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Analysis of the craft beer movement in Italy

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Summary

The purpose of this thesis is to describe the current state of the beer market in Italy with a qualitative and quantitative focus on craft breweries. Since it has been influencing the demand and setting new minimum quality levels, the Italian craft beer movement has become more important in recent years.

The first chapter analyses the concept of beer: its origin and how it has evolved over the centuries, the raw materials of which it is composed and its production process. Furthermore, this chapter provides a brief description of the differences in the production process between industrial and craft beer.

The second chapter begins with a general overview of the global beer market: some parameters (like market size, growth rates and trends) are provided. Furthermore, an in-depth analysis of three continents (and respective countries), where the largest amount of beer is produced, is carried out: Asia (China), America (USA) and Europe (United Kingdom), with an overview of their craft beer movements.

The third chapter focuses on the Italian beer market. It begins with an analysis of the Italian legislation and continues with a snapshot view of the sector. The displayed data and numbers help the reader to understand the market situation: production and consumption, imports and exports, main competitors, distribution channels and suppliers are taken into consideration.

The fourth chapter deals with an empirical analysis of a sample of brewing firms. It is based on the balance sheets, collected thanks to the AIDA (Analisi Informatizzata delle Aziende Italiane) database, and the information about production, taken from the book “Guida alle birre d’Italia 2019”. This chapter provides a better understanding of how healthy the industry is in terms of revenues, profitability ratios and partial productivity both of industrial and craft breweries. The last subchapter focuses on an econometric analysis performed on STATA (a statistical software package) that aims to estimate economies of scale of the market.

The fifth chapter shows the history, the products and the strategies of two important Italian breweries that have managed to emerge and reach a significant size, adopting completely different approaches: one focusing on innovation and vertical integration and the other choosing to be acquired by a multinational.

Abstract

The aim of this thesis is to examine the Italian beer market with an emphasis on the craft beer movement, to foster insight into market conditions through a qualitative and quantitative analysis, and to estimate the importance of economies of scale within this industry.

The empirical analysis has been carried out thanks to the data taken from the AIDA database and the "Guida alle birre d'Italia 2019" book, subsequently processed using the STATA software.

Finally, two case studies have been carried out on two craft beer companies that have managed to grow and effectively exploit economies of scale.

Index

1. The beer

1.1 Definition

Beer is one of the most widely consumed alcoholic drinks in the world. It is composed by a mix of water, yeast, hops and grain. The word “beer” comes from the old Germanic word “Beor”, probably derived from the Latin term, from the VI century, “biber” (beverage) or from the Proto-Germanic word “beuwoz”, linked to “beuwo” (barley).

There are many myths connected with the production of beer and evil spirits are usually involved in these. For example, “Goibniu”, a Celtic God and master goldsmith also known for his skill and craft in brewing the most vital of beers. According to legend, his brew was made with fruit from trees of the Otherworld, the realm of Celtic deities, and gave to its drinker invincibility in battle.

1.2 History

Nobody can exactly say where and when beer was firstly made.

Tradition says it was the ancient Sumerians who firstly invented the process to produce beer over 5000 years ago. For Sumerians, beer was so important that it had its own divinity: Ninkasi. On a board of 6000 years ago, known as “Hymn to Ninkasi” we can find the first beer recipe. Ancient Sumerians immersed cereals in water until the seed started to sprout, then the mixture had to dry out with the help of the sun, then they roasted it and obtained malt which was left to ferment in containers. Through this process they obtained beer. [1]

Traces of the presence of the drink can also be found in the Mediterranean area: many inhabitants, on their own, produced beer exploiting the fermentation of cereals.

After the fall of the Sumer Empire in 2000 BC, Mesopotamia became the land of the Babylonians, who inherited the culture and art of brewing beer. Beer was so important in Babylonian culture that it is mentioned in the very well known “Hammurabi code”, one of the more significant archaeological finds. This code brought together all the rules that were effective in the Empire; among these rules

subsisted a paragraph dedicated to the regulation of beer production and sale. It was even set up the death sentence for whom added water to the beer. This population produced at least 20 varieties. Including 8 of pure wheat, 8 of pure barley and 4 derived from a mixture of various cereals. At that time beer was turbid and unfiltered so it was drunk with a straw to avoid the bitter residues to settle on the lips. [2]

Then, the Egyptians kept on with the brewing tradition improving their technique and the product. Beer became the most widespread drink in ancient Egypt, so famous that scribes coined a new hieroglyph that indicated the "master brewer". Beer was present during all the life of ancient Egyptians: from the moment they were born to their death. Babies were weaned with a mixture of “zythum” (as beer was called in Egypt), water, honey and barley flour. Then, when they were older, they started drinking beer in moderation and were given a small amphora that established the maximum daily dose of allowed beer. This amphora followed them in death: as a matter of fact, it was placed inside their sarcophagus. The mummification process was preceded by a washing with beer, an evident purification symbol for the holy origin of the drink.

Again, other populations continued with the production of beer: the Greek and the Romans. In Greece, the beer, which was called barley wine, was usually consumed during the festivities in honor of the Goddess of the harvest and fertility, Demeter. In Italy Etruscans started to produce beer (called “pevakh”) and afterwards they passed on their beer culture to Romans. Nevertheless, Romans considered beer a barbaric drink and preferred wine over it. However, beer continued to be produced in the other territories of the Empire where it was difficult to cultivate the vines and get wine.

Beer was mostly brewed in Nordic European regions because low ambient temperatures were more suitable to the beer production. The oldest proof of beer brewing on German territory dates back to the 800 BC and consists of a beer amphora found in Bavaria. In Nordic territories beer became an everyday life product: it was no longer considered exclusively a holy product, often present in

sacrificial rites, actually it took space on most of the tables of the ancient Germanics. Beer became an essential part of the alimentation of Celtic people settled in Gaul, Britain and Ireland.

Beer was the main beverage in the Middle Age thanks to the monasteries. The different orders, most of all the Benedictine, Cistercian and Franciscan ones, used various natural substances to spice up the drink, including rosemary, bay leaves, sage, ginger and finally hops. This last ingredient in particular was introduced presumably by the monks of the convent of San Gallo in Switzerland and brought the production of beer to a decisive qualitative leap.

In 1516 was established in Bavaria the "German Beer Purity Law" (the “Reinheitsgebot”) by Wilhelm IV and Ludwig X, dukes of Bavaria. This edict consists in a series of regulations limiting the ingredients which could be used for the beer production in Germany and the states of the former Holy Roman Empire, admitting only barley malt, hops and water as ingredients for the production of beer. At the time, the use of yeast was unknown; fermentation was still a random process.

During the Industrial Revolution, four inventions helped the development of the brewing process: James Watt's steam engine and Carl von Linde's artificial refrigeration, Fahrenheit thermometer and the hydrometer, which allowed the brewer to keep under control things such as the temperature and the sugary density of malt extract.

Previously beer was maintained at its right temperature using large blocks of ice or cold and deep cells. Linde’s artificial refrigeration allowed to keep beer at the 4 - 10 degrees centigrade necessary to produce a good lager.

During the second half of the nineteenth century a Danish scholar, Christian Hansen, discovered low fermentation yeast and that the reason why so much beer turned sour was the joint presence of different yeast strains. He noted that not all yeasts were suitable for beer fermentation. Only some of these, especially the pure ones, allow the beer to ferment without problems. During 1883, Hansen isolated a

single yeast particle and subsequently succeeded in reproducing the microorganisms in an artificial culture, increasing its purity and perfecting the taste. Following these specific studies on yeast, he gave life to pure colonies and the first low fermentation yeast: the Saccharomyces Carlsbergensis.

The technique and the implants, although they expanded their productive capacity, remained substantially unchanged until the second half of the twentieth century: in 1953 the New Zealander Coutts developed the technique of continuous fermentation in sealed canisters, under pressure and protected from the air.

The successive advances in refrigeration systems, in logistics and in marketing have allowed the development of a global market, which today allows the consumers to enjoy a range of very different beers.

1.3 Raw materials

Beer is an alcoholic beverage obtained through the fermentation of a must made of malted cereals (mainly barley but also wheat, corn and rice), flavored and made bitter by hops.

To make a beer, 4 ingredients are enough:

- water;
- cereals;
- yeast;
- hops.

1.3.1 Water

Water is probably the most important ingredient for beer: as a matter of fact, beer is mainly composed of water (90%), therefore it can greatly influence its final taste. In general, brewing water should be clean and odor-free. The chemical composition of water does not only directly affect the taste of the drink, but it also acts significantly on the series of biochemical reactions that take place during the manufacturing process between water and all the other ingredients used.

Water hardness is one of the most important parameters to be evaluated in beer production. This value indicates the quantity of minerals dissolved in water and is measured in French degrees (°f). The higher the hardness value of a water is, the more it will be defined as "hard"; vice versa waters with low values of hardness are called "sweet".

Another important parameter is the pH level of the water, which is the scale of its level of acidity or basicity, i.e. the scale used to specify how acidic or basic it is. By convention, the pH of aqueous solutions takes values between 0 (maximum acidity) and 14 (maximum basicity). For beer, a good average would be 5.5 pH.

If it is true that the quality of the water affects the taste of beer, it is equally true that to produce beer according to a certain style, it is necessary to have the right type of water available. But nowadays the location of the brewery near the best springs is no longer decisive for the characterization of the production, because brewers have the chemical and technological knowledge to treat the water and make it suitable for the type of production chosen.

1.3.2 Cereals

Since they represent the basis of human nutrition, and not only the basis of beer production, cereals have always been very important. They are rich in carbohydrates, great sources of energy and they are one of the primary foods in both rich and poor countries. In ancient times beer was called "liquid bread", a definition that stated the importance that cereals played at that time. In fact, it was so laden with nutrients that it contributed to the daily intake of carbohydrates.

Beer can be made of different types of cereals. The most used of which is barley because it is easily growable in all climates and its grain is rich in enzymes; in addition, his peels are usefully employed during malting and filtration process of the must. Other cereals are also used in the production of beer are: wheat, millet, spelled, corn and rice.

1.3.3 Yeast

Beer, just like wine, must ferment to turn from must into the final product that everyone knows well. Yeast is a single-celled organism which, by reproducing itself, contributes to the fermentation of beer.

It was the 1876 when the French microbiologist Louis Pasteur isolated the yeast Saccharomyces Cerevisiae for the first time. Before his discovery, little or nothing was known about the fermentation process, although it had been used for thousands of years. Before this incredible finding, beer fermentation took place spontaneously thanks to the yeasts present in the surrounding environment.

Yeast develops into must "feeding" on the present sugar and returning ethanol and carbon dioxide. This process precisely explains why during the fermentation the sugar content of the must gradually diminishes in favor of the presence of alcohol.

Generally, two kind of yeast are used in beer production: Saccharomyces Cerevisiae (top fermenting yeast) and Saccharomyces Pastorianus (bottom fermenting yeast). Top yeasts rise on the surface of the must during fermentation and tend to produce the best aromatic profile when they are activated around 20 ° C, whereas for low fermentation yeasts are preferred working temperatures around 10 ° C and they usually operate on the bottom of the must.

1.3.4 Hops

“So what are hops? As far as beer is concerned, what we call “hops” are actually just the cone-shaped flowers of the female hop plant, aka Humulus lupulus” [3]. This plant is diffused in territories with a moderate climate. In ancient Egypt hops were well known for their therapeutic, digestive, relaxing and soothing properties, but the first hop crops date back to the 9th century in Germany.

Humulus lupulus (the Latin word for hop) is a plant easy to grow, tenacious and resistant. For what concerns beer production, it manages to perfectly contrast the excessive sweetness of the must. Aroma and flavor are fundamental, but its importance in beer production goes beyond that. Hops are known to be antiseptic and endowed with many conservative properties; moreover, by coagulating, they

stimulate the elimination of unwanted malt proteins, have a considerable foam promoting effect and extend the permanence of the perfume.

This plant has also beneficial properties for health: it is considered a digestive essence, useful as a bitter tonic and to alleviate digestive disorders of nervous origin. It is also helpful in case of insomnia and nervousness, thanks to his sedative properties.

Hops give a typically bitter taste to the beer. The most accurate method for quantifying the bitterness is the International Bittering Unit (IBU). The IBU is an international scale that measures the concentration of isomerized and oxidized alpha acids present in the finished beer, and is expressed in milligrams per liter, or in parts per million (ppm).

IBU is measured on a scale between zero and infinity but almost all beers have a measured IBU from 5 to 120 (from low bitterness to high). High level of IBU are not always associated with high perceived bitterness because in the perception of taste other components come into play. So if a beer is very malty (sweet), the bitter part will be less evident even with a very high IBU value.

Despite their flavoring and bittering properties, hops can be used in combination with other flavoring substances. Thanks to the following additional ingredients beers acquire distinctive characteristics. The most used flavorings are: fruit, honey, caramel, tobacco, hemp and rosemary.

1.4 Types of beer

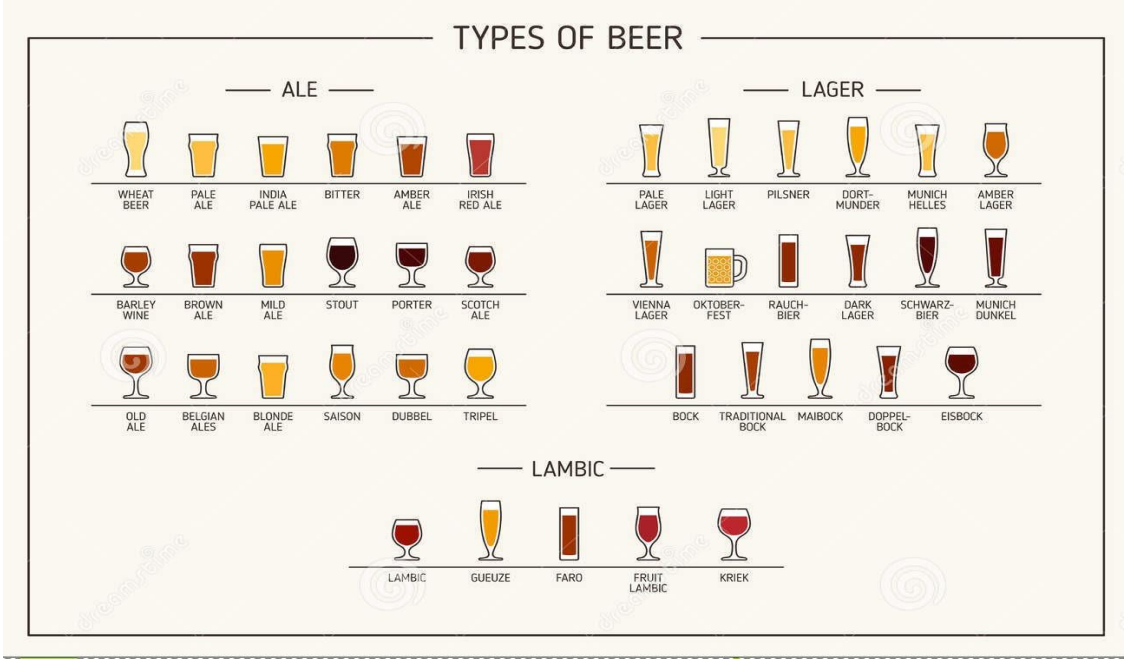
The definition of beer is generic and encompasses various types of beer, which differ in the type of fermentation that the must undergoes. Among the various types of beer, it is possible to identify many sub-categories, called styles, depending on the geographical area of production, malt or yeast used and other peculiar characteristics that the product possesses.

There are three main types of beer, which differ on the basis of the fermentation temperature and the behavior of the fermentation yeasts.

In particular:

- high fermentation beer, called Ale;
- low fermentation beer, called Lager;
- Spontaneously fermented beer, called Lambic.

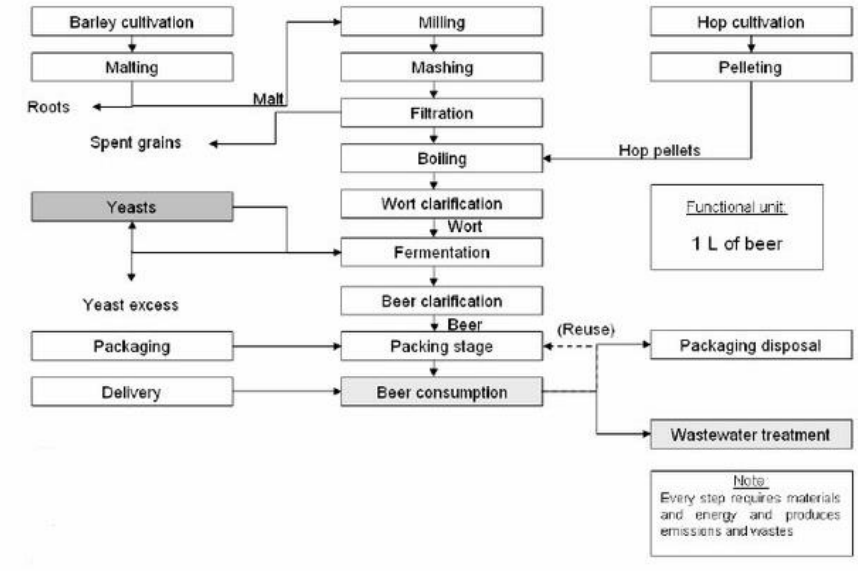
Figure 1.1 Types of beer scheme [4]



1.5 Productive process

The long production process that transforms afore mentioned materials into beer has not substantially changed over the centuries but has been refined thanks to scientific discoveries and technological innovations. Even today, starting from four simple and easily accessible elements such as water, cereals, yeast and hops it is possible to give life to one of the oldest drink in the world.

Figure 1.2 Beer life cycle scheme [5]



1.5.1 Malting

As we have said, water is the main ingredient of beer but malt is certainly the most characteristic.

Malt is the product obtained by malting fresh barley (or other cereals) in order to activate enzymes which are contained within barley seeds. Those enzymes transform the starch in fermentable sugars

Malting starts with an initial phase of maceration. The barley is immersed in water and macerated for a period from 2 to 4 days. When the seed reaches the desired humidity it is placed on germination grids and left to rest for another 1 weeks, during which the seeds begin to sprout and grow. As germination proceeds, enzymes transform proteins and carbohydrates and, as a consequence, they activate the proteins and make them useful for the brewing process.

For two days the green malt obtained is dried and toasted in special ovens with the aim of interrupting the germination process. The different temperatures at which this process can be carried out give rise to various types of malt of different colors, able to confer a particular fragrance to the finished product. After this operation, the grains become crunchy and take on a pleasant taste.

1.5.2 Mashing

“Mashing is the term given to the start of the brewing process, where crushed grains are mixed with water to form a porridge-like mixture called the mash.” [6]

Mash is brought to high temperatures; the purpose of this process is the reactivation of different types of enzymes: some of them split starch into simple sugars and others split proteins into peptides and amino acids.

The mixture can then be transferred to the filtration vat where the insoluble residues of the mixture are separated from the liquid which will continue for the next phase of processing.

The sweet fermentable liquid that is obtained (called “wort”) is immersed in a boiler and heated to the boiling point. The result of this phase is the evaporation of excess water and the sterilization and caramelization of the wort. The duration of the boiling varies depending on the selected type of beer, but it is rare to exceed two hours. In this phase the hop is added, which gives the characteristic bitter taste to the beer and characterizes its aroma.

1.5.3 Fermentation

Fermentation includes two well distinct phases: the main fermentation and the secondary one (maturation).

During the main phase the liquid is cooled and brought to suitable temperatures for the chosen type of fermentation: from 4 to 6 degrees for low fermentation and from 16 to 25 degrees for high fermentation. It is at this time that yeast comes into play; it transforms the sugars and the amino acids present in the must into alcohol, carbon dioxide and aromatic substances. As we said before, two large families of yeasts are used for this purpose: Saccaromyces Cerevisiae and Saccaromyces Carlsbergensis. The first one is used to produce high fermentation beer; in this case the action of the yeast is extremely rapid, and ends within three to four days. The Saccaromyces Carlsbergensis is used to produce low fermentation beer and its action can last up to two weeks. Exceptions to this rule are some beers which spontaneously ferment using a yeast present in the air.

The secondary fermentation (also called “maturation”) consists in placing the beer in large vats of maturation (generally of steel) at a temperature oscillating between 0 and 2 degrees, for a period of time from four to six weeks on average. In this phase the beer is saturated by carbon dioxide and acquires its characteristic and definitive taste, it is clarified and all its components are refined and stabilized.

1.5.4 Pasteurization and filtration

“The pasteurization of beer and in particular the flash pasteurization is a widely used technique for the biological product stabilization.” [7]

The process of pasteurization consists in bringing the beer for about 20 minutes to a temperature of 60 degrees in order to destroy any harmful microorganisms that may have entered the liquid during production. Pasteurization kills also yeasts, which, if placed in conditions unfavorable to their normal metabolism (i.e. if the beer is kept too warm) can cause unwanted fermentation.

Usually this phase is preceded by filtration: the liquid is subjected to progressive filtering operations which have the purpose of eliminating most of the unwanted substances in the beer and reducing the presence of contaminants.

1.5.5 Packaging

“The way we drink beer has certainly been changing, but the basic delivery systems are essentially the same. When you buy beer, it comes either bottled (typically 12 ounce bottles, though certain specialty beers also come in larger-format bottles) or canned. When you order a beer at a bar, your options might also include draft—beer poured straight into the glass from a tap line.” [8]

The optimal material to preserve the characteristics of the beer and protect it from the negative effects of light are dark, brown or green glass bottles. The metal cap, practical and safe, is the one that guarantees hermetic closure, but cork and ceramic are also used. A valid alternative is the can: aluminum offers economic advantages as bottling costs less and storage and transport are easier.

The keg is used above all by public exercises for the service on tap, which has a large number of passionate consumers. The beer packaged in this way (usually 25,

30 or 50 liters) is fragrant, but it is delicate and must be consumed in a short time (maximum three days) after opening the stem.

1.6 Difference between craft and industrial beer

As we have noted, not all beers are the same and it is possible to distinguish between craft and industrial ones. When we talk about craft beer, we mean a beverage prepared without the addition of preservatives that follows the traditional production method with a careful qualitative selection of the classic ingredients: water, yeast, barley malt and hops. The result is a beer neither pasteurized nor filtered, it evolves over time and it is never the same as another.

On the other hand, industrial beers are often produced with chemical additives, preservatives and with barley malt substitutes (rice and maize). This makes possible to reduce production costs but compromise the taste experience. The beer is pasteurized in order to guarantee a long shelf life and is produced by a standard process aimed at creating a beer with a taste that is always the same and recognizable by consumers.

“To make good beer you have to choose excellent-quality ingredients, apply passion and knowledge in equal parts to brewing it and take painstaking care of the entire process, from the grain fields to the tap from which that beer is pulled.” [9]

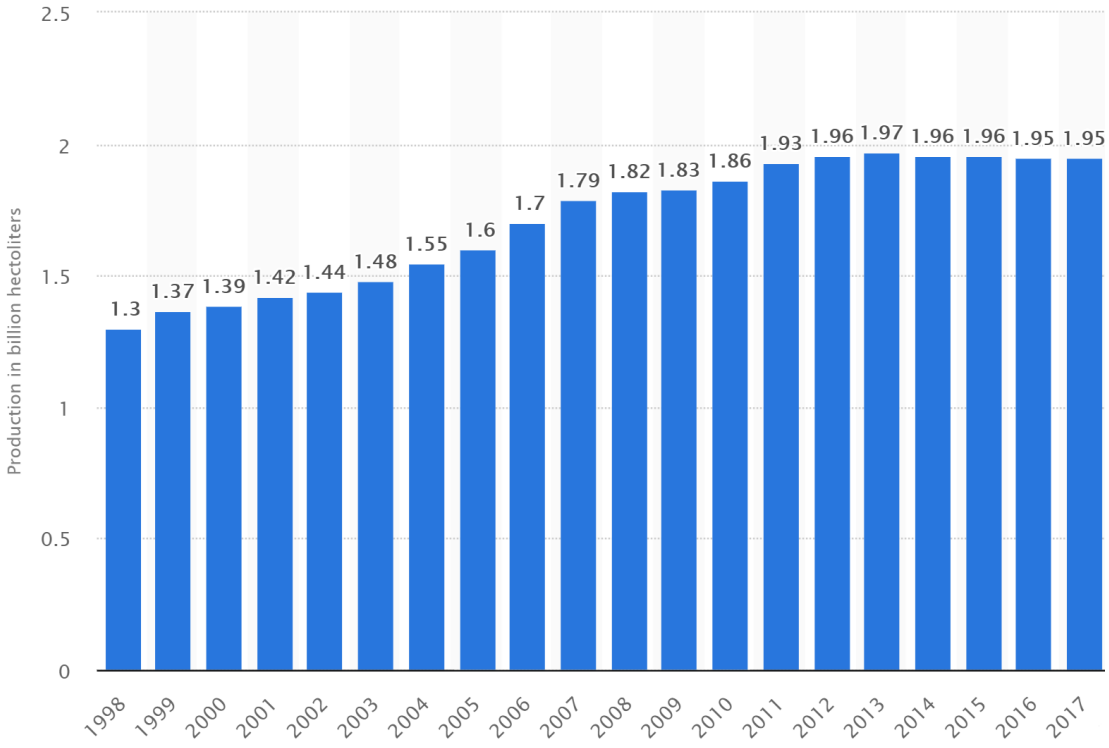
It must be admitted that in general craft beers are of greater quality than industrial ones but it is not always the case. Craft beers are born from the passion of their creator who should use fresh and high-quality raw materials that enhance the taste of the drink and make the consumer experience sensations impossible to find in industrial beers.

2. World Beer Market

The beginning of the 20th century was one of the darkest periods for the world beer market. With two World Wars, the Great Depression, the Temperance Movement and the American Prohibition, beer consumption and production were significantly reduced. Many breweries were forced to close due to the lack of raw materials and because labour and machinery were mainly employed in war. After the end of the Second World War, the reconstruction and relaunch of the world economy had positive repercussions for the beer market. From the '50s onwards beer production started to grow again and the industry became highly concentrated: mergers and acquisitions turned out to be useful for finding the necessary capital to build new (and more modern) beer brewing facilities.

The growth continued uninterrupted until 2013 when, also due to the economic crisis, the global beer production hovered around 1.95 billion hectolitres/year.

Figure 2.1 Beer production worldwide from 1998 to 2017 [10]



According to the data from the IWSR source for beverage alcohol trends [11], in 2018, the volume of worldwide sold spirits (through all channels) reached 248.4

billion litres, with a decrease of -1.6% compared to the previous year. However, the research company forecasts that consumption of alcohol will increase steadily over the next five years, reaching 256.5 billion litre in 2023 (+ 3% in the period). In terms of retail value, in 2018, the global alcohol market was just over 1 trillion dollars, a number that IWSR expects to increase by 7% by 2023, as consumers continue to trade products of superior quality.

A similar trend can be observed in the beer market: during 2018, the global beer market was valued $569.97 billion and it is expected to grow and reach USD 684.44 billion by 2023, registering a CAGR (Compound Annual Growth Rate) of 3.7% during the forecast period (2018 - 2023). [12]

The analysis carried out at the level of production by individual country points out that the major producers of beer during 2018 were China and USA. Together they exceed the production of the whole Europe with a total production of 658,486 thousand hectolitres which represents 31% of the global total.

Table 2.1 World beer production 2017/2018 [13]

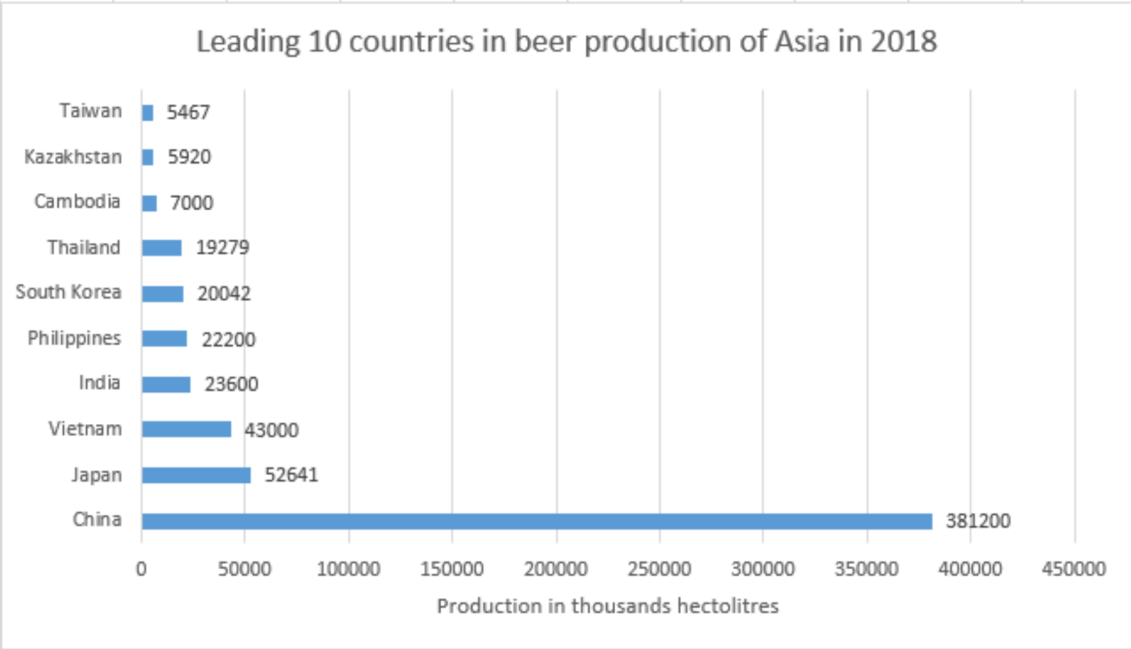
Region	2017	2018	Growth rate 2017-2018	Percentage of total
Europe	520,380	531,056	2%	28%
USA	218,336	214,607	-2%	11%
America (Excluding USA)	380,298	390,115	3%	20%
America Total	**598,634**	**604,722**	**1%**	**32%**
China	440,150	381,200	-13%	20%
Asia (Excluding China)	223,910	226,134	1%	12%
Asia Total	**664,060**	**607,334**	**-9%**	**32%**
Africa	138,613	140,937	2%	7%
Australia/Oceania	20,715	20,553	-1%	1%
Total	**1,942,402**	**1,904,602**	**-2%**	**100%**

Asia and America are the continents that produce the largest amount of beer in the world. It can be observed a significant decrease in production in the Chinese market that is bringing a reduction in the whole Asia continent (9% less in 2018 compared to 2017). A small reduction in production is also evident in the USA but it is offset by the growth of the South American market.

2.1 Asian Beer Market

"The consumption of beer has augmented in Asia-Pacific in recent years due to the rise in disposable income and an increase in consumer preferences for beer over other alcoholic beverages. Additionally, cultural changes and the adoption of western culture have influenced the perception of consumers toward alcoholic beverages, especially beer." [14]

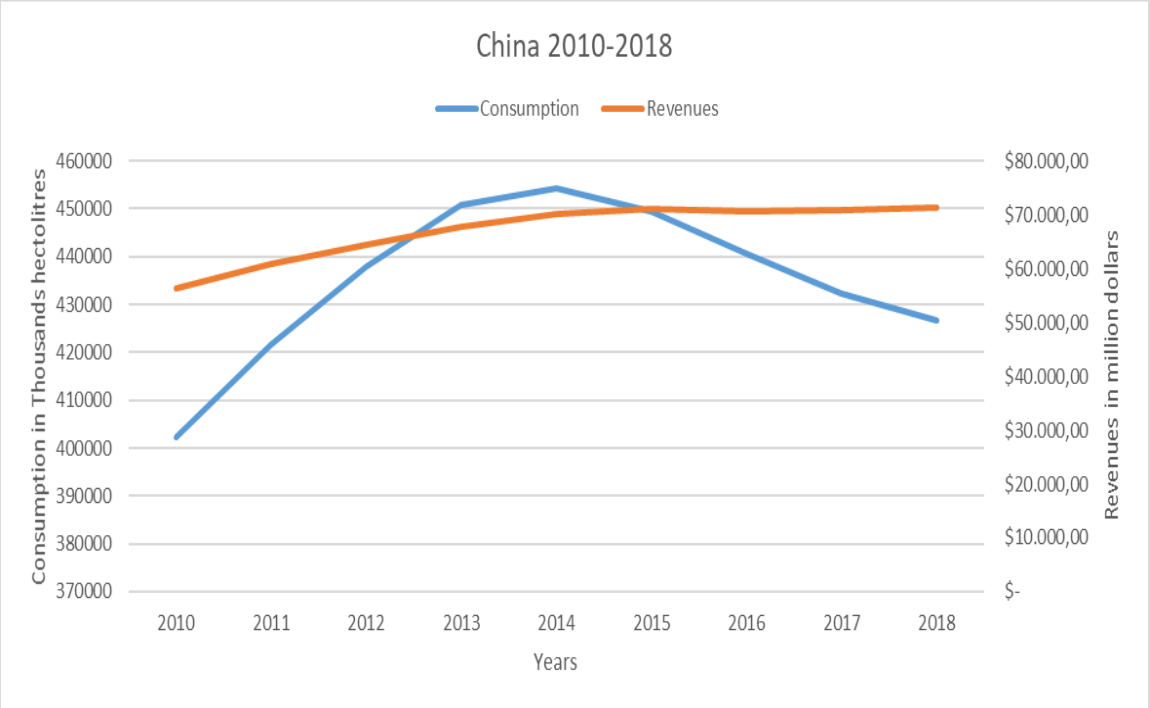
Figure 2.2 Leading 10 countries in beer production in Asia in 2018 [13]



In the beginning of the 21st century, China has become the nation with the highest consumption and production of beer in the world. "China Resources Snow Breweries", "Tsingtao Brewery" and "Yanjing Beer" are the largest producer of beer in the country.

Analysing the last 8 years it is possible to observe that after a period of growth (which has had a peak during 2014) the consumption in China is facing a year-on-year decrease. However, this is not accompanied by a similar trend as regards revenues.

Figure 2.3 Consumption and Revenues in the beer segment in China [12]



"Although the actual volume of beer consumed has decreased domestically the value of the total beer market has increased year on year. This can be mainly attributed to the movement of Chinese consumption between cheap Chinese domestically manufactured beers like Qingdao and Harbin to foreign imported beers like Hoegarden and La Chouffe." [15]

The most imported beers in China are the European ones, first come the German beers followed by Belgian and Dutch ones. In particular, drinkers from age 18 to 30 prefer foreign beers and thanks to the increasing level of wealth, they are consuming and paying more attention to high quality beers.

2.1.1 Craft beer among brew pubs and festivals in China

"It was 2008 when Dinghao Pan, founder of Beijing-based craft brewery Panda Brew, first came across the concept of craft beer while studying abroad in Canada. "I saw a trend for craft beer happening in North America," he shares. "When I came back to China, I found that there was almost no craft beer here, so I thought, "Well, maybe I can introduce this tasty beer to the Chinese market."" [16]

China, like Asia in general, does not have a tradition of craft beer. Even today, China's craft beer culture is still immature and its dissemination has primarily been driven by foreigners living and working abroad.

On the other hand, it is certain that something is moving: just few years ago craft breweries were really rare in China but nowadays it is possible to find them in many cities all over the country, and, if not proper craft breweries, at least places where you can drink imported beers from all over the world.

The brewpub represents the first concrete example of an approach between China and the world of craft beers. In Nanjing, Shanghai, Hangzhou, Xiamen there are some brew pubs with a strong American soul. Even if the clientele is typically Asian, the brewers and founders are generally Americans or Europeans.

On the other hand, the entrepreneurs and craft brewers are trying to stimulate the desire for a good craft beer in China by creating beer festivals. The Qingdao International Beer Festival (named also the "Asian Oktoberfest") is the largest beer festival in Asia with international breweries from all over the world.

2.1.2 Regulations

Beer regulations in China are mainly implemented through the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) and through the laws from the Ministry of Health (MOH).

"The regulations affect almost every aspect of the brewing industry, from sourcing to labelling, from brewing to bottling. The Standardization Administration of China (SAC) has compiled comprehensive national standards for the brewing industry to comply with, accompanied by detailed implementation procedures from AQSIQ." [17]

However, this regulatory system is only designed for industrial beer producers. In China an official definition of "craft breweries" does not exist. Since there is no differentiation between these two products, the regulations are taking into account only the industrially produced beer. For this reason, many problems for craft beer producers are arising.

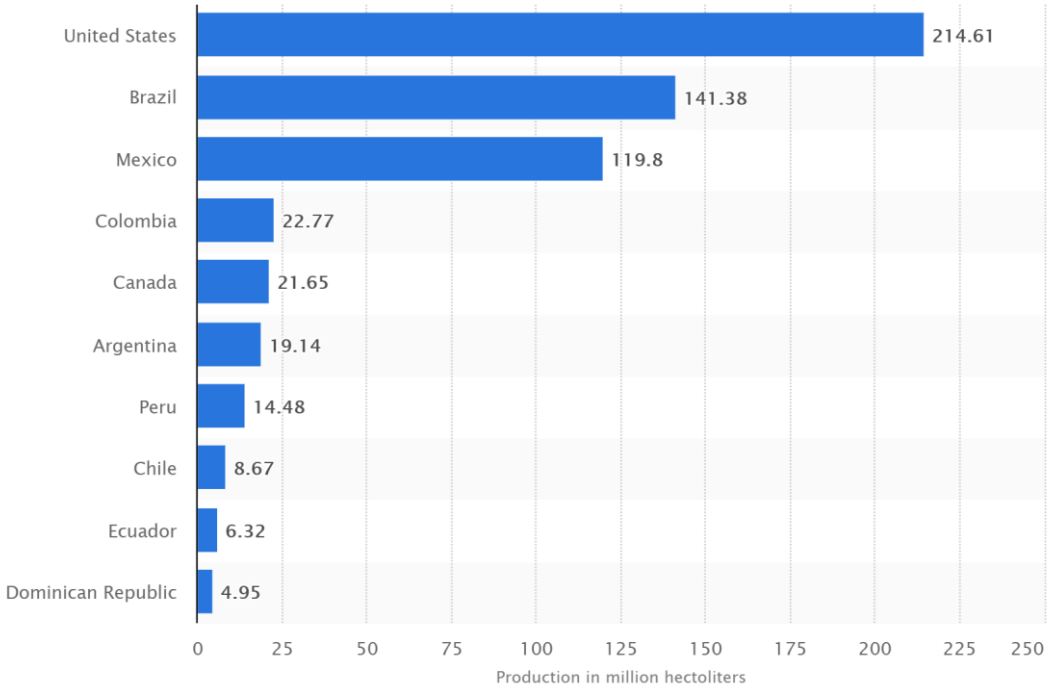
One of the requirements that is blocking the development of craft beer in China is that all the bottled beers produced must be filtered and pasteurized. This clashes with the philosophy of craft beer as a “live beverage” and obviously reduces the smell and taste of the final product. This regulation does not apply to draft beer and to imported beer if pasteurization and filtration are not mandatory in the countries where they were carried out.

Another major limitation is that a brewery is unable to acquire a license to distribute bottled beer if it cannot package at least 12,000 bottles/hour. It can be considered as a significant barrier to entry considering that usually a craft brewery starts as a microbrewery with a significantly lower production.

2.2 American Beer Market

The beer market of the American continent is experiencing two parallel realities: some states, such as the USA, are undergoing a lower growth and their market is going through a phase of maturity; on the other hand, Mexico, Colombia and other Latin states are encountering a moment of great development.

Figure 2.4 Leading 10 countries in beer production in America in 2018 [19]



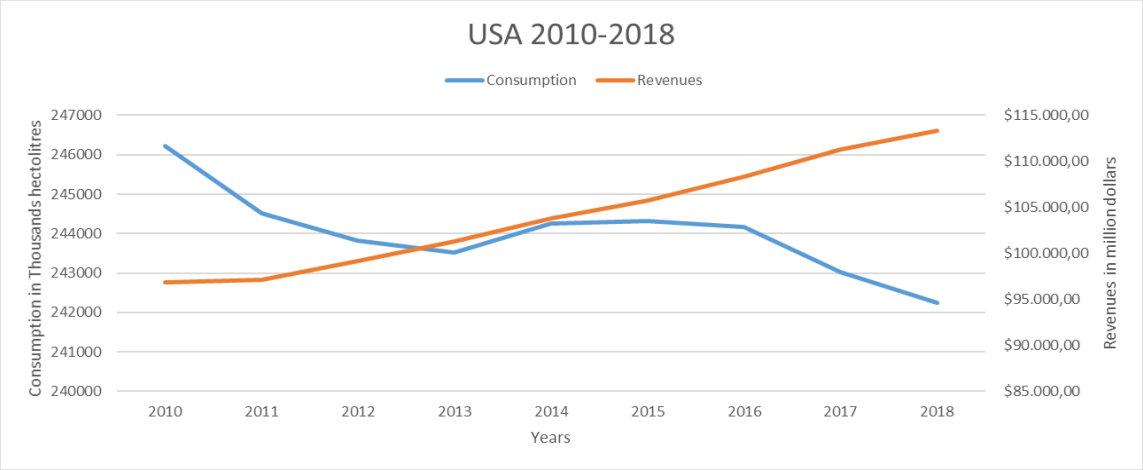
Latin America is one of the fastest-growing market for beer consumption, which accounts for about 20% of the global market share.

“According to World Health Organization (WHO), Latin American countries are the most heterogeneous on the planet in terms of average preferences for liquor consumption. The Caribbean, for example, is recognized for its rum production, while Chile and Argentina are recognized wine producers. But no Latin American country is specifically recognized for its brewing traditions; nonetheless, from 2008 to 2013, beer was the most important alcoholic beverage in the region, with approximately 50% of total production in the alcoholic beverages market.” [18]

For the third consecutive year, the consumption of alcoholic beverages in the USA is diminishing. The decline is mainly due, once again, to the decrease in beer consumption, given that those of wine and spirits have grown.

By contrast, it is possible to observe a continuous uninterrupted increase in revenues in the last 8 years.

Figure 2.5 Consumption and Revenues in the beer segment in USA [12]



As reported by the Brewers Association, overall U.S. beer volume sales decreased by 1% in 2018, whereas craft brewer sales continued to grow at a rate of 4% by volume, reaching 13.2% of the U.S. beer market by volume.

Retail dollar sales of craft increased 7%, up to $27.6 billion, and now account for more than 24% of the $114.2 billion U.S. beer market.

By contrast, imported beer sales grew at a rate of 3.6% by volume, reaching 18.4% of the U.S. beer market by volume

2.2.1 The U.S. brewing renaissance

The movement called “Renaissance Americana” was born in California where, since the end of the sixties, began to grow an attention towards quality food products and high-level wine production. This event helped the U. S. to recover the brewing tradition of special beers that wanted to link new realities and brewing styles with the tradition.

During 1965, Fritz Maytag acquired the Anchor Brewing Company in San Francisco and his Steam Beer rescued this company from bankruptcy. He decided to devote his life to creating more flavorful, traditional and quality beers.

What was being born was a combination of extremely traditional attitude towards materials and process, absolute basic old-fashioned brewing, but combined with modern food processing technology and equipment.

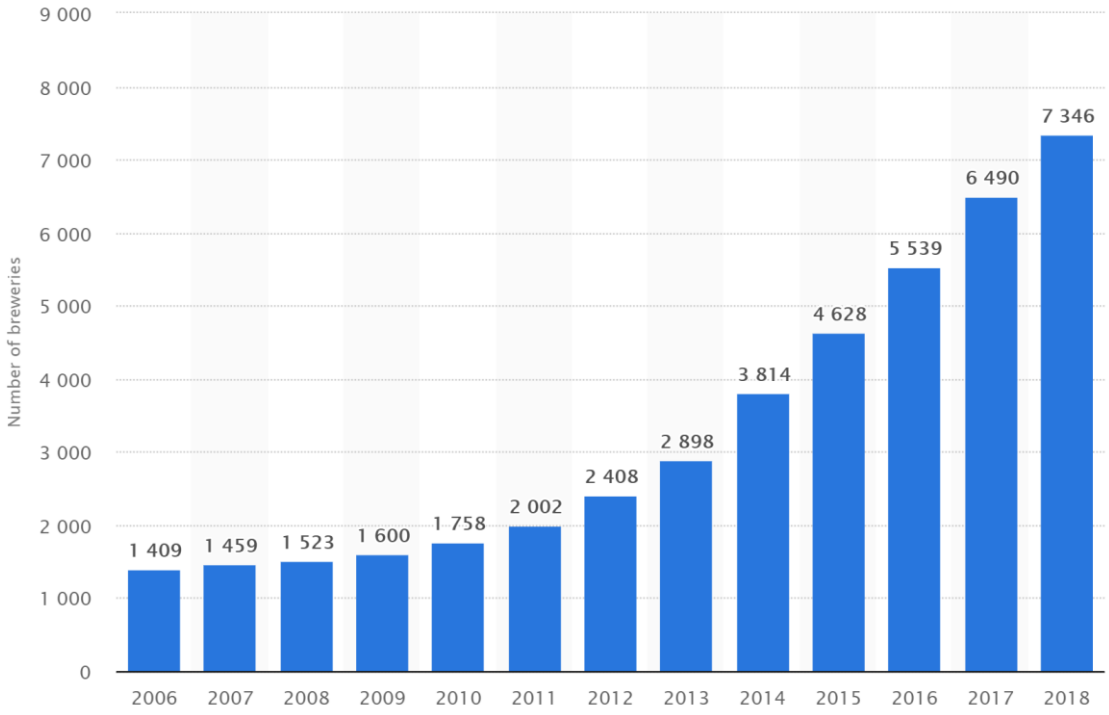
“On October 8, 1976, Jack McAuliffe filed incorporation papers with the State of California for what he called the New Albion Brewing Co. It was the first new brewery in the U.S. since the end of Prohibition in 1933, and it marked the true advent of what we know today as craft beer and all that comes with it.” [20]

Between 1980 and 1994, U.S. craft breweries increased from 8 to 537, ranging from an offer linked to classic European styles, from high to low fermentation, up to the new American beers, all with a strong product characterization. Small producers were free to experiment new styles in order to meet the consumer's taste or arouse their interest.

The real breakthrough was after 1994 i.e. the year of the beginning of the craft breweries boom. During those years the experimentation became more intense: for example hops very rich in unusual aromas began to be used and inserted into new beers such as Double IPA or Imperial IPA.

The U.S. movement is credited with having practically built from scratch what is currently the most interesting brewing panorama at a global level, both in terms of variety and experimentation, both in terms of vitality and innovation.

Figure 2.6 Number of operating craft breweries in the U.S. from 2006 to 2018[12]



2.2.2 Regulations

An U.S. craft brewer, as defined by the Brewers Association, is a small and independent brewer. It has an annual production of 6 million barrels of beer or less, and less than 25% of the craft brewery is owned or controlled by a beverage alcohol industry member that is not itself a craft brewer. [21]

U.S. brewers must respect multiple regulations at the federal, state and local levels of government.

Excise taxes, which are often thought of as a form of luxury tax, are paid when people purchase beer and are included in the price of the product. The federal tax code defines craft beer by the size of the production unit. Prior to 1978, the federal excise tax on beer was $9.00 per barrel. In 1978, growth in the craft brewing sector was encouraged through federal tax credits offered to brewers which produce less

than 2 million barrels, cutting their excise tax rate to $7 per barrel on the first 60,000 barrels and allowing them a far lower overall effective tax rate on all barrels up to 2 million. This was a windfall for craft brewers. Federal excise taxes are currently set at a rate of $18 per barrel for brewers of more than 2 million barrels and all beer importers. [22]

At the state level, brewers must comply with additional rules. Usually the first step is a license from the state. Regulators can deny this license for a number of subjective reasons, including a belief that the brewer is "physically unable to carry out the business of brewing," lacks "good moral character" or fails "to demonstrate financial responsibility." The license may even be refused if the state decides there are already enough brewers in the locality, and adding another would be detrimental to the area "interest, morals, safety or welfare." [23]

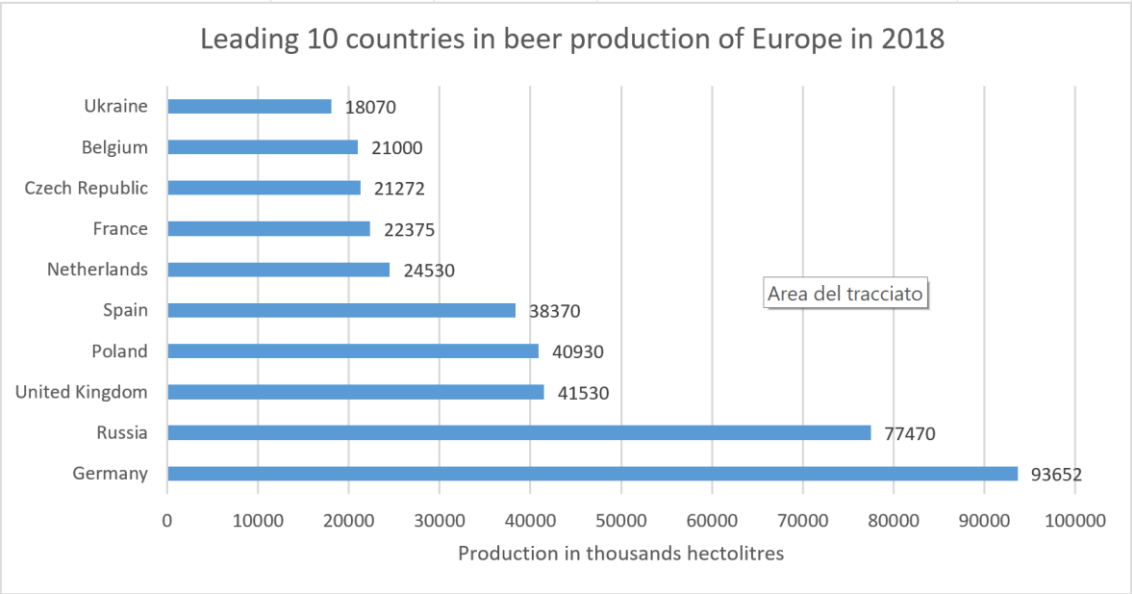
In addition to federal excise tax, which is applied to all states in the same way, state excise tax is also imposed and it differs between states.

2.3 European Beer Market

Following America and Asia, Europe is the third continent for beer production in the world.

"The beer cultures in the European countries vary extraordinarily, with different styles of beer and consumption habits that form an integral part of Europe heritage, alimentation, and culture. Change in lifestyles, consumption habits of alcoholic drinks, high disposable incomes, and popularity of beer among the younger generation are the major drivers of the Europe beer market."[24]

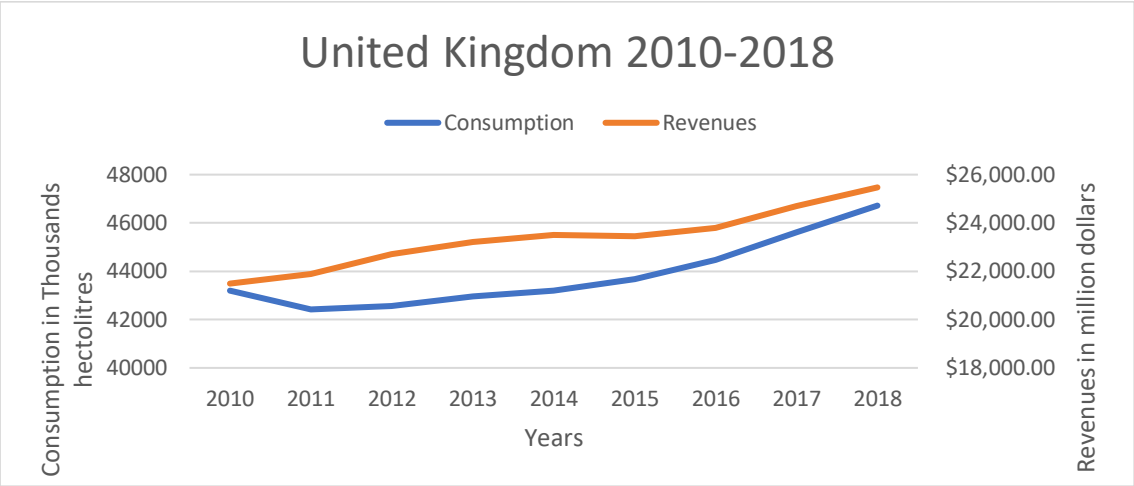
Figure 2.7 Leading 10 countries in beer production in Europe in 2018 [13]



Some countries of the old continent, where beer has always represented the largest share of alcohol consumed, have seen in the last ten years a consistent reduction in the production of beer. For example Germany and United Kingdom lost 2 million and 3.5 million hectoliters compared to 2010. A different reality is found, however, in those countries where there has never been a strong brewing culture: Spain and Poland, for example, show a 15% production growth rate between 2010 and 2018 while France has had a strong growth progression with a plus of 7 million hectoliters compared to 2010.

The United Kingdom is the third largest brewer in Europe. Beer consumption and revenues increased compared to 2010 with a growth rate of 8% and 19% respectively.

Figure 2.8 Consumption and Revenues in the beer segment in UK [12]



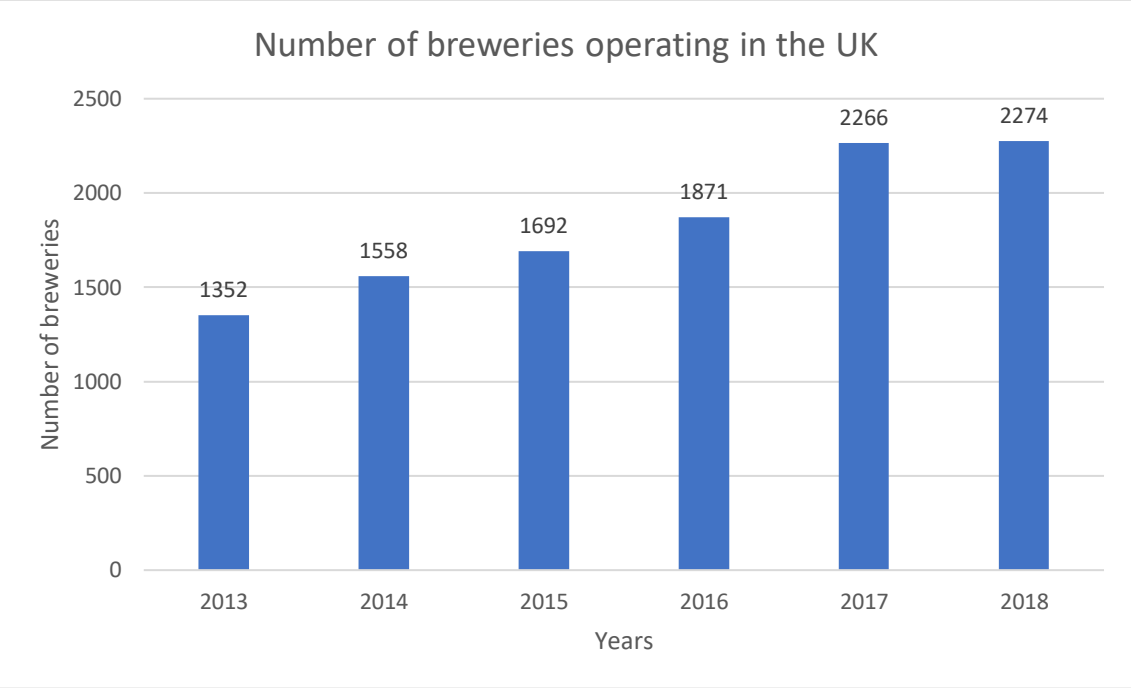
2.3.1 The UK's craft beer scene

If in Europe the most known and consumed beers are of industrial production, in the United Kingdom craft beers are preferred over the first ones, with their multiple styles and types, thanks also to the great passion of the British for the drink. In particular, UK is the country in Europe with the highest number of breweries, followed by Germany and France.

Within the beer sector as a whole, the craft typology remains one of the fastest growing categories. The consumer demand for premium products is key to craft category's on-going success. As the Millennial generation (currently aged 23-38) passed the torch to the Generation Z (currently aged under 22), all indications are that consumers will be drinking less, but better – choosing quality products such as local craft over mainstream beers. Mintel's consumer trends report also suggests that the younger consumers will increasingly value and will seek out 'genuine' products with a hand-crafted nature and trusted values – all areas where craft beer has a proven track record. [25]

After years of enormous growth, 2018 has seen a slowdown in the growth in number of breweries in UK: the market has become difficult for new entrants, therefore they need to create strong business models in order to survive. For their part, the multinational brewers are investing in the world of craft beer drawing strength from economies of scale and creating barriers to entry for new investors.

Figure 2.9 Number of breweries operating in the UK 2013-2018 [26]



2.3.2 Regulations

There is no official definition of craft brewery in the UK.

The Society of Independent Brewers (SIBA) tried to provide a definition for what a craft brewery is in the UK:

- it is brewing less than 200,000hl annually;
- it is truly an independent brewer who is a sole trader, a partnership, a limited company or a public company but is not a subsidiary of a larger firm with attendant or other subsidiary brewing interests;
- it has agreed to abide by SIBA's Food Safety & Quality standard.

"As well as being one of the leading brewing nations, UK drinkers also pay the most tax on their beer, stumping up almost 40% of all beer duty in Europe. The British Beer & Pub Association (BBPA) argues that this shows the growth potential the UK brewing sector has, and if taxation on beer in the UK was brought closer in line with that of Germany, it would see the sector grow even more. At present, beer duty in the UK on a pint of 5% ABV beer is 54 pence. In Germany, the duty on the same pint would be just five pence." [27]

In order to help small breweries to stay in the market without taking advantage of economies of scale of production, in 2002 the Government introduced the Small Brewer Relief (SBR).

“Small Breweries Relief”, or “SBR”, (sometimes known as progressive beer duty) allows small brewers to pay a more proportional rate of duty on their beer. This allows small professional brewing businesses to compete with global brewers who dominate the marketplace. A brewer up to 5,000 hectoliters (hl) of production per year pays 50% of the standard duty rate. 5,000 hl is around 880,000 pints of beer. Above 5,000 hl a year, the rate at which brewers pay on the standard duty rate tapers down until 60,000 hl – whereby the full standard duty rate is applied.” [25]

3. Italian Beer Market

Italy has never been a country known for beer production; on the other hand, it is probably the country with the largest and most diverse wine production in the world. The reasons can be found in its history, culture and climate: in particular the geological characteristics and the conformation of the territory make Italy the ideal place for the production of quality wines with much diversified characteristics. It is for this reason that the craft beer revolution is having a greater importance in Italy than in other countries.

The presence of Beer Industry in Italy started during the nineteenth century: the first and therefore oldest Italian brewery was Wührer in 1829, followed by Birra Peroni in 1846 and Birra Moretti in 1859. After the two World Wars, that sank the sector, there was a rediscovery and regrowth of the Italian beer market accompanied by a phenomena of homogenization of the product and concentration of the industry. This period reached its peak during the 1980s with the purchase campaign launched by multinational industrial groups that collected under the same properties brands with the most diverse history and provenance. All these great realities were however united by a common aspect that was considered one of the distinctive elements of successful beers: the lager style.

Industrial beers in Italy are today easy to drink, economical and standardized; at the same time few large industrial groups have contributed to the development and rationalization of production assets and the exploitation of economies of scale.

In contrast to this wave of homogenization, the craft beer movement has developed in Italy in recent years. Instead of standardization, the uniqueness and typical materials offered by the local territory are now enhanced. Nowadays the range of possibilities in the hands of consumers has grown dramatically, replacing the concept of small independent production with the impositions of multinationals.

3.1 Legislation

The initial legal definition of beer was declared by Law n. 1354 of 16/08/1962, modified by Law n. 329 of 16/7/1974, by Law n. 141 of 17/4/1989 and by Presidential Decree n. 272 of 10/8/98.

The first article of the Presidential Decree of 1998 clarifies that “The beer denomination is reserved to the product obtained from alcoholic fermentation, with saccharomyces carlsbergensis or saccharomyces cerevisiae strains, of a must prepared with barley (or wheat or their mixtures) malt, also roasted, and water, “amaricato” with hops or theirs derivatives or with both.”

The second article gives some further definitions:

- the name "non-alcoholic beer" is reserved for the product with a Plato degree (it is a measurement of the concentration of dissolved solids in a brewery wort) not less than 3 and not more than 8 and with an alcoholic strength by volume not exceeding 1.2%;
- the name "light beer" is reserved for the product with a Plato degree not less than 5 and not more than 10.5 and with an alcoholic strength by volume higher than 1.2% and not more than 3.5%;
- the name "beer" is reserved for the product with a Plato degree higher than 10.5 and with an alcoholic strength by volume higher than 3.5%; this product can be called "special beer" if the Plato degree is not less than 12.5 and "double malt beer" if the Plato degree is not less than 14.5;
- when fruit, fruit juices, flavorings, or other characteristic food ingredients are added to the beer, the sales denomination is completed with the name of the characterizing substance.

An official description of craft beer was defined by the Law n. 154 of 28/7/2016: “Craft beer is defined as beer produced by small independent breweries and not subjected to pasteurization and microfiltration processes during the production phase. A small independent brewery is a brewery that is legally and economically independent of any other brewery, which uses plants that are physically distinct

from those of any other brewery, which does not operate under license to use the immaterial property rights of others and whose annual production does not exceed 200,000 hectoliters, including in this quantity the quantities of beer produced on behalf of third parties“. It was an important milestone because this was the first time that Italian law recognized a difference between industrially produced beer and handcrafted beer.

As it is possible to note the definition of craft beer is built on that of craft brewery; it means that a beer can be defined as craft only when it is produced by a company that bases its principles on the craftsmanship of work. Summing up:

- absence of certain industrial solutions (microfiltration and pasteurization);
- production of maximum 200,000 hectoliters/year;
- legal and economic independence.

3.1.1 Tax and excise duty

The excise duty is an European tax that applies on the manufacture and sale of some consumer products like alcoholic beverages and tobacco.

“Excise duty is an indirect tax. This means that the end consumer is not responsible for paying the tax to the government, but they do cover the cost of the tax by paying more for the product. By making products more expensive, excise duty is supposed to discourage the consumption or waste of goods that are deemed to be harmful to consumers' health or damaging to the environment.”[28]

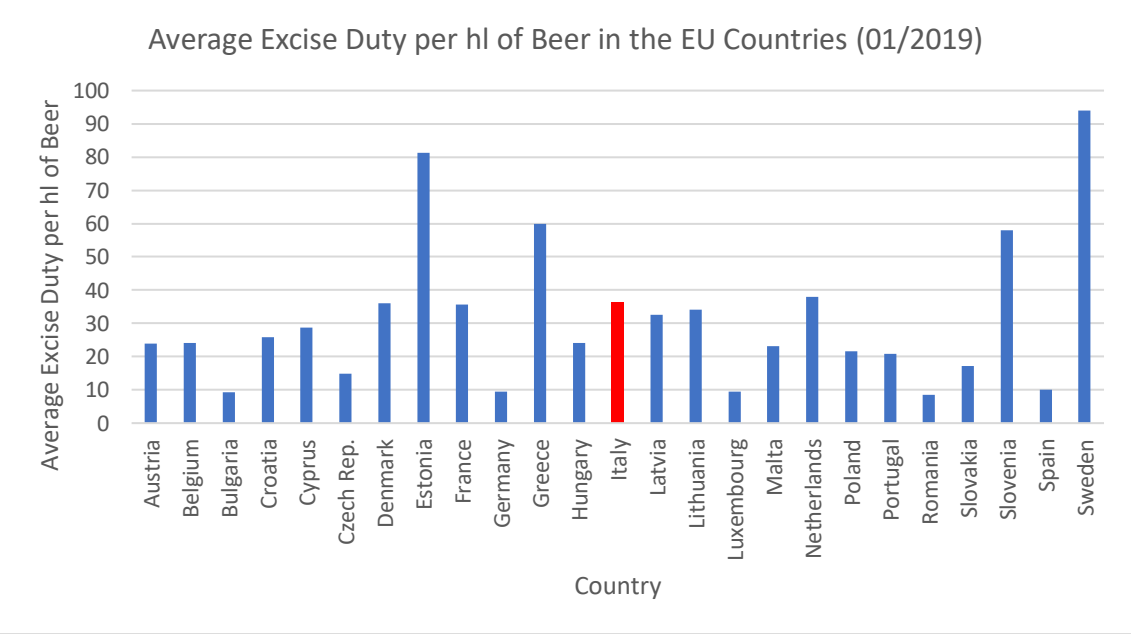
EU legislation only sets harmonized minimum rates, so EU countries are free to apply excise duty rates above these minima, according to their own national needs. In particular for beer the minimum rate is 0.748€ per Hectoliter/degree Plato or 1.87€ per Hectoliter/degree alcohol.

Another important tax is the Value-Added Tax (VAT). In Italy the VAT rate for beer is the standard rate of 22% and it is applied to the value of a product/service and, therefore, also to the excise tax applied to that product/service.

Over the last few years the brewing sector has been the subject of particular attention by the Italian legislator. In a period of only 15 months the beer has undergone an increase in direct taxation of 30%. From October 2013 to January 2015, in fact, the Government had increased excise duty on beer from 2.35 € to 3.04 € per Hectoliter/degree Plato. This factor, combined with the continuing economic crisis, has kept the brewing sector in stagnation. In 2016 an important reversal trend has partially corrected what happened, contributing to the recovery of market growth of beer in Italy. The last three Budget laws, approved from two different legislatures, had decreased excise duty on beer reaching 2.99 € per Hectoliter/degree Plato in January 2019. [29]

Taking into account both the excise and the VAT it emerges that the tax burden on beer in Italy is at the highest levels in Europe.

Figure 3.1 Average Excise Duty per hl of Beer in the EU Countries (01/2019) [29]



On 5 June 2019 the Ministerial Decree provided for by the Budget Law establishes the reduction in excise duties on craft beer. It provides a 40% reduction in excise duties for craft breweries that do not produce more than 10 thousand hectoliters a year, which are independent at company level and do not carry out pasteurization and microfiltration. This is an important step, the same that has been happening in

the great majority of European countries, to support and protect small Italian craft breweries and to incentive the growth of this sector.

3.1.2 Labeling

The labeling legislation has the objective of guaranteeing the consumer a complete, truthful and transparent communication and to avoid false advertising about the product he purchases. For this reason, some rules have been defined regarding the information that must or can be included on the label.

On 8 February 2018 the Legislative Decree 15 December 2017 (n.231) was published in the Official Gazette, n. 32. This Decree sanctions the violation of the provisions of Regulation (EU) n. 1169/2011 and adapts the provisions of Legislative Decree no. 109/1992 to the community legislation.

The obligation to report the food denomination (non-alcoholic beer, light beer, beer, special beer and double malt beer) as required by the previous law of 1998 therefore expires.

The following information must be indicated on the label:

- the business name of the producer, importer or distributor;
- the alcohol content, expressed as a percentage of the volume;
- the production lot and the bottling date;
- expiration date, which can also be indicated with the indication "to be consumed preferably within" followed by the date of maximum conservation;
- the net volume of product contained in the bottle, which can be expressed in cl. or l.;
- the presence of any ingredients that can be considered allergenic, or different ingredients from the base of barley malt and hops, which are the main ingredients of beer.

Although not mandatory, it is always welcome to include a slogan or a statement on responsible consumption on the label of alcoholic beverages, such as the phrase of the national prevention campaign “O bevi o guidi”.

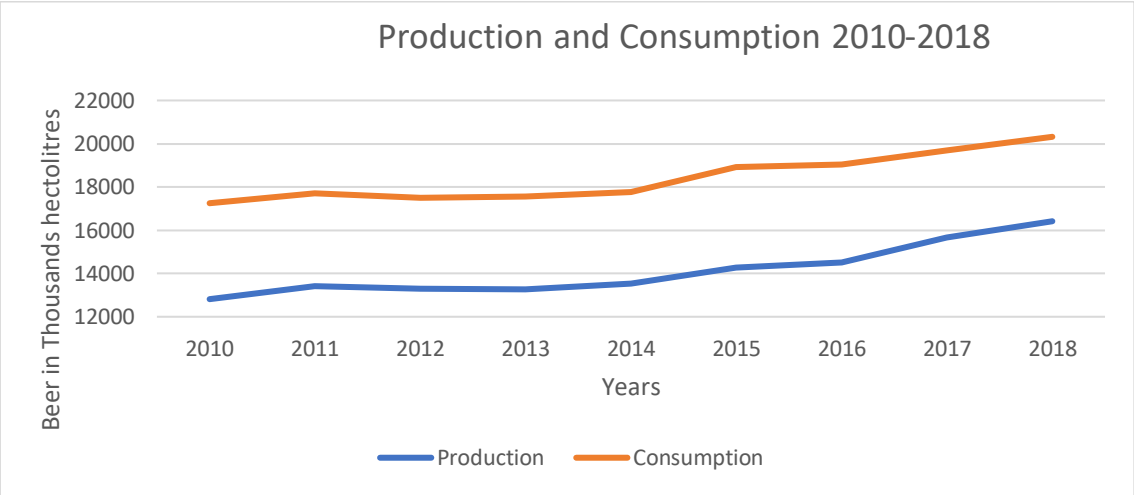
If the alcohol content is less than 1.2%, beers are exempt from the obligation to indicate the nutritional table on the label. But this situation could change in the next few years: to put forward its proposal was the association “Spirits Europe” with a project that includes the insertion of a label where not only ingredients and a nutritional table are highlighted, but also the type of process used to make the product. The information could be found online (thanks to a bar code or a QR code), on the label and in both ways. [31]

3.2 Production and Consumption

For the sixth consecutive year the Italian brewing market has recorded an increase in production exceeding 16 million hectoliters. With a growth of 28% compared to 2010, today Italy is in twelfth place in Europe for production volumes.

Similarly to production, beer consumption is also experiencing a period of growth. During 2018 more than 20 million hectoliters were consumed in Italy with an increase of 18% compared to 2010.

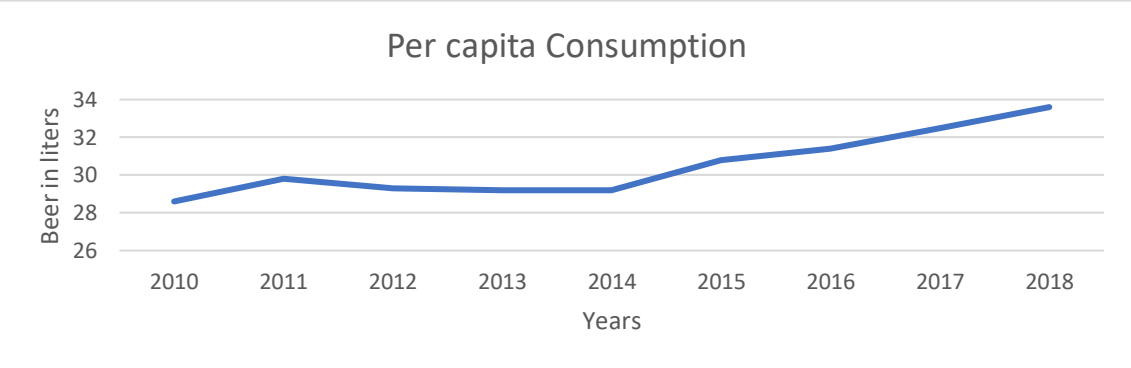
Figure 3.2 Production and Consumption of beer in Italy 2010-2018 [29]



It is clear that the beer sector in Italy is experiencing a period of extraordinary growth in the production chain and an equally significant development in demand: the diversification carried out by large and small producers is one of the main

drivers that has driven market innovation along with the boom in the craft beer sector that is pushing towards the production of high quality beers.

Figure 3.3 Per capita consumption of beer in Italy 2010-2018 [29]



Situation witnessed also by an increase in per capita consumption levels that reach 33.6 liters, an absolute record and an increase of 1 liter compared to last year.

Although the level of consumption per capita in Italy is growing, it always remains considerably below the European average. Italy ranks third from last on the list of European countries ranking for per capita consumption.

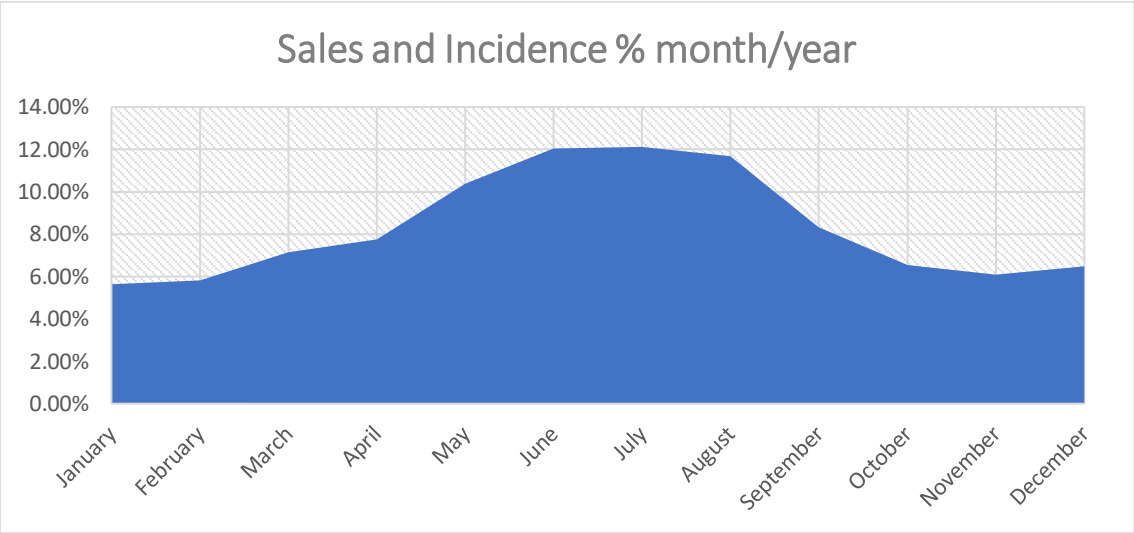
Table 3.1 Top 5 per capita beer consumption Country in Europe 2017 [30]

Country	Per Capita Beer Consumption (liter)
Czech Republic	138
Austria	105
Germany	101
Poland	97
Lithuania	88

It is interesting to explore the dynamics of consumption linked to the seasonal trend.

Comparing consumption on a monthly basis it clearly emerges that the months between May and August, which are the months with the highest temperatures, record a request that covers almost 50% of the whole year.

Figure 3.4 Sales and incidence % month/year in Italy 2018 [29]



Analyzing the consumption trend with respect to other alcoholic beverages, wine remains the most alcoholic beverage widespread. But it must be noticed that beer is shortening the distance.

The demand for beer has increased considerably from 2011 to 2018, reducing the distance with wine from 7.1 to 3.7 percentage points.

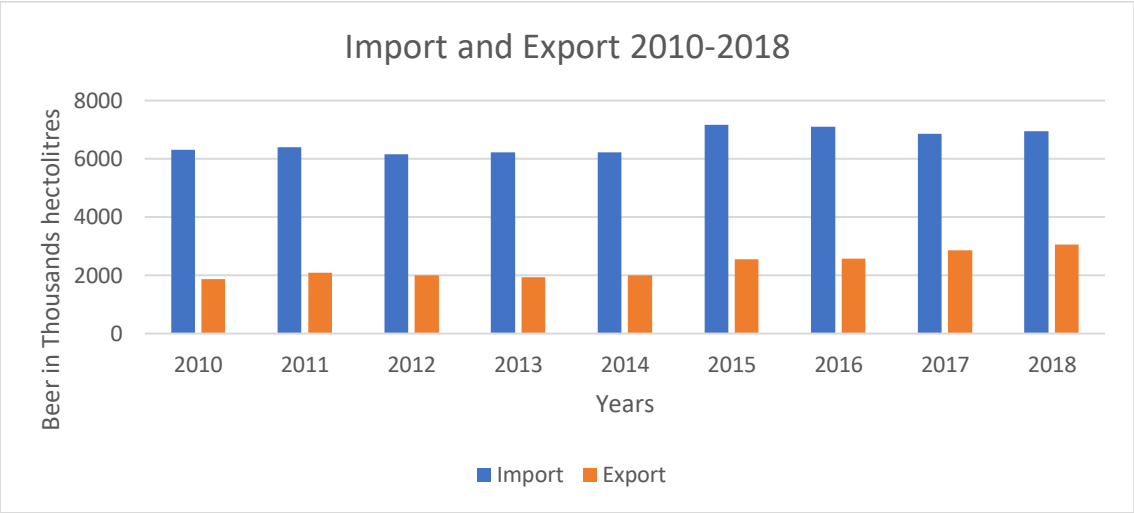
Table 3.2 % of drinkers on total population (once per year) in Italy 2011-2018 [32]

	2011	2012	2013	2014	2015	2016	2017	2018
Wine	53.30%	51.90%	51.60%	50.50%	52.20%	51.70%	52.60%	54.10%
Beer	46.20%	45.80%	45.30%	45.10%	46.40%	47.80%	48.00%	50.40%
Other alcoholic beverages	40.60%	40.50%	39.90%	39.90%	42.10%	43.20%	43.80%	45.90%
Total	65.00%	64.60%	63.90%	63.00%	64.50%	64.70%	65.40%	66.80%

3.3 Import and Export

Similarly to production and consumption, beer exports are constantly increasing. The offer of "Made in Italy" craft beer is conquering a growing number of consumers in Italy and abroad where the export of Italian beer has increased by 63% in 9 years. During 2018 exports exceeded 3 million hectoliters (18.55% of national production), an absolute record.

Figure 3.5 Import and Export of beer in Italy 2010-2018 [29]



Exports between 2017 and 2018 grew by 6.6%, a significantly greater increase than that recorded by the entire food sector (+ 3.4%), confirming that Italian beer is synonymous with excellence recognized more and more worldwide.

The Countries mainly interested in Italian beer are surprising: Great Britain is confirmed in first place with 48.9% of the total, followed by the United States (7.7%), Australia (7.6%) and France (5%).

The EU is the largest export market: during 2018 it covered almost 73% of Italian beer exports (around 2.2 million liter).

Table 3.3 Italian exports of beer 2015-2018 in hectoliters [29]

Country	2015	2016	2017	2018	%Tot 2018
United Kingdom	112,638.54	1,287,366.52	1,495,523.63	1,489,691.92	48.93%
France	99,552.96	123,949.08	130,629.70	153,451.77	5.04%
Netherlands	200,639.24	56,284.80	69,109.45	113,083.49	3.71%
Romania	30,761.11	54,017.88	31,052.07	97,387.86	3.20%
Malta	20,708.91	20,421.37	20,330.67	22,078.68	0.73%
Germany	40,852.34	69,533.22	13,315.71	8,753.68	0.29%
Other Countries in Europe	370,408.42	454,040.39	333,359.22	322,901.82	10.61%
Total Europe	**1,889,309.52**	**2,065,613.26**	**2,093,320.45**	**2,207,349.22**	**72.5%**
United States	196,453.69	196,208.05	217,827.78	235,898.10	7.7%
Australia	45,803.74	46,964.53	205,871.09	230,319.66	7.6%
Other Countries and Free Zones	415,696.61	273,179.51	338,615.78	371,104.80	12.2%
Total	**2,547,263.56**	**2,581,965.35**	**2,855,635.10**	**3,044,671.78**	**100%**

The volume of beer imports has increased slightly in recent years, growing by 10% between 2010 and 2018. Domestic production only covers 66% of domestic demand. With almost 7 million hectoliters in 2018, the volume of imports increased by only 1% compared to 2017.

Almost a third of imports come from Belgium with more than 2 million hectoliters imported during 2018. Taking into consideration the last 4 years, it can be seen that there has been a collapse of imports from Germany which has fallen from 3.4 to 1.8 million hectoliters/year.

Overall, almost all imports (95% in 2018) come from Europe; Mexico dominates among the extra - Europeans countries with approximately 270,000 hl.

It should also be taken into account that the taxation on beer in Italy is on the highest levels in Europe and international operators are able to offer prices on the market that are not compatible with the cost structure of domestic producers.

Table 3.4 Italian imports of beer 2015-2018 in hectoliters [29]

Country	2015	2016	2017	2018	%Tot 2018
Belgium	614,448.73	930,126.87	1,942,146.70	2,019,254.40	29%
Germany	3,400,794.87	2,958,521.42	2,051,646.68	1,841,813.45	27%
Netherlands	688,250.26	773,492.82	747,021.03	903,554.98	13%
Poland	367,912.68	400,967.60	435,428.18	467,983.58	7%
Denmark	394,775.47	396,651.45	409,608.64	425,658.78	6%
Other Countries in Europe	1,412,259.06	1,325,478.48	936,576.37	941,501.99	14%
Total Europe	**6,878,437.87**	**6,785,238.64**	**6,522,427.60**	**6,599,767.18**	**95%**
Mexico	227,391.48	243,740.58	272,768.09	270,301.18	4%
Other Countries	69,665.13	66,211.76	71,040.69	78,059.38	1%
Total	**7,175,494.48**	**7,095,190.98**	**6,866,236.38**	**6,948,127.74**	**100%**

3.4 Competitors

On the Italian beer market there are mainly five brewing companies with industrial production in our area: Heineken Italia Spa, Birra Peroni Srl, Anheuser-Busch In.Bev Spa, Carlsberg Italia Spa and Birra Castello Spa. They have approximately 70% of the Italian market share. To these the craft production units, such as microbreweries and brewpubs, and the third-party imports must be added.

Table 3.5 Beer marketed for consumption 2014-2018 in thousand hectoliters [29]

Brewing Companies	2014	2015	2016	2017	2018
Heineken Italia Spa	5,139 (28.9%)	5,223 (27.6%)	5,336 (28.0%)	5,771 (29.3%)	6,254 (30.8%)
Birra Peroni Srl	3,411 (19.2%)	3,477 (18.4%)	3,473 (18.3%)	3,699 (18.8%)	3,827 (18.8%)
Anheuser-Busch InBev Spa	1,418 (8.0%)	1,624 (8.6%)	1,736 (9.1%)	1,852 (9.4%)	1,911 (9.4%)
Carlsberg Italia Spa	1,067 (6.0%)	1,129 (6.0%)	1,166 (6.1%)	1,249 (6.3%)	1,225 (6.0%)
Birra Castello Spa	1,083 (6.1%)	1,088 (5.8%)	1,034 (5.4%)	1,125 (5.7%)	1,059 (5.2%)
Others	1,155 (6.5%)	1,245 (6.6%)	1,331 (7.0%)	1,458 (7.4%)	1,472 (7.3%)
Third-party imports	4,482 (25.2%)	5,128 (27.1%)	4,953 (26.0%)	4,530 (23.0%)	4,571 (22.5%)
Total	**17,755 (100.0%)**	**18,914 (100.0%)**	**19,029 (100.0%)**	**19,684 (100.0%)**	**20,319 (100.0%)**

In particular, Heineken Italia Spa and Birra Peroni Srl are the leader in sales and together they control more than 50% of the total market.

3.4.1 Heineken Italia Spa

Heineken was set up in 1873 when a young entrepreneur named Gerard Heineken bought a piece of land that is now the center of Amsterdam and he built his brewery.

It was 1974 when the company entered the Italian market with the acquisition of the Italian Birra Dreher Spa. The growth continues in 1986 thanks to the acquisition of Birra Ichnusa Spa, the current Assemini (CA) brewery.

During 1989 Partesa was established, a company specialized in sales, distribution, consulting and training for the Horeca channel. It operates throughout the country with 46 logistics centers and manages a distribution activity of over 10,000 products.

Also in the same year the Pollein brewery (AO) is also acquired.

In 1995 the Comun Nuovo (BG) brewery became part of the group. But it is in 1996, with the acquisition of Birra Moretti, that Heineken Italia Spa reaches its current size. Today the group also includes Dibevit Import, a company active in the import and distribution of specialty beers from around the world, acquired in 2003.

Heineken today has a portfolio of over 250 brands, it is in first place among beer producers in Europe and second in the world in terms of revenues. Thanks to the many acquisitions over the years, it is continuing to increase its growth and its presence also in emerging markets.

The main brands of Heineken Italia Spa (own or under license) are: Heineken, Birra Moretti, Dreher, Amstel, Ichnusa and Messina.

Heineken Italia Spa is present in the area with 4 breweries that employ a total of about 600 people and produces more than 6 million hectoliters of beer each year.

3.4.2 Birra Peroni Srl

The Birra Peroni Company was established in 1846 in Vigevano (PV) on the initiative of Francesco Peroni. In 1864 the production of Birra Peroni doubled, thanks to the opening of a second factory in Rome, initially managed by some partners of Francesco Peroni and starting from 1867 by the son Giovanni.

In 1924 a new production plant was opened in Bari, capable of producing 25,000 hectoliters of beer per year. The opening of the new plant was the first step in a strategy of expanding the group in southern Italy. In 1950 the annual production reached 420,000 hectoliters, making Peroni the first Italian brewer

In 1963, in homage to the Italian transatlantic Rex, winner in 1933 of the "Blue Ribbon", Nastro Azzurro was born, soon becoming one of the company's leading products, and sponsor, still today, of regattas and important sailing competitions. In the 70s-80s, Birra Peroni also expanded into foreign markets through the diversification of the product portfolio and with the start of collaborations with international companies, becoming one of the symbols of the Italian style. In particular Nastro Azzurro conquered the United States, the United Kingdom and the Australian markets.

In 1988 the Wührer, the oldest Italian brewery owned by the Danone group, was acquired and as part of the operation, Danone became a shareholder of Peroni with 19.5 percent of the capital.

In 2003 Birra Peroni definitively assumed the traits of an international company, becoming part of the SABMiller plc Group, the second largest producer of beer in 75 countries on 6 continents.

In 2016, Birra Peroni was acquired by the Asahi group, a Japanese multinational company with a product portfolio that includes beers, liqueurs, soft drinks and food.

The main brands of Birra Peroni are: Peroni, Nastro Azzurro, Pilsner Urquell and Wührer.

Birra Peroni is present in Italy with three production plants (Rome, Padua and Bari), and the Saplo malting plant. It operates with an annual beer production amounting to 5 million hectoliters, over 1 million of which is exported.

3.4.3 Anheuser-Busch InBev Spa

Anheuser-Busch InBev is a multinational company active in the production of alcoholic and non-alcoholic beverages. It was founded on November 18 2008 from the merger between the Belgian giant InBev and the American Anheuser-Busch.

Anheuser-Busch was created in St. Louis, Missouri when, in 1860, a German soap manufacturer named Eberhard Anheuser became the owner of a distillery. Anheuser's son-in-law, Adolphus Busch, joined the company in 1869 and became its president in 1880.

Busch pioneered the use of refrigerated railcars and of pasteurization in the brewing industry as part of his efforts to create the first nationally selling beer in the United States. In 1876 the company introduced a new, light-coloured beer called Budweiser. Thanks to Busch's inventions and the success of Budweiser, Anheuser-Busch grew to become the largest brewer in the United States in 1957. [33]

InBev is a brewing company that resulted from the merger between Belgium-based Company Interbrew and Brazilian brewer AmBev which took place in 2004.

“Interbrew’s history dates to the 14th century, when the Den Hoorn Brewery was founded in Leuven. In 1717 it was purchased by master brewer Sebastiaan Artois, who changed its name to Artois. In 1987 Artois combined with another Belgian brewery, Piedboeuf, to become Interbrew. The company acquired a number of breweries throughout the world during the 1990s—including the large Canadian brewery Labatt in 1995—and had established itself as the world’s third largest brewer by the early 21st century.” [34]

“AmBev, based in São Paulo, Brazil, was formed in 2000 through the merger of Companhia Cervejaria Brahma and Companhia Antarctica Paulista Indústria Brasileria de Bebidas e Conexos. Whereas these two companies had been primarily concerned with Latin American markets, the merger created the world’s fifth largest brewer, with AmBev drawing profits from such popular brands as Skol, Brahma, and Antarctica.” [34]

The main brands of Anheuser-Busch InBev are: Corona, Beck’s, Leffe and Tennent’s Super.

3.4.4 Carlsberg Italia Spa

In 1876 Angelo Poretti, an entrepreneur from Varese who emigrated first to Austria and then to Bohemia and Bavaria, where he learned about beer and its secrets from the best brewers of the time, founded the plant soon known as Industrie Poretti in Induno Olona, near Varese.

The great economic crisis of 1929 brought the consumption (and consequently the production) down: the national one, which in 1934 touched the minimum of 289 thousand hectoliters against the abundant million of the previous decade, and that of Poretti that from the 120 thousand hectoliters of 1922 falls to the 14 thousand from '34. At that time the history of Poretti Industries intersected with that of another historic family of Lombard entrepreneurs, the Bassetti, who in 1936 bought the plant and revived the fortunes, also bringing the Splugen beer brand which until then had been produced in the Chiavenna brewery. Poretti manages to fit into the miracle of reconstruction and, between 1946 and 1974, returns to being one of the cornerstones of Italian beer production. [35]

Since 1982 the company has become part of the Carlsberg group, which holds 75% of the share capital since 1998, the year in which the company name from Industrie Poretti becomes Carlsberg Italia. In 2002 Carlsberg Italia becomes 100% owned by Carlsberg Group.

With over 1 million hectoliters produced, Carlsberg Italia is currently the third largest national beer producer and boasts a portfolio of national and international brands: Carlsberg, Tuborg, Birrificio Angelo Poretti, Grimbergen, Kronenbourg 1664, Jacobsen and Brooklyn.

3.4.5 Birra Castello Spa

Birra Castello S.p.A. was founded in 1997 from a consortium of regional entrepreneurs who bought the former Moretti factory in San Giorgio di Nogaro, near Udine, from Heineken Italia.

In addition to owning one of the most modern Italian factories (moreover built in 1993), it can make use of a local brewing tradition refined for over a century of activity as well as management and control techniques left as inheritance by the multinationals (Labatt, Interbrew, Heineken) succeeded the head of the former Friulian company. [36]

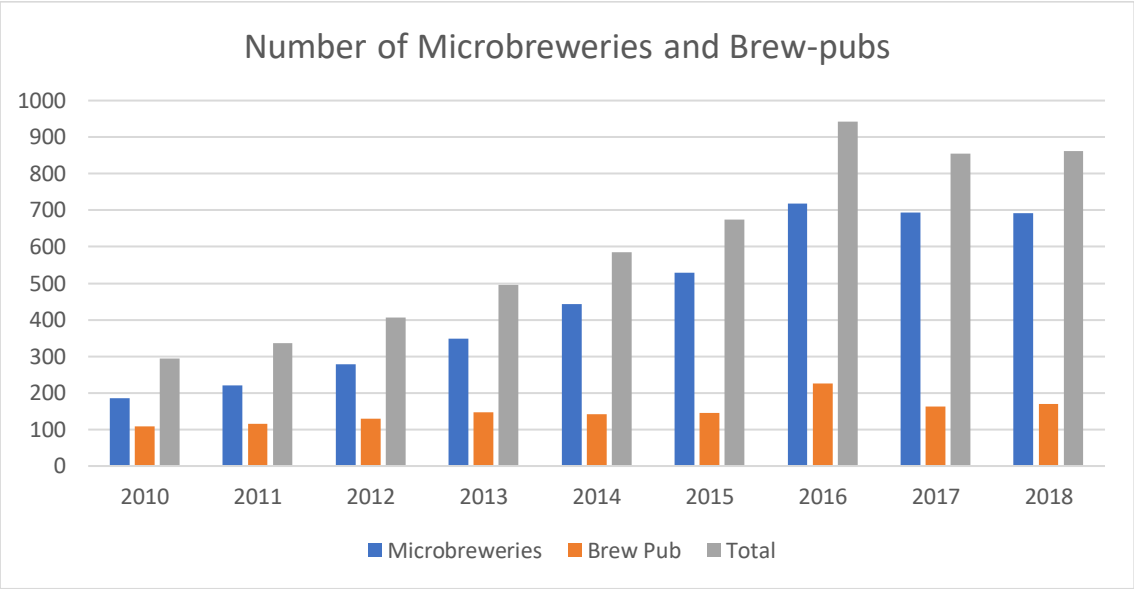
The consortium in 2006 took over, again from Heineken Italia, the historic plant in Pedavena (BL), which was added to the San Giorgio di Nogaro (UD) factory.

The main brands of Birra Castello Spa are: Birra Castello, with its editions "La Decisa", "La forte", "L'intensa" and "Radler", Pedavena and Birra Dolomiti.

3.5 Craft Breweries: microbreweries and brew pubs

The proliferation of made in Italy beers has been accompanied by a surprising growth in microbreweries and brew pubs: in the last 8 years microbreweries have recorded a percentage increase of 272% (from 186 to 692 units), while brew pubs increased by an amount equal to 57% (passing from 108 to 170 pubs).

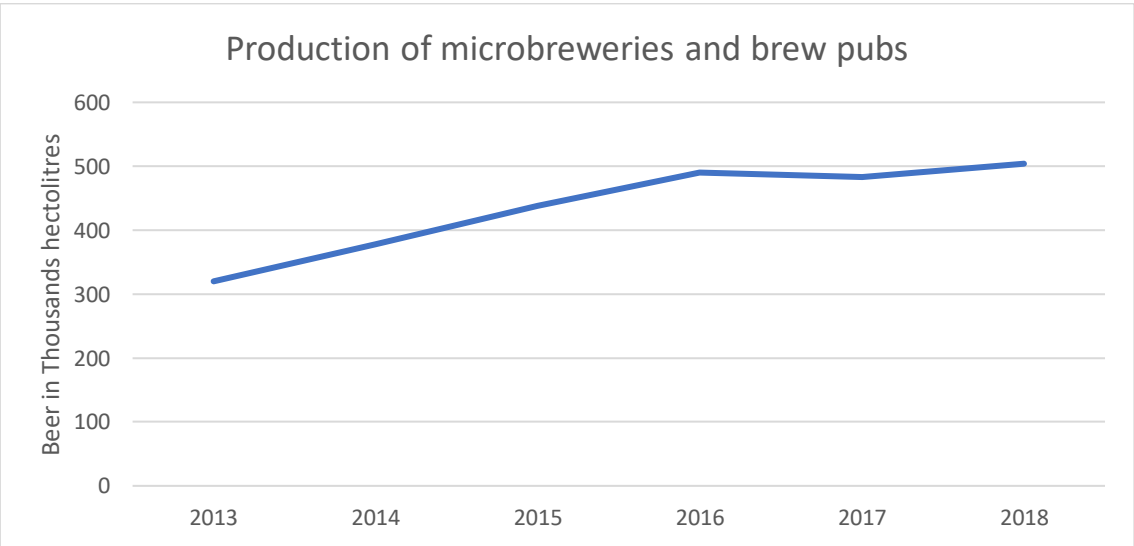
Figure 3.6 Number of Microbreweries and Brew-pubs in Italy, 2010-2018 [29]



Microbreweries are real breweries that produce significant quantities of craft beers that they then sell to third parties.

The brew-pubs are premises that present both the production unit and areas reserved for the supply and sale of the products they produce. Within them, therefore, both production and catering/selling activities are performed.

Figure 3.7 Production of microbreweries and brew pubs in Italy, 2010-2018 [29]



After the stop in 2017, the growth of craft beer production in Italy resumed, reaching a new peak in 2018 with more than 500 thousand hectoliters produced.

Perhaps the market is starting to reach its saturation level: the supply of breweries that produce craft beer is so wide that the market is much more competitive than a few years ago; without forgetting the competition of other alcoholic beverages such as wine and spirits.

However it cannot be denied that in the last few years we have witnessed a real boom of the craft movement. This phenomenon combines passion and entrepreneurship, so the creation of a quality drink is an essential requirement to differentiate from the mass-producers who, on the contrary, base their competitive advantage on a standardized product, advertised through marketing campaigns and sold at moderate prices.

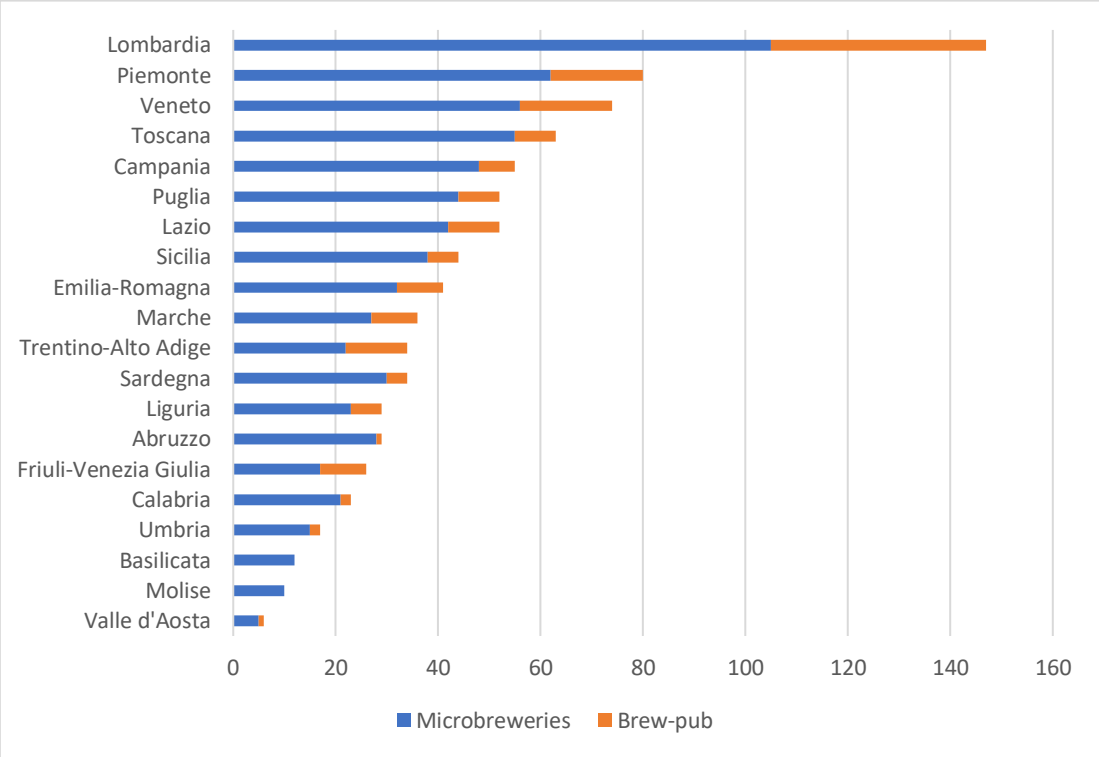
With a production of 504 thousand hectoliters and 862 between microbreweries and brew pubs, the craft beer sector in Italy gives employment to 3000 workers and covers 3.1% of national production.

Figure 3.8 Microbreweries and Brew-Pubs in Italy - Geographical Distribution - 2018 [29]

Analyzing the geographical distribution of microbreweries and brew pubs, it emerges that the largest number of activities is in northern Italy. Lombardy has 17% of all national activities, followed by Piedmont and Veneto. Subsequently it

is possible to find, in central Italy, Lazio and Tuscany and, in the south, Campania and Puglia.

Figure 3.9 Number of microbreweries and brew pubs in the regions of Italy - 2018 [29]



3.6 Consumer Preferences

The beer trend in Italy is growing and evolving, as photographed by a research carried out by DOXA for the Birra Moretti Observatory. First clue: beer connoisseurs increase, but always in the sign of a moderate and responsible consumption. And in fact in the last 10 years the number of beer consumers has grown by 34%, today 8 out of 10 Italian drink beer, they were 6 out of 10 in 2008. Second test: the desire for beer grows hand in hand with the curiosity to explore it in all its facets. By now 70% of Italians also drink special beers, and that is the whole universe of flavors, fragrances, colors and ingredients (from Ale to Blanche, from Bock to IPA and so on) that goes beyond the classic light beer. It must be said that the Italians do not see this novelty in antagonism with the Lager, but on the contrary as an evolution of a wider path of curiosity towards the world of beer. And in fact, only 9% drink only special beers, while 61% of them drinks both types, alternating them based on the consumption occasion. [37]

Light and non-alcoholic beers always remain a residual category in Italian consumption (less than 2% of volumes). Most of the consumption is absorbed by the classic low fermentation blondes (lager) and moderate alcohol (from 4 to 6 degrees) and yet, year after year, they tend to give up part of their share to the special beers.

Table 3.6 Market Segmentation in Italy, 2013-2018 [29]

Kinds of beer	2013	2014	2015	2016	2017	2018
Low - Non alcoholic	1.62%	2.58%	2.63%	2.03%	1.86%	1.75%
Lager	92.94%	91.16%	89.95%	89.59%	88.15%	86.56%
Special	5.44%	6.26%	7.42%	8.38%	9.99%	11.69%
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

The photograph taken in the survey "Italians and Beer", that was commissioned to AstraRicerche by AssoBirra in 2018 and realized through 1364 interviews with a sample of individuals - men and women - between 18 and 70 years, returns the image of a drink that sees, on the one hand, its diffusion and reputation, and on the other its nature as a meal drink, a peculiar Italian characteristic.

With a transversal consumption that involves the entire Country, AstraRicerche has identified 8 different drinkers, divided for all age groups from 18 years upwards. Among these, the following stand out:

- New beer lover (14.8%): is a medium beer drinker, looking for the latest products. The main reason he drinks beer is because it brings people together and creates unique experiences: this is why he drinks it mainly with family and friends. He is fairly informed about the world of brewing and would like to know a little more about it. He loves to discover new beers and allows friends and barmen to help him in his choice.
- The hyperlocal hipster (12.2%): a strong consumer of beer, attracted above all by taste, who drinks it with others or alone. He always drinks different beers, not disdaining pairing it with food and preferring traditional ones. Although he deems to be a good connoisseur, the desire to know more is ever present.

- The critical foodie (11.9%): who consumes it very frequently and drinks beer because - he says - 'it opens up a world of wide variety, of special products waiting to be discovered' and 'allows you to treat yourself to special moments'; being an expert, he is guided by reviews and articles read online, on blogs and in specialized magazines.
- The gourmand woman (11.7%): 45-54 years old, who consumes beer with medium-high frequency. She drinks mainly because it is a drink that allows her to enjoy special moments. She knows the world of brewing very well and tends to choose the one that best suits the circumstance, the one with the most style and that best matches the food.
- The uninformed enthusiast (14.2%): a male who drinks especially with friends. He knows the key points of the sector and loves to try different beers, choosing them according to their origin.

It is therefore clear that Italians are increasingly interested in learning more about beer: transversal to all ages, almost 83% of consumers would like to know more and only 17% say they are satisfied with what they know.

3.7 Market distribution

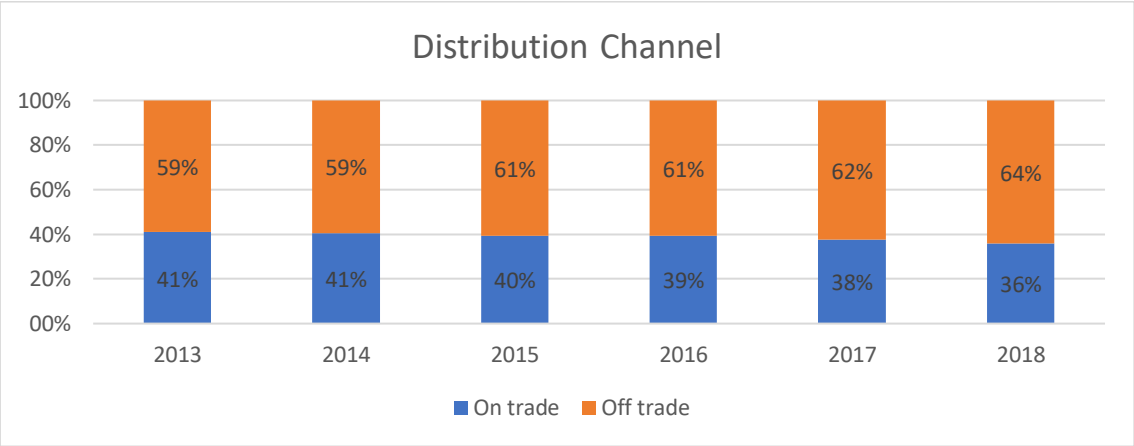
In general, alcohol brands face the challenging task of selling to consumers via pubs, bars, restaurants and hotels as well as hypermarkets, supermarkets, convenience stores, mini markets, kiosks, wines and spirits shops, otherwise known as “on trade” and “off trade” sales.

Figure 3.10 % of consumption of beer in Italy, On Trade vs Off Trade [29]

Also in 2018 a trend that has been going on for several years was confirmed: the supremacy of consumption at home compared to that outside the home. On Trade

consumption was 36% of the total, down 1.6% compared to 2017, while 64% of purchases concerned the modern distribution and traditional retail sectors. In the recent past the gap between On Trade and Off Trade has always been around the 20% share but, in the last three years, the distance has increased, still reaching 28% in 2018.

Figure 3.11 Distribution Channel in Italy, On Trade vs Off Trade, 2013-2018 [29]



It is possible to observe that almost two thirds of the beer is now purchased in hypermarkets, supermarkets, etc. If the Horeca channel has had (and still has) a fundamental role in Italian beer literacy, the importance of the large-scale distribution in the beer revolution experience is increasingly growing.

Light beers with a moderate alcohol content (less than 6% alcohol) dominate the beer market in large-scale distribution: in particular, they occupy around 85% of the sales volume. However, this family of products shows a lower growth rate than the market average and, therefore, its weight over time is destined to decline. [38]

Regarding the Horeca channel, the restaurant category (which also includes bakeries and ice cream parlors) represents over 53% of the total number of shops, the bars are 46%, while the remaining 1% includes all structures in charge of collective catering. In all this, beer plays an incisive role capable of generating about 7.8% of them total revenues.

3.8 Packaging

From some years, American and more recently British craft breweries are increasingly turning to the use of cans instead of glass bottles. The new trend in the United States is not just about craft breweries but also large industries, which have never stopped producing canned beer.

So far Italian craft breweries have kept away from producing canned beers, apart from few exceptions: at the end of 2015 a canned craft beer was presented by Baladin, one of the most famous Italian craft breweries.

Table 3.7 Packaging in Italy, 2013-2018 [29]

Kinds of Packaging	2013	2014	2015	2016	2017	2018
Kegs	11.68%	11.65%	11.74%	11.59%	11.57%	11.63%
Returnable glass bottles	7.47%	7.03%	6.41%	5.78%	5.09%	4.73%
Non-returnable glass bottles	74.57%	75.54%	76.59%	77.60%	78.36%	78.79%
Cans	6.28%	5.78%	5.26%	5.03%	4.98%	4.85%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

As it is possible to see, the use of the can as a container for beer is diminishing year after year. Accomplice to this trend is the general prejudice of Italians towards the can: it is seen as a typical container of cheap and poor quality beers.

It is possible to notice that the Italian market is characterized by a clear prevalence of non-returnable packages, while in the main European countries with a high brewing tradition, return packaging prevails, which are reused several times in the production process.

In practice, by encouraging the final consumer to return the packaging to the producer, it is hoped to limit the impact of the waste materials on the environment. The “returnable empties system” requires that the containers, thus saved by the differentiated bins, undergo a sterilization process that requires 60% less energy than is required for the creating a new packaging.

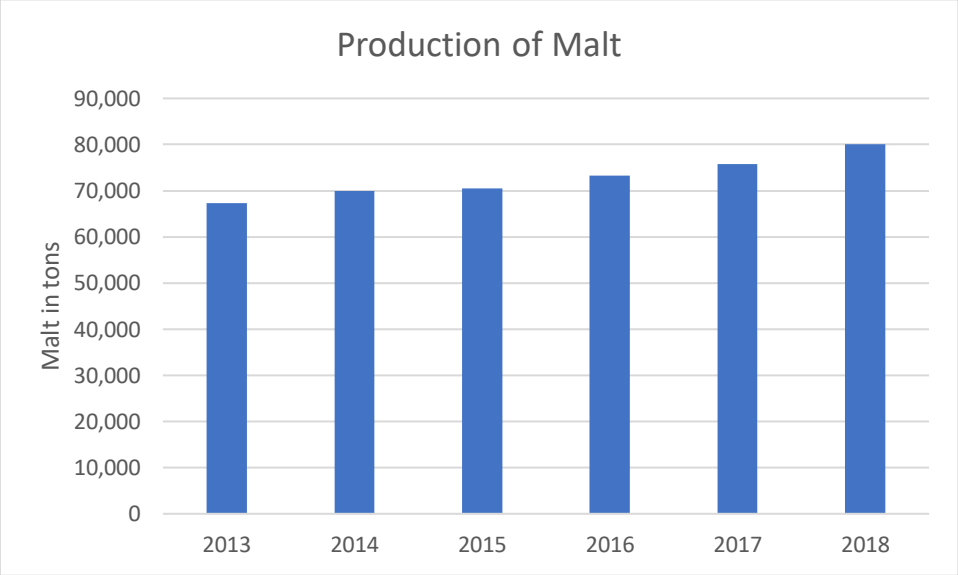
In Italy the returnable empties system was widespread until the early 1960s, before the massive spread of plastic. With this system the person who buys the product pays also a security deposit which is returned upon return. The disposable system

that replaced the old returnable was a direct consequence of the economic boom of past years. Today, with a more evolved ethical conscience, our country is trying to restore the old and more ecological system.

3.9 Suppliers and the importance of the production chain

The growing passion of Italians for craft beer and the increase in the number of micro-breweries active in our country have increased the parallel attention of malt and hop producers. Today Italy imports two thirds of the requirements of malt and almost all the hops used by Italian breweries.

Figure 3.12 Production of Malt in Italy, 2013-2018 [29]



Italy does not have a strong tradition in the production of beer barley, but the production of malt in Italy is slowly increasing. Today Italian producers bring around 80,000 tons of malt every year to the market with a 19% growth compared to 2013.

Currently, in Italy there are only two large industrial malteries located in Pomezia (RM) and in Melfi (PZ) which cover less than half of Italy's needs. Alongside these two industrial realities, in the Marche region in 2003 the Italian Consortium of Barley and Beer Producers (Cobi) was born, a consortium malting, with more than 130 members, coming from all over Italy. Finally, there are micromalteries in Tuscany, Friuli Venezia Giulia, Emilia Romagna and Piedmont, with a malting

capacity of between 5 and 20 tons, largely insufficient to meet the demands of the horticultural producers. [39]

However, most of the necessary malt is still imported from abroad, mainly from Germany (44%), France (35%) and Austria (16%).

Table 3.8 Imports of Malt in Italy 2014-2018 (tons) [29]

Country	2014	2015	2016	2017	2018
France	46,582.903	38,857.467	37,983.766	45,423.972	51,520.181
Netherlands	23.303	36.933	122.360	88.320	429.248
Germany	47,586.885	51,726.939	53,400.247	57,902.521	65,201.963
United Kingdom	539.184	680.429	846.453	1,236.899	872.611
Belgium	980.737	1,104.873	1,242.861	4,597.011	1,300.819
Spain	2.530	-	-	27.560	30.960
Portugal	4.032	4.032	-	-	-
Finland	0.000	11.000	92.964	80.575	0.000
Poland	0.000	33.424	434.780	1,977.570	1,079.172
Austria	16,926.711	16,792.043	15,528.965	18,706.048	23,052.342
Slovakia	113.060	400.600	149.385	282.590	-
Czech Rep.	198.748	156.503	225.268	2,776.220	3,475.400
Hungary	2,223.780	231.765	38.019	38.400	30.800
Ireland	0.200	-	-	-	-
Bulgaria	-	-	-	0.007	-
Croatia	-	-	-	-	499.600
Serbia	0.400	-	-	-	-
Sri Lanka	-	-	-	-	1.280
Other Countries	-	1.092	-	0.020	-
Total	**115,182.473**	**110,037.100**	**110,065.068**	**133,137.713**	**147,494.376**

As regards the hops, domestic production is practically non-existent. But, thanks to the movement of craft breweries the cultivation of this plant has become innovative and above all profitable, given also the generalized crisis in the agricultural sector.

It is estimated that the total requirement of hops in Italy is around 3,500 tons/years and 97% of the demand is covered by hops imported mainly from Germany.

Table 3.9 Imports of Hops in Italy - Year 2018 (tons) [29]

Country	Hops Powder	Hops Extract	Total
Germany	3,097.858	113.347	3,211.205
Netherlands	-	4.274	4.274
Denmark	-	0.063	0.063
Slovenia	3.565	-	3.565
United Kingdom	-	11.716	11.716
Belgium	24.484	64.650	89.134
Spain	-	0.300	0.300
France		0.565	0.565
Poland		0.008	0.008
Total	**3,125.907**	**194.923**	**3,320.830**

In the last few years the idea of a "km0" product is becoming increasingly popular: it derives from the abundance of local varieties of spices, herbs, vegetables and fruit from various regions of Italy. In particular, the high adaptability of barley and hops to different environments can allow the exploitation of marginal rural areas that are not used and thus bring income and employment in the territories in progressive depopulation, through the enhancement of local products.

The goal is to promote a path that leads to the production of beer that is 100% Made in Italy, which for the consumer is synonymous with quality, transparency and identity linked with the product.

4. Empirical Analysis – Focus on a sample of brewing firms

In the last years, in Italy, we are observing the spread of a real "beer culture" favored by the birth of various artisan microbreweries, the sale of kits for home production and tasting courses. This led to a shift in interest towards quality beers at the expense of mass production. Product diversification carried out by large and small producers is one of the main drivers of market innovation, together with the enhancement of local raw materials, in some cases even new materials compared to the brewing tradition.

Despite this increasing interest, craft breweries are facing difficulties in entering in such a concentrated and stable market. Craft beer costs because small volumes do not produce economies of scale: fixed costs, like plants and machineries, have a considerably greater weight if distributed on a relatively small production.

The following analysis does not claim to be exhaustive and to fully describe the health of the Italian beer market but aims to provide a general framework based on a sample of productive enterprises. For this purpose, the main financial data were collected from the AIDA ("Analisi Informatizzata delle Aziende Italiane") database, an online service that collects complete information on the companies in Italy, with a historian up to ten years. At the same time another important source of information about Italian breweries and their production was the book "Guida alle birre d'Italia 2019" edited by "Slow Food".

It is important to consider also the impact of the "Survivor Bias phenomenon": in general it describes the tendency to focus on the people or things that have passed some kind of selection process. In particular the sample analyzed here is composed by companies that was active in 2018 and therefore did not go bankrupt in the previous years.

The period of time analyzed is from 2010 to 2018 and is considered a sample of 113 firms. They are banded, according to their revenues from sales during 2018, into three main groups: companies with revenues higher than 100 million € are considered "Macro firm", companies with revenues between 10 million € and 100

million € are considered "Medium firm" and companies with revenues lower than 10 million € are considered "Microbreweries".

Only one company of the sample falls into the "Medium firm" category (Table 4.1) and for this reason it is not taken into consideration.

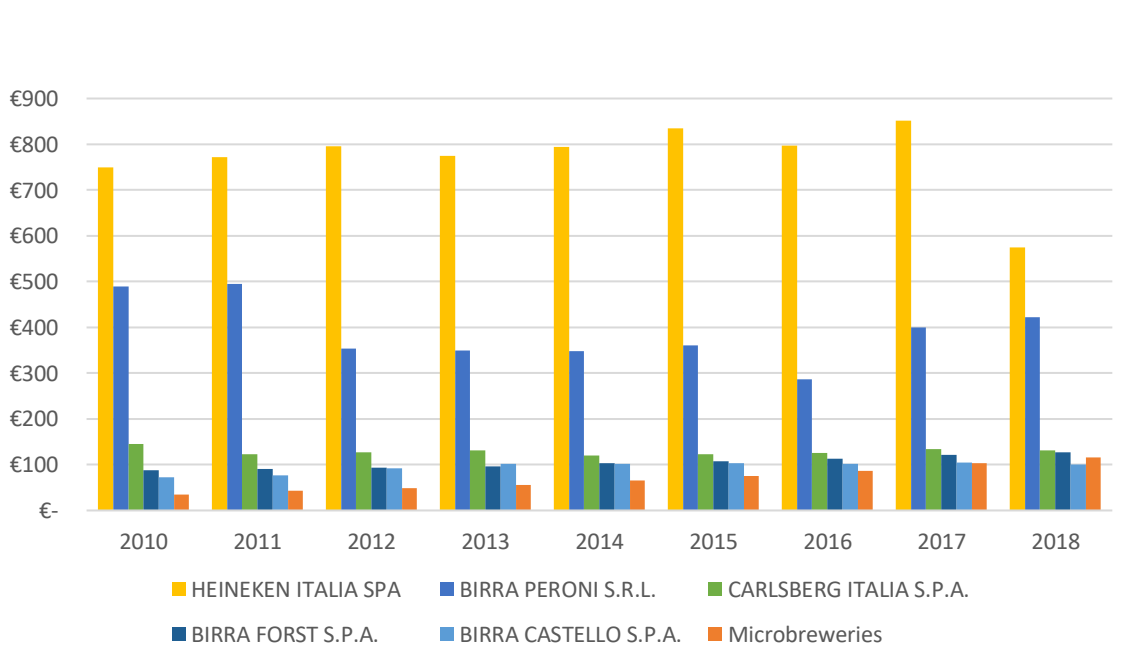
Table 4.10 Description of the analyzed sample

Category	Number of firms
Macro firm	5
Medium firm	1
Microbreweries	107

4.1 Revenues of Italian Beer Companies

An analysis of the revenues between 2010 and 2018 is performed in this section. Macro firms are considered individually while microbreweries are analyzed in aggregated form. The graph in Figure 4.1 can give a first rough idea of the health level of the beer industry in Italy

Figure 4.6 Revenues Italian Beer Companies 2010 – 2018 (M€)



As it is possible to notice, revenues of microbreweries are increasing year after year and during 2018 they have exceeded Birra Castello.

4.2 Profitability

In general profitability is a measurement of efficiency of a firm. It can be evaluated using different ratios; for example:

- Return On Sales (ROS): it is used to evaluate the operational efficiency, so it puts in relation profit and sales;
- Return On Assets (ROA): it is used to evaluate the assets efficiency, so it puts in relation profit and total assets;
- Return On Equity (ROE): it is used to evaluate the financial efficiency, so it puts in relation profit and shareholders' equity;
- Return On Investment (ROI): it is used to evaluate the investment efficiency, so it puts in relation profit and the difference between current value of investment and this cost.

In order to better understand the market, the analysis is performed individually for the five Macro firms and all together for the microbreweries (Figures 4.2 – 4.5).

Figure 4.7 ROS Macro Firms 2010-2018

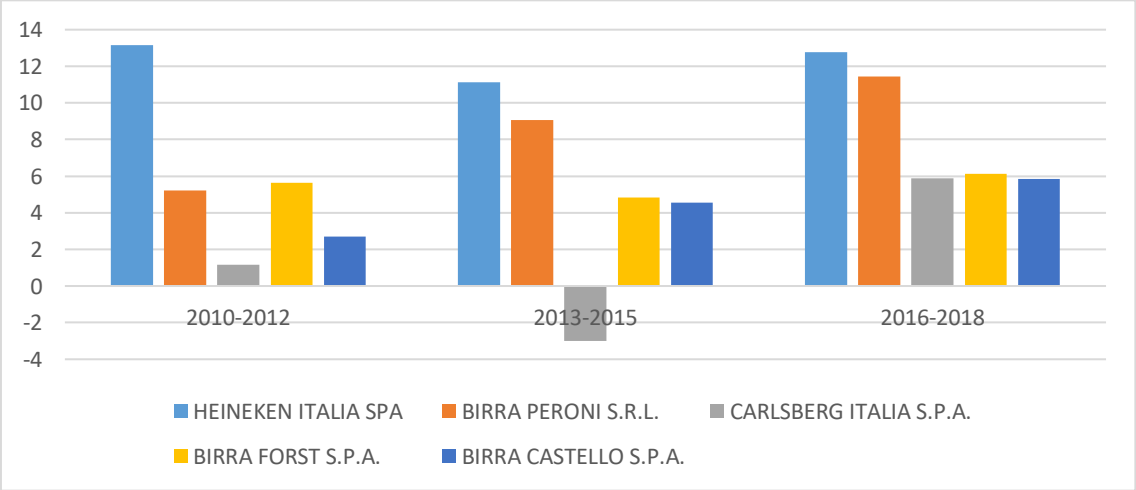


Figure 4.8 ROA Macro Firms 2010-2018

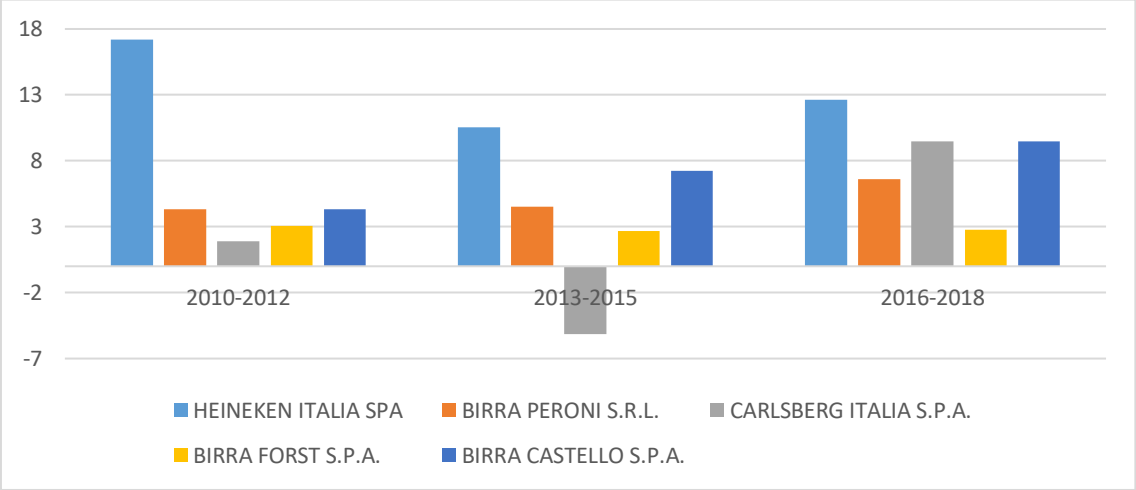


Figure 4.9 ROE Macro Firms 2010-2018

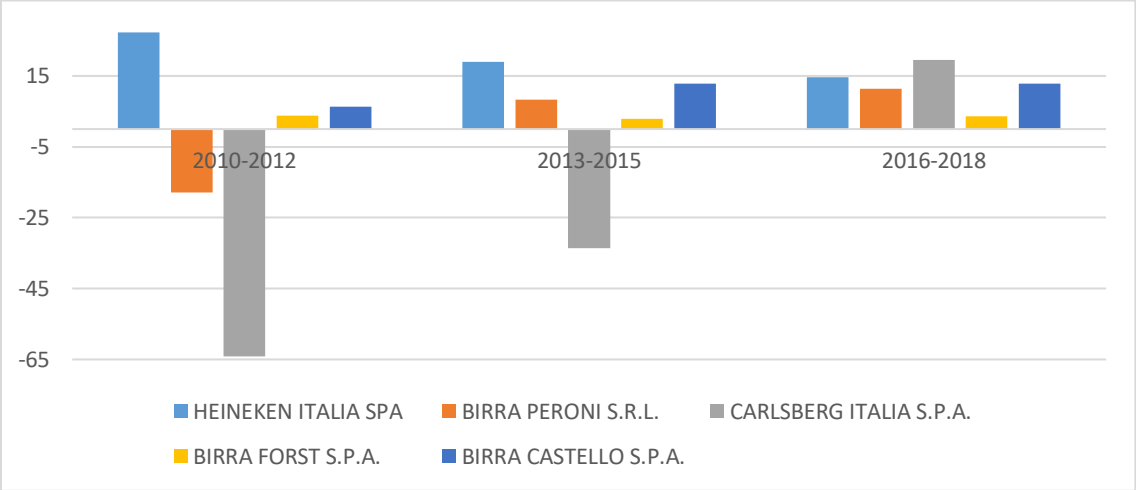
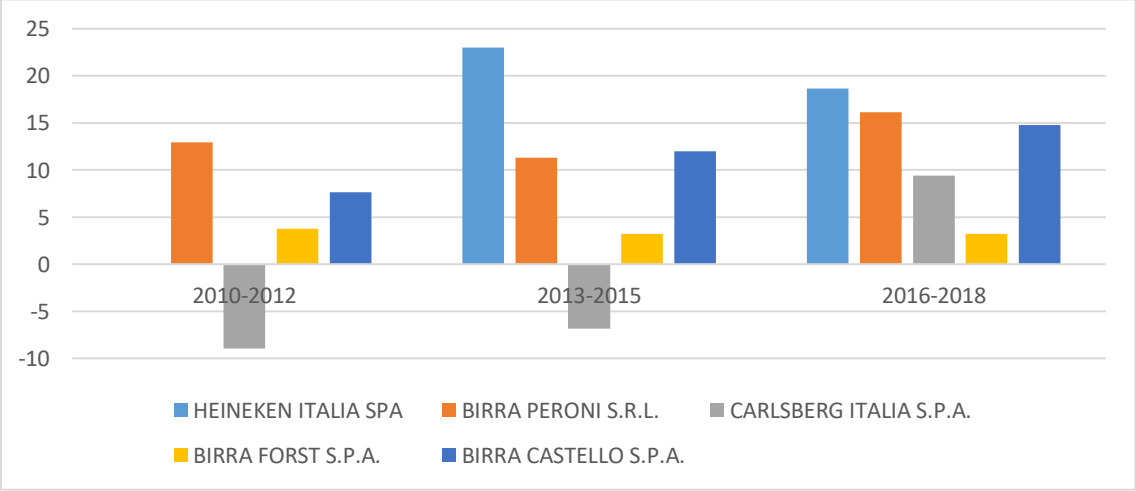


Figure 4.10 ROI Macro Firms 2010-2018



As it is possible to notice Heineken is the firm with the highest profitability.

On the opposite the Figures 4.2 – 4.5 show that Carlsberg has suffered the Italian economic crisis more than any other company: almost all its indices for the two three-year periods 2010 - 2012 and 2013 - 2015 are on average negative. Probably Carlsberg's biggest problems were the insufficient brand portfolio and also an inadequate size. Problems that were overcome during 2016-2018 period.

Table 4.11 Properties of Macro firms profitability indices distribution

	2010	2011	2012	2013	2014	2015	2016	2017	2018
					ROS				
Mean	5.73	4.90	6.07	5.97	4.59	5.40	5.15	8.09	12.00
Median	4.99	3.68	5.76	4.44	5.43	5.32	5.16	6.92	14.91
Standard Deviation	4.88	5.10	5.25	4.15	5.87	6.77	3.61	4.73	5.47
					ROA				
Mean	6.89	5.66	5.92	6.03	3.14	2.73	5.25	7.74	11.58
Median	3.63	4.17	5.09	4.09	3.43	6.06	2.65	8.75	9.37
Standard Deviation	6.05	6.89	6.97	4.97	6.57	7.69	4.89	4.25	7.76
					ROE				
Mean	-17.96	10.08	-18.89	5.63	-0.76	0.84	6.17	12.02	18.89
Median	4.07	6.20	7.21	13.18	3.00	7.44	2.84	14.21	17.08
Standard Deviation	42.34	13.66	70.05	20.69	21.06	21.00	5.76	5.36	15.02
					ROI				
Mean	6.48	4.93	3.98	8.77	4.95	13.02	8.69	14.79	14.92
Median	6.44	5.67	6.44	10.09	8.62	14.11	4.36	15.84	16.70
Standard Deviation	3.01	9.28	10.72	4.16	17.74	7.36	6.77	7.06	9.38

In order to represent the profitability indexes for the microbreweries the box-plot diagram is used (Figures 4.6 – 4.9). It represents the distribution of a set of data concerning the ROS, ROA, ROE and ROI indexes.

Figure 4.11 Box - Plot ROS Microbreweries 2010 - 2018

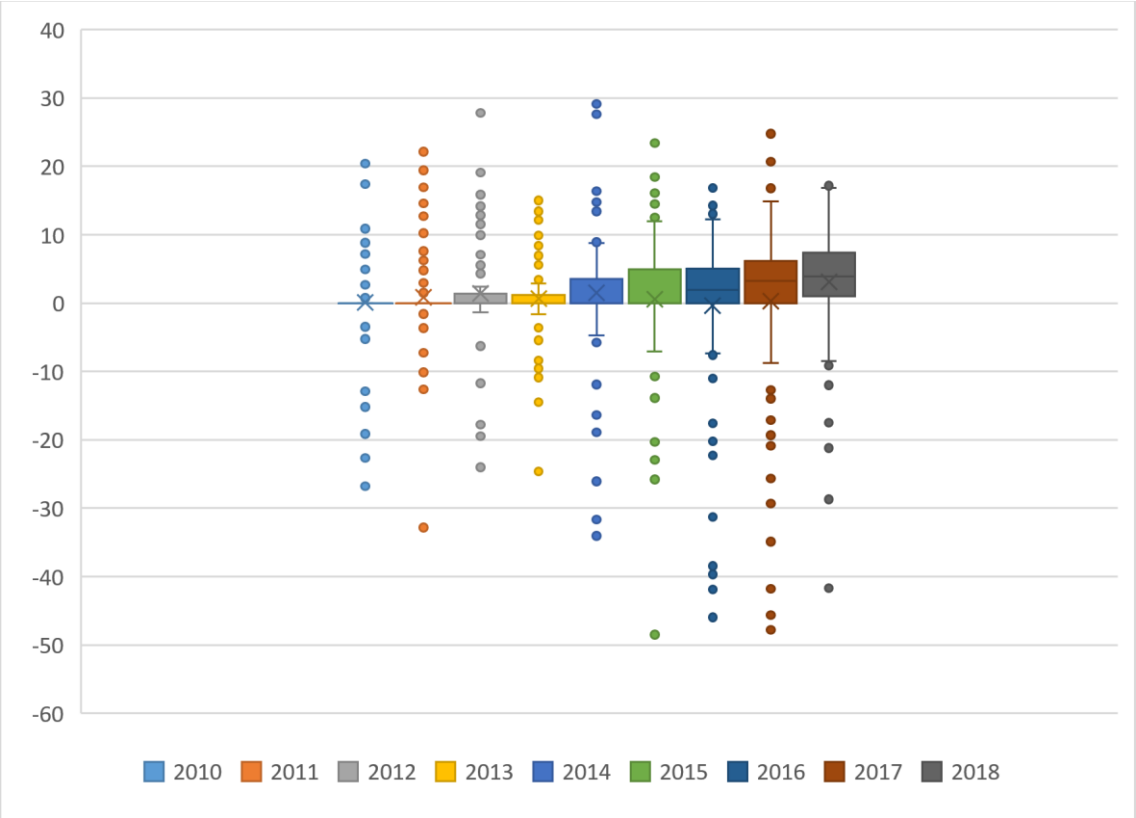


Figure 4.12 Box-Plot ROA Microbreweries 2010 - 2018

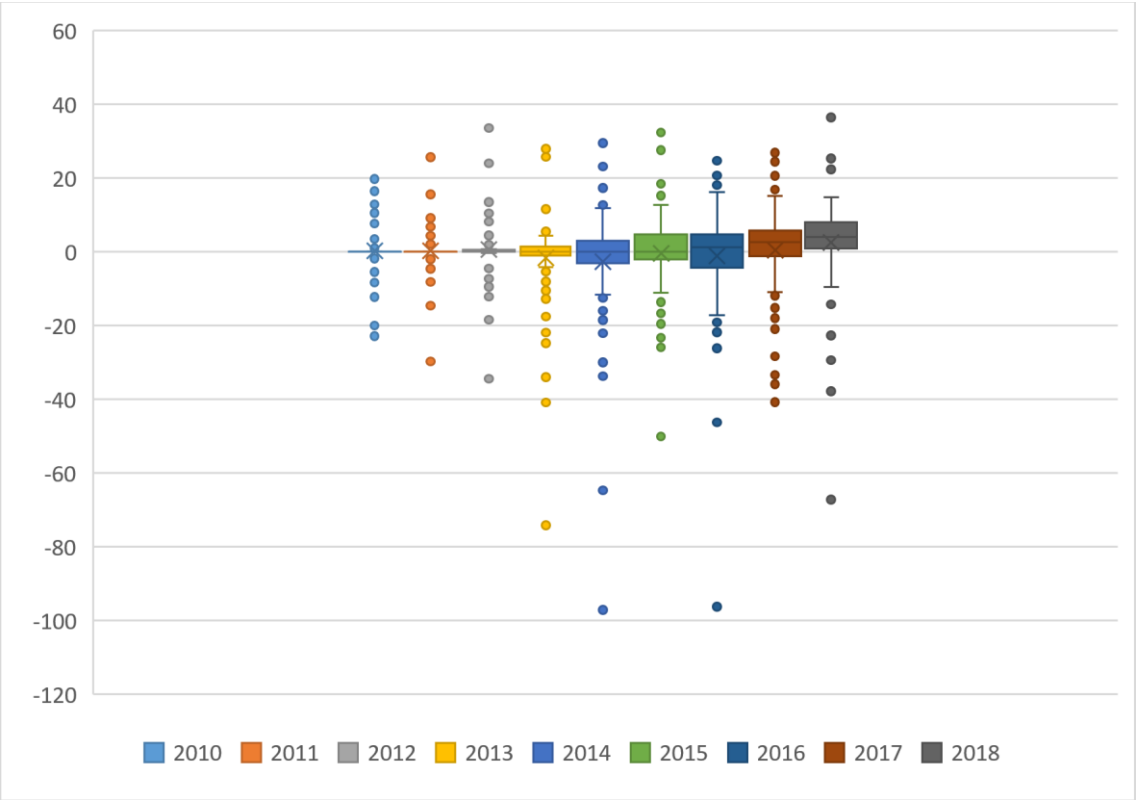


Figure 4.13 Box-Plot ROE Microbreweries 2010 - 2018

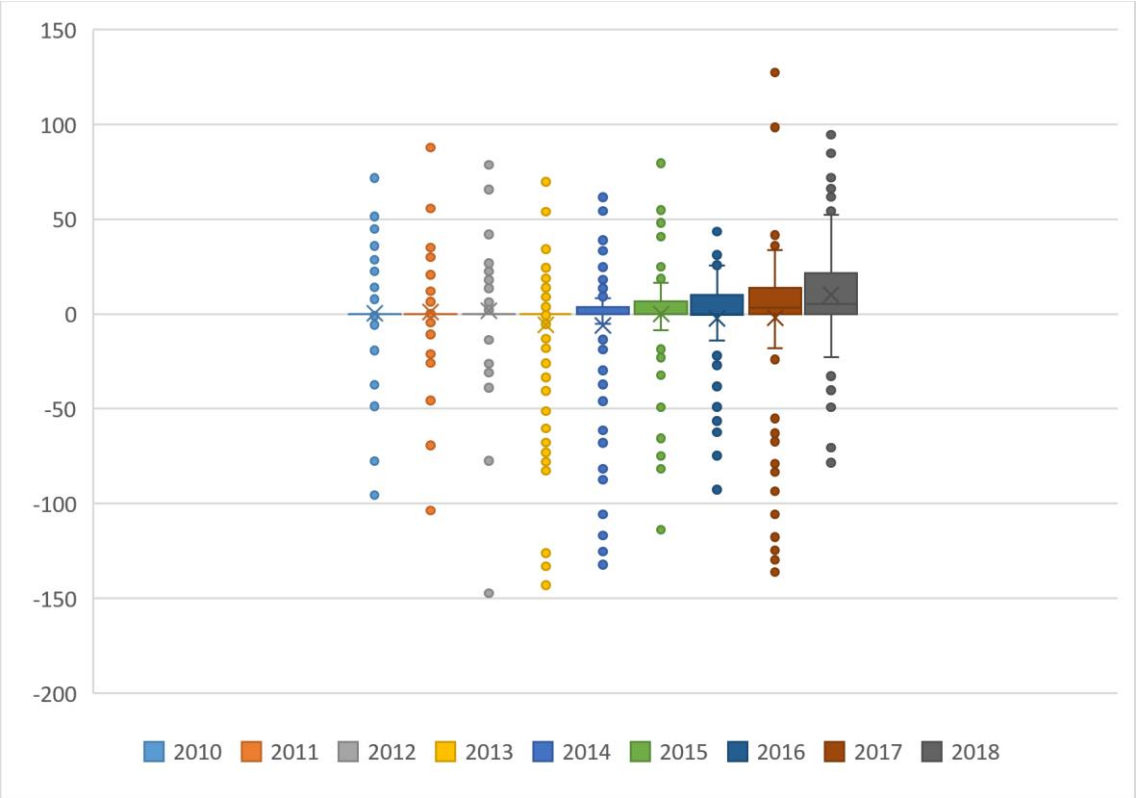
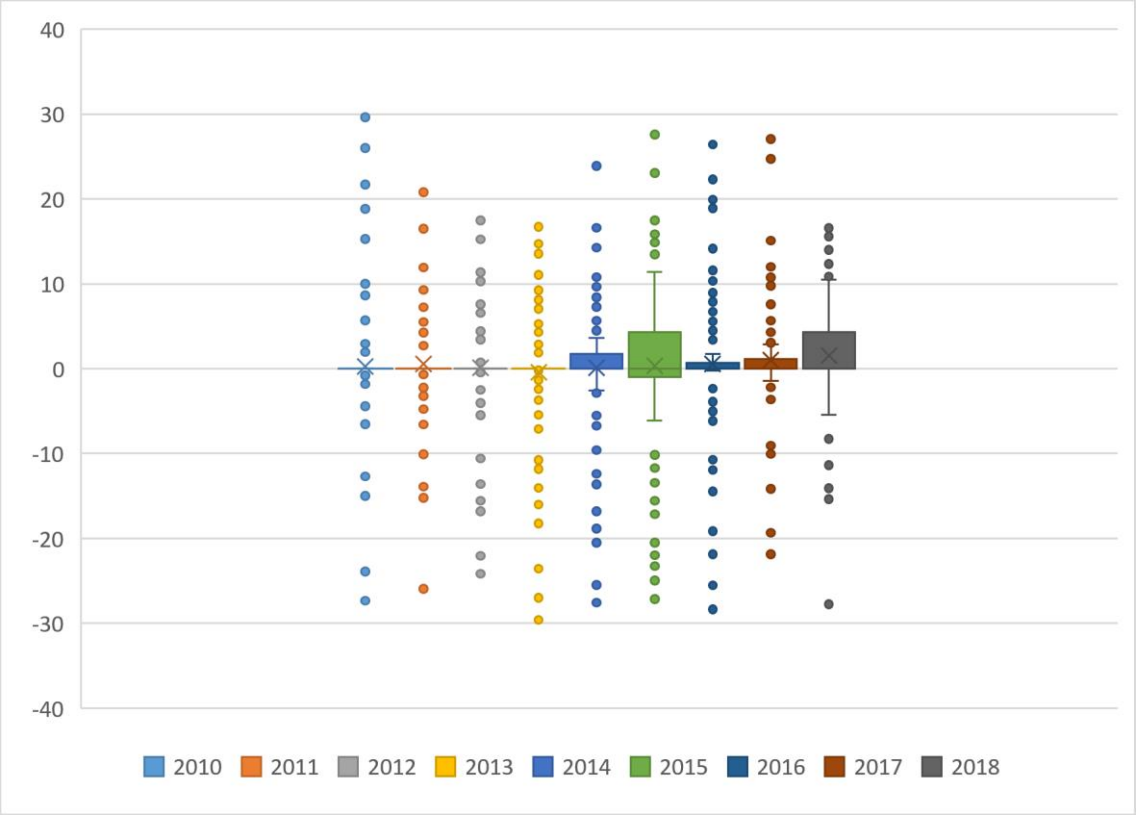


Figure 4.14 Box-Plot ROI Microbreweries 2010 - 2018



In Table 4.2 it is possible to see that the numbers of "outliers" (observations that are numerically distant from the rest of the data) are decreasing and the medians are in general increasing.

Table 4.12 Properties of Microbreweries profitability indices distribution

	2010	2011	2012	2013	2014	2015	2016	2017	2018
	ROS								
Mean	0.61	3.03	4.31	1.70	2.95	0.86	-0.42	0.34	3.20
Median	3.11	5.01	5.89	2.76	3.43	3.38	3.59	3.68	3.95
Standard Deviation	13.31	12.78	10.51	8.60	11.95	12.90	13.41	12.70	8.81
	ROA								
Mean	0.75	0.71	1.37	-2.90	-3.75	-0.48	-1.30	0.43	2.55
Median	0.98	2.42	2.88	-0.16	0.86	1.75	2.07	2.70	3.95
Standard Deviation	10.14	9.63	12.02	15.12	19.38	11.44	14.03	11.03	11.75
	ROE								
Mean	1.11	2.98	4.91	-11.75	-10.36	0.10	-2.91	-2.20	11.42
Median	2.51	2.91	6.82	-0.01	1.60	3.03	2.22	5.41	6.41
Standard Deviation	37.76	34.88	39.20	46.19	43.93	33.45	29.41	42.35	29.03
	ROI								
Mean	1.12	2.08	0.46	-0.89	0.22	0.51	1.35	2.38	3.32
Median	2.05	3.61	3.72	-0.10	1.71	2.39	2.58	3.51	4.84
Standard Deviation	14.99	10.34	10.73	11.04	11.55	12.06	12.05	10.71	9.07

4.3 Partial Productivity

Partial productivity, which in general is the relationship between the output and input used in the production, can be represented by different indexes and it is an important indicator of the importance in a particular industry of economies of scale.

Focusing on the labor input, the average revenue per employee and added value per employee are significant indexes as they give a measure of average financial productivity for each employee and of the company's efficiency.

As done previously, the analysis is performed individually for the five Macro firms (Figure 4.10 – 4.11) and all together for the microbreweries (Figure 4.12 – 4.13).

Figure 4.15 Average Revenue per Employee

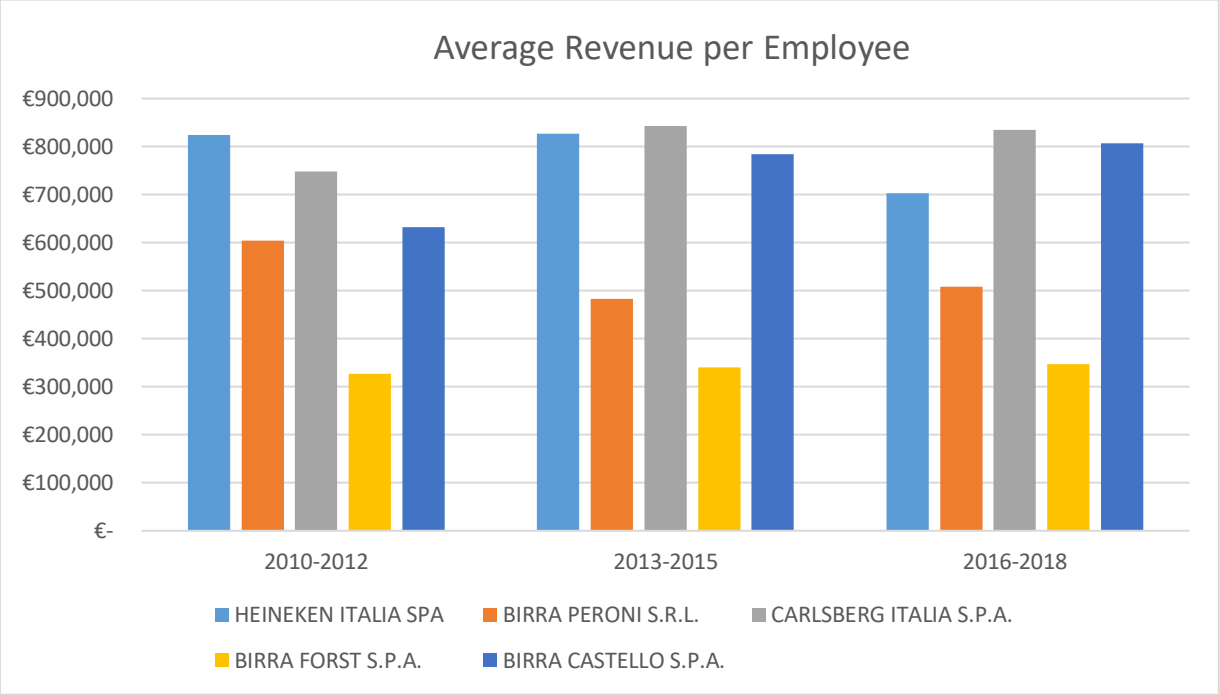


Figure 4.16 Average Added Value per Employee

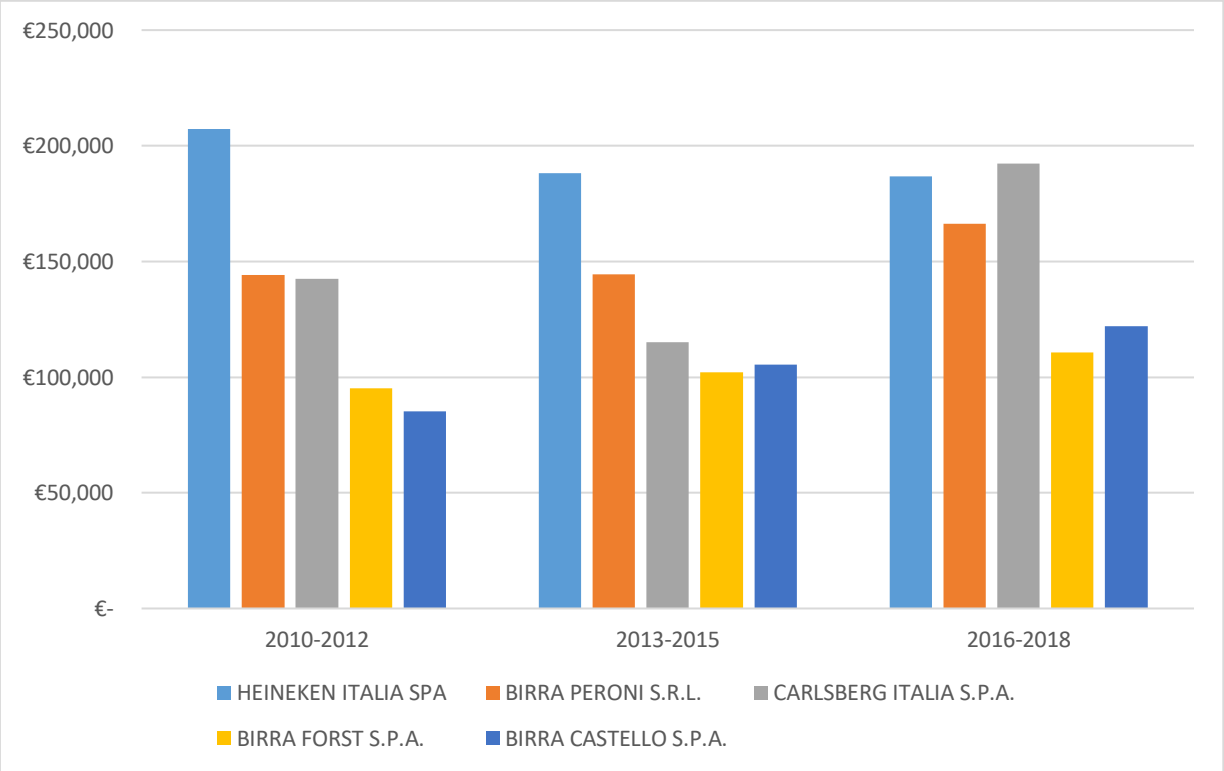


Table 4.13 Properties of Macro firms partial productivity indices distribution

	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Average Revenue per Employee (€)								
Mean	601,791	635,425	644,111	647,932	643,028	674,806	624,898	677,403	617,743
Median	660,924	669,669	756,663	747,878	780,541	822,914	766,982	791,902	576,791
Standard Deviation	188,687	188,459	225,952	235,439	222,121	234,176	224,549	220,105	210,656
	Average Added Value per Employee (€)								
Mean	139,617	132,442	132,457	134,628	126,777	131,697	129,775	153,115	183,808
Median	146,027	125,322	134,137	129,677	103,488	115,321	123,802	151,728	191,804
Standard Deviation	58,980	47,650	41,056	38,768	39,959	41,369	28,513	30,317	76,066

On average, the five big companies have 640k€ of annual average revenue per employee and 140k€ of annual average added value per employee.

Figure 4.17 Box-Plot Average Revenue per Employee Microbreweries 2010-2018

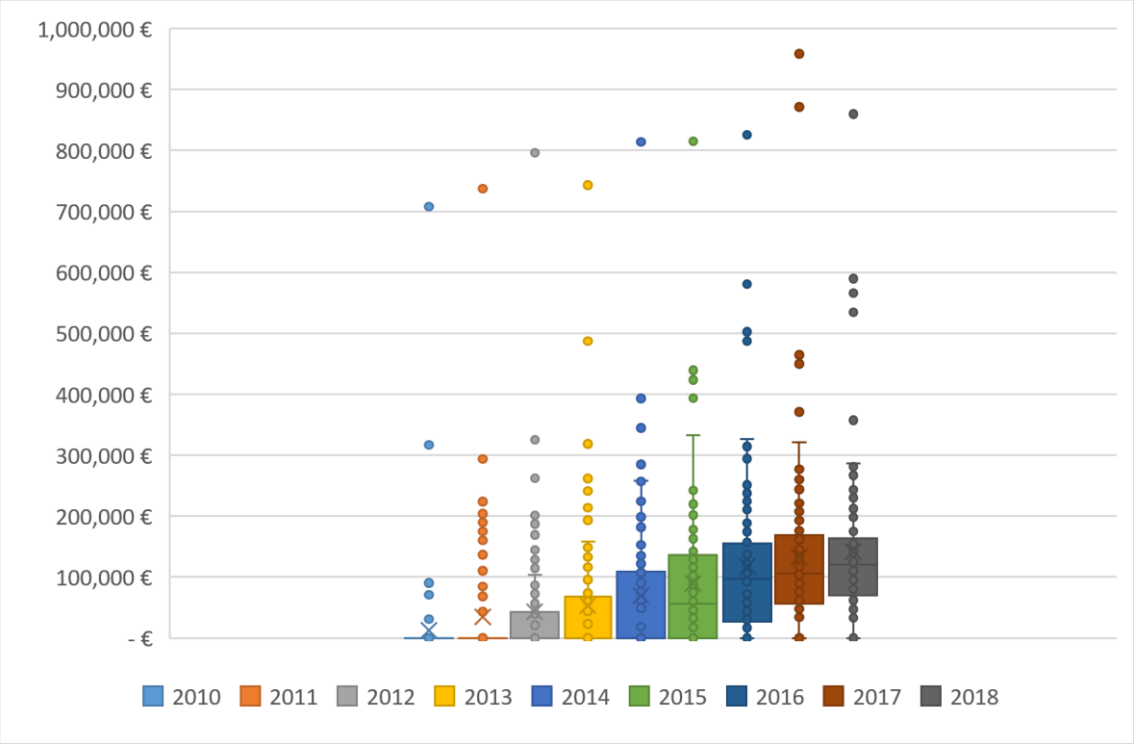


Figure 4.18 Box-Plot Average Added Value per Employee Microbreweries 2010-2018

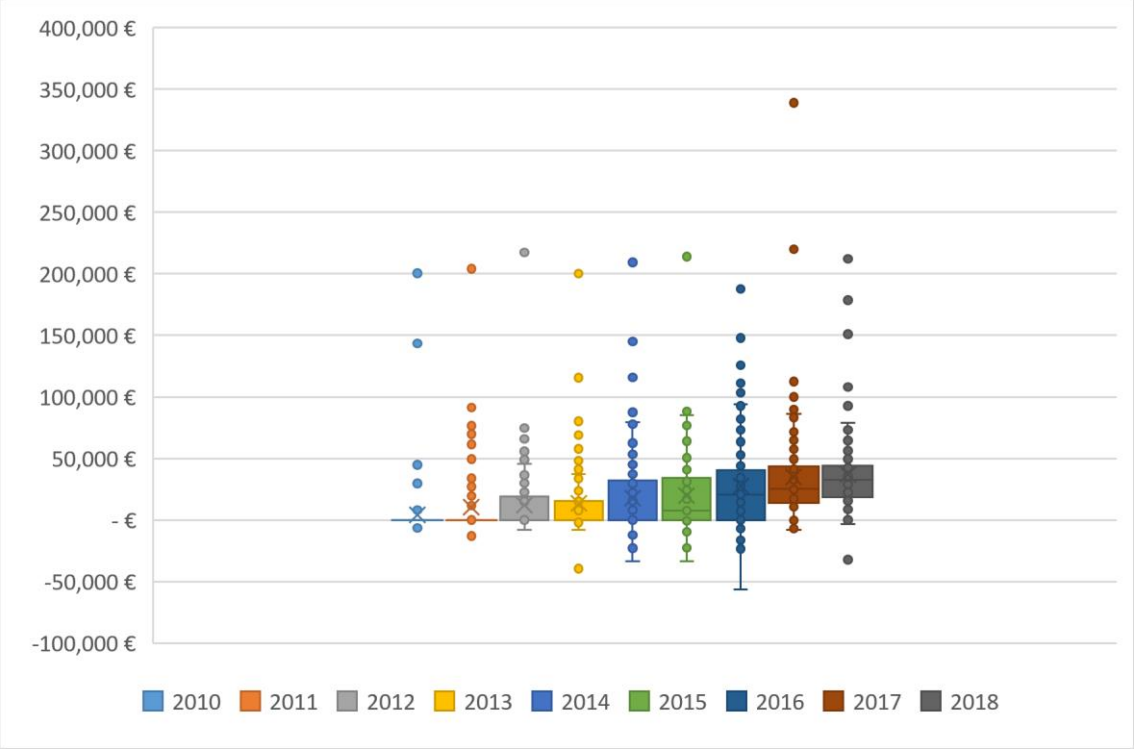


Table 4.14 Properties of Microbreweries partial productivity indices distribution

	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Average Revenue per Employee (€)								
Mean	189,073	155,892	151,470	152,202	150,063	135,551	142,517	150,211	150,766
Median	90,716	113,508	120,687	121,844	123,905	110,077	110,811	117,155	125,835
Standard Deviation	250,237	144,117	144,867	138,794	129,510	125,047	128,580	141,216	120,408
	Average Added Value per Employee (€)								
Mean	65,093	47,658	41,748	38,528	38,417	30,366	33,418	39,454	38,976
Median	35,568	35,153	33,308	31,344	33,631	27,795	25,210	27,814	33,816
Standard Deviation	76,787	41,823	37,675	39,462	41,417	35,138	38,453	44,056	33,309

On average, the microbreweries have 153k€ of annual average revenue per employee and 41k€ of annual average added value per employee; values significantly lower than those of large companies (76% less and 72% less respectively).

This consideration highlights that economies of scale are an important aspect of the beer market that brings the big firms to have a much higher average revenue and added value per employee compared to the microbreweries.

4.4 Craft Breweries

In order to focus on craft breweries, the sample of 107 microbreweries was analyzed. They were banded, according to their annual range of production during 2018, into three main groups: big breweries, mid-size breweries and microbreweries (Table 4.6).

Table 4.15 Sample of craft breweries banded by quantity produced

Category	Annual Range of production	# of companies
Big breweries	Higher than 6000 hl	8
Mid-size breweries	Between 2000 and 5999 hl	16
Microbreweries	Lower than 2000 hl	83

In Italy the craft beer movement is an anomalous case. The Italian legislation, in 2016, called "craft beer" (with the possibility of putting it on the label) the unfiltered and unpasteurized one produced by independent breweries under 200,000 hl per year. This size threshold is indicated by an European Directive, but in our country there is a clear prevalence of microbreweries. In fact, the average production of craft breweries in Italy is around 600 hl per year. [40]

4.4.1 Revenues of Craft Breweries

In this section it is performed an analysis of the revenues of the sample of 107 Italian craft breweries between 2010 and 2018 (Table 4.7)

Table 4.16 Maximum, Minimum and Average Revenue produced by category 2010-2018

Category	Maximum Revenue	Minimum Revenue	Average Revenue
Big breweries	6,087,443 €	795,761 €	2,350,688 €
Mid-size breweries	1,782,183 €	109,323 €	627,783 €
Microbreweries	1,068,924 €	20,295 €	243,285 €

Focusing on microbreweries, which represent the largest sample, it is possible to note an average growth in revenues (Figure 4.14, Table 4.8).

Figure 4.19 Box-Plot Revenue Microbreweries 2010-2018

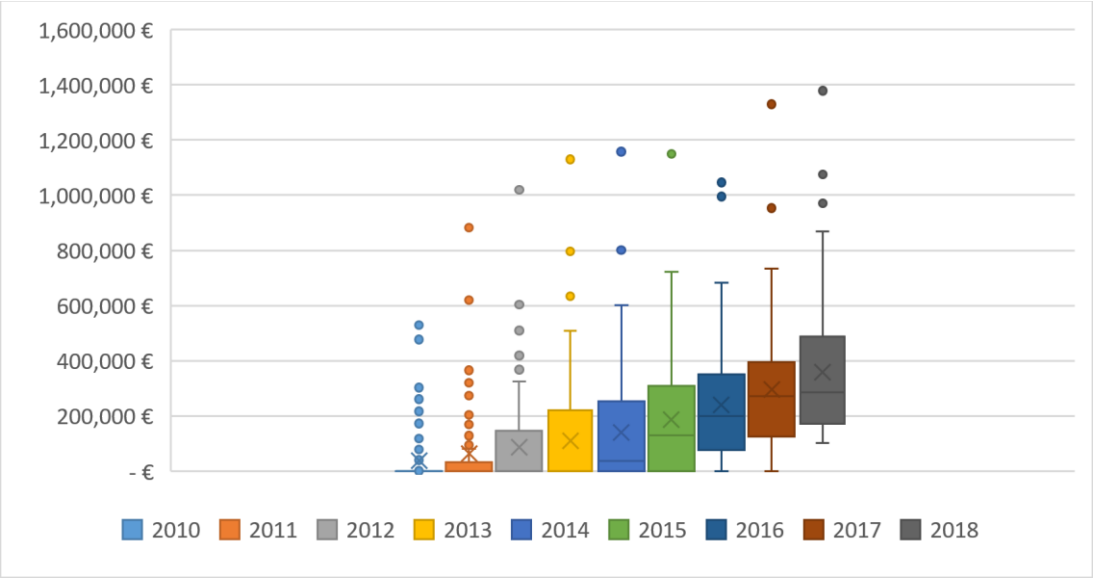


Table 4.17 Properties of Revenue Microbreweries distribution

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Mean	149,696	229,617	233,181	212,109	202,051	234,222	263,366	307,191	358,135
Median	118,155	204,084	186,949	209,725	153,417	182,266	212,474	275,747	286,421
Standard Deviation	153,449	206,977	214,680	229,578	217,310	206,253	211,719	221,038	238,145

Taking into consideration only 2018, it is possible to make an analysis of the relationship between average production and average revenues (Table 4.9).

Table 4.18 Average Revenue, average Production and average Revenue per liter 2018

Category	Average Revenue	Average Production	Average Revenue/liter
Big breweries	3,680,095	1,390,000 €	2.65 €
Mid-size breweries	1,051,577	297,500 €	3.53 €
Microbreweries	358,135	86,019 €	4.16 €

The big craft breweries sell their product on average for a lower price, around 2.65 €/l. This is possible thanks to the economies of scale that allow to spread the huge costs of production, bottling and distribution over a greater number of units produced.

On the other hand, mid-size breweries and microbreweries must sell their beer at an higher price (3.53 €/l and 4.16 €/l respectively). This was predictable

considering that the quantities produced are much smaller and this two categories of craft breweries cannot exploit economies of scale.

4.4.2 Cost of Craft Breweries

The following analysis shows how much the cost for raw materials and personnel affect the average production cost (Table 4.10).

Table 4.19 Average Production, Raw Material and Labor Cost 2010 - 2018

		Average Raw Material Cost		Average Labor Cost	
Category	Average Production Cost	€	%	€	%
Big breweries	2,542,048 €	791,300 €	31%	501,089 €	20%
Mid-size breweries	722,044 €	245,062 €	34%	101,694 €	14%
Microbreweries	276,364 €	86,579 €	31%	47,233 €	17%

As expected, the highest percentage of expenses belong to raw material. This mainly affects the mid-size breweries that are seeking higher quality of the ingredients, but on the other hand they cannot rely on consolidated relationships with suppliers. Problem that does not occur for big breweries thanks to their high power over suppliers.

Looking at labor costs, they are probably distorted by the phenomenon of undeclared work; moreover in microbreweries usually the owner is also the brew master and this further reduces costs.

4.4.3 Profitability

Profitability is a company's capability of generating profits from its operations. Profitability looks at the relationship between the revenues and expenses to see how well a company is performing and the future potential growth a company might have.

Table 4.20 Average Profitability of Craft breweries by category 2010-2018

Category	Production Value	Production Cost	Operating Income	Taxes	Profit
Big breweries	2,474,134 €	2,542,048 €	- 67,914 €	-8,500 €	- 99,610 €
Mid-size breweries	743,698 €	722,044 €	21,654 €	14,663 €	1,880 €
Microbreweries	276,333 €	276,364 €	- 30 €	1,884 €	- 7,587 €

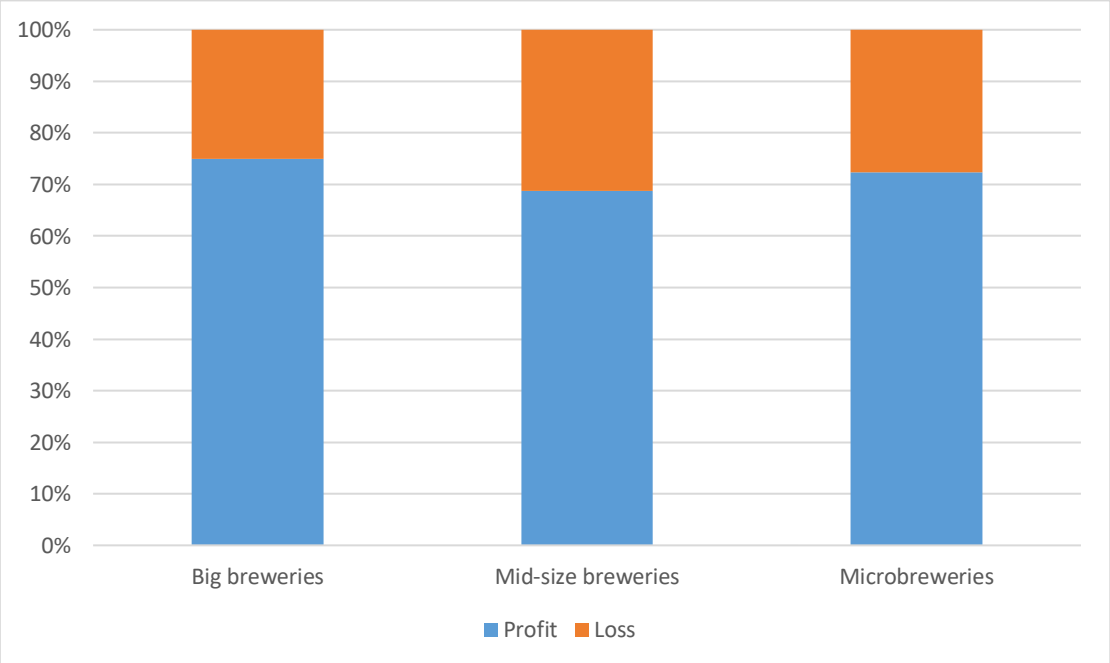
Table 4.21 Median Profitability of Craft breweries by category 2010-2018

Category	Production Value	Production Cost	Operating Income	Taxes	Profit
Big breweries	1,965,340 €	1,928,170 €	37,170 €	11,029 €	17,762 €
Mid-size breweries	641,894 €	623,941 €	17,953 €	6,596 €	6,514 €
Microbreweries	236,528 €	227,951 €	8,577 €	1,030 €	447 €

Looking to the difference between Table 4.11 and Table 4.12 it is possible to notice that the median values are better than the average one. This happens because the average has the disadvantage of being affected by any single value being too high or too low compared to the rest of the sample.

The market of the craft breweries is particular and complex where profits are on average low or even negative.

Figure 4.20 Percentage of craft breweries making profit-loss by category 2018



The Figure 4.15 show that, during 2018, about 30% of the micro mid and macro have suffered losses.

A possible reason is the growing number of craft breweries: the increasing supply of craft beer is not balanced by a similar growth in demand. In the last years, craft breweries have been able to steal some of the market share of industrial beer, but the market is not ready yet to guarantee profitability at this high number of craft breweries.

4.5 Estimate of economies of scale

In this section it is performed an econometric analysis using STATA, a statistical software. The purpose is to estimate economies of scale of the market analyzing the information about capital, labor and material cost and linking them to the quantity of production during 2018 in order to obtain a production function.

A production function is the relationship between the production quantity of an economic good (product or output) and the quantities of the individual production factors (input). It is a mathematical function that relates the flow of a good produced Y (output) and the flow of the n productive factors *x* (input) used in the process.

$$Y = f(x1, x2, x3, \ldots, xn)$$

To do this, the financial information obtained from AIDA and the information on production obtained from the book "Guida alle birre d'Italia 2019" were used.

In particular, 2018 was taken into consideration and for each company of our sample the following items were collected:

- production (l): *prod_*
- cost of labor (k€): *costo_lav_*
- cost of material (k€): *mat_*
- cost of capital (k€): *tot_imm_mat_*

After importing the data to STATA, we searched and deleted influential points (as outliers) that might skew the model. In particular, samples with negative values of the cost of the material (mat_) and values lower than 10k of the cost of capital (tot_imm_mat_) have been eliminated, obtaining a resulting sample composed of 97 elements.

4.5.1 Input

1. Cost of labor

This variable represents the cost of the employees of each company of our sample and it was collected directly from AIDA database. From now it is named: "*costo_lav_*".

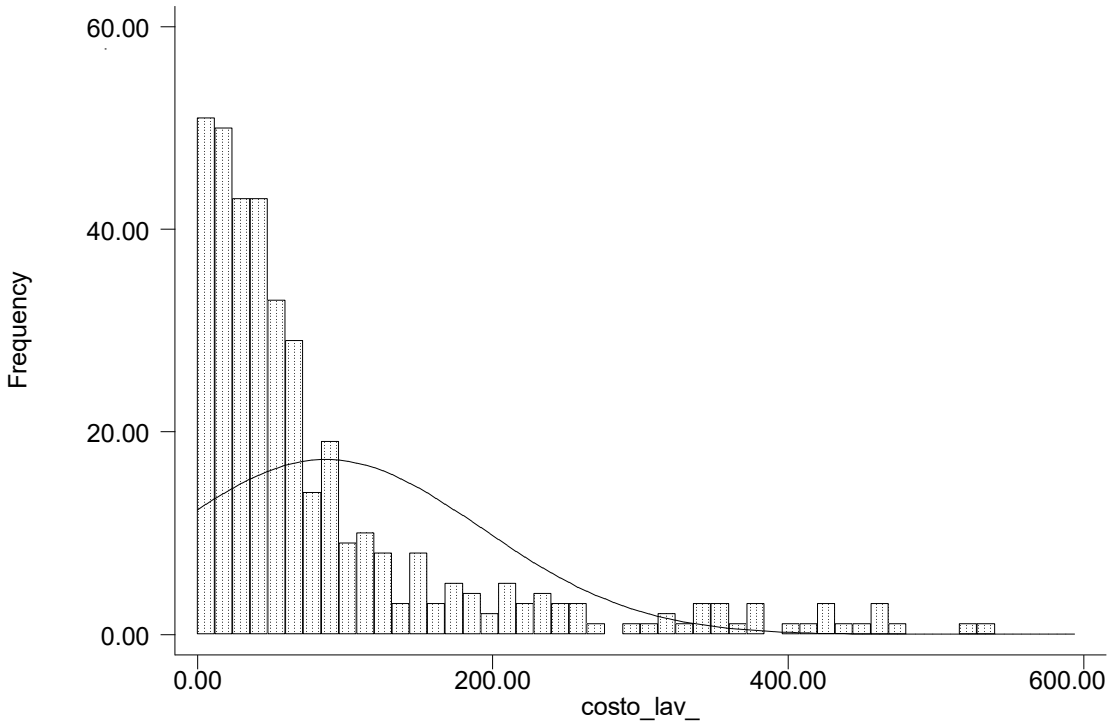
Table 4.22 Summary statistics "costo_lav_"

costo_lav_

	Percentiles	Smallest		
1%	6.025	6.025		
5%	12.702	6.355		
10%	16.117	7.347	Obs	97
25%	32.361	10.039	Sum of Wgt.	97
50%	72.585		Mean	2071.28
		Largest	Std. Dev.	10756.61
75%	205.22	11903.95		
90%	465.132	21739.19	Variance	1.16e+08
95%	6362.603	55108	Skewness	6.726471
99%	88355	88355	Kurtosis	49.92259

Some particularly large values of "costo_lav_" have been deliberately omitted from the following graph (Figure 4.16) to allow better visualization.

Figure 4.21 Frequency distribution of "costo_lav_"



The frequency distribution graph shows that most of the values are less than 200 k€. In particular, 75% of the values are concentrated in the range between few hundred euros and 205 k€

2. Cost of Material

This variable represents the cost of energy and raw materials necessary for the production of each company of our sample. It was obteined by subtracting the added value from the turnover; both dates were derived from AIDA database. From now it is named: "*mat_*".

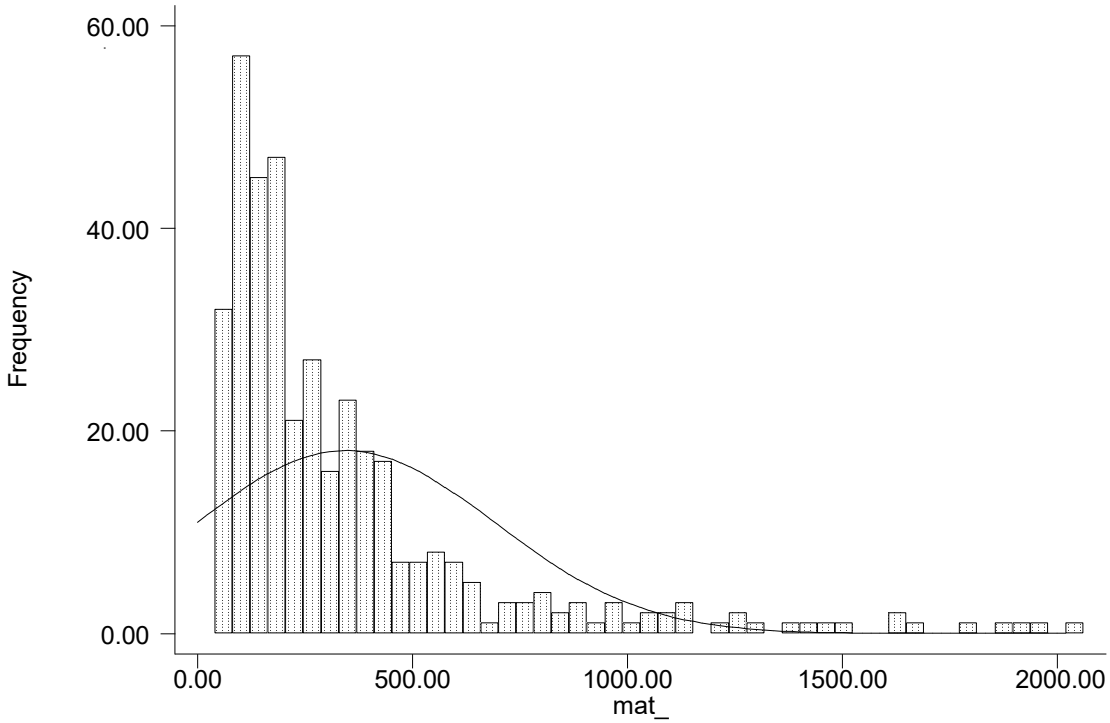
Table 4.23 Summary statistics "mat_"

mat_

	Percentiles	Smallest		
1%	42.935	42.935		
5%	86.835	74.101		
10%	97.873	74.815	Obs	97
25%	186.949	86.586	Sum of Wgt.	97
50%	344.157		Mean	10092.37
		Largest	Std. Dev.	48158.98
75%	579.778	84834.01		
90%	1994.814	85888.15	Variance	2.32e+09
95%	84329.98	282196	Skewness	6.045356
99%	360844	360844	Kurtosis	40.52888

Some particularly large values of "mat_" have been deliberately omitted from the following graph (Figure 4.17) to allow better visualization

Figure 4.22 Frequency distribution of "mat_"



The frequency distribution graph shows that most of the values are less than 500 k€. In particular, 75% of the values are concentrated in the range between 43 k€ and 580 k€.

3. Cost of Capital

This variable represents the cost of the capital or the cost of fixed assets of each company of our sample and it was collected directly from AIDA database. From now it is named: "*tot_imm_mat_*".

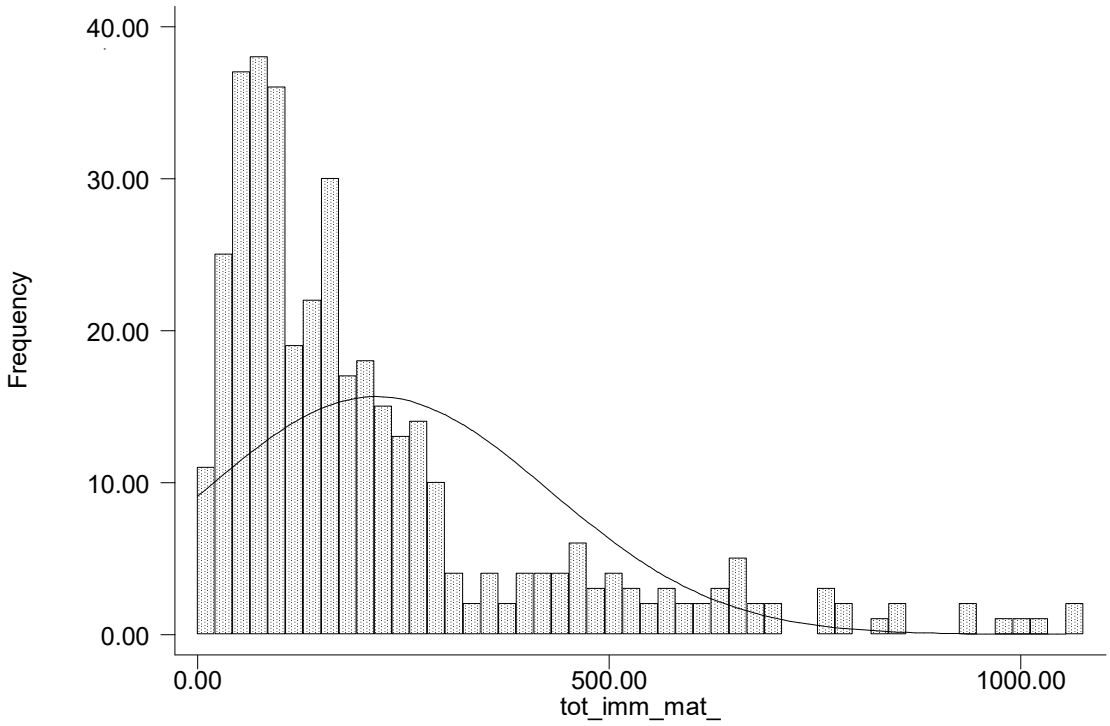
Table 4.24 Summary statistics "tot_imm_mat_"

tot_imm_mat_

	Percentiles	Smallest		
1%	15.387	15.387		
5%	38.54	22.39		
10%	57.994	32.593	Obs	97
25%	90.021	38.483	Sum of Wgt.	97
50%	189.981		Mean	6070.535
		Largest	Std. Dev.	29020.77
75%	425.136	30437.33		
90%	1956.461	106114.9	Variance	8.42e+08
95%	27602.19	140159	Skewness	6.076447
99%	226869	226869	Kurtosis	41.56111

Some particularly large values of "tot_imm_mat_" have been deliberately omitted from the following graph to allow better visualization.

Figure 4.23 Frequency distribution of "tot_imm_mat_"



The frequency distribution graph shows that most of the values are less than 500 k€. In particular, 75% of the values are concentrated in the range between 15 k€ and 425 k€.

4.5.2 Linear Regression

From now on the production is named: "*prod_*".

It is therefore possible to express the production function in terms of a multiple linear regression:

$$Y = prod\_ = f\,(costo\_lav\_, mat\_, tot\_imm\_mat\_)$$

To estimate the unknown parameters the OLS (Ordinary Least Squares) method was used. ,

First the logarithms of the variables were calculated:

- *log_prod_real*=log(*prod_*)
- *log_lav_mon*=log(*costo_lav_*)
- *log_mat*=log(*mat_*)

- *log_cap*=log(*tot_imm_mat_*)

Then the squares of the logarithms and the cross products were elaborated:

- *log_lav_mon2=log_lav_mon*^2
- *log_mat2=log_mat*^2
- *log_cap2=log_cap*^2
- *log_lav_mat=log_lav_mon*log_mat*
- *log_cap_mat=log_cap*log_mat*
- *log_cap_lav=log_cap*log_lav_mon*

Table 4.25 Estimation results

```
Linear regression                               Number of obs =      97
                                                F(  9,    87) =  396.99
                                                Prob > F      =  0.0000
                                                R-squared     =  0.9522
                                                Root MSE      =  .44491
```

log_prod_r~l	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
log_lav_mon	.5551579	.4201139	1.32	0.190	-.2798639	1.39018
log_mat	-.5477011	.3729204	-1.47	0.146	-1.288921	.1935186
log_cap	.0113702	.3136084	0.04	0.971	-.6119604	.6347008
log_lav_mon2	-.1291796	.0636701	-2.03	0.046	-.2557308	-.0026285
log_mat2	.09369	.0580139	1.61	0.110	-.021619	.2089989
log_cap2	.0306174	.0518026	0.59	0.556	-.0723459	.1335807
log_cap_lav	-.0040177	.0707747	-0.06	0.955	-.14469	.1366546
log_cap_mat	-.0335856	.0811259	-0.41	0.680	-.1948322	.127661
log_lav_mat	.0933057	.1433245	0.65	0.517	-.1915672	.3781787
_cons	9.643134	.798265	12.08	0.000	8.056496	11.22977

As it is possible to observe, the value of R-squared is close to 95%: it is the proportion of variance in the dependent variable which can be predicted from the independent variables.

Now the production function has been exposed in this way:

$$log\ (prod\_) = \beta_0 + \beta_L\ log\_lav\_mon + \beta_K\ log\_cap + \beta_M\ log\_mat + \beta_{LL}\ log\_lav\_mon2 + \beta_{KK}\ log\_cap2 + \beta_{MM}\ log\_mat2 + \beta_{LM}\ log\_lav\_mat + \beta_{KM}\ log\_cap\_mat + \beta_{KL}\ log\_cap\_lav$$

Where β_0, β_L, β_K, β_M, β_{LL}, β_{KK}, β_{MM}, β_{LM}, β_{KM}, β_{KL} are the values for the regression equation for predicting the dependent variable from the independent variable (the "Coef.")

The index of the economy of scale (ES) was calculated:

$$ES = \frac{\partial log\ (prod\_)}{\partial log\_lav\_mon} + \frac{\partial log\ (prod\_)}{\partial log\_mat} + \frac{\partial log\ (prod\_)}{\partial log\_cap}$$

Where:

ES > 1 → Economies of scale

ES < 1 → Diseconomies of scale

Performing the derivatives:

$$\frac{\partial log\ (prod\_)}{\partial log\_lav\_mon} = \beta_L + 2\,\beta_{LL}\ log\_lav\_mon + \beta_{LM}\ log\_mat + \beta_{KL} log\_cap$$

$$\frac{\partial log\ (prod\_)}{\partial log\_mat} = \beta_M + 2\,\beta_{MM}\ log\_mat + \beta_{LM}\ log\_lav\_mon + \beta_{KM} log\_cap$$

$$\frac{\partial log\ (prod\_)}{\partial log\_cap} = \beta_K + 2\,\beta_{KK}\ log\_cap + \beta_{KL}\ log\_lavmon + \beta_{KM} log\_mat$$

The Table 4.17 shows the index of economies of scale (ES). It is determined in correspondence with the percentiles relating to "*costo_lav_*", "*mat_*" and "*tot_imm_mat*" obtained from normalization with respect to median values.

Table 4.26 Estimates of economies of scale

Percentiles	costo_lav_	mat_	tot_imm_mat_	ES
25%	32.36 €	186.95 €	90.02 €	0.830
50%	72.59 €	344.16 €	189.98 €	0.862
75%	202.22 €	579.78 €	425.14 €	0.834
85%	378.49 €	1,523.14 €	1,446.02 €	0.998
90%	465.13 €	1,994.81 €	1,956.46 €	1.037
95%	6,362.60 €	84,329.98 €	27,602.19 €	1.582
99%	88,355.00 €	360,844.00 €	226,869.00 €	1.547

Returns to scale are higher for companies with greater production and decrease with decreasing percentiles. Around the 85th percentile, economies of scale have a unitary value. This result shows that for smaller dimensions there are diseconomies of scale: a dimensional growth up would be desirable to increase production efficiency.

It is necessary to exceed the threshold for which the cost advantages begin to overcome the decrease in the price. A good strategy could be to avoid or at least reduce the decrease in price by investing in marketing and product reputation: thus increasing the quantity of product produced but maintaining the perception of high quality and artisanal product.

5. Case Study - Growth strategies of two Italian breweries

In this chapter an analysis has been performed on the history, the product and the strategies of two Italian companies: Baladin and Birra del Borgo.

5.1 Baladin - “Gusto in evoluzione”

5.1.1 The company and history

Baladin means storytellers and this is the name that Teo Musso has decided to give to his adventure that is going on for thirty years.

The Baladin brewery was founded in 1996 in Piozzo, a small town in the Langhe (Province of Cuneo). Its founder and master brewer is Teo Musso. The first plant, self-produced in Belgium by Musso with his friend Jean Luis Dits, was installed in a garage and was built using tanks for milk processing. This achievement was the result of a 4-year journey between Italy and Belgium that Musso did to deepen his knowledge on the production of craft beer.

Initially the beers produced were few and served only on tap. This was something unusual: twenty years ago people didn't think about craft beer at all. Musso then tried to bring the beer through "dressing" them as if they were wines and bring them to lovers of good food and good drink. Right from the start the objective was to produce beers characterized both in taste and in image with the aim of establishing themselves in the world of catering and gastronomy, not only in Italy but worldwide.

Following this plan, he was gradually able to arouse the curiosity and attention of consumers with his beers that came out in succession: Super (Baladin's first bottled beer), Isaac, Niña, Nöel and Wayan.

After a few years from its start, the must fermentation cellar required an expansion thanks to the first commercial successes. First of all Musso decided to re-adapt a former chicken coop owned by his parents and, in order to transfer the must, he created a “birroduct”: a 300-meter pipe line to connect the cooking room to the cellar. At the same time, Musso's creative process was not interrupted. In those

years Nora and Elixir born and in 2004 Xyauyù: a barley wine with an intense ruby color, the flagship of the Baladin experimentation.

In 2005 Musso was awarded by Carlsberg with the "Semper Ardens Awards for Beer Culture": a prize for those who have been able to contribute to the development of beer culture in the world. Teo, the first Italian to receive the award, was recognized as "promoter of beer culture in the world of gastronomy and catering".

In 2008, Open Baladin was born, the first open source beer in history. The recipe was put online with the appropriate quantities for a home production: the goal was sharing and dissemination. It was a historic moment that represented Musso's desire to spread the culture and value of craft beer in Italy as much as possible.

The ever-increasing success made it necessary to transfer, in 2009, to a larger structure: a former hardware factory of about 2,600 square meters at the foot of the Piozzo hill, in Farigliano.

Since January 2012 Baladin has become an agricultural brewery with the aim of taking responsibility for the entire production cycle of its beers, starting from the land and the raw materials that are generated from it. The ultimate goal, pursued through the production and sale of Baladin beers, is to fully support this cycle by producing not only wealth, but also ethical values. Barley malt is produced in Basilicata while part of the hops in an experimental plantation in Piedmont in collaboration with the Cussanio Agricultural Institute.

In 2016 the new Baladin brewery was inaugurated. The new headquarters is located on a 73,000 m^2 property - including, among other things, a beautiful farmhouse - and is immersed in a breathtaking park called Baladin Open Garden. The latter was inaugurated the following year for its first “summer in Garden”: a season of events, shows and concerts to spread the culture of craft beer and create a strong moment of sharing both for the Baladin community and for fans of the brewing world.

With an annual production in 2018 of around 25,000 hectoliters divided between more than 30 types of beer, with the aim of becoming the first completely independent artisan brewery in the world by 2022, the Baladin brewery can be considered the forefather of the craft beer movement in Italy.

5.1.2 The products

The range of products manufactured and sold by Musso is wide: the catalog includes both beer and non-alcoholic beverages (Cedrata, Spuma Nera, Ginger and Cola), distillates, cider and objects (for example, the table-top dispenser).

Within this last category is placed TEKU, a "universal beer glass" born in 2006 and whose name derives from the beginnings of the two inventors: Teo Musso and Kuaska, one of the most important taster of Italian beers. The glass is made by the company Rastal, leader in the sector, and is now considered the official Italian glass for tasting beer and is received with enthusiasm even abroad. In fact, its particular shape is able to enhance the aromas and flavors of the beers. Since 2014 alongside the TEKU, with a capacity of 42 cl, the "Mini-TEKU" has been introduced with similar functional and design characteristics but with smaller dimensions (33 cl).

Regarding products other than real beer, the catalog includes “Spirits Baladin” that are the Vermouth of beer and beer distillates, “Sidro”, “Extra bibite” (for example “cola” and “cedrata”), “Bevi Frutta” born from the combination of zero-kilometer fruit and spices, “Dolcezze” that are typical Christmas cakes like “panettone” and the beerkits dedicated to all homebrewers.

As for beers, Baladin's production consists mainly of special and premium beers:

- “Speziate”
- “Puro Malto”
- “Luppolate”
- “Speciali”
- “Riserva Teo Musso”
- “Linea Open”

- “Lattina”
- “Senza Glutine”
- “Le Spine”

The Specials are beers produced in limited quantities for several reasons: for the raw materials with scarce availability (seasonal or experimental) that are used or because they represent an “event beer” or a special collaboration. The "Speciali", "Riserva Teo Musso" and "Lattina" are parts of this category and collect a total of 17 different variants of beer.

5.1.3 Strategies

The positioning choice made by Teo Musso is an expression of his corporate philosophy: Baladin is synonymous of Italian craft beer and it must address a wide audience (Italian and foreign), "sophisticated" and attentive to the quality of raw materials.

Baladin also has a strong bond with the land: this message is strongly expressed by Musso to make clear that beer is a direct expression of the products of the earth and agriculture.

The company wants to be the forefather of a brewing culture based on the made in Italy. The idea is to focus on the "short chain" for a craft beer produced entirely in the Italian supply chain. In order to achieve this results, it produces most of the raw materials independently: 100 hectares of two-row barley are grown in Basilicata and a hop crop built close to the Piozzo site.

The company is also attentive to safeguarding the territory: it produces electricity and power through the use of photovoltaic panels installed on the roof of the plant which, in optimal conditions, cover 80% of the total requirement of the brewery. The heat used in the fermentation cell (which must always be around 23 degrees of temperature), derives from the heat collected in the cellar, from the fermentation process of the must. In this way, the use of fuel is avoided.

In a nutshell, continuous innovation in both process and product, expansion and growth while maintaining the highest level of quality are the pillars of the Baladin strategy.

Teo Musso also wanted to push towards the creation of an active community and to spread a culture of craft beer. Not surprisingly, the birth of the Open Garden project, open to the public on an ongoing basis as a center for aggregation and dissemination of beer culture, represents the awareness that one becomes great only with the involvement of the public, for which the craft beer movement is still a world to be discovered.

5.2 Birra del Borgo: "If you can't beat them, buy them"

5.2.1 The company and history

The Birra del Borgo brewery was founded in 2005 in Borgorose, a small town in Province of Rieti, on the border between Lazio and Abruzzo inside the "Monti della Duchessa" nature reserve.

Leonardo Di Vincenzo, the founder and master brewer, after years of study and travel around Europe to rediscover the ancient brewing styles, began his activity with a high fermentation production, with a second fermentation in the bottle.

In the Old Brewery of Colle Rosso the first beers were produced which had great success and introduced Birra del Borgo all over the world: the "Reale", the "Ducale" and the "Duchessa".

In May 2007, the company celebrated its birthday by creating the first "BdB Day"; in addition, in the same year the birth of "Bir e Fud" in Trastevere, the first place that brought a different idea to Rome about how and why to drink beer with food, combining craft beers with excellent pizzas.

In 2009, the new Spedino brewery was inaugurated, not far from the existing one. Spedino remains an important center as a laboratory for experimentation and more creative projects.

The New Brewery also hosts the Quality Control Laboratory, whose purpose is to monitor the entire Birra del Borgo production by analyzing each batch during and after fermentation to ensure that the final result is the desired one. Another fundamental objective of the laboratory is the study of the different steps of the fermentation process and the identification of native yeast strains to make the beers even more unique.

In April 2016 the brewery was bought by the industrial giant Ab-Inbev: a real shock for the whole world of craft breweries.

5.2.2 The products

Rethinking beer in a radical way has led the brewery to go beyond the boundaries, to unite styles and worlds that are completely different and far apart.

The production of “Birra del Borgo” consists mainly of premium and special beers. It is possible to choose between twenty different flavors that are distributed around four many product categories: “Classiche”, “Stagionali”, “Bizzarre” and “Quotidiane”.

- “Classiche”: the classic beers are made with historical recipes that have made the "Birra del Borgo" known all over the world; examples are the "Reale" inspired by the traditional India Pale Ale and the "Maledetta" that experiments a particular yeast mixture obtained from the interaction of traditional brewer's yeasts with wild ones "hunted" in the mountains around the brewery.
- “Stagionali”: 4 special beers, which are particularly suited to the seasons for which they are designed. A classic Porter to which are added Kentucky Tuscan tobacco leaves, a Chestnut Beer with dried chestnuts, a Spiced Ale with gentian root and an Italian interpretation of a Blanche produced using alternative cereals in addition to the classic barley malt.
- “Bizzarre”: twelve beers are part of this category, each produced once a year. They are called "Bizzarre" because special ingredients or special processes are used for their creation. The common thread between the various beers is creativity: one of them is the "Perle ai Porci", a Stout to

which are added, during the boiling, fresh oysters and cockles of the Roman Coast Slow Food presidium.

- “Quotidiane”: immediate and easy-to-drink beers, inspired by classic styles but reinvented in the "Birra del Borgo" taste.

5.2.3 Strategies

Contamination and innovation, rediscovery and knowledge of traditional processes and techniques giving free rein to creativity and experimentation: these are the inspiration and ambition of “Birra del Borgo”.

Philosophy that has not changed even after the acquisition by Ab InBev in April 2016; reporting the words of Leonardo Di Vincenzo immediately after the conclusion of the purchase: “Our journey since we started in 2005 has been a great adventure. Today the beer sector has become very competitive and it is necessary for us to take another step forward to continue developing products with distinctive aromas and flavors. The collaboration with AB InBev is a great opportunity for us. The opportunity to have resources of various kind, from technological improvement to the possibility of exploiting an infinite number of scientific researches on the subject, to the possibility of growing from a commercial point of view. The opportunity to grow in a sustainable way, remaining true to our identity and the philosophy we have always followed. This partnership will also allow us to concentrate our energies on what we like best to do and that we do the best: create, experiment and push ourselves beyond the boundaries of beer ".

The objective is also similar to that of Teo Musso and Baladin: to push towards an increase in visibility for quality products. This can only bring benefits for the entire market, customers who know the products of Birra del Borgo are curious to try others, perhaps focusing on that craft sector that they did not know before.

6. Final Considerations

The craft beer sector has recently experienced a real boom. Over the last decades, many new entrepreneurial realities, for the most part founded by young people, have been born in Italy, resulting today in a total of 862 microbreweries, and a production of 504,000 hectoliters, an increase of 4.3% over 2017.

However, analyzing the range from 2013 to 2018 it can be seen that the enormous increase of more than 200% in the number of craft breweries (from 294 to 862) has not been accompanied by an equally large increase in production, which has grown only by 58% (from 320,000 hl to 504,000 hl). This highlights how the increase in demand has not been high enough to counterbalance the rise of producers: the consumption of Italian beer per capita is still one of the lowest in Europe (Italy ranks third from last).

Focusing on small artisan breweries, it emerges that 30% of them had negative revenues in 2018. In particular, the fixed costs of production, bottling and distribution are too high and significantly affect the cost of individual bottles due to low production volumes. Adding up these costs with Italian excise and taxes it is clear that an increase in the quantity produced is necessary for small and medium craft breweries in order to rely on a favourable economy of scale.

Italy is one of the countries with the highest excise per litre of beer in Europe and this implies its low competitiveness with other spirits: first of all, wine, for which Italy has a very long tradition. Recently the Italian government has taken some measures in order to support microbreweries: it provides a 40% reduction in excise duties for craft breweries that do not produce more than 10 thousand hectoliters a year, which are independent at company level and do not carry out pasteurization and microfiltration processes. This is an important step to support and protect small Italian craft breweries and to incentivize the growth of this sector.

The quantitative analysis carried out and the case studies analyzed, confirm that craft breweries must increase in size. However, this is not easy because the competition is high and the consumption of beer in Italy has yet to grow. Building

a solid and coherent project is obligatory: it is necessary to be consistent with the mission of the firm and involve the consumers as much as possible. This is why companies, such as Baladin and Birra del Borgo (analyzed in the last chapter), albeit in a different way, have pushed and continue to push towards a growing diffusion of the craft beer culture.

Growth is therefore necessary but must not coincide with a loss of the product's artisan identity: the consumer must always perceive the product as of high quality, where not only the raw materials used are valorized but also the history of the master brewer and the brewery.

In the Italian beer market, industrial producers continue to play a predominant role: Heineken Italia Spa, Birra Peroni Srl, Anheuser-Busch In.Bev Spa, Carlsberg Italia Spa and Birra Castello Spa own approximately 70% of the Italian market share. In particular, Heineken Italia Spa and Birra Peroni Srl are the leader in sales and together they control more than 50% of the total market.

However, the consumption of Italian beer will continue to increase. The market of craft beers is destined to grow but through a process of change from a period characterized by great enthusiasm and constant growth, reaching a period of consolidation. Fewer breweries will be opened and the little ones, who have failed to find their own niche, will be forced to close. Companies will have to structure themselves and it will be necessary to have professional figures prepared to face the inevitable challenges. For this reason, many formative courses all over the Italian country have been developed in order to help the master brewers of the future to blossom.

List of Figures

List of Tables

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