers' preferences for drinking in the

off- versus on-trade. For instance, a greater emphasis on food and less on drinks in pubs and bars, or decreased use of pubs and bars as centres for social interaction, can result in relatively more drinking in the off-premise. For instance, several studies (for example, Allamani et al., 2011) find the following social and economic changes influenced alcohol consumption trends in Italy from 1970 to the 2000s:

- urbanisation
- industrialisation
- rising income
- changing roles of women
- increased health awareness.

The authors find this second set of factors related to culture, economy, social norms and demographics had a stronger effect on reducing alcohol consumption, particularly wine, than preventive alcohol consumption policies. In what follows, we examine whether Allamani et al.'s findings for consumption levels are also relevant for shifts between on- and off-trade alcohol purchases. In particular, we explore the correlation between proxies for urbanisation, industrialisation, rising income and changing roles of women with the ratio of off- and on-trade purchases. We were not able to identify a proxy for increased health awareness and consider this an avenue for future research. We explain the empirical strategy below.

3.9.1 Quantitative assessment of potential determinants of shifts in premise consumption

As some literature finds the second set of drivers discussed above appears to be a stronger set of determinants of consumption levels, we further explore their potential to understand shifts between off- and on-trade consumption.

We model the ratio of off- to on-trade consumption as a function of determinants of interest described in Allamani et al. (2011): urbanisation, industrialisation, income and women's roles (a proxy for health awareness was not located across the countries over time). The off- and on-trade consumption ratio is the outcome variable. The variables used to explain the ratio are the determinants of interest. As the data used to populate the variables include different countries over time, we also control for differences across countries that may be affecting the ratio and for issues occurring over time similar to all countries that affect the ratio.

To do this, a regression is performed for a ratio (of off- to on-trade consumption of alcohol) on the determinants of interest with country and year dummies.[8] The addition of country and year dummies takes into account differences across countries (which did not change over time) and differences over time (which were similar to all countries). This helps to isolate the potential relationship between the ratio and determinants by eliminating the other country and time factors contributing to off- and on-premise consumption.

[8] Note that we initially included year dummies. Testing indicates no differences between the years and thus a parsimonious model including a year trend instead is modelled.

All the data to populate the determinants were retrieved from Eurostat. We describe the proxies used for each factor below.

Urbanisation

Urbanisation refers to growth in size of urban areas. It is most commonly associated with people moving from rural areas, or villages and farms, to cities. The hypothesis is that increasing concentration of people makes it more profitable to obtain a licence and sell alcohol (supply-side) and people may want more interaction at various types of on-premise settings (demand-side). On the other hand, in more rural settings, there may be few locations for socialisation and drinking in pubs and restaurants may be relatively more attractive. Therefore, *a priori* the direction of the relationship is unclear.

Eurostat produces an urbanity indicator but as it is not provided annually, we used population density, which is measured as the number of inhabitants per square kilometre instead.

Industrialisation

Industrialisation refers to the degree of social and economic transformation of a society from agrarian to industrial. While Member States have already undergone industrialisation many years ago, this determinant can generally be thought of in the broader scope of modernisation, or transition from a traditional to modern society with modernisation theory proposing countries transition along a similar path. For our purposes, countries may begin the modernisation process at different times and follow the path at different speeds, which introduces important differences across countries that we exploit for empirical analysis.

The hypothesis is that technology, especially information and communication technology, has changed the way we engage in economic and social exchanges. This may have altered not only the way the alcohol industry undertakes business, but more widely how we as a society interact, which may therefore have altered the attractiveness of the off-trade versus the on-trade. As Martin (2008, p. 1) describes:

> Information and Communication Technologies (ICTs) continue to be a major driver of economic and social modernization. Europe is among the world leaders in the development of the digital economy, but there are [a] few problems, like e-inclusion and e-accessibility. Digital convergence is now a reality and the Internet is an essential tool for our economies and daily lives. Broadband is becoming the standard mode of connectivity.

As a proxy measure of modernisation, therefore, we use broadband penetration rate, which is measured as number of broadband access lines per 100 inhabitants.

Rising income

Consumers' demand for a particular product can be sensitive to changes in real income. Some products are "normal" goods, where an increase in real income results in increased consumption, and others are "inferior" goods, where consumers decrease their consumption with greater income. Economic growth, therefore, affects the level and pattern of demand differently across goods.

The hypothesis is that when people's incomes increase the nature of how they socialise and behave changes: they do not just drink more alcohol, but also change where they prefer to drink.

We use mean GDP per capita at current, market prices within the country (or nominal GDP adjusted for purchasing power across countries) over time as a proxy for changes in income.

It is important to note that income trends in the last three years of analysis (2008–2010) may be partially affected by national recessions. Therefore, we may be picking up a period that is atypical, or at least not a situation we may experience in future years, which would reduce the accuracy of the relationship between incomes and on- or off-premise consumption in the "average" situation. This affects the ability of the model to predict how changes in incomes in the future may influence shifting between the on- and off-trade.

An interesting avenue of further research would be to clarify empirically to what degree changes in income inequality, not only levels of income, influences shifting between on- and off-trade. And to what extent inflation, or percentage changes in overall prices, can have an effect on shifting the premise of consumption.

Changing roles of women

Economic and sociological research has explored the extent to which economic and social factors lead to broader life course options and the subsequent roles that women play in the home, economy and society more widely. Some consistently used indicators of women's autonomy have been educational attainment, employment status, and the income and residential status of family members (Domínguez-Folgueras and Castro-Martín, 2008).

There is research that then examines whether changes in these indicators, such as increases in further education, have altered outcomes; for example, economics literature finds women with higher education exert more household bargaining power (Browning and Bonke, 2009), thus implying a stronger role for women.

Allamani et al. (2011) find a relationship between changes in women's roles in society and their alcohol consumption across 12 countries of Europe. For other detailed, country-level analysis see for example Häkkinen et al. (2008) for Finland; Mondena et al. (2003) for the Netherlands; and Stelmach et al. (2003) for Poland; and further cross-country evidence in Kuntschea et al. (2009). In testing the extent to which changing roles of women influences the amount of on- and off-trade purchases, we use the proportion of women with tertiary education at the national level as a proxy for women's role in society.

Increased health awareness

We are unable to identify an indicator for the level of health awareness in order to test the hypothesis that increasing health awareness may have shifted alcohol purchasing between on- and off-premise. It would take more research than was available in the time for this particular study to determine if such an indicator exists across the Member States or if, for example, a survey is needed. In any event, we consider this an important avenue for future research as this may be considered more of a "policy" variable than the others, and a key area in which public health awareness can positively influence harmful alcohol consumption.

3.9.2 Results

In Table 3.8, we present the results of the regression analysis, using data for Germany, Ireland, Latvia, Slovenia and Spain. Models I and II show the ratio of total off- to on-trade consumption, whereas Models III and IV show the ratio of off- to on-trade consumption of wine. Models I and III also include data for Finland.

Examining the basic model first, we find population density, broadband concentration and GDP per capita to be statistically significant factors. Thus, increases in population density and broadband penetration are associated with relatively higher consumption in the off-trade; whereas the increasing income as measured by mean GDP per capita is associated with shifts towards on-trade consumption.

Specifically, a 10 percent increase in the number of inhabitants per square kilometre (population density) increases off-trade relative to on-trade consumption by 21.7 percent. Increasing broadband access per 100 inhabitants by 10 percent is associated with a 1.6 percent increase in off- relative to on-trade consumption. Conversely, a 10 percent increase in GDP per capita is associated with a 10 percent decrease in off-trade consumption relative to on-trade.

We find the direction of the relationship does not change when considering wine; however, the magnitude of results does change. Broadband penetration is no longer a statistically significant factor: increased interconnectivity and innovation is related to relative increases in off-trade consumption of alcohol in total, but not for wine specifically. The effect thus appears to be specific to beer and/or spirits drinkers.

Table 3.8: Regression results of the potential determinants of premise shift in alcohol consumption in Germany, Ireland, Latvia, Slovenia and Spain, and Finland for models I and III

	Model I	Model II	Model III	Model IV
	Total consumption		Wine consumption	
	Off-trade	On-trade	Off-trade	On-trade
Log population density	2.171**	2.509***	1.788*	1.448*
	(0.980)	(0.732)	(0.959)	(1.049)
Log broadband penetration	0.155***	0.164***	0.030	0.039
	(0.044)	(0.034)	(0.432)	(0.485)
Log GDP per capita	−0.923***	−1.016***	−0.718**	−0.741**
	(0.308)	(0.229)	(0.302)	(0.329)
Log female higher education	−0.842	−0.296	−0.427	−0.742
	(0.512)	(0.390)	(0.501)	(0.560)
Includes Finland	Y	N	Y	N
Number of observations	38	31	38	31
R^2	0.994	0.997	0.987	0.987

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10. Country dummies and time trend included in all.[9] Dependent variable: ratio of off- to on-trade consumption in litres of alcohol. All models include Germany, Ireland, Latvia, Slovenia and Spain. Unbalanced panel from 2000 to 2010.

Since data on Finland were obtained from a different source than the other countries, we perform analysis with and without Finland to see whether this makes a difference and thus test the sensitivity of our results. This was particularly important given the potentially small sample size and different source of data for Finland. This test allows us to consider objectively whether we obtain consistent results.

Results are robust to the exclusion of Finland. When comparing models I to II and III to IV, we find the magnitude of results changes for population density and female higher educational attainment, but results that are statistically significant in one model are significant in the other and the direction of the associations did not change. This indicates the results are relatively robust, yet we caution the reader that the values of the relationship may not be exact; further research is needed to increase precision of the results.

3.9.3 Limitations

The key limitation of this analysis is the small number of observations. We included data for six countries across a period of approximately five to six years, resulting in a small sample and limited "information" to detect the relationships of interest. In order to develop a more accurate model, we then need to introduce control variables to take into account other factors occurring in the countries analysed. This limits the amount of information left to explain observed relationships further. Despite this, however, we were able to detect a statistically significant relationship between some of the factors, which suggests this to be a promising area of future research.

This is the first study we are aware of that attempted to quantify the relationship between various factors thought to influence the relative shift between on- and off-trade alcohol consumption. The "model" presents a reduced-form estimation (it is a model to identify particular relationships between variables, not to explain why or how relationships exist). It is therefore limited in its ability to explain the effect of the determinant on the ratio. We consider this a first attempt to better understand empirically the relationship between off- and on-trade consumption shifting and cultural, economic and social factors. A useful avenue of further research would be to develop a structural model for the supply and demand of off- versus on-trade alcohol, which will help to explain the observed relationships further.

There may be important variables omitted from the analysis that are not observed that statistically bias our results to some degree, so under- or over-estimating results We cannot rule out that there is a characteristic influencing both a determinant and the ratio, and thus introducing statistical bias into our estimation. More in-depth research may be necessary to identify these unobserved characteristics in countries. We have made efforts to reduce this statistical bias, however, by including country and time factors.

[9] Yearly dummies were initially introduced in the model; however, years were not statistically different from each other in the magnitude of relationship to the ratio.

3.10 Final remarks

Even though this chapter presents information for only a few EU Member States, it nonetheless provides policy-relevant insights into alcohol consumption trends in a range of economically, geographically and culturally diverse countries.

First, we found differences across countries and beverage types in the trends in on- and off-trade consumption. Our results show that off-trade beer consumption is increasing in five out of the six countries analysed (all except Germany, where all alcohol consumption is decreasing). At the same time, beer consumption is decreasing in the on-trade in all countries but one (Latvia, where it is increasing). This is summarised in Table 3.9, which shows the direction of change between 1997 and 2010 by beverage and premise in each of the countries investigated.

Table 3.9: Summary of developments in consumption of alcohol, by beverage, in Finland, Germany, Ireland, Latvia, Slovenia and Spain, 1997–2010

Country	Beer		Wine		Spirits	
	On-trade	Off-trade	On-trade	Off-trade	On-trade	Off-trade
Germany	⇩	⇩	⇩	⇧	⇩	⇩
Finland	⇩	⇧	⇧	⇧	⇩	⇧
Ireland	⇩	⇧	⇧	⇧	⇩	⇧
Latvia	⇧	⇧	⇧	⇧	⇩	⇩
Slovenia	⇩	⇧	⇩	⇩	⇩	⇩
Spain	⇩	⇧	⇩	⇩	⇩	⇩

Note: Downward arrows indicate reduction in consumption; upward arrows indicate increased consumption.

The trend of growth in off-trade consumption is less prevalent for wine, being present in four out of six countries. For on-trade consumption of wine, we find a mixed trend, with half the countries exhibiting an increase and the other half a decrease. The trend for on- and off-trade consumption of spirits is down in four of the countries; only in the Finnish and Irish off-premise sectors are spirits consumption increasing.

Our second important finding is that in all countries the *ratio* of off- to on-trade consumption went up for at least one type of alcoholic beverage during the observed period. The ratio of off- to on-trade consumption indicates the litres of alcohol that are consumed in the off-trade for every one litre of alcohol consumed in the on-trade. In four countries out of six, ratios went up for all beverages, as Table 3.10 shows.

Table 3.10: Summary of developments in consumption of alcohol, by beverage, in Finland, Germany, Ireland, Latvia, Slovenia and Spain, 1997–2010

	All beverages	Spirits	Wine	Beer

Germany	↑	↑	↑	↑
Finland	↑	↑	↑	↑
Ireland	↑	↑	↑	↑
Latvia	Mixed	Stable	Stable	↑
Slovenia	Mixed	Stable	⇩	↑
Spain	↑	↑	↑	↑

Note: Downward arrows indicate reduction in consumption; upward arrows indicate increased consumption.

These changes in the ratio of off- to on-trade alcohol consumption mean that the proportion of alcohol consumed in the off-trade *increased* in four out of the six countries relative to the proportion consumed in the on-trade. This is the case even in Spain and Ireland, which had traditionally higher consumption of alcohol on-premise. In both these countries, on-trade consumption has been in steep decline relative to off-premise consumption for a number of years. In those countries in our sample with traditionally higher off-trade alcohol consumption (Finland and Germany) the proportion of alcohol sold through the off-trade has also been increasing relative to on-trade alcohol sales. Slovenia and Latvia, where off-trade consumption has been higher than on-trade consumption since at least the mid-1990s, exhibit stability in the ratio of on- and off-trade sales for selected beverages, an exception in our sample of six countries. The only instance of a decrease in the ratio of off- to on-trade consumption is for wine consumption in Slovenia.

It is not possible to assess with great certainty the precise drivers of the changes observed. It is possible, as indicated in other studies (eg Rabinovich et al., 2009), that generally lower off-trade alcohol prices, driven in part by growing competition in the supermarket sector (and at least in some countries possibly driven by cross-border consumption), are causing at least part of the shift. Moreover, as consumption continues to shift from the on- to the off-trade, competing establishments in the latter may step up their use of price promotions and discounts further, to attract a higher share of customers. Similarly, alcoholic beverage producers may incentivise off-trade establishments to promote their particular brand and products, thus stimulating even higher levels of price competition.

Lower prices, however, are only one of the possible drivers influencing a shift from on-premise to off-premise consumption. Preventive alcohol policies and social, cultural, economic and demographic determinants also can play a large role in the shift between on- and off-premise consumption of alcohol. In this chapter, we conduct an exploratory analysis of the effect of a number of social, cultural, economic and demographic factors on alcohol consumption by premise. This is the first study we are aware of that attempts to analyse the potential relationship between a variety of determinants statistically.

Results suggest population density, broadband concentration and GDP per capita are statistically significant factors. The relationship is positive for population density and broadband penetration in which increases in those factors are associated with relatively more consumption in the off-trade; the

relationship with GDP per capita is negative, so increases in wealth are associated with shifts towards on-trade consumption.

The economic downturn experienced in Europe in the last few years may have influenced the trends observed towards increased off-trade consumption, which is in line with the finding on the association between GDP per capita and the location of alcohol consumption. Perhaps interestingly, a relationship between female higher education rates and off- and on-trade consumption is not observed, despite other research in the UK finding a relationship between levels of consumption and female higher education (Borgonivi and Huerta, 2010).

The finding that off-premise alcohol consumption is growing relative to on-premise consumption has important implications for policy. While an emphasis on policies that promote responsible retail practices in the on-premise sector are critical, the data presented in this chapter highlight the growing necessity to consider approaches that address alcohol consumption in the off-premise sector. This chapter analyses a number of factors contributing to there being more off- and less on-trade consumption and finds three particularly important issues: urbanisation, innovation and wealth. A better understanding of policies related to these factors and how targeted initiatives could reduce economic and social harms of alcohol consumption is desirable. This chapter also highlights the importance of having access to data at least on the trend of on- versus off-trade alcohol consumption, to enable more effective and efficient policymaking and decisionmaking.

CHAPTER 4 Discounts and promotions in alcohol sales across the EU

Sales promotions and discounts, which include "2 for 1" offers, "happy hours", "women drink free", volume discounts and other alcohol retail promotional practices, exist in some form or another in the retail of alcohol in most EU Member States, in both the on- and in the off-trade. However, as with the ratio of on- to off-trade sales, data on the volume of alcohol price promotion and discounts across the EU are limited, so we do not know the exact extent of these practices.

Sales promotions and discounts are used by retailers and manufacturers of alcohol and other consumer goods in order to attract new customers, increase the loyalty of existing customers, promote particular products and clear certain stock (for more on how prices are determined, see Appendix E). Price discounts and promotions of alcoholic beverages have been of increasing interest among policymakers and researchers in Europe who are concerned with the potential for cheap, readily available alcoholic beverages to encourage harmful and hazardous drinking through high volume purchasing and drinking.

Price discounts and promotions presume something like a "normal", "regular" or "standard" price from which it is deviated during a certain time. While normal price and its synonyms are part of our common parlance, there seems to be no single definition of the concept at the EU level, or of what a price promotion or discount constitutes. However, the industry-recognised method of determining a promotion or discount, as opposed to a "normal" or "regular" price, consists of treating the highest price recorded over the previous five weeks as the regular price; if the regular price falls by 5 percent or more in a subsequent week, the item is classified as being on promotion, and if the reduced price remains in place for more than four additional weeks it then becomes the new regular price (Brennan et al., 2009).[10]

In this chapter we explore the current situation regarding the use of alcohol price discounts and promotions targeted to the final consumer, as well as trends across the EU. The aim of this chapter is to shed light on the use of alcohol price promotions and discounts in the EU, as understanding the nature and scale of price promotions and discounts is a key element in the assessment of the most appropriate policy response.

[10] There does not appear to be a standard or legal definition of what constitutes a price discount or promotion at EU level.

4.1 Why do alcohol price discounts and promotions matter to public health policy?

Previous chapters noted the evidence linking alcohol prices to consumption and harms, as well as the ways in which cheap alcohol is related to consumption. In addition to this, there is some research on the impact of off- and on-trade price promotions and discounts which is informative, although this evidence base is not well developed. Among the few research efforts, a study by Brennan et al. (2009) modelled the possible impacts of different restrictions on off-trade price promotions and discounts in the UK, finding that tighter restrictions reduce alcohol consumption and harms further than more lax restrictions, with a total ban on discounting leading to a 2.8 percent decrease in consumption a year (similar to the decrease from a 40p minimum price). The different promotional restrictions modelled by the Brennan et al. (2009) study range from bans on "buy one get one free" offers, bans on discounts of more than 30 percent (covering "3 for the price of 2" offers), bans on discounts only for lower-priced alcohol (less than 30p per unit), and a total ban off-trade discounting. The data on off-trade discounts were taken from Nielsen, which uses an industry-recognised method of determining a price promotion or discount, described earlier.

Other studies on alcohol promotions and discounts have been conducted elsewhere, most notably in the US, which come to similar conclusions. A well-known study of price promotions to US college students found that "[t]he availability of large volumes of alcohol (24- and 30-can cases of beer, kegs, party balls), low sale prices, and frequent promotions and advertisements at both on- and off-premise establishments were associated with higher binge drinking rates on the college campuses" (Kuo et al., 2003, p. 204; for other studies see also Bray et al., 2009; Christie et al., 2001).

Finally, while not exploring the impact of alcohol price promotions on outcomes other than sales themselves, a study from the UK indicates that promotions in the retail of spirits in the UK supermarket sector "have had a slight positive impact on the volume of sales, particularly over the seasonally important Christmas period" (Fearne et al., 1999, p. 430). Interestingly, the study also concludes that "some promotions, especially multibuys, appear largely to reward loyal customers [whereas o]ther promotions, such as price and gift offers, appeal more to consumers who do not purchase spirits so frequently and also attract people who are less brand and store loyal" (Fearne et al., 1999, p. 430).

The retail of alcohol at below its cost price is a type of promotional activity that has also been the subject of policy discussions in the EU in recent years. The literature on below-cost sales is briefly reviewed in Chapter 5.

4.2 Trends in discounts and promotions in alcohol sales across the EU

We aimed to obtain reliable, comprehensive data on the extent of alcohol sales through price promotions and discounts in a time-series but such data are not readily available. Governments' statistical offices do not collect such information (for more information on alcohol price and retail data collected by Member States, see Appendix G). Of the market research companies we

consulted, two had some relevant information, although they do not provide a complete picture of alcohol price promotions and discounts for the European Union.[11] While individual economic operators may record the extent of their alcohol sales through price promotions and discounts, there was no scope in this project to survey business to arrive at an estimate. As a result, we rely on the limited published literature on the extent of alcohol price promotions and discounts in Europe, and on anecdotal information provided by experts and economic operators consulted through interviews and a questionnaire.

4.2.1 Alcohol price discounts and promotions in the EU

As mentioned above, there is limited research on the extent, nature and impacts of alcohol price promotions and discounts at the point of sale across the EU. Most of the available research we have identified is grey literature. As mentioned above, one such study is the previous report on alcohol affordability in the EU (Rabinovich, et al., 2009), which offered limited insights into this subject. It found that in Ireland, Latvia, the Netherlands, Poland and the UK, price promotions and discounts are common in both the off- and on-trade, but this is increasingly significant in value in the off-trade (Rabinovich et al., 2009). No information on this issue was retrieved for other EU countries.

The study also found that off-premise alcohol prices are already lower than on-premise prices to begin with. For example, in Norway, alcoholic drinks are three to four times more expensive on-premise. They are also 3.4 times more expensive on-premise in Finland. Ireland, Latvia and the Netherlands also reported significant price differences. A reason for this is that supermarkets are able to purchase large quantities of alcohol at lower prices than on-premise and smaller retailers, through volume discounts. Another reason is the use of alcohol as a loss-leader – a product sold at very low prices (sometimes below cost) to lure customers into stores – in supermarkets (Rabinovich et al., 2009). The high level of competition among supermarkets also contributes to keeping prices of alcohol low (although in countries with alcohol retail monopolies, such as Finland and Norway, prices are set centrally, which makes the dynamics of alcohol retail different from that in other countries).

Wales

Another recent example of research in this area is a report produced by Alcohol Concern, a UK-based non-governmental organisation that campaigns for effective policy in the alcohol field. The report presents findings from an investigation into the nature and extent of price promotions in on-premise establishments on a Friday night in three urban locations in Wales (Leyshon and Misell, 2009). The report found that 49 percent (21 out of 43) of the venues examined were offering some form of alcoholic drinks promotions, such as "happy hours", half price drinks, "2 for 1" deals and others, whereas only 12

[11] We made inquiries with International Wine and Spirit Research (IWSR), Euromonitor and Nielsen. Euromonitor gathers data for various EU countries on the volume of alcohol sales through discount stores. Nielsen gathers data on the volume and value of alcohol promotions, although mostly for the off-trade and not always for all types of alcoholic beverage (only data for the UK are complete across on- and off-trade and type of beverage). Nielsen's data are for 25 European countries (including Norway and Switzerland). While the Nielsen data would provide interesting and useful information with at least a low bound estimate of the extent to alcohol price promotions and discounts in many EU countries, the cost of this data made it prohibitive for this project.

percent offered promotions on non-alcoholic drinks. Moreover, the researchers found that at least four venues were offering pints of beer for less than the lowest priced soft drink available to consumers. Finally, 40 percent of the venues were found to have no messages about responsible or sensible drinking on display. Interestingly, even in the locations were alcohol promotions were not used, the "regular" price of alcohol was low, often lower than the cheapest available non-alcoholic drink (Leyshon and Misell, 2009).

France

A study released in 2007 examined price promotions and discounts for beer in France. It indicated that in France, supermarkets are the main sellers of beer, and regularly make sales promotions both for brand and own-brand beers depending on "sales promotions as either offensive and/or defensive tools in the battle for market share" (Mangez and Mckinley, 2007, p. 7). While clearly indicating that price promotions and discounts are pervasive off-premise, the study did not provide more detailed information on the proportion of alcohol sold through promotions and discounts.

Scotland

A large study commissioned by the Scottish Executive examines the sale of alcohol off-premise in Scotland, finding that "the primary technique used for the promotion of alcohol in off-sales is price discounting, in particular ramped discounting, and is often event driven" (Scottish Executive, 2007, p. 4). While providing interesting qualitative insights into this phenomenon, the report does not attempt to measure the ratio of total alcohol that is sold through price promotions and discounts.

The Netherlands

The Dutch Institute for Alcohol Policy (van den Wildenberg, 2010) reports that approximately 90 percent of beer retailed in the off-premise sector is sold through supermarkets. Within that, 38 percent of all cases of beer were sold through some kind of price promotion or discount. In fact, beer has become so cheap in Dutch supermarkets that even licensed liquor stores are now buying their beer from them for subsequent resale (van den Wildenberg, 2010). This leads to double-counting by market research companies such as Nielsen who reported an increase in beer consumption, when in reality, according to Netherlands Statistics, consumption of beer has decreased.[12]

The findings of this Dutch report are worth presenting in some detail as it represents one of a very few in-depth empirical examinations of the incidence of price discounting and promotions of alcohol. The report's research methodology consisted of tracking all price promotion on beer in 25 different supermarkets and three rural liquor store branches. The study found that every year, approximately 2,500 to 3,000 price promotions on beer take place in the 25 supermarket chains and in the three national branches liquor stores. Of this total number of price promotions on beer, almost three-quarters (74 percent) took place at the supermarket; the remaining 26 percent of the promotions came from the three nationwide liquor store branches. This included promotions such as volume discounts. The total number of price promotions in

[12] For more information, see http://www.cbs.nl/en-GB/menu/themas/gezondheid-welzijn/publicaties/artikelen/archief/2007/2007-2216-wm.htm (last seen October 2011).

2009 compared with 2008 increased by 33 percent in the supermarket, versus a decrease of over 11 percent in liquor stores. The number of price promotions at supermarkets peaks during different public holidays or festivities. The liquor stores show a more consistent level of price action during the year. The average discount of a price action comes out to be about 25 percent, both at the supermarket and the liquor store. The percentage of price promotions on beer with discounts of more than 30 percent of the normal selling price is 25.7 percent (van den Wildenberg, 2010).

Media reports

There are also myriad editorials and journalistic articles addressing the question of the availability of cheap alcohol and the role price promotions and discounts have in problem drinking. For example, an editorial in the *British Medical Journal* mentions how "fierce competition between supermarket chains has led to discounts and promotions" (Groves, 2010). It is possible that relevant reporting on this exists in the different Member States but it is not within the scope of this study to explore news media in the different European languages to identify empirical evidence on this issue.

4.2.2 The drivers of alcohol price promotions and discounts

Alcohol price promotions and discounts are a key tool for competition in the alcohol retail market in both the on- and the off-trade. In the absence of regulation restricting or banning their use, retail venues are likely to use at least some price promotions and discounts regularly as one of the strategies to achieve competitive advantage.

Research focusing on the *drivers* of the use of alcohol price promotions and discounts is limited. However, interviews conducted during this study suggest that a number of social and economic trends may contribute to changes in the scale of promotional and discount activity in the alcohol market.[13] For instance, in Catalonia, a Spanish province where regulations restricting the use of promotions were recently introduced (see Chapter 5), an increase in tourism over the last decade or so appears to have been an important factor in the widespread use of alcohol promotions, especially in the on-trade. Interviewees from Spain as well as Estonia and the UK also mentioned the economic crisis of 2008/09 as a driver of promotional activity; as consumers shift from on- to off-trade consumption, both types of retail venues increase their use of promotions to retain or attract customers. A study on price promotions in the UK argued that declines in consumer spending fosters their use as a means to attract price-sensitive consumers (Fearne et al., 1999).

In Finland, Ireland and the UK, regulatory changes were also cited as factors leading to changes in the extent to which alcohol promotions and discounts are used. In Ireland, the repeal of the Groceries Order and the introduction of a smoking ban (both in the last decade) appear to have contributed to an increase in the use of promotion, as competition between alcohol retail venues intensified (see Chapter 5 for a more in-depth discussion of the repeal of the Groceries Order). In the UK, the smoking ban of 2007 has also been interpreted

[13] We conducted interviews with 23 informants with knowledge and expertise in the area of alcohol retail across the EU. Interviewees included economic operators and government representatives in Austria, Denmark, Estonia, Finland, Ireland, Iceland, the Netherlands, Spain, Sweden and the UK.

as a possible driver of an increase in promotions and discounts, especially in the on-trade as retailers compete to retain and attract new customers. Finnish on-trade retailers may be using price promotions and discounts more frequently and extensively in the last few years as a response to alcohol tax increases (which followed significant tax reductions in 2004; see Chapter 2) and the ban on tobacco smoking in public venues.

In contrast, in Denmark and Sweden, interviewees did not identify a change in the scale of promotional and discount activity in the retail of alcohol in recent years. Instead, interviewees in Denmark identified a change in the focus of promotions, towards specialist beers and ciders as well as other products.

While based on exploratory research only, these insights from informants with expertise in alcohol retail highlight that while commonalities can be found across the EU, trends in the use of alcohol price promotions and discounts are likely to vary between Member States in response to different policy, social and economic realities.

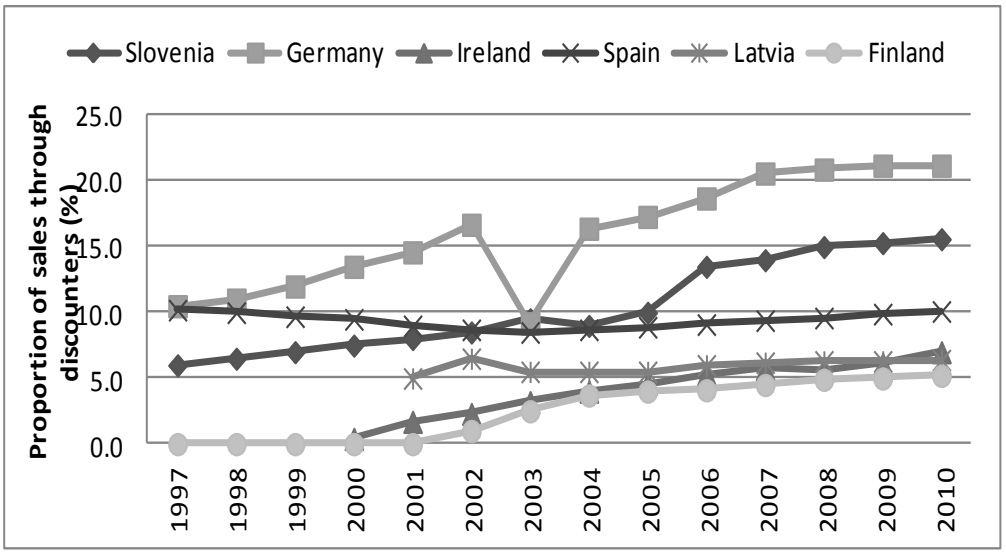
4.3 Alcohol sold through discounters in five EU Member States

While we were not able to obtain comparable data on the proportion of total alcohol sold through price discounts and promotions in the on- and off-trade, we obtained data from Euromonitor International on the proportion of alcohol sales through discounters (retailers selling mostly own brands, budget brands and leading brands at discount prices) in selected Member States.[14] Even though these data do not provide us with a complete picture of the situation, they offer insights into the trend in the retail of alcohol through price discounters.

The countries for which data were obtained are those we used as case studies in Chapter 3 when discussing on- versus off-trade sales: Finland, Germany, Ireland, Latvia, Slovenia and Spain. Figures 4.1 to 4.3 present the trends between 1997 and 2010 on the sale of beer, spirits and wine through discounters, for all five countries.

[14] More specifically, the definition of "discounter" used by Euromonitor is as follows: Discounters include hard discounters and soft discounters. Hard discounters were first introduced by Aldi in Germany, and are also known as limited-line discounters. Stores are typically 300-900 square metres in size and stock fewer than 1,000 product lines, largely in packaged groceries. Goods are mainly private-label or budget brands. Soft discounters are usually slightly larger than hard discounters, and are also known as extended-range discounters. Stores typically stock 1,000–4,000 product lines. As well as private-label and budget brands, stores commonly carry leading brands at discounted prices. Discounters exclude mass merchandisers and warehouse clubs. Example brands include Aldi, Lidl, Netto, Penny and Plus.

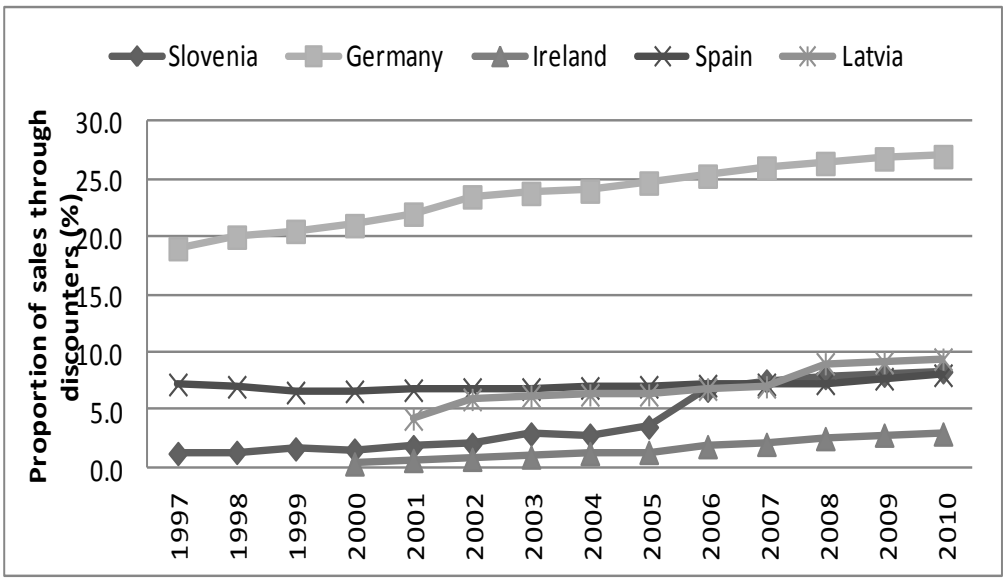
Figure 4.1: Proportion of total beer sales by discount retailers in six EU Member States, 1997–2010



Source: Euromonitor International.

Figure 4.1 shows an increase in the proportion of beer sold through discounters in Finland, Germany, Ireland and Slovenia. Latvia experienced only a small increase, while in Spain consumption of beer through discounters has remained stable since 1997, with a small dip around 2003.

Figure 4.2: Proportion of total spirits sales by discount retailers in five EU Member States, 1997–2010

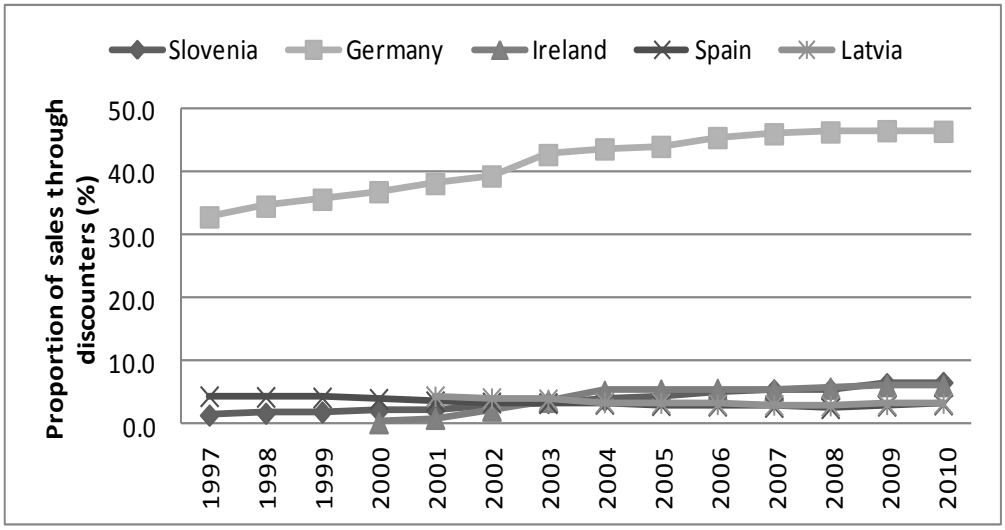


Source: Euromonitor International.

Figure 4.2 shows a similar trend for spirits as observed for beer, in all countries except Latvia, which exhibits a more than doubling of the proportion of spirits sold through discounters between 2001 and 2010. Finland is missing from both

figures on spirits and wine, because the national retail monopoly (Alko) is the only legal retailer of wine and spirits; only the sale of low alcohol beer (4.7% ABV or less) is allowed through discounters.

Figure 4.3: Proportion of total wine sales by discount retailers in five EU Member States, 1997–2010



Source: Euromonitor International.

Finally, the data for wine indicate there has been a different trend from sales of beer and spirits in all countries (Figure 4.3). There is a substantial increase in the proportions of wine sold through discounters in Germany, Ireland and Slovenia. In Latvia and Spain, on the other hand, we observe relative stability (or small decreases) in the proportion of wine sold through discounters in the last ten years.

The data presented above provide an incomplete but informative snapshot of the trend in the sale of discounted alcoholic beverages in five EU Member States. The findings from these data are in line with our findings on the trends in on- versus off-trade alcohol consumption – that alcohol consumption in the off-trade sector seems to be growing. While the bulk of off-trade alcohol may be purchased in large supermarkets, policymakers should closely monitor their country's trend in alcohol sales through discounters.

One reason offered for this trend is the emergence of growing numbers of discount stores selling a multiplicity of grocery products as well as alcohol. This may have resulted in a shift from on- to off-trade purchasing because individuals find it more efficient and/or cost-effective to purchase alcohol along with other products.

4.4 Final remarks

This chapter explores the use of alcohol price promotions and discounts in the EU. Its findings highlight a number of key issues for consideration. First, as the review of research in this and other chapters indicate, the retail of alcohol at promotional or discounted prices merits careful consideration by policymakers,

given existing evidence that cheap and readily available alcohol may fuel harmful and hazardous consumption. Second, information on the extent to which alcohol is sold through price promotions and discounts is limited. While there are indications from certain countries about the size and trend of promotional and discount activity in alcohol retail, more comprehensive and robust evidence is needed to determine the appropriate policy response. Finally, as we found in previous chapters, the extent and nature of discounting and promotions in the retail of alcohol appears to vary between Member States. While in some the value and volume of alcohol discounting was reported to have grown in recent years, in others no change was observed. In yet a third group of countries, discounts and promotions are severely constrained through statutory regulation; this is most notable in those countries with an alcohol off-trade retail monopoly. The most suitable policy options to address alcohol-related harm will therefore vary, although important policy lessons may be shared between countries facing similar trends in alcohol promotions and discounts.

CHAPTER 5 Regulations affecting alcohol prices

Policymakers, researchers and public health practitioners have raised concerns about the use of below-cost sales and other price promotions and discounts in the marketing of alcohol. These concerns emerge from the strong evidence, outlined in the preceding chapters, that price affects drinking and harm levels; below-cost sales and other sales promotions that make alcohol cheaper can lead to higher consumption and harms.

Alcohol sales promotions and discounts are common across the EU. In many of Member States there are measures in place intended to curb or control them, not only for public health but also for competition purposes. The most common regulations of this type include bans on sales below cost, and restrictions or bans on price discounts and promotions in the on- and/or off-trade.15 Countries with a monopoly on alcohol retail (Finland, Iceland, Norway and Sweden) control prices centrally for alcohol sold in the off-trade (this would not in itself exclude price actions), and some of them also impose various restrictions on the use of price promotions and discounts in the on-trade.

In this chapter we provide a rapid review of the evidence on the effectiveness of bans on sales below cost and statutory restrictions on price promotions and discounts.16 We then present findings from five case studies of different forms of these regulations as a means to illustrate how they work and what they can aim to achieve. The case studies are of pricing policies in Finland, Germany, Iceland, Ireland and Spain. Case study research consisted of reviews of existing research, documents and data, as well as of key informant interviews with government representatives and researchers with expertise in alcohol pricing in the countries examined. Obtaining a good picture of the regulatory landscape in the EU pertaining to alcohol sales promotions and discounts is important for influencing the public health debate and developing policy strategies in this area.

[15] Many countries have also developed regulations to control the promotion of alcohol through advertising, the provision of alcohol in fairs, exhibitions and similar events, the supply of alcohol free of charge in different types of venues, and the use of alcohol as prizes in competitions, and so on (Rabinovich et al., 2009).

[16] Statutory regulations are policies established by or founded on official (government) laws or rules.

5.1 Bans on alcohol sales below cost

Bans on sales below cost are used in a small number of EU countries, including Belgium, France, Greece (for grocery goods), Hungary (for agricultural products), Italy, Luxembourg (where legislation on commercial practices and consumer protection ban sales below cost), Poland and Spain. Ireland had such a ban as well, part of the 1987 Restrictive Practices (Groceries) Order, but this was repealed in 2006 (Rabinovich et al., 2009; also Allain and Chambolle, 2004; Donnelly, 2006). In these countries bans on sales below cost apply to products generally, not specifically to alcohol.

Typically, the main aim of the policy when applied to products generally is to prevent anti-competitive (predatory) pricing, thus protecting small retailers and producers from the market power of large retailers (such as supermarket chains), and enabling new entrants into the market.17 These types of bans do not set a minimum price for a product or products; rather, they ban the sale of products at a price below the seller's cost of doing business or some proxy thereof (eg below the cost of VAT plus excise duty of a particular product, or the unit price invoiced by the supplier).

While very little is known about the effects of this type of ban on alcohol consumption and harms, researchers have raised concerns about the use of below-cost sales and other price promotions and discounts in the marketing of alcohol. These concerns emerge from the strong evidence that price affects levels of drinking and alcohol-related harm; below-cost sales and other sales promotions that make alcohol cheaper can lead to higher consumption and harms (Hastings et al., 2005; more on this also below).

There is, however, some evidence examining how retail and manufacturer competition is affected by the introduction of a government-imposed price floor in a "loss-leader" model. For example, Chevalier et al. (2003) use supermarket data on the daily purchases of buyers, including quantity of beer purchased, and find evidence of a "loss-leader" model of retailer competition. The authors find retailers lower the price of particular products and this benefits the retailers because consumers purchase more of other products for which the price has not changed.

Research on the economic impact of bans on sales below cost in markets other than alcohol is also limited (Marx and Shaffer, 1999). Most of the existing economic research focuses on explaining the use of these pricing strategies by industries, and on distinguishing anti-competitive behaviour from pro-competitive price cutting (Allain and Chambolle, 2004; Marx and Shaffer, 1999).18 In Europe, where a number of countries (including Belgium, France, Luxembourg and others) implement general bans on sales below cost, the

[17] It is worth noting that these arguments, which underlie the introduction of below-cost sales bans, are challenged by some economic literature. First, economic theory distinguished between below-cost sales and predatory pricing. A predatory price may be lower *or higher* than the cost price, thus not necessarily always leading to a sale below cost. In addition, there are many legitimate reasons why retailers sell products at below their cost price, such as the need to clear certain stock (for example when products are reaching their expiration date). Below-cost sales are not always motivated by anti-competitive interests (Colla, 2006).

[18] Studies on the economic impacts of bans on sales below cost in markets other than alcohol include Allain and Chambolle, 2009; Anderson and Johnson, 1999; Skidmore et al., 2005.

research consensus seems to be that the bans increase retail margins (for a short review of existing evidence on this, see Allain and Chambolle, 2009, pp. 7–8). An important issue regarding sales below cost is enforcement and compliance, about which little is known. Key informant interviews conducted in the course of this study suggest that at least in one EU country (Spain) enforcement is patchy. It is likely that there is significant variation in the extent to which bans on below-cost sales of alcohol are monitored and complied with across EU Member States.

5.2 Restrictions on alcohol price promotions and discounts

As discussed in the previous chapter, there is some research on the impact of general off- and on-trade price promotions and discounts (not looking specifically at below-cost sales). Although these studies can be informative, the evidence base is not well developed (Hastings et al., 2005). The Brennan et al. study (2009) mentioned previously modelled the possible impacts of different restrictions on off-trade price promotions and discounts in the UK, finding that tighter restrictions are associated with greater reductions in alcohol consumption and harms, with a total ban on discounting leading to a 2.8 percent decrease in consumption a year (similar to the decrease from a 40p minimum price) (see also Purshouse et al., 2010).

Other studies on alcohol promotions and discounts have been conducted elsewhere, most notably in the US. A study estimating brand- and packaging-specific own- and cross-price elasticities for beer in the US found that volume-based price discounting in supermarkets induces people to buy larger-volume packages of beer and may lead to an increase in overall beer consumption, concluding that restrictions in volume-based price discounts are potentially effective at reducing beer consumption (Bray et al., 2009). The study of price promotions to US college students mentioned earlier concludes that "[t]he regulation of marketing practices such as sale prices, promotions, and advertisements may be important strategies to reduce binge drinking and its accompanying problems" (Kuo et al., 2003; p. 204*)*. A third study focused on the effect of on-trade price promotions on intention to drink, finding that "lower prices generally lead to more favorable attitudes and intentions and increase the perceived likelihood of increased consumption" and that "[c]ompared with nonbingers, binge drinkers had higher patronage intentions and expected to consume more alcohol in response to the promotion" (Christie et al., 2001, p. 245).

5.3 The situation in Europe

As interest in the importance of alcohol pricing policy increases, so does the information available about approaches taken by individual European governments in this area. The World Health Organization and the European Commission, for example, are currently collecting data on the presence of legally binding regulations on alcohol sales promotion in European countries. The data collected through their European Survey on Alcohol and Health in 2008–2009 (World Health Organization, 2010) include information on the presence of these regulations in the off-premise sector only. In a very recent development, the 2010–2011 wave of the survey includes questions on

regulations on alcohol price promotions in the on-premise sector as well. Alcohol surveys by the WHO before the 2008–2009 wave did not include questions on regulations on price promotion, which means that we cannot ascertain whether and to what extent countries' approaches have changed in recent years.

According to the 2010 WHO report, the EU and EEA Member States with legally binding regulations on alcohol sales promotion were Bulgaria, Estonia, Finland, Iceland, Ireland, Italy, Latvia, Lithuania, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain and Sweden. Norway and Switzerland, which we also examine in this study, also have legally binding regulations on alcohol sales promotions. Thus 63 percent of EU Member States have some type of statutory, legally binding regulation restricting or banning at least certain forms of alcohol price promotion. The 2010 WHO report, however, did not provide details on the specific nature and scope of the regulations in place in the different Member States. This level of detail is important, because within the broad category of "price promotions" there is significant variation in the requirements, reach and scale of the statutory regulations in the different countries.

Results from the 2011 wave of the survey (still unpublished) were slightly different. The results of this latest wave suggest that countries with legally binding regulations on alcohol sales promotion were Austria, Bulgaria, Finland, France, Germany, Italy, Latvia, Lithuania, Norway, Poland, Slovenia, Spain, Sweden and Switzerland. It is unclear whether results differed because of changes in regulation in individual Member States or respondent error (respondents in the different waves having different degrees of knowledge of alcohol pricing regulation). A third explanation would be the lack of response from certain countries; at the time of writing this report, responses from Ireland and Luxembourg were not available (for a summary of responses available, see Appendix H).

The first report on alcohol affordability in Europe (on which the present study builds) provided examples of the types of regulations in place (Rabinovich et al., 2009). For instance, as mentioned elsewhere in this report, a number of countries (such as Belgium, Luxembourg, Poland and some Spanish provinces) have bans on below-cost sales of grocery products, which include alcoholic beverages. Scotland recently introduced comprehensive alcohol legislation that, among other things, bans a wide range of promotions on-premise, although a few apply to the off-premise sector as well. Finland bans quantity discounts in the on-trade and the advertising of price promotions such as "happy hours" outside the establishment if the promotion is valid for less than two months. In Sweden, national legislation stipulates that alcohol cannot be sold at a price lower than cost "plus a reasonable addition" in the on-trade. In Germany, the so-called Apple Juice Law stipulates that at least one non-alcoholic beverage must be of the same or lower price than the lowest priced alcoholic beverage of the same volume, in the on-premise sector. In some Swiss cantons (provinces) at least three non-alcoholic beverages must be sold at a price lower than that of the cheapest available drink of the same volume (Rabinovich et al., 2009).

The situation for price promotions and discounts in the off-trade is different in countries with alcohol retail monopolies: Finland, Iceland, Norway and

Sweden.[19] Among the characteristics of alcohol retail monopolies are the typically lower number of retail outlets, shorter opening hours, and tighter restrictions on price promotions and discounts than in countries with competitive alcohol off-trade sectors. They also tend to offer the same products at the same price across the country, which is not usually the case in competitive markets (Örnberg and Ólafsdóttir, 2008). In line with their central aim of reducing individual and social harm as a result of alcohol consumption (Örnberg and Ólafsdóttir, 2008), alcohol retail monopolies restrict the sale of alcoholic beverages through promotions and discounts in the off-trade.

In addition, the report on progress with the implementation of the EU Alcohol Strategy provides further examples of this type of regulation in Austria, Ireland and Slovenia. These and the above examples are summarised in Table 5.1.

Table 5.1: Examples of current pricing policies (excluding excise duty) in selected European Union and EEA member states

Country	Price policy
Austria	Federal law requires on-premise establishments to offer at least two non-alcoholic beverages below the price of the cheapest alcoholic drink available.
Belgium	Ban on sales below cost of certain groceries (including alcoholic beverages) in the off-premise sector.
Finland	Off-trade alcohol retail monopoly (Alko). The Alcohol Act bans volume-based discounts.
Germany	The Apple Juice Law stipulates that on-premise establishments offer at least one non-alcoholic beverage at the same price as the cheapest alcoholic drink available. Baden-Württemberg's 2010 regulation banning activities or events offering alcoholic beverages at fixed or below-cost prices, such as "flat-rate parties", "all-inclusive parties" and drinking competitions (promotional activities such as "first drink free", "first drink half price" or happy hour promotions are exempted from the ban).
Iceland	Off-trade alcohol retail monopoly (ÁTVR).
Ireland	The Intoxicating Liquor Act 2003 bans happy hour sales in the on-premise sector (law to come into force in 2012).
Luxembourg	Ban on below-cost sales of certain grocery items (which include alcoholic beverages).
Netherlands	The Licensing and Catering Law specifies that alcohol cannot be sold at a price lower than 70% and 60% of the original selling price in the off- and on-trade respectively.
Norway	Off-trade alcohol retail monopoly (Vinmonopolet).
Poland	Ban on below-cost sales of certain grocery items (which include alcoholic beverages).
Scotland	The Scottish Licensing Act bans a range of alcohol sales promotional practices applying to the on- and off-premise sectors. These practices include volume discounts, "all you can drink" offers and others.

[19] While not providing a full review of the research on alcohol retail monopolies, it is worth noting the findings from recent studies. A systematic review of research on the privatization of retail monopolies found that the majority of studies included reported that total alcohol consumption often increased after allowing for substitution with non-alcoholic beverages (Wagenaar and Holder, 1996). Other studies that found increases in consumption after privatisation of retail monopolies include Her et al. (1999) and Holder and Wagenaar (1990).

Country	Price policy
Slovenia	Alcoholic beverage retailers are required to offer at least two non-alcoholic beverages at the same or lower price as the cheapest alcoholic beverage available.
Spain	National ban in 1996 on sales below cost (defined as invoice price) (Noticias Juridicas, 1996). Catalonia restrictions on alcohol sales promotions and discounts. Galicia restrictions on alcohol sales promotions and discounts in the on-trade.
Sweden	Off-trade alcohol retail monopoly (Systembolaget). Legislation stipulates that alcohol cannot be sold for less than cost plus a "reasonable premium" (the Department of Health recommends this premium is 25%).
Switzerland	Certain cantons (provinces) stipulate that on-premise establishments must offer at least three non-alcoholic beverages at lower prices than the cheapest alcoholic beverage available.
UK	Ban on "irresponsible promotions" through Licensing Act 2003 (Mandatory Licensing Conditions) Order 2010. The types of promotions banned include "women drink for free", "all you can drink for x amount", discount nights for students and "pay your entry fee then drink for free until 10pm". "Happy hours" are not banned, but will "fall foul" of the Order if "they are promoted and organised in an irresponsible way" (Home Office, 2010). Ban on below-cost sales, where "cost" is defined as VAT + excise duty. This will come into force in April 2012.

5.4 Germany: regulation in Baden-Württemberg

In 2009, the German federal state Baden-Württemberg, situated in the south-west of the country, introduced the Alkoholverkaufsverbotsgesetz ("Law prohibiting the sale of alcohol") (Landtag von Baden-Württemberg, 2010e), which came into force on 1 March 2010.[20] The law, which represents an amendment to the Baden-Württemberg law on the opening hours of shops (Gesetz über die Ladenöffnung) and the statute governing restaurants (Gaststättengesetz), comprises two components: first, it prohibits the sale of alcoholic beverages off-premise during night-time (between 10pm and 5am); second, it bans on-premise activities or events offering or marketing alcoholic beverages in a way "that promotes alcohol misuse or excessive alcohol consumption", such as "flat-rate-parties", "all-inclusive parties" and drinking competitions (eg "Wettsaufen"), which offer alcoholic beverages at fixed or below-cost prices. The ban does not apply to offers that also include fixed prices for alcoholic beverages but that in nature and scope are not targeted at enticing hazardous and harmful alcohol consumption, such as fixed price offers for

[20] It may be worthwhile noting that in 2010, members of the state parliament of Bavaria put forward a similar proposal to ban the on-premise offering or marketing of alcoholic beverages that entices excessive alcohol consumption or misuse, referring to figures on the proportion of violent acts under the influence of alcohol of a scale similar to Baden-Württemberg, at 41 percent in 2009. However, the proposal was rejected on recommendation by the parliamentary Committee for Economics, Infrastructure, Transport and Technology, with input from representatives from relevant committees, including for Environment and Health; Social Affairs, Family and Work; and Local Affairs. Other states, such as Schleswig-Holstein, Mecklenburg-Vorpommern, Sachsen and Berlin, indicated that they would follow developments in Baden-Württemberg closely and consider the introduction of a similar law if the *Alkoholverkaufsverbotsgesetz* proved to have positive effects (Eppelsheim, 2010).

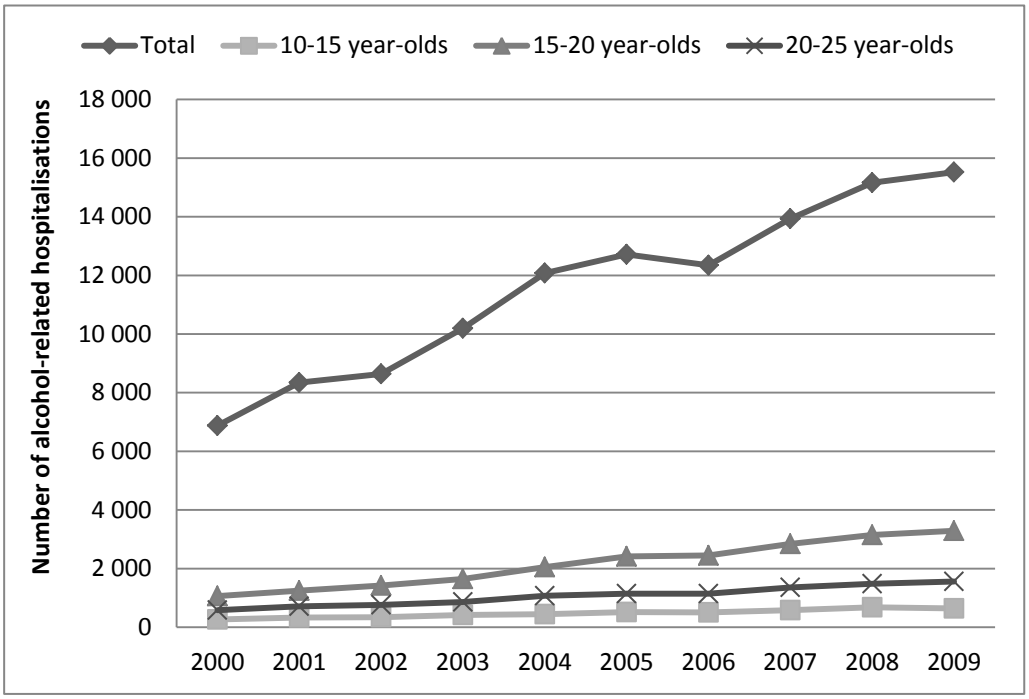
weddings, birthday parties, corporate events and so on. Promotional activities such as "first drink free", "first drink half price" or "happy hour" promotions are also exempted from the ban as are wine tasting offers (Landtag von Baden-Württemberg, 2009). Violation of the ban on consumption-enticing events constitutes a regulatory offence and is subject to a financial penalty of up to €5,000.

It should be noted that the law also requires an evaluation of the newly introduced regulation. However, evaluation is foreseen only for prohibition of the sale of alcoholic beverages off-premise during night-time within three years of enacting the law. The precise scope of the evaluation is not specified although the justification of the law explains that it is also aimed at assessing the economic impacts of the ban on sales in shops, in particular petrol stations, and whether the ban is undermined by increased on-premise sales for off-premise use.

The primary goal of the Alkoholverkaufsverbotgesetz is to tackle the increase in alcohol-influenced crime and anti-social behaviour thought to be related to the widespread availability of alcoholic beverages and events enticing alcohol misuse through fixed price promotions such as flat-rate offers. Its secondary objective is to address alcohol-related health effects associated with excess alcohol consumption (Landtag von Baden-Württemberg, 2009; Landtag von Baden-Württemberg, 2010d).

This law was put forward against the background of a high proportion of crimes being alcohol-related, with Baden-Württemberg crime statistics showing that in 2008, for instance, about 36 percent of adults who committed violent acts did so under the influence of alcohol. This proportion went up to 40 percent among those aged 18–21 years. About two-thirds of alcohol-influenced violent acts took place during night-time, as did about 46 percent of alcohol-related traffic injuries. Just under half of those with a causal involvement in traffic injuries involved offenders with a blood alcohol level in excess of 1.6 percent, while a quarter showed a blood alcohol level of more than 2.0 percent. In addition, the overall number of people admitted to hospital because of alcohol-related health problems and acute alcohol intoxication more than doubled in the 2000s (Landtag von Baden-Württemberg, 2009). According to several people interviewed for this case study, this rise, particularly in the second half of the 2000s, may be partly explained by a heightened public sensitivity towards alcohol-related harm and thus a greater readiness to take others to hospital when considered at risk; as suggested by experts consulted in the course of this study, the sharpness of the increase is striking (see Figure 5.1).

Figure 5.1: Number of alcohol-related hospital admissions in Baden-Württemberg, 2000-2009



Source: Statistisches Bundesamt.

The draft bill for the *Alkoholverkaufsverbotgesetz* was intensely debated in parliament and met with opposition by a range of stakeholders, including the drinks industry, hotel and restaurant businesses, the retail federation and petrol station businesses. However, criticism was exclusively targeted at the ban on the sale of alcoholic beverages off-premise during night-time and focused predominantly on the alcohol consumption of youths. For instance, Brigitte Lösch, the Green Party's spokesperson for drug and addiction policy in Baden-Württemberg, welcomed the ban on activities or events offering alcoholic beverages at fixed or below-cost prices, yet condemned the prohibition of off-premise alcohol sales at night as a merely "symbolical, political gesture", which could easily be circumvented by purchasing alcohol before the prohibition period (Lösch, 2009). Sabine Bätzing, the then drugs commissioner of the federal government, pointed out that the regulation of off-premise alcohol sales could have been based on the existing *Jugendschutzgesetz* (legal protection for children and young persons) and did not require the introduction of a new law Hoischen and Eppelsheim (2009). Representatives of petrol stations, in turn, warned that the prohibition of night-time off-premise alcohol sales would lead to a drop in revenue of 30 percent to 40 percent, resulting in a possible loss of 2,000 to 3,000 jobs and the closure of many petrol stations during night hours (Eppelsheim, 2010).

The reason why the debate predominantly focused on the ban on off-premise night-time sales, rather than on activities enticing the consumption of alcohol, is likely to be two-fold, as suggested by our interviewees. First, following high-profile media coverage of events such as the death of a 16-year-old pupil after a drinking competition in Berlin (Friedrichsen, 2009), flat-rate-parties and similar events had already been widely discussed and condemned in public

discourse. In this vein, the Federal Association of the German Liquor Industry and Liquor Importers (BSI), for instance, publicly criticised and pledged to prevent flat-rate parties and below-cost events where possible Arbeitskreis Alkohol und Verantwortung des BSI (2010). Second, it can be argued that the prohibition of consumption-enticing events is implicitly covered within the statute governing restaurants (the *Gaststättengesetz*) (Landtag von Baden-Württemberg, 2007). More precisely, among other things the *Gaststättengesetz* specifies that on-premise licences can be withheld or withdrawn if there is sufficient reason to assume that the licence applicant will act so as to entice alcohol misuse, and that it is forbidden to sell alcohol to visibly drunken persons. In this vein, the Baden-Württemberg Ministry of Economy issued a decree in 2007, which explained how to ban events such as flat-rate parties on the basis of the *Gaststättengesetz* (Landesportal Baden-Württemberg, 2007). Hence, the second component of the *Alkoholverkaufsverbotsgesetz* tackling the promotion of on-premise alcohol misuse is arguably a more explicit formulation of this stance on excessive alcohol consumption, which can already be found in the *Gaststättengesetz*. Consequently, it was not as significant a step as the restriction of alcohol availability during night hours and was, therefore, not received with as much controversy as the ban on off-premise night-time sales.

This critical focus on the ban on off-premise night-time sales continued after the *Alkoholverkaufsverbotsgesetz* came into force. Three lawsuits were filed against the ban, but none of them were successful. Although the Federal Administrative Court in Leipzig rejected the charge brought by a group of owners of petrol stations and declared the *Alkoholverkaufsverbotsgesetz* to be constitutional (Innenministerium Baden-Württemberg, 2011a), the Federal Constitutional Court in Karlsruhe found two constitutional complaints (one put forward by an owner of a petrol station and the other by a customer) groundless and thus did not admit them to a full hearing (Bundesverfassungsgericht, 2010; Rechtslupe, 2010). At the same time, potential weaknesses in the law were pointed out. This was, first, the possibility of avoiding the ban of alcohol sales either by purchasing alcohol before the start of the prohibition period at 10pm, or by buying and consuming more alcohol in on-premise establishments after 10pm. The second perceived weakness concerned ways to undermine the law on the basis of legal loopholes. More precisely, it was found that a considerable number of petrol stations can legally avoid the ban because they possess on-premise licences and are thus exempt from the law (Alkoholpolitik und Volksgesundheit, 2010; Stuttgarter Nachrichten, 2010; Stuttgarter Zeitung, 2011). According to information provided by the Baden-Württemberg Ministry of Economy, this applied to 215 out of 1,850 petrol stations in May 2010 (Landtag von Baden-Württemberg, 2010a, 2010c). However, in light of the rather low number of new licence applications put forward by petrol stations by May 2010 (a total of 32), the Baden-Württemberg government did not, at that point, see the law being undermined by the option of having on-premise licences. Similarly, attempts to circumvent the ban of off-premise alcohol sales during night hours, for instance by allowing customers to buy alcoholic beverages during day-time hours while picking them up during the period of prohibition, were thwarted. By April 2010, five violations of the law were recorded (Landtag von Baden-Württemberg, 2010b).

Bearing in mind that the *Alkoholverkaufsverbotsgesetz* was introduced only in March 2010, documented evidence of its effectiveness is very limited.

Moreover, it is not possible as yet to determine to which component of the law, if any, effects should be attributed. It can be said, though, that first reports on the law's effectiveness implicitly link potential impacts with the ban on off-premise night-time sales of alcohol, for instance around an observed drop in incidents requiring police presence around petrol stations (Innenministerium Baden-Württemberg, 2011b). Further studies will need to be conducted to determine the law's impacts.

5.5 Ireland: ban on sales below cost

Ireland's 1987 Restrictive Practices (Groceries) Order introduced a ban on sales below cost that was then repealed in March 2006. This Order was the latest incarnation of a law first introduced in 1956 with the aim of ensuring fair trading conditions; one of the key modifications in the 1987 Order was the introduction of the ban on below-cost sales (Donnelly, 2006). Like similar bans in countries like Belgium, France, Greece, Luxembourg and Poland, the Irish ban applied to a number of grocery products and not exclusively to alcoholic beverages. Nonetheless, it is an interesting case study of this policy as it allows us to ask questions about not only its introduction but also the effects of its repeal.

According to the ban, "cost" was defined as the net invoice cost of the good by the supplier, including VAT but excluding all off-invoice rebates and discounts. This differs from how cost is defined in other places; for instance, in France "cost" is the net invoice cost plus the transport cost, but it also excludes rebates and reductions not on the invoice. Yet another definition of "cost" is as value added tax plus excise duty (Allain and Chambolle, 2004).

Originally, the Groceries Order was passed with the aim of stimulating price competition in the grocery trade for the benefit of the consumer (Collins, 2009). The central premise behind the implementation of the ban was that sales below cost used in multi-product retail pricing reduces consumer welfare by giving consumers adverse perceptions of independent retailers' overall price competitiveness, and distorts competition by driving a more concentrated market structure (Collins and Oustapassidis, 1997; Walsh and Whelan, 1999).

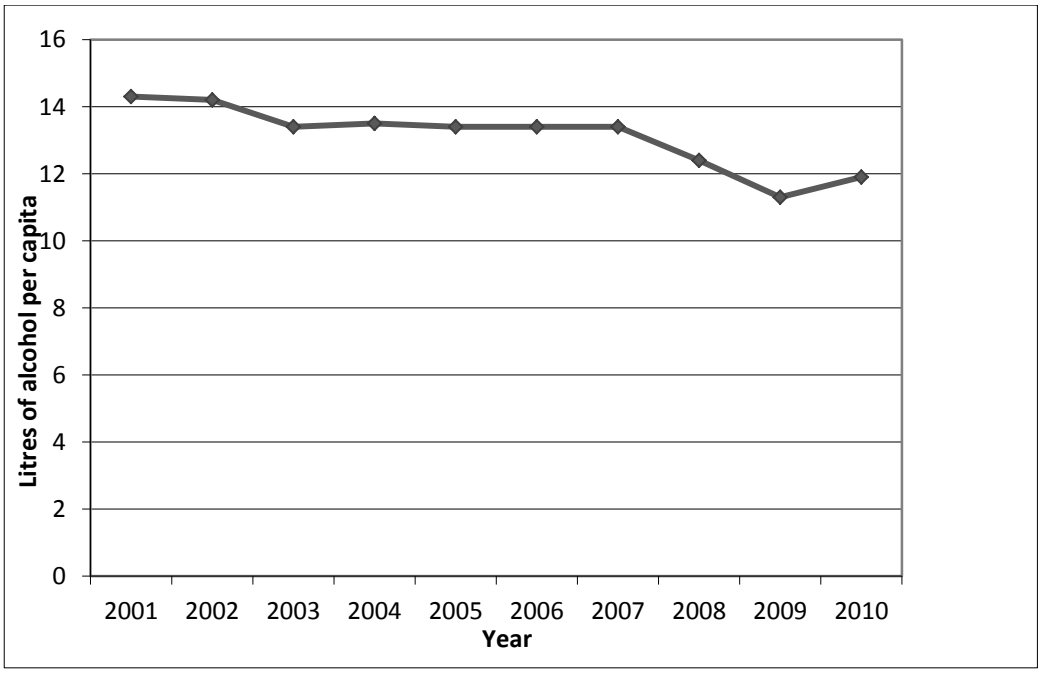
The Groceries Order has been the subject of much debate in Ireland. A number of academic and grey literature papers have been published since 1987 exploring the effects of the Order. Much of this literature agrees that the Order was not successful in protecting consumers and encouraging competition in the grocery trade; the order was repealed in part as a result of these findings. For example, a paper in the *Journal of the Statistical and Social Inquiry Society of Ireland* has argued that "[b]y eliminating price competition at retail level, the Order encouraged the market to become more concentrated through a process of vertical integration" whereby independent retailers became affiliated with franchise groups operated by the biggest wholesalers. This, the authors posited, "further diminished competition and contributed to higher rates of food price inflation", which made groceries' prices higher than they would have been in a competitive environment (Donnelly, 2006, p. 171). Another paper conducted econometric analysis that concluded that the dramatic increase in retail margin in the product category reviewed in this paper, which is attributable to the legislation, suggests that such a change in competition did not happen (Collins

and Oustapassidis, 1997). For other papers reviewing the effect of the Order on competition in the grocery trade see Collins (2009), Collins and Burt (2011) and Collins, Burt and Oustapassidis (2001).

A recent submission by the Irish Competition Authority to a government consultation on alcohol policy states that "[t]he Groceries Order held alcohol prices artificially high, well above the true cost, and it is not surprising that prices have fallen since its abolition" (Competition Authority, 2008).[21] This same document disputes that the ban on below-cost sales had any effect on consumption: "The Groceries Order imposed a ban on below-cost selling of alcohol from 1987 to 2006 but, despite its introduction, the upward trend in alcohol consumption continued until 2001" (Competition Authority, 2008, p. 7).

In fact, alcohol consumption data from Ireland's Department of Health do not show changes that correlate closely, to the naked eye, with the introduction and repeal of the Order. In particular, data show no significant changes in alcohol consumption in the short or medium term following the repeal of the Order in 2006.

Figure 5.2: Alcohol consumption in Ireland, 2001–2010



Source: Department of Health, Ireland.

As Figure 5.2 shows, alcohol consumption in Ireland decreased from 14.2 to 13.4 litres per capita between 2002 and 2003, to remain relatively stable until 2007, a year after the repeal of the Order, when it decreased again from 13.4 to 12.4 in 2008 and 11.3 in 2009.

[21] The Competition Authority of Ireland is an independent statutory body tasked with enforcing Irish and European competition law, available at http://www.tca.ie/default.aspx (last accessed June 2011).

Important changes occurred in Ireland, both regulatory and "unplanned" societal shifts, which may affect the observed trends in alcohol consumption. First, the sharp decrease in alcohol consumption in 2008–2009 has been attributed primarily to the economic recession suffered in Ireland (Hope and Butler, 2010). This was coupled, to an extent, by an increase in cross-border shopping (in Northern Ireland) due to parity between the sterling and the euro and prices in Northern Ireland being lower (Hope and Butler, 2010). The latter is especially interesting given the observed upward trend through the years 2004–2008 of indicators of alcohol-related harm such as alcohol poisoning and other deaths attributable to alcohol, at least among alcohol-dependent individuals (Lyons et al., 2011). This suggests that even if recorded consumption decreased, unrecorded consumption (including through cross-border shopping) may have contributed to the increase in alcohol-related harms. In addition, it is also possible that an improvement in recording practices on alcohol-related harms may also have influenced this upward trend (Lyons et al., 2011).

Nevertheless, in the 15 years before the start of the recession in Ireland, the country had experienced significant economic growth, with corresponding increases in levels of personal disposable income (*ibid*). The fact that alcohol excise duty did not change in the period 1994 to 2001 in spite of this economic growth, further contributed to the increased affordability of alcohol in Ireland; in fact, between 1996 and 2004 alcohol affordability increased by 50 percent (Lyons et al., 2011; Rabinovich et al., 2009). These changes, in turn, were accompanied by "substantial increases in levels of alcohol consumption, with corresponding increases in all the main indicators of alcohol-related problems" (Rabinovich et al., 2009, p. 479). Alcohol consumption increased from 10.96 litres of pure alcohol in 1990 to a peak of 14.3 litres in 2001. The decline in consumption observed in 2002–2003 was at least partly attributable to a 42 percent increase in spirit excise duty – consumption remained relatively stable until the sharp decline in 2008 (Rabinovich et al., 2009).

A final "unplanned" societal change relates to migration trends. Starting in 2001 Ireland experienced high levels of net immigration that persisted until 2007, when net out-migration began taking place. Finally, economic recession hit Ireland with force starting in 2008, which may explain at least some of the sharp decrease in alcohol consumption observed at that time.

Regulatory changes in alcohol policy also took place, although their effect is unclear and possibly obscured by the important societal changes taking place in Ireland especially since the early 2000s. These have included not only the repeal of the Groceries Order in 2006, but also the introduction of the smoking ban in 2004 (which, publicans indicate, has negatively affected their trade), and of random breath testing in 2006. In addition, a number of licensing changes occurred since 2000. First, the Intoxicating Liquor Act of 2000 extended opening hours of pubs. In 2003, modification to the Act reduced opening hours on Thursday to 11.30pm from the previous closing time of 12.30am, and prohibited the sale of alcohol at reduced prices during the day (Butler, 2003). Then in 2008 new provisions were introduced to the Act, specifying that off-licences must close at 10pm, thus further reducing opening hours.

While changes in alcohol consumption are not observed in the period following the repeal of the Order, anecdotal evidence suggests that specialist off-licences as well as the on-trade sector have been adversely affected by the repeal. While

prices of alcohol were lower in supermarkets than in other retail outlets during the time of the Groceries Order (although above cost), they became even lower following the repeal, putting smaller and independent outlets under pressure. Moreover, according to experts consulted for this case study, since the repeal of the Order alcohol has been increasingly used as a loss leader particularly among supermarkets. The repeal of the Order led to the loss of a base price for alcohol, which essentially opened up new marketing opportunities around low prices and incentives to buy cheaper alcoholic beverages, especially in supermarkets. It is possible, although as yet unproven, that the repeal of the Order and subsequent decrease in alcohol prices lessened the effect of the economic recession, such that alcohol consumption decreased less than it would have if prices had remained at their higher level.

Intense concern from the public health community about the decrease in alcohol prices in supermarkets sparked debate and discussion on the possible re-introduction of a ban on below-cost sales of alcohol alone. While at the time of writing no resolution had been reached on this issue, in 2009 the supermarket sector in Ireland formally agreed with the government to restrict the use of "irresponsible" promotions and selling practices of alcohol.

5.6 Iceland: alcohol monopoly ÁTVR and Vínbúð

Iceland's alcohol monopoly, which is managed by its state alcohol and tobacco company (ÁTVR), was established in 1922. In addition to the state alcohol monopoly system, a ban on alcohol advertising, age limits and controls of drink driving form the basis of Iceland's alcohol policy (Ólafsdóttir, 1993).

ÁTVR's main responsibility as laid down in the law on the sale of alcohol and tobacco (No. 63/1969) concerns off-premise retail sales of alcoholic beverages, defined as any beverage containing more than 2.25% ABV strength (Örnberg and Ólafsdóttir, 2008).[22] Interestingly, in contrast to other Nordic alcohol monopolies, ÁTVR is not supervised by the Ministry of Welfare (which is also responsible for health), but falls under the jurisdiction of the Ministry of Finance. Accordingly, ÁTVR's primary function has always been to collect revenues for the state, rather than perform direct alcohol-preventive roles (Örnberg and Ólafsdóttir, 2008).

Two major events stand out in the long history of the state alcohol monopoly. The first was the legalisation of beer in 1989. Although duty-free, smuggled and home-brewed beer was consumed in Iceland even before 1989, this meant a new alcoholic beverage was officially introduced into the Icelandic market (Ólafsdóttir and Leifman, 2002). The second was Iceland's decision to join the European Economic Area (EEA) in 1994, placing it inside the EU's internal market and thus binding it by EU economic law.[23] Before then, the Icelandic alcohol monopoly included import, retail, wholesale and, for the period between the legalisation of beer and the entry to the EEA, the production of

[22] A new Act on ÁTVR was passed last year (no. 86/2011), which replaces the older law (No. 63/1969).

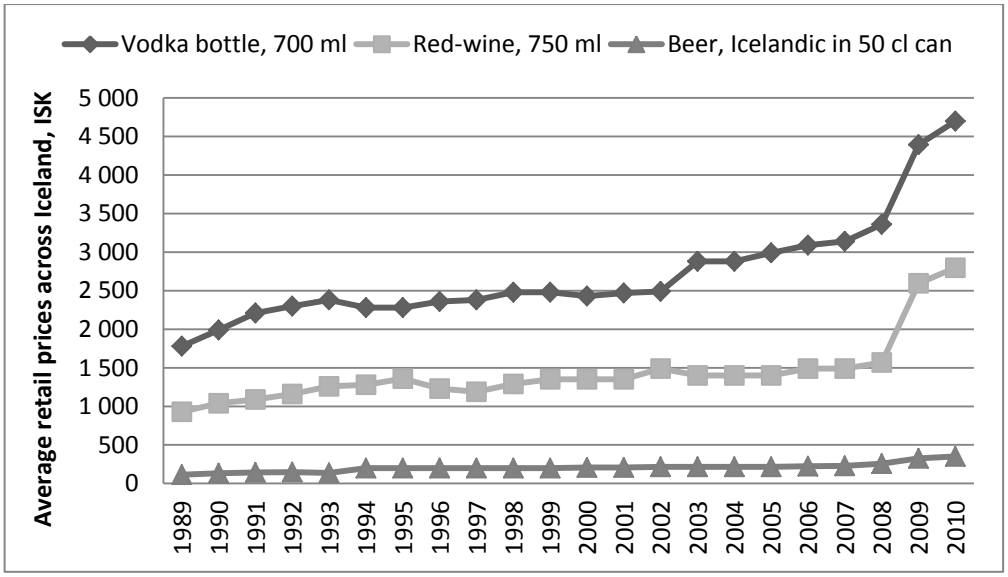
[23] See EU country profile Iceland, available at http://eeas.europa.eu/iceland/index_en.htm (last accessed October 2011).

alcoholic beverages (Holder, 2009). By entering the EEA, though, all monopolies except for off-premise retail sales had to be abolished.

Despite its entry to the EEA, alcohol prices and taxes in Iceland have been kept at a high level compared with other European countries. Partly, this is possible because Iceland's policy on alcohol taxes faces less downward pressure than that of other Nordic countries because of Iceland's specific geographical position, which makes it less exposed to private import and smuggling of alcoholic beverages (Ólafsdóttir, 1993). However, the level of alcohol taxes and prices is predominantly driven by fiscal interests, which holds particularly true for recent tax rises that followed in the wake of the global financial crisis, which hit Iceland head-on in 2008. For instance, in 1995, an alcohol tax of ISK 68.31 to ISK 91.57 (ca. €0.43 to €0.57) was introduced for each centilitre in excess of 2.25 centilitres.[24] Since the financial crisis of 2008, alcohol excise rates have risen by 44 percent to 48 percent, with CPI rising by 30 percent (IMF, 2011). On 1 January 2010, Iceland levied the highest excise duty of all EU and EEA countries on intermediate products and the second highest excise duty rates on distilled spirits, wine and beer, charging up to 23 times the EU minimum level and being surpassed only by Norway (Österberg, 2011). In January 2011, excise tax rates on alcohol were raised by a further 3 percent and on liquors by 1 percent, whereas excises in duty free stores were raised from 0 percent to 10 percent of the *ad valorem* excise duty on alcohol (IMF, 2011).

Figure 5.3 presents the development of retail prices in Iceland for a selection of alcoholic beverages since the legalisation of beer in 1989.

Figure 5.3: Off-premise price developments in Iceland for vodka, red wine and Icelandic beer, 1989-2009

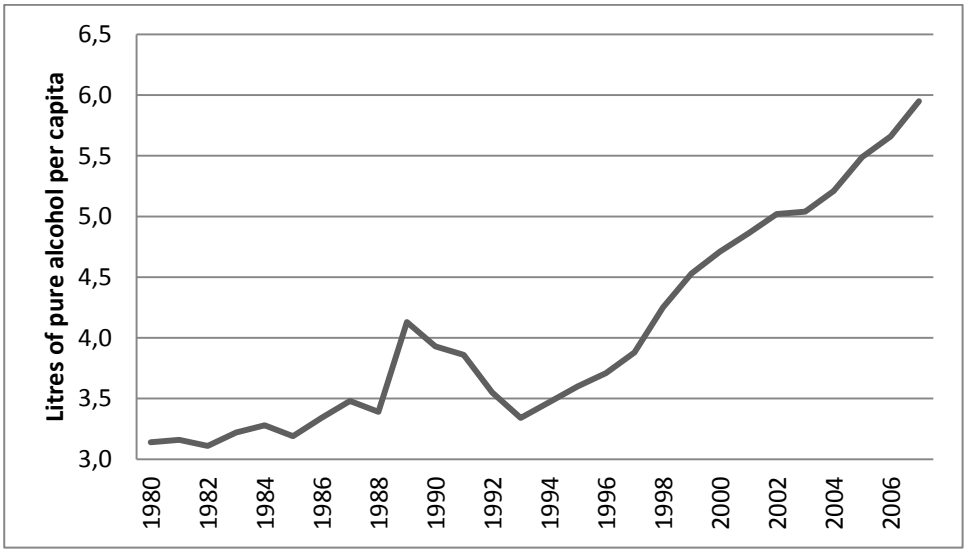


Source: Statistics Iceland.

[24] Law No. 96/1995 on alcohol and tobacco tax, available at http://eng.fjarmalaraduneyti.is/media/log-reglur/Act_no_96_1995.pdf (last accessed October 2011).

Alcohol taxes are thus very tightly linked to fiscal interests. At the same time, it is clear that Icelandic alcohol policy has also been driven by concerns about alcohol consumption and alcohol-induced health problems (Bjarnason, 2006). This focus on alcohol consumption is understandable not only against Iceland's cultural background of a strong temperance movement in the early twentieth century, but also in light of a significant rise in alcohol consumption. Although if falls far short of the high consumption levels of countries such as Finland, Germany and Ireland, alcohol consumption in Iceland has clearly increased in recent decades, rising from 3.14 litres of pure alcohol per capita in 1980 to 5.95 alcohol litres in 2007 (see Figure 5.4). Most of this consumption is attributable to off-premise sales (Bjarnason, 2006). In 2005, for instance, it was estimated that 75 percent of the recorded alcohol consumption was attributable to ÁTVR's retail shops (Örnberg and Ólafsdóttir, 2008). According to our interviewees, the proportion of off-premise alcohol consumption may even have increased to 80 percent of alcohol being consumed off-premise in recent years, possibly in light of the financial crisis and alcohol tax increases.

Figure 5.4: Alcohol consumption in Iceland, 1980–2007

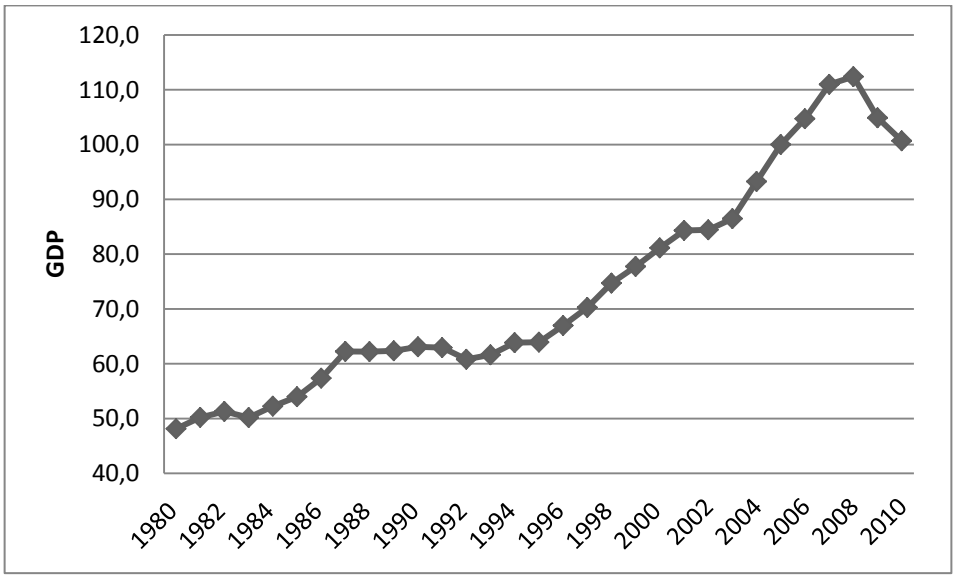


Source: Statistics Iceland.

When looking at Figure 5.4, two features stand out. The first is the spike in alcohol consumption from 1988 to 1989, which amounted to an increase of almost 22 percent. This spike is likely to be related to the legalisation of beer in 1989. However, by 1993 alcohol consumption returned to the same level as it had been in 1988, which may at least partly be explained by a shift in drinking culture from distilled spirits towards beer (Bjarnason, 2006).

The second feature is the faster increase of alcohol consumption between 1994 and 2007, with an average rise of over 4 percent per year. Looking at the development of Icelandic society, at least three factors may explain this increase. The first is Iceland's economic development. Research suggests that there appears to be a strong correlation between alcohol consumption and economic growth, which can be seen when looking more closely at Iceland's economic development as depicted in Figure 5.5 (Alcohol and Drug Abuse Prevention Council, 2003).

Figure 5.5: GDP in Iceland, 1980–2007



Source: Statistics Iceland.

Except for the spike in consumption caused by the legalisation of beer, alcohol consumption and GDP run in close parallel: developments of alcohol consumption mirror periods of economic recovery (eg from 1993 to 2000 and 2003 to 2007) as well as stagnation (eg between 2000 and 2002). Importantly, though, the price levels of alcoholic beverages have not been adapted to economic developments, but instead remained relatively constant even during periods of rapid economic growth. This means that during the 1990s and 2000s in particular, alcoholic beverages became more affordable in real terms. Regrettably, Statistics Iceland discontinued collecting data on alcohol consumption after 2007 and thus did not capture developments following the global financial crisis of 2008. However, according to our interviewees, the last three years have seen a fall in on-premise and off-premise alcohol consumption, suggesting that the sharp recession following the financial crisis together with a sharp increase in prices had an adverse effect on alcohol consumption.

The second factor that may have impacted on the significant increase in alcohol consumption in the last 20 years is a certain change in attitudes towards alcohol consumption. The strength of the temperance movement, which led to the total prohibition of alcohol in 1915, significantly declined during the twentieth century, with currently only about 5–10 percent of the population indicating that they are lifetime abstainers (WHO, 2009). Furthermore, our interviewees have suggested that since the legalisation of beer and the resulting shift from stronger alcohol drinks to weaker alcoholic beverages, regular alcohol consumption has become more embedded in Icelandic culture.

Related to this cultural shift is a third factor: a marked trend towards liberalisation in alcohol policy, which can be observed at least since the 1990s, in both off- and on-premise sales.[25] Whereas ÁTVR ran 26 Vínbúð shops in

[25] Even privatisation has been openly discussed (Örnberg and Ólafsdóttir, 2008). See also Just-drinks (2004).

1990, this number has today almost doubled and there are currently 48 shops open, making the number of alcohol retail shops in relation to the Icelandic population one of the highest among Nordic countries (Örnberg and Ólafsdóttir, 2008). In addition, opening hours were expanded to 41 hours per week in 2006, including Saturdays,[26] and alcohol can be purchased online. At the same time, shops are now increasingly integrated in shopping malls and based on a collaborative scheme, which combines alcohol sales with those of other products, thus moving towards an integration of alcohol with daily consumer goods (Ólafsdóttir, 1993). The number of establishments licensed to sell alcohol has also risen sharply. In 1954, only one restaurant in Iceland possessed an alcohol licence. This number rose to 37 in 1980, 322 in 1994 and 551 in 2002. Between 1990 and 2001, then, the number of on-premise licences increased by nearly 311 percent, with the rise being particularly sharp in rural areas (Alcohol and Drug Abuse Prevention Council, 2003; Gunnlaugsson and Galliher, 2010).

Hence, increased availability and acceptability coupled with greater affordability of alcoholic beverages is likely to have contributed to greater alcohol consumption. However, only very limited data are available to assess the potential effect of this increase on alcohol-related problems, since information on such harm is often not centrally registered or not recorded at all (Ólafsdóttir, 2007). Yet, it appears to be the case that the rise in alcohol consumption has not been matched by a comparable rise in alcohol-related harms. For instance, alcohol-related deaths from 1992 to 2003 faced a downward trend, even though alcohol consumption steadily rose during this period. The number of discharges from hospital after alcohol-related stays fell between 2000 and 2008, while remaining relatively constant in the second half of the 2000s. The number of alcohol-related offences, public intoxications, drink-driving and self-reported alcohol problems also decreased from the 1990s to the 2000s.[27] Possible explanations of these developments may comprise Icelandic treatment facilities, including a wide network of Alcoholics Anonymous, which are so comprehensive that they are likely to have mitigating effects on alcohol-related harm. Social factors, such as strong family ties and a developed welfare system, could further have helped to prevent serious alcohol-related harms. Yet, given the limitation of the available data and the possibility of a time lag between a rise in alcohol consumption and alcohol-related harms, these data should be interpreted very carefully.

5.7 Finland: alcohol off-premise retail monopoly

In the Alcohol Act of 1932, Finland replaced its policy of total prohibition with the structure of a comprehensive state alcohol monopoly (Alko), which for the next 63 years was to control the production, wholesale, import, export and on- and off-premise sale of alcoholic beverages, defined as any beverage containing more than 2.8% ABV strength (Holder, 2009; Örnberg and Ólafsdóttir, 2008). Although the monopoly underwent a process of liberalisation from the late

[26] For studies about the impact of extended opening hours on alcohol consumption, see Ólafsson (2011) and Ragnarsdóttir et al. (2008).

[27] For more information about all of the following statistics, see Ólafsdóttir (2007).

1960s – allowing licensed grocery stores and bars to sell and serve beer of less than 4.7% ABV and opening liquor stores in rural areas – its biggest change resulted from Finland's accession to the European Union in 1995. Now being bound by European internal market law, Finland had to abandon all monopolies save for the monopoly on off-premise retail sales.

Other changes were also implemented (National Institute for Health and Welfare, Finland, 2010). New administrative bodies were introduced to restructure the management of the state monopoly. Licensed grocery shops and cafés were allowed to sell not only medium-strength beer, but also any alcoholic beverage produced by fermentation below 4.7% ABV. The advertising of alcoholic beverages with a maximum of 22% ABV was legalised if it met certain conditions. Additional changes included allowing the sale of beer, cider and ready-to-drink beverages in kiosks and gas stations.

However, a few restrictions were put in place more recently. Most notably, stricter restrictions on alcohol promotions were introduced in 2008. Quantity price discounts, offering two or more packages or portions of alcoholic beverages at a reduced total price, were banned, as was the advertisement of happy-hour prices outside on-premise establishments and of alcoholic beverages on television and in cinemas before 9pm. Overall, these measures essentially entailed a considerable expansion of the availability of alcohol in the period 1995–2008, with a slowing of the liberalisation trend after the mid-2000s (when the decision on tighter restrictions on promotions was taken).

At present, the monopoly is supervised by the National Supervisory Authority for Welfare and Health (Valvira). The number of Alko liquor shops supervised by the monopoly increased from 251 in 1995 to 346 in 2009.[28] However, the number of retail outlets selling fermented beverages with an alcohol content of no more than 4.7% ABV fell by 2,129 from 8,076 to 5,947 in the same period. The number of restaurants licensed to sell either all alcoholic beverages (A-licence) or light alcoholic beverages (B-licence) rose significantly from 1995 to 2009. In 1995, 3,222 restaurants possessed an A-licence and 270 a B-licence; in 2009, this number amounted to 5,750 and 289 respectively. Yet, the number of restaurants with a C-licence, being permitted to sell only alcoholic beverages with a maximum of 4.7% ABV by volume, fell from 5,989 in 1995 to 2,259 in 2009.

Developments between 2004 and 2009 form the greatest interest for the purposes of this study. As explained above, the year 2004 marked a significant break in Finnish alcohol policy. On the one hand, European internal market law required Finland to abandon quotas on travellers' alcohol import allowances, while on the other hand, Estonia, separated from Finland only by the narrow Gulf of Finland and selling alcoholic beverages at much lower prices, joined the European Union. Fearing a sharp increase in privately imported amounts of alcohol, Finland reduced excise duties on alcoholic beverages at an overall rate of 33 percent on 1 January 2004 (Rabinovich et al., 2009).

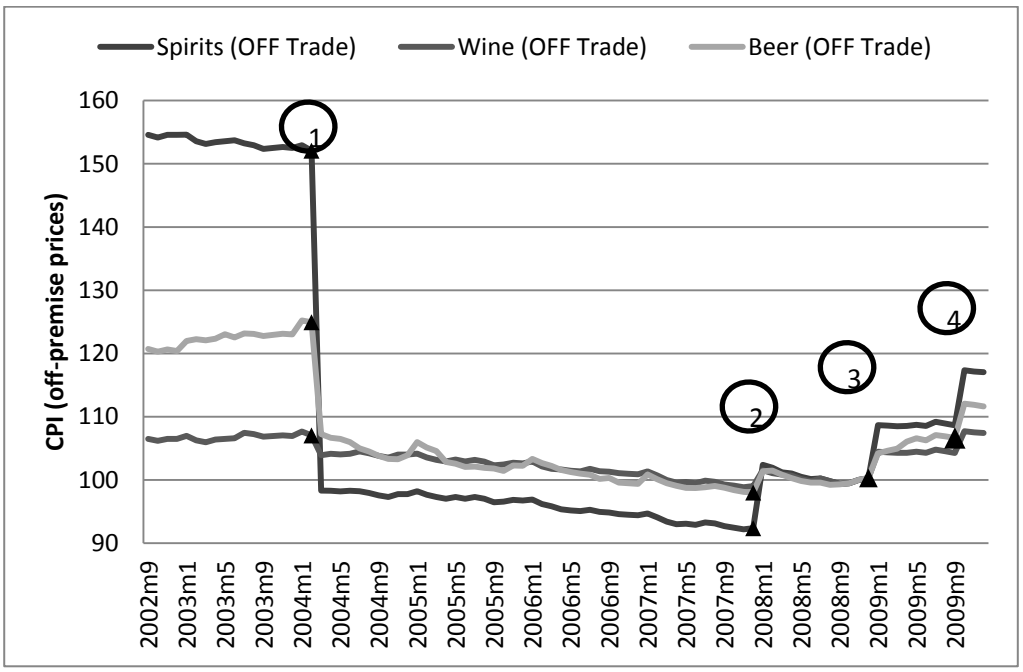
As expected, alcohol imports by passengers (in pure alcohol) rose by 80 percent in 2004, although it is unclear how much of this already existed as smuggling, and became "private imports" after 2004. Although imports continued to

[28] Unless stated otherwise, all data presented here are taken from the *Yearbook of Alcohol and Drug Statistics 2010*; see National Institute for Health and Welfare, Finland (2010).

increase in 2005 by 12 percent, in 2006 and 2007 there was a decrease in imports. Nonetheless, imports in 2007 were still 50 percent higher than in 2003 and increased again by 4.3 percent in 2008 and by 7.6 percent in 2009 (National Institute for Health and Welfare, Finland, 2010).

However, despite the significant rise in private imports, Finland raised taxes three times in 2008, 2009 and most recently in early 2012. Despite these tax rises in 2008 and 2009, though, the price of alcoholic beverages in real terms was still an average of 5.6 percent lower in 2009 than in 2003. Figure 5.6 summarises the off-premise price developments of alcoholic beverages from 2002 to 2009, which were presented in greater detail in chapter 2.7.2.

Figure 5.6: Consumer price index (off-premise, deflated) for beer, wine and spirits in Finland, 2002-2009 (deflated) and changes in excise duties

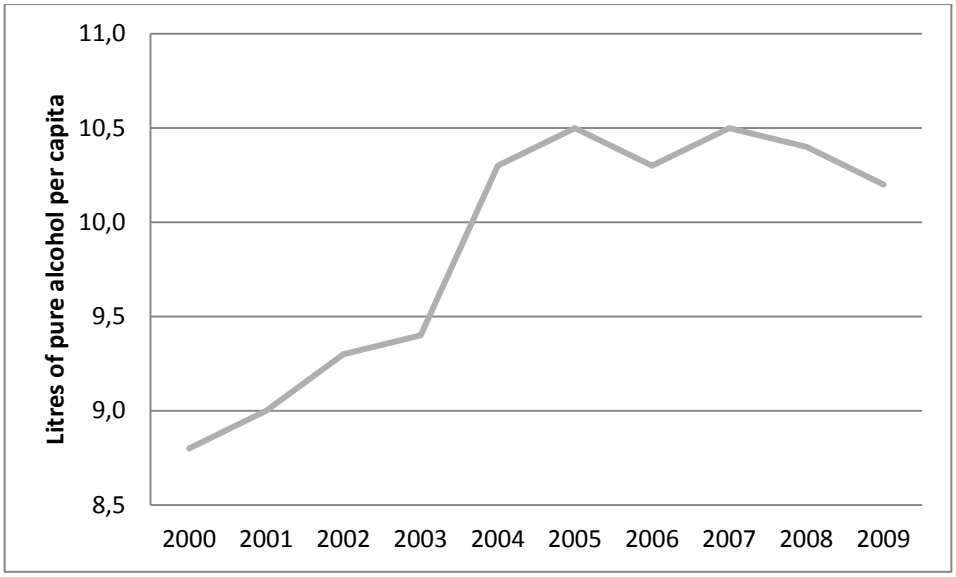


Source: National Institute for Health and Welfare (THL), Finland; Maitkalu, Finnish Hospitality Association.
Note: Dates of changes in excise duties are as follows: (1) 1 March 2004 – decrease, (2) 1 January 2008 – increase, (3) 1 January 2009 – increase, (4) 1 October 2009 – increase.

A better understanding of these tax increases can be gained when locating them within Finland's wider approach to alcohol policy. More precisely, as specified in the Resolution on Strategies in Alcohol Policy from 9 October 2003 and later endorsed by further legislation packages and initiatives such as the National Alcohol Programme, the fundamental objective of Finnish alcohol policy is to reduce alcohol-related harm, particularly with regard to the well-being of children and families, and to invert the trend in overall consumption of alcoholic beverages. Just as in the case of Iceland and other Nordic countries, this traditionally restrictive approach to alcohol policy can be understood against the cultural background of a strong temperance movement in the twentieth century. However, our interviewees indicated that the drive to tackle alcohol-related harm is also motivated more urgently by a sharp increase in alcohol consumption and alcohol-related problems in the last 40 years.

As explained in Chapter 3, total alcohol consumption in Finland more than tripled over the past four decades, although a shift from stronger to lighter alcoholic beverages can be observed during the same period. Figure 5.7 summarises the level of alcohol consumption per capita in Finland in the 2000s.

Figure 5.7: Total alcohol consumption in Finland, 2000–2009



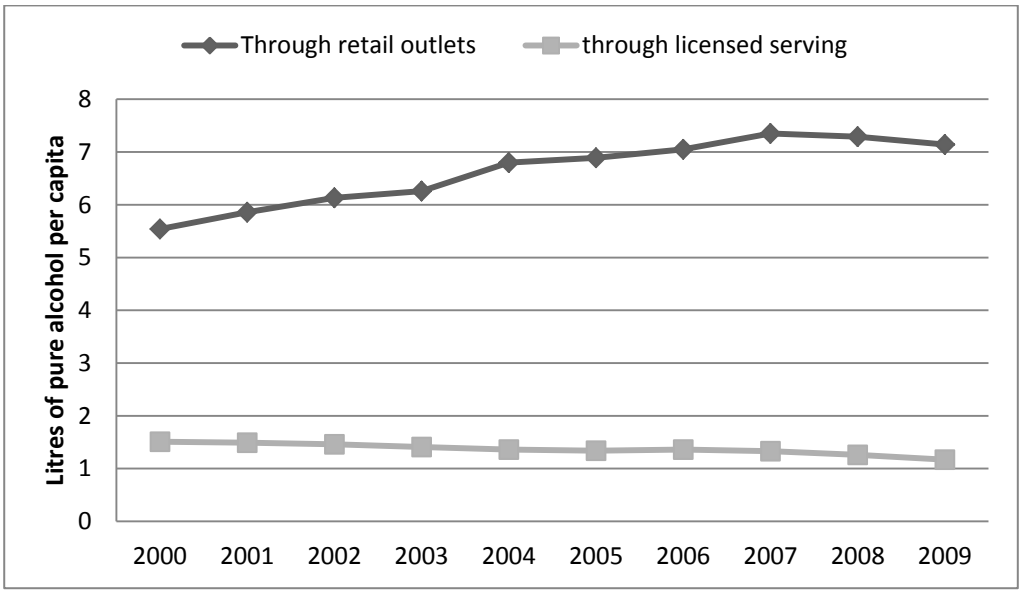
Source: SOTKAnetFinland.

Of particular interest to this study are the changes in alcohol consumption following the tax decrease in 2004 and the tax increases in 2008 and 2009. As can be seen from the graph, alcohol consumption per capita rose from 9.4 litres of pure alcohol in 2003 to 10.3 litres of pure alcohol in 2004. It then remained more or less constant until it started to fall again after 2008. These trends in alcohol consumption thus coincide temporally with developments in alcohol taxation and prices.

These rises and falls in alcohol consumption are mainly due to changes in off-premise consumption. As explained in Section 3.4, most of the alcohol consumed in Finland is attributable to off-premise consumption: between 1960 and 2009, the proportion of off-premise consumption never fell below 75 percent.[29] In the 2000s, this gulf between on-premise and off-premise consumption grew even wider, as can be seen in Figure 5.8.

[29] See Section 3.4.1, Figure 16. Data sourced from the National Institute for Health and Welfare, Finland (2010).

Figure 5.8: Recorded consumption of alcoholic beverages in Finland, 2000–2009



Source: Yearbook of Alcohol and Drug Statistics, 2010.

Regrettably, these data do not cover the increase of alcohol consumption resulting from the significant rise in privately imported alcohol, which counts as unrecorded alcohol consumption. Despite this it can be seen that off-premise alcohol consumption through retail outlets rose from 6.26 litres of pure alcohol in 2003 to 6.8 litres in 2004 and started to fall again for the first time in 2008, where it decreased from 7.29 litres in 2008 to 7.14 litres in 2009. In contrast, except for one small rise in 2006, on-premise consumption declined steadily throughout the 2000s. Hence, the tax changes of the 2000s are likely to have had an impact mainly on off-premise, rather than on-premise, consumption of alcohol.

The impact of changes in alcohol prices and consumption on alcohol-related harms in Finland is not quite as unambiguous.[30] Numbers of care periods related to alcohol intoxication (12 percent), liver diseases (16 percent) and psycho-organic syndrome (16 percent) showed a significant rise from 2004 to 2005, yet levelled out or started to fall again in the second half of the 2000s. By the end of 2009, the number of alcohol-related periods of care had fallen to about the level at which it was in the early 2000s. The number of alcohol-related deaths, in turn, rose sharply in the mid-2000s, but started to fall again since then. In 2009, 457 people more died as a result of alcohol-related diseases than in 2003. Since 2005, alcohol-related diseases have been the most common cause of death among men and women aged between 15 and 64. Although the number of alcohol-related traffic accidents and disturbances increased in 2004, it kept falling again in the second half of the 2000s, reaching the same level in 2009 as it had reached at the end of the 1990s.

Consequently, changes in alcohol prices, alcohol consumption and alcohol-related harms appear to be closely associated in Finland in the 2000s.

[30] For more details on the impact of the 2004 tax decrease on alcohol-related harms, see Herttua (2010), Herttua et al. (2009) and Herttua et al. (2011) and Mäkelä and Österberg (2009).

Following the big tax decrease in 2004, alcohol consumption rose by 10 percent, periods of care resulting from alcohol-related intoxication, liver diseases and psycho-organic syndrome increased by 12 percent to 16 percent and the number of alcohol-related deaths grew by almost 19 percent. All of these indicators fell again at the end of the 2000s. Policy developments in Finland and their associated price changes explain much of the observed trends in alcohol consumption and harms. However, further research is warranted to shed light on the role of other developments, such as the recent financial crisis.

5.8 Spain: Catalonia's ban on on-trade alcohol discounts and promotions

Alcohol-related harms are a problem of great policy concern in Spain. According to the 2009/10 population survey on alcohol and other drugs, conducted by the government of Spain, 63.3 percent of the population has consumed alcohol in the last 30 days, an increase of three percentage points from the previous survey.[31] More than one in ten (11 percent) of the population has drunk alcohol daily, up from 10.2 percent in 2007/8. As in previous years, alcohol continues to be the most widely used psychoactive substance, followed by tobacco and cannabis.

Eurostat data on alcohol prices show that of all 27 EU Member States, only Romania and Bulgaria have cheaper alcohol prices than Spain, indexed to the EU average (Kurkowiak, 2010). Alcohol prices in Spain are 84 percent of the average (Hungary shares third place with Spain in the index), whereas the price of food and non-alcoholic beverages in Spain is 97 percent of the EU average.

In the context of growing concern over the availability of cheap alcoholic beverages and persistent concern over alcohol-related harm, the Spanish autonomous region of Catalonia enacted modifications to a 1985 law in 2009, which now bans the sale of alcoholic beverages through sales promotions and price discounts, prizes, promotional parties and events, and other similar practices. These include offers such as "two for one", "three for one", "open bar" and others (BOE, 2009). The law applies to all establishments licensed to sell alcohol, and not just the on-trade – the text of the law refers to a ban in "establishments, venues, and other spaces authorised for [alcohol] sale or consumption" (BOE, 2009).

The law also includes other provisions regulating the retail and distribution of alcoholic beverages, as well as provisions regulating the retail and distribution of tobacco.[32] Finally, the law includes provisions on assistance and treatment for substance abuse problems.

The 1985 law had already been amended in 1991; the latest changes, from 2009, aimed primarily to make the provisions of the law more explicit so as to reduce legal uncertainty regarding what constituted a price promotion. There was consensus between them, as well as among members of the Catalonian Parliament, over the changes to the 1985 law; in fact, the new text of the law

[31] Data from the Spanish Ministry for Health, Social Policy and Equality.

[32] See http://www.gencat.cat/salut/depsalut/pdf/esdogc572.pdf (last accessed May 2011).

was passed unanimously by the Catalonian Parliament. Until early 2011, when the autonomous region of Galicia approved a similar law (banning alcohol promotions in the on-trade), Catalonia was the only Spanish region with any statutory regulation restricting alcohol price promotions or discounts.

The law aims to reduce the accessibility of alcoholic beverages especially among young people and minors. Of particular concern was the use of alcohol promotions of different kinds (open bars, "two for one", "three for one", and so forth) that were becoming increasingly prevalent amid a growth in tourism to the area. The revised law stipulates that in establishments authorised for the sale and consumption of alcohol, the sale of alcoholic beverages through promotional offers, prizes, draws, raffles, exchanges, promotional events or price reductions, including "open bar", "two for one", "three for one" and similar, are now banned.[33]

The modifications to the legislation came in the context of negotiations and discussions between government and alcohol retailers in Catalonia and have widespread support from the sector. Part of the reason for the sector's support was a desire to see less variability in the manner and extent to which different establishments complied with the 1985 regulation, which in its pre-2009 form allowed for much flexibility in interpretation.

Monitoring and enforcement of the law is the responsibility of the Catalonian Agency for Public Health, which works in cooperation with the police in ensuring compliance. The law specifies that sanctions for non-compliance consist of fines of up to €6,000, but according to public health officials not many establishments have been sanctioned for non-compliance. One official indicated that trade associations have been active in encouraging their members to comply with the regulations, and that there has been a positive shift in the way the sector perceives its role in the alcohol situation in the Catalonia.

5.9 Final remarks

This chapter presents in-depth case studies of (non-tax) pricing policies in place in different EU member states. These policies were selected for analysis to represent a range of approaches, other than excise taxation, used to affect the price of alcoholic beverages. The aim of this chapter has been to explore how different alcohol pricing policies have developed and been implemented, and the opportunities and challenges faced in the process.

With the exception of retail monopolies, which have been the object of much research, the evidence base on the effectiveness of the other types of policies in reducing alcohol-related harm remains limited. We do not yet fully understand the impact of the repeal of Ireland's Groceries Order on alcohol prices and consumption.

Given the subsidiarity principle in European public health policy, it may nevertheless be useful for Member States to learn about different approaches to alcohol harm deployed elsewhere. Important lessons on design,

[33] See http://www.gencat.cat/salut/depsalut/html/ca/dir1852/index.html (last accessed May 2011).

implementation, stakeholder cooperation, public support, monitoring and enforcement can be shared between countries facing similar challenges.

CHAPTER 6 Closing remarks

In spite of extensive evidence that raising alcohol prices reduces alcohol consumption and harms, the real price of alcoholic beverages is decreasing across the EU. This trend has fuelled debate among policymakers, public health practitioners and other stakeholders across the EU about the opportunities, and challenges, of alcohol pricing policies. This study aims to contribute a robust evidence base to inform pricing policy in the region. Towards this aim, the study examines in greater detail a number of issues that a previous report on alcohol affordability and pricing (Rabinovich et al., 2009) produced for the European Commission. These issues are pass-through from tax changes to consumer prices, trends in on- and off-trade alcohol consumption, and the nature and scale of price promotion and discount activity in the EU.

A key message from this study is that there is considerable heterogeneity in alcohol retail and pricing phenomena between EU member states. Some commonalities are apparent, at least in the countries sampled here, most notably the shift from on- to off-trade consumption and the widespread use of price promotions and discounts, except in countries with alcohol retail monopolies. However, when we take a closer look it becomes quickly apparent that different member states have different experiences with regards to alcohol retail and pricing.

One of the most interesting and topical findings of this research is that the effects of a change in excise duty depend, to a large extent, on factors other than the change in duty itself. This is why we observe little one-to-one pass-through, instead finding more and less than full pass-through in different contexts, as well as heterogeneity in the pass-through rates across countries. As discussed elsewhere in this report, it is possible that factors such as market structure, consumer preferences, other pricing policies (eg retail monopolies and price floors such as Ireland's Grocery Order) and alcohol-related policies (eg changes in criminal justice penalties for alcohol-related crimes such as drink driving) affect the extent to which excise duty changes are passed on to consumers.

A key implication of this finding is that the effect of excise duty on prices cannot be taken for granted. Not only do different countries exhibit different rates of pass-through, but within countries, pass-through for different alcoholic beverage types and for the on- and off-trade vary considerably. In view of this, it is useful for policymakers to assess carefully prior responses to excise duty changes in their countries and the other key changes occurring in that environment before implementing new changes.

Our analysis of on- and off-trade sales indicates that in four out of the six countries sampled in this study there is an unmistakable trend towards increasing off-trade alcohol consumption relative to on-trade consumption. This is the case even in Spain and Ireland, which had traditionally higher consumption of alcohol on-premise. In both these countries, on-trade consumption has been in steep decline relative to off-premise for a number of years. In those countries in our sample with traditionally higher off-trade alcohol consumption (Finland and Germany) the proportion of alcohol sold through the off-trade has also been increasing relative to on-trade alcohol sales. Slovenia and Latvia, where off-trade consumption has been higher than on-trade consumption since at least the mid-1990s, exhibit stability in the ratio of on- and off-trade sales for selected beverages, an exception in our sample of six countries. The only instance of a decrease in the ratio of off- to on-trade consumption is for wine consumption in Slovenia.

As discussed in Chapter 3 of this report, the finding that off-premise alcohol consumption is growing relative to on-premise consumption has important implications for policy. Approaches that focus on the on-premise sector (such as the Catalonia and Baden-Württemberg regulations) are of course important. However, the data presented in this chapter highlight the need to consider approaches that address alcohol consumption in the off-premise sector.

Finally, as alcohol-related harms continue to present a public health challenge across the EU, this study makes an important contribution to the evidence base on alcohol pricing policy. In addition to the findings from its own analysis, the report also makes a strong case for improved data collection in a number of key areas (such as alcohol prices by beverage and premise type, on- versus off-trade consumption, and the use of price promotions and discounts), which would enhance research and policymaking in the region.

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APPENDICES

Appendix A: Study methodology

We obtained information and data for this study through a review of literature, a statistical data analysis, an online questionnaire and key informant interviews, as discussed below.

Review of literature

The literature review, which informed all the chapters in the report, drew primarily on meta-analysis and systematic reviews, because of time and resource constraints. Nevertheless, individual studies were reviewed when they offered insights unavailable in existing systematic reviews and meta-analysis. Grey literature was also reviewed, in particular towards the discussions on on- versus off-trade alcohol consumption, the use of alcohol price promotions and discounts, and alcohol pricing regulations.

A number of sources were used to identify relevant literature. First, searches for journal-based, peer-reviewed publications were conducted through databases including PubMed, Web of Science, Wilson Select Plus and Academic Search Elite. Grey literature (reports and studies produced by professional associations, government, international organisations and other relevant bodies) was searched using conventional search engines and targeted searches in organisational websites.

Statistical data analysis

The statistical data analysed in this study were obtained from a range of sources, as outlined in the main body of the report.

Online questionnaire

As part of this study, the research team circulated a questionnaire (designed in cooperation with DG SANCO) to gather data and information on all the issues examined in the research. The online questionnaire was sent to members of the European Alcohol and Health Forum, the Committee on National Alcohol Policy and Action, and the national WHO counterparts for alcohol policy in the European region. This represents a total of nearly 100 representatives of Member State national authorities, industry, research organisations and other stakeholders in the alcohol field in Europe.

Key informant interviews

Key informant interviews were conducted with 23 national authorities and economic operators across ten Member States, to obtain insights to inform Chapters 4 and 5 (on the use of discounts and promotions, and on pricing regulations).

Appendix B: Methodology for adjusting price data in Ireland

To investigate the effect of changes in excise duties on prices of alcoholic beverages in the case of Ireland, it was necessary to carry out a series of data manipulations to generate prices in Euros and to generate beverage-specific excise duties. These are the details of the data management we performed.

Generating prices in Euros

The base year and month for the monthly price index which we obtained from Central Statistics Office Ireland was October 1993 and expresses percentage changes in price over time; however, the average price data is for November 2008. Therefore, we rebased the alcohol price indices to November 2008. We then multiplied the monthly price indices from 1994 to 2010 by the retail price in Euros (for November 2008). This allowed us to recover the price series in Euros for stout, lager, whiskey, brandy and wine by using the corresponding beverage-specific price index. Since the average prices by beverage were not obtained from the same source as that which generated the price index and the price index is based on more than one price, it is possible that the generated price series is measured with some error.

Adjusting excise duty rates by alcohol volume

The data on volume as a percentage of alcohol content for excise duties are not immediately comparable with those for prices. It was therefore necessary to adjust the excise tax to be applicable to each analysed beverage.

There are different excise duties for different levels of alcohol content and we needed to select one of the excise duty rates to use. We assumed (following a note by the Ministry of Finance of Ireland[34] that each type of stout, lager, whiskey, brandy and wine has a typical alcohol content. Namely, stout and lager were assumed to have 4.2 percent alcohol, whisky and brandy were assumed to be of 40 percent alcohol and wine was assumed to have 12.5 percent alcohol. This is not a particularly strong assumption as the information on prices we have obtained is used in the calculation of CPI in Ireland (Central Statistics

[34] See "General Excise Duties (Tobacco and Alcohol Products)", TSG 07/16, http://taxpolicy.gov.ie/wp-content/uploads/2011/04/TSG0716.pdf (accessed February 2012).

Office[35]) and therefore the presence of atypical products in the consumer basket is unlikely.

Excise duty for beer is calculated per hectolitre per percent of alcohol and for typical table wine it is reported per hectolitre only. By contrast, excise duty for spirits is reported per hectolitre of pure alcohol. However, individuals do not consume hectolitres and prices are provided for volumes consumed in the on- and off-licence, such as a pint or cans. To adjust for this, we divided the level of excise by 100, thus making the excise duty per litre. We then multiplied this amount by the alcohol content (for example 4.2 percent for beer and 40 percent for whiskey) and volume of the particular beverage. As wine has alcohol content from 5.5 percent to 15 percent, the typical table still wine is subject to excise on volume but not on alcohol content, so we did not include the alcohol content in our calculation.

Robustness check

We adjusted all nominal price and excise series to account for changes in prices over time, or inflation. To do this, we divided each series by the CPI with the base period November 2008. We then checked our beverage-specific excise duty rates against data available from the Ministry of Finance of Ireland;[36] our calculated duties matched the official estimates.

[35] http://www.cso.ie/releasespublications/documents/prices/2008/apa_nov2008.pdf (last seen 2011)

[36] See "General Excise Duties (Tobacco and Alcohol Products)", TSG 07/16, http://taxpolicy.gov.ie/wp-content/uploads/2011/04/TSG0716.pdf (accessed February 2012).

Appendix C: Further statistical description of pass-through

Identifying the appropriate empirical model

We performed a series of tests to better understand the statistical trends of the data and thus developed a more accurate model that isolates the relationship between prices and excise duties. One key issue of time-series data is that of non-stationarity, or trended data, as explained. There are two forms of non-stationarity: autoregression and cointegration. Autoregression refers to the situation in which a variable is highly persistent. In other words, prices today may be highly correlated to prices yesterday, irrespective of changes in policy or market changes. Equally, excise duty rates may be highly dependent on previous excise duty rates. Cointegration is the situation in which two series move together, for instance when two variables under investigation always generally increase. Again, the reason this is important is that detecting the relationship between prices and excise duties requires "de-trending" the data and eliminating non-stationarity (or making series stationary); otherwise, the estimated relationship is inconsistent and is either over- or under-estimated.

One way to mitigate the problem of cointegration is to examine the relationship between changes (or *differences* in levels between two periods), rather than levels. A way to think about how this can fix the problem is to consider that two trends may be observed going in the same direction, but at different "speeds"; the rate at which they are changing is not similar even though they are going in the same direction. Therefore, a regression based on differences may more accurately capture how much prices change when there are changes in excise duties.

In order to mitigate the problem of autocorrelation, we can simply take it into account and add the past levels of the variables into the model. This means, for example, running a regression in which prices in the current period are a function of prices in the previous period, as well as the other variable of interest. This way, the relationship between prices and the variable of interest is based on the "part" of the price that is left after "taking out" the part because of persistence in prices. In effect, this means the researcher is isolating the relationship between the current price and current excise duty, irrespective of past levels of each.

In order to test for autoregression, we employed Durbin's alternative test for serial correlation in the errors (this test does not assume strict exogenenity of

regressors).[37] We found that nearly all regressions were suffering from strong autocorrelation in the residuals: previous tax rates are highly correlated with current tax rates.

In a further test of autoregression, we conducted unit-root tests (using three versions of the augmented Dickey-Fuller test) and concluded that all series were first-order integrated. Thus all beverage prices in the current period are correlated with their prices in the previous period.

We therefore used the technique described previously of estimating a model of differences between the previous and current periods. We then tested each pair of *changes* in excise duties and prices for cointegration. After testing for cointegration, we found little evidence supporting such a hypothesis. We are therefore confident that using first differences (the difference in the levels of prices and excise duties between the current and previous period) addressed the risk of spurious correlation and over- or under-estimation.[38] In summary, we established the order of integration and estimated ordinary least squares (OLS) regressions in first differences (including year- and month-specific time dummies), with standard errors robust to heteroscedasticity. Our specification tests, and particularly the tests for autocorrelation (eg Durbin's alternative test for serial correlation and Breusch-Godfrey LM statistic test), suggested that the assumptions necessary for consistency of OLS estimates were not violated.

Before and after nominal changes in excise duties

In order to develop a picture for what happened to prices before and after the change in excise duties, we calculated the amount of price change for excise duty change, in percentage terms. In particular, we took the change in prices (the difference between the price during the month of the excise change and the price from one month before the change) and divided it by the corresponding change in excise duty. This is not actual pass-through because it does not take into account, for example, that prices may have been changing already during the period of increased excise duties. It does, however, provide a picture of what happened immediately following a change in excise duty.

Ireland

Beer

The calculation of the price change shows the on-premise corresponds more closely to the change in excise duty than the off-premise. A 100 percent increase in excise duty is associated with a 0.7–1.8 percent increase in beer prices; a 100 percent decrease in excise duty is associated with a 1.5 percent decrease in prices in the on-trade and 5.3 percent increase in the off-trade (Table A.1). As this analysis does not take into account other relationships at work, this is not pass-through and simply a description of prices and excise duty at the time of changes.

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[37] In some cases (eg Latvia and Slovenia) we employed Breusch-Godfrey LM statistic for autocorrelation as we include lagged difference of the dependent variable in our specifications (to control for autocorrelation).

[38] However, in Finland and Slovenia (for particular beverages), a further lagged effect of the difference is required to achieve non-stationarity. Such additional lagged effect is included in the model are indicated in the tables of results.

Table A.1: Percentage change in price with change in excise duty for beer (stout and lager) in Dublin, 2002 and 2009

	Stout, off-trade	Stout, on-trade	Lager, off-trade	Lager, on-trade
January 2002: duty increase	0.68	1.78	0.68	1.77
December 2009: duty decrease	5.26	−1.52	5.27	−1.53

Note: Quantity of alcohol prices: off-trade: stout 6-pack (6 x 250 ml), lager single can (500 ml); on-trade: draught stout (1 pint), draught lager (1 pint).

Spirits

Similarly to beer, the on-premise change in prices corresponds more closely to the change in excise duty than in the off-trade; although unlike with beer, the magnitude of changes differs substantially across the changes in excise. A 100 percent increase in excise duty is associated with a 0.4–14.3 percent increase in beer prices; a 100 percent decrease in excise is associated with a -247.2–53.6 percent change in prices (Table A.2). This suggests there were other factors influencing the price of spirits and regression analysis was needed to calculate excise duty pass-through more reliably.

Table A.2: Percentage change in price with change in excise duty for spirits (whiskey and brandy) in Dublin, 1996–2009

	Whiskey, off-trade	Whiskey, on-trade	Brandy, off-trade	Brandy, on-trade
July 1996: duty decrease	53.56	−246.76	53.56	−247.23
January 2002: duty increase	0.38	2.09	0.38	2.09
December 2002: duty increase	14.31	5.94	14.31	5.93
December 2009: duty decrease	40.30	−1.54	40.30	−1.54

Note: Quantity of alcohol prices: off-trade: whiskey bottle (70 cl), brandy bottle (70 cl); on-trade: whiskey, single measure (half glass), brandy, single measure (half glass).

Wine

Similarly to beer, the on-premise change in prices corresponds more closely to the change in excise duty than in the off-trade. A 100 percent increase in excise duty is associated with a 1.4–3.8 percent increase in wine prices; a 100 percent decrease in excise is associated with a 1.1 percent decrease in on-premise prices and 8.9 percent increase in off-trade prices (Table A.3). Again, this is a simple calculation of before and after prices and is not pass-through. This is simply to describe the situation in Ireland further.

Table A.3: Percentage change in price with change in excise duty for wine in Dublin, 2002–2009

	Wine, off-trade	Wine, on-trade
January 2002: duty increase	1.38	2.55
October 2008: duty increase	3.80	3.21
December 2009: duty decrease	8.90	−1.10

Note: Quantity of alcohol prices: off-trade: wine bottle (75 cl); on-trade: wine, small bottle (187 ml).

Finland

The calculation of the price change shows an increase in excise duty in Finland is associated with greater increases during the first three excise duty changes in 2004, 2008 and January 2009; a 100 percent increase in excise duty is associated with a 44–104 percent increase in price (Table A.4). There is virtually no accompanying price change in the October 2009 excise duty change.

Beer

Table A.4: Percentage of change in duty passed through to price of beer, Finland, 2004–2009

	Beer, off-trade
March 2004: duty decrease	44.50
January 2008: duty increase	103.65
January 2009: duty increase	44.28
October 2009: duty increase	0.32

Note: Off-trade: 12-pack beer (3,960 ml).

Spirits

Unlike beer, when there were changes in excise duties there were always changes in the price of vodka and the price changes were similar in scale for each of the excise duty changes. From 2004 to the end of 2009, a 100 percent increase in excise duty changes would be associated with an approximately 65–80 percent increase in prices of vodka in the off-trade (Table A.5).

Table A.5: Percentage of change in duty passed through to price of spirits (vodka), Finland, 2004–2009

	Vodka, off-trade
March 2004: duty decrease	81.38
January 2008: duty increase	79.59
January 2009: duty increase	72.98
October 2009: duty increase	66.48

Note: Off-trade: Vodka Koskenkorva (0.5 l).

Cider

Similar to beer, one of the changes in excise duties is associated with nearly no effect on cider prices in the off-trade; however, during three other excise duty increases, a 100 percent increase in excise duties was associated with a 33–45 percent price increase (Table A.6).

Table A.6: Percentage of change in duty passed through to price of cider, Finland, 2004–2009

	Cider, off-trade
March 2004: duty decrease	33.47
January 2008: duty increase	8.58
January 2009: duty increase	35.89
October 2009: duty increase	44.84

Note: Off-trade: cider (0.5 l).

Latvia

Beer

For three changes in excise duties on alcohol in Latvia, there were relatively small, but positive increases in prices of beer in the off-trade. Specifically, a 100 percent increase in excise duties was associated with an approximately 8–30 percent price increase (Table A.7).

Table A.7: Percentage of change in duty passed through to price of beer, Latvia, 2006–2009

	Beer, off-trade
January 2006: duty increase	30.99
February 2009: duty increase	8.40
July 2009: duty increase	12.79

Note: Off-trade: beer (1 l).

Spirits

Larger changes were observed for brandy than beer in the off-trade. In particular, a 100 percent increase in excise duties was associated with an approximately 40–100 percent price increase (Table A.8). Again it is important to stress that this is not pass-through; this is simply a description of the size of price changes during a period in which excise duty changed so other factors may be masking the effect of excise duties.

Table A.8: Percentage of change in duty passed through to price of spirits (brandy), Latvia, 2006–2009

	Brandy, off-trade
January 2006: duty increase	46.66
February 2009: duty increase	38.62
July 2009: duty increase	98.25

Note: Off-trade: brandy (1 l).

Wine

The increases in wine prices were similar to beer price changes during periods of excise duty changes for wine. Specifically, a 100 percent increase in excise

duties was associated with an approximately 20–30 percent price increase in off-trade, sparkling wine (Table A.9).

Table A.9: Percentage of change in duty passed through to price of (sparkling) wine, Latvia, 2009 and 2010

	Sparkling wine, off-trade
February 2009: duty increase	17.88
February 2010: duty increase	29.16

Note: Off-trade: sparkling wine (75 cl).

Slovenia

Beer

There were decreases and increases in beer prices during increases in excise duties. Specifically, a 100 percent increase in excise duties was associated with a fall in the price of bottles of beer in the off-premise of 17 percent and increases of approximately 23–25 percent (Table A.10).

Table A.10: Percentage of change in duty passed through to price of beer (pale ale), Slovenia, 2001–2010

	Pale ale, off-trade
February 2001: duty increase	22.98
April 2002: duty increase	−16.86
March 2009: duty increase	23.15
July 2010: duty increase	25.83

Note: Off-trade: bottle of pale ale (0.5 l).

Spirits

All prices increased during the month in which excise duties increased; although similar to beer prices in Slovenia, the smallest change was in April 2002 (Table A.11).

Table A.11: Percentage of change in duty passed through to price of spirits (brandy), Slovenia, 2001–2010

	Brandy, off-trade
February 2001: duty increase	26.79
April 2002: duty increase	8.87
March 2009: duty increase	17.04
July 2010: duty increase	18.63

Note: Off-trade: natural brandy (70 cl or 1 l).

Full results of excise duty pass-through: How much pass-through is there overall for a €1.00 increase in excise duties?

Table A.12 summarises our regression analysis of pass-through in Chapter 2 across all the countries.

Table A.12: Full regression results of pooled model on pass-through across all countries

Dependent variable: real price of beverage	Beer	Spirits	
		Vodka	Brandy
Real excise duty	0.831***	0.938***	0.841***
Country (compared to Finland, or Slovenia for spirits)			
Ireland	−0.411*	2.482***	
Latvia	−0.460*		−1.252***
Slovenia	−0.413*		
R^2	0.99	0.99	0.99
F-stat	51479.85	4964.01	2004.17
N	513	200	206
Additional controls			
Month and year dummies	Y	Y	Y
Real price (t-1)	Y	Y	Y
Real excise (t-1)	Y	Y	Y

What may retail prices in the on- and off-trade be with a €1.00 increase in excise duties?

Table A.13 summarises our regression analysis of Chapter 2 on the influence of excise duties on prices. The third and fourth columns are the mean real price and excise duties over the period of analysis for which we have data for each country; thus the years may differ across countries. The fifth column is the pass-through values identified in Chapter 2 through regression analysis. The sixth column (New mean real excise duty) includes a €1 increase in excise. The new mean price is the mean real price plus pass-through.

As can be seen in Table A.13, a €1 increase in excise is a relatively large amount for some countries and beverages, but not all, because it depends on the volumes considered, excise duty rates and consumer price levels in each country.

Table A.13: The effect of €1 increase in excise duties, by country

		Mean real price (€)	Mean excise duty (€)	Pass-through (€)	New mean real excise duty* (€)	New mean price (€)
Beer	*Off-trade*					
	Ireland	1.97	0.42	0.45	1.42	2.42
	Finland	10.14	4.75	0.77	5.75	10.91
	Latvia	1.00	0.09	1.91	1.09	2.91
	Slovenia	1.63	0.19	2.50	1.19	4.13
	On-trade					
	Ireland	4.48	0.52	0.00	1.52	4.48
	Finland	9.76	0.68	0.65	1.68	10.41
Spirits	*Off-trade*					
	Ireland	22.57	11.68	0.67	12.68	23.24
	Finland	11.52	5.94	1.44	6.94	12.96
	Latvia	8.13	3.15	1.28	4.15	9.41
	Slovenia	11.35	3.10	0.66	4.10	12.01
	On-trade					
	Ireland	3.63	1.67	0.10	2.67	3.73
	Finland	105.81	11.78	0.78	12.78	106.59

Appendix D: Further description of prices and excise duties across the European Union

This section provides a descriptive overview of the alcohol prices and excise duties across the European Union to provide context of the different price and excise duty regimes in the Member States. Data on the price of alcohol in particular countries are provided by Eurostat as a price index. It is an indicator for how much prices have changed and the trend in prices. This allows for the comparison of prices across geographical locations. It is important to reiterate that the EU harmonised price index cannot be used for excise duty pass-through because the price is adjusted to conform to a basket of goods at the EU level. This makes the price in a Member State relative to the EU-27 average and not relevant for analysis of pass-through.

This section provides an illustrative example of overall alcohol prices and beverage specific excise duties across Member States.

Prices levels and changes across the European Union

Price levels

The price levels (rather than trends) in each of the Member States compared with the EU-27 average is presented in Table A.14, which shows the differences between countries in prices of alcohol consumed in 2009. Large differences in price levels are observed with some countries having prices 150 percent higher and others 30 percent lower than the EU-27 average. The highest price levels for alcoholic beverages were registered in Finland (170 percent of the EU-27 average), Ireland (167 percent), Sweden (138 percent) and Denmark (135 percent), and the lowest in Romania (70 percent), Bulgaria (77 percent), Spain and Hungary (both 84 percent) (Eurostat, 2009). This difference may be due to the types of alcohol consumed whereby people in Finland and Ireland, for example, consume relatively higher quality, higher priced alcohol in their countries than those in Bulgaria and Spain.

Table A.14: Alcohol price index, by Member State, 2009

Member State	All alcohol price index (%)
Romania	70
Bulgaria	77
Spain	84

Member State	All alcohol price index (%)
Hungary	84
Portugal	86
Czech Republic	89
Poland	89
Germany	91
France	95
Austria	95
Luxembourg	96
Slovakia	97
Malta	98
Lithuania	99
Netherlands	99
EU-27	100
Belgium	101
Slovenia	102
Greece	105
Estonia	106
Italy	113
UK	117
Latvia	118
Cyprus	119
Denmark	135
Sweden	138
Ireland	167
Finland	170

Source: Eurostat, 2009.

Price changes

Table A.15 shows the alcohol price indices in 17 countries reporting this data to Eurostat for 2010, compared with each country's prices in 2005 that were relative to the EU-27 average.

It is an illustration of changes in prices of alcohol within each country, adjusted for any inflation or taxes within the country; it may not be the actual price changes. This can happen when there are compositional shifts in the types of drinks consumed, even within a drink category, which affects prices collected to generate the price index. For example, if there is a shift in demand towards consumption of lower quality or non-brands, then more of these prices will be collected for the price index than previously. This will make it appear as if the price is falling or not increasing as much as expected.

In the price index a value greater than 100 represents increases, and values lower than 100 represent decreases in price or lower priced alcohol consumed since 2005. For instance, the price index for Ireland's beer in 2010 is 96, which means that the price of beer in Ireland decreased by 4 percent since 2005, or the type of beer consumed was 4 percent cheaper than in 2005. In contrast, the price index of beer in the UK is 105, indicating that the price of beer in the UK

increased by 5 percent, or more expensive types of beer were consumed since 2005.

Overall across the European Union, beer and spirits prices or types of beer and spirits consumed have increased similarly, by 17 percent, whereas wine prices or types of wine increased slower at 12 percent. The table below shows that Ireland is the only Member State for which all alcohol types are priced lower in 2010 than in 2005. Latvia has experienced the largest increases, of between 35 percent and 49 percent, across all the three main alcohol types. Again, this may simply be due to increasing consumption of more expensive types of alcohol, rather than actual increases in price. Yet other Member States, such as the UK and Netherlands, have relative discrepancies in prices changes by alcohol type. In the UK for example, beer prices increased by 5 percent, whereas spirits and wine increased by 15 percent.

Table A.15: Harmonised* price index for alcoholic beverages in EU countries, 2010 (2005=100)

Beer		Spirits		Wine	
Ireland	96	Ireland	91	Ireland	94
UK	105	Netherlands	97	Sweden	104
Germany	106	Sweden	102	Austria	105
France	110	France	107	Belgium	105
Sweden	111	Germany	109	Denmark	107
Romania	114	Denmark	110	Netherlands	107
Austria	115	Belgium	110	Spain	108
Belgium	115	Austria	112	Italy	110
Italy	119	Italy	113	Germany	110
Spain	119	UK	115	France	111
Slovenia	119	Spain	116	Finland	114
Netherlands	119	Slovenia	125	UK	115
Finland	120	Romania	126	Romania	116
Denmark	120	Finland	131	Estonia	116
Greece	121	Greece	140	Slovenia	122
Estonia	142	Estonia	144	Greece	126
Latvia	147	Latvia	149	Latvia	135
EU 17 average	117	EU 17 average	117	EU 17 average	112

Source: Eurostat, 2011.

Notes: *Harmonised at the EU level. The table presents information for the Member States that provided data. The EU-17 average is the unweighted mean of all Member States providing information.

Excise duty rates across Member States

Excise duty rates are more often provided as actual monetary values or as proportions of the retail price since it is a cost added to the producer price of a good. There is a minimum rate set by the European Union, which varies by beverage type (beer, spirits and wine). The Member States have the discretion to apply rates at or beyond the minimum rates.

Table A.16 shows that excise duty rates vary considerably across countries and beverages. Of the three alcohol types, spirits excise duties were highest where the EU-21 (of Member States providing data) is approximately 32.5 percent of the retail price of spirits. Some Member States set excise duty for wine at zero – the minimum set by the European Union.

Table A.16: Alcohol excise tax as a percentage of retail price, for beer, spirits and wine in EU countries, 2008

Beer		Spirits		Wine	
Portugal	0.4	Romania	2.9	Austria	0.0
Bulgaria	1.9	Bulgaria	5.6	Bulgaria	0.0
Lithuania	2.0	Cyprus	6.0	Cyprus	0.0
France	3.8	Austria	10.0	Hungary	0.0
Cyprus	4.8	UK	11.9	Malta	0.0
Estonia	6.4	Lithuania	12.8	Portugal	0.0
Malta	6.7	Slovenia	20.8	Slovenia	0.0
UK	7.7	France	22.5	France	1.2
Sweden	11.7	Portugal	24.9	Romania	2.5
Latvia	12.0	Estonia	25.0	Lithuania	5.2
Austria	13.9	Hungary	28.4	Latvia	6.0
Czech Republic	14.9	Malta	30.0	Poland	12.4
Ireland	21.5	Denmark	42.0	Denmark	15.4
Hungary	21.6	Ireland	44.0	Estonia	15.8
Poland	22.1	Netherlands	45.4	Netherlands	16.8
Belgium	23.9	Poland	49.4	Czech Republic	20.0
Netherlands	25.0	Sweden	50.1	Ireland	25.7
Denmark	31.9	Belgium	53.5	Belgium	33.0
Slovenia	33.0	Finland	59.9	Sweden	34.6
Finland	47.7	Latvia	65.8	Finland	37.3
Romania	60.0	Czech Republic	72.6	UK	42.2
EU 21 average	17.8	EU 21 average	32.5	EU 21 average	12.8

Source: Eurostat.

Conclusions

For those Member States for which in-depth analysis is not possible, we provide descriptive information. The data show the highest price levels compared with the EU-27 average are in northern countries, such as Sweden and Denmark, whereas the lowest are in the southern and CEE countries, such as Romania and Spain. This appears to be changing as the largest relative increases in prices occurred in the southern and CEE countries – especially Estonia, Greece and Latvia.

The proportion of retail price due to excise duty tends to be greater for spirits (32.5 percent) than for beer (17.8 percent) and wine (12.8 percent) across the EU-21 providing data. It appears that this proportion may be more related to markets than political, social welfare systems or wealth typologies. In particular, countries with long traditions of selling wine with an important place in the economic system, such as Bulgaria, France or Portugal, appear to keep excise duty low. This may be to ensure competitiveness of their products. An interesting avenue of research would be to find out how the competitiveness of the markets influences the degree to which excise duties are a proportion of retail prices.

Appendix E: The alcohol value chain and factors determining prices

The alcohol value chain is the activities involved in the development and retail of a product, all of which add value to the final product. The activities involved in alcohol production, distribution and retail vary widely around the world, by beverage and by whether these activities result in recorded or unrecorded alcohol consumption. Typically, recorded alcohol is produced by manufacturers who in many countries pay excise duty on their products; smaller manufacturers often retail the products to the final consumer directly. Larger producers distribute their products through wholesalers, or sell directly to final retailers. Some prominent and boutique brands of various alcoholic beverages are also exported. International brands also often manufacture their products locally (this is true primarily for beer), especially in countries with high sales volumes.

The factors determining prices in a market are complex as it involves the interaction between supply and demand side factors, as well as the change of each factor over time. As described in Zamparelli (2009), a firm is in equilibrium (no longer changing its quantity or price) when maximising profit by producing a quantity where marginal cost[39] equals marginal revenue,[40] and when in the industry as a whole, no firm has an incentive to enter or exit.

Price is then determined by factors contributing to the marginal cost and marginal revenue and by factors incentivising firms to enter or exit (for example obtainable profits). A list of factors contributing to marginal costs and revenue can be seen in the textbox below.

[39] The extra money spent to produce one more unit of output.

[40] The extra money earned by producing one more unit of output.

Text box A.1: What determines prices?

What determines prices?

The retail price of alcoholic beverages may be determined by several factors, including:

- production costs:
    - cost of inputs (grain, hops)
    -cost of processing inputs (labour, capital)
- costs of transportation and distribution
- costs of retailing – these differ in the on- and off-trade sectors
- marketing costs – communication efforts to establish and maintain brands; these are affected by the level of competition between retailers and between producers, and include:
    - advertising costs
    - promotions and discounts
- the level of taxation
- consumers' tastes, preferences and demand.

Each of these factors, when altered, individually and in combination with changes of other factors, can have differing effects on prices. Generally speaking, increasing costs and strong consumer preferences and demand equate to increasing prices. However, literature has shown that not all increasing costs are passed on to consumer prices. This can be because of the market structure (for example, oligopoly, monopoly) where evidence shows that more concentrated markets, such as oligopolies, lead to strategic interaction between firms in determining prices above marginal costs and allow for an accumulation of profits; in perfectly competitive markets, firms cannot set the price since there are so many firms they would lose all sales by increasing their price even slightly.

Sometimes we observe products in a market offered to the consumer that appear to be priced above or below their marginal cost. One explanation for this is price discrimination, which is "the ability to set prices so that the difference between average prices and average costs varies between different sales of either the same good or closely related goods" (Church and Ware, 2000, p. 193). In other words, the same product sells for different prices to different consumers. There are three kinds of price discrimination:

1. First-degree price discrimination – identical goods sold at different prices to each individual consumer. Examples of this include markets with open negotiations where the seller gauges how much the buyer is willing to pay and each party negotiates a price. This is more likely to occur in the wholesale alcohol market.
2. Second-degree price discrimination – different quantities of goods sold at different prices. Examples include bulk sales, where consumers (including wholesalers) can purchase a large quantity of alcohol in one setting for lower per unit prices.
3. Third-degree price discrimination – identical goods sold at different prices to groups of consumers based on observable characteristics. Examples of this are youth, senior or female discounts.

Third-degree price discrimination is also known as market segmentation. Another form of market segmentation affecting prices is that related to socio-economic aspects of an area and elasticity of demand. Retailers and pubs may set the price of alcoholic beverages higher in the higher income areas where they can get more money for the beverages. Equally, if people have access to only one retailer, even in a low income area, the retailer can price the products higher because there is no competition and the retailer can earn more.

There are two conditions to price discriminate (Church and Ware, 2000):

- Market power – if firms do not have market power, and "over-priced" products by unit, such as over-charging for a small cup of coffee, other firms would come into the market and offer a lower price. All units would then be driven down to the perfectly competitive price, thereby eliminating price discrimination.
- No resale or arbitrage – if consumers of the lower-priced good can sell to those intending to buy the good at a higher price, firms will lose profits to their own consumers.

Market power is an important feature particularly in the alcohol industry, as research suggests that large retailers may have a higher degree of market power (Hunt et al., 2010) and thus prices may be determined by the nature of strategic interaction of the firms, rather than economic conditions (for an example of how this works in practice, see Textbox A.2).

Text box A.2: Example of how prices are set in an oligopoly market – the case of tobacco in the 1920s and 2930s

An example of how prices are set in an oligopoly market – the case of tobacco in the 1920s and 1930s

Church and Ware (2000) describe pricing in the US cigarette market in the late 1920s and 1930s when there were three companies – Reynolds, American Tobacco and Liggett – that dominated the market with more than 90 percent market share mainly coming from their three leading brands – Camel, Lucky Strike and Chesterfield, respectively.

The list price of each of these brands was nearly the same from 1923 to 1928, and was exactly the same from 1928 to 1940. During this latter period, there were seven price changes, each led by Reynolds. In 1929, for example, Reynolds indicated the next day (5 October) it would change the price of 1,000 Camels from $6.00 to $6.40. On 5 October, both American Tobacco and Liggett increased their prices to $6.40. Similar types of changes occurred, until the three firms were convicted of price-fixing under Section 1 of the Sherman Anti-trust Act, despite no evidence of collusion.

Interestingly, the price increases were at a time of overall falling prices (for example the 1931 depression) and falling demand for tobacco leaf (Church and Ware, 2000). Therefore, history shows it is important to consider that in more concentrated markets price leadership can have a strong effect, even stronger than economic conditions, on prices observed in the market.

Appendix F: Further consideration of pass-through implications

In this appendix, we provide details of the analysis and data used in Chapter 2 on the pooled model estimating pass-through and describe the potential implications for consumption per country.

Descriptive statistics of analysis across countries

Table A.17 shows the data used in Chapter 2 for the pooled analysis comparing the mean log real prices and excise duties for beer and spirits in four EU countries.

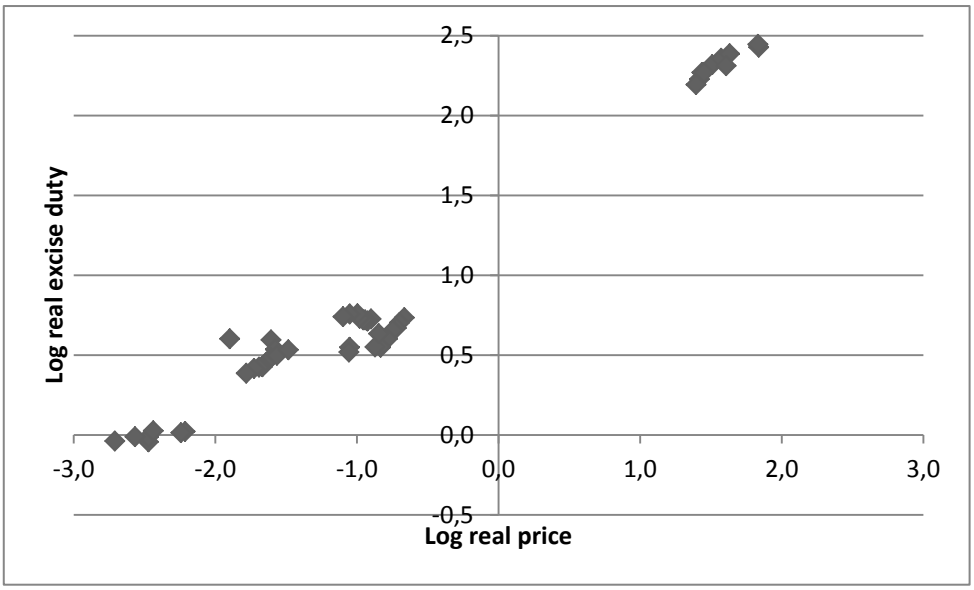
Table A.17: Summary statistics for beer analysis, four EU countries, 1994–2011

	Mean log real price	Mean log real excise duty	Number of observations
Beer (overall)	0.86	−0.83	517
Finland	2.31	1.55	104
Ireland	0.68	−0.89	205
Latvia	−0.01	−2.47	76
Slovenia	0.49	−1.66	132
Spirits			
Brandy (overall)	2.31	1.63	208
Latvia	2.09	1.14	76
Slovenia	2.43	1.12	132
Vodka (overall)	2.76	1.63	202
Finland	2.43	1.76	104
Ireland	3.11	2.33	98

Note: The panel is unbalanced with some countries having a shorter time series than the full period 1994–2011.

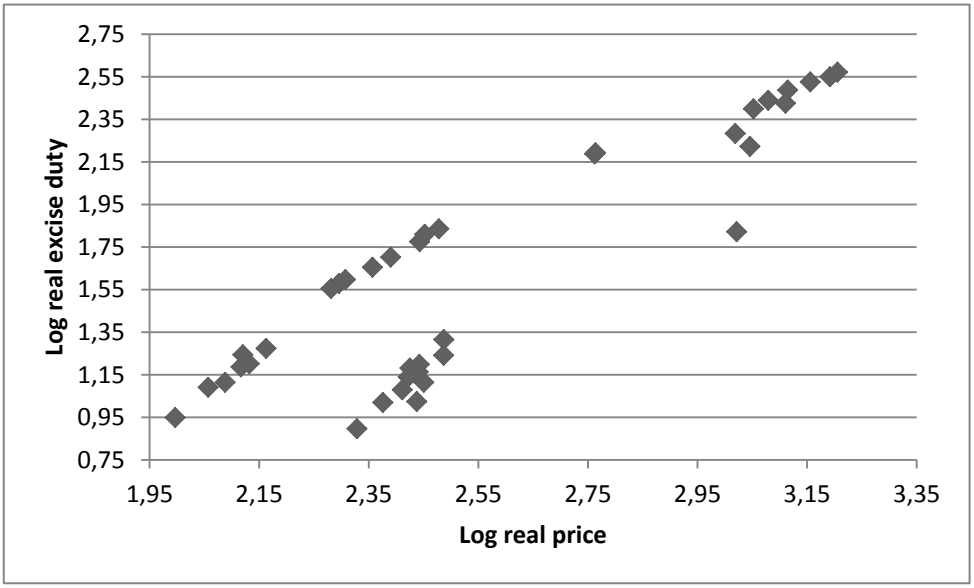
We provide figures of the data to illustrate the potential relationship between excise duties and prices. Each data point is a country's value of log real excise duty and log real beer price at a point in time. Figure A.1 illustrates a clear positive relationship between them; although statistical analysis is necessary, which takes into account any spurious correlation.

Figure A.1: Scatter plot of relationship between log real price and log real excise duty, beer only, four EU countries, 1994–2011



Similar to the figure for beer, the figure for spirits, shown in Figure A.2, shows a fairly clear positive relationship between excise duty and prices.

Figure A.2: Scatter plot of relationship between log real price and log real excise duty, spirits only, four EU countries, 1994–2011



Excise duty pass-through implications on consumption

As an aim of pass-through may be to reduce harmful consumption of alcohol, as opposed to raise tax revenues for example, governments may be interested to know how much consumption may change with changes in excise duty rates. Although this is outside the scope of this study, we consider it important to provide results in a way that allows researchers to translate pass-through findings into consumption. Therefore we do not provide potential changes in consumption here, but instead give the percentage change in prices for a 10

percent change in excise duties. This may be used with elasticities of demand – the percentage change in demand (or consumption) for a percentage change in prices – to understand the potential scope for excise duties to alter consumption.

What was the overall percentage change in prices for a 10 percent change in excise duties?

Table A.18 presents results of the regression analysis of countries' data pooled together in one model. Each model includes a variable to take into account countries' different cultures, social structures, markets and policies.

Results indicate a 10 percent change in excise duty is associated with a 2.5–6.5 percent change in alcohol prices, depending on the beverage. For beer, this change is greater in Latvia and greater still in Slovenia.

Table A.18: Full regression results of pooled model of percentage change in price for 1 percent change in excise duty

	Beer	Spirits	
Dependent variable: log price of beverage		Vodka	Brandy
Log real excise duty	0.189***	0.579***	0.265***
Country (compared with Finland, or Slovenia for spirits)			
Ireland	−0.108***	0.145***	
Latvia	−0.120***		−0.893***
Slovenia	−0.096***		
R^2	0.99	0.99	0.994
F-stat	756883.93	8375.13	2069.55
N	513	200	206
Additional controls			
Month and year dummies	Y	Y	Y
Log real price (t-1)	Y	Y	Y-
Log real excise (t-1)	Y	Y	Y

For each country, what was the percentage change in prices for a 10 percent change in excise duties?

Table A.19 summarises our regression analysis of Chapter 2 on the influence of excise duties on prices and presents results as percentage changes. This provides an additional perspective on the relationship between excise duties and prices.

The third and fourth columns are the mean real price and excise duties over the period of analysis for which we have data for each country (as above in the

statistical description); thus the years may differ across countries. The fifth column is pass-through measured in Euros for a 10 percent increase in the country's mean excise duty (calculated as the ratio to change in excise duty by taking the difference between the new and mean excise duty and multiplying by pass-through result from regression analysis per country). The sixth column (New mean real excise duty) includes a 10 percent increase in excise. The new mean price is the mean real price plus pass-through. The last two columns present the change in percentage terms.

As can be seen in Table A.19, for beer, a 10 percent change in excise duty is associated with a 1–4 percent change in the off-trade and less than 1 percent change in the on-trade. For spirits, a 10 percent change in excise duty is associated with a 1.8–7.4 percent in the off-trade and less than 1 percent change in the on-trade.

Table A.19: Calculating the effect of a 10 percent increase in excise duties, by country

		Mean real price (€)	Mean excise duty (€)	Pass-through (€)	New mean real excise duty* (€)	New mean price (€)	Change in excise duty (%)	Change in price (%)
Beer	*Off-trade*							
	Ireland	1.97	0.42	0.02	0.46	1.99	10.0	1.0
	Finland	10.14	4.75	0.37	5.23	10.51	10.0	3.6
	Latvia	1.00	0.09	0.02	0.10	1.02	10.0	1.7
	Slovenia	1.63	0.19	0.05	0.21	1.68	10.0	2.9
	On-trade							
	Ireland	4.48	0.52	0.00	0.57	4.48	10.0	0.0
	Finland	9.76	0.68	0.04	0.75	9.80	10.0	0.5
Spirits	*Off-trade*							
	Ireland	22.64	9.36	0.63	10.30	23.27	10.0	2.8
	Finland	11.52	5.94	0.86	6.53	12.38	10.0	7.4
	Latvia	8.13	3.15	0.40	3.47	8.53	10.0	5.0
	Slovenia	11.35	3.10	0.20	3.41	11.55	10.0	1.8
	On-trade							
	Ireland	3.63	1.67	0.02	1.84	3.65	10.0	0.5
	Finland	105.81	11.78	0.92	12.96	106.73	10.0	0.9

Appendix G: Alcohol price and retail – data collected by Member States' statistical offices

The information in this appendix was collected between June and September 2011. It was provided by phone or email by staff from each Member State's and Norway's statistical office, or retrieved by the research team from said offices' websites.

Table A.20: Data collected on alcohol prices and retail practices across the EU

Country	Data on alcohol prices by beverage type	Data on alcohol prices by venue type (on-trade vs off-trade)	Data on ratio of consumption/sales in on-trade vs off-trade premises	Data on volume/value of alcohol sales through price discounts and promotions (relative to all sales)	Year collection started	Frequency of data collection	Data access
Austria	Yes	To some extent (prices are collected in supermarkets as part of the CPI and in restaurants for beer and wine)	No	No (however, if promotions take place while monthly CPI data are collected, promotion prices are recorded)	2001 for data on wine and beer in restaurants (CPI base year 2000); 1959 for data on wine and beer in supermarkets (CPI base year 1958)	Monthly	Data are generally accessible but access to microdata may require special permission
Belgium	Yes	No	No	No	1920 for CPI	Monthly	Data are generally accessible but access to microdata may require special permission
Bulgaria	Yes	No information found	No information found	No information found	No information found	Monthly	No information found
Cyprus	Yes	To some extent (prices are collected in supermarkets as part of the CPI; prices of some selected items are collected in certain on-premise establishments, such as beer in cafeterias and nightclubs)	No	No	No information found	Monthly	Data are generally accessible but access to microdata may require special permission
Czech Republic	Yes	Yes	Not specifically recorded but can be calculated on the basis of other data collections	No	1995 for price collections by type of beverages and venue type	Monthly	Data are generally accessible but access to microdata may require special permission

Country	Data on alcohol prices by beverage type	Data on alcohol prices by venue type (on-trade vs off-trade)	Data on ratio of consumption/sales in on-trade vs off-trade premises	Data on volume/value of alcohol sales through price discounts and promotions (relative to all sales)	Year collection started	Frequency of data collection	Data access
Denmark	Yes	No	No	No	1905 for data collection on beer prices as part of the CPI; data collection on prices of other alcoholic beverages were initiated later	Monthly	Data are generally accessible but access to microdata may require special permission
Estonia	Yes (for all types of alcoholic beverages, yet data collected on wines comprise only Estonian products, such as fruit-berry wines)	No	No	No	2001	Quarterly	For enquiries about data access, contact the Ministry of Agriculture, Trade Policy and Alcohol Market Regulation
Finland	Yes	Yes	Yes	No	2001 for data collection on average prices in restaurants; 1998 for data collection on average prices in retails outlets (but Alko may have longer time series)	Quarterly for average prices of alcoholic beverages in restaurants; monthly for average prices of alcoholic beverages in retail outlets and Alko stores	Data are generally accessible
France	Yes	No information found	No information found	No information found	No information found	Monthly	No information found
Germany	Yes	Yes	Not specifically recorded but can be calculated on the basis of on- or off-premise consumption of alcoholic beverages	No (however, if promotions take place while monthly CPI data are collected, promotion prices are recorded)	1948 for West Germany: 1991 for re-unified Germany	Monthly	Data are generally accessible but access to microdata may require special permission
Greece	No information found	No information found	No information found	No information found	No information found	No information found	No information found

Country	Data on alcohol prices by beverage type	Data on alcohol prices by venue type (on-trade vs off-trade)	Data on ratio of consumption/sales in on-trade vs off-trade premises	Data on volume/value of alcohol sales through price discounts and promotions (relative to all sales)	Year collection started	Frequency of data collection	Data access
Hungary	Yes	Yes	No	No	1992 for CPI	Monthly	Data are generally accessible but access to microdata may require special permission and incur a fee
Ireland	Yes	Yes	No	No	1968 for collections on alcohol prices by type; 1975 for collections on price indices by type; 1983 for collections on absolute prices for certain items by type	Monthly since 1997 (quarterly before 1997)	Data sets are publicly available only in index form or price form
Italy	Yes	Yes (however, data collections on on-premise prices are limited to apértitifs and beer)	No	No	1954 for CPI; 2005 for data collection on average prices of alcoholic beverages	Monthly	Data are generally accessible but access to microdata may require special permission and incur a fee
Latvia	Yes	Yes (however, for on-premise establishments, no distinction is made by beverage type)	No	No	1991 for CPI	Monthly	No information found
Lithuania	Yes	Yes	No	No	1990 for data collection on retail prices of alcoholic beverages; 2000 for collection on alcohol consumption; 2007 for data collection on sales of alcoholic beverages	Monthly	Data are available on request

Country	Data on alcohol prices by beverage type	Data on alcohol prices by venue type (on-trade vs off-trade)	Data on ratio of consumption/sales in on-trade vs off-trade premises	Data on volume/value of alcohol sales through price discounts and promotions (relative to all sales)	Year collection started	Frequency of data collection	Data access
Luxemburg	Yes	Yes	Not specifically recorded but can be calculated on the basis of data collected within the household survey	No	1999 for HICP; 2012 for data collection on average prices of alcoholic beverages	Monthly	Data are generally accessible but access to microdata may require special permission
Malta	No information found	No information found	No information found	No information found	No information found	No information found	No information found
Netherlands	Yes	No	No	No	1938 for CPI	Monthly	No information found
Norway	Yes	Yes	Yes	Norwegian regulation prohibits price discounts and promotions of alcoholic beverages, except for price discounts on non-alcoholic beer	No information found	Monthly for data collection on alcohol prices in restaurants and shops, three times per year for data collection on alcohol prices in alcohol monopoly stores	Data are generally accessible but access to microdata may require special permission
Poland	Yes	Yes	No	No	1989 for CPI	Monthly	Data may be accessible on request
Portugal	No information found	No information found	No information found	No information found	No information found	No information found	No information found
Romania	Yes	Yes	No	No	No information found	Monthly since 1990	No information found
Slovakia	Yes	Yes	No	No	1999 for CPI	Monthly	Data are generally accessible
Slovenia	Yes	Yes	No	No	1952 for CPI indices	Monthly	Data are generally accessible but access to microdata requires special permission
Spain	No information found	No information found	No information found	No information found	No information found	No information found	No information found

Country	Data on alcohol prices by beverage type	Data on alcohol prices by venue type (on-trade vs off-trade)	Data on ratio of consumption/sales in on-trade vs off-trade premises	Data on volume/value of alcohol sales through price discounts and promotions (relative to all sales)	Year collection started	Frequency of data collection	Data access
Sweden	Yes	Yes	Not specifically recorded but can be calculated on the basis of on- or off-premise alcohol sales	The Swedish Alcohol Act prohibits price discounts and promotions of alcoholic beverages	No information found	Quarterly publication of data on retail sales; yearly publication of data on restaurant sales	Data are generally accessible but access to microdata requires special permission
UK	Yes	No	No	No	1947 for RPI; 1996 for CPI	Monthly	No information found

Appendix H: Responses from 2011 WHO-EC alcohol survey

Table A.21: Responses from 2011 WHO-EC alcohol survey in Europe

	Price measure other than taxation (such as having a non-alcoholic beverage cheaper than an alcoholic one)	Restrictions on sales below cost (two for one, happy hours, etc)	Restrictions in on-trade serving alcohol for free	Perception: policies to control affordability of alcohol
Austria	Requirement to offer non-alcoholic beverages at a lower price than alcoholic beverages	No	No	No response
Belgium	No	No	No	Stronger
Bulgaria	No	Partial statutory restrictions and voluntary agreements	Partial statutory restrictions and voluntary agreements	Stronger
Cyprus	No	No	No	No response
Czech Republic	No	No	No	Stronger
Denmark	Additional levy on specific products	No	No	Weaker
Finland	Ban on volume discounts	Total ban for spirits and wine; partial statutory restriction for beer	Total ban for beer, wine and spirits	Stronger
France	Additional levy on specific products; requirement to offer non-alcoholic beverages at a lower price than alcoholic beverages	Partial statutory restrictions	Total ban	Stronger
Germany	Apple Juice Law (requirement to offer non-alcoholic beverages at a lower price than alcoholic beverages); ban on below-cost sales; additional levy on specific products (alcopops)	Total ban	No	No change
Greece	No	No	No	Stronger
Hungary	No	No	No	Weaker
Iceland	No	Voluntary	No	Stronger

	Price measure other than taxation (such as having a non-alcoholic beverage cheaper than an alcoholic one)	Restrictions on sales below cost (two for one, happy hours, etc)	Restrictions in on-trade serving alcohol for free	Perception: policies to control affordability of alcohol
		agreements		
Italy	Yes	Partial statutory restrictions and voluntary agreements	Partial statutory restrictions and voluntary agreements	No change
Latvia	Yes	Partial statutory restrictions	Partial statutory restrictions	Stronger
Lithuania	Yes	Partial statutory restrictions	Partial statutory restrictions	Stronger
Netherlands	No	Voluntary agreements	Voluntary agreements	No change
Norway	Ban on volume discounts	Total ban	Total ban	No change
Poland	Yes	Total ban for spirits and wine; partial statutory restriction for beer	Partial statutory restrictions for beer, wine and spirits	No change
Portugal	No	No	No	No change
Romania	No	No	No	Stronger
Slovakia	No	No	No	Weaker
Slovenia	Requirement to offer non-alcoholic beverages at a lower price than alcoholic beverages	No	No	No change
Spain	Only at sub-national level	Restrictions on promotions in Galicia and Catalonia	Restrictions on promotions in Galicia and Catalonia	No change
Sweden	Yes	Total ban	Total ban	No change
Switzerland	Additonal levy on specific products (alcopops); requirement to offer non-alcoholic beverages at a lower price (only in some cantons); ban on promotions of spirits (no happy hour offers)	Total ban for spirits (no restrictions for wine and beer)	Total ban for spirits (no restrictions for wine and beer)	No change

Source: Unpublished data, WHO Regional Office for Europe.

Appendix I: The effects of tax changes on cross-border and other unrecorded consumption

There is limited research on the effects of alcohol taxation on the extent to which increases in tax result in shifts to unrecorded consumption (for example illicit trade in alcohol, home production of alcohol, cross-border alcohol purchases for personal use, and non-commercial alcohol beverages). A small number of papers seem to suggest that some shift may occur, but their extent in different countries remains unclear (for discussions on these issues see for example, Beard et al., 1997; Gruenewald and Treno, 2000; Nordlund and Österberg, 2000).

There is some research on cross-border alcohol consumption in the Nordic countries, although most of this is related to the change in EU regulations on cross-border purchases of alcohol for personal use, and the effect of this on alcohol taxation and prices (for example, Herttua et al., 2008; Koski et al., 2007; Mäkelä and Österberg, 2009; Mäkelä et al., 2007). For example, one study found that near the border in Norway, 49 percent of beer was purchased abroad (Beatty et al., 2007). Studies from elsewhere have shown a similar phenomenon. Research has found that during the 1980s, nearly 25 percent of Ireland's residents' alcohol expenditures were north of the border because of the divergence between Irish and UK liquor prices (FitzGerald et al., 1988; Walsh, 1989). Another study (Crawford and Tanner, 1995) examines the UK alcohol taxation system in the light of cross-border alcohol purchases for personal use. In particular, authors examine whether reducing the price of domestic alcohol relative to alcohol across a border would stimulate enough demand to increase tax revenues. Crawford and Tanner find it does not, instead observing that "a policy of cutting tax rates on beer and wine [to increase domestic tax revenue] is likely to cause revenues to fall" (1995, p. 109). A follow up study from 1999 finds no change on the demand elasticity of beer, wine and spirits since 1993 (the year on which the first study focused), and that the duty rates on beer and wine were still below their revenue-maximising levels although the authors cannot reject the hypothesis that the current (1999) excise duty rate for spirits is at its revenue-maximising level (Crawford et al., 1999). In her paper, Smith (1999) arrives at the same conclusions. Another paper that also examines the effects of the introduction of the Single Market found that the Single Market has created tax competition between EU Member States where there was none before (Lockwood and Migali, 2009), as countries compete to retain domestic and capture foreign demand for particular products, most

notably alcohol and tobacco. This in effect means that tax rates in the UK (and other EU countries) are not independently set but are inter-dependent. Nonetheless, the paper concludes that "[t]here is evidence for Ireland and other countries… that high excise taxes do reduce the level of alcohol-related problems" (Lockwood and Migali, 2009).

An older study also examining cross-border alcohol shopping between Ireland and Northern Ireland found that distance from the border and the presence of a car in the household are important determining factors in the extent of this activity (FitzGerald et al., 1988). This finding echoes those of a study of cross-border alcohol shopping from Denmark to Germany, which found that an estimated 50 percent of cross-border shopping was carried out by Danes living within 50 kilometres of the German border (Danish Institute of Border Region Studies, 1989, cited in Crawford and Tanner, 1995b). More recently, a study on cross-border alcohol and tobacco shopping from Norway to Sweden arrived at a similar conclusion: stores near the border report lower revenues on sales of goods that are highly taxed than those further away (Beatty et al., 2009).

Finally, non-European studies have looked at the same phenomenon. A paper from the US models the effect of higher taxes on beer and spirits, finding that: (1) higher taxes reduce consumption, (2) although some consumers do cross state borders in response to increases in state excise duty, in the vast majority of states cross-border alcohol consumption is small enough that modest tax or price hikes would still raise tax revenues (Stehr, 2007). Older research also from the US either finds little or no evidence of border-crossing effects due to alcohol price differentials (Baltagi and Goel, 1990; Baltagi and Griffin, 1995; Beard et al., 1997).

Research examining the direct association between increases in price (such as through increases in taxation) and changes in alcohol-related harm in a way bypass the issue of accounting for shifts to unrecorded consumption by focusing on the "net" effect of a change in price; if a reduction in levels of harm is found after an increase in alcohol price, it is likely that overall consumption went down as well even if some shift occurred from recorded to unrecorded consumption.