



The Contribution made by Beer to the European Economy

EU Report - January 2016

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and conducted by Europe Economics



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Foreword

Foreword by the President of The Brewers of Europe



I would like to congratulate Europe Economics on putting together this detailed and comprehensive picture of the contribution made by beer to the European economy. In this sixth study, it is interesting to see over the last decade how the success and prosperity of the European beer sector acts as a barometer for the wider economy as a whole.

The European brewing sector declined during the global economic downturn, and stabilised in the following three years before the first shoots of recovery started to be seen. Now, in this latest economic impact report, we are seeing the brewing sector really starting to flourish again. Indeed, the beer markets in some Member States have returned to growth for the first time in a number of years.

What we are seeing is that, as confidence returns to the wider economy, confidence is also returning to the beer sector. And this is not a one-way relationship by any means, with a flourishing beer value chain capable of making an important contribution to strengthening Europe's whole economy.

It is notable that beer in Europe now generates an estimated 2.3 million jobs throughout the value chain, from grain to glass. Indeed, 1 job in a brewery generates on average a further 17 jobs - 2 in supply and agriculture, 2 in retail and 13 jobs in the bars, pubs, cafés and restaurants of Europe.

One of the most remarkable phenomena of recent years has been the growth in the number of breweries in the EU, with an increase of over 900 breweries since 2013. The EU now counts over 6,500 breweries, adding to what is already an extremely diverse beer scene, stretching to all corners of the European Union.

Brewers across Europe are investing heavily in new product innovation to satisfy consumer interest in a wide variety of beer styles, including lower- and non-alcohol versions. The level of investment involved is a sure sign of growing confidence amongst brewers, helping to lift the wider economy out of the recent downturn. Whilst consumers often like to drink local beers, they also increasingly try new tastes, with exports now making up around 20% of European beer production. Over a third of those exports are going to destinations outside the EU, satisfying the world's thirst for European beer, with Europe's status as the traditional heartland of modern brewing, its reputation for quality and the increasing focus on innovation and diversity. Ensuring that the importance of Europe's beer sector is recognised in the EU's trade negotiations can help support this improving trade balance.

Beer is a European success story and the brewing sector is one of which Europeans, its citizens and its policy-makers, should be immensely proud. With beer's close ties to agriculture through the ingredients used in the process, Europe's brewers are also excited that beer now qualifies for co-funding within the EU's promotion policy concerning agricultural products. Having launched "Love Beer" and sister projects across Europe over the last year, this EU policy opens up further opportunities for The Brewers of Europe to further strengthen the image of beer and promote responsible consumption of beer as a category.

Of course the beer sector also faces challenges in Europe. Brewers need to find ways to keep beer relevant in the lifestyles of both new and maybe former beer consumers who have moved towards other drinks categories, making the case for moderate beer consumption's place within a balanced, modern lifestyle. This is also the thinking behind the commitment undertaken by brewers in Europe to voluntarily list ingredients and nutrition information.

There is also a continuing drift of beer consumers from the more labour intensive bars, pubs and restaurants to the retail sector, which impacts directly on the ability of beer to create jobs in the wider economy. A sympathetic and supportive tax system that recognises the economic importance of both beer and the hospitality sector therefore doesn't just help brewers but also helps the whole beer value chain to build upon the early stages of economic recovery, to the benefit of the European economy as a whole.

Finally, it would be remiss of me not to mention Germany, which in 2016 is celebrating the 500th anniversary of the Reinheitsgebot (the German Purity Law). And what is interesting to see today is how, within the rules of the Reinheitsgebot, many German brewers are also innovating to meet consumer interest in beer diversity, showing how beer is as relevant today as it was half a millennium ago. So, whilst there are many words to toast a beer in Europe, this year I say "Prost!"

Demetrio Carceller
President of The Brewers of Europe

Executive Summary

Executive Summary

The EU is the second largest beer producer in the world, after China. There are over 6,500 active breweries, which produced around 383 million hectolitres of beer in 2014.

Domestic consumption has declined over a number of years, affected by wider macroeconomic trends, but is increasing in 2014 in line with the early stages of economic recovery.¹ Total consumer spending was over €110 billion in the EU in 2014. In part this reflects companies innovating with new craft and specialty offerings appealing to changing consumer tastes. On-trade consumption has continued to decline in most countries, but there are more exceptions now than before (e.g. Spain and Italy both saw an increase in the on-trade share of consumption in 2014).

The brewing sector in Europe is also a major exporter. EU countries sold over 27 million hectolitres of beer outside the EU in 2014. Some countries' exports (intra and extra-EU) represent more than half of their total production (notably Belgium, the Netherlands and Denmark). Most countries import significant amounts of their consumption and export significant amounts of their production (10% or more of consumption is imported and similar shares of production are exported).

Enormous numbers of jobs depend on the continued success of beer in Europe. The total contribution of beer to employment was around 2.3 million jobs in the EU (around 1% of total EU employment) in 2014, which includes:

- nearly 130,000 jobs in the brewing sector alone (this is in companies producing beer);
- a further 290,000 jobs in supply sectors (in industries like agriculture, packaging and services, which depend on the €16 billion spent on domestic purchases by brewing companies); and,
- 1.65 million jobs generated by beer sales in the on-trade hospitality sector (e.g. bars, pubs and hotels) and over 270,000 jobs in the off-trade retail sector (e.g. supermarkets or specialist shops).

Significantly, nearly 95% of beer-generated employment occurs outside the brewing companies themselves. In fact, 1 job in the brewery creates over 17 jobs in the wider economy.

These workers make a significant contribution to economic growth. The total contribution to value added in the EU in 2014 was around €51 billion. This would be comparable for instance to the total GDP of Croatia or Luxembourg.

In the EU, in 2014 there was:

- nearly €16 billion in value added in the brewing sector itself;
- a further €8 billion in value added generated in the supply sector; and,
- over €23 billion in value added generated in the hospitality sector (the on-trade) and over €4 billion in the retail sector (the off-trade).

The contributions to employment and value added have increased from 2013 to 2014. The largest increases occurred in the new Member States and, among the major EU economies, Italy and the United Kingdom.

Governments gain significant revenue from taxes on products (VAT and excise duties) and labour incomes earned in the supply chain. The total contribution of beer to government revenues was nearly €42 billion in the EU in 2014:

- VAT charged on beer sales produced around €19 billion in revenues (almost €13 billion on-trade and over €6 billion off-trade);
- taxes on labour income earned by workers in the brewing sector, supplying industries and the on- and off-trades produced around €12 billion in revenues; and,
- excise duties charged on beer sales produced around €11 billion in revenues (the highest excise duty rates are currently charged in Northern Europe and rates have increased the most in recent years in Northern European countries).

All of this evidence provides a persuasive case that the beer sector is large and successful, making a material contribution to the meeting of overall goals for economic policy in EU Member States. However, the environment could be challenging if volumes decline as a result of difficult economic circumstances, and there is a need to constantly innovate to be able to supply changing consumer tastes and competitive global markets. Governments can maximise the economic impact of the sector with policy choices including a moderate tax burden.

¹ Economic recovery began in Europe in the second quarter of 2013 and is expected to continue spreading across countries and gaining strength progressively.



Introduction

1. Introduction

This study was commissioned by The Brewers of Europe, who wishes to understand the economic impact of the beer sector across the EU and in some non-EU countries, in terms of its impact on value added, employment and government tax revenues. This EU report focuses on the findings for the EU but country reports have also been produced, including for Norway and Switzerland. This is the 6th study estimating beer's contribution to the economy in Europe.²

1.1 Economic impact

This report aims to quantify the economic impacts of beer in the European economy. Beer creates value in European economies in a number of ways: it has a direct utility value to consumers, who enjoy consuming beer and prefer the choice of a diverse range of beers; it has a social value in many countries as people meet over a beer in a bar or pub or at home; and it has an existence value as even many non-drinkers value the beer traditions of their countries. Many of those sources of value are growing in importance in an environment in which, as we shall see later, premium beers, craft and other speciality beers are becoming an increasingly valuable part of the overall market – the value for a given volume of consumption is rising.

Equally, the production and distribution of beer creates a range of economic impacts for different stakeholders involved either directly or indirectly in the supply chain. In this report, we quantify the value of the economic activity associated with that supply chain, which produces beer and distributes it to customers. Three kinds of economic impact are assessed:

- direct impacts in the beer sector – value added, employment and government revenue impacts in businesses brewing beer in Europe;
- backward linkages in supplying sectors³ – value added, employment and government revenue impacts in the businesses supplying the beer sector itself; and
- forward linkages in the on- and off-trades⁴ – value added, employment and government revenue impacts in the businesses selling beer, particularly the hospitality sector (representing the on-trade) and the retail sector (representing the off-trade).

There is more information on how these impacts were estimated in the final chapter (covering sources and methodology). Crucially, the direct impacts in the beer sector and the backward linkages in the supplying sectors relate to beer produced in Europe (excluding imports, including exports), whereas the forward linkages in the on-trade and the off-trade relate to beer consumed in Europe (including imports, excluding exports). This methodological choice provides a complete picture for the economic impact of beer.

1.2 Structure of the report

The report first sets out different aspects of the beer sector at an aggregate European level.

- In Chapter 2, we set out the scale of the sector and its impact on intra- and extra-EU trade.
- In Chapter 3, we describe the economic impact of the sector overall.
- In Chapter 4, we describe the upstream impacts in supplying sectors in particular.
- In Chapter 5, we turn to the downstream impact in the hospitality and retail sectors.
- In Chapter 6, we describe the impacts on government revenues in different countries and in different types of tax.
- In Chapter 7, we explain in detail the sources used and the calculations undertaken to produce the estimates presented in the rest of the report.

² In this edition, some of the underlying data has been updated to reflect the latest information available from European and national statistical agencies. The combination of that update and the use of a new sample of individual breweries mean that comparisons cannot necessarily be drawn between the findings in this study and earlier editions. The fundamentals of the method are the same, though, and differences in the Eurostat series are limited.

³ These were referred to as “indirect” impacts in earlier iterations of this study. However in other studies indirect impacts cover both the upstream and downstream impacts and we therefore adopt the more precise term here. Another term for the activity covered here would be upstream industries.

⁴ These were referred to as “induced” impacts in earlier iterations of this study. However in other studies induced impacts cover the activity resulting from the factors of production in sectors where there is a direct and indirect impact spending of the income derived from that activity in the wider economy, a form of economic impact not captured here. Another term for the activity covered here would be downstream industries.

The scale of the European beer sector

2. The scale of the European beer sector

2.1 The second largest brewing economy in the world

The European Union as a whole is the second largest beer producer in the world, producing around 383 million hectolitres of beer in 2014 and 381 million hectolitres in 2013. The EU produces less beer than only China (around 465 hectolitres in 2013, the most recent year for which data is available). However, those figures imply that the EU produces considerably more beer than China per person, given the Chinese population is over twice as large. The EU also produces considerably more than the United States (224 million hectolitres), Brazil (134 million hectolitres) or Russia (89 million hectolitres).⁵

2.2 A very diverse sector with over 6,500 active breweries

As well as producing a large overall volume of beer, the sector also produces a very diverse range of beers. There are a large number of breweries, representing a rich mix of beer cultures and strong traditions in each Member State.

There were around 6,500 active breweries in the EU in 2014 in comparison to around 5,600 in the previous year. The opening of microbreweries accounts for around half of all new breweries. The increased number of breweries is a sign of the confidence and trust Europeans have in the sector and a testimony to the enthusiasm consumers have for the diversity and quality of the product. Of the total number of active breweries, 1,700 were located in the United Kingdom, 1,352 in Germany and 663 in France.

The range of products in the European beer sector creates additional value for consumers, who, in most markets, tend to prefer variety. Indeed, the value of variety has been highlighted as one of the key gains associated with globalisation.⁶ This applies to both intra- and extra-EU trade in beer. That variety occurs both:

- within segment e.g. different pilsners with different tastes; and
- between segments e.g. traditional segments such as pilsners and pale ales and growing segments in which many breweries are launching new products such as flavoured beer, Radlers⁷ and alcohol-free beers.

Diversity amongst beer products is increasing over time as the industry innovates, producing a wider range of products. At the same time, consumers are reducing the volume of beer they are drinking but have an increasing preference for speciality beers. The value of that diversity to consumers is therefore likely to be rising as well. An increase in the consumption of speciality beers was noted across Europe by brewers and national associations in the latest survey. It was also noted that consumers are typically willing to pay higher prices for these beers, with the overall market shifting towards lower volumes but more valuable products.

This diversity is also reflected in the rising number of microbreweries. There are substantial increases in almost all the countries in our sample, but particularly striking increases in numbers in the Czech Republic, France, Portugal, Slovenia, Spain, Sweden and Switzerland. There was also a particularly large increase in Italy and the United Kingdom in 2013.

⁵ Kirin Beer University Report, *Global Beer Production by Country in 2013*, available here: http://www.kirinholdings.co.jp/english/news/2014/0808_01.html.

⁶ Weinstein, David & Broda, Christian, "Globalization and the Gains from Variety", NBER Working Paper No. 10314.

⁷ Beers mixed with lemonade.

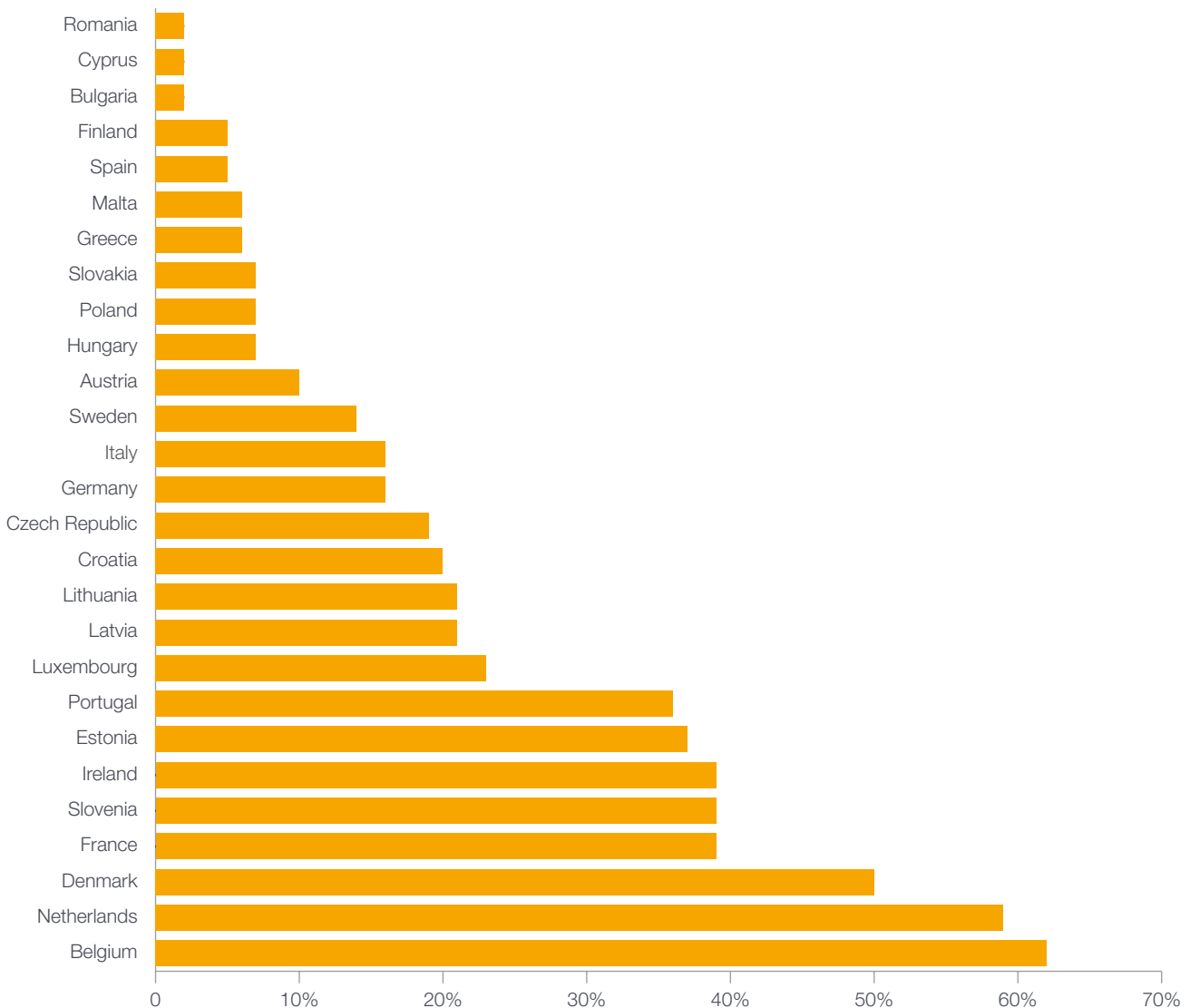
2.3 Contributing to the European trade balance

The beer sector makes a substantial contribution to the overall European trade balance. Around 27 million hectolitres were exported from EU countries to destinations outside the EU in 2014, around 7% of total production. This includes both large global brands and also specialty brands produced for export.

Exports were particularly important in Belgium, Netherlands and Denmark, where they represented the largest shares of production (Figure 2.1). In those three countries in particular, exports equal more than half of domestic production, indicating that international markets are as important as the home market to the jobs and other economic impacts associated with beer production. However, 10% or more of production is exported in most European countries. A healthy export trade is therefore the norm and not restricted to a small set of countries.

There is also a substantial trade within Europe, with around 50 million hectolitres of intra-EU exports from European breweries.

Figure 2.1: Exports (intra-EU and extra-EU), percentage of total production, 2014



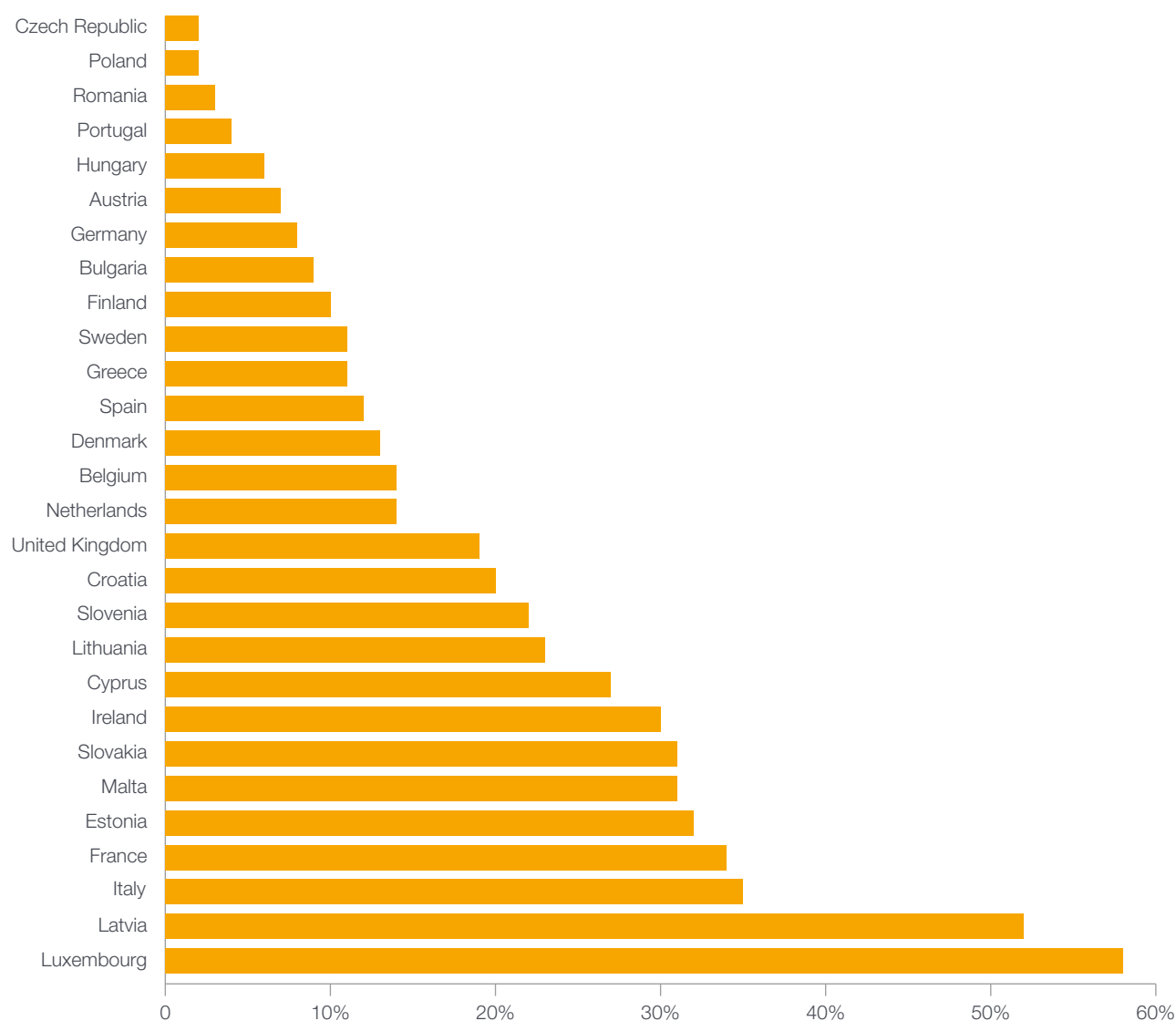
Source: Survey of National Associations.

Imports were largest relative to overall consumption in Latvia and the other Baltic countries, Luxembourg, Italy and France (Figure 2.2). Imports of beer in those countries equal a third or more of consumption. Imports are generally a larger share of consumption in smaller countries (with France and Italy notable exceptions). It is important to note, however, that imports never displace local production entirely. Local production serves a substantial proportion of the market in every European market. This trade pattern, with considerable trade but also substantial local production in every country, reflects the following features in consumer preferences:

- appreciation of certain beers made in particular places, e.g. Belgian beers with a Trappist heritage.
- love of variety; wanting to try a range of beer styles.
- attachment to beers from specific geographical areas. This will often mean consumers preferring their own country's beers, but in other cases it might be dependent on context, e.g. feeling an Italian beer is appropriate to accompany a meal at an Italian restaurant.

Imports are therefore a significant source of demand for many European brewers and, while extra-EU imports are likely to reduce the impact of beer in Europe, they do not prevent healthy and competitive domestic markets at present.

Figure 2.2: Imports (intra-EU and extra-EU), percentage of total consumption, 2014



Source: Survey of National Associations.

The economic impact of the European beer sector

3. The economic impact of the European beer sector

The European beer sector makes a significant contribution to a number of economic outcomes of interest to policymakers, particularly:

- value added – economic growth can be understood as an increase in value added across the economy (the difference between inputs consumed and outputs produced in each industry). Value added contributes to the EU strategy for economic growth, Europe 2020 (hence reinforcing the objectives of increasing employment and government revenues);
- employment – many people work in the beer supply chain, and this contributes to Europe 2020 targets of achieving 75% of 20-64 year olds to be employed; and,
- government revenues – there are taxes on the beer itself, excise duties and VAT, but also taxes on the factors of production in the supply chain. Government revenues are especially important as EU Member States have committed to medium-term limits on borrowing under the Stability and Growth Pact (and as part of a wide range of priorities for public spending).

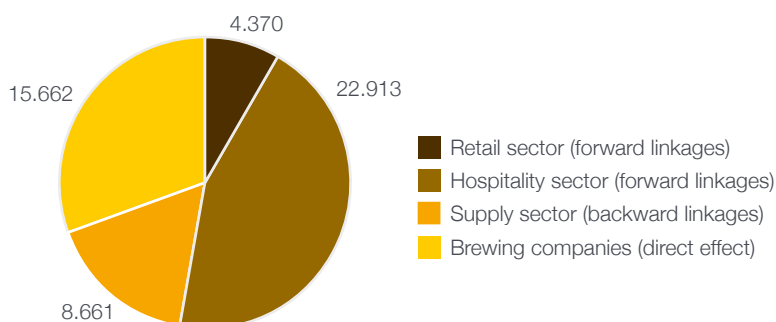
3.1 Increasing value added by around €51bn

The EU beer sector's contribution to value added and therefore economic growth in 2014 amounted to over €51 billion. Just as a point of reference, Estonia's GDP was less than €20 billion in 2014; Croatia's GDP was just over €43 billion; and Luxembourg's GDP was less than €49 billion. The scale of the economic impact of the European beer supply chain can therefore be understood as being similar to that of a small Member State.

Of that total, the largest component is the hospitality sector selling beer in the on-trade (around €23 billion). This includes both the sale of beer produced in Europe and the sale of beer produced outside Europe (around 13% of the total). This sector is discussed in more detail in Chapter 5. There is also an over €4 billion contribution in the retail sector selling beer in the off-trade, though naturally value added is lower in this sector as other services (catering and hospitality) are not provided along with the distribution of the beer. The sector producing the second largest increase in value added is the beer sector itself (around €16 billion). This value added is the difference between the value of the goods and services purchased by the beer sector and the value of the beer which it sells; the sector's net output. That value will accrue to labour, in the form of wages and other compensation, and capital, dividends or other returns to investors. Finally, there is an over €8 billion contribution to value added in supply sectors such as the manufacturing of packaging and agriculture (Figure 3.1).

This all illustrates a recurring theme: the economic impact of the beer sector is not just felt by those working directly for breweries, but across the wider economy. The impact in the supply sectors is covered in more detail in Chapter 4.

Figure 3.1: Contribution to value added impact, by sector, 2014 (billion €)



Source: Calculations - different sources.

3.2 Increasing employment by around 2.3 million jobs

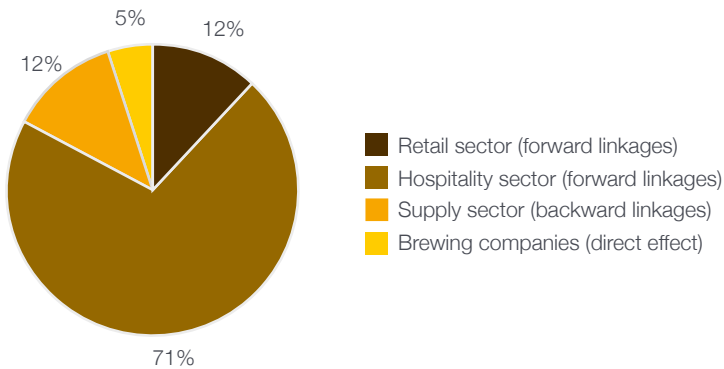
Around 2.3 million are directly or indirectly employed because of the beer sector. This is similar to total employment in Slovakia (around 2.4 million). It is around 1% of total EU employment (218 million in 2014).

The pattern in employment is similar to the one found for value added, but more accentuated for certain sectors. The largest contribution to employment is in the hospitality sector, which accounts for over 1.6 million jobs (over 70% of the total). The retail sector is more important in terms of the contribution to employment than its contribution to value added, reflecting the greater labour intensity of retail relative to production activities in breweries and the supplying sectors, which are more capital-intensive (Figure 3.2).

The crucial point to note here is that 95% of employment resulting from beer in the European economy is not in breweries themselves. Employment is instead distributed across the wider economy. Any expansion or contraction in the beer sector will therefore have an effect, particularly in terms of employment, far greater than is immediately apparent looking only at any new jobs or job losses at the breweries themselves. On average 1 job in the brewery creates over 17 jobs in the wider economy.

This also increases the extent to which the relative stability of beer-related employment helps dilute the effects of job losses in other parts of the economy in situations with economic volatility. The sector is also a potential source of employment for a wide range of workers, not just those with specialist skills of value to breweries. Youth employment is a particular problem in many Member States, for example, and beer-related employment in the hospitality and retail sectors is a common early job for young people.

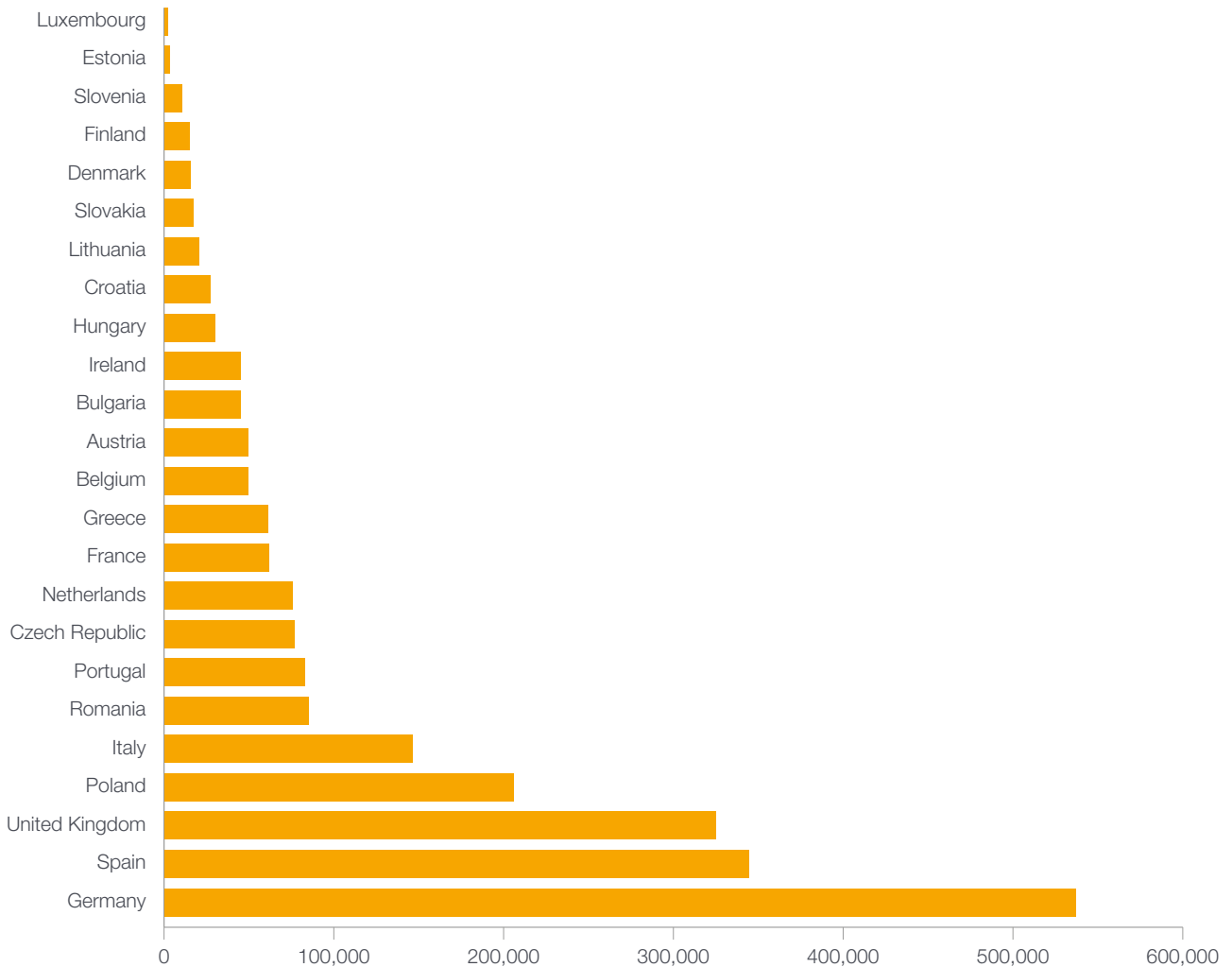
Figure 3.2: Contribution to employment impact, by sector, 2014 (%)



Source: Calculations - different sources.

The largest contributions to employment are in Germany, Spain and the United Kingdom (Figure 3.3). These are large economies with substantial beer production (in terms of output and number of breweries) and consumption (which means substantial employment in the on- and off-trade selling beer). Of the largest European economies, employment is lowest in France, reflecting a smaller share of beer in the overall consumption of alcoholic drinks (particularly in the on-trade). Of the major economies, the employment impact is particularly important in Spain, where the impact is large both relative to total employment and because youth unemployment is particularly severe (the youth unemployment rate was nearly 21% in 2013).

Figure 3.3: Contribution to employment, by country, 2014 (number of jobs)



Source: Calculations - different sources.

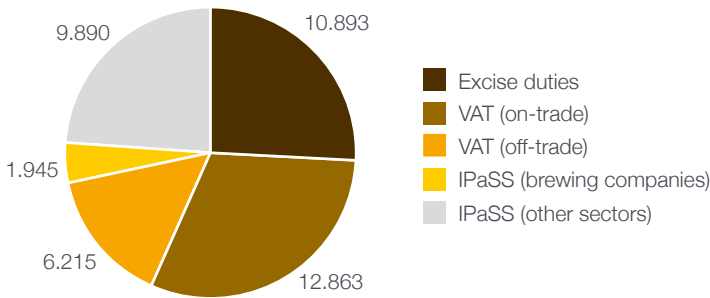
Note: Cyprus, Latvia, Malta, Sweden excluded due to lack of data.

3.3 Increasing government revenues by nearly €42 billion

The contribution to government revenues resulting from the beer sector is nearly €42 billion, of which the largest component is VAT on beer sold in the on-trade at around €13 billion, followed by excise duties at around €11 billion, and income tax in other sectors besides brewing (e.g. income taxes paid by bar staff) at €10 billion (Figure 3.4).

The impacts on government revenues are discussed in more detail (with breakdowns by country) in Chapter 6. To give a sense of the overall scale of the revenue impact, however, it is worth noting that €42 billion is similar to the total tax revenue in 2013 in Hungary (€40 billion) or Romania (nearly €42 billion). Again, the economic impact is similar to that of a smaller Member State, except that in this case the particular burden of excise duties means that the Member States concerned are larger than those we mentioned in similar comparisons for value added and employment.

Figure 3.4: Government revenues related to beer, 2014 (billion €)

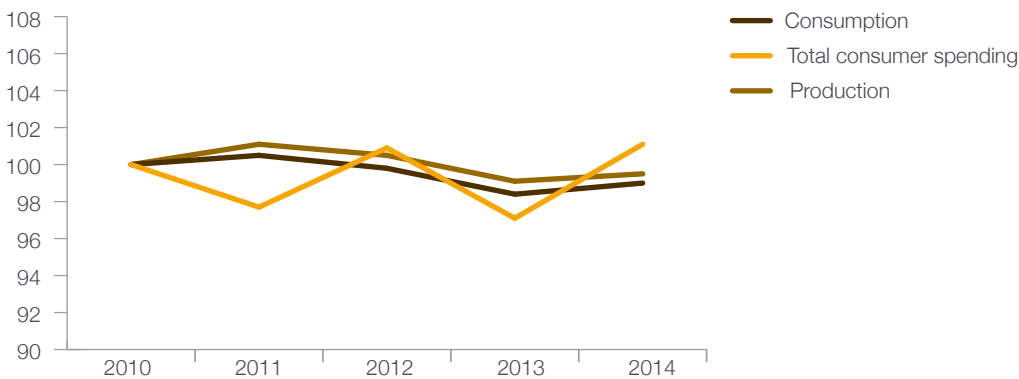


Note: IPaSS denotes income, payroll and social security contributions.
 Source: European Commission DG Taxud, calculations - different sources.

3.4 Holding up well in difficult economic circumstances

Overall changes in the size of the beer market have been relatively modest. From 2010 to 2014, production and consumption have declined by less than 1% (with some recovery in the last year, from 2013 to 2014). Total consumer spending has increased by a little over 1% (Figure 3.5).

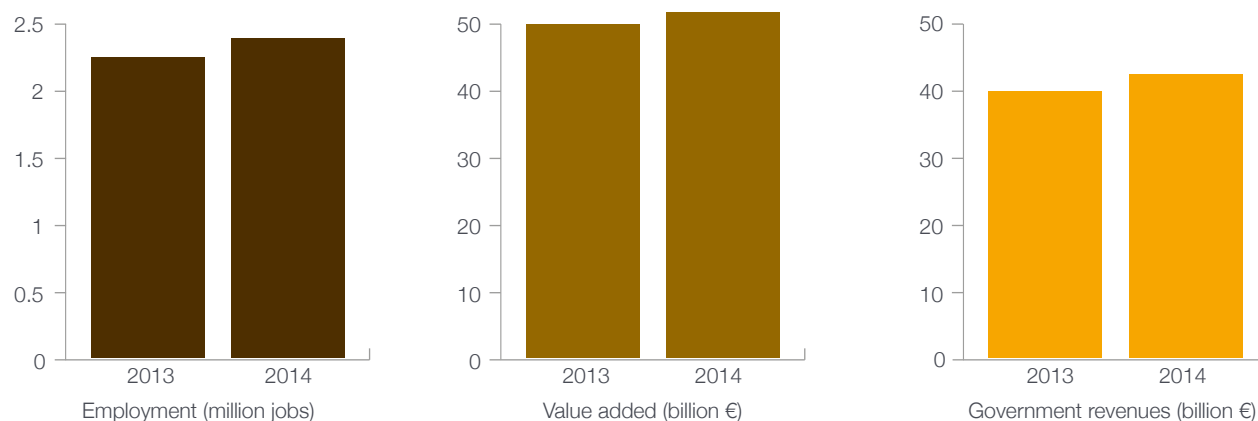
Figure 3.5: Development of the EU brewing sector, 2010-2014 (2010 = 100)



Source: Survey of National Associations.

We observe a slight rise in employment from 2013 to 2014, which is reflecting the increase in consumer spending between these years. Government revenues have also increased in the last year, from 2013 to 2014 (Figure 3.6).

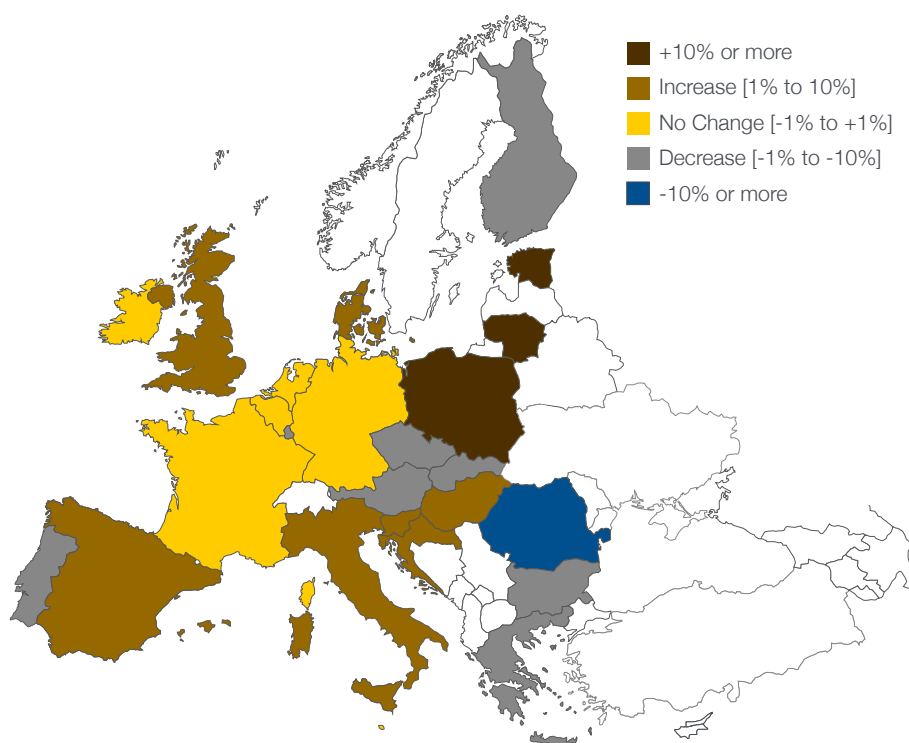
Figure 3.6: Development of EU beer impact, 2013-2014



Source: Calculations - different sources.

The largest increases in employment from 2013 to 2014 were in Lithuania⁸, Poland, Estonia and Hungary⁹. In a number of Member States, such as Bulgaria, Czech Republic, Slovakia and Romania, decreases in employment can be observed. The largest increases among the major EU economies were in Italy and the UK. The largest decreases were in Romania¹⁰ (Figure 3.7).

Figure 3.7: Change in employment impact, by country, 2013-2014 (%)



Note: Cyprus, Latvia, Malta excluded due to lack of data.

Note: Sweden excluded in this map due to data limitations.

Source: Calculations - different sources.

⁸ Lithuania is the country with a largest increase in employment. Data from National Associations show that this was mainly due to a significant increase in the value of the market. This is due to the change in the average prices reported (on-trade prices in Lithuania went up from 2.61 to 4.10 € per litre between 2013 and 2014).

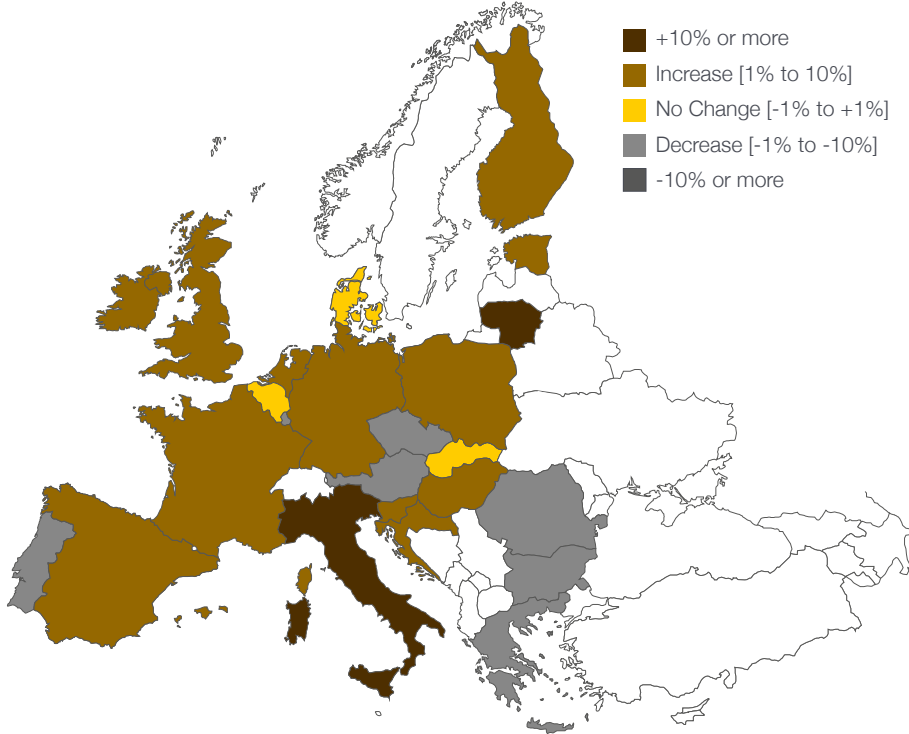
⁹ In Poland the largest employment increase occurs in the on-trade sector due to a change in the on-trade consumption share (from 10% to 15%); in Estonia the rise is driven by an increase in the value of the market (due to changes in consumer prices) while in Hungary, an increase in the value of the off-trade market drives the result.

¹⁰ Romania in particular reports a decrease in consumption from 16.3 to 14.9 million hectolitres between 2013 and 2014.



Government revenues have also increased in many countries. The largest increases have been in Lithuania and Italy¹¹, while the largest decreases have occurred in Romania and Greece (Figure 3.8).

Figure 3.8: Change in government revenues, 2013-2014 (%)



*Note: Cyprus, Latvia, Malta excluded due to lack of data.
Note: Sweden excluded in this map due to data limitations.
Source: Calculations - different sources.*

11 As seen, changes in Lithuania are driven by the increase in the value in the market (prices). In Italy the increase in government revenue is driven by the VAT contribution. VAT revenue has grown because of an increase in the on-trade market value and also an increase in the share of on-trade consumption (from 40% to 43%).

The economic impact in agriculture and supplying sectors

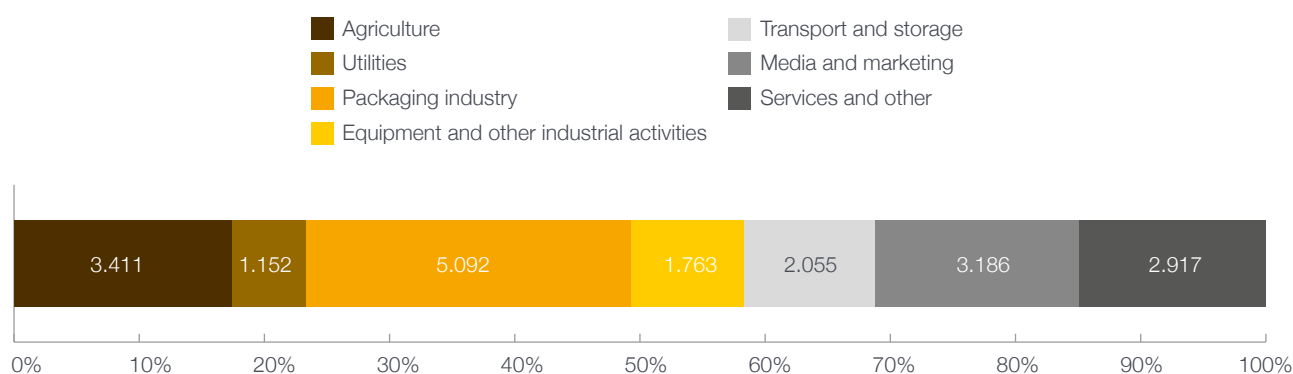
4. The economic impact in agriculture and supplying sectors

There are a number of sectors which supply the European beer industry. Those employed in these sectors should be considered as also working (though indirectly) in the production of beer. This includes those who work primarily to supply the beer sector (e.g. those making beer bottles) as well as those working in a number of other sectors where beer is a part of the workload that justifies current patterns of employment (e.g. those providing transport services).

4.1 The beer sector spends nearly €20bn a year purchasing goods and services

Total beer sector spending on goods and services across the EU in 2014 was nearly €20bn, of which almost €16bn represented domestic purchases. The largest sector from which the beer sector purchases supplies is packaging: the bottles, cans and other materials which contain beer, and the card and other materials holding those bottles and cans together (Figure 4.1).

Figure 4.1: Goods and services purchases by supply sector (billion €)



Source: Individual breweries, calculations.

Earlier research commissioned by The Brewers of Europe investigated the packaging sector in order to understand how its environmental impact was being minimised. Glass bottles are the most-used material¹², and it is likely they will remain important over time if the beer sector remains healthy and is able to grow.

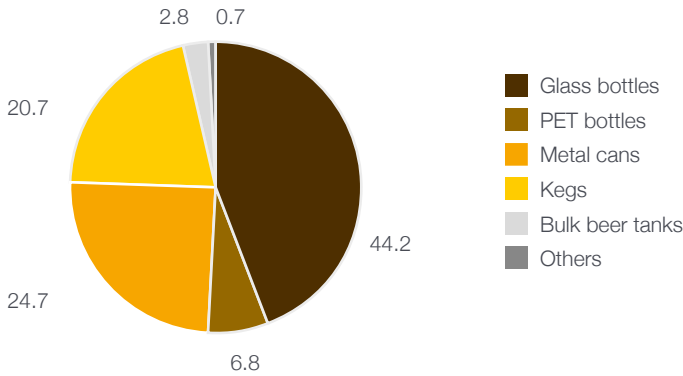
The EU is the largest glass producer in the world with a market share of around one-third. Within that total, Germany is the EU's largest producer (responsible for about 20% of total production) followed by France, Spain, Italy and the United Kingdom. The glass bottle share for beer is significant (accounting for almost half of all packaging, Figure 4.2) but may be declining to the benefit of cans. Kegs also account for a significant share of packaging (around 20%). Beer can fillings increased 2% in 2014, with particularly strong growth "in mature beverage can markets such as France and Spain".¹³ However, glass production will continue to be supported by craft and high value-added beers, which are currently packaged in this material.

¹² The Brewers of Europe, "The Environmental Performance of the European Brewing Sector", 2012.

¹³ The largest share of can fillings occurred in the United Kingdom, at 15% of the European market, followed by Poland at 13%, Spain at 9% and the Netherlands at 8%. BCME, "European Can Market Report 2015".



Figure 4.2: Packaging materials used in the beer sector, share in % by beer volume (2010)

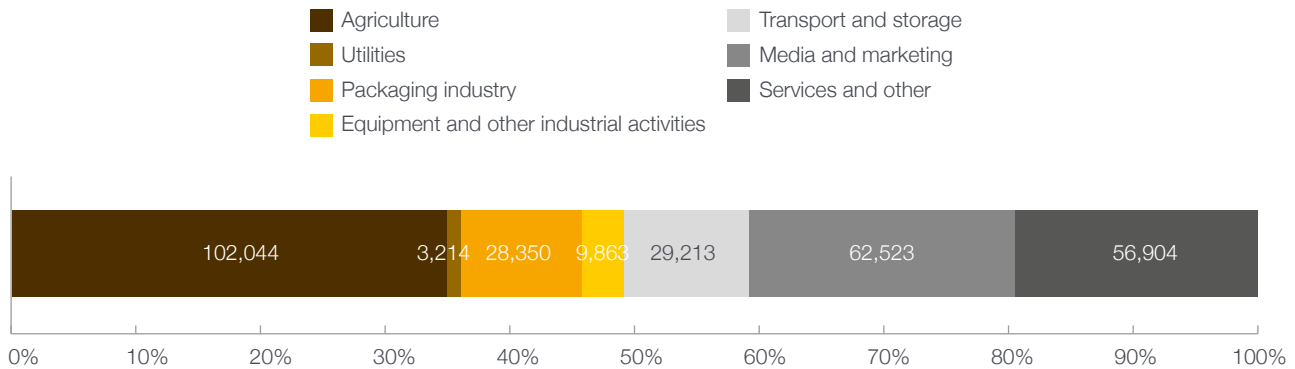


Source: *The Brewers of Europe. "The Environmental Performance of the European Brewing Sector", 2012.*

4.2 Around 290,000 workers are employed in the beer supply chain

Around 290,000 workers were employed in the supply chain for the beer sector in 2014. The shares in upstream employment accounted for by different supply sectors exhibit a similar pattern to that in the purchases of supplies. However, less labour-intensive sectors, such as the manufacturing of packaging (around 28,000 jobs) and equipment (around 10,000 jobs), naturally account for a smaller share of employment than they do in more labour-intensive sectors. The largest impact on employment is therefore in agriculture (over 100,000 jobs).

Figure 4.3: Upstream employment, by supply sector (number of jobs)



Source: *Calculations - different sources.*

The principal agricultural industries serving the beer sector are hops and malt (a product of high-quality barley). Both of those industries are dominated by production to serve the beer market (though some malts are used in other drinks, such as whisky production).

There are around 2,600 hop-producing farms in the EU, with around 26,500 hectares of land dedicated to the crop (a good proxy for employment). That represents around 60% of total global hop-producing agricultural land. Total EU production is around 50,000 tonnes a year (out of a global total of 80-100,000 tonnes), with around 20,000 tonnes exported.¹⁴ While global production had been falling, hop acreage rose worldwide for the first time in four years, by over 3% or 1,500 hectares from 2013 to 2014, which may reflect an increase in beer production and/or an increase in the hop content in beer. Amounts rose in Germany, in particular.¹⁵

Germany alone accounts for around 60% of total EU land area dedicated to hops (17,000 hectares). The other major producers are the Czech Republic, Poland, Slovakia and the United Kingdom.¹⁶ The locality of hop production, dependent on particular climatic conditions, contributes considerably to the extent to which agricultural supplies for the beer sector are sourced locally or imported.

14 European Commission, Agriculture and Rural Development, "Hops".

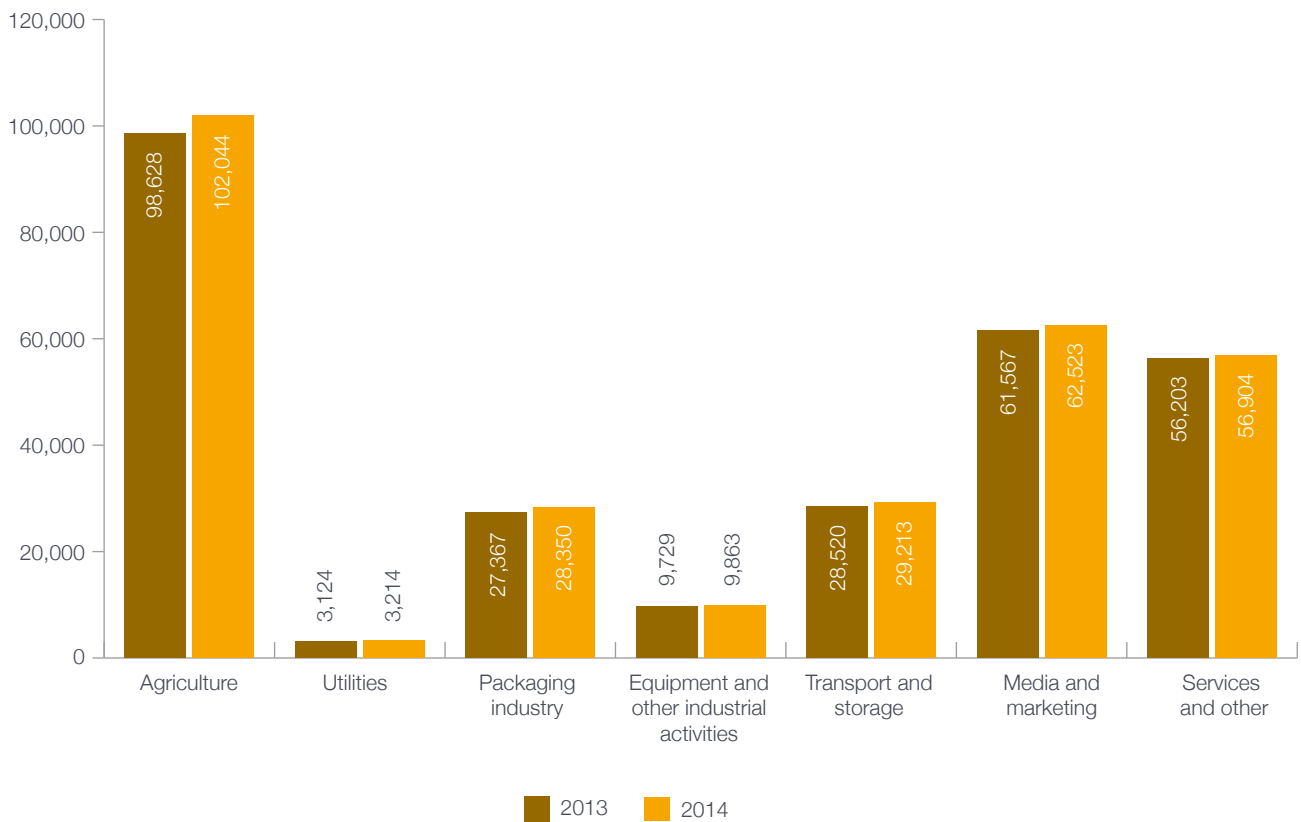
15 Barth-Haas Group, "The Barth Report, Hops 2014/2015".

16 European Commission, Agriculture and Rural Development, "Hops".

Malt is another agricultural product in which the EU is a major player in world production, reflecting its large share in overall beer supplies. EU malting capacity in 2014 equated to nearly 10 million tonnes, around a third of world capacity (with production in other European countries accounting for another 10%), and roughly constant since 2012. This represents around 42% of global capacity. The EU was again a major exporter, accounting for more than 60% of world trade including selling 817,000 tonnes to Asia (a particularly substantial increase from 679,000 in 2012), 770,000 tonnes to Africa (also rising over time), and 595,000 tonnes to America (the scale of this market fluctuates; exports being down from 2013, but up from 2012).¹⁷

Employment has begun increasing in all sectors from 2013 to 2014. The largest increase was in agriculture.¹⁸ This will reflect increasing consumption in some countries, as consumers respond to the broader macroeconomic recovery. It may also reflect a rise in the typical value of beer sold for a given volume. Media, marketing and other services also grew with many brewers reporting that they have been innovating more and launching new products.

Figure 4.4: Change in upstream employment, by supply sector



Source: Calculations - different sources.

¹⁷ Euromalt, "Euromalt Statistics".

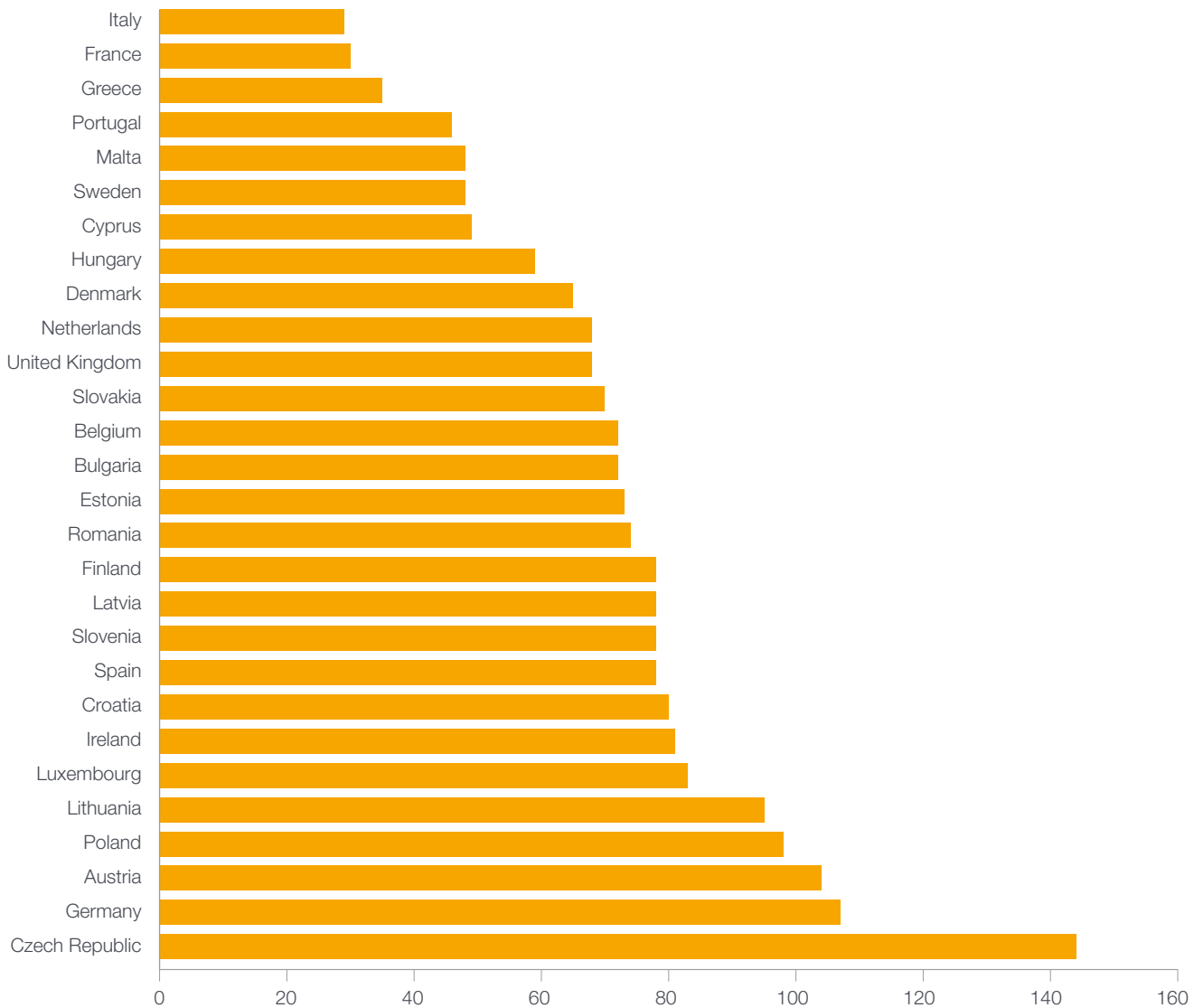
¹⁸ Coefficients including turnover per person employed were derived from the latest Input-Output tables for the countries concerned.

The economic impact in the hospitality and retail sectors

5. The economic impact in the hospitality and retail sectors

Beer consumption per capita is highest in the Czech Republic, by some margin, followed by Germany, Austria, Poland and Ireland. It is lowest in Italy, followed by France and Greece (likely reflecting a relative preference for other drinks), Figure 5.1.

Figure 5.1: Beer consumption, litres per capita (2014)



Source: Survey of National Associations.

Economic activity will be created wherever beer is consumed. In this chapter, however, we focus on the hospitality (on-trade) and retail (off-trade) sectors, which are particularly important to European economies as a source of value added and employment.

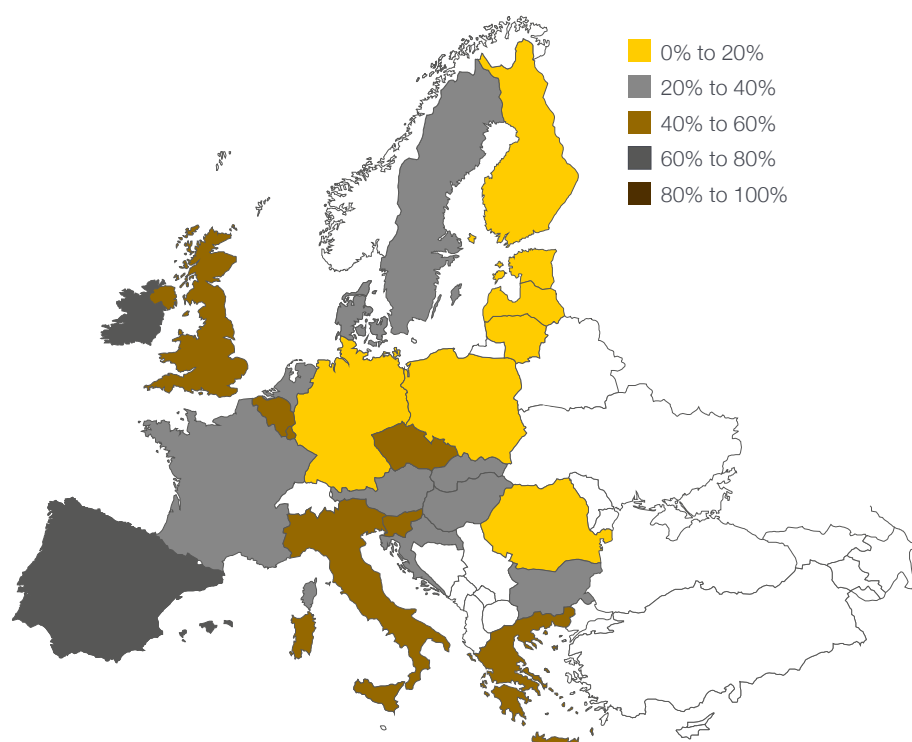
5.1 More beer is consumed in the off-trade, but the on-trade is economically more important

In terms of the pure volume of beer consumed, the off-trade is larger. Around two thirds of beer is bought in supermarkets, at specialist stores or in other shops and consumed at home, against one third served in the on-trade.

The division between the on-trade and the off-trade varies considerably across Europe. The largest shares in the on-trade (over 60%) are in Ireland, Portugal and Spain¹⁹. Higher shares tend to be seen in either Northern or Southern Europe, with lower shares in Central and Eastern Europe (Figure 5.2). The lowest shares are in the Baltic states: Latvia, Lithuania and Estonia. The pattern may reflect differences in:

- cultural traditions - in some countries drinking in the on-trade is a more deeply-embedded social norm;
- the price sensitivity of consumers - people might prefer the lower-price offering in the off-trade; and,
- tourism - countries with large numbers of tourists might see more consumption in the on-trade.

Figure 5.2: Beer consumption in hectolitres, on-trade share by country (2014)



Source: Survey of National Associations.

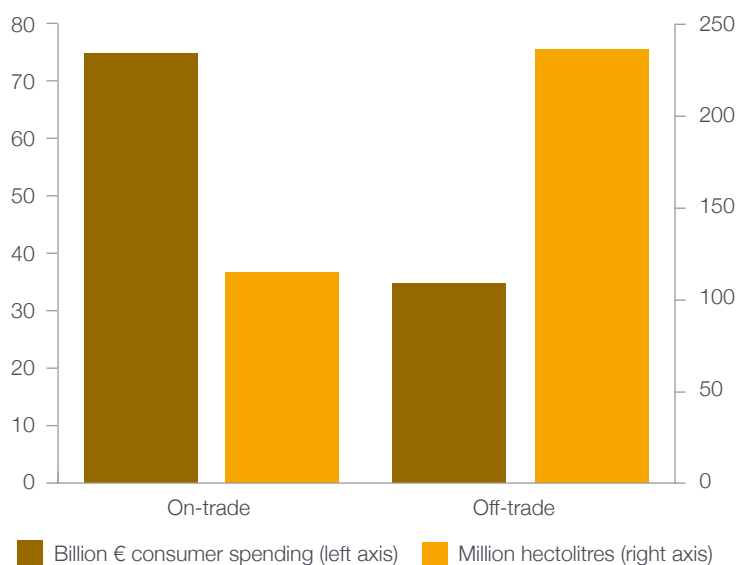
However, in terms of value, beer's impact is higher in the on-trade, and this is due to the higher price (related to the cost of providing, maintaining and staffing the venues in which those drinks are consumed). Around two thirds of the money spent on beer is in the on-trade, against one third in the off-trade (Figure 5.3).

The higher value of the on-trade market explains why it is responsible for such a large contribution to value added (nearly €23 billion) and employment (over 1.6 million jobs). Consumers pay those higher prices in return for service from bar staff, a space to meet their friends and family and the ambience and other qualities of the venue (including entertainment, free snacks and other extras). All of this is valuable and reflected in the premium of on-trade market prices which consumers are willing to pay (albeit with a decline in on-trade consumption in almost all markets). Being a more labour intensive sector, it will have higher implications for the jobs involved: for each euro spent on beer, there are more employees involved in the on-trade than in the off-trade sector.

¹⁹ In Spain, in particular, the on-trade sector has a remarkable impact on GDP: beer accounts on average for 25% of the income of bars and 40% of small establishments under 10 employees (90% of Spanish bars and cafes).



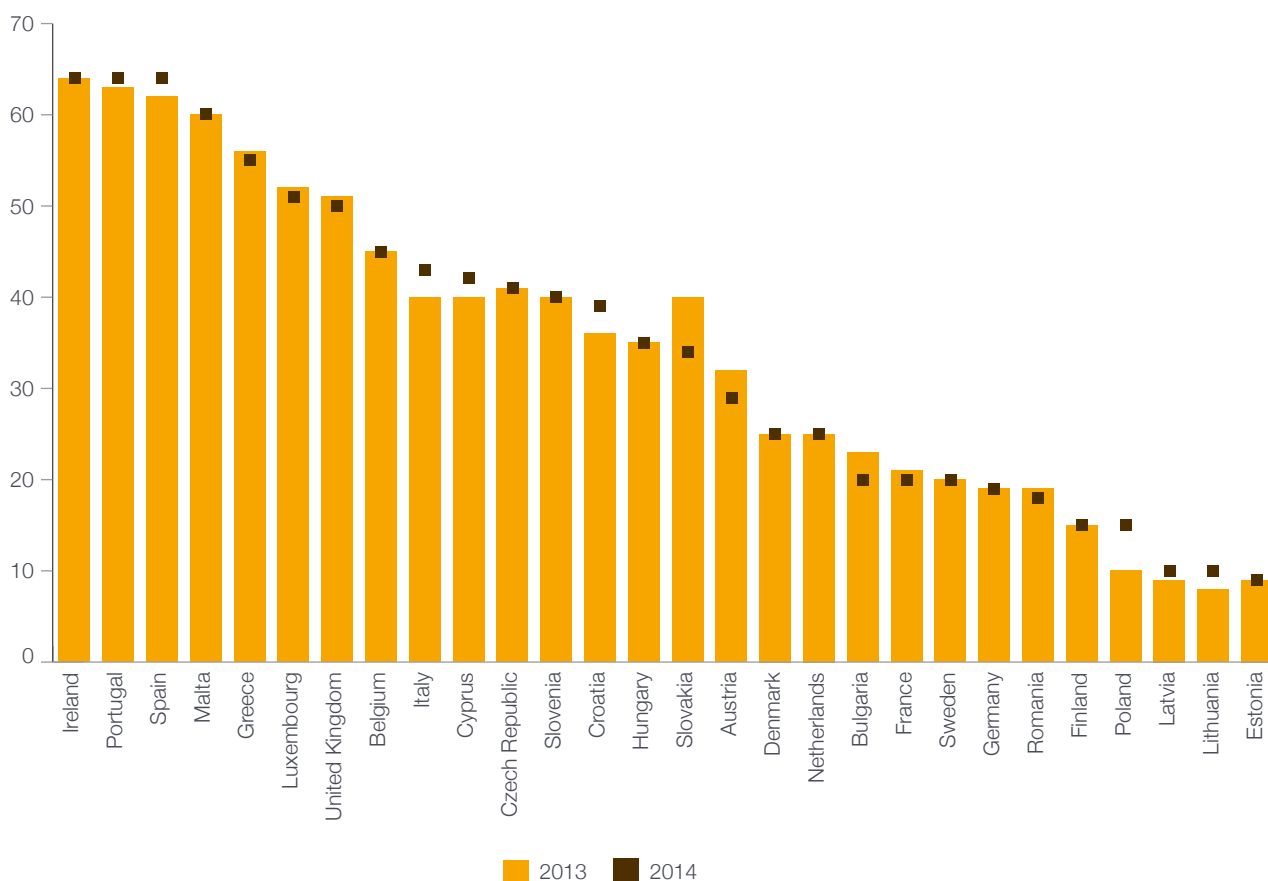
Figure 5.3: Beer consumption and consumer spending in EU (2014)



Source: Survey of National Associations.

On-trade consumption has declined over time in most countries, though there are more exceptions from 2013 to 2014 than before (e.g. Spain and Italy). That general trend reflects an increasing penetration of supermarkets and other off-trade consumption and, most likely, increased sensitivity to price in difficult macroeconomic conditions. It may also reflect an impact of bans on smoking in public places reducing the attraction of pubs and bars for smokers (although it is plausible this might be somewhat mitigated by an increase in the attraction of pubs and bars for non-smokers). The largest declines have been in Slovakia, Bulgaria, Austria and the United Kingdom, while the on-trade share has increased the most in Poland, Croatia, Italy, Cyprus and Spain (Figure 5.4).

Figure 5.4: Change in beer consumption patterns: on-trade share (2013-2014)



Source: Survey of National Associations.

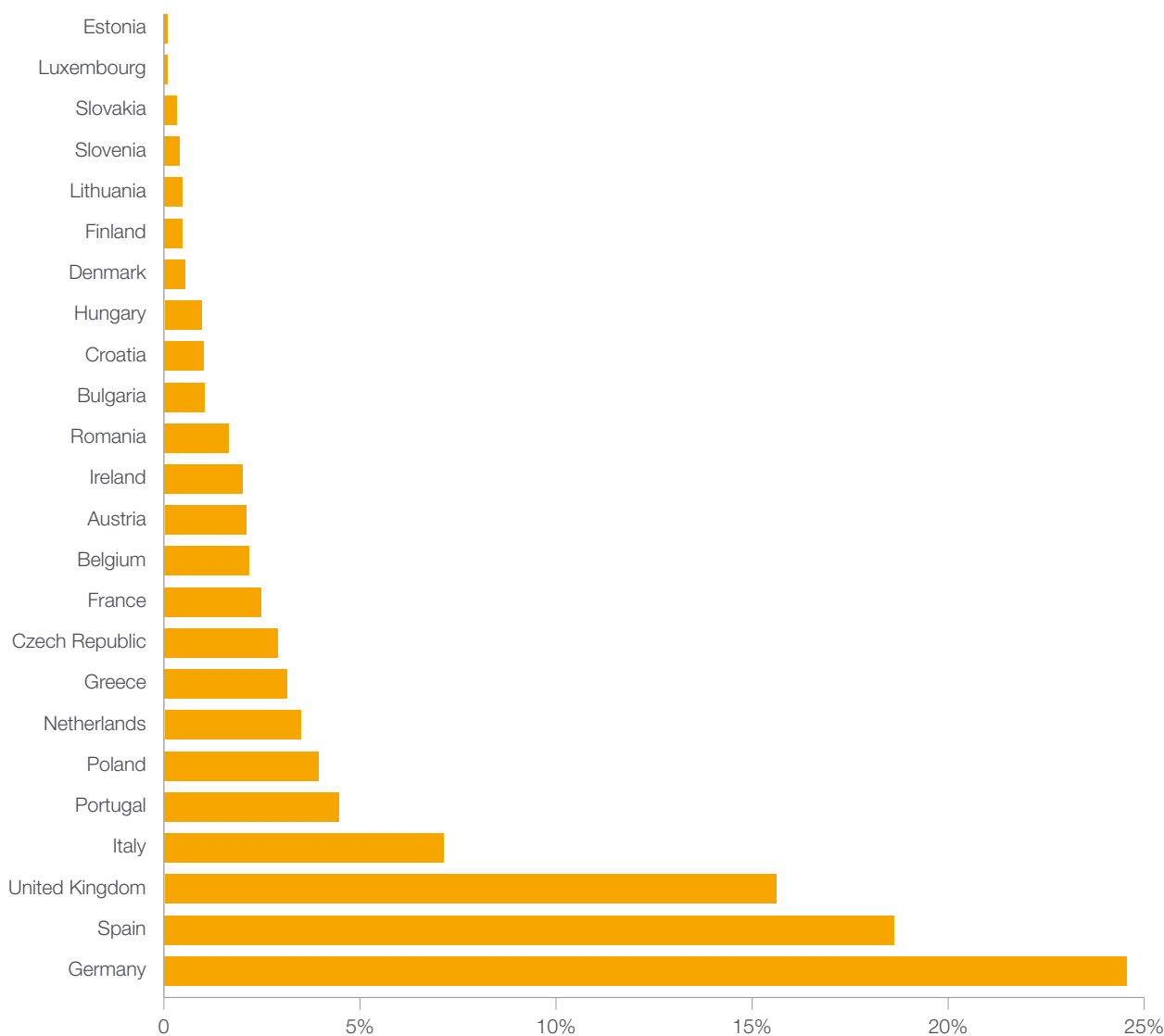
The on-trade is a large employer (responsible for most of the employment impact of beer overall). This reflects the large number of people selling beer as the entirety or a part of their work in pubs and bars, restaurants and other venues such as hotels. The largest employment impacts are in Germany, Spain, the United Kingdom and Italy. The major economy where the employment impact is the lowest is France, reflecting a relatively low on-trade share in beer consumption (Figure 5.5).

The significance of on-trade related employment also illustrates the vulnerability of the beer sector to any changes in taxes related to beer: a reduction in beer sales will not only impact the producers of beer but will also affect (very significantly) the number of jobs downstream, in the hospitality sector in particular and in the retail sector, which are dependent on the sales of beer. Some countries apply a reduced rate of VAT in the hospitality sector as a way to encourage employment in the hospitality sector (the sector includes many “first jobs” and young people employed).

Another lesson from this analysis is that with consumption shares switching from the on- to the off-trade this will have severe impacts on the overall employment (even if the total consumed volumes remain constant in aggregate).

The reason for the large impact on employment is the sheer number of venues in which beer is a principal component in their product mix. There were 51,900 pubs in the UK in 2014, for example.²⁰ All of these establishments require staff and often for longer hours than typical retail outlets. Beer is also often an important product sold in restaurants, hotels and other venues.

Figure 5.5: Employment impact of beer in the on-trade. Share by country as a percentage of EU (2014)



Note: Cyprus, Latvia, Malta, Sweden excluded due to lack of data.

Source: Calculations - different sources.

20 BBPA – Statistics, <http://www.beerandpub.com/statistics>.



Government revenues

6. Government revenues

The most important components, in order of their share in the €42 billion total EU beer-related contribution to government revenues, are:

- VAT charged on beer sales – around €19 billion;
- taxes on labour income related to the direct, upstream and downstream impacts of the European beer sector – around €12 billion; and
- excise duties charged on beer sales – around €11 billion.

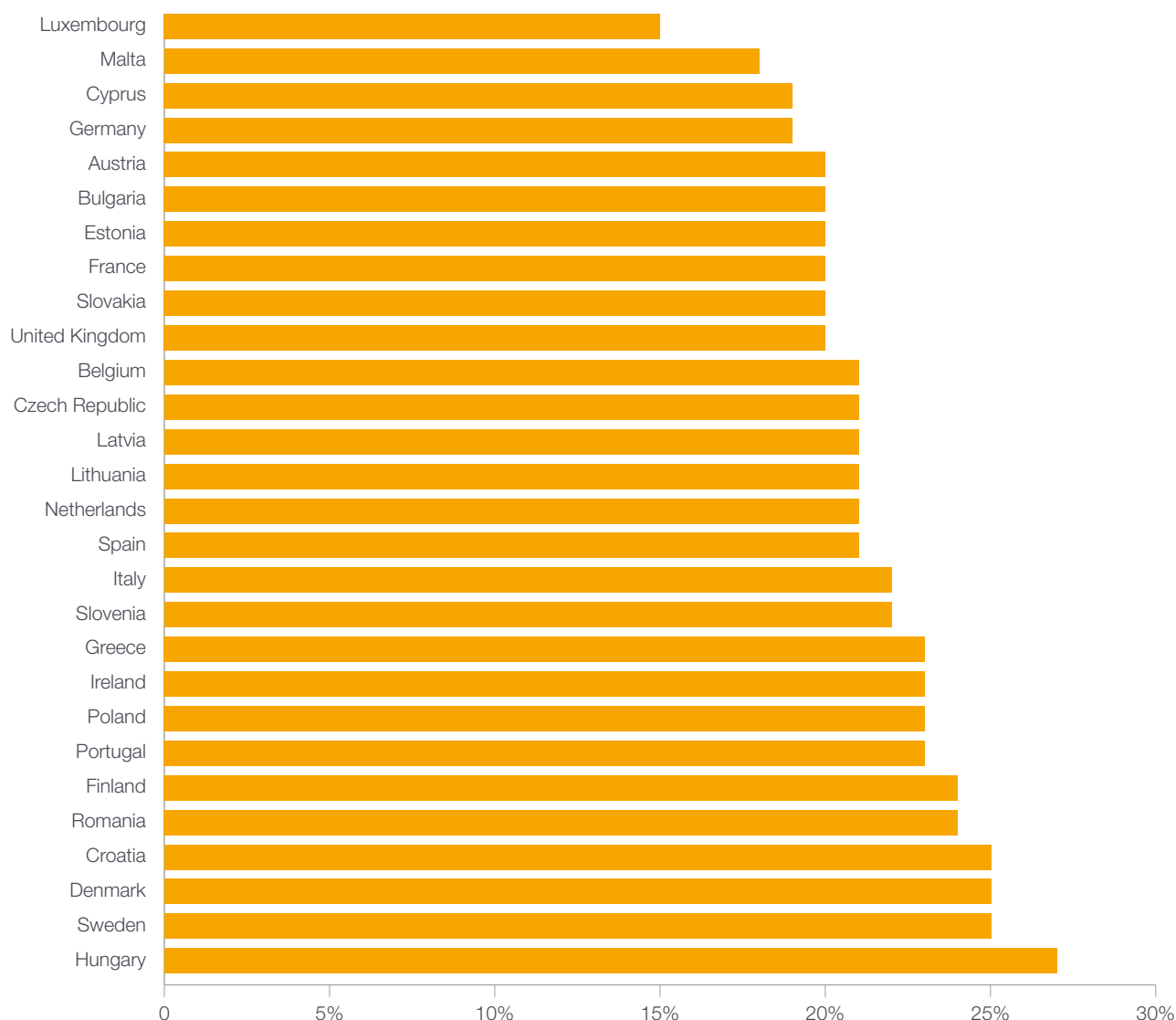
These components vary in different countries.

6.1 Unfavourable tax climate

6.1.1 VAT charged on beer sales

VAT is charged on all goods at a standard rate of around 20% in most Member States (though some charge less and many charge more, Figure 6.1). This is the largest component in overall tax revenues resulting from beer. VAT in the on-trade accounts for €13 billion and VAT in the off-trade accounts for over €6 billion.

Figure 6.1: Standard VAT rates (%): 2014



Source: *The Brewers of Europe and DG Taxud.*



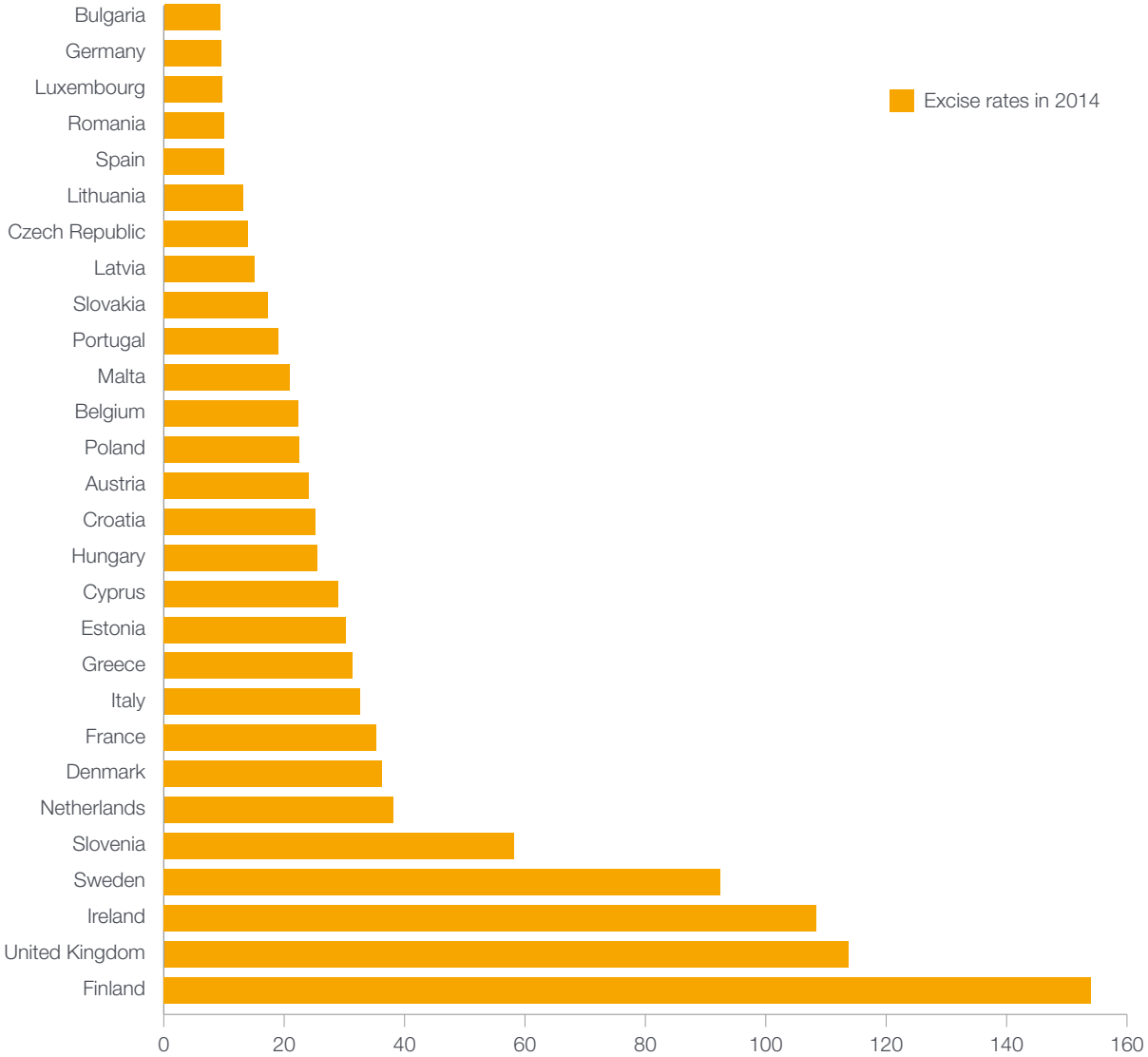
VAT rates have risen since the end of 2010 in many economies, as governments attempt to reduce fiscal deficits. The largest increases have been in countries with large starting deficits: Cyprus increased the rates 4 percentage points (in several increases between 2012 and 2014); Spain 3 points (in 2012)²¹; and the United Kingdom 2.5 (in 2011). Over the period 2010-2014 another 7 Member States increased their VAT rates by 2 percentage points (Italy, Croatia, Hungary, Ireland, Netherlands, Portugal and Slovenia), and another 5 by 1 percentage point (Czech Republic, Finland, Poland and Slovakia) or less (France).

It is worth mentioning that some economies apply a reduced rate of VAT in the hospitality sector, set in response to the sector’s employment composition, which includes “first jobs” for often-marginalised groups (e.g. young people) in the labour market. Research by The Brewers of Europe has found that, where a reduced rate of VAT is applied, the sector over-performed the wider economy during the crisis and was therefore a source of economic resilience. The Brewers of Europe has argued that this practice should be made standard across the EU for the sake of simplicity and to support the economic impact of the hospitality sector.

6.1.2 Excise duties

The Single Market encourages competition between Member States. With regard to beer, Member States have the ability to set their own rates of excise duty above a minimum rate set by EC Directive 92/84 EEC. This has given rise to significant tax differentials between neighbouring Member States (Figure 6.2).

Figure 6.2: Excise duty rates by country (€ per hl at 12° Plato/4.8% abv): 2014



Note: situation as of end of 2014.
 Source: The Brewers of Europe and DG Taxud.

21 In Spain, the VAT rate was first raised on the 1st of July 2010 from 16% to 18% and was increased again to 21% on the 1st of September 2012. Hence, VAT increased by 5 percentage points between 1st January 2010 and 31st December 2014.

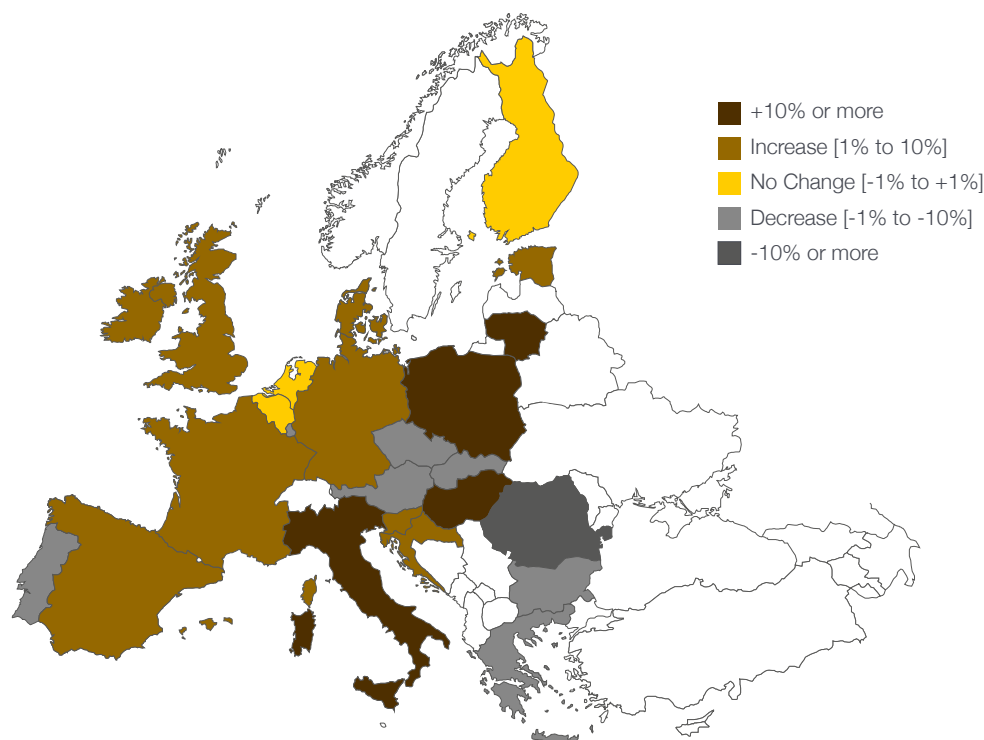
Recent changes in excise duties have tended to exacerbate these differences between Member States, rather than smoothing them. Between 2010 and 2014 the largest increases have been in France and Malta (170.5% and 130.7% increase in excise duties, respectively). In another 6 Member States the increases have been between 20 and 45% (Ireland: 43.5%; Latvia: 42.2%; Slovenia: 34.4%; Cyprus: 25.5%; Finland: 23.3%; Romania: 22.1%). The average increase in the duty rates in the EU has been 21.5% for that same period.²²

6.2 Government revenue from beer

6.2.1 VAT revenues

VAT revenues have changed substantially over the 2013-2014 period, with large increases in Lithuania (reflecting large increases in the value of the market, rather than changes in VAT rates²³), and to a lesser extent in Hungary, Italy and Poland.²⁴ By contrast, in markets like Romania where the market has shrunk, VAT revenues have also declined (Figure 6.3).²⁵

Figure 6.3: Change in revenue from VAT, 2013-2014 (%)



Note: Cyprus, Latvia, Malta excluded due to lack of data.

Note: Sweden excluded in this map due to data limitations.

Source: Calculations - different sources.

²² All figures are calculated from rates expressed in local currencies.

²³ As already pointed out, the large increase experienced by Lithuania is mainly due to an increase in average price in the on-trade sector.

²⁴ In Hungary, the raise is due to an increase in the off-trade prices; in Italy it is because of an increase in the on-trade prices and in the share of on-trade consumption; and in Poland the increase is due to a change in the on-trade consumption share.

²⁵ The large drop in Romania is due to a significant decrease in consumption between 2013 and 2014.

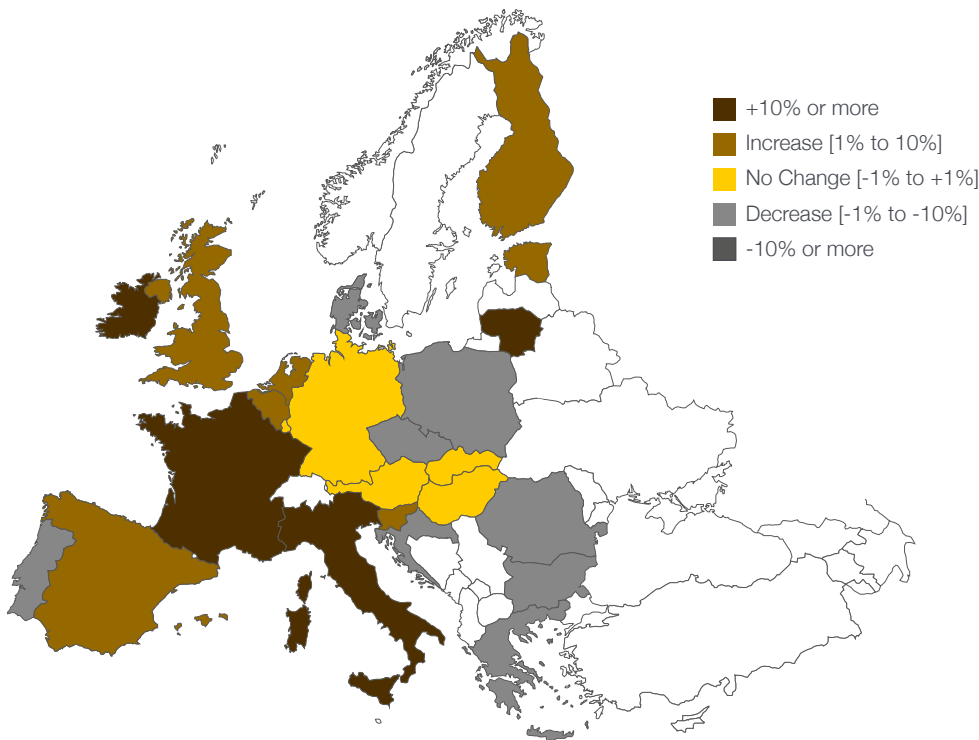


6.2.2 Excise revenues

The change in revenues from excise duties is more modest in scale. While many of the countries have seen an increase in their excise duty revenue (e.g. France, Lithuania, Italy, and Ireland) there have been reductions in another 7 Member States (Poland, Croatia, Portugal, Denmark, Greece, Bulgaria, and the Czech Republic). The reductions in excise duty rates in 2013 in the United Kingdom have also not been reflected in a reduction in revenue (excise revenues have increased slightly in 2014, also in GBP).²⁶

Ambiguity in the relationship between tax rates and tax revenue is the result of effects of the tax rate on the tax base (consumption). When tax is cut and prices fall, consumers may switch to beer instead of other alcoholic products, they might consume more beer domestically and from legal sources (reducing consumption of smuggled beer), or they might switch from off- to on-trade consumption, hence increasing total tax revenue. The extent to which people increase their consumption in response to a given decrease in prices is known as the price elasticity of consumption.²⁷ The consumer response to price changes hence mitigates the impact reductions in tax rates have on tax revenues (and vice versa).

Figure 6.4: Change in revenue from excise duty, 2013-2014 (%)



*Note: Cyprus, Latvia, Malta excluded due to lack of data.
 Note: Sweden excluded in this map due to data limitations.
 Source: Calculations - different sources.*

6.2.3 Reduced rates for independent small breweries

One of the most striking statistics from this new survey is the increase in the number of breweries across Europe: there were around 6,500 active breweries operating in the EU in 2014 in comparison to around 5,600 in the previous year. Almost half of these new businesses are microbreweries that have been established largely to meet consumer demand for innovative craft-brewed products. Typically such products command higher market prices.

This wide-scale development of microbreweries has also been supported by preferential duty rates. Council Directive 92/83/EEC (on the harmonization of the structures of excise duties on alcohol and alcoholic beverages) allows Member States to apply reduced rates of duty to beer produced in small independent breweries. Article 4 of the Directive allows such reductions to independent small breweries producing less than 200,000 hl of beer per year, providing that the reduced rates are not set at more than 50% below the standard national rate of excise duty.

Thus, the dramatic increase seen in the craft brewer sector has been driven both by consumer demand and by preferential excise rates that have encouraged the establishment of a huge number of new businesses over a relatively short timescale.

²⁶ Source: Taxud – Excise Duty Tables (Tax receipts – Alcoholic beverages). Note: all country percentage changes calculated on basis of local currencies converted to Euros, as used in Taxud database. For percentage changes in local currency, consult the same database.

²⁷ To be more precise, this describes the “own-price elasticity” of consumption. There are also “cross-price” elasticities which explain how, for example, a rise in the duty and hence price of whisky might increase consumption of beer as a substitute alcoholic drink.

6.2.4 Taxes and cross-border shopping

The high price of beer in several higher-tax countries has led consumers to shop in neighbouring lower-pricing countries. This legitimate activity can become problematic where large tax differentials encourage levels of cross-border shopping that threaten businesses from competing on a level playing field. Such differentials induce problems particularly for countries around the Baltic Sea (Germany, Denmark, Sweden, Finland, and Estonia), as well as in Norway and the Netherlands.

High taxes for beer also create an environment which encourages illicit trade, further reducing revenues. Large-scale smuggling, transport, distribution and selling of goods that have not paid the appropriate tax in the country of destination often involves organised criminal activity.

In 2014, EY and Regioplan²⁸ quantified the economic impact of high excise duties on beer in Nordic countries; Denmark, Finland, Norway and Sweden. Analysis of increases in excise duty in the EU (2008-2012) shows that high excise duty does not generate a proportional increase in total beer-related government revenues, and negatively impacts businesses. In eight of the seventeen countries in which an excise duty increase was implemented (16 EU countries and Norway) beer-generated government revenues even decreased.

The report showed in particular that:

- between June 2013 and June 2014, 53% of Nordic beer consumers bought beer outside their national borders;
- inhabitants of Nordic countries purchased nearly 330 million litres of beer (worth €1 billion) outside their national borders annually;
- the loss of VAT and excise duty revenues arising directly from cross-border shopping for beer amounted to approximately €545 million in the Nordic countries;
- in the Nordic countries cross-border shopping for beer led to at least 2,590 fewer beer-generated jobs in the retail sector alone and, consequently, a loss of €42 million in income tax and social contribution government revenues as well as significant losses in other industries;
- Nordic consumers spent approximately €2 billion in total on other products when they travelled abroad to buy beer, resulting in a total loss of over €400 million in VAT revenue; and
- taking all these points into account, cross-border effects resulted in an estimated total loss of government revenues of €1 billion.

Attempts to increase revenues by raising excise duty rates can be undermined by the cross-border trade (and vice-versa, reductions can help mitigate the revenue effects of rate reduction).

In the Netherlands, a 10% increase in excise duty on beer in 2013 was projected by the Government to generate an additional €39 million in excise tax as compared with 2012. However, a study by Regioplan estimated the additional revenue would be only €26 million. This has been ascribed to border effects. In fact, the actual yield was €24 million, a reduction of €15 million on the 2012 projected figure and implying a decline in the Dutch beer market of more than 3%. The excise duty increase resulted directly in an increase in cross-border traffic and lower domestic beer sales. Regioplan calculated that a 3% market decline in beer would additionally result in €28 million less in VAT revenue; i.e. a loss greater than the additional excise duty generated. The actual cost of the increase of beer excise duty is in fact even higher, since a market decline leads to loss of direct and indirect employment. Regioplan calculated this loss at more than 300 direct brewery jobs and, consequently, reduced social security contributions and income tax lost to the Government.

On the other hand, in 2013, the Danish Parliament reduced excise duties on some goods most subject to cross-border shopping such as beer and soft drinks, with the objective of creating growth and employment in retail. As of 1 July 2013, the beer duty excise rate was reduced by 15%. At the same time, indexation of beer excise duties was abolished until 2020. Since the plan came into force, domestic beer sales have increased by 5% and this trend is continuing.

A similar approach has been adopted in the UK, where recent cuts provide a helpful case study (though the rate remains relatively high and has risen over the medium term). Research by the Centre for Economics and Business Research for the UK non-profit making body Campaign for Real Ales (CAMRA) found that cuts to excise duty in the United Kingdom saved consumers around 16p (around €0.23) for each pint of beer.²⁹ This was estimated to have led to an increase in consumption of 750 million pints. In turn, this increased investment in the brewing industry by £61 million prevented the closure of over 1,000 pubs (saving on-trade jobs) and increased employment by 26,000 jobs. The report estimated that freezing the rate until 2020 would create an additional 33,000 jobs.

Since legitimate cross-border shopping can have important implications for tax revenues as well as business, social and environmental impacts, at least some Member States are beginning to take such factors into account in developing national fiscal policies rather than developing them in isolation.

28 EY and Regioplan (2014), Economic effects of high excise duties on beer, Regioplan Policy Research, 2014.

29 CEBR, "Scrapping the beer duty escalator – benefits to consumers, pubs and brewers", CEBR, February 2015.

6.2.5 Taxes on labour income

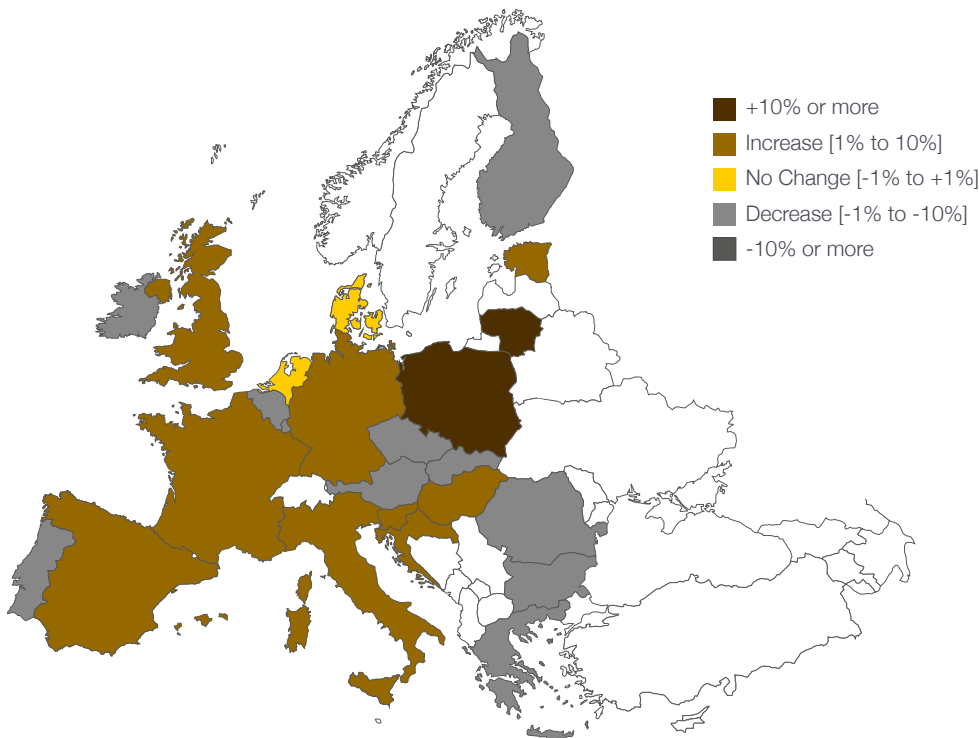
In almost all developed economies, taxes on labour income (income tax and social security contributions) are the largest source of government revenue. While excise duties are the largest distinctive tax on the beer sector (i.e. not levied on other economic activity), the economic impact of the beer sector creates income for those working in the sector itself and the wider supply chain which is responsible for a substantial part of beer's overall impact on government revenues.

Taxes on labour income related to economic impacts in the supplying industries and the on- and off-trade are estimated to have produced nearly €10 billion in 2014. Taxes on labour income related to economic impacts in the beer sector itself account for a further around €2 billion.

It is not surprising that most of the impact on labour taxes relates to the rest of the supply chain. Around 95% of beer-generated employment is outside the actual brewing companies and jobs in these sectors constitute the majority of the impact on labour tax revenues (the brewery share of the tax contribution is nevertheless larger than the share of the employment contribution).

Revenue from taxes on labour income related to the impacts of the European beer sector has varied considerably, but the largest increases have been in those countries where employment has increased the most, reflecting greater sales: noticeable in Lithuania and Poland. The greatest decline has been in Romania reflecting the drop in consumption and to a lesser extent in Greece, Austria, Luxembourg, Bulgaria, the Czech Republic, Ireland, Finland, Portugal, Belgium and Slovakia (Figure 6.5).

Figure 6.5: Change in revenue from taxes on labour income related to indirect impacts, 2013-2014 (%)



Note: Cyprus, Latvia, Malta excluded due to lack of data.

Note: Sweden excluded in this map due to data limitations.

Source: Calculations - different sources.

6.2.6 Remarks on government revenues

We have seen that changes in excise duty rates will affect consumption and tax revenues of beer directly, but also the revenues obtained throughout the supply chain. Hence, a reduction in the consumption of beer as a response to an increase in excise duty rates would lead to less beer being produced, meaning that fewer raw materials (e.g. barley and hops) and packaging (e.g. bottles and cans) are required. In turn, that might mean less employment in agriculture and the packaging industry and hence less income tax paid by workers in those sectors. At the same time, there might also be fewer staff needed in order to serve drinks in the on-trade, further reducing employment and labour tax revenues. Less VAT revenues will be generated, as well.

The increasing and persisting shift of sales from on-trade to off-trade in many Member States is having negative consequences on the overall number of jobs in the sector. Because sales in the on-trade are more labour intensive than in the off-trade (due to the additional services it provides), the shifting of beer from on- to off-trade is reducing the number of jobs in the on-trade by an amount that is not being fully recovered in the form of additional jobs created in the off-trade.

At the same time, beer prices are higher in the on-trade, also as a reflection of the higher value added provided in the hospitality sector. The continuing trend in loss of sales of beer through the on-trade has resulted in the lower government revenues from employment taxes and VAT from beer sales. Indeed, the many VAT rises across the European Union will also have increased pressure on the on-trade which would have been hit harder than the off-trade due to its higher value-added.

Sources and methodology

7 Sources and methodology

In estimating the size and economic impact of the European beer sector, we balanced three priorities:

- Maximising the accuracy and reliability of the estimates.
- Maximising the scope of the data available, by minimising the administrative burden for the individual breweries and national associations providing data.
- Maximising consistency with earlier reports in terms of the method used and thereby creating a series over which reasonable comparisons can be drawn.

We collected data for EU Member States plus Norway and Switzerland. Some of the economic impacts could not be estimated due to limitations in the data for Cyprus, Malta and Sweden, in particular, which are discussed later.

7.1 Impacts estimated

There are broadly three types of impacts estimated:

- Direct impacts in the beer sector – value added, employment and government revenue impacts in businesses brewing beer in Europe.
- Upstream impacts in supplying sectors³⁰ - value added, employment and government revenue impacts in the businesses supplying the beer sector itself.
- Downstream impacts in the on- and off-trades³¹ - value added, employment and government revenue impacts in the businesses selling beer, particularly the hospitality sector (representing the on-trade) and the retail sector (representing the off-trade).

7.2 Data collection

We collected data from three principle sources:

7.2.1 Statistical agencies and European Commission's DG Taxud

We collected data on the sectors that form part of the upstream and downstream impacts of the beer industry from the statistical agency Eurostat (and in some cases the national statistical agencies for Norway, Switzerland and Turkey): the turnover, value added and personnel costs per person employed in different supplying sectors and in the on- and off-trades. Eurostat also provided high level information such as the population in each country.

In its data on economic activity by sector and the structural business statistics, the Eurostat break down is based on the NACE Rev. 2 nomenclature. We assigned an appropriate NACE sector, which we felt to be representative of the activity concerned, to each of the sectors used in the earlier studies and covered in the questionnaires to individual breweries: Agricultural products; Utilities; Packaging and bottling; Transportation and storage; Equipment and other; Media, marketing and communication; Other goods; the On-Trade; and the Off-Trade.

The sectors used represented the most direct translation possible from the sectors used in earlier reports (which were based on the earlier NACE Rev 1.1 nomenclature), except in the case of the on-trade sector, where we used the more specific sector definition referring to beverage serving activities in place of the higher-level sector representing hotels and restaurants as a whole.

³⁰ These were referred to as “indirect” impacts in earlier iterations of this study. However in other studies indirect impacts cover both the upstream and downstream impacts and we therefore adopt the more precise term here. Another term for the activity covered here would be upstream industries.

³¹ These were referred to as “induced” impacts in earlier iterations of this study. However in other studies induced impacts cover the activity resulting from the factors of production in sectors where there is a direct and indirect impact spending of the income derived from that activity in the wider economy, a form of economic impact not captured here. Another term for the activity covered here would be downstream industries.

Table 7.1: NACE Rev 2 sectors used

Industry	Sector used
Agriculture	A: Agriculture ⁽¹⁾
Utilities	D: Electricity, gas, steam and air conditioning supply E: Water supply; sewerage, waste management and remediation activities
Packaging	C: Manufacturing
Equipment	C: Manufacturing
Transportation	H: Transportation and storage
Media and marketing	L: Real estate activities N: Administrative and support service activities M: Professional, scientific and technical activities
On-trade sale	I56.3: Beverage serving activities
Off-trade sale	G47.25: Retail sale of beverages in specialised stores

(1) Information on agriculture is not contained in the structural business statistics. The information for this sector was therefore derived from a combination of specific agricultural statistics and coefficients for value added and labour compensation derived from Input-Output tables, all of which is published by Eurostat.

To the extent that data was not available for the years required, we used the most recent available year (often 2012) and updated in line with the overall change in the Harmonised Index of Consumer Prices (HICP). In some cases, there was information missing for certain Member States. We adopted the following procedure when filling such gaps:

- Use a higher-level sector. For example, the sector G47.25: Retail sale of beverages in specialised stores might be replaced by G47: Retail trade, except of motor vehicles and motorcycles.
- Where that was not possible, use information from another country where the coefficients are similar for other sectors. For example, some data from Cyprus was used to fill gaps for Malta.

These techniques proved sufficient to produce a full set of coefficients.

We also collected information on VAT rates; implicit tax rates on labour income; and excise duty receipts from the European Commission's DG Taxud.

7.2.2 Questionnaire to national associations (QNA)

This covered the overall size and scope of the sector in each Member State. Complete or near-complete responses were received for every Member State. The variables collected were:

- Production, in hectolitres.
- Consumption/sales, in hectolitres.
- Imports (intra EU/ community trade), in hectolitres.
- Imports (extra EU/ from third countries), in hectolitres.
- Exports (intra EU/ community trade), in hectolitres.
- Export (extra EU/ to third countries), in hectolitres.
- Employment, in persons.
- Total number of breweries.
- Total number of microbreweries (up to 1000hl annual production).
- Off trade sales (e.g. supermarkets, shops), %.
- On trade sales (e.g. restaurants, pubs), %.
- Price per litre of beer sold in the off-trade.
- Price per litre of beer sold in the on-trade.
- Taxes paid by brewing companies.

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- Usage of different packaging materials (e.g. glass, PET, cans, tanks).
 - Qualitative information, such as analysis of market trends.

7.2.3 Questionnaire to individual breweries (QIB)

This covered the direct economic impacts of the sector in each Member State. Usable responses were received for every Member State except Cyprus and Malta and in many cases a sample of firms was available. In some cases, responses were not usable due to some values being omitted, in which case they were excluded. The variables collected were:

- Production, in hectolitres.
- Consumption/sales, in hectolitres.
- Imports (intra EU/ community trade), in hectolitres.
- Imports (extra EU/ from third countries), in hectolitres.
- Exports (intra EU/ community trade), in hectolitres.
- Export (extra EU/ to third countries), in hectolitres.
- Employment, in persons.
- Total number of breweries.
- Total number of microbreweries (up to 1000hl annual production).
- Off trade sales (e.g. supermarkets, shops), %.
- On trade sales (e.g. restaurants, pubs), %.
- Price per litre of beer sold in the off-trade.
- Price per litre of beer sold in the on-trade.
- Taxes paid by brewing companies.
- Usage of different packaging materials (e.g. glass, PET, cans, tanks).
- Qualitative information, such as analysis of market trends.

There was a need to process the data collected from this source for three reasons.

First, in order to limit the requirement for data from the individual breweries, some of the information was only provided for 2014. We therefore estimated the financial variables for 2013 based on price inflation (measured by the HICP) and the change in production (in hectolitres).

Second, the respondents only represented a sample for each market, not the entire population of breweries. The financial variables were therefore scaled based on the ratio of the sum of production (in hectolitres) in the responding individual breweries to production (in hectolitres) reported by the national associations.

Finally, values given in national currencies were adjusted to euros based on contemporary exchange rates.

7.3 Calculations

The calculations closely followed those used in earlier reports. We constructed a spreadsheet model to implement the calculations across the countries covered.

Our estimates of upstream impacts in the supplying industries were based on the following calculations.

Table 7.2: Upstream impacts calculation

Indicator	Unit	Computation method / source
(1) Production value	million Euro	QIB
(2) Value added total, brewing sector	million Euro	QIB
(3) Purchases of inputs, total	million Euro	= (1) – (2), also QIB
(4) Share of purchases, by industry	%	QIB
(5) Purchases, by industry	million Euro	= (3) * (4)
(6) Share of domestic purchases, by industry	%	QIB
(7) Domestic purchases, by industry	million Euro	= (5) * (6)
(8) Turnover per person empl., by industry	000 Euro per person	Eurostat
(9) Employment, first round effect, by industry	persons	= (7) / (8)
(10) First round effect on supply sectors	%	Default value of 65%
(11) Employment, total effect, by industry,	persons	= (9) / (10)
(12) Indirect employment, total	persons	= sum of (11) over industries
(13) Value added per person empl, by industry	000 Euro per person	Eurostat
(14) Value added, by industry	million Euro	= (12) * (13)
(15) Indirect value added, total	million Euro	= sum of (14) over industries

Our estimates of downstream impacts in the on- and off-trades were based on the following calculations.

Table 7.3: Downstream impacts calculation, on-trade

Indicator	Unit	Computation method / source
(1) Consumption total	1,000 hl	QNA
(2) Share on-trade	%	QNA
(3) Consumption on-trade	1,000 hl	= (1) * (2)
(4) Average beer price on-trade	Euro/litre	QNA
(5) Value of the market inc. VAT on-trade	Euro	= (3) * (4)
(6) National VAT rate	%	DG Taxud
(7) Value of the market exc. VAT on-trade	million Euro	= (5) / (1 + (6) /100%)
(8) Turnover per person employed on-trade	000 Euro/ person	Eurostat
(9) Employment induced on-trade	Persons	= (7) / (8)
(10) Value added per person employed on-trade	000 Euro/person	Eurostat
(11) Value added on-trade	million Euro	= (9) * (10)

Table 7.4: Downstream impacts calculation, off-trade

Indicator	Unit	Computation method / source
(1) Consumption total	1,000 hl	QNA
(2) Share off-trade	%	QNA
(3) Consumption off-trade	1,000 hl	= (1) * (2)
(4) Average beer price off-trade	Euro/litre	QNA
(5) Value of the market inc. VAT off-trade	Euro	= (3) * (4)
(6) National VAT rate	%	DG Taxud
(7) Value of the market exc. VAT off-trade	million Euro	= (5) / (1 + (6) /100%)
(8) Turnover per person employed off-trade	000 Euro/ person	Eurostat
(9) Employment induced off-trade	Persons	= (7) / (8)
(10) Value added per person employed off-trade	000 Euro/person	Eurostat
(11) Value added off-trade	million Euro	= (9) * (10)

Finally, our estimates for government revenues were based on the following calculations.

Table 7.5: Government revenue calculation

Indicator	Unit	Computation method / source
(1) Beer excise revenue	million Euro	DG Taxud
(2) On-trade VAT revenues	million Euro	Downstream calculations
(3) Off-trade VAT revenues	million Euro	Downstream calculations
(4) Income, payroll tax & social security, direct	million Euro	QIB
(5) Implicit tax rate on labour	%	Eurostat
(6) Downstream personnel costs	million Euro	Downstream calculations
(7) Downstream labour taxes	million Euro	(5) * (6)
(8) Upstream personnel costs	million Euro	Upstream calculations
(9) Upstream labour taxes	million Euro	(5) * (8)
(10) Total supply chain labour taxes	million Euro	(7) + (9)
(11) Total government revenues	million Euro	(1) + (2) + (3) + (4) + (10)



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