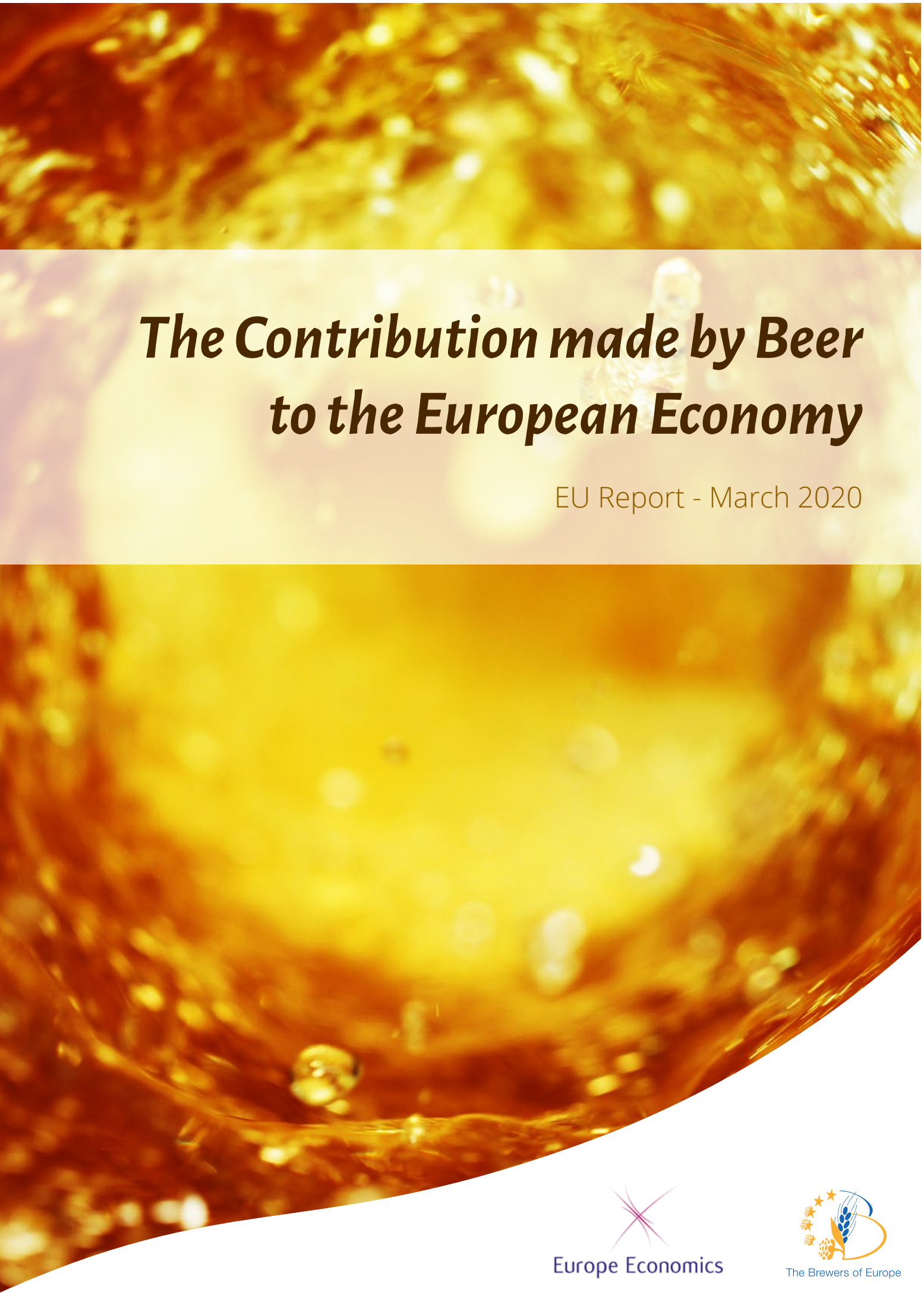

The Contribution made by Beer to the European Economy

EU Report - March 2020

Europe Economics

The Brewers of Europe

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2 Executive Summary

The EU28 is the second largest beer producer in the world, after China. There are around 10,300 active breweries, owned by more than 9,500 active brewing companies, which produced over 405 million hectolitres of beer in 2018. A significant number of new microbreweries (over 860 more than in 2017) have been established, adding to the innovation and diverse products offered by the beer sector.

Domestic consumption declined over a number of years up until 2013, affected by wider macroeconomic trends, but has grown in each of the last five years, with the biggest increase in 2018, following economic recovery. Total consumer spending on beer was over €117 billion in the EU28 in 2018. 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. Croatia, Denmark, Austria, Lithuania, Portugal, Malta, and Cyprus all saw an increase in the on-trade market in 2018 compared to 2015).

The brewing sector in Europe is also a major exporter. EU28 countries sell over 32 million hectolitres of beer outside the EU. Some countries export more than half of their total production (notably Estonia, the Netherlands and Denmark). Most countries import significant shares of their consumption and export significant shares 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 is over 2.3 million jobs in the EU28 (around one per cent of total EU employment), in 2018, which includes:

- Over 130,000 jobs in the brewing sector alone (this is in companies producing beer).
- A further 255,000 jobs in supply sector, including 60,000 in agriculture. Upstream industries including agriculture, packaging and services benefitted from the almost €11 billion spent on domestic purchases by brewing companies.
- 1.7 million jobs generated by beer sales in the on-trade hospitality sector (e.g. bars, pubs and hotels) and almost 241,000 jobs in the off-trade retail sector (e.g. supermarkets or specialist shops).

As much as 94% of beer-related employment occurs outside the brewing companies themselves. This means that 1 job in the brewery sector creates an additional 16 jobs in the economy.

Those workers make a significant contribution to economic growth. The total contribution to value added in the EU28 is around €55 billion, this would be comparable for instance to the total GDP of Croatia.

In the EU28, there is:

- Nearly €16 billion in value added in the brewing sector itself;
- A further €10 billion in value added in the supply sector; and,
- Over €24 billion in value added in the hospitality sector (the on-trade), with over €5 billion in the retail sector (the off-trade).

The contributions to employment and value added have increased from 2017 to 2018. The largest increases occurred in Eastern Europe and, among the major EU economies, Germany, Belgium, 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 €44 billion in the EU28, in 2018:

- VAT charged on beer sales produced around €20 billion in revenues (€13 billion on-trade and €7 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.

All of this evidence amounts to a persuasive case that the beer sector is large and successful, making a material contribution to meeting overall goals for economic policy in EU Member States. All three economic indicators (jobs, value added and government revenue) are pointing upwards. However, the environment can be challenging if volumes decline, particularly in the on-trade as a result of difficult economic circumstances and/or restrictive policies, hence the need to constantly innovate to be able to supply changing consumer tastes and competitive global markets. Governments can further optimize the economic impact of the sector with policy choices including a moderate tax burden.

Finally, we have looked at the impacts beyond economics that the beer industry has, and we have observed that the sector is actively investing, reaching very high absolute figures but also in relative terms (in certain cases the sector invests as much as 16 or even 18% of the total turnover). On the other hand, we have also found that other social objectives are in the agenda of many brewers and there are significant efforts towards making the sector sustainable and environmentally more efficient.

3 Introduction

This study was commissioned by The Brewers of Europe, who wish to understand the economic impact of the beer sector across the EU and in a few non-EU countries, in terms of its impact on value added, employment and government tax revenues. The report focuses on the findings for EU28 (figures refer to the 28 Member States which constituted the Union until January 2020) but also provides country chapters for Norway, Switzerland and Turkey. This study is the seventh iteration in a series of studies updating estimates of the economic contribution made by the sector.

3.1 Economic impact

This report aims to quantify the economic impacts of beer in the European economy. Beer creates value 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 as people meet over a beer in a bar or pub or at home; and it has an existence value, with many non-drinkers valuing the beer traditions of their countries. Many of those sources of value are growing in prominence in an environment in which, as we shall see later, craft and other specialty 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. We look at value added, employment and government revenues for the following reasons:

- 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).
- Many people work in the beer supply chain, so the number of jobs is a relevant metric of measurement (it is in agreement with most policy targets of reducing unemployment rates).
- The taxes on the beer itself, excise duties and VAT, but also taxes on the factors of production in the supply chain are an important source of government revenues.

There is more information on how these impacts were estimated in the Annex (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.

3.2 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 sector.

- In Chapter 6, we describe the impacts on government revenues in different countries and in different types of tax.
- Finally, in Chapter 7, we describe some examples of the positive externalities of beer to society.

In the Annex we explain in detail the sources used and the calculations undertaken to produce the estimates presented in the rest of the report.

4 The scale of the European beer sector

4.1 The second largest brewing economy in the world

The European Union as a whole (figures refer to the 28 Member States which constituted the Union until January 2020) is the second largest beer producer in the world, producing over 405 million hectolitres of beer in 2018 (395 million hectolitres in 2017). Beer production by the EU28 is second only to China in aggregate figures (397 hectolitres in 2017, the most recent year for which data is available), but considerably more in terms of per capita production (as the Chinese population is over twice as large). The EU28 also produced considerably more than the United States (217 million hectolitres), Brazil (140 million hectolitres) or Mexico (110 million hectolitres).[1]

4.2 A very diverse sector

As well as producing a large volume of beer, the sector also produces a very diverse range of beers. These are being produced by a great number of breweries in Europe, all representing a rich mix of beer cultures and strong traditions in each of the countries.

The national brewers' associations have counted over 9,500 active brewing companies in 2018, which operate around 10,300 breweries (a significant increase compared to around 8,200 reported in 2016). Of the total number of active breweries, 2,030 were located in the United Kingdom, 1,600 in France and 1,542 in Germany. The significant increase observed was largely due to the addition of a substantial number of microbreweries (which now count over 8,000).

[1] *Kirin Beer University Report,* Global Beer Production by Country in 2017*, available here:* https://www.kirinholdings.co.jp/english/news/2018/0809_01.html

Table 4.1: Number of active breweries

Country	2012	2014	2016	2018	Change 2018-2012
Austria	173	198	235	298	125
Belgium	150	168	224	304	154
Bulgaria	13	16	17	29	16
Croatia	6	6	6	97	91
Cyprus	2	4	3	4	2
Czech Republic	213	338	398	488	275
Denmark	150	159	180	206	56
Estonia	7	15	33	53	46
Finland	30	49	82	104	74
France	503	663	950	1,600	1,097
Germany	1,340	1,352	1,411	1,542	202
Greece	18	20	43	46	28
Hungary	50	50	50	77	27
Ireland	15	30	62	75	60
Italy	421	599	757	874	453
Latvia	16	29	41	64	48
Lithuania	73	75	72	72	-1
Luxembourg	7	7	30	34	27
Malta	1	1	2	2	1
Netherlands	177	302	489	699	522
Norway	41	75	128	128	87
Poland	132	133	210	318	186
Portugal	9	35	94	120	111
Romania	17	22	34	64	47
Slovakia	30	39	61	73	43
Slovenia	30	51	62	99	69
Spain	132	332	483	538	406
Sweden	75	154	283	375	300
Switzerland	375	483	753	1,021	646
Turkey	11	9	10	14	3
United Kingdom	1,080	1,430	1,870	2,030	950
EU28	**4,872**	**6,279**	**8,184**	**10,285**	**5,413**

Source: The Brewers of Europe.

The diversity of the European beer sector creates additional value for consumers, who, in most markets, tend to prefer variety. That occurs both: *within* segment, e.g. different pilsners; but also *between* segments, e.g. growth in new products such as beers mixed with fruit juices ("radlers") and beers with no or lower alcohol content. In countries such as Germany, Spain, and Hungary alcohol free and low alcohol beer products currently represent shares of over 6% of total production.

Table 4.2: Alcohol-free and low-alcohol beer production

Country	2012	2014	2016	2018
Croatia		4.8%	3.8%	3.8%
Czech Republic	2.8%	2.7%	2.7%	2.9%
Denmark			1.2%	
Finland				1.3%
France	1.0%	0.9%	1.4%	1.7%
Germany (incl. malt beverages)	5.4%	6.7%	6.7%	7.3%
Greece	0.2%	1.4%	1.3%	2.3%
Hungary			5.5%	6.1%
Ireland				0.6%
Italy		3.4%	2.7%	2.2%
Luxembourg			0.0%	1.0%
Netherland	1.5%	2.3%	3.3%	5.2%
Portugal	1.5%	1.7%	1.7%	1.6%
Slovakia	4.1%	3.7%	4.7%	4.1%
Slovenia		9.0%	8.3%	
Spain	9.2%	8.8%	8.9%	8.9%
Sweden	0.5%	1.1%	2.0%	3.4%

Source: The Brewers of Europe.

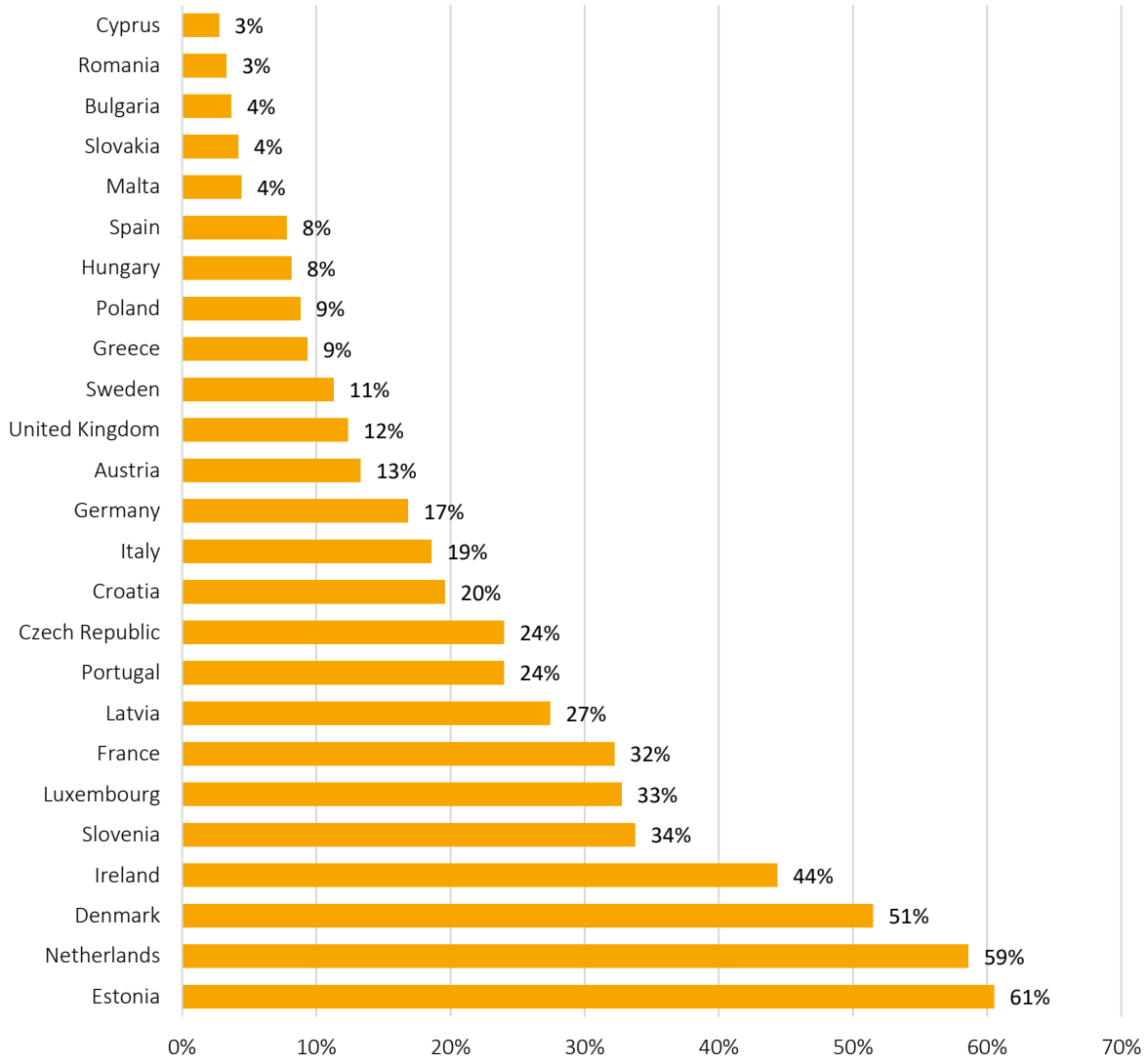
Along with an increased variety of available products as the industry innovates, there are also signs that European consumers are embracing those new products. The value consumers attach to the concomitant diversity of beers that is created is likely to further grow. In a survey undertaken for this report, brewers and national brewers' associations noted an increase in the consumption of craft beers across Europe. It was also noted that consumers are typically willing to pay higher prices for these beers, with the overall market being stable in volumes, but shifting towards higher value products. The description of the market is something we turn to in Chapter 5.

4.3 Contributing to the European trade balance

The beer sector makes a substantial contribution to the overall European trade balance. Over 32 million hectolitres were exported from EU28 countries to destinations outside the EU in 2018, which represents more than 8% of total production. This includes both large global brands and also craft beers and specialty brands produced for export.

Exports (both intra- and extra-EU) were particularly important in Estonia, Netherlands and Denmark, where they represented the largest shares of production (Figure 4.1). 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 generated by beer production. However, as much as 15% or more of production is exported from most of the different European countries (for example large countries such as Italy, Germany or France, but also Croatia, Luxembourg and Slovenia). A healthy export trade is therefore the norm and not restricted to a small set of countries.

Figure 4.1: Exports 2018 (as % of total production)



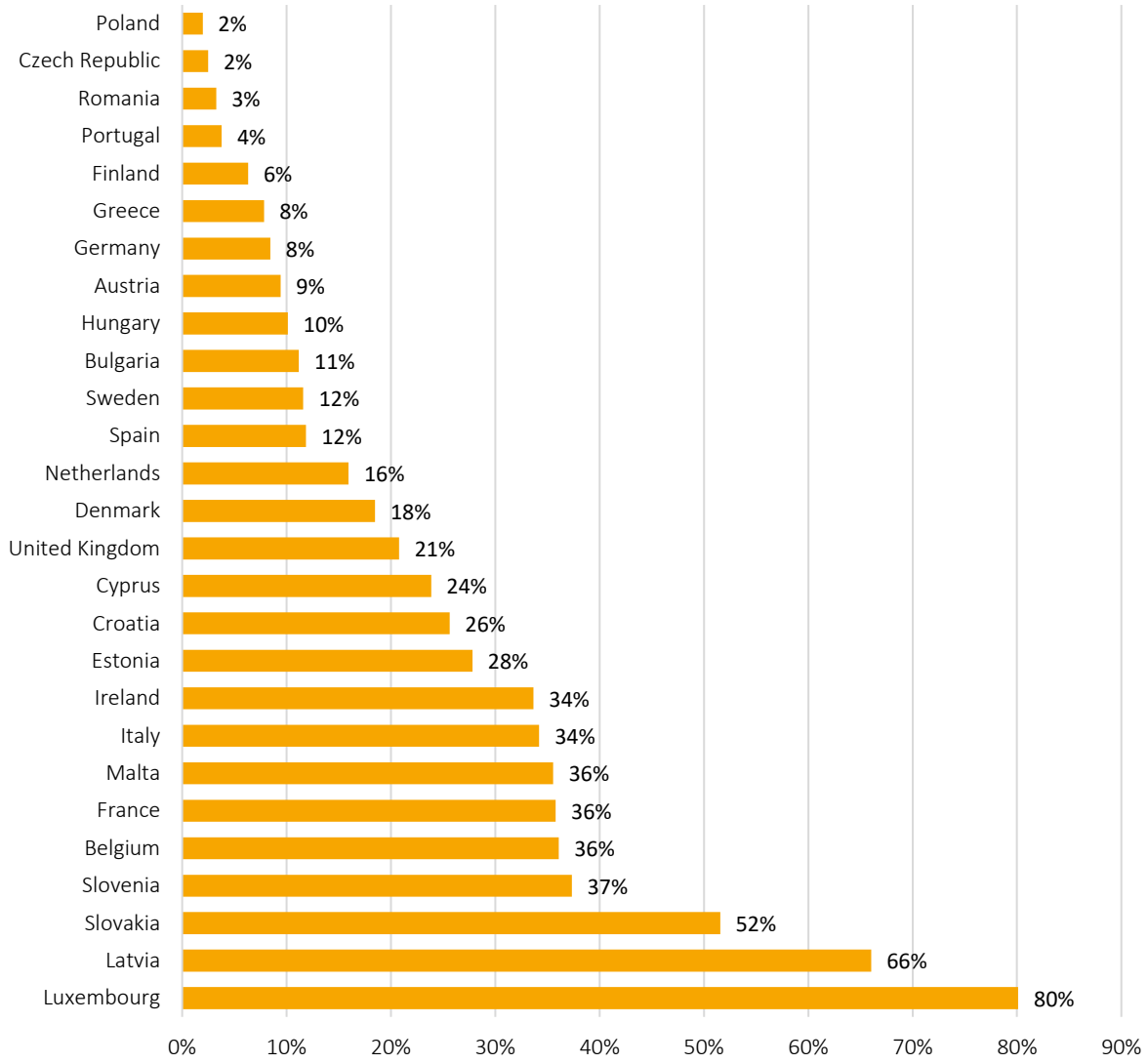
Note: no data for Finland, Belgium and Lithuania. France and Latvia figures refer to 2017.

Source: The Brewers of Europe.

Imports (both intra- and extra-EU) were largest relative to overall consumption in Luxembourg, Latvia, Slovakia, Slovenia, Belgium, France, Malta, Italy, and Ireland (Figure 4.2). Imported beer equals a third or more of consumption in those countries. However, imports never displace local production entirely, and local production still serves a substantial share in every European market (with the notable exceptions of Luxembourg, Latvia, and Slovakia). This trade pattern, characterised by a sizeable import trade but also substantial local production, reflects three features of consumer preferences: (1) Appreciation of certain beers for their particular style or heritage (e.g. Belgian beers with a Trappist heritage); (2) Love of variety, wanting to try more different beers; (3) Attachment to beers from specific geographical areas: consumers show a preference for their own country's beers, but may switch depending on the context, for example, by asking for a particular type of beer to accompany a special meal or dish at a restaurant.

Imports are therefore a significant source of demand for many European consumers and show a healthy and competitive European market at present.

Figure 4.2: Imports 2018 (as % of total consumption)



Note: No data for Lithuania. Latvia and France figures refer to 2017.

Source: The Brewers of Europe.

5 Economic impact indicators

The European beer sector makes a significant contribution to a number of economic outcomes of high interest to policymakers, particularly in terms of value added, employment and government revenues. This is for the following reasons:

- 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 strategies for economic growth.
- Many people work in the beer supply chain, and this contributes to Europe's targets of achieving employment, particularly for young workers.
- There are taxes on the beer itself, excise duties and VAT, but also taxes on the factors of production in the supply chain. Direct and indirect taxes on beer are therefore an important source of government revenues.

The economic impacts of beer are not constrained to the sector itself, but span out to other sectors within the supply chain, including the distribution of beer to the consumer. This is in terms of the inputs the beer sector buys to produce its beer, and the channels it uses to distribute the beer to the consumers (be it through retail stores or serving it in different catering establishments). This chapter makes this difference apparent by defining three types of impacts:

- Direct impacts: these are the impacts of the beer sector itself (employment or value added aggregated from all the brewers in the sector).
- Supply impacts: these refer to the sectors supplying inputs to the brewing industry (these might include items as diverse as the raw agricultural input, or the packaging and machinery used in the production of the beer).
- Impacts in the retail and hospitality sectors (also referred to as off- and on-trade markets): these include the different retail stores or supermarkets where beer can be purchased, and the distribution channels including hotels or restaurants where beer is served to consumers.

This chapter provides an analysis of the impact on value added, employment and government revenues generated directly or indirectly (supply, and retail and hospitality sectors) by the beer sector. The chapter also shows the recent evolution of these indicators and provides an outlook for the near future.

5.1 Increasing value added by over €55bn

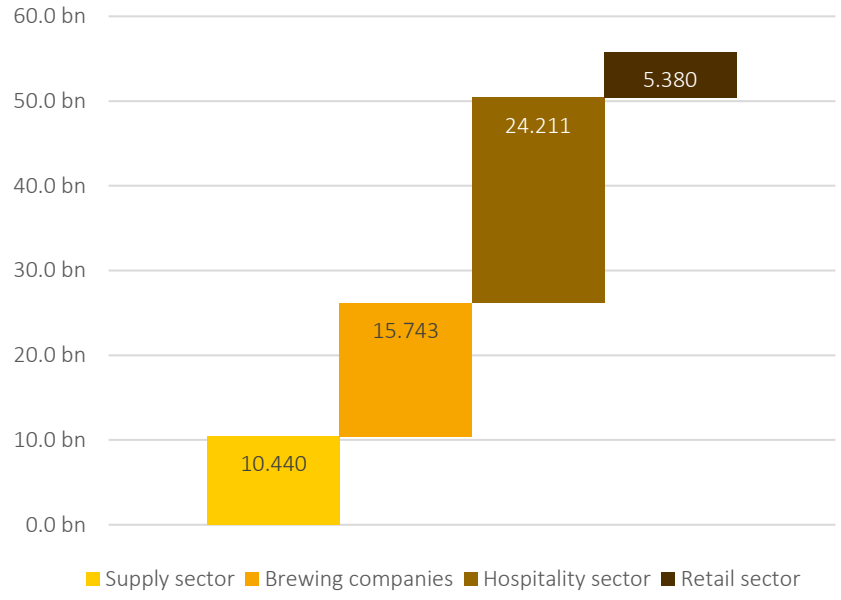
The EU28 beer sector's contribution to value added and therefore economic growth in 2018 amounts to over €55 billion. This value added is comparable to the GDP for Croatia (€52 billion) in 2018.

Of the €55 billion total, the largest component is the hospitality sector, selling beer in on-trade premises (with a value added of around €24 billion). This sector is discussed in more detail in Chapter 5. There is also a contribution of more than €5 billion by the retail sector selling beer in the off-trade, though naturally value added is lower in this route to market, as other services (catering and hospitality) are not provided with the distribution of the beer. The part of the supply chain producing the next largest increase in value added is the beer sector itself (almost €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. 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 a €10 billion contribution to value added in supply sectors such as the manufacturing of packaging materials and agriculture (Figure 5.1). The impact in the supply sectors is explained in more detail in Chapter 4.

This illustrates a recurring theme of this study: the economic impact of the beer sector is not just felt by those working directly for breweries, but across the wider economy.

Figure 5.1: Contribution to value added impact, by sector, 2018 (billion €)



Source: Calculations of this study.

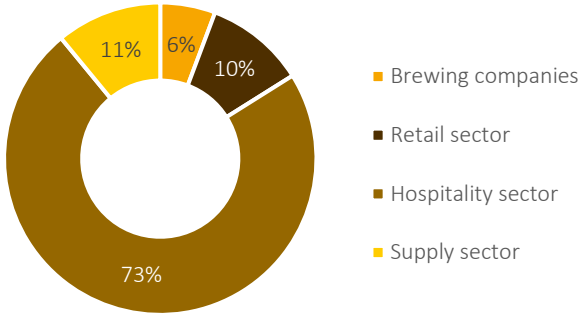
5.2 Employing over 2.3 million people

Around 2.3 million are directly or indirectly employed because of the beer sector. For comparison, the figure is similar to total employment in Ireland (around 2.4 million), and is almost one per cent of total EU employment (243 million in 2018).

The spread of employment through the supply chain is similar to the pattern found for value added, but more accentuated for certain sectors. The largest contribution to employment is in the hospitality sector, which accounts for almost 1.7 million jobs (around 73% of the total), reflecting the greater labour intensity of hospitality relative to industrial activities in breweries, which are more capital-intensive (Figure 5.2). On average 1 job in the brewery sector creates an additional 16 jobs in the economy.

The crucial point to note here is that as much as 94% 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.

Figure 5.2: Contribution to employment impact, by sector, 2018 (%)



Source: Calculations of this study.

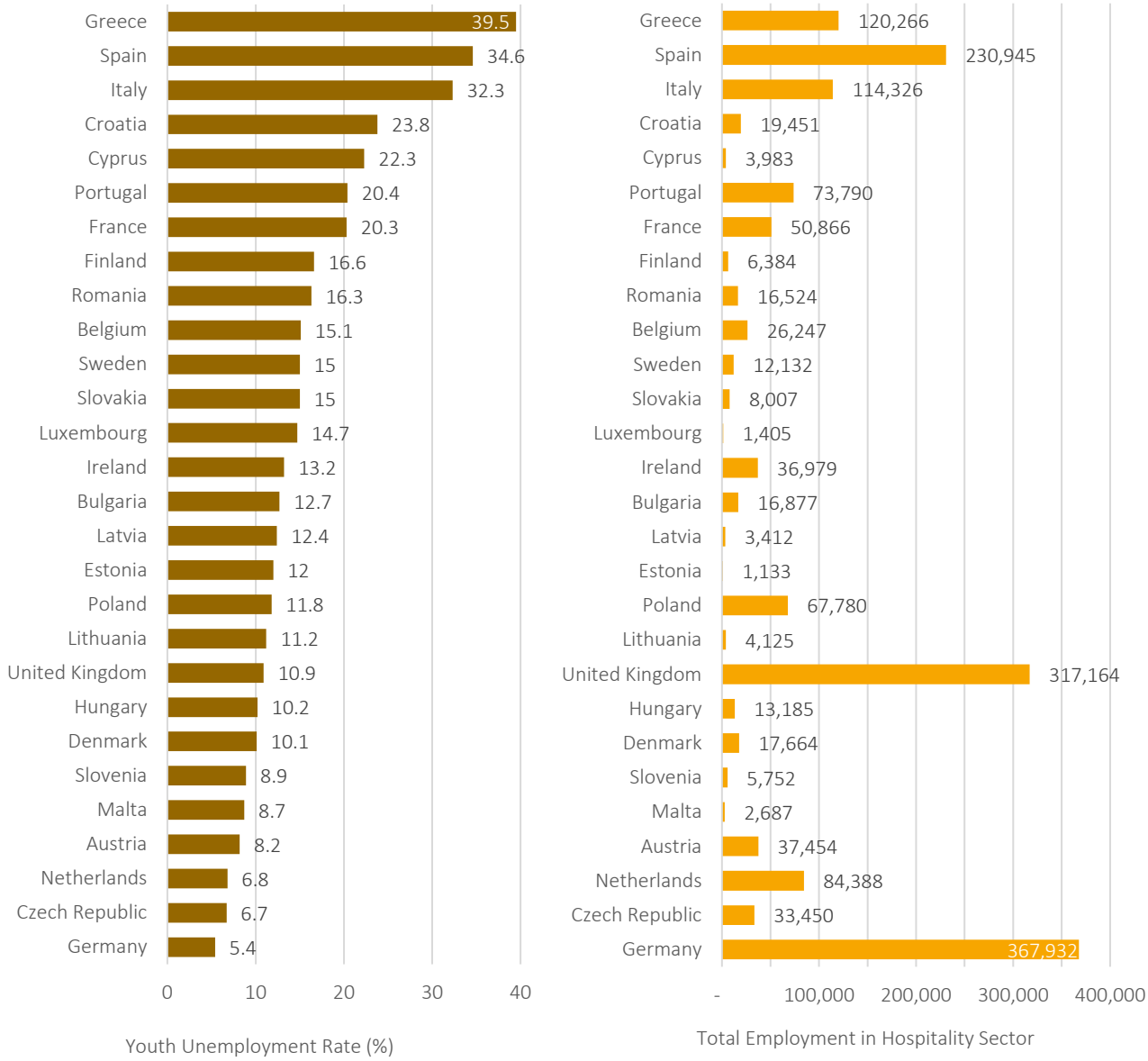
5.3 Nature of hospitality sector jobs

The analysis shows how the beer sector is a potential source of employment for a wide range of workers, not just those with skills related to breweries. The hospitality sector is a key source of jobs for many young people and often a way for these young workers to gain their first employment. This is particularly important in areas with high youth unemployment (which may also be heavily reliant on part-time or seasonal employment).

Unemployment among the young is a severe problem in several countries in Europe, notably Greece, Spain, Italy, Croatia, Cyprus, Portugal and France (Figure 5.3). There are significant job numbers in the hospitality sector associated with beer in a number of these countries. In Greece and in Italy, where the youth unemployment rates represent the highest and the third highest European levels (38 and 32%), the beer related hospitality sector generates over 120 thousand and 114 thousand jobs, respectively.

Again, these jobs are likely to be disproportionately held by young workers. The jobs created are not only beneficial in terms of the absolute numbers but also in terms of the type of unemployment Europe seeks to solve.

Figure 5.3: Employment in hospitality and youth unemployment rates: by country (2018)

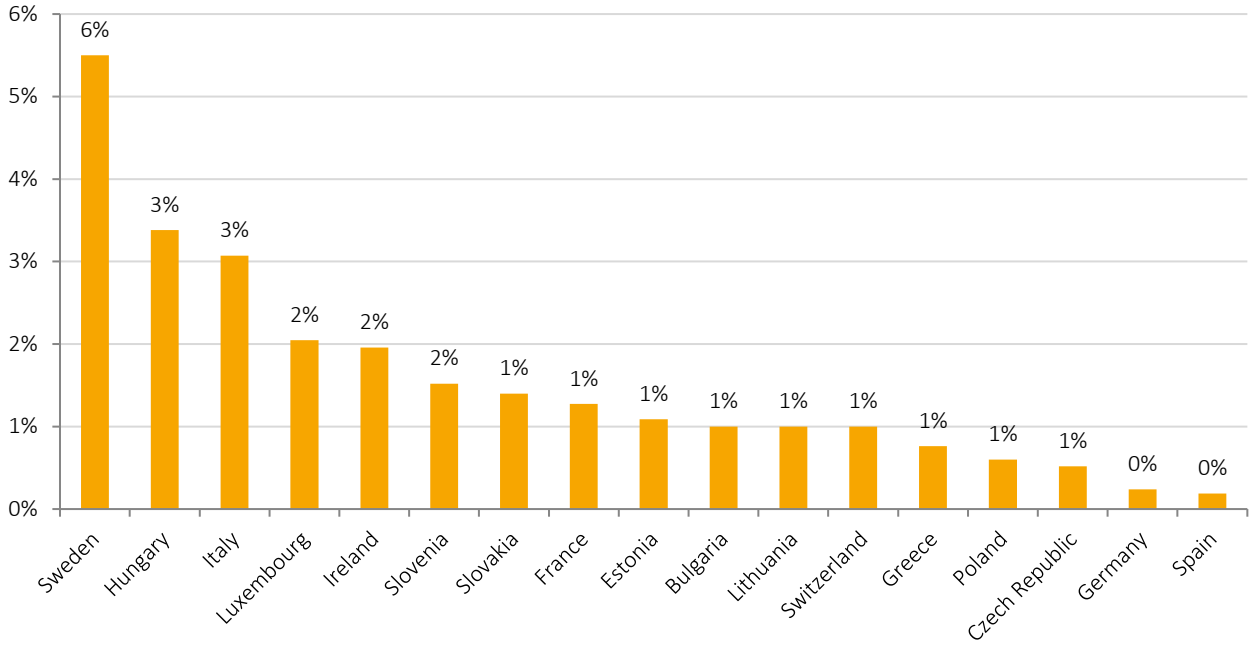


Source: Eurostat and calculations of this study.

5.4 Job contributions from microbreweries

In recent years the number of microbreweries has increased significantly and they have become more established. Data are difficult to collect for every market. However, production by microbreweries in a number of countries (where information is available) is approaching or in some cases exceeding 2% of national beer production (Figure 5.4).

Figure 5.4: Microbreweries: share of national production 2018



Source: The Brewers of Europe.

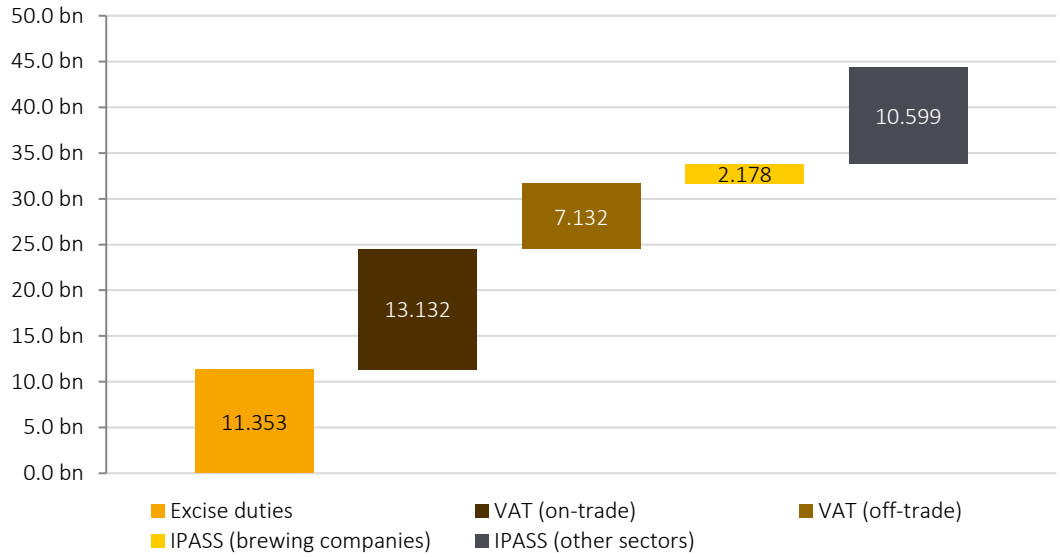
We estimate the contribution of microbreweries to the overall employment to be around 1,135 jobs (this uses the shares of production for the countries for which data are available). However, this figure is probably an underestimate of the impact of microbreweries. This is because the numbers have assumed that microbreweries have similar productivity ratios to the overall market, when in fact this is unlikely to be the case. What is clear is that the numbers employed by microbreweries is not insignificant and is growing.

5.5 Increasing government revenues to nearly €44 billion

The contribution to government revenues resulting from the beer sector is over €44 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. Income tax in other sectors besides brewing (e.g. income taxes paid by bar staff) adds another €11 billion (Figure 5.5). This represents an increase of 7% between 2015 and 2018.

The impacts on government revenues are discussed in more detail (with breakdowns by country) in Chapter 6. However, to give a sense of the overall scale of the revenue impact it is worth noting that €44 billion is similar to the annual total tax revenue of some of the smallest EU28 Member States.

Figure 5.5: Beer-related government revenues, 2018 (billion €)



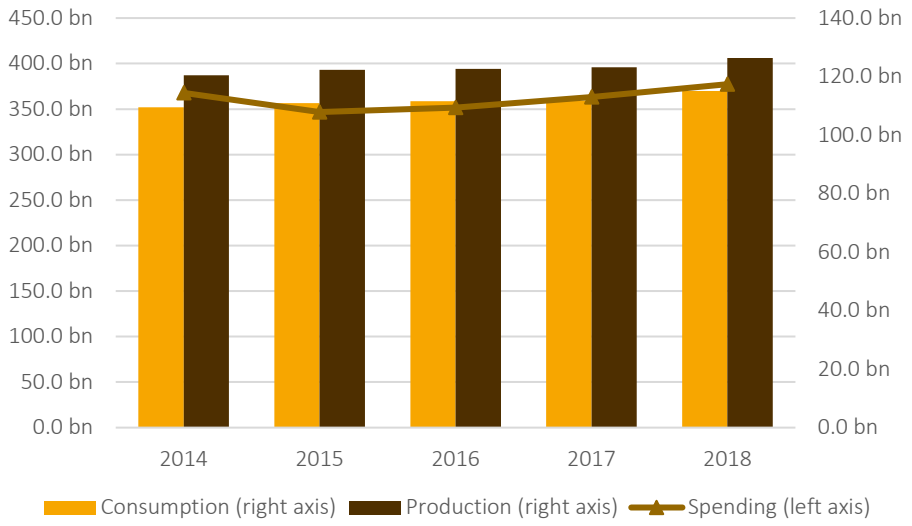
Note: IPASS denotes income, payroll and social security contributions.

Source: Calculations of this study.

5.6 Steady recovery between 2015-2018

Overall changes in the size of the beer market have shown an expansion trend on production, consumption and consumer expenditure. From 2014 to 2018, production has increased by almost 5% from 387 million hectolitres produced in 2014 to almost 406 million hectolitres in 2018 (with the greatest annual increase between 2017 and 2018, +2.5%). Consumption has increased by 5% reaching almost 370 million hectolitres consumed in 2018 (with an increase of almost 3 percentage points in 2018). Total consumer spending has increased by a little less than 3% from an initial spending of around €114 billion in 2014 to more than €117 billion in 2018 (Figure 5.6).

Figure 5.6: Evolution of the sector, 2014-2018

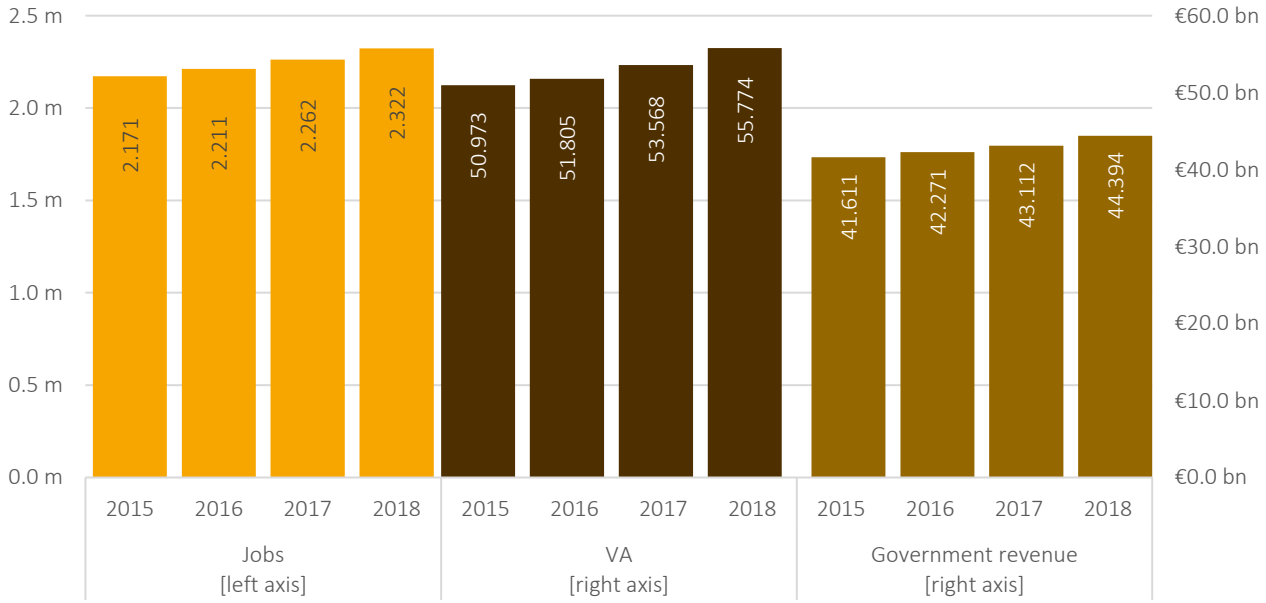


Source: The Brewers of Europe.

5.7 All indicators pointing upwards

Figure 5.7 shows the recent evolution of the economic indicators. All three show an increasing trend. There is a slight rise in employment in every year from 2015 to 2018, which is reflecting the increase in consumer spending between these years (the overall growth in employment related to beer in these four years amounts to almost 7%). The value added generated by the industry also reflects the trend in the employment (an increase of around 9% in the four-year period). Government revenues have also increased steadily in the last four years, from 2015 to 2018, growing over the whole period by almost 7%.

Figure 5.7: Main indicators of EU beer impacts, 2015-2018



Source: Calculations of this study.

6 Impact in supply sectors

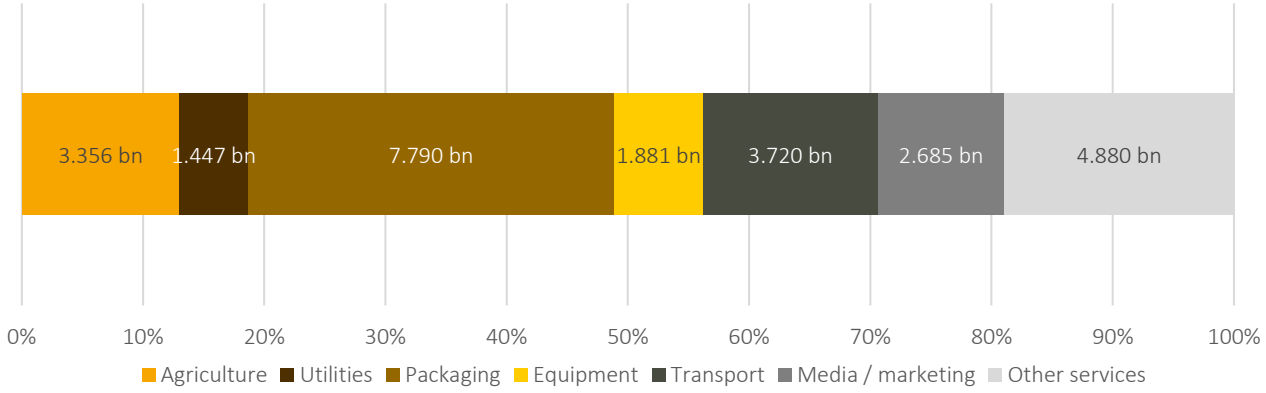
There are a number of sectors which supply the European beer industry. Workers in those sectors are also considered working (though indirectly) in the production of beer. This includes those who work primarily to supply the beer sector (e.g. those making beer bottles) as well as those working in a number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

This chapter links the beer sector with its suppliers of inputs (and the jobs created therein) and shows the indirect presence in the agriculture and packaging sectors.

6.1 A spender of nearly €26bn a year (goods and services) …

Total beer sector spending on goods and services across the EU28 in 2018 was nearly €26bn (total purchasing figures have been obtained from Eurostat for the brewing sector).[2] The largest sector from which the beer sector purchases supplies is packaging, this includes primary packaging: the bottles, cans and other materials which contain beer, and the secondary and tertiary packaging: cardboard and other materials holding those bottles and cans together. Of the total purchases, around 80% were domestic purchases (Figure 6.1).[3]

Figure 6.1: Goods and services purchases by supply sector (2018)



Source: Eurostat for the overall purchase figure. Individual breweries for the splits between suppliers. Own calculations and adjustments to make data conformable.

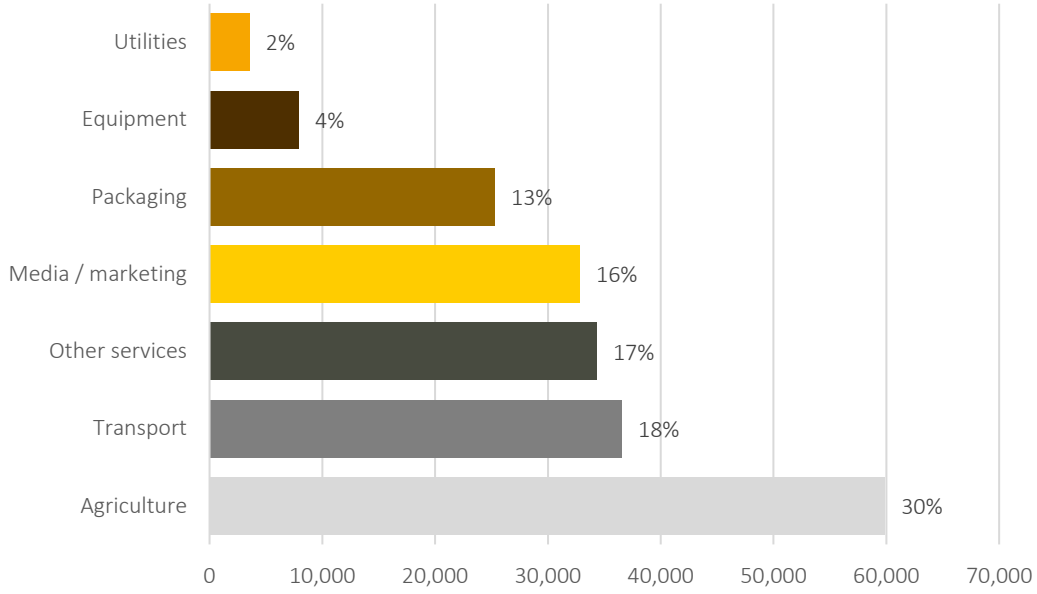
[2] *The figures have been also been checked with values reported from individual brewing companies and these have shown the overall consistency of the data.*

[3] *To obtain a split between the different inputs we have used the share of purchases reported by individual brewers in the different questionnaires. Where data contained inconsistencies we made small corrections to the figures to make them comparable across respondents and countries. Any corrections to the shares of non-domestic purchases were done upwards, allocating less to the domestic share (this is likely to underestimate our figures as is might not account for all the purchases taking place in the country; hence, the size of the sector supplying to beer could be larger but not smaller than what we report).*

6.2 …With implications along the supply chain: 255,000 jobs

Almost 255,000 workers were employed in the supply chain for the beer sector in 2018. The shares in upstream employment accounted for by different supply sectors exhibit a similar pattern to that for the absolute value of purchases of supplies. However, more capital-intensive sectors, such as transport or equipment, naturally account for a smaller share of employment. The largest impact on employment is in agriculture, around 60,000 jobs.[4]

Figure 6.2: Upstream employment: by sector, 2018



Source: Calculations - different sources.

6.3 Barley and the European farmland

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

As a key ingredient of beer, demand for malt (and its input: barley) has a significant impact on the EU agricultural sector. Taking the average total production in the period 2014-2018 (almost 400 million hectolitres of beer), the impact can be calculated as 6.3 million tons of barley[5], which is equivalent to 1.3 million hectares across Europe[6]. This is an impressive magnitude by any standards: it compares to 77% of all potato land in Europe, 62% of the rye land and 43% of vineyards (Figure 4.3).

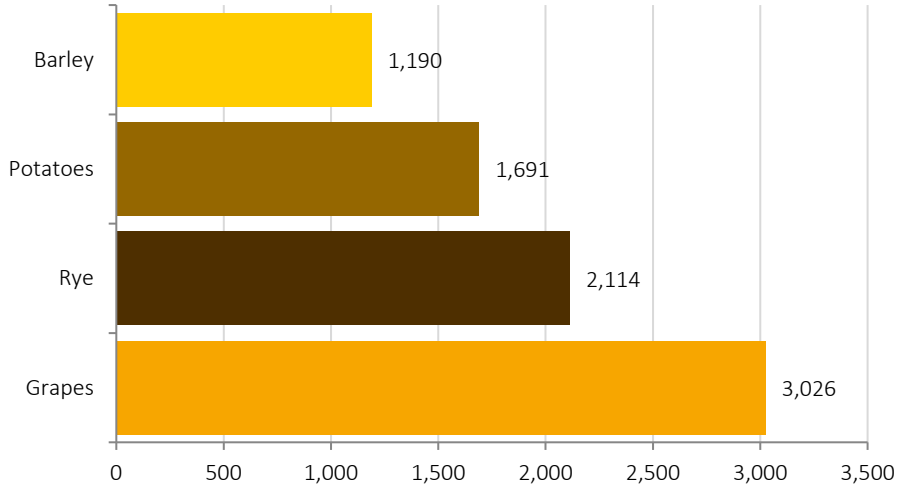
This is only part of the picture, as other cereals, whether processed or unprocessed, are also used in brewing.

[4] *Inputs split as reported by individual brewers in questionnaires.*

[5] *We have used a conversion rate of 16kg of barley per hectolitre of beer as provided by the Brewers of Europe.*

[6] *We have used 4.87 tonnes / Ha as the 2014-2018 average crop yield in EU28 countries to convert production volumes into equivalent crop area (6,324 / 4.87 = 1,300 Ha).*

Figure 6.3: Thousand hectares used in Europe on different crops (2014-2018 average)



Source: Eurostat and own calculations.

6.4 An important agricultural presence: hops

There are around 2,600 hops-producing farms in the EU, with around 26,500 hectares of land dedicated to the crop. This represents around 60% of total global hops-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[7]. Despite a slight fall in hop production in 2018 compared to 2017, the area under cultivation increased by 2.5% in the same period[8].

When it comes to production, 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.[9]

[7] *European Commission, Agriculture and Rural Development, "Hops".*

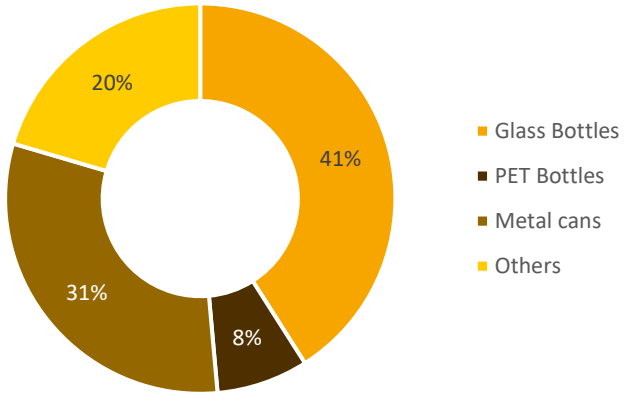
[8] *Barth-Haas Group, "The Barth Report, Hops 2018/2019".*

[9] *European Commission, Agriculture and Rural Development, "Hops".*

6.5 Importance of beer in the packaging sector

The Brewers of Europe have collected data from the National Brewers Associations on packaging in order to investigate the impact of beer on that sector. Glass is the most-used material (40% of the beer produced is being packaged in glass bottles), followed by cans (31%). PET bottles take less than 8% (Figure 6.4).

Figure 6.4: Packaging materials used: share by beer volume (2018)



Source: The Brewers of Europe.

Over recent years, a decrease in the use of glass bottles has been observed in favour of a movement towards packing in cans. Overall cans comprise approximately 31% of total packaging in 2018, up from 25% in 2013. During the same period glass bottles have seen their share declining slowly from 43% in 2013 to 41% in 2018. Most likely, these trends can be attributed to the sales of bulk beer from larger producers. It is unlikely that glass will be replaced and it will certainly remain the main form of packaging used by microbreweries (the demand for this type of packaging will strengthen, as the craft sector consolidates and continues to grow in the coming years).

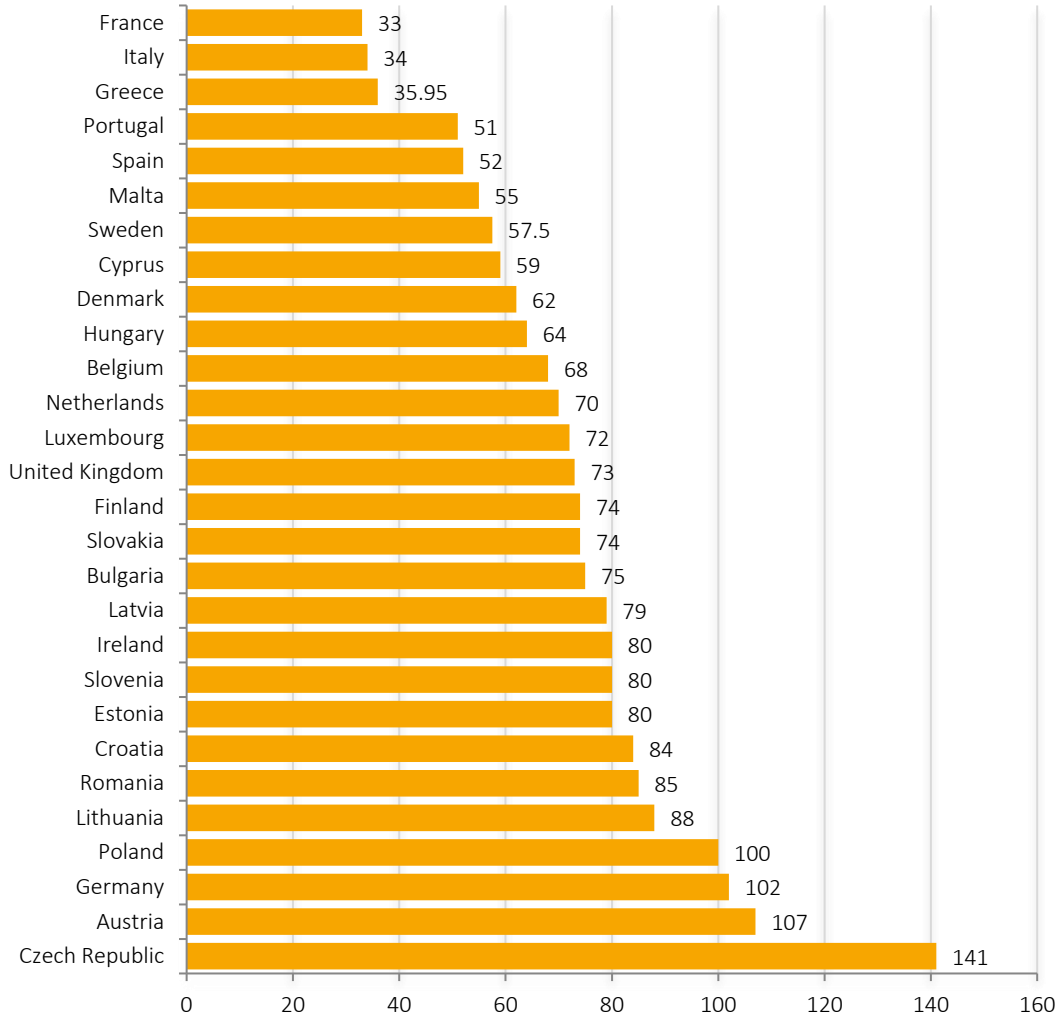
7 Impact in hospitality and retail

Economic activity will be created wherever beer is consumed, and this affects both the hospitality and retail routes to market. In this chapter, we describe some characteristics of these sales channels and focus on the jobs created in the hospitality (on-trade) and retail (off-trade) sectors. As seen, beer is also particularly important to European economies as a source of employment.

7.1 The market

Per capita consumption of beer in Europe varies greatly by country, and is influenced by whether countries typically have a beer- or wine-drinking tradition. The traditional beer-drinking countries are Poland, Germany Austria, and the Czech Republic, all of which have a higher per capita beer consumption. In Mediterranean countries, such as France and Italy with a strong tradition of wine production and consumption, the per capita consumption figures are lower. Most countries have an average consumption per capita between 50 and 80 litres (Figure 7.1).

Figure 7.1: Beer consumption, litres per capita (2018)

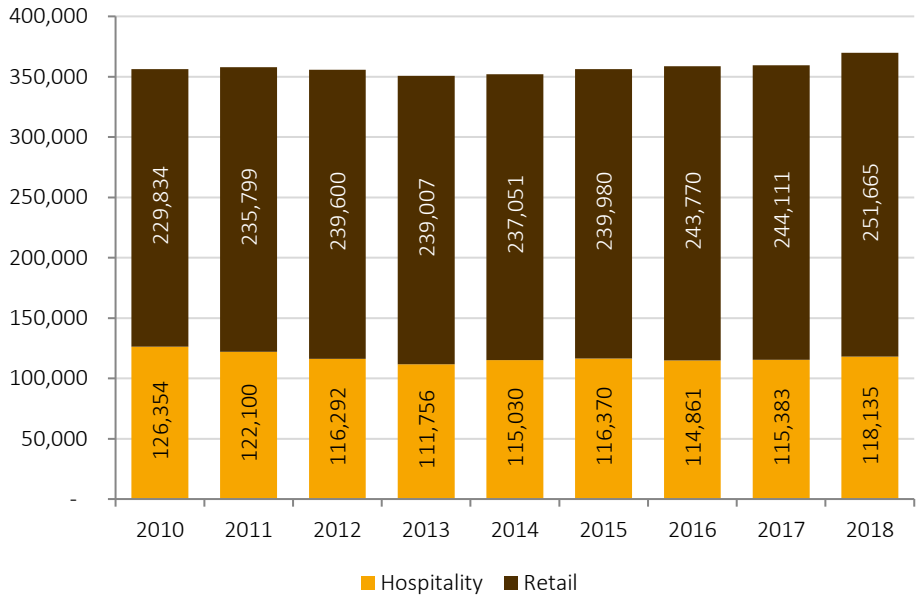


Source: National Associations.

7.2 On- and off-trade split: More beer in the off-trade, but on-trade is economically more important

In terms of the pure *volume* of beer consumed, the off-trade market is larger than the on-trade. Around two thirds of beer is sold in supermarkets, at specialist stores or in other shops and consumed at home, against one third served in the on-trade. Over the period, a slow but continuous shift towards the off-trade can be observed (consumption of beer in hospitality outlets has reduced from 35% in 2010 to 32% in 2018).

Figure 7.2: Beer consumption in hectolitres, on- and off-trade share

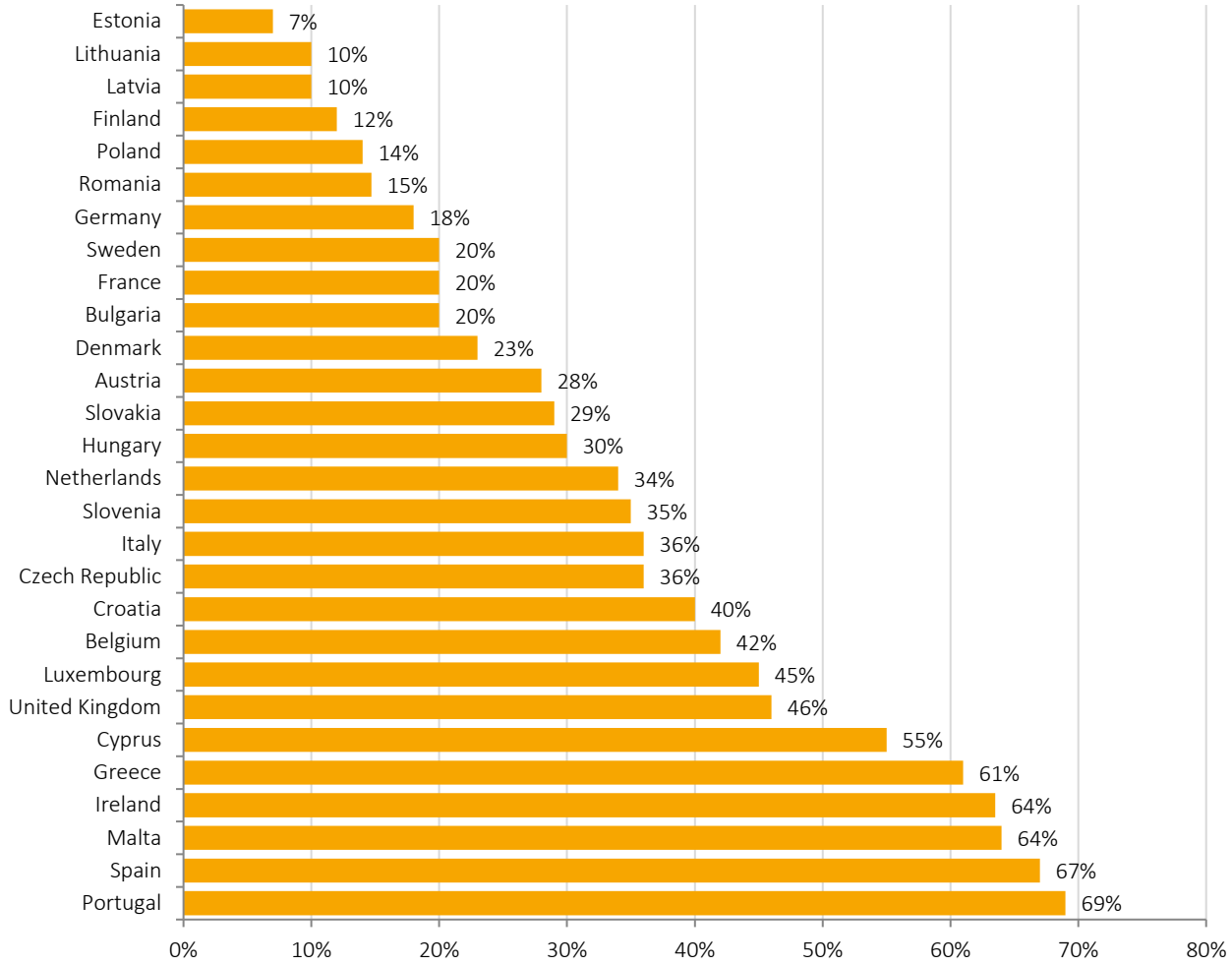


Source: National Associations.

The ratio of on-trade and the off-trade sales by volume varies considerably across Europe. The largest shares by volume in the on-trade are in Portugal, Spain, Malta, Ireland and Greece (over 60%), the lowest shares are in the Baltic States (Latvia, Lithuania and Estonia, Figure 7.3).

The different patterns reflect differences in cultural traditions. In some countries consumption in the on-trade is a more deeply-embedded social norm or is impacted by large numbers of tourists. Equally, price sensitivity of consumers might push them to the lower-price offered in the retail/off-trade.

Figure 7.3: Beer consumption in hectolitres, on-trade share by country (2018)

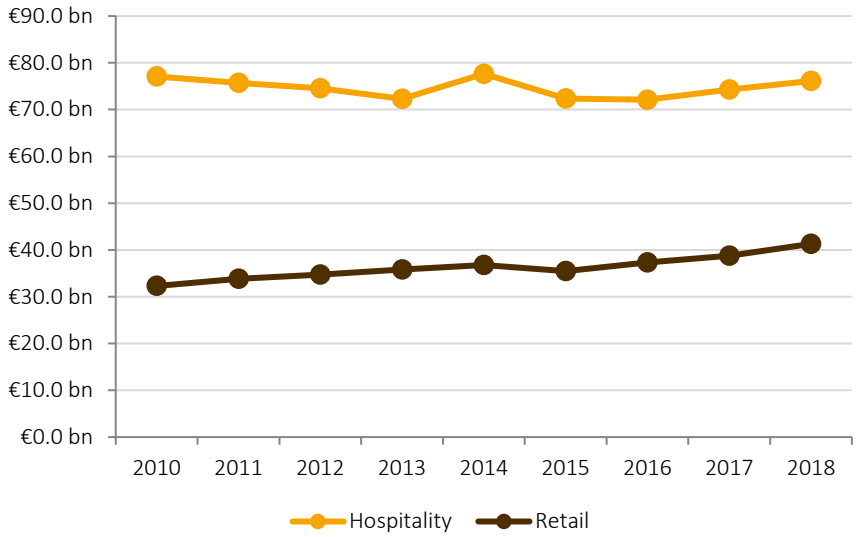


Source: National Associations.

7.3 On-trade has more value

However, in terms of *value*, consumption is higher in the on-trade, and this is due to the higher price of beer sold therein. Prices tend to be higher in hospitality as these reflect the costs of providing, maintaining and staffing the venues in which those drinks are consumed. The addition of Value Added Tax has a significantly higher impact in the on-trade (in comparison with the off-trade, where pre-tax pricing is lower). Taking into account beer prices the share split between on- and off-trade looks very different: around two thirds of sales by value is spent on beer in the on-trade, against one third in the off-trade (the split was the reverse for off- and on-trade when measured in terms of volumes, as shown in Figure 7.2). The market share observed by value and across time shows slightly increasing off-trade sales and reducing on-trade sales. The hospitality market grew from €77.1 billion to 76.1 billion between 2010 and 2018, which implies a loss in market share from 70 to 65%; the retail sector went from €32.3 billion to 41.3 billion in the same period, which instead represents a gain in market share from 30 to 35% (Figure 7.4).

Figure 7.4: The beer market in Europe (consumption in billion Euro)

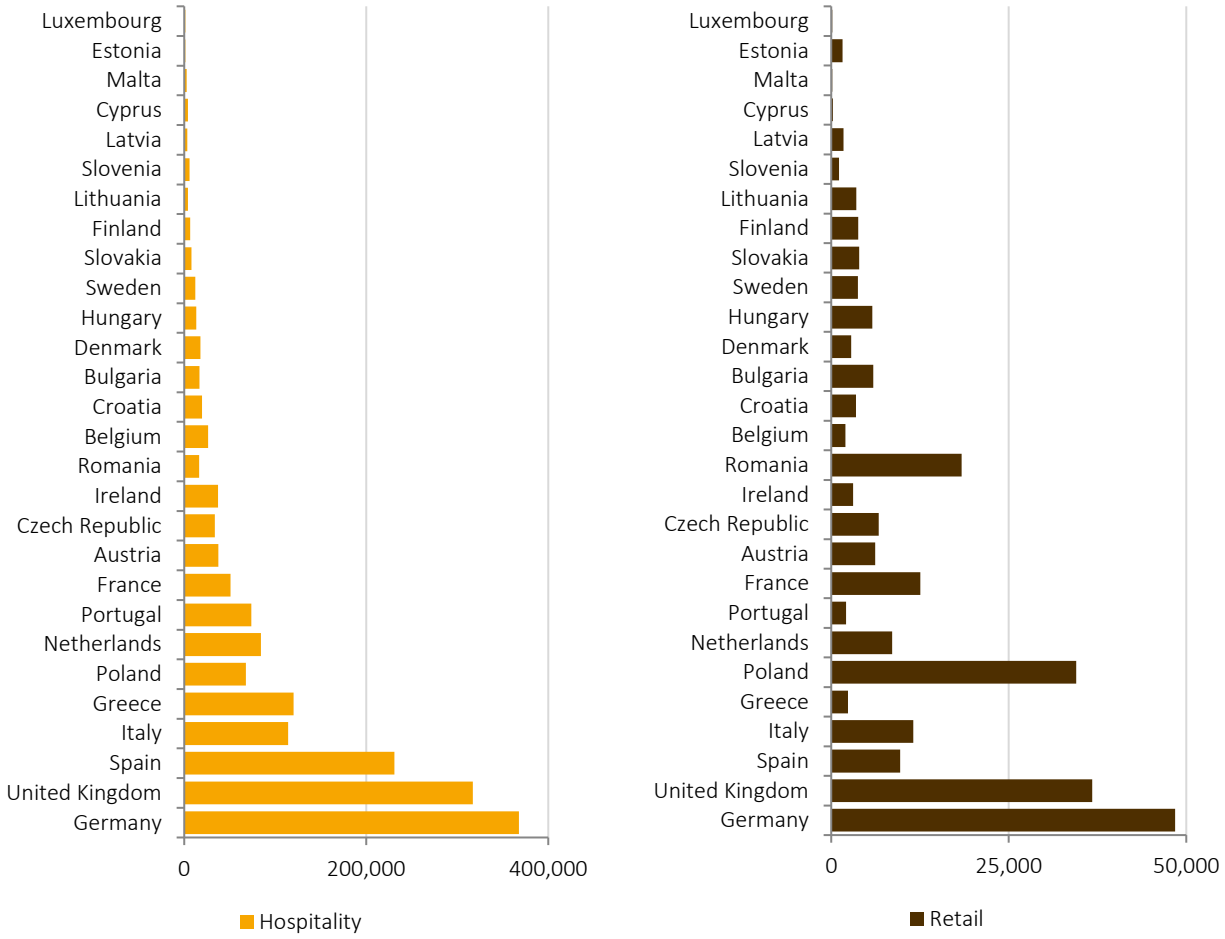


Source: National Associations.

7.4 The employment impacts

With its huge market value and the services it provides, it is no surprise that the on-trade is a large employer, responsible for most of the employment impact of the beer sector overall. The jobs in this market represent the large amount of people selling beer as part of their work in pubs and bars, restaurants and other venues such as hotels. The largest employment impacts are in Germany, the United Kingdom, Spain and Italy, and this also reflects the size of these countries (and the amount of beer sold therein). 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).

Figure 7.5: Employment impact of beer: hospitality and retail (2018)



Source: Calculations - different sources.

7.5 Trends and outlook

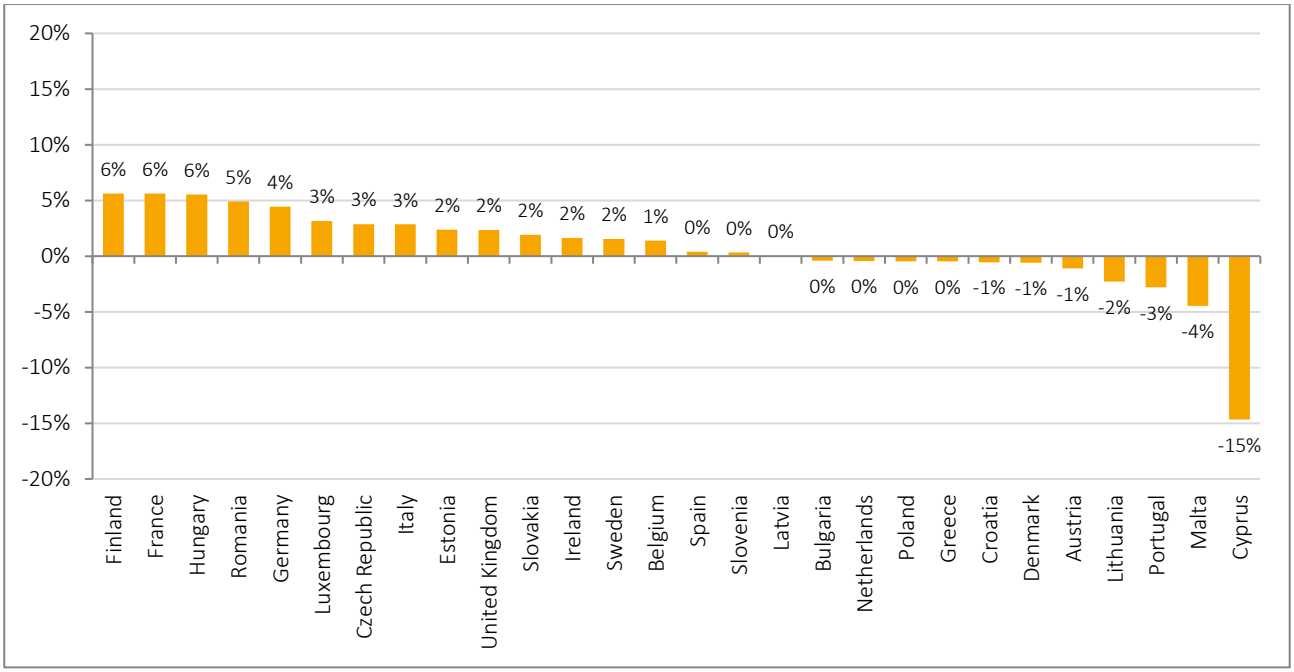
As can be seen above, whilst the off-trade drives the beer consumption by volume, the on-trade is a significant driver of the added value, government revenues (especially Value Added Tax and employee taxes) and employment (nearly 1.7 million). Consumers pay higher prices in the on-trade in return for service from bar staff, a place to socialise, the ambience and other qualities of the venue. This added value is reflected in the premium payable in on-trade prices (with higher value added this implies a higher impact of Value Added Tax in this market compared to the off-trade). The significant number of hospitality jobs supported by the beer sector also results in significant employees' taxes. Changes in on-trade beer consumption, positive or negative, therefore have a disproportionate impact on the contribution by the beer sector.

There is a generalised trend away from on-trade consumption (this can be seen beyond the beverages sector as consumers increasingly order food and drinks to take away and enjoy at home). This trend is captured for the beer sector in Figure 5.4 above which illustrates the steady growth of the off-trade and the declining sales in the on-trade.

However, the aggregate figures hide some differences across countries. The consumption in the off-trade market has increased in most countries. Finland, France, Hungary, Romania, Germany, Luxembourg, Czech Republic, and Italy, have all experienced a shift towards spending more in the supermarkets and stores, with changes in the shares of between 3 and 6% points of share (implying an equivalent loss in the on-trade

markets). However, there are some countries (Croatia, Denmark, Austria, Lithuania, Portugal, Malta, and Cyprus), where the retail sector is losing market share (Figure 7.6).

Figure 7.6: Change in consumption patterns (difference off-trade market shares 2015-18)



Source: Survey of National Associations.

The experience of the national brewing associations confirm the findings in this report that the impact of any reduction in beer sales extends beyond the beer producers, affecting (sometimes significantly) the amount of jobs (mainly) in the hospitality sector, but also in the retail sector which depend on the sales of beer.

8 Government revenues

The most important taxes, in order of their share in the €44 billion total EU28 beer-related contribution to government revenues in 2018, were:

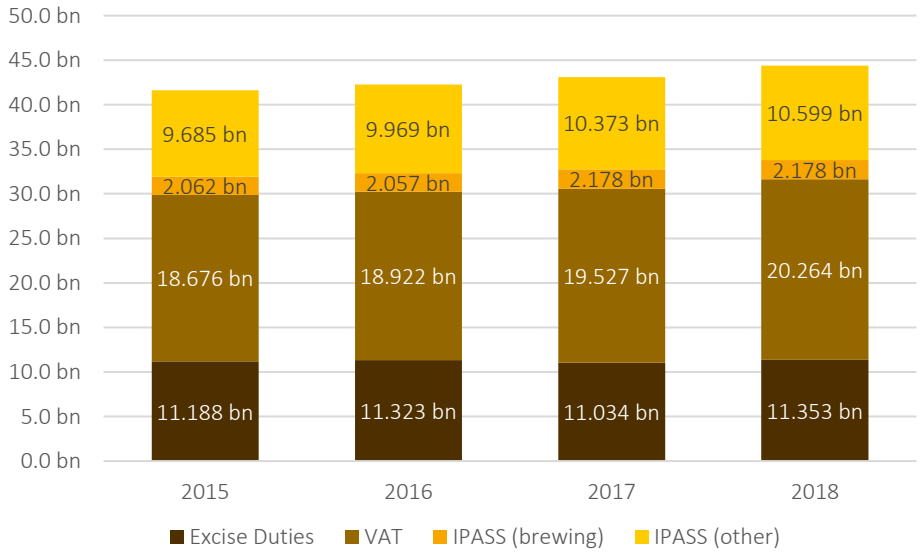
- VAT charged on beer sales – around €20 billion.
- Excise duties charged on beer sales – around €11 billion.
- Taxes on employment income related to the direct, upstream and downstream impacts of the European beer sector – over €12 billion.

This chapter looks at the trends and differences of these taxes and their distribution across countries. As governments are also responsible for subsidies and tax reliefs we have also provided evidence on implications of the major tax relief in Europe for small breweries. The chapter ends with some final remarks.

8.1 Recent trends

Looking at the past four years (2015-2018), we see a slightly increasing trend in the total revenues collected (Figure 8.1). These were approximately €41.6 billion in 2015 and reached approximately €44.3 billion by 2018. This accounts for an increase of 6.6%. Almost the whole increase (in absolute terms) is driven by an increase in the VAT revenues which increased by more than €1.5 billion (8.5%). VAT constitutes the largest share of total tax revenues for the beer sector collected across the whole EU. The other tax categories also saw an increase during that period but at different rates with excise duties increasing by approximately 1.5%, IPASS[10] (brewing) 5.6% and IPASS (other) 9.2%.

Figure 8.1: VAT and Excise Duties trend for the period 2015-2018 (billion €)



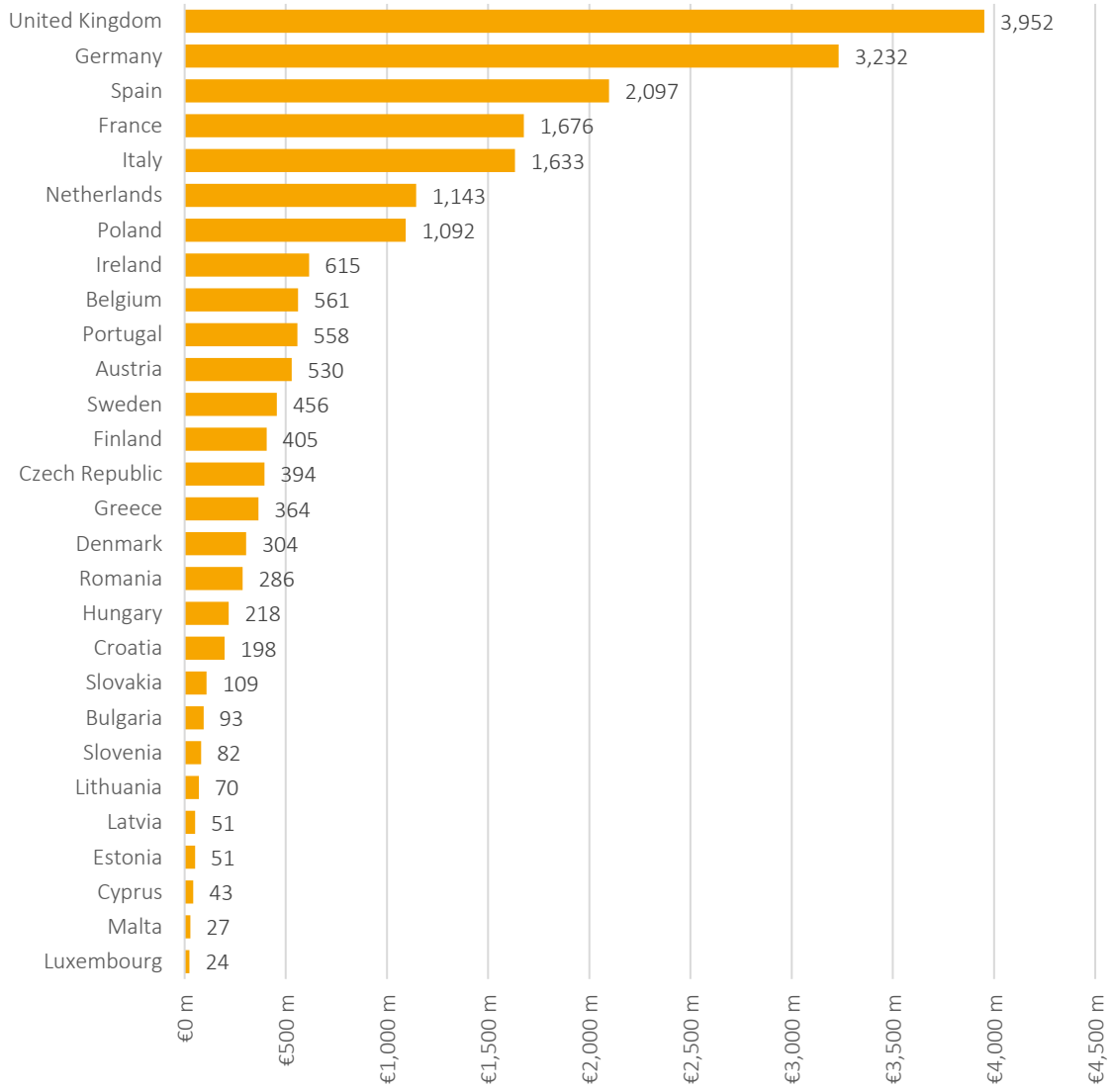
Source: The Brewers of Europe and calculations of this study.

[10] *Income taxes, payroll taxes and social security contributions together referred to as IPASS.*

8.2 VAT and excise revenues (distribution by country)

Looking at the 28 EU Member States in 2018, VAT revenues contributed by the beer sector have surpassed for the first time the €20 billion mark. United Kingdom alone accounts for almost a quarter of the total EU VAT revenues from beer. Germany, Spain, France and Italy are also large VAT contributors and, together with the UK, they account for more than half the total VAT revenues generated by the beer sector in the region (Figure 8.2).

Figure 8.2: Total VAT collected by country in 2018 (million €)

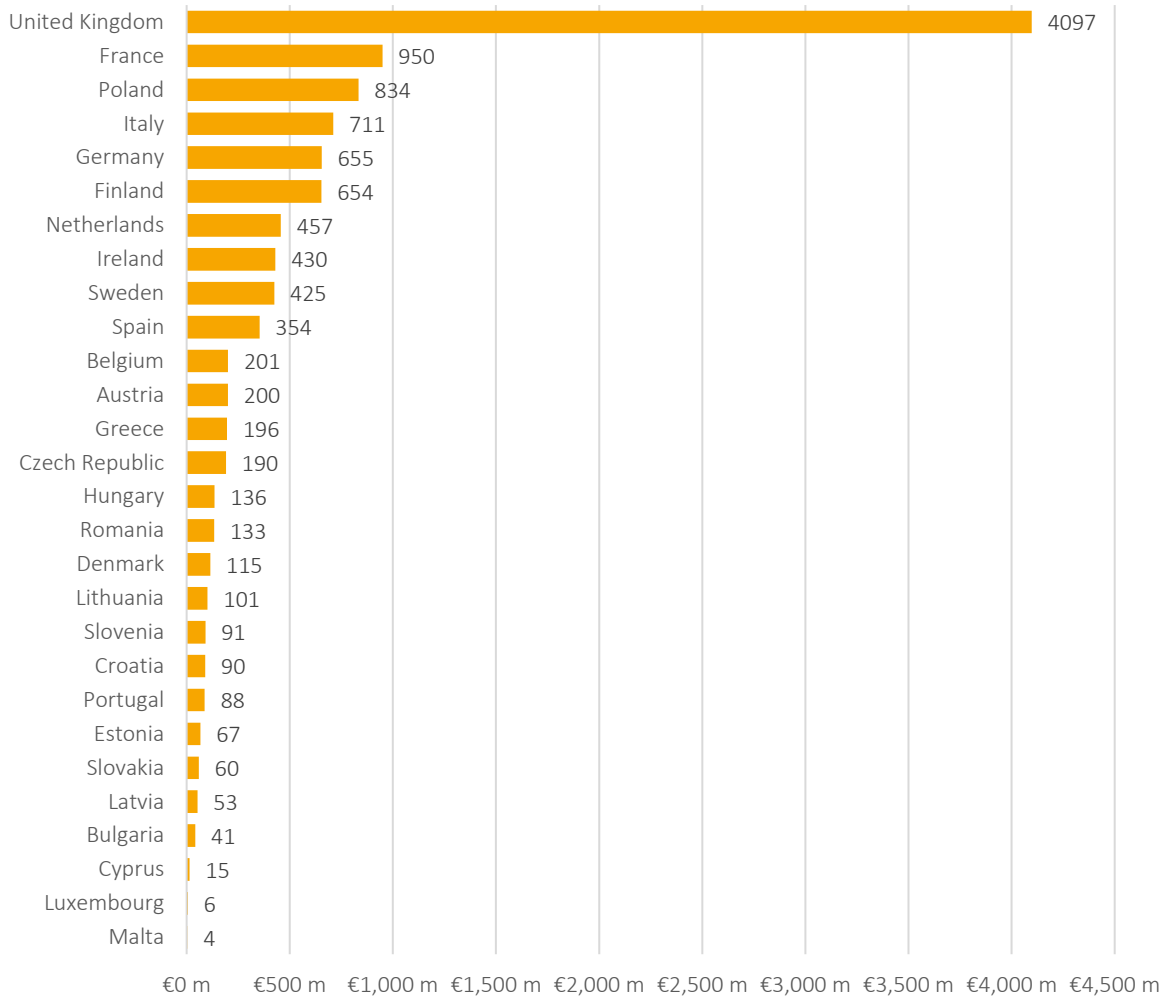


Source: Calculations of this study.

In 2018 almost all the countries saw an increase in tax revenues from beer compared to 2017. Malta saw a 30% increase and Estonia's and Croatia's revenues were larger by 19 and 11% respectively. Denmark, Slovenia and Finland saw tax revenue contributions from the beer sector fall with decreases of 2, 4, and 5% respectively.

Beer excise revenues across the region were approximately €11.4 billion for 2018. The UK alone accounted for almost half of that. Other countries with large beer excise revenues were France (close to €1 billion) and Poland (approximately €800 million) (Figure 8.3).

Figure 8.3: Total revenues from excise duty in 2018 (million €)



Source: The Brewers of Europe.

8.3 Reduced rates for independent small breweries

One of the most positive statistics from this new report edition is the increase in the number of breweries across Europe: there were around 10,300 active breweries operating in the EU28 in 2018 in comparison to around 9,100 in the previous year. These new businesses are mainly 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 to some degree been supported by the preferential excise duty rates available for small producers. Council Directive 92/83/EEC (on the harmonization of the structures of excise duties on alcohol and alcoholic beverages) allows Members States to apply reduced rates of duty to beer produced in small independent breweries (small breweries' relief, also known as SBR). 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 more than 50% below the standard national rate of excise duty.

The effects and functioning of the Directive have been analysed in a study by Economisti Associati et al (2018)[11]. The study finds that the thresholds properly allow small breweries to overcome diseconomies of scale and the costs of accessing the market, notwithstanding the very concentrated nature of the beer industry.

However, the SBR cannot be deemed to be a sufficient condition for the entrance of small breweries into the market (as similar trends have been observed in countries that did not adopt the reduced excise rates). It seems that some national characteristics such as the industry structure, the consumer demand, and the stability of the market also play relevant roles behind such an extended phenomenon.

8.4 Remarks on government revenues

Increases in excise duty rates will have a two-fold effect: they will firstly have a direct effect on consumption and tax revenues of beer and secondly affect the government revenues generated through the supply chain. For example, increasing excise duties can lead to a reduction in beer consumption, notably in the higher value on-trade. This will result in lower production, which will also imply lower demand for raw materials (e.g. barley and hops) and packaging (e.g. bottles and cans). This will also mean a reduction in employment in the agricultural and packaging industries and thus lower revenues from income taxes paid by the workers in those sectors. Employment will also be affected (negatively) in other sectors as for example lower demand for waiters and waitresses to serve drinks in the on-trade, meaning less labour tax revenues. There will also be a reduction in VAT paid.

The trend in many of the Member States is a shift in sales from on-trade to off-trade. This has a negative impact on employment in the sector due to the fact that on-trade sales are more labour intensive compared to off-trade. Therefore, the shift observed leads to less jobs in the on-trade and more in the off-trade but the extra jobs generated are not enough to fully substitute for the lost jobs in the on-trade.

With higher beer prices in the on-trade, which also reflects the higher value added in the hospitality sector, the above-mentioned shift towards higher off-trade sales of beer implies a loss of government revenues from both employment taxes and VAT from beer sales. As a result, it will be difficult to clearly see any effects of increases in excise duties, as any impact will be distorted by individuals shifting consumption from the on-trade to the off-trade.

In this chapter we have also seen that the wide-scale development of microbreweries has also been stimulated by preferential duty rates. Although it is not clear these are the only responsible for the growth trend, there is evidence that these have helped small breweries to overcome diseconomies of scale and the costs of accessing the market.

[11] *https://ec.europa.eu/taxation_customs/sites/taxation/files/study-on-dir83-vol-1.pdf*

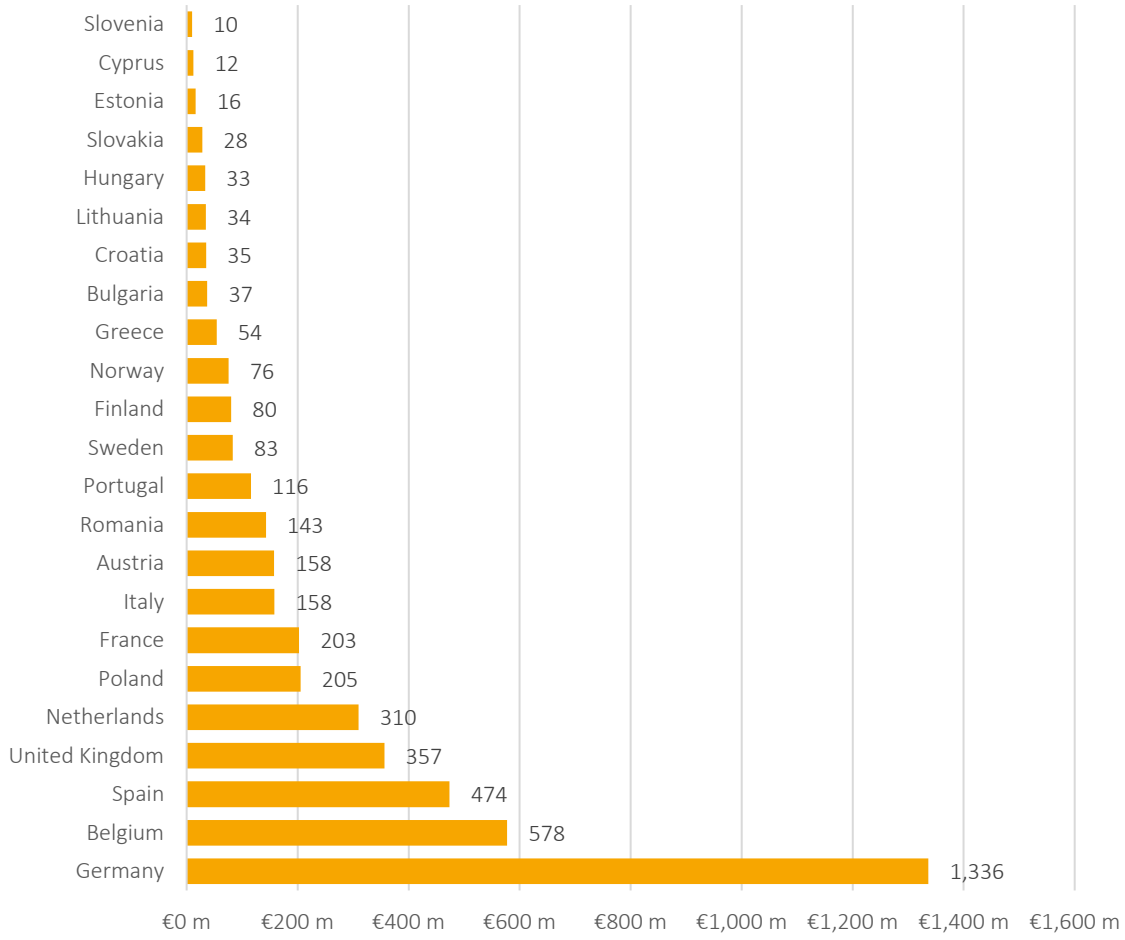
9 Beer impacts beyond economics

As well as delivering significant economic benefits, many companies and beer associations described the sector's commitment to other benefits for society. In this chapter we have looked at capital investment in Europe, investing in innovation and local communities. Brewers are also undertaking important initiatives relating to protection of water resources, reduction of CO_2 emissions, utilising secondary products, sustainable purchasing and in other areas, and these are described in the last part of the chapter.

9.1 Capital investment

Brewers across Europe have been stimulating valuable investment in their national economies in recent years. Figure 9.1 reports the total capital expenditure in the beer manufacturing sector for each country measured as the sum of gross investment in tangible goods, land, buildings, machinery and equipment. Not surprisingly, the bulk of expenditure is concentrated in the countries producing the largest volumes of beer. Germany, (over 9bn litres) invested between €1.2bn and €1.4bn each year between 2015 and 2017 (16% of total revenue of 2017). Other large producers, such as Poland (4.3bn litres), the UK (4.2bn litres), Spain (3.8bn litres), Netherlands (2.5bn litres), France (2.2bn litres), and Belgium (2bn litres, 2016) each invested over €150m annually, ranging between 5 and 18% of revenue. Some smaller producers, such as Lithuania (273m litres) and Slovakia (214m litres) have been investing more than €20m each year, with Lithuania's annual total increasing over the period and in 2017 accounting for 18% of revenue.

Figure 9.1: Capex expenditure, total and proportion of total turnover, all countries, 2017



Source: Eurostat. Capex series: sbs_na_ind_r2; NACE rev. 2 code: C11.05 (Manufacture of Beer). Capex is measured as the sum of gross investment in tangible goods, land, buildings (construction and alteration), and machinery and equipment. Turnover series sbs_na_ind_r2; NACE rev. 2 code: C11.05; "Turnover or gross premiums written - million euro". No turnover data for SI and NL. 2018 figures were not available at time of publication.

9.2 Investment in innovation and communities

Investment in the brewing sector extends beyond that in the capital stock to include flows for innovation purposes and contributions to the wider community. Here, we have summarised the survey responses we received to highlight some examples of activities to which brewers are committed.

Investment in innovation

Some examples showed high expenditure figures for innovation by individual companies (in the region of tens of Euro million, over the period 2015-2018). The objectives of some of these investments were the introduction of new craft brews, expanding product lines to include cider and stout, packaging innovations, and the development of new flavours. Many smaller and medium-sized brewers sought to place themselves at the forefront of this new product development. These comments support the wider findings of other parts of this report regarding the development of new products as a key characteristic of this market.

Investment in communities

The response to our survey highlighted that many brewing companies are enthusiastic supporters of their local community, investing in community endeavours at national and provincial levels, with significant financial contributions in some cases (running to tens of millions of Euros). Local community involvement was seen as important by both large producers and many smaller brewers.

Some examples of the support provided include:

- Grants provided to recreation parks and non-government organisations.
- Sponsorship of national and local sports teams.
- Scholarships provided to students at national universities.
- Charitable donations.
- Volunteering activities of company staff.

9.3 Other social objectives

For this study, we also asked brewing companies for details on their commitments to ensuring social responsibility and sustainable production. In what follows, we describe how the balance of responses shows such credible commitment and a comprehensive awareness among brewers of the social and environmental issues related to the production and consumption of beer. These cover the protection of scarce natural resources, the importance of implementing circular economy methods in production, and ensuring that the brewing sector shows responsibility along the length of the production chain.

Protection of water sources

As many as 17 of the 55 companies have reported on their extensive and successful efforts to preserve water resources, with most of the rest displaying commitments to the protection of water reserves for the future. This has been in the form of reducing water usage in beer production (maintaining "low consumption levels", using "28% less water" since 2011, and voluntary agreements with local governments to limit brewer water use) and in improving the efficiency of production processes through investment. In some cases, this has gone as far as investing in new plants (investing in a wastewater treatment plant) and the introduction of such technology as solar powered water purification systems.

The quality of local water reserves is also being improved by some brewers in Europe. Long term goals and joint projects with community partners seek to make this become reality (mentioned themes included: "by 2025, 100% of our communities in high-stress areas will have measurably improved water availability and quality" and "to advance in the treatment of wastewaters from the agro-food industry").

Reduction of CO_2 emissions

Brewing companies in Europe have been successfully committed to reducing greenhouse gas emissions, contributing to national and international goals. Many brewers have cut CO_2 emissions by more than 30% since 2008, whilst others have committed themselves to a transition towards 100% renewable energy generation by 2025. Brewing companies have achieved this through innovation by rerouting transport and delivery routes to minimise fuel consumption, recovering packaging waste more effectively for recycling purposes, and using different lighting and sources of energy ("using solar panels to produce electric energy", "replacing halogenic [lights] with LED lightning" and "using biogas from wastewater treatment plants").

Sustainable purchases (renewable energy and equipment)

As brewing companies have a significant impact in the multiple sectors in their supply chains, many have taken steps to ensure that inputs have smaller environmental footprints. Some have achieved this through investing in "green" fridges, power purchase agreements that specify the origin of energy resources, and purchasing locally. Many companies have adopted innovative solutions to their energy consumption by, for example, harnessing geothermic energy, solar power, and hydropower. Recycled content accounts for large proportions of glass and bottle packaging.

Responsible consumption

Promoting the responsible consumption of beer is a top priority of multiple brewers. Some have promoted it at gastronomy festivals, on interactive e-learning platforms, and through campaigns to prevent drink-driving.

E-learning provides a method of reaching young adults and servers of beer about the risks and fines related to breaking the law on serving alcohol to minors and tips how to deal with these situations when underage people request alcohol. Campaigns to increase "alcohol health literacy" combined with clear labelling are expected to promote responsible consumption by increasing the awareness of the drinking public. On occasion, some brewing companies have actively engaged with national police forces to encourage drivers to substitute alcohol for non-alcoholic beer varieties, of which there are plenty on offer.

Health and Safety

Our survey illustrates that all companies, from microbrewers to the large multinational brewing companies, are taking steps to minimise safety concerns in the production of beer. Many companies have managed to sustain reductions in the number of injuries for multiple years. Behavioural safety programmes rolled-out to employees fit within a broader scheme to achieve an "interdependent safety culture". Fatalities are exceedingly rare along the length of the beer production chain.

Health and safety is addressed by brewing companies in-step with their commitments to reducing reliance on fossil fuels. For example, monitoring CO_2 extraction alongside total emissions can help to ensure that employees are not exposed to hazardous greenhouse gas fumes.

9.4 Employment mix

Over the last four years, European brewers have generally exhibited promising trends in their male-female employment mix. Despite the scattered data on employment breakdowns at brewing companies, the female share of employment shows encouraging results, standing at as much as 38% for one brewer (other percentages were in the order of 23% but there were also one-digit figures reported). In one company, up to a third of female employees can be found on the production line in any one year (as opposed to solely being represented in management or other administrative positions). Although the results are based on a small sample and it is difficult to draw general inferences, some of the responses show that the brewing sector is moving towards encouraging employment in all stages of production.

Employment diversity is also present in smaller breweries. In the small sample of brewing companies that provided their employment breakdown, the brewing sector finished the period with women representing an average 23% of total employment. The results are probably even more accentuated in micro-breweries: given their small size, and sometimes their origins and family-focused production, these tend to be even more populated by women than the rest (the one microbrewer that provided an employment breakdown displayed equal employment shares of men and women).

9.5 Concluding remarks

Given the references the sector makes highlighting their commitment to wider benefits for society, in this chapter we investigated the brewers' efforts in areas as diverse as: capital investment, innovation and local communities, other social objectives and progress toward the employment mix of the sector. The results confirm some of the messages being put forward by the industry and its stakeholders.

As for the capital investment, it is easy to see how the sector is actively investing, reaching very high absolute figures but also in relative terms (in cases the sector invests as much as 16 or even 18% of the total turnover).

Our analysis on the remaining indicators has been based on the responses received from the individual brewers' questionnaires. It is difficult to draw inferences that might apply to the whole sector but what we have found is that social objectives are in the agenda of many brewers and there are significant efforts towards making the sector more sustainable and environmentally more efficient. The role of brewers in shifting the employment mix is also very varied but there are signs of making the workplace more inclusive for women (one area where this is probably true is in microbreweries when they run as part of a family business or being set up in the middle of a community).

Annex: Sources and methodology

In estimating the size and economic impact of the European beer sector, we balanced three priorities: (1) Maximising the accuracy and reliability of the estimates; (2) Maximising the scope of the data available, by minimising the administrative burden for the individual breweries and national associations providing data; and (3) 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 the 28 EU Member States throughout 2014-2018 for the purposes of compiling our report into the European contribution of the beer sector, plus Norway, Switzerland and Turkey for the individual country element of the report.

There are three types of impacts estimated:

- Direct impacts: these are the impacts of the beer sector itself (employment or value added aggregated from all the brewers in the sector).
- Supply impacts: these refer to the sectors supplying inputs to the brewing industry (these might include items as diverse as the raw agricultural input or the packaging and machinery used in the production of the beer).
- Impacts in the retail and hospitality sectors (also referred to as off- and on-trade markets): these include the different retail stores or supermarkets where beer can be purchased, and the distribution channels including hotels or restaurants where beer is served to consumers.

We collected data from four principle sources, which were used to perform our calculations and estimates. These are described below.

Statistical agencies and 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). We sourced data on 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.

One of the challenges of this new edition of the report has been related to the low availability of data from the individual brewers' questionnaires (this is described further below). Although some respondents made a huge effort to provide the different data in the formats we specified, in many instances such data were not enough to be representative of the entire sector in each country. To avoid any potential misrepresentation of the estimates generated in this year's report, the figures for value added and purchases of the brewing sector are sourced from Eurostat too (series "Value added at factor cost - million euro" and "Total purchases of goods and services - million euro" were used). These have been collected for the category "C11.05 Manufacture of beer", which is a good delimitation of the sector.[12]

[12] *When data were missing we constructed a VA using a multiplier (production–VA) estimated from neighbouring or similar countries [in brackets]: Czech Republic [Slovakia]; Denmark [average Germany and Sweden]; Ireland [average Germany, Belgium and the Netherlands. Latvia [Lithuania]; Luxembourg [Germany] Malta [Italy] Netherlands [Belgium]; Slovenia [Croatia]; Switzerland [Germany]; and Turkey [Romania]. Finally, the UK 2017 figure was corrected using a previous year multiplier (Eurostat reports low*

In its data on economic activity by sector, the structural business statistics, Eurostat's breakdown 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 are consistent with the sectors used in the previous report (and differ, only slightly with earlier reports which were based on the earlier NACE Rev 1.1 nomenclature). The only difference with previous editions is the use of an average of two sectors to represent the off-trade sector (these are "G47.25: Retail sale of beverages in specialised stores" and "G47.11 Retail sale in non-specialised stores with food, beverages or tobacco predominating", which we believe is more representative given sector trends).

Table A.1: NACE Rev 2 sectors used

Industry	Sector used
Agriculture	A: Agriculture
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
Other	Average of Packaging and Media and marketing.
On-trade sale	I56.3: Beverage serving activities
Off-trade sale	G47.25: Retail sale of beverages in specialised stores G47.11 Retail sale in non-specialised stores with food, beverages or tobacco predominating

To the extent that data was not available for the years required, we used the most recent available year 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, in which case we used a higher-level sector aggregate or information from another country where the coefficients were similar in other sectors. In particular the following changes were made.

For on-trade ("I56.3 Beverage serving activities") the following changes were undertaken. Spike values for France were smoothed (using averages of pre- and post-values; although a change was observed in Denmark in 2016 this was left unchanged as the change was also observed in the other series). For Malta, Sweden and Turkey values of a higher heading were used ("I56 Food and beverage service activities"). Values were missing for Turkey in some years, so the most recent (2009) value was used.

values that we did not see in other data for this country). When data for purchases were missing we used a figure constructed using a multiplier (production – purchases) estimated from neighbouring countries (we used the same approach used for VA).

For off-trade (average of "G47.25: Retail sale of beverages in specialised stores" and "G47.11 Retail sale in non-specialised stores with food, beverages or tobacco predominating") the changes made related to correcting some spikes in the series (using averages of pre- and post-values). We used data from a higher division (G47.1 and G47.2) for Switzerland due to missing data (in G47.11 and G47.25).

Data on "Average personnel costs" were for missing Switzerland for both the on- and off-trade sectors, so the corresponding value for Finland was used as a suitable comparator.

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

The Brewers of Europe

In the elaboration of its 2019 Beer Trends publication, The Brewers of Europe has been collecting a wide range of indicators related to the beer industry. The database includes: Brewery demographics (Number of active breweries; Number of active brewing companies; Microbreweries); Total beer Production (Microbreweries production; Total alcohol-free, low and non-alcohol; Organic beer sales); Trade (Imports; Exports); Supplies (Packaging; Hop information; Malting information); Market indicators (Consumption; On-trade Off-trade consumption; Average consumer prices[13]; Consumption per capita; Total non-alcohol beer consumption); Government revenues from excise. Employment in persons (with male / female breakdowns provided for one country: Sweden).

National associations

This covered qualitative questions on the analysis of market trends and commentary on the country's experience with the Small Brewers' Relief (SBR).

Questionnaire to individual breweries

This covered the direct economic impacts of the sector in different countries. In comparison with previous years, information was requested at more specific and varied levels of detail.

The variables collected were related to production, employment in persons (male, female, and under 25), turnover, value-added, investment in capex, innovation, and communities, total purchases and share of inputs sourced by different sectors, broken down by domestic and non-domestic source (in the case of agricultural products, the non-EU origin was also recorded). Qualitative data, such as analysis of market trends and descriptions of brewers' contributions to communities were also requested and, in many cases, generously provided. Smaller brewers befitting form the SBR were also asked how the SBR has helped their companies, but this was not generally well answered.

As the responses only represented a sample for each market, and not the entire population of breweries, some variables were 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, and then used to fill gaps in the national brewers data series. Despite the transformations some of the values appeared inconsistent in comparison to similar countries and years. It is for this reason that we proceeded to use data

[13] *Where not provided in €, the price was converted using an exchange rate index from Eurostat. Where not provided at all, prices were estimated using a previous year's figure and a country-specific HICP inflation index from Eurostat.*

from Eurostat for value added and purchases. In comparison to some of the responses (and scale-transformations made) Eurostat data appeared consistent and hence were chosen for the analysis (this has been described previously). The only piece of information not available in Eurostat relates to the sectoral shares made by brewers, which is extremely valuable for calculating the shares upstream in the production chain. For this we relied entirely on the responses from the questionnaires. However, the data went through a careful process of checking and auditing. The values were checked across respondents and countries to reach figures perceived as representative of the industry.[14] It might be that the share of purchases we used contain some margin for error, however we estimate that the impacts on the final figures to be small, as any potential difference will come from the split into shares and not from the total brewers purchase value (as this is a total figure sourced from Eurostat).

It is important that the results are read with the above consideration in mind: that the total values are a good estimate but that the individual sector-specific impacts might be estimated with some inaccuracy.

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. For reference, "QIB" refers to the questionnaire of individual brewers, and "QNA" to questionnaire of national associations.

[14] Some data could not be used either because they contained significant number of missing values or because they did not contain production values. For some others were there were a few missing values, these were imputed using previous years' figures. For countries that contained no data, or countries that contained figures that were judged as not representative of the country (in comparison to values provided in previous years or in comparable countries across the EU) an EU median was used. Finally, for a few countries we observed some large values but these were kept unchanged.

Table A.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	= Eurostat
(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
(16) Share of non-domestic purchases, by industry	%	= 1 – (6) and QIB
(17) Non-domestic purchases, by industry	million Euro	= (3) * (4) * (16)
(18) Agricultural (ag) purchases, non-domestic	million Euro	= (4ag) * (16)
(19) Total agricultural purchases	million Euro	= (5ag) + (18)
(20) Agricultural (ag) purchases share, non-EU	%	QIB
(21) Agricultural purchases, non-EU	million Euro	= (19) * (20)

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

Table A.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 A.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 A.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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