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Craft beer sector analysis in Catalonia through an economic-financial assessment of the nine leading companies

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Martí Pons Miscopein

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Director of the dissertation:

Anna Solans Filella

Co-director of the dissertation:

Xavier Perramon Tornil

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List of abbreviations

CEO: Chief Executive Officer

WACC: Weighted Average Cost of Capital

SME: Small and Medium Enterprises

RoE: Return on Equity

RoCE: Return on Capital Employed

EBIT: Earnings Before Interest and Tax

COGS: Cost of Goods Sold

CAPEX: Capital Expenditures

FCF: Free Cash Flow

EMH: Efficient Market Hypothesis

CAPM: Capital Asset Pricing Model

CTO: Chief Technical Officer

OPEC: Organisation of the Petroleum Exporting Countries

SML: Security Market Line

NDA: Non-Disclosure Agreement

K_e: cost of equity

K_d: cost of debt

C_d: cost of debt before deducing the corporate tax

1. Declaration

I, Martí Pons Miscopein, declare that this work is original and unique, created entirely by me. Furthermore, all information and sources used in this work have been properly referenced and fully comply with the academic honesty policy.

Signed: Martí Pons Miscopein

Date: 7th April 2021

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3. Abstract

The growth of the artisan beer sector in Catalonia has been following a promising trend for some years now. It has already managed to gain almost 2% of the market share of the brewing sector and the forecast is that it will continue to grow at an incredible rate. This study aims to study the 9 leading companies in the sector to see if they follow the same pattern and, thus, to predict whether the strategy of each of the companies is similar or not. The financial study of these companies aims to analyse whether they are following a joint path and by means of an analysis of Porter's 5 forces, the external environment of the sector will be studied. In this way, we will have both internal sector and external information. With such information, it will be possible to diagnose whether the Catalan beer sector is being threatened by the artisan sector. The last objective derived from the study is to analyse whether the modern theories of capital structures are useful for local and small companies or not, which is what the financial performance of the companies under study will be studied with.

4. Introduction

4.1 Overview

The craft brewing sector is an innovative, ever-growing sector which is making large manufacturers start struggling since are constantly decreasing their market share, taken over by new niches such as artisanal breweries. Needless to say, individuals drink a constant amount of beer, i.e. it is a sector that has difficulty growing, thus, the brewing industry holds a limited and constant market share. Craft beer is included within the brewery sector so if the craft beer sales increase, large industrial manufacturers' sales drop. Concisely, the craft beer industry is growing worldwide, and the present report will intend to quantify how is evolving, specifically in Catalonia.

4.1.1 Craft beer in the USA

In the United States, the country of reference, production of craft beer reached double-digits in 2014, accounting for an 11% of the total market share, where the value of the beer market was $100 billion (McKinsey, 2015). In 2019, according to a recent study, the artisan market already reached 25% of the total market share which accounted for $29.3 billion. Indeed, it has taken 14% of the market share in 5 years. This outstanding increase in craft beer consumption was mainly due to a growth in the number of taprooms (2,966), regional breweries (240), microbreweries (2,058), and brewpubs (3,011) as well as the change in consumer mentality for reasons of quality, health, greater diversity, among many others. These 4 ways to sell artisanal beer have experienced a tremendous increase since 2010, as it is displayed in the following figure (Brewers Association, 2019)

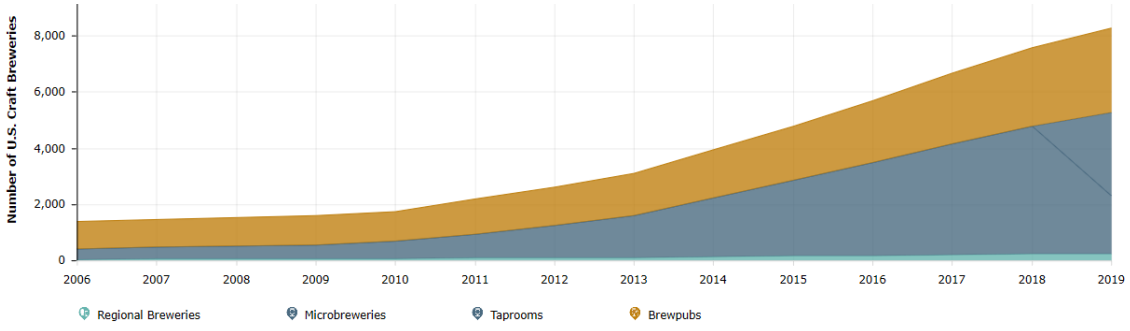


Figure 1. Craft breweries in the U.S. by type (Brewers Association, 2020)

Furthermore, 1,049 artisanal breweries appeared in 2018 while only 219 had to shut down. Not only did the number of craft breweries increase in 2018, but also the volume market share increased by 13.4% whilst overall beer market lost ground by 1% in the same year. Subsequently, is worth to comment that in 2019 beer sales in the USA decreased by 2% while craft brewer sales remained at a growth rate of 4% (Pellechia, 2019).

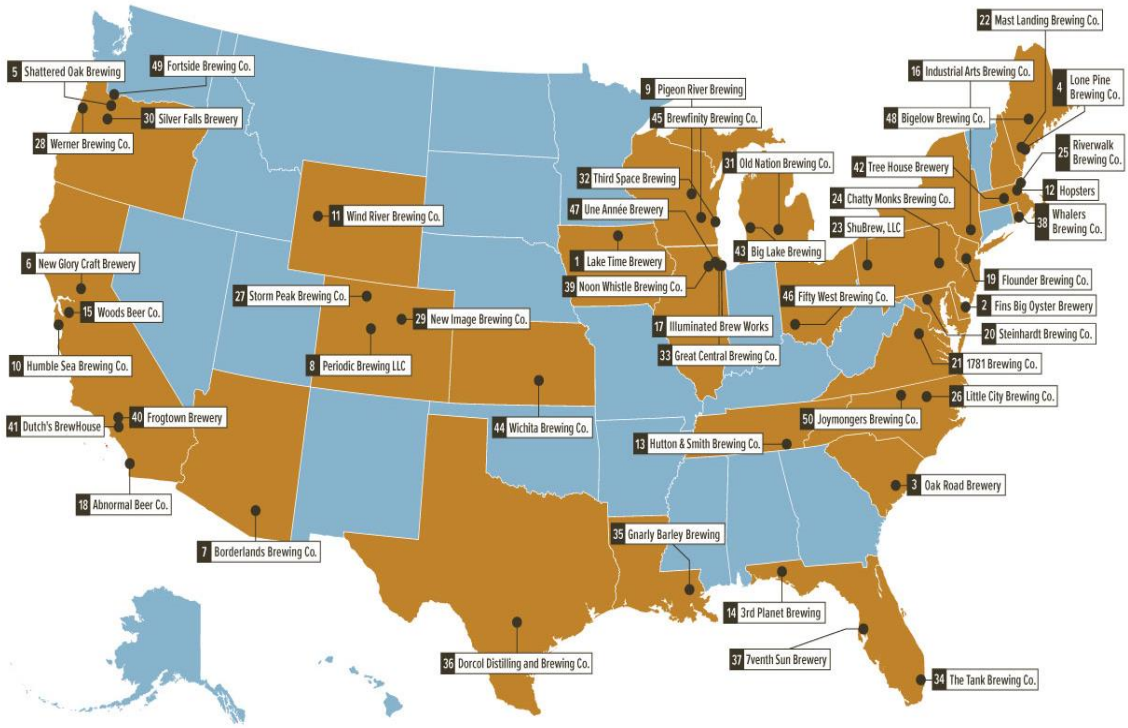


Figure 2. 50 fastest-growing breweries in 2018 (Brewers Association, 2019)

The 50 fastest-growing breweries shown in the picture above accounted for a 10% of the growth within the craft beer sector in the US in 2018.

The Brewers Association states that craft should mean "small, independent and traditional". Small implies an annual production of 6 million barrels or less, independent is defined as 75% owned by a craft brewer, at least; and traditional when at least 50% of the beer's volume consists of traditional or innovative ingredients.

Nevertheless, the majority of the country's best well-known craft beers are either manufactured by large corporations such as Molson Coors and Heineken or by craft brewers boosted by those companies through huge investments, enhancing the market

penetration. Therefore, these beers are not considered artisan by many critics. Despite this, the values presented above refer to all segments, both the purely artisanal and the "semi-artisanal" ones, which are not supported by those critics (Hancock, 2018).

4.1.2 Craft beer in Europe

A recent study carried out by McKinsey (2015) studied the trend not only in the USA but also in Europe. The study revealed an increase of 8 times in craft beer consumption between 2007 and 2012 in Italy, 5 times in the Czech Republic, 4 in Spain and 3 in France, over the same period. Conversely, countries like Germany or the UK which are big beer consumers are still experiencing the transition of part of the market share to craft beer.

Brewers of Europe depicted the number of breweries per country and created a map resulting on the picture presented below:

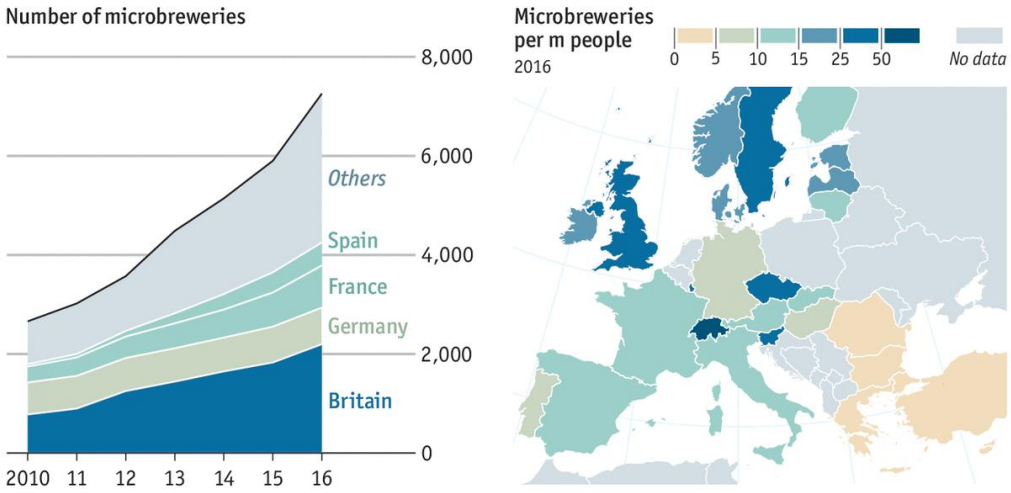


Figure 3. Number of microbeweries in Europe per country (The Economist, 2017)

In the UK, on-trade sales by members of the Society of Independent brewers reached 1.28 million hectolitres while overall sales (on and off-trade) amounted to 2.86 million hectolitres in 2018. However, the number of production sites in the UK remained around the same figure during the last 3 years, holding 2,274 breweries of which 1,978 were considered microbreweries in terms of size (Wunsch, 2020). The same author explains that COVID-19 caused a drop in independent brewers' sales of 80% over the same period during last year although the sector had apparently reached a saturation point regardless the pandemic.

In Spain, the number of craft breweries increased by 10 times from 2010 to 2019, holding 50 companies at the beginning of the period and 500 in 2019. The same study reflects a 22-fold increase in artisan beer production from 2011 to 2017 (Calleja and Doncel, 2019).

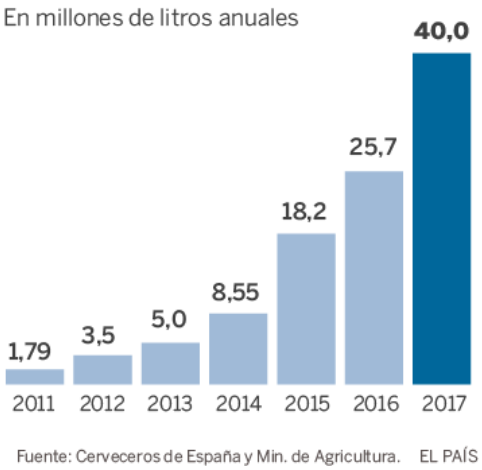


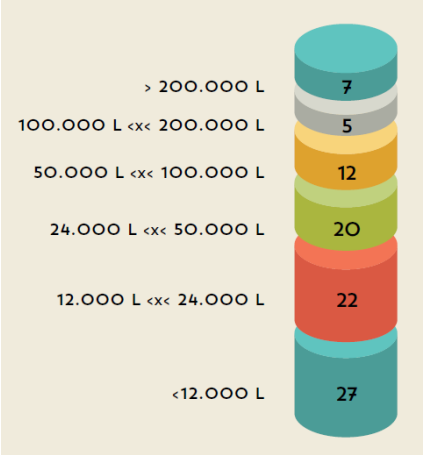
Figure 4. Craft beer production in Spain in million litres per year

Overall, according to Technavio (2019) there could be a potential increase of 1,324.31 million litres between 2020 and 2024 if year-over-year growth continues at the same rate which is estimated at 10.30% in the present year. Therefore, with all that has been said, the sector has a tremendous potential in Europe and will keep taking market share away from industrial manufacturers.

4.1.3 Craft beer in Catalonia

Concretely in Catalonia, during the past 15 years, the artisanal, natural, and independent beer sector has been growing more strongly than ever at a surprising rate (Garcia-Arbós, 2019). More specifically, since 2012 the sector's growth at a pace of 35% per year, yet it is a very novel sector, with a short lifespan, which is growing unevenly, with a large number of companies dedicated to a sector that in 2018 almost produced 5 million litres. More precisely, there were 93 companies dedicated to the sector that same year according to the Guild of Artisanal and Natural Beer Producers – GECAN (2018). Hence, this means that most of them are small family-run companies, some of them are growing rapidly and reinvesting in themselves though.

Figure 5. Average production per factory.



Although the average production was 51,300 L per factory in 2018 as it can be displayed in Fig. 5, only 7 companies produced more than 200,000 L over the same period. These 7 leading companies have produced 42% of the craft beer in Catalonia, which is equivalent to 2,014,450 L. The next 5 companies produced between 100,000 and 200,000 litres (GECAN, 2018).

Figure 6. Distribution of production by quantity

For this reason, this study has several attractive purposes that overall seek to study the 9 largest companies in the sector and extract information that might be highly valuable for companies in the sector such as the performance of the studied companies, the evolution and impact of the craft beer sector within the brewery in general and create, as far as possible, a trustworthy tool to assess financially and productively this sort of companies according to existent theories. As most companies in the Catalan artisanal beer industry cooperate together in the Guild of Artisanal and Natural Beer Producers (hereinafter GECAN, from its Catalan acronym), it can be useful both to gather information of the sector and to generate worthy information for them.

4.2 Aims and Rationale

4.2.1 Craft beer sector analysis through an assessment of leading companies'

The first purpose and key question will be focused on figuring out if these companies under study are following the same roadmap in terms of financing methods and capital structure to find out their current and future growth. Once the previous points have been analysed, the aim is to study whether these 9 leading companies in the sector are following similar strategies or not, whether they are the right ones or whether they could be better according to modern theories of capital structures or productive processes. It should be remembered that this is an extremely novel sector and different methodologies will probably be applied in these companies. Therefore, the aim is to analyse the suitability and performance of each company and technique applied.

4.2.2 Validation of existent theories for SMEs

The second purpose, which will be carried out while the first one is being developed, is basically based on the financial study of the company with the traditional methods (ratios, Altman's bankruptcy test, among others) adding a very important element, the weighted average cost of capital (WACC). The calculation of the WACC in small and medium-sized enterprises (SMEs) has always been complicated, basically because is hard to calculate the cost of equity which is one of the terms in the WACC. For this reason, the aim is to study some of the existing theories in the field, see their validity and check their reliability, as far as possible, of the results obtained by seeing the variability between them according to the theories applied.

4.2.3 Impact of the artisanal sector on the brewing sector

Finally, the third and last purpose and key question is the study of the beer sector in general in Catalonia, not only the artisanal sector. Nowadays, the artisan sector has already taken 1.8% of the market share from the giant industrial manufacturers (Varela, 2019). With the assessment it is expected to get a prognosis from the companies interviewed and one in general from the craft sector, as accurate as possible. Afterwards, make a complete market study and a future forecast of the craft sector and the brewery

as a whole in order to find out the possible threat is posing to the industrial manufacturers.

4.3 Literature review

The literature review will be divided into three groups: all literature related to both the brewing and artisanal brewing sectors, to support and understand the importance and innovation of the study. Secondly, the literature related to the theories that will be used for the financial analysis, such as interpretation of results or explanation of the theories used throughout the study. Finally, the literature review used for the sector analysis and the future trends will be also briefly explained.

4.3.1 State of the art

An article carried out by the University of Barcelona revealed that the first beer fermentation in Europe took place in Catalonia 6,400 years ago, more specifically in a cave in Begues, Barcelona, Catalonia (UB, 2013).

Nowadays the natural artisanal manufacturing industry is gaining power within the sector and could become a possible threat for the traditional players i.e. industrial manufacturers (Castán, 2017).

In Catalonia, there is a total of 93 companies dedicated to the sector which have been divided into 3 sub-areas: nano-brewery with an annual production of less than 24,000 litres; micro-brewery with a production of between 24,000 litres and 100,000 litres; and small brewery with an annual production of more than 100,000 litres (GECAN, 2018). The companies chosen, therefore, will be classified as small breweries since their production exceeds 200,000 litres per year.

The previous year, a report about the state of art in Catalonia was also carried out but comprised 105 companies which produced 3,959,636 litres (GECAN, 2017), what implies a reduction in number of companies but an increase in production and, hence, some companies within the sector are growing in terms of manufacturing and sales and may become an attractive investment opportunity (Guía Repsol, 2015).

According to GECAN (2018), production is growing at an unbelievable pace of 35% on average per annum since 2012. Therefore, the market share it accounted for was up to

1.8% in 2018 whereas in 2016 was only 1%, an increase of 80% only in 2 years (Varela, 2019).

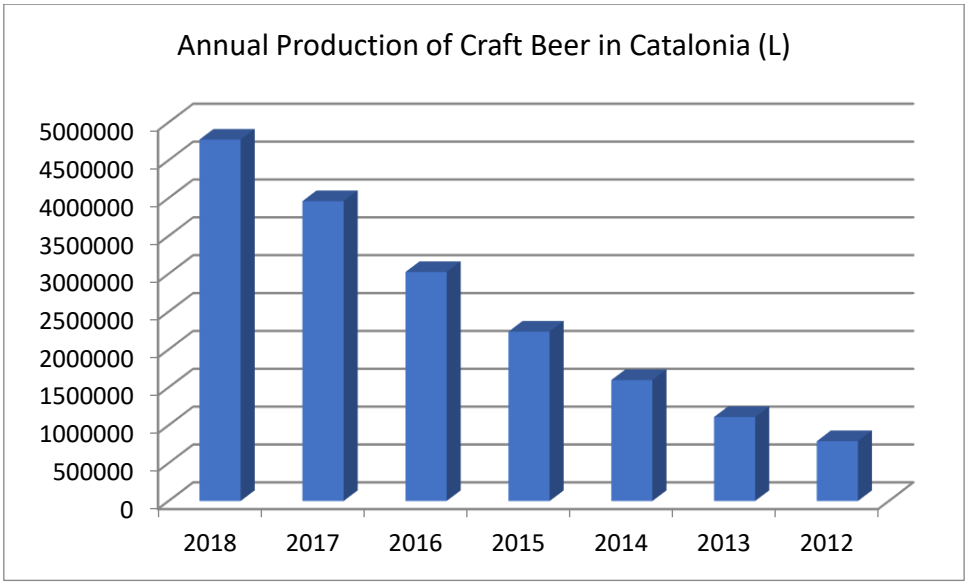


Figure 7. Evolution of the craft beer production

The brewery sector in Catalonia had a market value of 2.32B in 2018, of which the artisan sector has already taken away €43m and continues to grow. The sector is not only growing at a national level, but also internationally, since 18% of the produced goods are exported (Garcia-Arbós, 2019).

As brewery newcomers are taking market share away from the main Catalan companies within the sector, 9 craft beer manufacturers will be assessed since the artisanal sector is one of the strongest entering the field. The study will focus on the extent to which these companies are gaining power while the main players are slightly but steadily reducing their market share (Garcia-Arbós, 2019).

Not only this, it should be noted that only 7 breweries concentrate 42% of the production of craft beer in Catalonia (Varela, 2019). These 7 leading companies will be studied plus the following 2 most important, with the purpose of getting a consistent, reliable, and trustworthy picture of the sector.

4.3.2 Financial Analysis

For the analytical part of the study, proven sources will be needed to properly interpret financial ratios, application of the Altman test for non-traded companies, modern theories of capital structure for cost of equity analysis and the calculation of the WACC.

4.3.2.1 Ratios

According to McKenzie (2010), there is a methodical way to study the annual accounts of companies in order to identify time evolution and future trends, even before studying the financial ratios. Once this has been done, the financial ratios are analysed and, more importantly, the values obtained are studied and interpreted according to McKenzie's rules, which provide guidance.

Analysis of the financial ratios

To assess properly the financial performance of the companies, different types of ratios will be studied. A possible classification of these is presented below:

- Profitability ratios

As a rule of thumb, the higher the profitability ratios, the better.

- **Return on Equity (RoE):** it measures in percentage how much is the return per every euro invested by the shareholders. It is obtained by dividing the net income by total equity. For example, a RoE of 14% means for every euro invested as a stakeholder, the company generates 14 cents of profit (Tracy, 2012).

$$RoE = \frac{Net\ income}{Equity}$$

- **Operating profit:** the ratio reflects in percentage the profit generated by a company from its operations (without considering taxes and interest expenses) compared to the revenue. It is useful to compare companies within the same sector (McKenzie, 2010). The result obtained reflects how many cents are from the operations per every euro of sales.

$$Operating\ profit = \frac{Operating\ income}{Revenue}$$

- **Return on Capital Employed (RoCE):** this ratio attempts to explain how effectively a company is generating profit with the capital employed. Capital employed refers to all assets minus current liabilities which is tantamount to say non-current liabilities plus shareholders' equity (see figure 8). In other words, the ratio measures the profit generated per euro of long-term funds. Therefore, is more useful than RoE to assess the longevity of a business (McKenzie, 2010).

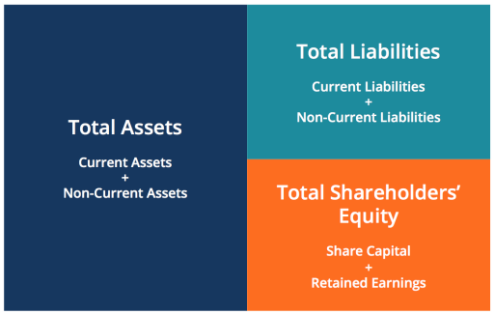


Figure 8. Balance sheet explained graphically (Corporate Finance Institute, n.d.)

$$RoCE = \frac{EBIT}{Total\ assets - Current\ liabilities}$$

❖ Liquidity ratios

- **Current ratio:** is one of the most useful ratios to test the liquidity of a company. Is obtained by dividing current assets by current liabilities and it reveals whether a company is able to meet its short-term obligations (Henry and Robins, n.d.). The ideal value would be 2:1, lower values than 1 suggest problems to cover the short-term obligations and higher values than 2 anticipate a bad cash management and hence idle resources.

$$Current\ ratio = \frac{Current\ assets}{Current\ liabilities}$$

- **Acid-test ratio:** is similar to the current ratio with the addition that inventories are subtracted from current assets because they are considered not liquid enough and may be difficult to quickly liquidate and

convert to cash (Henry and Robins, n.d.). Is designed to study liquidity in an even shorter-term than the current ratio and an ideal proportion is 1:1.

$$Acid\ test = \frac{Current\ assets - inventories}{Current\ liabilities}$$

- Efficiency ratios
  - **Inventory days:** it measures the average number of days taken by the company to sell its stock. Generally, the lower the ratio, the better because it suggests a greater rotation as well as good planification in terms of production and sales. It is obtained dividing the average inventory by the cost of goods sold (COGS), finally multiplied by 365 in order to get the amount of days required on average to liquidate the stocks (Henry and Robins, n.d.).

$$Inventory\ days = \frac{Average\ inventory}{COGS} \cdot 365$$

  - **Trade receivable days:** is the amount of days that a client invoice takes to be collected by the company. In other words, how many days it takes the company to collect debts from debtors. Normally payment terms are made for 30, 60 or 90 days, among other standardized contracts. Therefore, it is normal that the company does not receive the transaction immediately when issuing the invoice. An efficient and timely collection of customer debts is vital for a good cash flow management (Henry and Robins, n.d.). Is calculated on an annual basis, usually. The ratio is obtained dividing the accounts receivable by the revenue, multiplied by 365 days.

$$T.Receivable\ days = \frac{Accounts\ receivable}{Revenue} \cdot 365$$

  - **Trade payable days:** it reflects the average time, in days, that is taken by the company to pay the bills to its creditors. If a company takes long to pay its bills is retaining the available funds and may allow to use this available cash to maximize the profits. However, if it is a huge figure it could suggest liquidity problems and therefore creditors could be afraid

and not want to work with the company anymore (Henry and Robins, n.d.). The ratio is obtained dividing the accounts payable by the purchases and then multiplying the figure by 365.

$$T.Payable\ days = \frac{Accounts\ payable}{Purchases} \cdot 365$$

- **Asset turnover:** this ratio is particularly useful to understand how efficiently a company is using its assets to generate sales. Obviously, the higher the ratio, the better. On the other hand, if a company has a low value it means inefficiency in the way they use the assets to generate revenue (McKenzie, 2010). It is obtained dividing the sales by the average assets within a year (assets at the beginning of the year + assets at the end divided by 2).

$$Asset\ turnover = \frac{Sales}{\frac{(Assets\ year\ 1 + Assets\ year\ 0)}{2}}$$

❖ Leverage ratios

- **Gearing ratio:** this ratio measures the proportion in which a company is financed by long-term debt (borrowings) in relation to the total funds with which the company is financed (long-term debt + equity). Traditionally, it was thought that debt was cheaper than equity, so a high gearing was supposed to be better in terms of funding. Nevertheless, it has been proved that some companies highly geared have a greater cost of capital than others which are low geared, according to Modigliani and Miller theory (Glickman, 1997). In other words, the weighted average cost of capital explains better how a company must be funded.

$$Gearing = \frac{Debt}{Debt + Equity}$$

❖ Other ratios

- **Free cash flow (FCF):** is an efficiency and liquidity indicator. Some investors consider this ratio as important as price/earnings ratio or earnings per share ratio because it checks the ability of a company to create an excess

of money after paying the capital expenditures (CapEX) as well as the operating expenses. Therefore, it shows how efficient is a company at generating money and if a return can be payed to investors after paying off operations and inversions for expansions (Tracy, 2012). The indicator is the result of subtracting the CapEX from the operating cash flow. CapEX refers to the change in tangible fixed assets (plant, property, and equipment) within a year plus the amortization. When the CapEX is higher than the amortization, the company have a policy of expansion. If CapEX is negative it represents a sale of fixed tangible assets to increase a company's cash flow which is usually a bad sign because it suggests that the company had to sell fixed assets to meet its short-term obligations (López-Abellán, n.d.).

$$FCF = Operating\ Cash\ Flow - CapEX$$

$$CapEX = (Fixed\ tangible\ assets\ year\ 1 - Fixed\ tangible\ assets\ year\ 0) + amortization$$

- **Altman Test:** The Altman test is a very useful tool for the analysis of business failures which achieved a 90% of accuracy predicting bankruptcies when Edward Altman formulated it in 1960 (Kruchynenko, 2012). However, it is necessary to use an adaptation of the formula, made by Altman himself, since the original one contemplates only publicly traded companies. This modification serves to predict bankruptcies in small companies and is the one that will be used for the case study (Cantalapiedra, 2014).

Finally, the Altman test was included in the section of ratio analysis as it can really be considered as such. In fact, it is a formula that brings together 5 different ratios with the intention of predicting the probability of a company to become insolvent and go bust. Altman created 3 formulas, one for publicly quoted companies, one for unlisted industrial companies (which is the one to be used) and one for commercial and service companies. The one to be used is called Z_1 and differs from the original in

the weighting and in the way X_4 is calculated, in the original it uses the market value of equity while in Z_1 it is calculated with the book value (Edmister, 1972).

$$Z_1 = 0{,}717 \cdot X_1 + 0{,}847 \cdot X_2 + 3{,}107 \cdot X_3 + 0{,}42 \cdot X_4 + 0{,}998 \cdot X_5$$

- X_1 = Working capital / Total Assets
- X_2 = Retained earnings / Total Assets
- X_3 = Operating profit / Total Assets
- X_4 = Total equity (book value) / Total debt
- X_5 = Sales / Total Assets

According to the figure obtained from the above formula, Altman established three different limits to assess the probability of a company to go bankrupt:

- If Z_1 is 1.23 or less, the company has a high probability of insolvency.
- If Z_1 is between 1.24 and 2.89 it is an uncertain area, also named grey area by Altman.
- If Z_1 is 2.90 or more the company has a low probability of insolvency in the future.

4.3.2.2 Cost of equity

For the study of the cost of equity two valuation methods will be used, which are considered valid theories for valuing private equity companies and in principle should be valid for small companies as well (Corporate Finance Institute, 2015).

Before delving into any of the theories to be used, one must start from the assumptions presented below as they are all based on these:

1) Stock markets are competitive and efficient. In other words, they are based on the Efficient Market Hypothesis (EMH) which postulates that the appearance of relevant information quickly and universally balances out the financial markets,

being absorbed and distributed by the prices of stock values. In other words, financial markets are made up of highly sophisticated buyers and sellers with access to all possible information (David W. Mullins, 1982).

2) Investors are rational, risk-averse people who try to maximize profits at the lowest possible risk, so they are people who care about wealth and want a higher return for the risk they take (Piper and Fruhan, 1981).

Capital Asset Pricing Model

The first theory is the CAPM, with which the cost of equity will be revealed through a modification of the original formula where the beta must be previously valued, in order to measure the response of the company with respect to the market . The companies under study do not have any response with respect to the market, since they are not quoted on the stock exchange, hence a reliable beta must be predicted that reflects the response's behaviour with respect to the market, even if they are independent (Miryazev, 2019). The CAPM formula is presented below:

$$k_e = r_f + \beta_{im} \cdot \left(E(r_m) - r_f\right)$$

Where:

k_e: cost of equity.

r_f: risk free.

β: beta.

$E(r_m)$: expected return of the market.

However, first we will explain what assumptions and hypotheses must be made to arrive at such a formula. In the case of the CAPM, there is a sequence of more specific assumptions such as that markets are free of imperfections, like taxes, loan restrictions, transaction costs or uncovered sales (David W. Mullins, 1982). Finally, it is assumed that the returns and risks of the securities over a common time horizon are agreed by the investors, according to the same author. It is clear that both the assumptions of the EMH and the CAPM itself are unrealistic, but it is the only way that a universal, useful mathematical model can be created that is as faithful to reality as possible.

Understanding how risk analysis works plays a fundamental role to use correctly the CAPM. Risk can be divided into non-systematic and systematic risk. The first refers to the part of the company's own risk that can be diversified. The systematic one, which is the non-diversifiable, depends on the movement of the stock market (Ross, 1976). Some examples of these two different risks are presented below:

Unsystematic risk factors

- A company's CTO dies in an auto accident.
- An unpredictable revolution halts shipment of a special raw material.
- An unexpected competitor with lower costs enters in a company's product market.
- An oilfield is found on a business' property.

Systematic risk factors

- The Organization of the Petroleum Exporting Countries (OPEC) decides to drop oil prices.
- A massive tax cut is voted.
- Interest rates rise unexpectedly.
- The Federal Reserve strengthens its monetary policy.

For this reason, the portfolio theory appeared, which according to empirical studies serves to diversify risks and thus practically eliminate unsystematic risk (Ross, 1976).

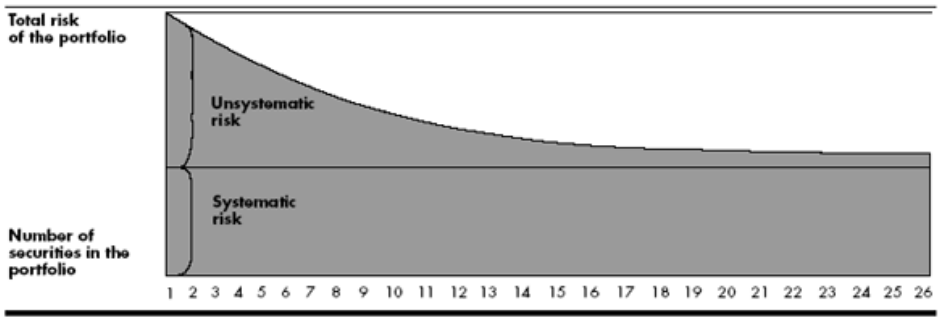


Figure 9. How unsystematic risk can be avoided through diversification of securities within a portfolio.

In a world governed by investors who are reluctant to take unnecessary risks, securities with higher risks necessarily have a price to produce higher returns than securities with lower risks (Piper and Fruhan, 1981). Hence, to understand the CAPM, the expected return on a risky R_S stock can be understood as a risk-free rate, usually a 10-year treasury bond is considered a risk-free security, plus a premium for risk (Ross, 1976):

$$R_S = R_F + risk\ premium$$

Given the investors can eliminate company-specific risk (unsystematic risk) by diversifying the portfolio according to the portfolio theory, they are not compensated for bearing such risk in return (Ross, 1976). In other words, each of the companies in the portfolio has an unsystematic risk, but by creating a portfolio such risk is eliminated as discussed above. Therefore, by diversifying investments, the relevant risk in compensation is the systematic risk and not the total risk, as one would expect. This is why an investor is rewarded with higher returns for taking only the systematic risk and not the total risk (Piper and Fruhan, 1981). That said, beta is the standard measure of risk that is only systematic (Harrington, 1983). Therefore, a company with a beta value of exactly 1.00 - an average level of systematic risk - means a harmonious movement with the same percentage change as the stock indicator it follows e.g. S&P 500, Nasdaq, NYSE, among others (David W. Mullins, 1982). Similarly, a beta of less than 1.00 means a lower level of systematic risk which translates into a lower sensitivity to index changes. On the other hand, if it is higher than 1.00, the company will be more sensitive and move more abruptly than the index (Damodaran, n.d.). Explained in other words, beta is actually a measure of risk (Harrington, 1983).

Finally, the theory ends with the expected risk/return ratio and serves to price risky securities. That is what CAPM really is, a measure of the relationship between underlying risk against expected return (Levy, 2009) The formula, which is the same that was presented above but now explaining where each term comes from, assumes that only systematic risk matters, which is what the beta measures, as explained earlier. Then, the above formula becomes the following:

$$R_S = R_f + \beta \cdot (R_m - R_f)$$

Where:

R_S = stock's expected return which is the company's cost of equity.

R_f = risk-free rate.

R_m = expected return on the stock market.

β = stock's beta, the measure of risk (Harrington, 1983).

If we remember the above formula, the premium risk is equivalent to:

$$risk\ premium = \beta \cdot (R_m - R_f)$$

According to David W. Mullins (1986), this risk/expected return relationship is also called security market line (SML).

For the use of the CAPM with private companies, which is the case in question, there are 2 handicaps: the first is calculating the β, since it is not a company listed on the stock market; second, finding the value of the R_m since, again, the company is not part of any index, so the market return will have to be extracted approximately.

Estimating β and R_m

The best way to estimate the β for companies in the same sector is to find the β of a listed company and to add to its value. That is, you have the β of that listed company ($\beta_{LEVERED}$), but it has the value it has for the company in question which has a certain D/E value and a tax shield corresponding to the country in which the company is listed (Miryazev, 2019). As can be seen, the process just mentioned is very useful for using the β of a company traded in one country to use it for the calculation of the β of a company in another country (Damodaran, n.d.). Therefore, the following mathematical operation is done:

$$\beta_U = \frac{\beta_{L1}}{1 + (1 - T_1) \cdot \frac{D_1}{E_1}}$$

Note: The value that contain sub-index 1 refers to the values of the company for which β is known.

Once this is done, the reverse process is done to leverage the β that is being estimated. In other words, the following is done:

$$\beta_{L2} = \beta_U \cdot \left[1 + (1 - T_2) \cdot \frac{D_2}{E_2}\right]$$

On the contrary, β_{L2} is the one that has been estimated by leveraging it with D/E of the company to which the β and the tax shield of the company's country are estimated (Miryazev, 2019).

For R_m we look at the value of the index in which the industry is part, in our case it would be food and beverages, and we see the growth over a period of 5 years, to have an approximate credible growth.

Build Up Discount Rate

Lastly, Build Up Discount Rate will be also used to end up with 2 different values of cost of equity and verify the validity (or not) of these theories.

$$Cost\ of\ Equity = Risk\ Free\ Return + Market\ Return + Company\ Size\ Premium + Industry\ Premium + Company\ Specific\ Premium$$

To understand the operation of the Build Up Discount Rate, we start with the return for an investment with a risk equivalent to a risk-free rate (such as investing in 10-year treasury bonds) and further returns are being added to that risk-free rate of return to end up with a trusty return depending on the factors in which is involved the company (Damodaran, 2016). As it has been explained, the higher the risk, the higher the expected return. Therefore, by the mere fact of being part of a market i.e. a sector with competition, a company has a higher risk than if an investor was simply buying government bonds, thus, the investor expects a higher return (Market Return). In addition to this, there is a risk associated to the size of the company (Company Size Premium), since statistically, the smaller the company, the greater the risk of investing in it, which means that the return must be greater, according to Damodaran (2016). This is because a consolidated financial infrastructure is more secure than one that is still developing. In other words, Apple is less likely to go bust than a craft beer company with €1.5 million in sales per year. Next, there is also a risk arising from the sector in which the company operates (Industry Premium) that also increases the value expected by the investor, e.g. cryptocurrencies are far more volatile than utility stocks or defense stocks, so the return is higher, as is the risk ('How to determinate the cost of equity for a small

business', 2019). Finally, according to Mohendroo (n.d.), each company has an intrinsic risk (Company Specific Premium) as it is not the same to invest in a company that has been incurring losses for 2 years as it is to invest in one that has been increasing its turnover for 10 years, as an example.

The problem when using this method to calculate the cost of equity is that there are some of the returns that are complicated to estimate, such as the Company Specific Premium or the Company Size Premium.

Theoretically, the Build Up Discount Rate has been explained. For listed companies it is relatively easy to find each of the returns explained above. However, for private companies, either small, medium or multinationals, it is more complicated. In the case of risk-free returns, the first term in the formula, the same value is used as for listed companies, and it is through the return on 10-year treasury bonds. The way in which each of the remaining returns will be calculated is as follows, according to Mohendroo (n.d.):

- **Market Return:** Usually the return of the market is understood as the return you get from investing in a country's stock index. In other words, how do leading companies that have an extremely important weight in the economy of the country in question grow? In the case of Catalonia, as it is not a country, it will have to be used the value of the IBEX 35, which is the Spanish stock exchange. The Catalan market will probably not grow at the same rate as the Spanish market in general, since Catalonia is one of the richest areas in Spain. However, there is no other way to estimate such a return.

- **Company Size Premium:** this value will be obtained by regressing the value of the return of two listed companies according to their share capital. With the straight line obtained, the value of the return of the companies studied will be extrapolated according to their share capital. In this way, a reliable Company Size Premium will be obtained based on the difference in share capital in comparison with the listed companies in the sector. This difference between the returns of listed companies and those studied is the Company Size Premium, that is, the extra that the investor has to earn by investing in a

smaller company than those that are on the stock market because it implies a higher risk (ValuAdder," n.d.).

- **Industry Premium:** The Food & Beverages index will then be used to estimate the additional return value expected from investing in the brewing sector, as the brewing sector is included in this index, so that a reliable return can be estimated on the basis of the industry under consideration (Mohendroo, n.d.).

- **Company Specific Premium:** the way to estimate this return will be carried out through the study of the cost of debt due to the impossibility of obtaining the information by other means. In fact, the exact or real return will not be obtained, but by using the cost of debt we will reach the most adjusted value to the real one possible since studying this cost shows how risky the banks believe it is to lend money to such companies. Once the cost of debt of the companies being studied is known, the cost of debt of a company in the same sector that is listed on the stock exchange will be subtracted. This difference between the two debt costs will be the estimated Company Specific Premium ('How to determinate the cost of equity for a small business', 2019).

4.3.2.4 Cost of capital

Finally, with the calculation of the cost of the companies' equity, the weighted average cost of capital of each company can be calculated. The WACC, as the name suggests, measures the cost of capital of a company in a weighted average way. It is an extremely important value for all companies because when carrying out a project the profit margin of the project must be higher than the WACC, otherwise losses would be incurred (Fernández, n.d.). It is a measure widely used for large corporations, however, as it is difficult to determine in small businesses, for all that we have seen, it is not used when evaluating whether or not a project should be carried out in SMEs (London Economics, 2010). One of the purposes of the project is to test the validity of the results obtained through the theories discussed and, if the results are validated, to give the necessary importance to WACC when deciding whether a project should be accepted or not.

The London Economics (2010) already anticipates that the CAPM does not capture the effect of business size, so there may be important differences in the cost of equity values obtained through the CAPM and the Build Up Discount Rate and therefore there will also be differences in the WACC value. That said, once the cost of equity value has been obtained, the portion of the total capitalization of the enterprise that corresponds to equity and the portion that corresponds to long-term debt must be found. The cost of debt is then calculated using the formula presented above and the corporate tax is deducted, as the debt has the benefit of being paid before taxes.

The WACC formula is presented below (Deloitte, 2014):

$$WACC = \frac{E}{D+E} \cdot k_e + \frac{D}{D+E} \cdot C_d \cdot (1-T)$$

Where:

E: market value of equity.

D: market value of debt.

k_e: cost of equity.

C_d: cost of debt before corporate tax is deducted.

T: Tax rate.

For the calculation of the cost of capital in SMEs, another problem arises because, as shown, the values of E and D have to be market values, i.e. listed securities. Damodaran (1994) uses book value instead of market value, as it is difficult to find market value of D for some publicly quoted companies. For SMEs it is totally impossible either E or D, because there are no market values for equity or debt, therefore book values will be used.

The value of k_e will be calculated according to the theories explained above. The calculation of k_d is obtained only by applying the following formula, according to a simplification made for private-owned companies (Baker and Martin, 2011):

$$C_d = \frac{Interest\ expense}{Long-term\ debt}$$

T refers to the corporate tax which in Spain is 25% (Europe, 2019).

4.3.3 Porter's 5 forces

The analysis of Porter's 5 forces will be carried out due to the inability to obtain the productive information derived from the impossibility of interviewing the companies under study due to the COVID-19 pandemic. The productive part has been finally replaced by Porter's 5 Forces analysis.

Figure 10. 5 Forces of Michael Porter

For a company to survive in the long term and remain profitable it must respond strategically to competitiveness. According to Michael Eugene Porter (1980) there are 5 factors that have great power over companies in a sector and that can harm them if they do not know how to act (Porter, 2008):

1) The rivals already established in the niche in question. These can be very detrimental as they aim to take market share away from companies in the same sector, but at the same time they can help create strategies similar to those taken by them, such as benchmarking the leader, for example (Johnson et al. 2009).
2) Smart customers who can force companies in the same sector to lower prices for their own benefit, i.e. they go to the highest bidder by forcing down prices on competitors in order to continue competing, according to Porter (2008).

3) **Powerful suppliers**, Johnson et al. (2009, pp. 30 - 37) highlight those providers who have unique products or are the leaders in their sector, can raise prices and reduce the profitability of the company that depends on them.
4) Businesses that aspire to enter the same sector (**newcomers**) with a desire to take market share from current players. These can force established companies in the sector to raise the investments required to remain in the "game" according to Johnson et al. (2009, pp. 32 - 35).
5) The emergence of **substitute products** can attract customers who will no longer be part of your portfolio.

Porter states that the power of each of these must be kept low for a company to make big profits. If the opposite happens, as is the case in the aviation industry (one of the industries with the lowest profit margin), a company has to be constantly reviewing its prices in order to have satisfied customers, negotiate with suppliers to lower costs, overcome newcomers, outperform products that can replace its own and, of course, outperform established rivals.

Porter says that in order to avoid the powers of the 5 forces mentioned above, one must reshape the forces in its favour, doing the following according to the order of the forces explained above (Porter, 2008):

1) Invest heavily in products that differ significantly from those offered by **competitors**.
2) Expand services so that a **customer** does not see the need to switch to a rival.
3) Standardize the specifications of the products you sell so that you can change **suppliers** whenever you want, in case they start to gain too much power.
4) Increase R&D expenses to raise the fixed costs of competing, in order to scare off **new entrants**.
5) To limit the threat of **substitute products**, better value can be offered through increased product accessibility.

4.3.4 Industry trend analysis

To date, the artisanal brewing sector has grown incredibly as mentioned above. By means of sectorial analyses, we will try to see the growth of the sector in general and the growth of the artisanal one, which will have already been analysed in the first part. They will then be compared to see what the outlook is expected to be in the foreseen future.

In addition, according to El Mundo (2020), the impact of the coronavirus on the artisanal sector will be extremely negative because 90% of the sales come directly from the catering industry (bars, restaurants, pubs, clubs, among others) and now is partly stopped. As these are small, self-employed businesses, this crisis will affect them much more than the country's large producers, forcing many of them to shut down.

Finally, therefore, we will study the future progression if the COVID-19 had not burst into Catalonia, in other words, the natural tendency. Eventually, whenever possible, an attempt will be made to study how the COVID-19 has impacted the artisan sector.

5. Methods

In order to be able to validate, or not, the supposed hypotheses established in the aims and objectives' section, all the above-mentioned calculations must be carried out.

As explained earlier, for the financial analysis the ratios mentioned in the literature review section will be studied together with the Altman test and then the cost of equity and the weighted average cost of capital. In this way, a technical analysis will be carried out for the 9 companies plus a specific analysis for each company when required to understand more deeply abnormal behaviours. Finally, the data obtained for each company that can be compared will be gathered and an analysis will be made of whether the behaviour is similar or not, to verify hypotheses and draw conclusions.

The financial ratios of each company will be compared with the others as well as the cost of equity obtained with each of the two theories that will be used and the same with the weighted average cost of capital obtained.

As mentioned above, the initial idea was to go to each of the companies and carry out on-site interviews to undertake a productive analysis as well. However, as a result of the COVID-19 pandemic, it will be totally impossible to go to the companies in person so this part has been replaced by the analysis of Porter's 5 forces which will give consistent and relevant information of the business environment.

Porter's assessment will be carried out gathering recent and reliable information for each of the 5 forces through local and national newspapers and databases in Catalonia and Spain.

5.1 Participants

The present sectorial analysis aims to undertake a reliable study so that approximately 10% of the companies involved in the artisan brewing sector in Catalonia will be studied to get a consistent picture.

The companies under study will be chosen according to various criteria. Of the 9 companies to be studied, 8 are part of the Catalan brewers' guild GECAN, which consists

of 93 companies. The remaining company is not part of this guild. This has been chosen in such a way as to cover the whole variety in order to draw conclusions and see whether being part of the guild entails an advantage, a disadvantage or is unrelated.

The companies were chosen according to the criterion of highest turnover. At this point it should be remembered that the 98 companies in the sector (93 from the guild + 5 that are not part of it) had a turnover of EUR 43 million in 2018. Of the companies chosen, there are 2 that had a joint turnover of around 3 million euros, so it can already be seen at first sight that the data obtained from some of them will be much more significant than others.

Another criterion for selection has been the availability of data on the study population in the SABI database (dedicated to Spanish and Portuguese companies). Of the 93 companies in the guild, 46 agreed to be published on the guild's official website. It was established that companies with 5 years of life or more would be chosen. With all the premises established, the 9 companies of the guild were chosen. However, 2 of these 9 companies are only 4 years old. This is because these 2 companies are highly significant and provide great value to the study. Of the 5 companies that are not part of the guild, the leader in terms of turnover was chosen.

5.2 Design

The study will be conducted using a **case study design** to analyse in-depth the performance of the companies using existent theories to back up, validate or find out information that will enable to assess the functioning of each one. The case study will be carried out throughout a **longitudinal time horizon** in order to study the trends over a period of 5 years and be able to forecast future performance. A **mixed-methods approach** will be adopted combining **quantitative** (financial analysis) and **qualitative** (external analysis through 5 forces of Porter) forms of data collection. Financial quantitative data will be gathered either through official reports from the company itself or a database called SABI.

Finally, a **deductive** approach will be used since existent theories will be used to carry out the study.

Variables:

For each of the ratios, the independent variables are the ones that will be used in the formulas to obtain the ratios values, which are the dependent variables. The same applies to the Altman test according to the formula presented in the review literature. For the formulas used to find the cost of equity is equivalent, independent variables will be used (R_f, R_m, β, etc.) to find the values of K_e which are the dependent variables. In the search for the WACC instead, the K_e that was a dependent variable will be an independent variable, as will the K_d, which will serve to calculate the value of the WACC.

In the case of Porter's analysis, the variables to be studied through the primary data obtained will be the power that each of the 5 forces has. The 5 are dependent variables since they depend on the environmental conditions. The environmental variables that reveal the value of each of the forces could be considered as the independent variables (i.e. increase in hops production would be an independent variable and the dependent variable would be a reduction of suppliers' bargaining power).

5.3 Materials & Apparatus

Basically, the only device necessary for the correct development of the project will be the computer. With this, the necessary calculations will be made using Excel, the whole report will be written using Word, PowerPoint will be used to make the poster and the references will be collected and quoted with Zotero.

Furthermore, apart from what has been mentioned, what will be used with the computer will be the SABI database for the collection of financial information, the balance sheets of publicly traded companies, the IBEX 35 stock values from the official website, treasury bonds risk values through the Spanish government website. In addition, subscriptions to newspapers or the use of the Idescat database to extract the information necessary for Porter's analysis.

5.4 Procedure

The way to collect the primary data of the companies under study that will be processed through the financial tools mentioned such as ratios, cost of equity and WACC (dependent variables) to obtain the necessary information will be through the Spanish company database SABI. Primary data will be the independent variables necessary to come up with the dependent variables.

Then, for the calculation of the cost of equity through the Build Up Discount Rate will be needed:

1) The return values of Spanish 10-year Treasury bonds (risk free).
2) The IBEX 35 stock values that will be obtained through the official BME (*Bolsas y Mercados Españoles*) website to obtain the market return.
3) The Food & Beverages index values that will be obtained from the same platform to obtain the industry premium.
4) The equity, stock market growth, interest expense and long-term debt values of two artisanal beer companies listed on the NASDAQ (Craft Brew Alliance) and NYSE (Boston Beer Company) will be necessary to determine the values of the company size premium and the specific company premium. In other words, their balance sheets will be also necessary to get these pieces of information.

To calculate the cost of equity using the CAPM, the risk free and market return values (previously obtained) will be needed, as well as the value of the β. As seen in section 4.3.2.2, the company's β must be unlevered using the debt and equity variables and the US corporate tax must be deducted. All this will be obtained from the official annual reports of the company in question. These variables will be obtained from one of the two companies, namely the Craft Brew Alliance listed on the NASDAQ mentioned above. It will then be necessary to re-lever β with the debt and equity values of the companies being studied, which will also be obtained from SABI, and the corporate tax which will be obtained from official Spanish government sources.

As for obtaining the necessary data for analysing Porter's five forces, the necessary information will be obtained through the Statistical Institute of Catalonia (Idescat) and

reliable national and local newspapers and websites in order to provide us with relevant and updated local information to make the analysis as real and clear as possible.

5.5 Ethics

The present study does not need any kind of information regarding individuals; therefore, no processing of personal data will be necessary. On the other hand, it had been thought to codify the companies under study to avoid any problem of confidentiality, as well as to sign a Non-Disclosure Agreement (NDA). As it has been completely impossible to go to the companies personally for the interviews planned to collect the productive data and no response has been obtained to any of the forms sent, no privileged information will be held on any company. In other words, by using only information from the Spanish SABI database and doing the external analysis with Porter's 5 forces (everything is public) no coding or signature of any NDA will be required. Therefore, the study has no ethical implications that would require a specific approach.

5.6 Data analysis

For the case under study only the part of the analysis of Porter's 5 forces will be qualitative. The way to analyse each of the 5 points of Porter's analysis will be done by collecting information that will help to draw conclusions to see what power each of the 5 forces has. For clarification purposes an example is given: we will study whether the number of hop, malt and yeast growers in Catalonia is increasing or not, the number of growers for each of these products (if there are 2 hop growers in all of Catalonia it means they will have great bargaining power), among others. With this data obtained, we will qualitatively analyse whether, for the same example, the suppliers have great negotiating power (there are few suppliers and the buyer must adapt to their conditions) or whether the artisan brewers have great power over the suppliers (there are many suppliers and they can choose who to buy from). The example has been given to explain how the qualitative analysis will be done using Porter's 5 forces.

In the case of the financial study, the primary data will be converted into meaningful information as mentioned in point 5.4, using the formulas and theories explained in point 4.3. Processed data will be studied by looking at specific trends in each company, general trends in the sector if there are any, which will serve to analyse how both companies and the sector are performing. This will allow us to say whether it is going in the right direction or not and in general to draw many conclusions.

6. Results

6.1 Porter's 5 Forces

6.1.1 Rivalry among established rivals

In a highly competitive market, each company will try to impose its own conditions, but taking into account the conditions set by its competitors in order to try to gain a competitive advantage (Porter, 2008). The beer market in general is a large market, and in continuous growth, so the different brands want to expand their market trying to attract new customers. According to Porter (2008), if the market were very limited, and slow to grow, the brands would try to increase their market share by taking it away from their rivals.

The craft beer market gains market share by taking it away from the industrial brewers. In other words, within a single market there may be several segments of rivalry, as each company tries to compete with its peers, i.e. a higher quality beer is unlikely to be able to compete as the lowest priced beer, but will have to compete with higher quality beers. It is for this reason that each company must define its strategies.

Porter also says rivalry between competitors cannot be avoided, since it is what makes the market grow, encouraging the need to improve day by day, so the only solution is to try to improve the rival's proposals. The main strategies that can be adopted are:

- Investing in marketing
- Increase quality
- Reduce the selling price
- Create partnerships with other brands
- Try to reduce fixed costs

To try to attract more customers, and to take over more market, a good resource that companies can use is to invest in marketing. Through a good campaign, they can reach more customers, trying to increase sales. To make the campaign, they must highlight the factor that makes their product different from the rest, making known the competitive advantages, according to Johnson et al., 2009.

Other ways of gaining an advantage over rivals may be to increase the quality of the product or to lower prices, although the latter is usually complicated. They can also try to reduce fixed costs. This could be achieved by increasing production, negotiating with suppliers, transporters, etc.

As expected, the rivalry is fierce due to the large number of companies established in Catalonia for such a limited territory. Remembering the values already mentioned, there are 98 companies (93 from the guild and 5 from abroad) dedicated to the sector for a nation of 7.5 million inhabitants (GECAN, 2018). As mentioned in point 4.3.1, 18% of production is exported, so 82% of the 4.8 million litres produced are distributed throughout Catalonia (Garcia-Arbós, 2019), which is equivalent to approximately 4 million litres. This means that, although the figures are not yet exorbitant, the rivalry is high due to the large number of different products on offer in the artisan brewing sector. Furthermore, one of the main incentives that motivate consumers of craft beer is the tasting and obtaining of new flavours, this further intensifies the rivalry to get the flavours that the customer expects (Chapman et al., 2017).

6.1.2 Bargaining Power of Buyers

In a market where there are few customers, they may be well organized, reaching an agreement with which they establish the price they should pay for the product, affecting the company, since it could not set the price, being the price agreed by the customers lower than the one the producing company would want to establish, generating losses (Johnson et al., 2009 pp. 32-33).

The number of sellers in the market must also be taken into account, since the greater the number of sellers, the greater the possibility that the buyers may go with another seller (Porter, 2008). Therefore, if there were numerous sellers, the negotiation capacity of the customers would be high, as is the case with the beer market.

In line with what has just been said in the section on rivalry, it can be said that the power of buyers is high for various reasons. One of them is the search for diversity on the part of the clients, whether in originality in the taste, colours, sensations, aromas, quantity of

alcohol, since there are from 2% to 17% of alcohol (some even reach 60%), price (from 1 to 300 euros). For this reason, they are called signature beers (Sandri, 2014).

The price factor is not so influential in this sector since the craft beers, in general, are much more expensive than the beers of industrial producers, as is logical. But the consumer already knows this, so his decision is not so influenced by the price but rather by the variety, originality in taste, among others. To give an idea, the Lupulus beer of the Companyia Cervesera del Montseny is sold at 6.02 euros/L in 3 bottles of 33cl (Ulabox, n.d.), while the same amount of the Damm brand is worth 2.05 euros/L (Carrefour, n.d.).

Given the immense diversity available, the power to choose which brand to buy is very great since if someone do not like a particular brand or beer can have hundreds of other beers to choose from, among the 98 brands available in Catalonia. Hence, the bargaining power of customers is high.

6.1.3 Bargaining Power of Suppliers

Johnson et al. (2009, pp. 30 - 37) describe that in a market with many suppliers, if the product needed is poorly differentiated, the bargaining power of the supplier will be low, as the product we want to purchase can be found from other suppliers. However, if the product we want to acquire is an unusual product, i.e. more differentiated, the number of suppliers will be lower, having a high bargaining power.

When choosing a supplier, factors such as the volume of purchase required, delivery times, quality, etc. must be taken into account. (Porter, 2008).

Given the products needed to make the beer are little differentiated, and the number of suppliers is numerous, the general bargaining power of the suppliers with the company will be low, since, in case of not agreeing with its policies and conditions, it could be changed to another supplier who accepts the conditions. Before choosing a supplier, it is important to be clear about the conditions, as they can be crucial to the company's future. These conditions could be the payment term, the delivery terms (as precise as possible), the cost for wanting to change the supplier, etc. For the case study it will be studied the power of the suppliers of the 4 main ingredients of beer which are water,

malt, hops and yeast. Their power will be studied in terms of their availability, either locally, nationally or internationally.

Water:

As is evident, there is no difficulty in obtaining it since in Catalonia there are 22 reservoirs with a total capacity of 1950 hm3 according to Embalses (n.d.). The annual consumption was 3123 hm3 in 2008 (Catalan Water Agency, 2008). Logically, the reservoirs are filled and emptied according to the need for use throughout the year, so the need for water is completely covered.

Malt:

At the Spanish level, 320,000 hectares of barley were cultivated with which some 460,000 tonnes of beer malt were obtained in 2015. Due to the latitude, Spanish barley is a high-quality product, so the country supplies itself for all the necessary demand at the national level. In addition, a total of 23,000 tonnes was exported.

More generally, in Catalonia 556,513 tonnes of barley were obtained according to Idescat (2019) although the source does not specify how many tonnes were destined for beer. Of this quantity, more than half was produced in Lleida (approximately 300,000 tonnes). That said, it can be concluded that the bargaining power of malt suppliers is low because of the large quantities produced, since this allows the buyer, i.e. the brewers, to choose which supplier best meets its needs.

Hops:

In Spain, 99% of the hop production is concentrated in Castile and Leon which is equivalent to 918 tons; the remaining 1% is produced in Catalonia, La Rioja and Galicia (Orellana, 2019).

In Catalonia in particular there are 13.5 hectares of hops planted which produce about 7 tons distributed among 3 companies: Biolupulus, Lo Vilot D'Almacelles and Lupulina.

According to Jordi Sanchez, CEO of Lupulina, artisan beer producers are not yet interested in locally produced hops as they provide low competitive advantages due to their high price (Costa-Pau and Carreras, 2018).

Most of the world's hops are concentrated in Germany, the United States, China, the Czech Republic, England, New Zealand and Argentina ('The definitive guide to hops', 2014).

As they cannot buy hops locally because they are not very competitive, the brewers have to buy them from abroad, where they have a much wider choice and can choose which supplier suits them best. In other words, the power of the suppliers is low since having to buy it from abroad, which is where most of the producers are, they have the possibility of choosing between one supplier or another, depending on the quality, price or quantity desired, proximity and so on. However, if Catalonia continues to opt for local hops and becomes more competitive, these suppliers could gain bargaining power.

Yeast:

According to the Spanish economic newspaper El Economista (n.d.), there are 553 producers of dry yeast for beer throughout Spain spread over 47 of the 50 provinces which make up the country. More specifically, in the province of Barcelona there are 41 producers of this ingredient. In other words, there is no problem in finding such a product so the power of this type of supplier is low.

6.1.4 Threat of new entrants

The threat of new competitors is influenced by the level of difficulty they have in entering the market, i.e. it depends on the barriers to entry. The easier it is to enter the market, the greater the threat of new entrants (Porter, 2008).

Porter itself foresees the following barriers to entry:

- Initial investment
- Distribution channels
- Customer loyalty
- Technological needs
- Experience
- Economy of scale

By studying these entry barriers, the threat of new competitors can be analysed. The initial investment is low, as there is no need for a large outlay at first. Having access to distribution channels is an important factor, as they are necessary for the business to prosper. Customer loyalty is difficult to achieve in this market, as there is no extreme customer loyalty (Johnson et al., 2009). As there is so much market, customers have a preferred brand (usually a traditional beer), but when choosing a craft beer, it is normal to try several different brands. Johnson et al. (2009) foresee that the technological needs may be a barrier, as certain machines may be required, which would increase in price and size as demand increases. Experience in the sector can be a key factor, since knowing how the sector works, competitors, the main preferences, and tastes of customers, etc., can be a major advantage, being a barrier to entry (Porter, 2008). Porter also says that companies that have been in the sector for some time can reach an optimum level of production with which their costs can be reduced, and they can produce at a lower cost. In this way, the more you produce, the lower the cost of the unit product. If we remember that in 2017 there were 105 companies in the GECAN and in 2018 they were reduced to 93, we can see that the risk of new entrants has decreased with respect to 2017 although it is still high.

In short, the threat of new competitors in the sector is high, so it must be a factor to be taken into account, forcing the company to be in continuous improvement (Kaizen method), and not relax, because at any time new competitors may appear to take market share, which would mean a reduction in profits.

6.1.5 Threat of substitute products

Substitute products are those that can satisfy the same needs as others. In the case where there are few or highly differentiated products, companies marketing those goods or services can set the prices they want, thus generating significant profits, with a low threat of substitute products. But in the case of a large number of similar products, the market share is spread (unevenly) across all products in the market, with the threat of substitutes being very high (Porter, 2008).

According to Johnson et al. (2009, pp. 35-37) there are several factors that can influence the emergence of substitute products:

- Price
- Differentiation
- Availability
- Advertising
- Customer loyalty
- Cost/efficiency of change

As mentioned above, if there are no similar products on the market, the company would operate in a similar way to a monopoly. But if there are similar products on the market, care should be taken in pricing, because if a product is very highly priced, the threat of the emergence of a lower priced substitute is high, according to Porter (2008). The same author says the factor of differentiation is similar to that of price, since if a product is highly differentiated, the emergence of substitute products will be complicated, while if the product is not highly differentiated, the threat of the emergence of substitute products is high, says Porter (2008).

In the market for traditional beer, customers tend towards one brand, whether by tradition, price, quality, geographical area, etc. But in the market for craft beer, customers tend to change, as each craft beer is different. So, a new beer can threaten another one's market share. Therefore, there is an easy change, which means that the threat of the appearance of substitute products is high. On the other hand, since the risk of new entrants is high and each brand creates its own beer with different characteristics from the others, the risk of emergence of substitute products (new beers) is very high.

Another interesting point is that Catalans are increasing their wine consumption according to La Vanguardia (2019). The growth in wine consumption in Catalonia can be taken as a substitute product that could steal market share from the artisanal brewing sector. According to the same newspaper, the consumption of wine as the most used alcoholic beverage per person increased from 27.8% in 2010 to 28.74% in 2019.

In short, in the market in which the company intends to set up, the threat of substitute products is high, a factor which will have to be taken into account and will be dealt with by means of advertising campaigns, increasing quality, lowering prices, increasing the range of products, etc.

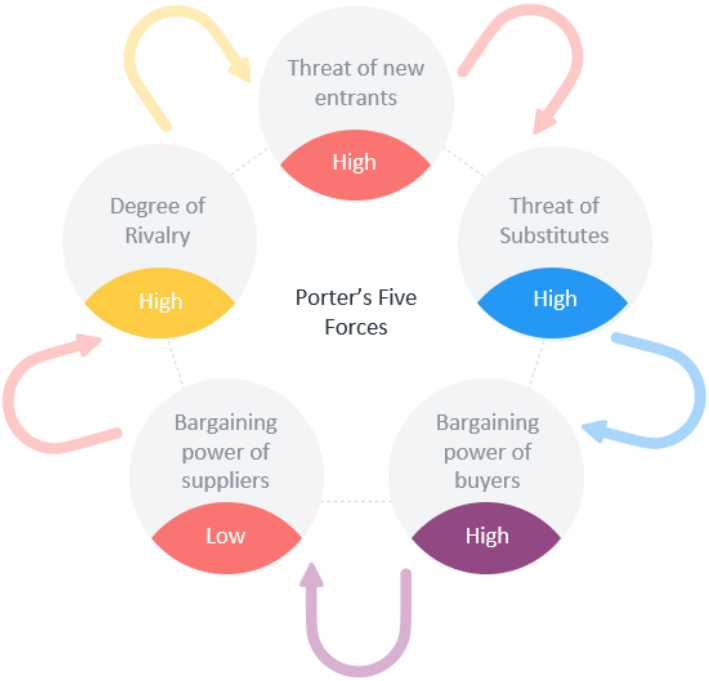


Figure 11. The 5 forces of Porter for the artisan brewery sector in Catalonia

6.2 Ratio analysis

The analysis will be made of all 9 companies at the same time in order to be able to analyse if there are similar trends and to see at first sight who performs better and worse. For the values that are very different from the rest, independent graphs will be made so that a specific analysis can be made as well as to avoid distorting the other data present in the graph. All individual graphs can be found in the Appendix 1.

6.2.1 Profitability ratios

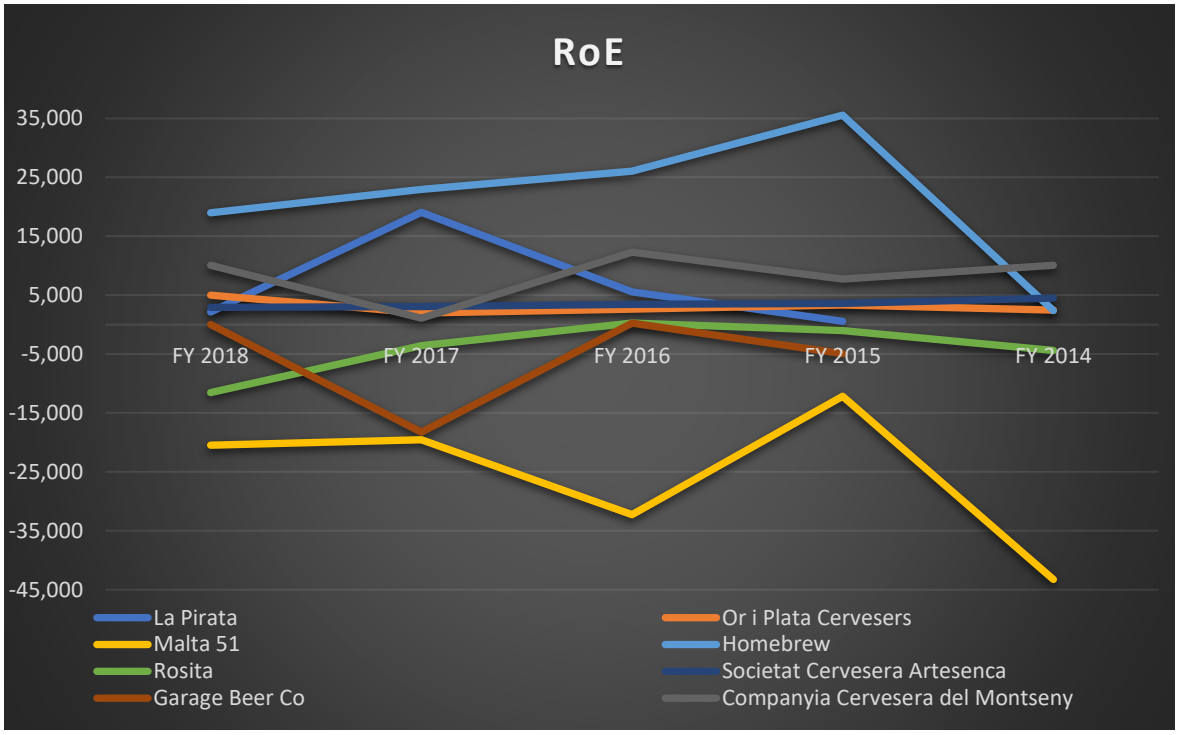


Figure 12. RoE of the companies studied except Vic Brewery

From the graph it is clear that there is no general trend that can be extracted. On the other hand, apart from Malta 51 and Garage Beer the rest of the companies have a positive RoE, with Homebrew showing the best results, despite the fact that this ratio is slightly down from 2015. However, it seems that the value tends to stabilize around 15%. The Companyia Cervesera del Montseny is the second in terms of good results, fluctuating between 3% and 8% approximately. Therefore, this and Homebrew can be seen with good eyes by investors. Rosita has had positive results every year that are studied except 2018 when the net income was negative. Both Or i Plata Cervesers and

Societat Cervesera Artesenca have presented positive values, low and stable over the period studied. La Pirata has had positive but regular results every year except in 2017 which had an unexpected rise to approximately 17%. Finally, Vic Brewery's RoE has been studied separately due to very different results from the rest that would have distorted the graphs.

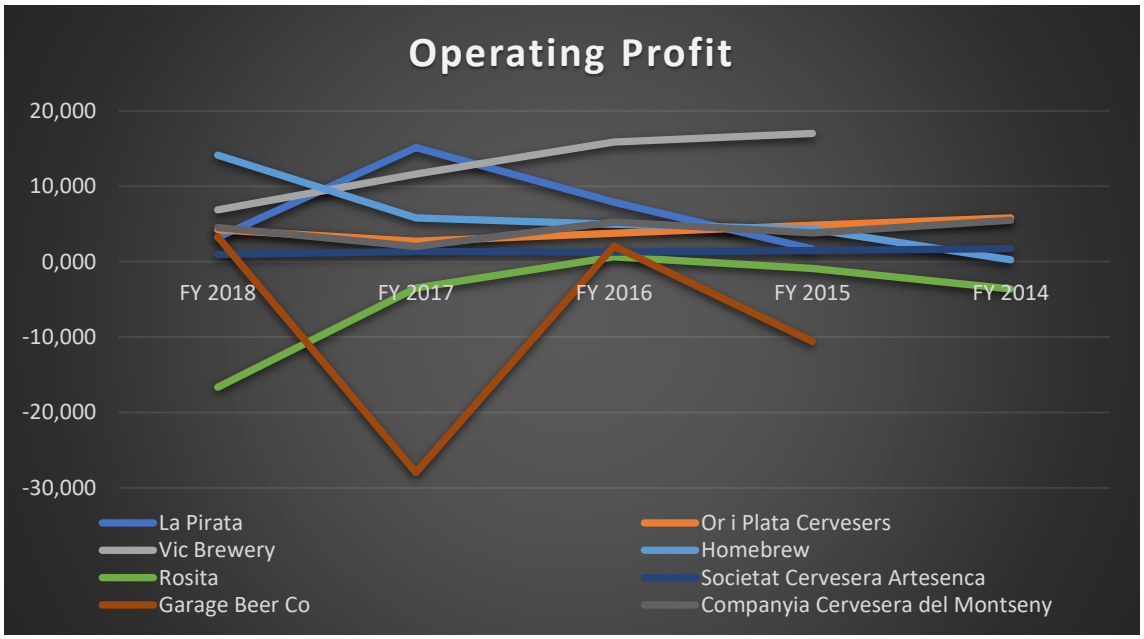


Figure 13. Operating profit of the companies under study except Malta 51

As far as Operating Profit is concerned, the results of Malta 51 have been studied separately, as well as the results of Vic Brewery for 2014. In this case, the worst results are Garage Beer and Rosita. Therefore, they would have to review the return on their operations such as personnel expenses or the price they pay for the goods consumed, as they could be too high. Vic Brewery has presented very good results from 2015 to 2018 although it seems that the trend is downwards from 17% in 2015 to approximately 8% in 2018. On the other hand, the trend of Homebrew is encouraging since it has had positive results but lower than Vic Brewery until 2017, but in 2018 it has surpassed it being the one that has presented better results, with an operating profit value of approximately 15%. La Pirata had the best results in 2017, although it seems that it was exceptional as it is not a trend that has been maintained. Finally, Companyia Cervesera del Montseny, Societat Cervesera Artesenca and Or i Plata Cervesers have had positive results, very

stable that have fluctuated between 0.9% and 6%. As a final note, there is no sectorial trend that can be extracted from the graph.

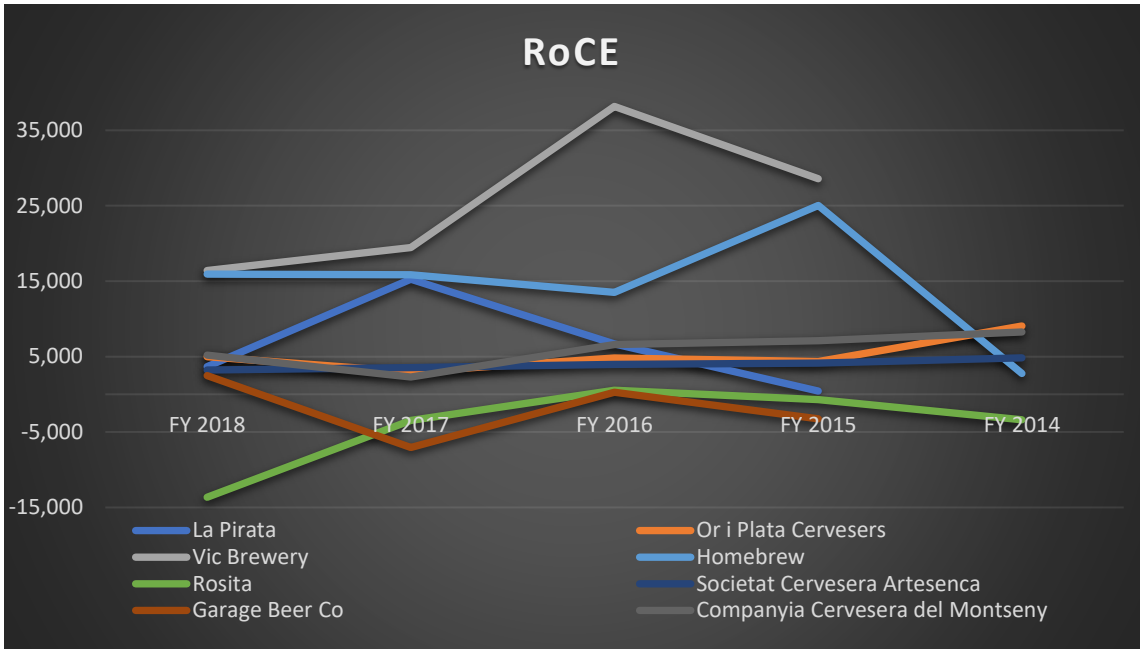


Figure 14. RoCE of the companies under study except Malta 51

The companies that performed best in terms of the RoCE ratio in order are Vic Brewery (except in 2014 which is presented in another specific graph) and Homebrew. However, the trend for Homebrew is slightly upwards since 2016 while Vic Brewery is downwards, both companies giving a RoCE of around 15% in 2018. This indicates that they have had an EBIT that has represented 15% of equity plus long-term liabilities (long-term financing sources). La Pirata presented an excellent result in 2017 (around 15%) but the rest of the years were regular. Or i Plata Cervesers, Companyia Cervesera del Montseny and Societat Cervesera Artesenca continue with the stable trend as for RoE and Operating Profit, fluctuating between 3% and 7% approximately. Rosita has presented quite bad results during the whole period, being the RoCE slightly positive only in 2016. In 2014, Vic Brewery presented very different results from the rest, as well as Malta 51 during the 5 years studied.

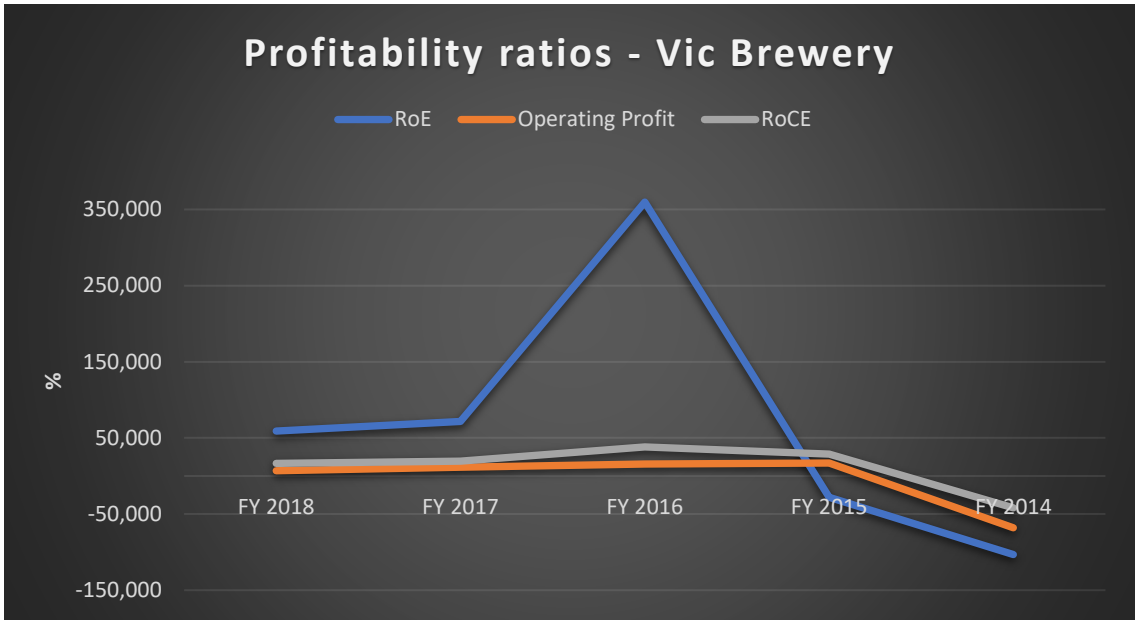


Figure 15. Profitability ratios of Vic Brewery

Vic Brewery's RoE results were very bad in 2014 and 2015 although in 2016 it showed abnormal growth, exceeding 350% (they had a net income much higher than equity during that year). It then stabilized around 50% in 2017 and 2018. Operating Profit and RoCE performed in a similar way, being negative and unpromising in 2014, but becoming positive from 2015 onwards and stabilising at around 7% Operating Profit and 16% RoCE in 2018. It can be added that there is no trend apart from the stabilisation of these last two ratios.

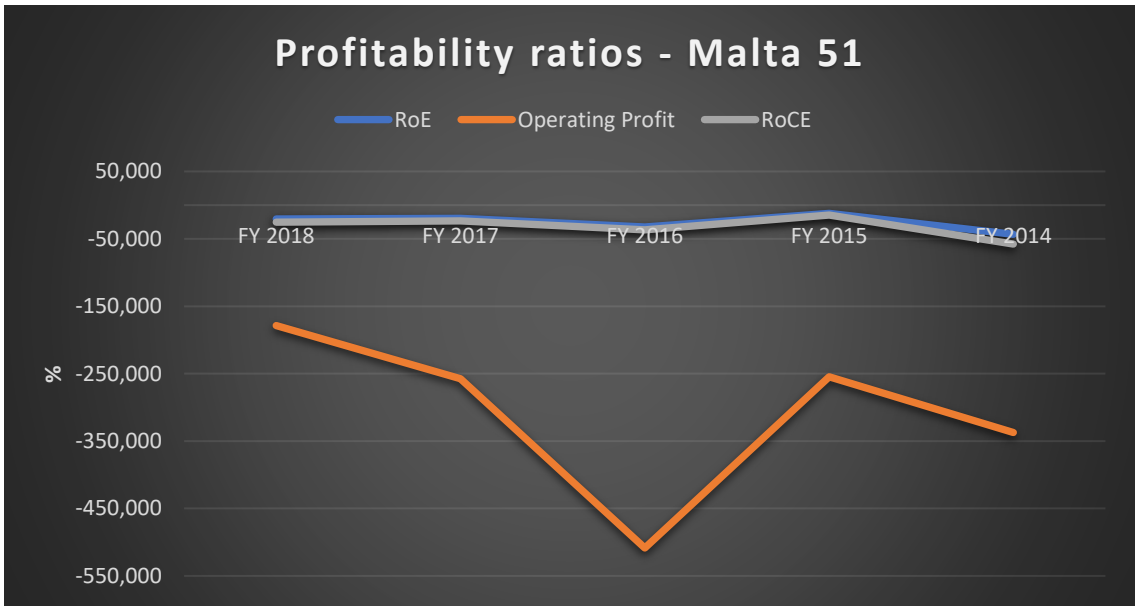


Figure 16. Profitability ratios of Malta 51

Malta 51 has presented disastrous results in terms of profitability. RoE and RoCE values have fluctuated between -60% and -12% over the 5 years. In addition, Operating Profit results have been even worse, reaching -500% approximately in 2016, which means that operating profit is negative and 5 times higher than revenue. In general, they should reduce all operating expenses to achieve positive EBIT, net income and operating income.

6.2.2 Liquidity ratios

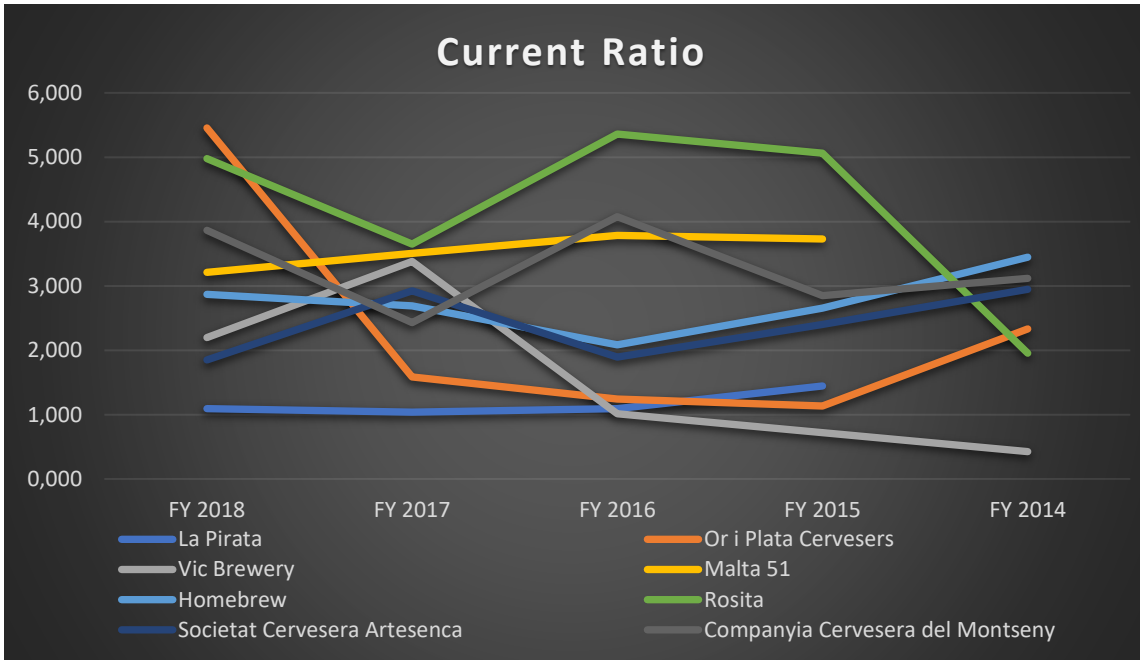


Figure 17. Current ratio for the companies except Garage Beer Co.

As for the Current Ratio, Rosita and Malta 51 present the highest values, both exceeding the ideal value 2:1. This means that they have idle capital that they could have used to reinvest in the long term and expand. La Pirata has presented values around 1 which means problems in dealing with short-term obligations. Vic Brewery had a very fair underperformance except in 2017 and 2018 which again showed good liquidity. Or i Plata Cervesers had a good result in 2014 but then fell below the ideal average until 2018 which had a value of 5.5 which clearly means a bad use of resources in the short term by not reinvesting the surpluses. Homebrew, Societat Cervesera Artesenca and Companyia Cervesera del Montseny had good results in general, except the latter that in 2016 and 2018 had a surplus of current assets that could have been used to expand.

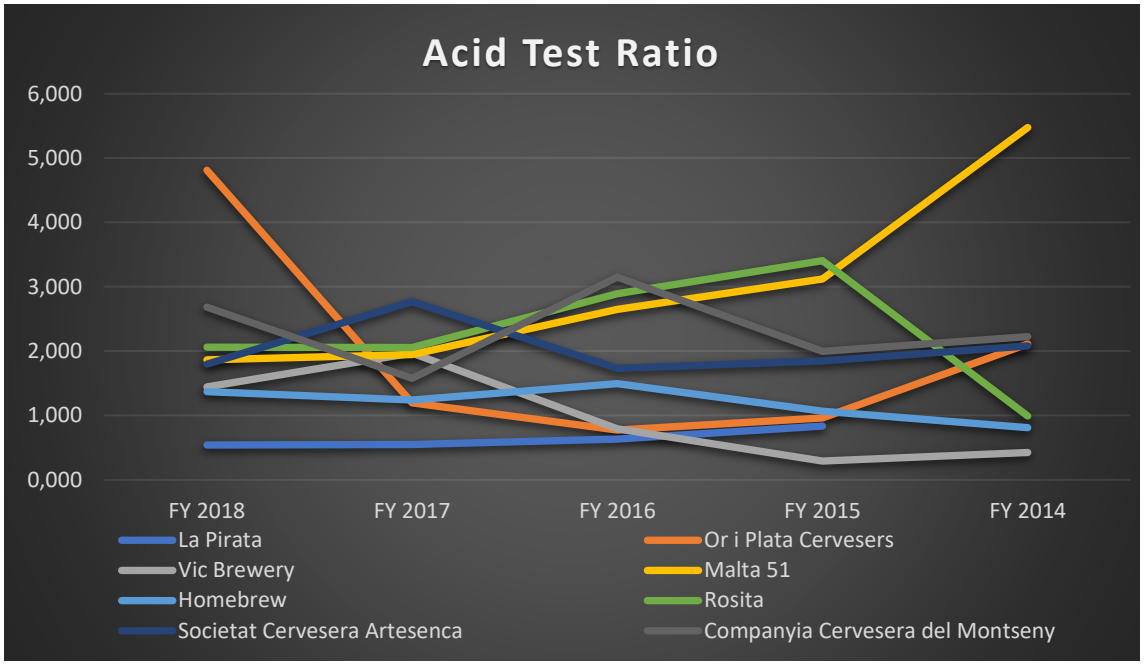


Figure 18. Acid test ratio for the companies except Garage Beer Co.

As for the Acid Test Ratio, the companies La Pirata for 4 years, Vic Brewery from 2014 to 2016 and Or i Plata Cervesers from 2015 to 2017 presented worrying results. The latter, moreover, had too high results in 2014 and 2018 as the ideal value is around 1:1, so they have idle resources even ignoring inventories. Malta 51 had exorbitant values in 2014 and 2015 but the trend was for it to stabilize to a little below 2:1 in 2018. Rostia, Homebrew, Vic Brewery in 2017 and 2018, Companyia Cervesera del Montseny and Societat Cervesera Artesenca present good results during the period studied, some slightly exceed the ideal value, but are considered within the acceptable range. This means that without taking into account the inventories (in case they could not be sold) they would still be solvent in the short term and could meet their obligations in the short term.

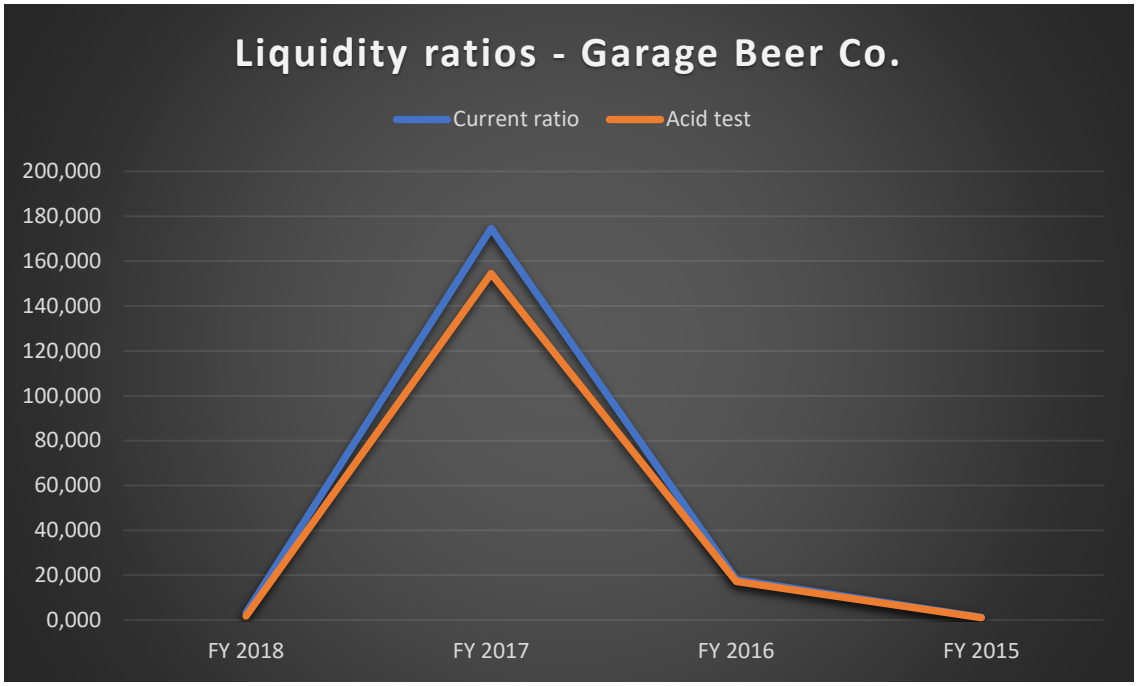


Figure 19. Liquidity ratios of Garage Beer Co.

Garage Beer Co. is studied separately due to exorbitant results in 2017 (Current Ratio of 175 and Acid Test of about 160) due to very high values of liquid assets and extremely low values of liquid liabilities. In 2016 they also presented enormous values (around 20 both ratios) although less than in 2017 as can be seen in the graph. Despite this, in 2015 and 2018 they had values of 1.2 and 3.2 respectively in terms of the Current Ratio and 1.1 and 1.8 in the Acid Test, which indicates that they used the surplus resources correctly so as not to continue to have idle resources.

6.2.3 Efficiency ratios

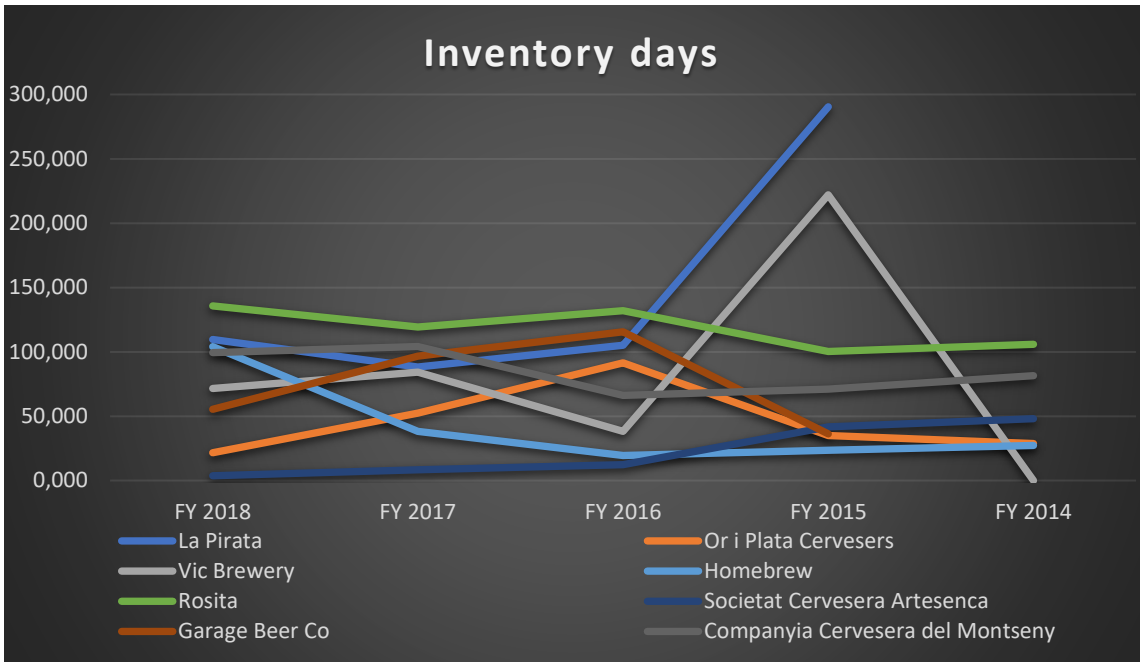


Figure 20. Inventory days except Malta 51

The company that presents the best numbers in terms of inventory days is Societat Cervesera Artesenca because in 2014 it took 50 days to sell the inventory, but each year has been decreasing to reach approximately 4 days in 2018. In general, the rest of the companies have fairly large values as most values are between 50 and 100 days. Garage Beer and Or i Plata Cervesers had acceptable values in 2018 (around 50 and 20 days respectively) but the rest of the companies had values that were too big. In particular, Rosita exceeded 100 days every year and La Pirata and Vic Brewery had more than 200 days and almost 300 days respectively in 2015. In general, these values would have to be lower as they denote difficulties in creating cash while they could be affected by price declines in the market and incur losses.

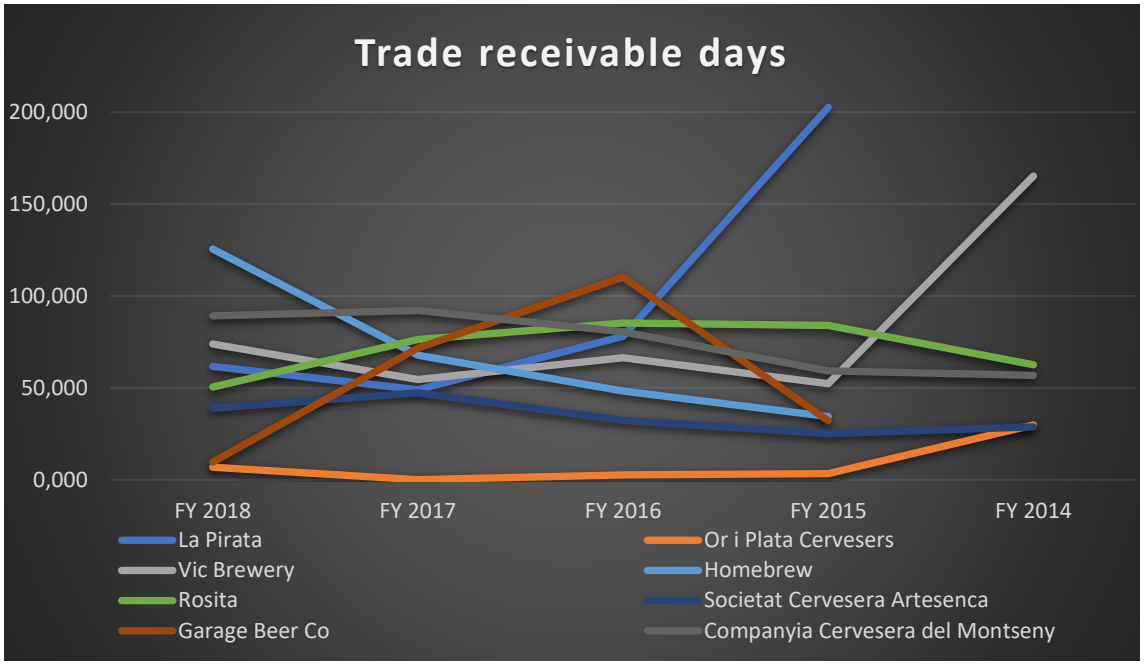


Figure 21. Trade receivable days values except Malta 51

Or i Plata Cervesers and Societat Cervesera Artesenca are the ones who collect their debts more quickly which means that their debtors do not have liquidity problems, which is a good sign. The trend in Homebrew is that it is taking longer and longer to receive what their debtors owe them, which can be worrying. The other companies have acceptable results since they all have values below 100 (usually the purchase contracts are made at 30, 60 or 90 days). Finally, La Pirata in 2015 and Vic Brewery in 2014 had alarming values of 200 and 165, respectively. However, this was only temporary, and they returned to normal in the following years. No trend was discernible other than relatively stable values for most companies.

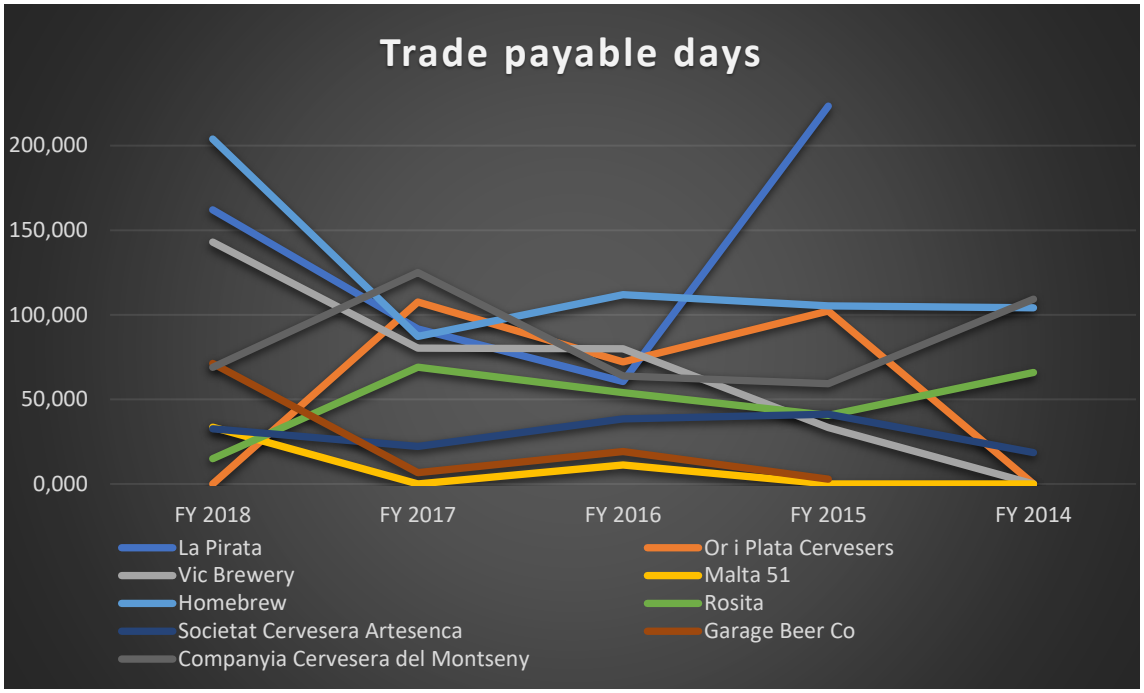


Figure 22. Trade payable days values except Malta 51

La Pirata had very high trade payable days in 2015 (225 days) and 2018 (200 days) possibly due to its liquidity problems seen in the study of liquidity ratios (Current Ratio and Acid Test). Societat Cervesera Artesenca and Garage Beer Co. had values ranging from 10 days to 70 days, which is an acceptable time to pay debts to creditors. Homebrew and Vic Brewery had a rebound in 2018 which could indicate liquidity problems, although as seen in the Current Ratio they do not have liquidity problems. Therefore, they may be gaining in liquidity because they are slow in paying their creditors, which gives them extra time with more money than they really should have. The rest of the companies have an acceptable behavior considering that they do not exceed (or slightly exceed) 100 days, which would make them pay at 90 days. A particular case is that of Or i Plata Cervesers that had 0 trade payable days in 2014 and 2018 because their account payable was 0 both years. There is no general trend, but the days it takes companies to pay their debts is not a concern, except for those specifically mentioned.

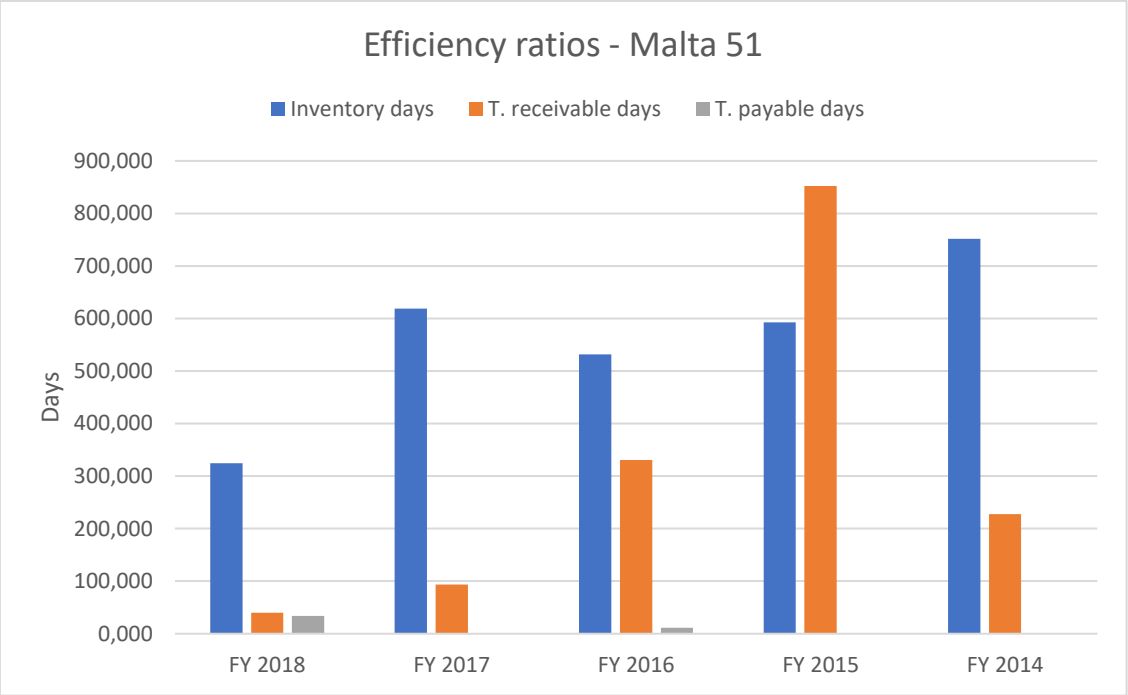


Figure 23. Specific efficiency ratios of Malta 51

The case of Malta 51 is quite worrying, however. It takes them many days to sell their surplus inventory, and it also takes them many days to receive what the debtors owe them (800 days in 2015), except in 2017 and 2018. In fact, the serious problems that the company is experiencing in terms of profitability could come from this problem. Instead, they pay their creditors very quickly. Having a lot of days of inventory in the company without being sold implies some expenses of material, personnel, etc., that are not paid because you cannot sell everything that is produced with speed. If, in addition, it takes a long time to collect what is sold, this generates even more problems of profitability and liquidity at the same time. In other words, if Malta 51 managed to sell the inventories more quickly and the debtors paid it with normal terms, the profitability problems would probably disappear or be much less.

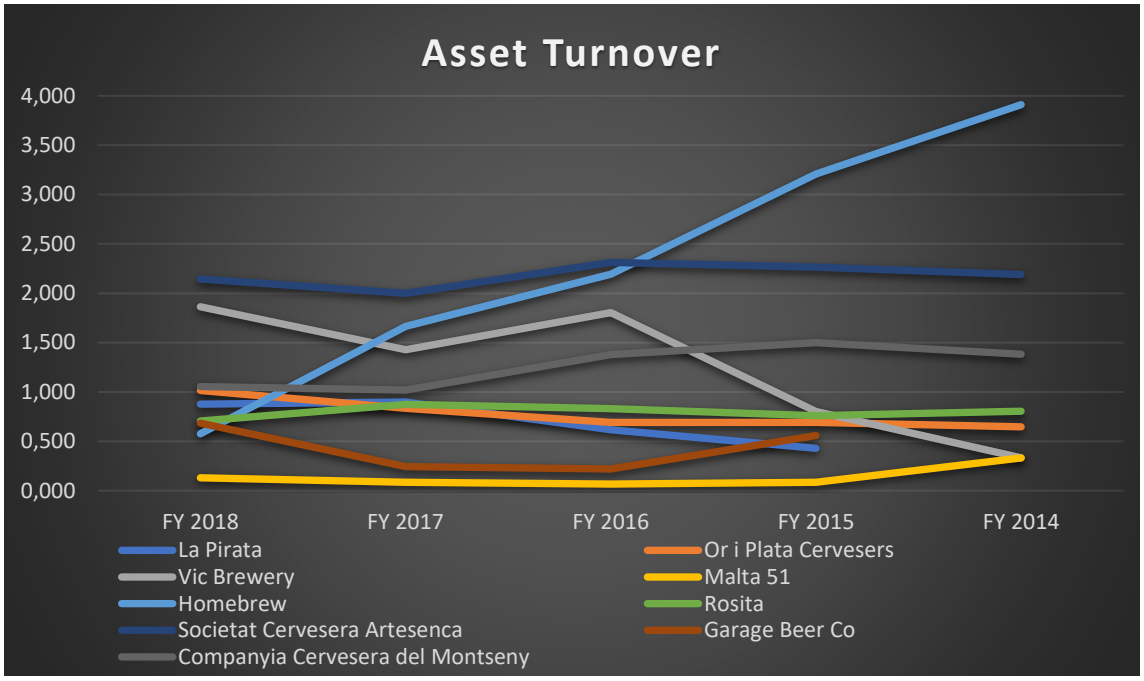


Figure 24. Asset turnover graph

This ratio measures the relationship between revenue and average total assets during the year in question. Obviously, the higher the ratio, the better, as it means that for given assets you create more revenue. Homebrew had an incredible asset turnover value in 2014 reaching almost 4, although since then the trend has been downwards to 0.6. Societat Cervesera Artesenca has remained around 2 (with the assets it has managed to make a revenue equivalent to twice the value of these), Vic Brewery has a very good upward trend in which almost reached 2 in 2018. The Companyia Cervesera del Montseny has been ranging between 1.5 and 1, going from more to less during the period of study. Finally, the rest of the companies studied have been below 1, being Malta 51 and Garage Beer Co. the worst revenue results with the average assets they have. As has been said, there are companies that tend to improve and others that appear to be going down, in other words, it cannot be said that there is a general trend in the sector.

6.2.4 Gearing

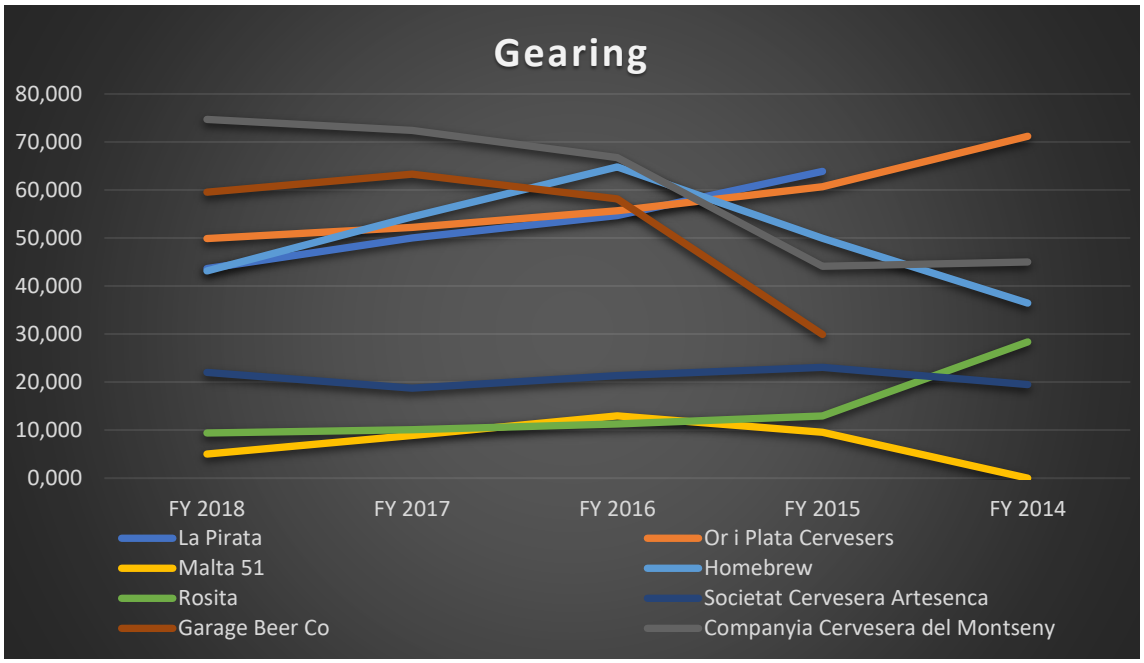


Figure 25. Gearing of the companies under study except Vic Brewery

Gearing measures what proportion of debt a company uses to finance itself. Societat Cervesera Artesenca, Malta 51 and Rosita use from 0% to less than 30% of their debt to finance themselves, so they are mostly financed through equity. On the other hand, the rest of the companies Garage Beer Co. and Companyia Cervesera del Montseny have been increasing their debt to finance themselves, reaching 60% and 75% in 2018, respectively. Unlike the companies mentioned above, Or i Plata Cervesers and Homebrew have been increasing their equity as a form of financing, i.e. the value of gearing has risen to 50% and 43% respectively. Finally, La Pirata began with a gearing of 40% approximately in 2014, increased to 65% in 2016 and since then has decreased to 43% in 2018. Each company has been financing itself in different ways, so there is no general trend either.

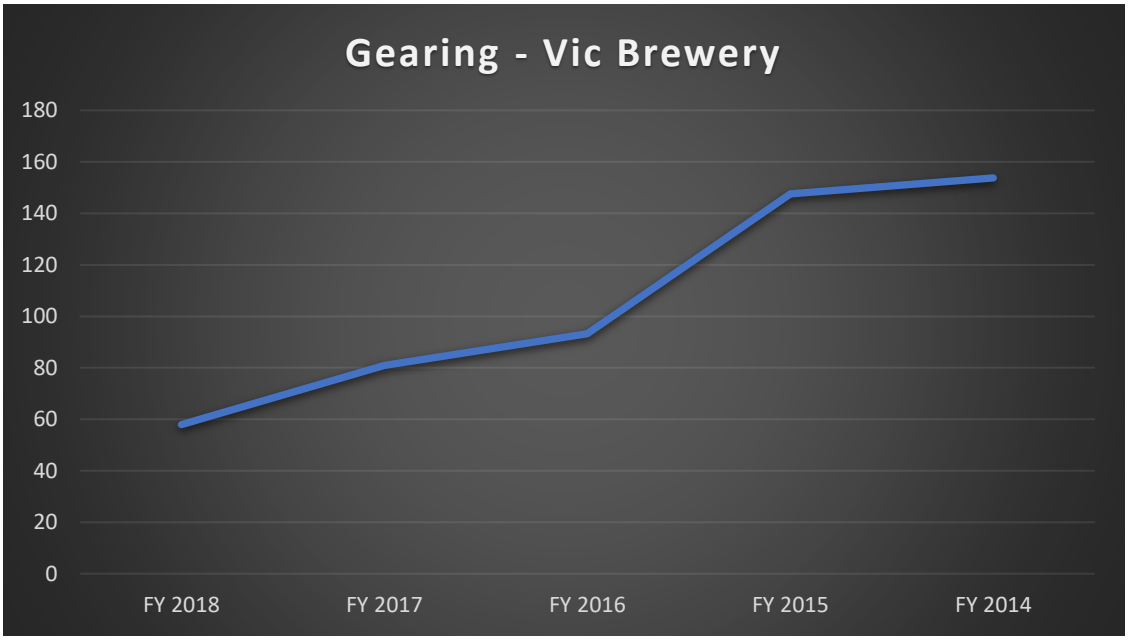


Figure 26. Gearing presented by Vic Brewery

The case of Vic Brewery is quite special since in 2014 and 2015 it had a gearing greater than 100% due to a negative equity. This happened because the company's liabilities were greater than its assets, i.e., since the company owed more than it had, it had to "borrow" in terms of equity, or in other words, the equity and reserves have been spent to cover the losses. This is an extremely worrying sign, but Vic Brewery managed to get through it and is now back to positive equity values thanks to the restitution of negative values being the profits generated by the company put into reserves. In addition, Vic Brewery showed poor results in almost all ratios for 2014 and 2015. In spite of this, in 2016 it recovered completely, presenting very good results in all the ratios studied.

6.2.5 Others

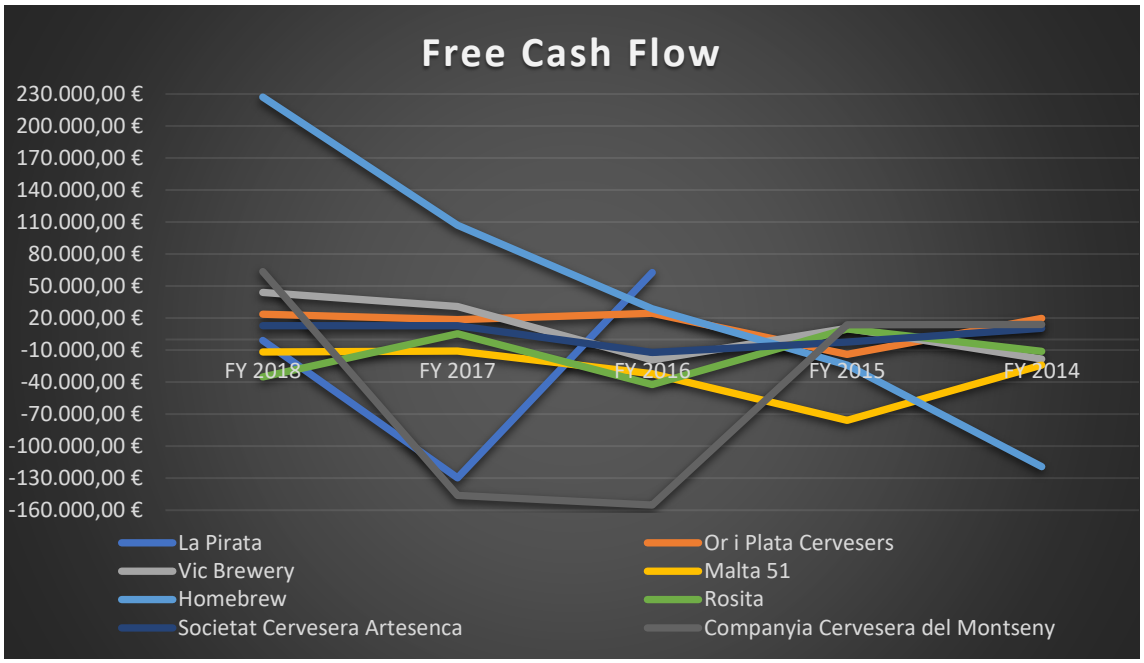


Figure 27. FCF values except for Garage Beer Co.

It can be seen at first glance that Homebrew is the one that started off worst, but it is the one that had the best result in 2018 at the same time. The trend of this company is promising in terms of Free Cash Flow. However, it should be mentioned that the CAPEX was negative in 2018 which means that they sold tangible fixed assets to increase the cash flow (it can denote problems in getting financing), that is, they sold fixed assets which is what really allows them to produce more, bad sign. Malta 51 has had a negative result every year due to negative operating cash flows also during all the years, Companyia Cervesera del Montseny had negative results in 2016 and 2017 due to large CAPEX (expanded and grew at the level of tangible fixed assets) despite positive and high operating cash flows. Finally, La Pirata also had a very negative FCF in 2017 due to large CAPEX (large investment in tangible fixed assets). Rosita had a negative FCF in 2016 because of large CAPEX and therefore large investment and 2018 with negative operating cash flow but remains stable and fairly regular. The rest of the companies presented acceptable and stable results over the 5 years, which denotes little investment in fixed assets and therefore little investment in expansion.

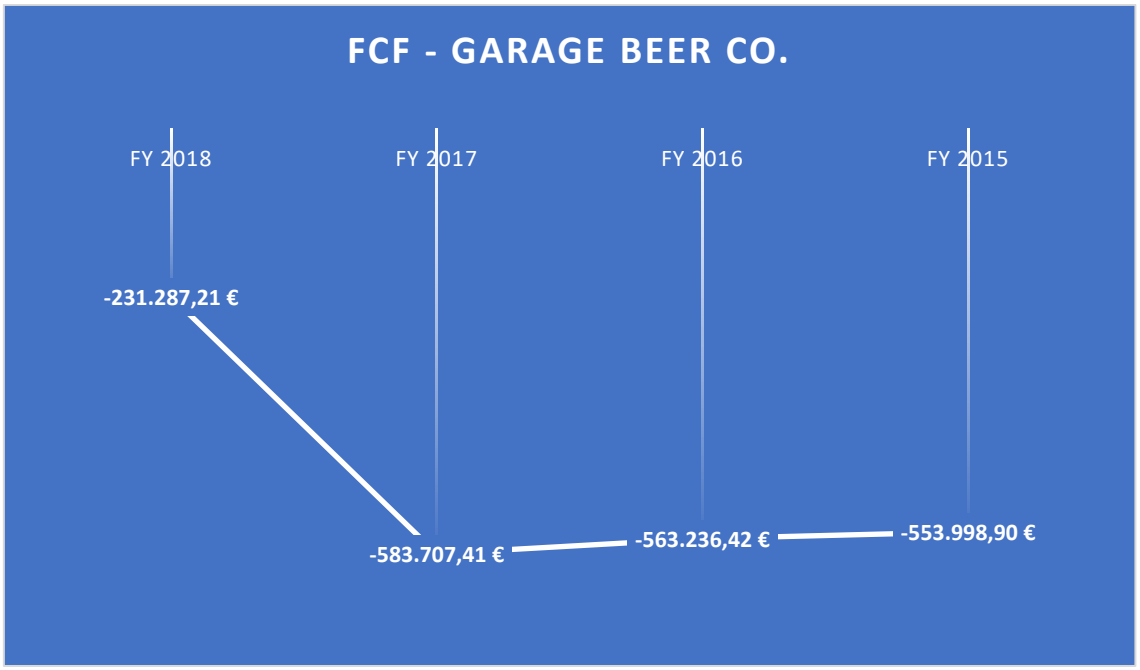


Figure 28. FCF for Garage Beer Co.

The case of Garage Beer Co. is studied separately because the numbers they present in terms of FCF are much more negative than the rest. The following values are presented to understand how the FCF has evolved:

Table 1. CAPEX and FCF for Garage Beer Co.

	FY 2018	FY 2017	FY 2016	FY 2015
CAPEX	€314,968	€455,595	€587,871	€563,102
Free cash flow ratio	€-231,287.21	€-583,707.41	€-563,236.42	€-553,998.90

Actually, except 2017 which had a large CAPEX, but also negative operating cash flow, the rest of the years had a very high CAPEX value, having a positive cash flow though. In other words, it is a company that has been expanding and growing in terms of tangible fixed assets (machinery, equipment, etc.) as well as having a positive operating cash flow every year except 2017. Despite having a negative cash flow in 2017, every year it has been reinvesting and increasing its fixed assets in order to produce more and continue growing as a consolidated company within the sector. Therefore, it is a company that promises growth and keeps reinvesting in itself. These data can be very interesting for an investor who is looking for a growing business, in constant expansion and with future projection.

6.2.6 Altman test

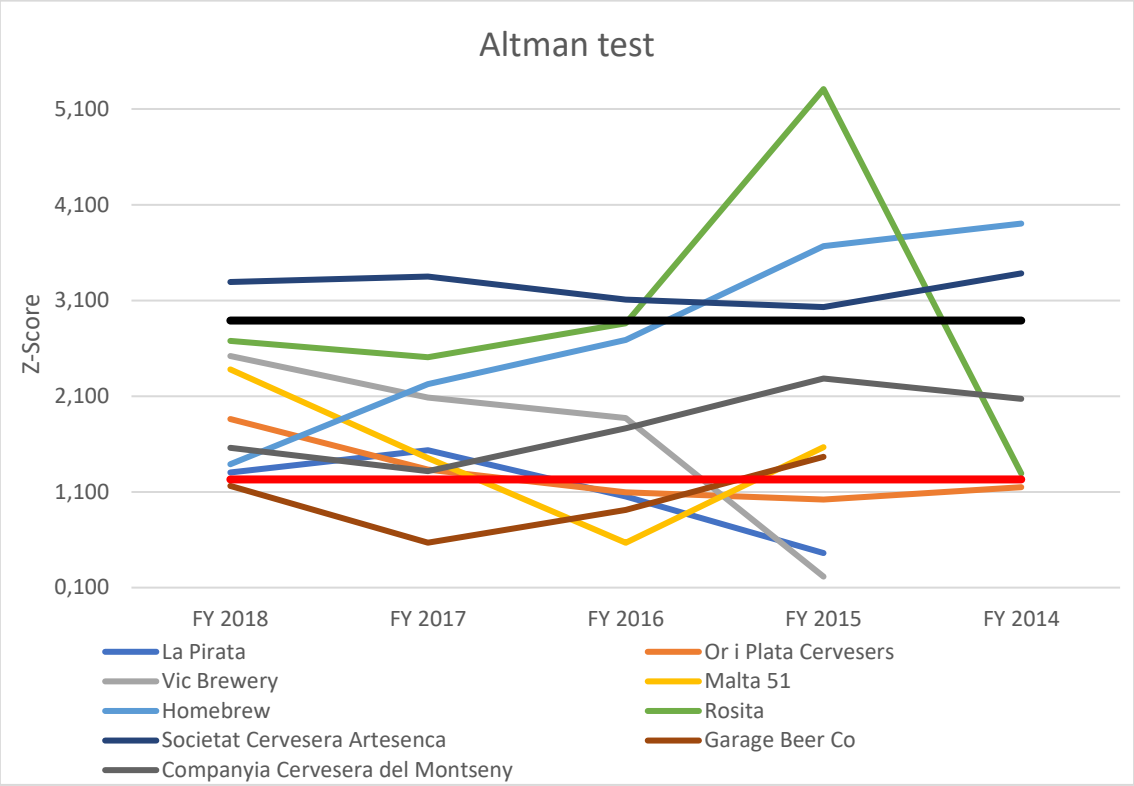


Figure 29. Altman solvency test

According to Altman, values below the red line indicate a high probability of bankruptcy, values above the black line indicate a low probability of becoming insolvent, and the intermediate zone is the grey zone and indicates uncertainty. As can be seen in the graph, the only company that is supposed to have a low risk of bankruptcy is Societat Cervesera Artesenca during the period studied. Homebrew was in the same area in 2014 and 2015 and Rosita in 2015 and 2016, although the rest of the years were in the grey zone both. Companyia Cervesera del Montseny has remained every year in the area of uncertainty. Or i Plata Cervesers and La Pirata have been until 2016 in the area of bankruptcy, although in 2017 and 2018 both were in the grey area. Garage Beer Co. has been every year in the high probability zone of insolvency except in 2015. Malta 51 was in the grey zone in 2017 and 2018 after passing through the bankruptcy zone in 2016. Finally, Vic Brewery started off very badly with even negative values in the Altman test in 2014 (see Appendix 1), in 2015 it had a positive value but well below the limit of 1.23 set by Altman. Since then, however, it has been placed in the zone of uncertainty with a trend that seems to put it in the zone of little probability of bankruptcy in future years.

As a general comment, this test does not seem to be entirely useful for the analysis of the companies under study, probably because they are very small companies of which most are less than 8 years old. This is said because companies like Rosita or Malta 51 have presented bad results in profitability, efficiency or Free Cash Flow, and yet the first one has very good values of the Z-score and the second one has acceptable values. On the other hand, Or i Plata Cervesers presented much better results in the ratios and has a Z-score result but that of the companies that have just been commented on leads one to think that they will go bankrupt and this will not be the case.

6.3 Cost of equity

The values used for the industry premium can be found in the Appendix 2 and all the calculations for the cost of equity can be found in the Appendix 3.

6.3.1 Build Up Discount Rate

In the case of the Build Up Discount Rate, the 5 returns explained in the literature review section are taken into account. For this theory the values used for R_f, R_m and $R_{INDUSTRY\ PREMIUM}$ coincide for all the companies since they are part of the same country, the same economy (economic growth of the same country) and the same industry. The values that change are those of $R_{COMPANY\ SIZE}$ and $R_{COMPANY\ SPECIFIC}$ so it can be seen that the cost of equity values will not differ much from one another. That is, what will make them not the same values for each company are these two returns just mentioned.

Table 2. Cost of equity using the Build Up Discount Rate

Cost of equity with Build Up Discount Rate					
Companies | Year	FY2014	FY2015	FY2016	FY2017	FY2018
Vic Brewery	-	-	28,856	37,497	23,973
Societat Cervesera Artesenca	22,900	54,108	21,190	31,439	18,886
Rosita	19,783	53,739	18,181	30,921	17,982
Or i Plata Cervesers	25,420	57,287	24,267	34,976	21,668
Companyia Cervesera del Montseny	19,666	53,493	19,366	31,622	18,425
Malta 51	20,972	51,741	23,999	37,471	27,351
La Pirata	-	50,947	23,990	33,610	20,076
Homebrew	20,296	52,523	19,622	32,047	18,964
Garage Beer Co.	-	50,166	15,687	29,988	18,243

First of all, the value of the company size premium was calculated by taking the average equity value of 2 publicly traded companies from the last 5 years, Boston Beer Co. and Craft Brew Alliance. On the other hand, we saw the value of the average stock market growth of the companies during the same period. With this, a graph was created in order to obtain an exponential regression and see what return our companies would have given their equity value. From the graph, the equation of the regression was extracted and was possible to calculate the value of the company size premium as a function of the equity value. An exponential regression was taken since it appears to be more realistic than a linear one.

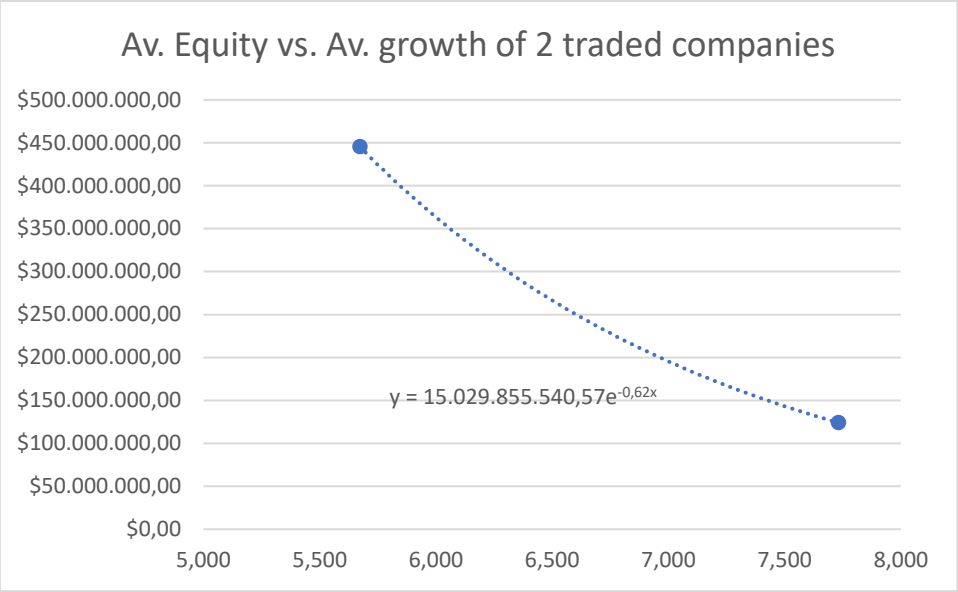


Figure 30. Exponential regression to calculate the Company Size Premium

As can be seen in table 2, companies such as Garage Beer Co., Rosita, Homebrew O Companyia Cervesera del Montseny will have a lower return value by company size since they have a higher equity than the rest, that is, investors will have less premium since the companies are larger and therefore present less risk. Vic Brewery, Or i Plata Cervesers or Malta 51 have lower equity so the investor will require a higher return due to the risk involved in investing in a smaller company. The weight of the company size premium is greater than that of the company specific, as can be seen in the graph, and is therefore much more significant than that of the latter.

On the other hand, the company specific has been taken into account by deducting the debt to equity of each company from the debt to equity of the reference company Craft Brew Alliance, the difference being what has been considered the company specific premium. As the companies are very new, the C_d (interest expense divided by long-term debt) is low as what they pay annually has not stabilised and is equivalent to the % required by the banks. In other words, the C_d is useful when a company already has many loans and at an interest rate that is always the same, which in the end stabilizes and the C_d is equivalent to the interest that the banks earn on the loans. In order to understand our case, since we are new companies that have been making loans recently, let's say that they make loans for 20 years, then what they pay annually is not equivalent to the % of the interest that the banks earn. If this were to be repeated over time, it would be

equivalent to interest in the end. Therefore, the value of $R_{COMPANY\ SPECIFIC}$ of the 9 companies in many occasions is less than 0, so it has been commented. However, for most of the companies, this value is increasing over time and in 2017 and 2018 it starts to stabilize. In other words, the return of the specific company begins to be positive from these years (not for all companies, but for many).

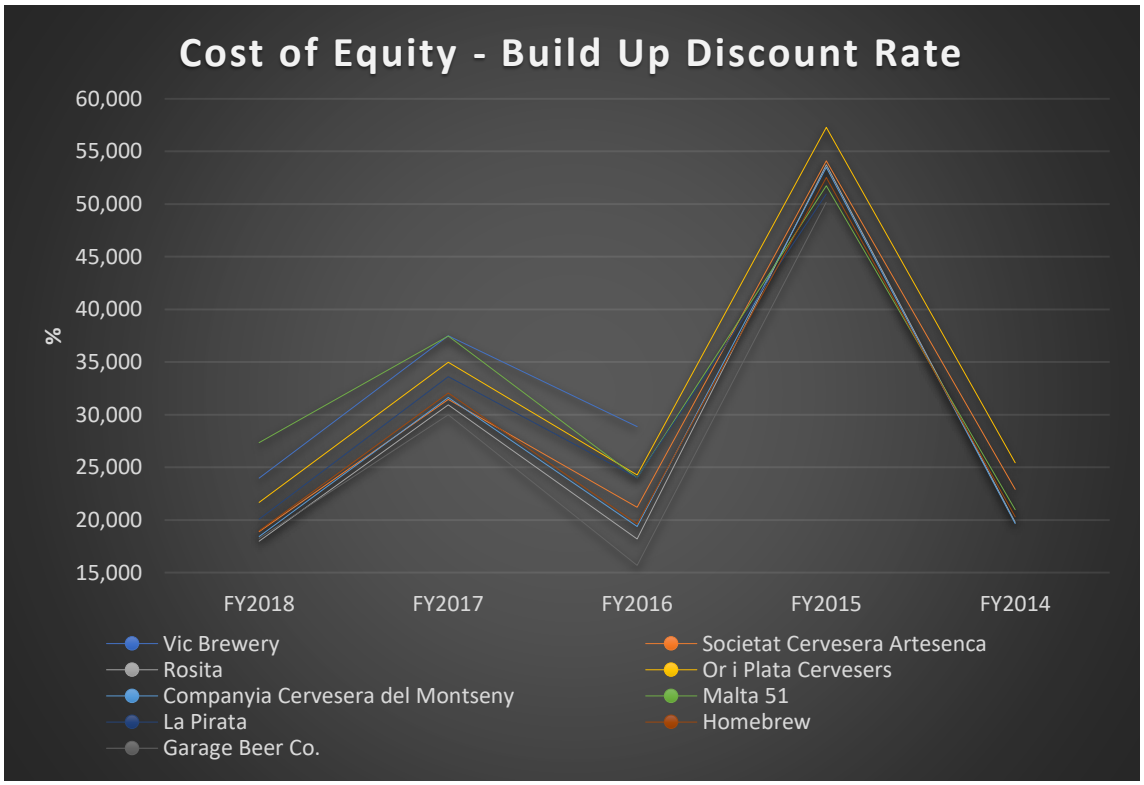


Figure 31. Cost of equity using the Build Up Discount Rate

As for the graph obtained, it can be seen that for all companies there was a large increase in 2015. This is due to the fact that the Food & Beverages index had a big increase from 2014 to 2015. Being part of such an industry, it is assumed that if the index rose (growth of the sector) the return for the investor should be in line with the rise of the index representing the industry. If we do not take into account the year 2015, we can see that the values of all companies fluctuate between 16% and 38%. These values are quite acceptable if we take into account that for example in 2018 the cost of equity of Craft Brew Alliance, the reference company used for the calculation of the company specific premium, was 5.35% according to Guru Focus (2020).

Considering that it is a listed company with much lower cost of capital, the results obtained for cost of equity may not be perfect, but at least they are quite close. Furthermore, it has to be taken into account that for the calculation of each return the most appropriate information available has been used, so the result is as accurate as possible according to the information used.

6.3.2 Capital Asset Pricing Model

By performing the calculations explained in section 4.3 of the literature review, we obtained the values of β for each of the companies (unlevering the β of the reference company Craft Brew Alliance and then re-levering the β for our companies). Once the β was known, only the formula presented in section 4.3 had to be applied.

Table 3. Cost of equity using CAPM

Cost of equity with CAPM					
Companies | Year	FY2014	FY2015	FY2016	FY2017	FY2018
Companyia Cervesera Montseny	2,614	2,658	3,811	4,521	4,712
Garage Beer Co	-	2,267	3,050	3,471	3,072
Societat Cervesera Artesenca	1,928	2,130	1,666	1,720	1,757
Rosita	2,111	1,821	1,487	1,582	1,559
Homebrew	2,323	2,883	3,608	2,848	2,285
Malta 51	-	1,921	1,514	1,564	1,502
Vic Brewery	-1,764	-1,535	16,232	6,413	2,967
Or i Plata Cervesers	3,874	3,470	2,883	2,729	2,546
La Pirata	-	3,714	2,821	2,623	2,301

As it can be seen, the K_e values are much lower for this case. As there are no publicly quoted breweries in Spain, it was decided to use American companies when calculating the β. This must have introduced an error in the calculations as they are very different markets. However, Catalonia is experiencing a very pronounced growth in the craft sector, as is happening in the United States. For this reason, American companies were chosen before companies from other countries that are not experiencing such strong growth.

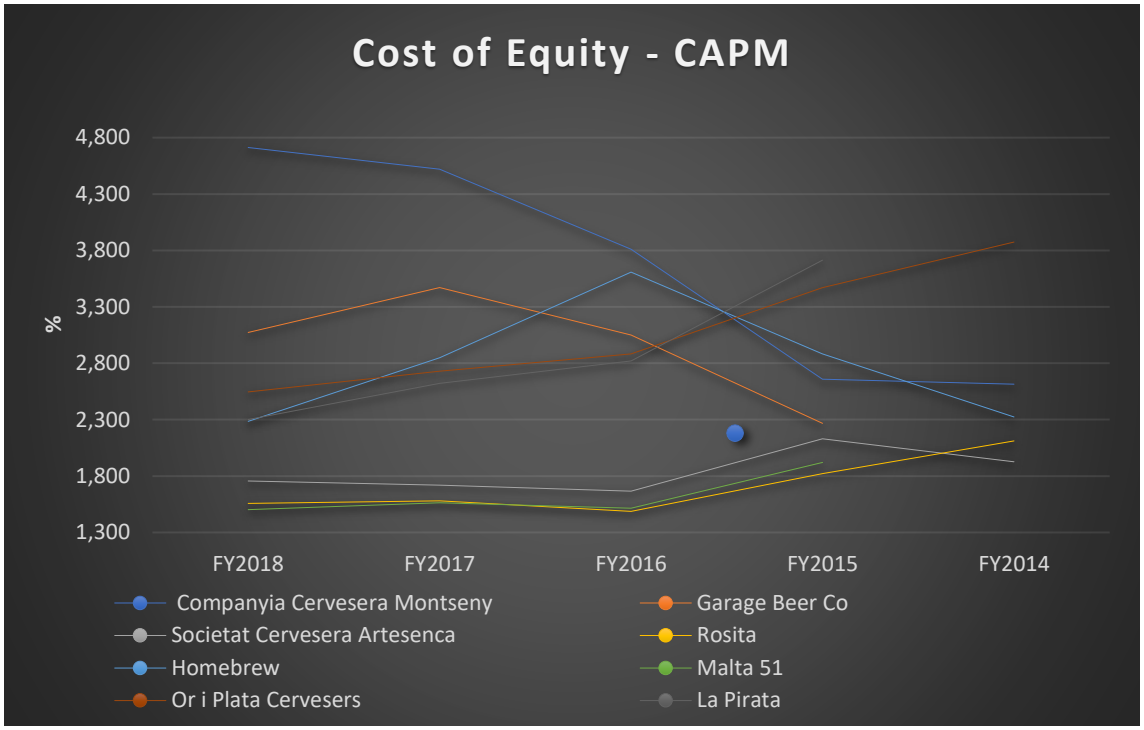


Figure 32. Cost of equity using CAPM except Vic Brewery

As can be seen, according to the CAPM the company with the highest cost of equity was Companyia Cervesera del Montseny in 2018 as well as having an upward trend throughout the period studied. In fact, only Or i Plata Cervesers, Malta 51, Rosita and Societat Cervesera Artesenca have a downward trend, being those with a lower cost of equity Malta 51 in 2017 and Rosita and Societat Cervesera Artesenca in 2018. However, as can be seen, it does not seem very logical that those with the lowest cost of equity are Malta 51 and Rosita as they are the riskiest (they presented problems in profitability and efficiency). In other words, the CAPM may not give such reliable results as those obtained with the Build Up Discount Rate.

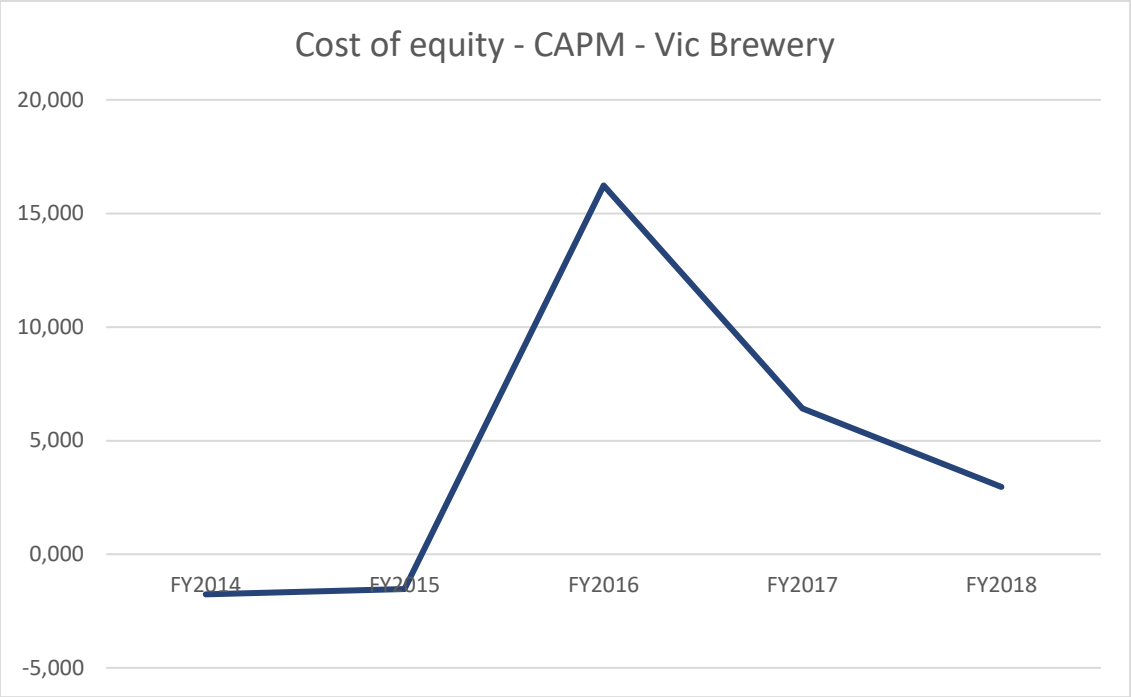


Figure 33. Cost of equity using CAPM of Vic Brewery

Finally, the case of Vic Brewery was studied separately as in 2014 and 2015 it had negative K_e values and in 2016 it presented an exorbitantly large value compared to the rest. The negative results are due to a negative equity that led to a debt-to-equity also negative and when it came time to re-read the β was negative. The value of approximately 16% of K_e in 2016 was due to having a debt-to-equity value of just over 12, so that β was much higher than any other company (over 5). For this reason, Vic Brewery's values are even less significant than those of the rest of the companies, which in turn are less accurate than those obtained with the Build Up Discount Rate as mentioned above.

6.4 Weighted Average Cost of Capital

All the calculations can be found in the Appendix 4.

6.4.1 Build Up Discount Rate

Once the K_e values are obtained and the K_d is calculated, which is obtained by multiplying the C_d used to calculate the company specific premium by 1 minus the country's Corporate Tax, the WACC can be calculated. Below are the values used for the calculation, as well as the WACC values obtained for each company in each of the years studied.

Table 4. WACC using the Build Up Discount Rate

WACC with Build Up Discount Rate					
Companies | Year	FY2014	FY2015	FY2016	FY2017	FY2018
Vic Brewery	-	-	8,611	10,388	12,134
Societat Cervesera Artesenca	19,009	42,033	17,002	25,707	14,851
Rosita	14,786	53,090	16,298	28,051	16,506
Or i Plata Cervesers	11,603	24,697	12,584	18,215	12,131
Companyia Cervesera del Montseny	11,481	30,902	7,309	10,148	6,009
Malta 51	20,972	46,799	21,355	34,616	26,347
La Pirata	-	18,520	13,340	18,683	12,817
Homebrew	13,318	26,929	7,834	16,023	11,926
Garage Beer Co.		35,285	6,701	12,456	9,201

As a general comment, having a low Kd makes the WACC go down in relation to the cost of equity. In other words, the WACC will always be lower than the cost of equity because the cost of debt is very low and lowers the value of the WACC.

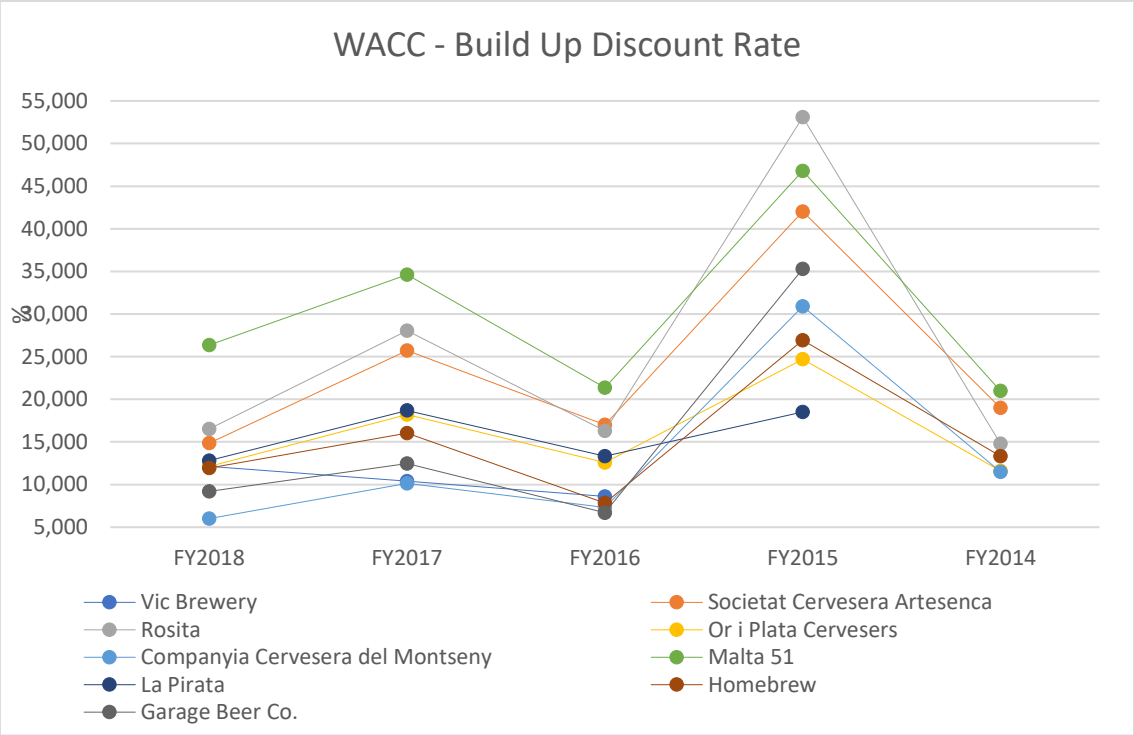


Figure 34. WACC using the Build Up Discount Rate

The highest value every year except 2015 has been shown by Malta 51, being almost 30% in 2018. Along with Malta 51, Rosita has been the second worst, even surpassing Malta 51 in WACC in 2015. The company that has presented the best results in general has been the Companyia Cervesera del Montseny with a value of 6% in 2018. Or i Plata Cervesers, Homebrew and Garage Beer Co. are the other companies that in general have presented better results during the period studied, fluctuating between 10% and 12% in 2018.

Societat Cervesera Artesenca is the third worst performer, but unlike Malta 51 and Rosita it is because they are financed basically on the basis of equity (the lowest year was 77%) and as already said equity is much more expensive in all companies than debt. The issue of debt was discussed earlier, the cost is so low due to the low accumulation of interest to date, so it has not yet stabilized. If the companies were older, the interest would have been accumulating according to the loans taken out, so it would be more similar to the real interest that the companies pay. In other words, the cost of debt that has been calculated has been calculated correctly, but it is not exactly the interest on the loans that they have taken out.

6.4.2 CAPM

For the calculation of the CAPM it is the same as what has been commented for the cost of equity using the CAPM, as the value of K_e is very low the value of WACC will also be quite low as the K_d is also relatively low as explained above. That is, the WACC with the CAPM will be much lower than the one obtained with the Build Up Discount Rate.

Table 5. WACC using CAPM

WACC with CAPM					
Companies | Year	FY2014	FY2015	FY2016	FY2017	FY2018
Companyia Cervesera Montseny	2,104	2,496	2,133	2,666	2,541
Garage Beer Co	-	1,717	1,414	2,726	3,061
Societat Cervesera Artesenca	2,118	2,048	1,652	1,558	1,499
Rosita	2,128	1,845	1,484	1,675	1,627
Homebrew	1,897	2,079	2,199	2,714	2,447
Malta 51	-	1,737	1,785	1,891	1,791
Vic Brewery	-	-	7,644	4,453	3,293
Or i Plata Cervesers	4,115	3,534	3,104	2,799	2,549
La Pirata	-	1,461	3,744	3,200	2,800

Before commenting on the results of the graph, it should be noted that it is already apparent in certain cases that the WACC is too low. For example, companies such as Malta 51 or Rosita have a WACC of around 2%, when they have been the worst performers in the analysis of the ratios. Nor does it seem very logical that these two companies have a much lower cost of capital than Companyia Cervesera del Montseny or Homebrew.

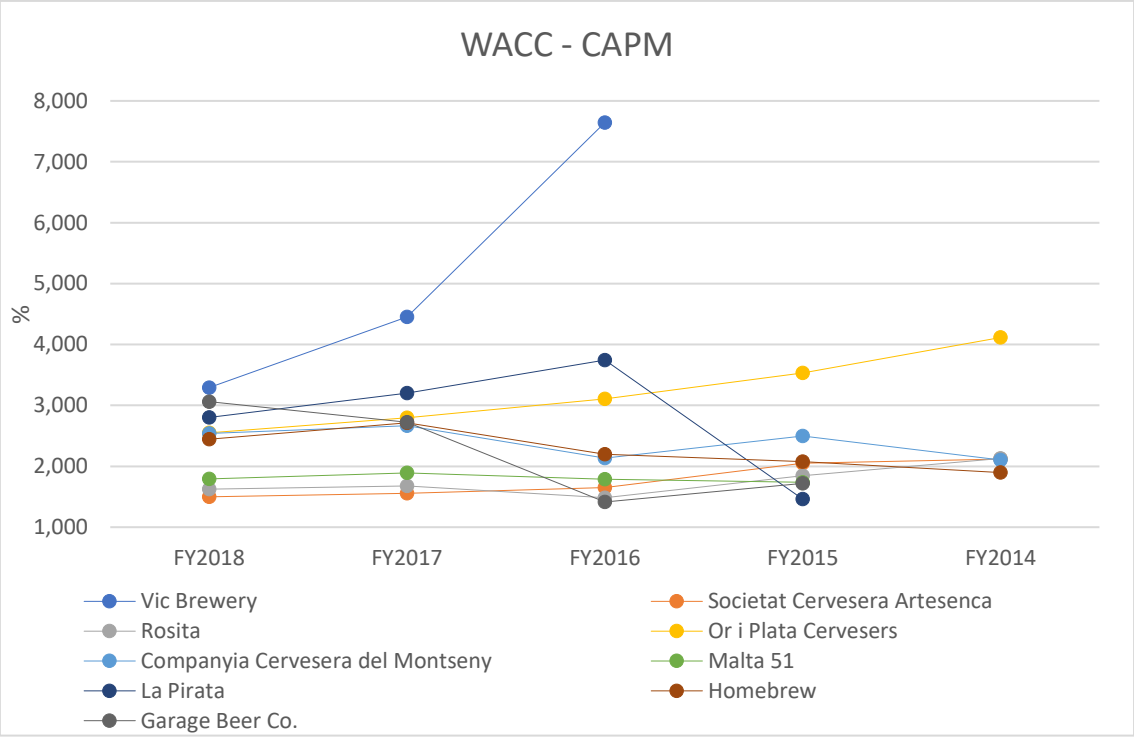


Figure 35. WACC using CAPM

Vic Brewery is presented as the company that has had the worst results in terms of WACC despite seeming implausible, since as commented in the part on ratios it has been carrying out very good strategies since 2016. Malta 51, Rosita and Societat Cervesera Artesenca present the lowest WACC which is supposed to be good. However, by using the Build Up Discount Rate these 3 companies came out as having the highest WACC and the values seem more real than those obtained with the Build Up Discount Rate. According to the CAPM, La Pirata, Homebrew, Companyia Cervesera del Montseny and Garage Beer Co. have an upward trend despite having seen with the Build Up that all 3 have a downward trend from 2017 to 2018 which seems to be wrong. Or i Plata Cervesers has a downward trend during the 5 years we are studying, which means the capital they use costs less nowadays compared to 2014.

6.5 Market performance against craft breweries

To conclude the analysis, the revenue growth of the best-selling company in Catalonia, Sociedad Anónima Damm, will be studied and compared with the average revenue of the nine companies studied.

Figure 36. Breweries map in Spain in 2016 (El País, 2016)

Table 6. Revenue growth comparison

	Revenue					
	FY 2018	**FY 2017**	**FY 2016**	**FY 2015**	**FY 2014**	**FY 2013**
Revenue Damm	786.632.588,81 €	752.324.200,03 €	718.303.972,44 €	684.432.729,30 €	650.451.683,90 €	625.278.000,00 €
S.A. DAMM growth	4,560	4,736	4,949	5,224	4,026	
Vic Brewery	331.645,53 €	238.234,71 €	239.335,34 €	68.498,76 €	25.836,18 €	657,36 €
Societat Cervesera Artesenca	328.259,62 €	364.055,12 €	437.383,94 €	387.938,59 €	351.523,18 €	416.415,92 €
Rosita	490.906,12 €	661.961,44 €	598.059,26 €	495.877,27 €	495.399,26 €	438.272,86 €
Or i Plata Cervesers	161.030,69 €	151.220,15 €	140.431,96 €	149.009,96 €	149.775,47 €	141.545,24 €
Co. Cervesera Montseny	1.255.807,46 €	1.028.730,59 €	991.882,24 €	784.838,17 €	633.456,97 €	603.737,37 €
Malta 51	15.094,70 €	9.989,11 €	8.332,09 €	6.708,92 €	5.186,77 €	
La Pirata	785.577,54 €	659.789,71 €	398.141,31 €	143.681,50 €		
Homebrew	800.244,87 €	1.953.775,93 €	1.949.544,19 €	2.145.445,32 €	2.086.150,77 €	1.748.413,48 €
Garage Beer Co	1.619.269,77 €	623.521,42 €	360.012,71 €	175.476,58 €		
Total	5.787.836,30 €	5.691.278,18 €	5.123.123,04 €	4.357.475,07 €	3.747.328,60 €	3.349.042,23 €
Companies' Average	1,697	11,090	17,571	16,282	11,893	

As far as revenue growth is concerned, it is clear that the average of the 9 companies exceeds the average growth of Damm each year studied, except in 2018 when the average of the 9 companies was 1.7% while Damm's remained around 4.5%.

Another relevant comment is that Damm has a stable and regular growth, while the companies representing the craft sector are much more volatile, they had a much higher growth until 2017, but suddenly in 2018 the revenue growth was lower than that of the main industrial producer.

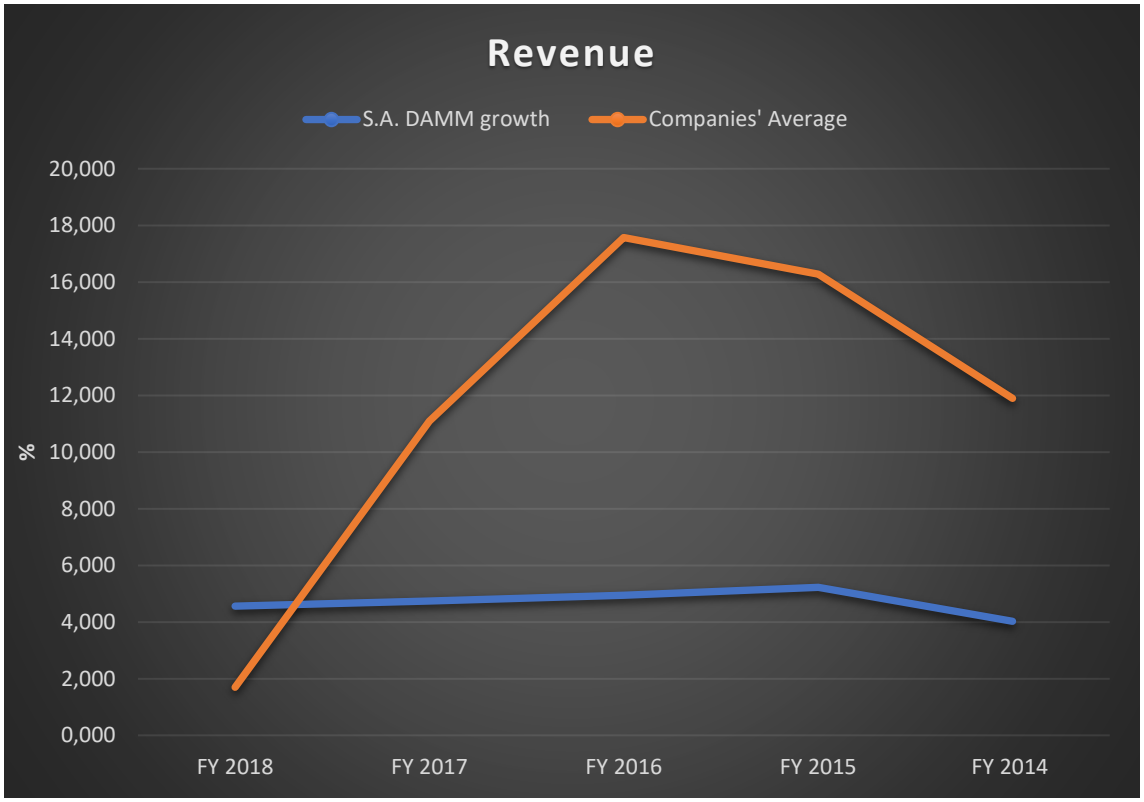


Figure 37. Revenue growth compared

The study of revenue growth is very significant, but equally significant or more so is the analysis of net income growth. Below are the growth values of the average of the 9 companies, as well as that of the leading beer company in Catalonia.

Table 7. Net income growth comparison

Net income						
	FY 2018	**FY 2017**	**FY 2016**	**FY 2015**	**FY 2014**	**FY 2013**
Revenue Damm	75.691.918,68 €	64.252.777,34 €	75.079.189,56 €	58.546.522,60 €	60.406.381,53 €	57.605.000,00 €
S.A. DAMM growth	17,803	-14,420	28,239	-3,079	4,863	
Vic Brewery	34.446,49 €	17.161,36 €	24.416,41 €	4.946,68 €	-23.283,51 €	-55.562,30 €
Societat Cervesera Artesenca	2.230,01 €	3.453,04 €	3.731,41 €	3.795,30 €	4.574,73 €	11.291,23 €
Rosita	-62.598,46 €	-21.587,41 €	1.668,00 €	-6.474,44 €	-16.770,01 €	6.255,01 €
Or i Plata Cervesers	3.450,31 €	1.299,97 €	1.713,61 €	2.161,75 €	1.595,40 €	9.085,20 €
Co. Cervesera Montseny	27.943,66 €	2.734,51 €	32.368,40 €	18.259,12 €	23.321,41 €	45.372,68 €
Malta 51	-20.610,22 €	-19.795,88 €	-32.322,23 €	-12.810,72 €	-13.114,33 €	
La Pirata	8.194,64 €	62.345,57 €	11.888,34 €	1.142,89 €		
Homebrew	76.600,71 €	74.894,79 €	65.549,20 €	66.109,19 €	2.851,42 €	67.403,36 €
Garage Beer Co	131,77 €	-165.447,25 €	2.783,81 €	-19.540,53 €		
Total	69.788,91 €	-44.941,30 €	111.796,95 €	57.589,24 €	-20.824,89 €	83.845,18 €
Companies' Average growth	255,289	-140,199	94,128	376,540	-124,837	

As can be seen, S.A. Damm had great variability in terms of net income growth. In 2015 it suffered a decrease of approximately 3% and in 2017 it also fell by 14% with respect to the previous year.

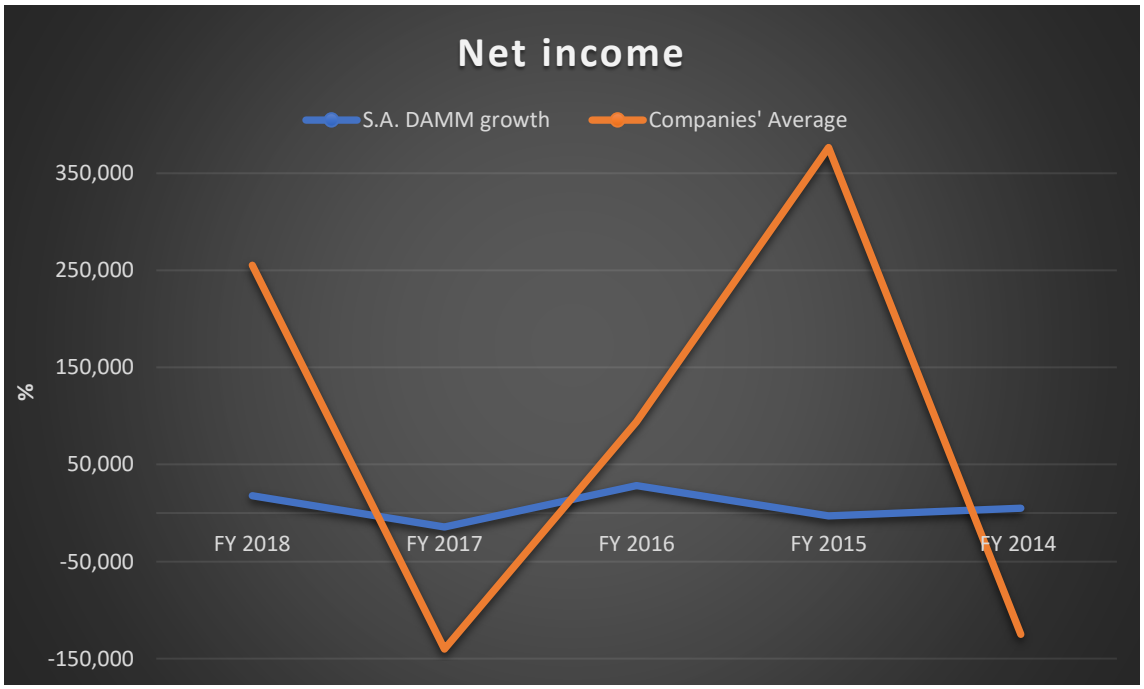


Figure 38. Net income growth compared

On the other hand, the average of the 9 craft beer companies had a decrease of 125% in 2014 compared to 2013 and another of 140% in 2017 compared to 2016. However, in

2015 it had a rise of approximately 375% which was the year in which Damm had a fall of 3%. Damm's fall was probably driven by the growth of the craft sector. In contrast, in 2017 both companies experienced a slowdown. It may be that beer consumption was generally lower in the year in question, or perhaps other industrial and/or craft companies performed better in that year.

However, in 2018 both Damm and the beers studied in the beer sector had a great growth in 2018 which was 17.8% and 255% respectively.

Finally, the fluctuations for the craft companies studied are much greater due to their small size and recent incorporation, as growth of several thousand euros represents a large % for them, which is not the case for Damm, which is a leading company that needs large growths or decreases in order for the % variation to be greatly altered.

7. Discussion and conclusions

7.1 Porter's 5 forces

It has been seen in Porter's external analysis that it is an extremely competitive sector and therefore one must constantly reinvent itself and make good decisions. Rivalry, the threat of new entrants, the threat of substitute products and the bargaining power of buyers are all very high. The only one that gave low results is the bargaining power of the suppliers. In other words, the Catalan artisan brewers have it easy when it comes to buying the necessary goods, but they are involved in a very demanding environment in terms of buyers, rivals, potential competition and new products, whether other artisan beers or the growing consumption and production of wine. The fact that there are still 3 companies that give excellent results in all ratios means that they are the leaders and have a competitive advantage over the others, in other words, they are stronger and the environment ends up hurting the weak more than them.

7.2 Company analysis

The conclusions drawn from the results obtained will be briefly summarised. The section on gearing and free cash flow will not be commented on again as they were sufficiently explained in the results section.

7.2.1 Profitability

The companies that have presented the best profitability during the period studied are Vic Brewery since 2016, Homebrew, Companyia Cervesera del Montseny, Or i Plata Cervesers, La Pirata and Societat Cervesera Artesenca, being ordered from highest to lowest. Homebrew and Companyia Cervesera del Montseny are the most stable companies in terms of results, that is, for some years now they have maintained profitability values with few fluctuations. Vic Brewery has presented a stratospheric change in profitability values, despite having negative results in 2014 and 2015. This is one of the sector's great promises. Or i Plata Cervesers is also presented as a company with great projection, although it is still far from the numbers obtained by Vic Brewery.

On the other hand, Malta 51 is probably the worst in terms of results, so it was commented on inventory and trade receivable days. They have an accumulation of inventories, so it is difficult for them to convert everything they produce into cash and that affects their profitability. Rosita has also presented negative results every year, although with much less worrying values. Even so, the company must make decisions to start being profitable. Finally, Garage Beer Co. which was founded only 4 years ago, has presented 2 years with positive profitability and 2 with negative profitability. This is probably due to its recent creation and the fact that it has not yet consolidated its position in the market, although it is believed that in a few years it will begin to present good results.

7.2.2 Liquidity

Malta 51, Homebrew, Companyia Cervesera del Montseny and Societat Cervesera del Artesenca are the best performers in terms of liquidity. Malta 51 had a year with excessive liquidity giving 12 in the current ratio in 2014, but the rest of the years had good results. Homebrew and Societat Cervesera Artesenca had values very close to ideal (neither too many idle funds nor too little liquidity). Companyia Cervesera del Montseny had a slightly high but very acceptable values. Vic Brewery, as happened in profitability, started badly, but the trend is incredible and is stabilizing around 2 in the current ratio and 1.4 in the acid test, which are ideal values. La Pirata had a low liquidity and can cause problems to meet their obligations in the short term, the same happened to Or i Plata Cerveseres during all the years except 2018 that had too high values inducing idle resources. Rosita had excessive liquidity that could have been used to reinvest in long-term resources. Garage Beer Co. presented exorbitantly high results in 2016 and 2017 due to large current assets and very small current liabilities, but it seems that they survived and in 2018 presented very good results.

7.2.3 Efficiency

In terms of efficiency (inventory days, trade payable days and trade receivable days) it can be said that all the companies performed well except Vic Brewery in 2014 and 2015,

La Pirata in 2015 and Malta 51 in all the years studied. This has been explained in more detail in the section on ratios. It can be concluded that the general trend of the companies studied in the sector is good in terms of efficiency.

As far as asset turnover is concerned, those that performed best were Societat Cervesera Artesenca in first place and Companyia Cervesera del Montseny.

7.2.4 Altman test

The results obtained with the Altman test were highly variable. However, the general note is that very few companies exceeded the limit of 2.89 set by Altman to consider that a company was unlikely to go bankrupt. In addition, Rosita exceeded the 2.89 limit but has been presented as one of the worst companies in terms of profitability. In contrast, Societat Cervesera Artesenca, which is one of the best companies in all ratios (all have good values), has always obtained values in the area of low probability of bankruptcy.

Therefore, probably the use of the Altman test to predict the probability of bankruptcy may be good for some companies and significant and not so good for others. In other words, not all the results obtained with this tool can be taken as reliable since it is clear that it has not worked for all companies. One conclusion that can be drawn is that for such a new sector and with such underdeveloped companies, this tool is probably not entirely faithful to reality.

7.2.5 Overview

With all this said, the analysis by means of ratios has served to see that some companies performed well according to all the ratios studied (Companyia Cervesera del Montseny, Homebrew and Societat Cervesera Artesenca), others had problems of profitability (such as Malta 51 or Rosita), some presented problems of liquidity (La Pirata), etc. The general conclusion is that the analysis by means of financial ratios has served to see that not all companies do equally well and that they do not all follow the same strategy. Some bet more to be solvent in the short term, others to be more profitable or others bet to be good at everything. The fact is that, being such new companies, not all can do as well as

the leaders Companyia Cervesera del Montseny, Homebrew and Societat Cervesera Artesenca, and perform well in what they can because competition in the sector is huge (remember that there are 98 companies dedicated to a sector that had a turnover of 43 million in 2018). Finally, we can say that being part of the GECAN or not is indifferent because Homebrew is not part of the guild and Companyia Cervesera del Montseny yes and both have great results.

7.3 Cost of equity

7.2.1 CAPM

As already mentioned, according to Guru Focus (2020), Craft Brew Alliance had a cost of equity of 5.35% in 2018. From the results obtained from the CAPM, they are all lower than this value, which is not very credible. A company with the Craft Brew Alliance infrastructure should have a lower cost than any of the companies studied which, being small, new and with fewer resources, should present a higher risk and therefore a higher return as well. The first conclusion is that the CAPM may not be the most reliable way to study the cost of equity. This may be because the reference company used to obtain the β is from the USA and there may have been a lot of error in transforming and adapting the β to Catalan and much smaller companies. The fact that the β was downloaded and re-read, was done with debt-to-equity and this does not consider factors such as the difference in size between companies.

7.2.2 Build Up Discount Rate

Conversely, the results obtained with the Build Up Discount Rate are more possible since they are significantly higher than those obtained in Guru Focus for Craft Brew Alliance, as is the risk when investing in these 9 companies. The downside of this theory is that they all follow a pattern. In other words, by taking into consideration the country (R_f), the growth of the economy of that country (R_m) and the growth of the industry ($R_{INDUSTRY\ PREMIUM}$), only the company size and the company specific premium change the value of the Ke of each company. The company size premium does not vary much between

companies as the sizes of all companies are more or less of the same order of magnitude. Therefore, only the company specific premium ends up making a more drastic difference. Even so, it must be said that the values used are the most real ones available. Therefore, the result obtained is the most reliable according to the information available. Furthermore, it is logical that the trend of the equity costs is similar, with all the companies being from the same country, in the same industry and of a similar size. The conclusion is that the values obtained with the Build Up Discount Rate are much more reliable, i.e. for the companies studied it is concluded that is better to use those values instead of those obtained through the CAPM, which is probably better when it comes to companies with much more similarity to publicly quoted companies, with similar sizes.

7.4 WACC

WACC has been influenced by the cost of equity calculated above. When the CAPM was used, the WACC was much lower than when the Build Up Discount Rate was used. If we add that the cost of debt is not entirely realistic since it has not yet stabilized and what they now pay in interest is not equal to the actual % of interest they must pay on the loans, due to the fact that businesses are still new, the error increases even more (explained in more detail in the results section). That said, the WACC obtained through the Build Up Discount Rate is more accurate than CAPM despite the error derived from the cost of debt, because of what has just been mentioned. Therefore, both WACC calculations for each company are not precise, however the one obtained through Build Up Discount Rate carries less error. One of the main conclusions is that using WACC in this kind of industries may be not as useful as expected due to the inaccuracy resulting from many factors.

7.5 Comparison with Damm

As seen in the comparison with the results of Damm and the 9 companies in the craft sector, the change in revenue growth has been much more attractive in the craft sector, except for 2018, which was lower than the leading company in the sector, Damm. In

addition, in the articles found to support the growth of the craft sector, growth is always measured in terms of turnover.

However, when the growth in net income has been studied, it has been seen that the results of the artisan brewery sector were very volatile, suddenly going from a reduction of 125% from one year to the next, while the following year it went up by 375%. That is, in terms of turnover, the craft sector has surpassed the industrial sector almost every year using the leading company in Catalonia as a reference, but when looking at the net income, the results are either very good or very bad compared to the previous year, which shows that the sector is still subject to many fluctuations in operating costs, some years are much higher than others. However, it is likely to stabilize in the near future. Having said that, Damm also fluctuated a lot over the 5 years, but not at the levels of the 9 craft enterprises.

7.6 Impact of the COVID-19 pandemic

As for the impact of the COVID-19 pandemic, it was expected that the problem would be over by now in order to make a prognosis of the damage caused to the industry. However, the problem persists, and it is still impossible to quantify the damage and losses since they are not yet over. Therefore, there is still no way to be able to measure the economic consequences this has had on the sector.

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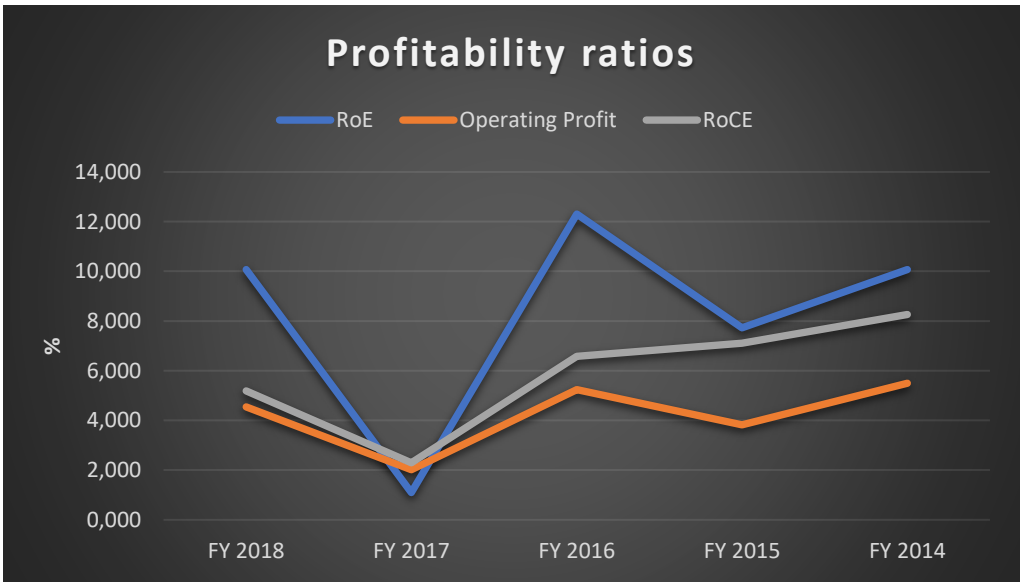
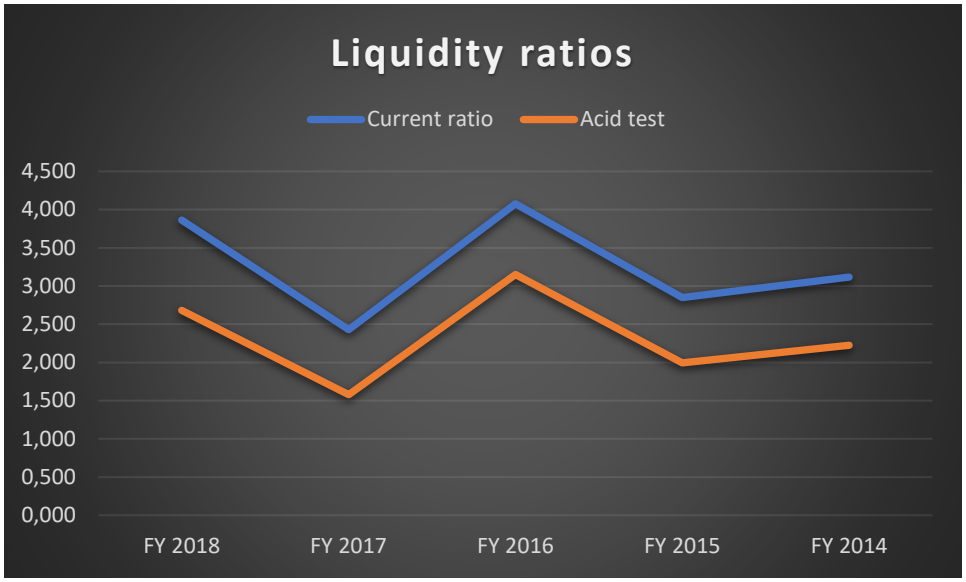
9 Appendix - Content

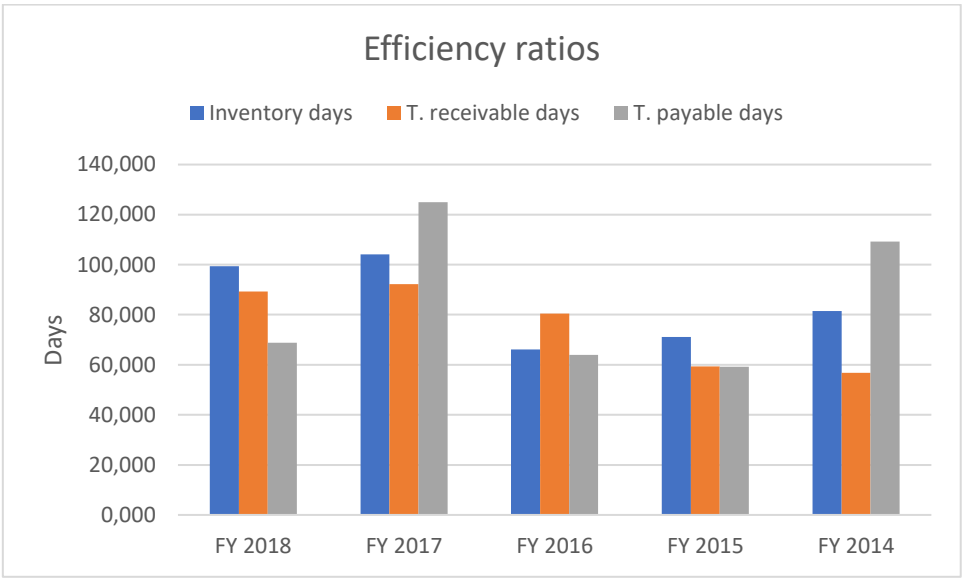
9.1 Appendix 1 – Individual results

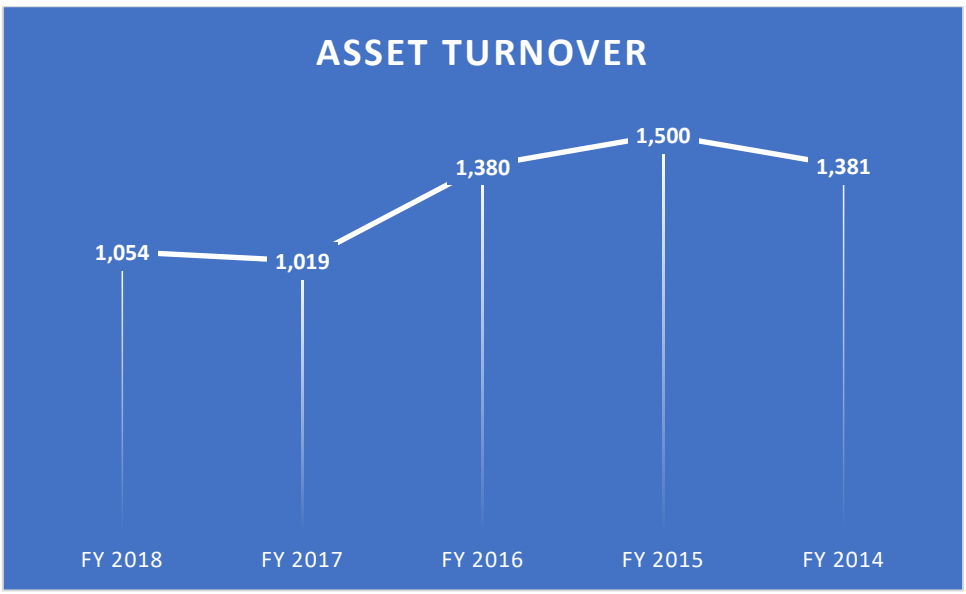
9.1.1 Companyia Cervesera del Montseny

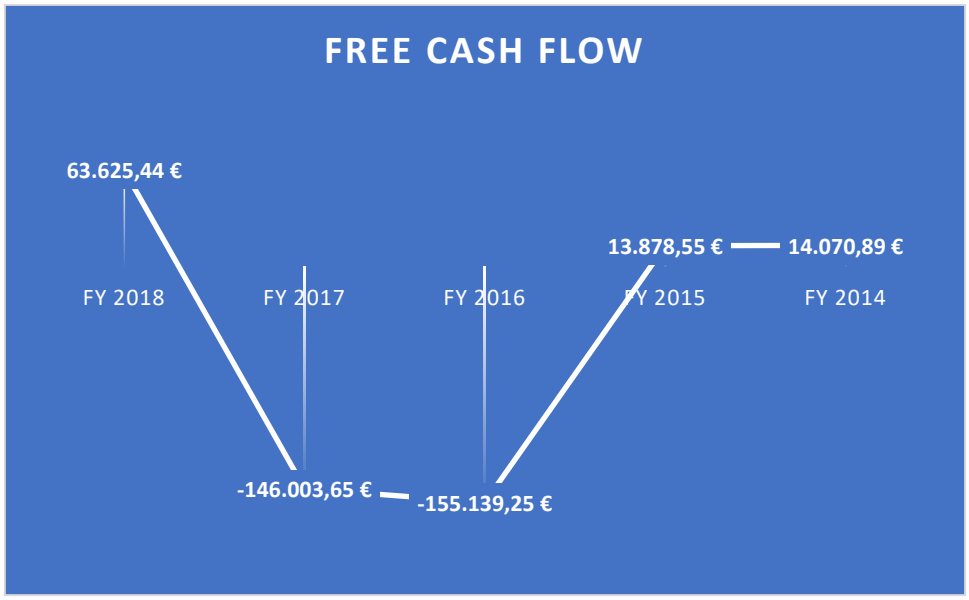
Companyia Cervesera del Montseny					
	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014
Profitability					
RoE	10,068%	1,096%	12,305%	7,732%	10,065%
Operating Profit	4,538%	2,016%	5,245%	3,825%	5,496%
RoCE	5,194%	2,294%	6,580%	7,103%	8,263%
Liquidity					
Current ratio	3,862	2,429	4,076	2,849	3,118
Acid test	2,682	1,578	3,151	1,996	2,225
Efficiency					
Inventory days	99,377	104,129	66,163	71,148	81,507
T. receivable days	89,291	92,153	80,479	59,299	56,832
T. payable days	68,833	124,989	63,911	59,263	109,164
Asset turnover	1,054	1,019	1,380	1,500	1,381
Gearing					
Gearing ratio	74,705%	72,391%	66,731%	44,122%	45,011%
Others					
CAPEX	110319,620	251673,990	258687,640	57048,990	48634,000
Free cash flow	63625,440	-146003,650	-155139,250	13878,550	14070,890
Altman Z-score	1,523	1,295	1,724	2,259	2,055

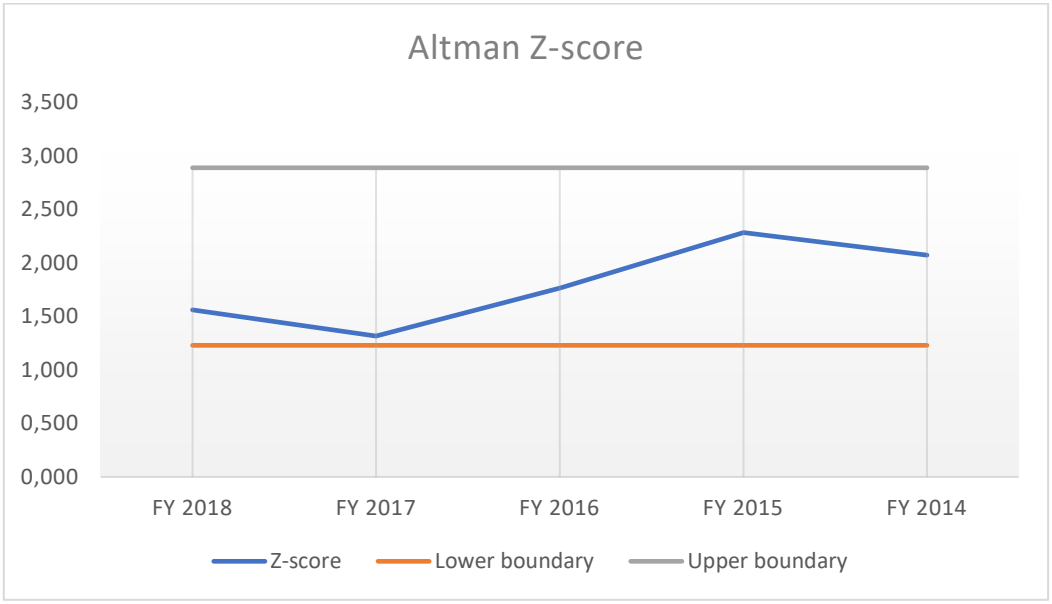



Liquidity ratios
Current ratio
Acid test
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
0,500
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014


Efficiency ratios
Inventory days
T. receivable days
T. payable days
Days
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014


ASSET TURNOVER
1,054
1,019
1,380
1,500
1,381
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

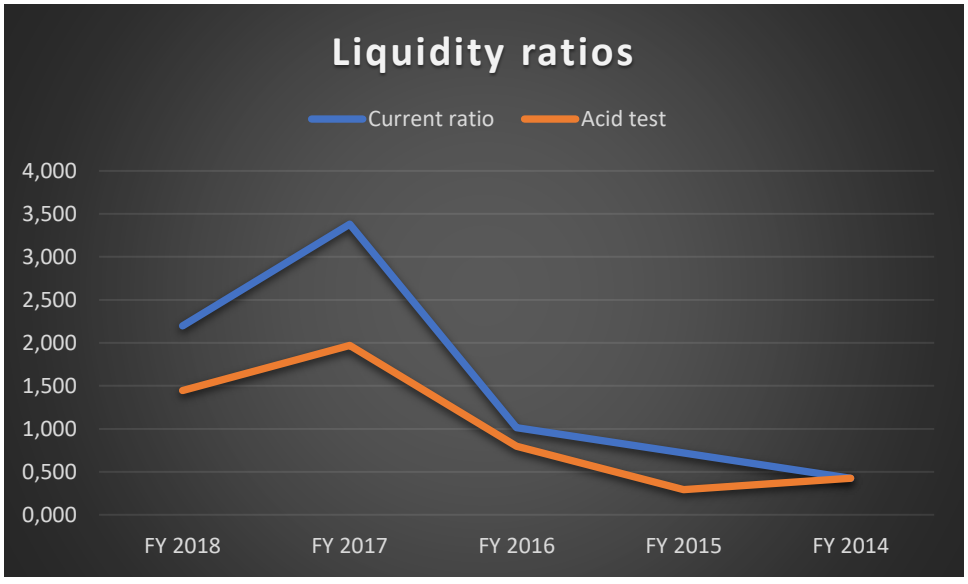

FREE CASH FLOW
63.625,44 €
-146.003,65 €
-155.139,25 €
13.878,55 €
14.070,89 €
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

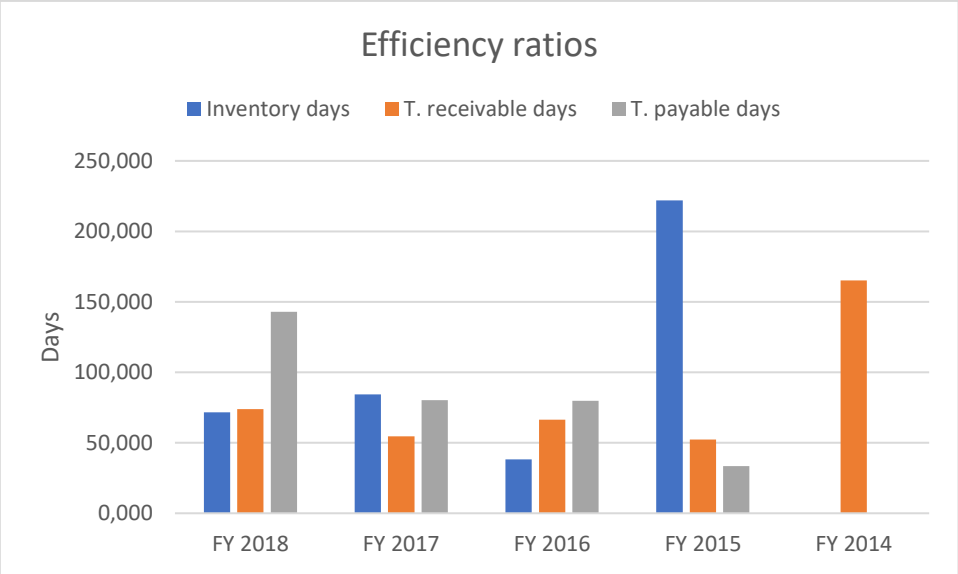

Altman Z-score
3,500
3,000
2,500
2,000
1,500
1,000
0,500
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014
Z-score
Lower boundary
Upper boundary

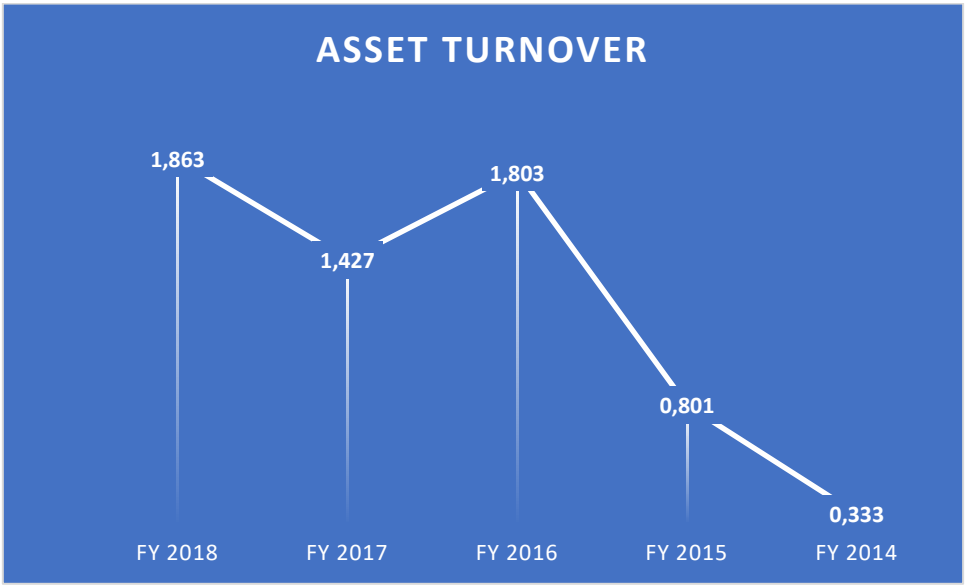
9.1.2 Vic Brewery

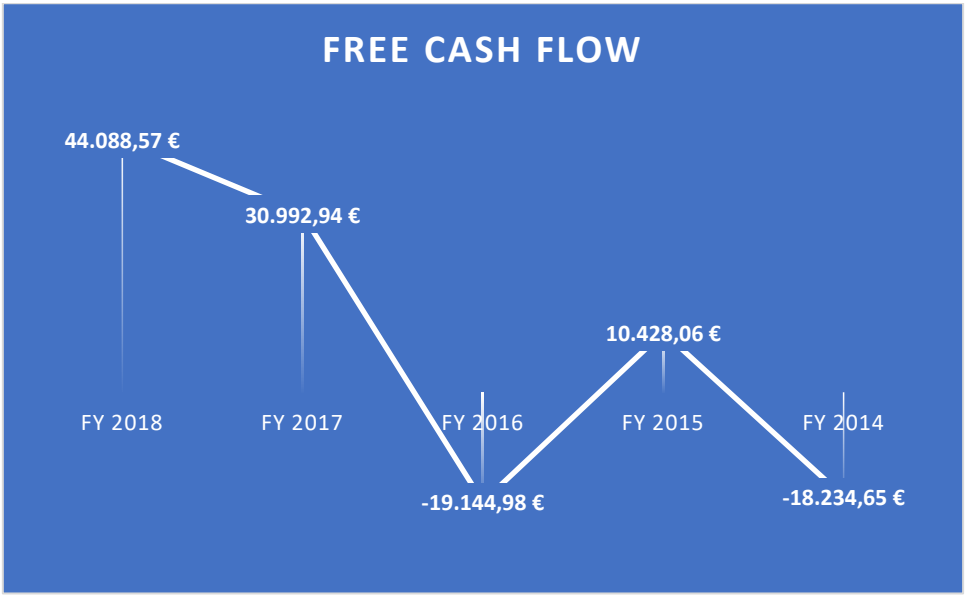
Vic Brewery					
	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014
Profitability					
RoE	58,987%	71,656%	359,676%	-28,062%	-103,140%
Operating Profit	6,868%	11,610%	15,857%	17,002%	-68,005%
RoCE	16,415%	19,479%	38,169%	28,595%	-41,839%
Liquidity					
Current ratio	2,197	3,380	1,013	0,721	0,424
Acid test	1,445	1,970	0,796	0,292	0,424
Efficiency					
Inventory days	71,537	84,266	38,126	222,023	0,000
T. receivable days	73,971	54,595	66,375	52,307	165,295
T. payable days	142,975	80,316	79,891	33,367	0,000
Asset turnover	1,863	1,427	1,803	0,801	0,333
Gearing					
Gearing ratio	57,914%	80,910%	93,172%	147,617%*	153,757%*
Others					
CAPEX	4417,350	0,000	52185,540	1936,640	2150,000
Free cash flow	44088,570	30992,940	-19144,981	10428,060	-18234,649
Altman Z-score	2,526	2,270	2,139	0,892	-0,666

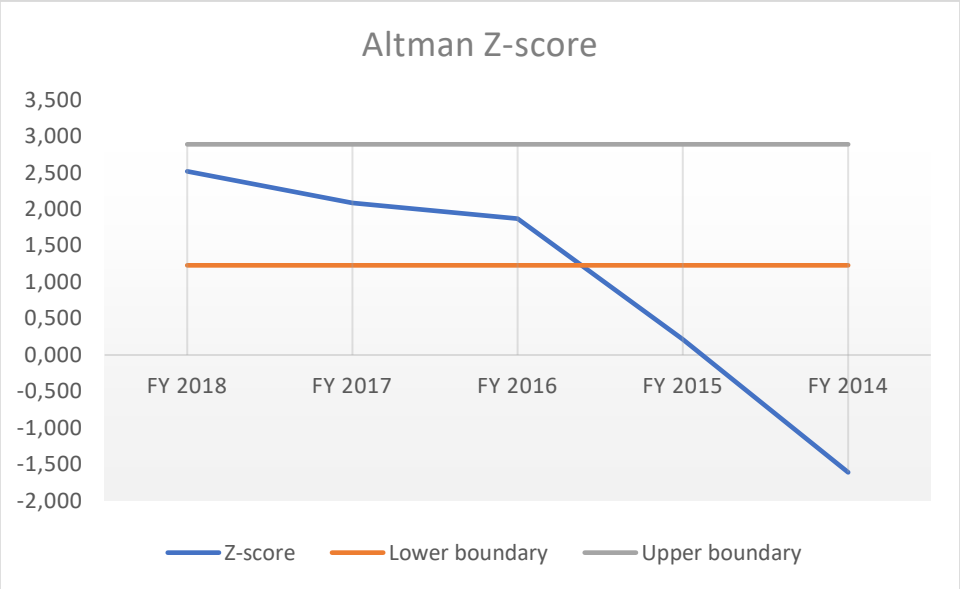
* Negative equity




Efficiency ratios
Inventory days
T. receivable days
T. payable days
250,000
200,000
150,000
100,000
50,000
0,000
Days
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

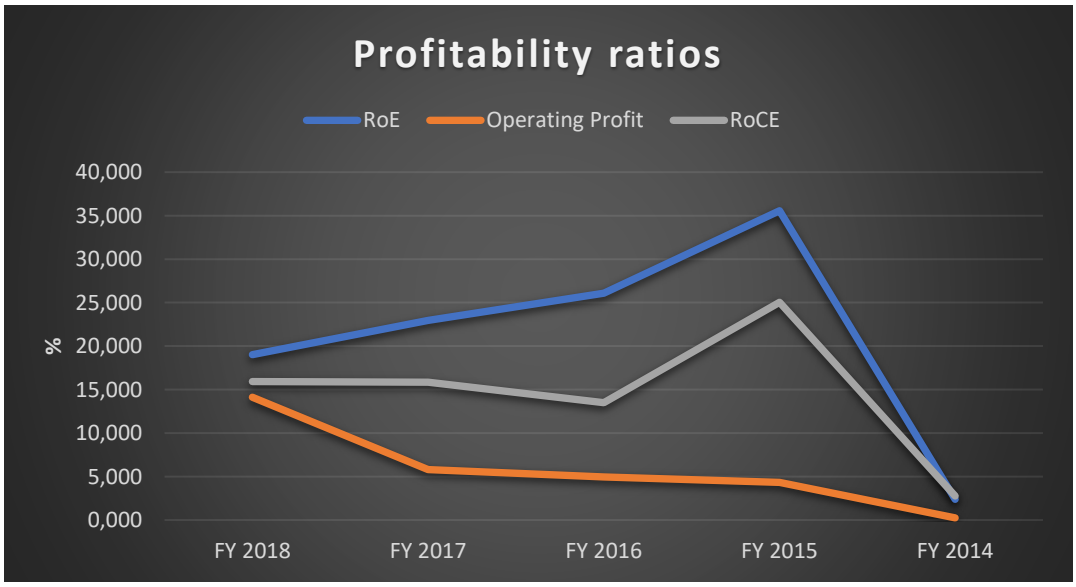

ASSET TURNOVER
1,863
1,427
1,803
0,801
0,333
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

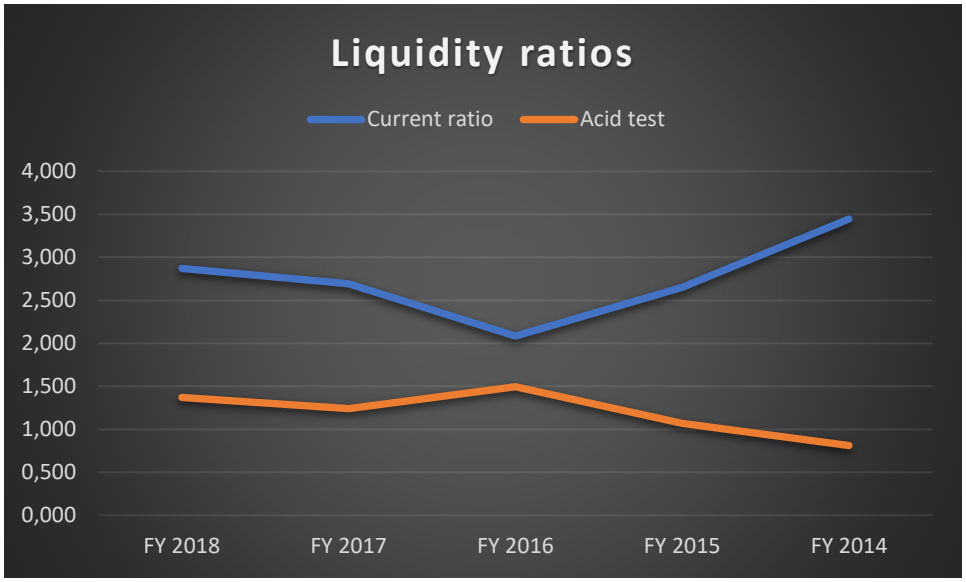

FREE CASH FLOW
44.088,57 €
30.992,94 €
-19.144,98 €
10.428,06 €
-18.234,65 €
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

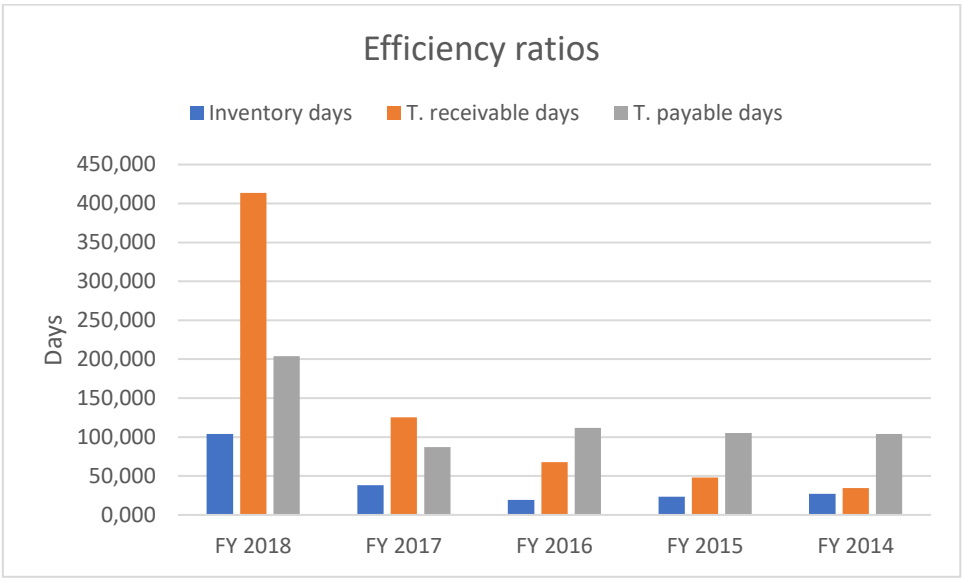

Altman Z-score
3,500
3,000
2,500
2,000
1,500
1,000
0,500
0,000
-0,500
-1,000
-1,500
-2,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014
Z-score
Lower boundary
Upper boundary

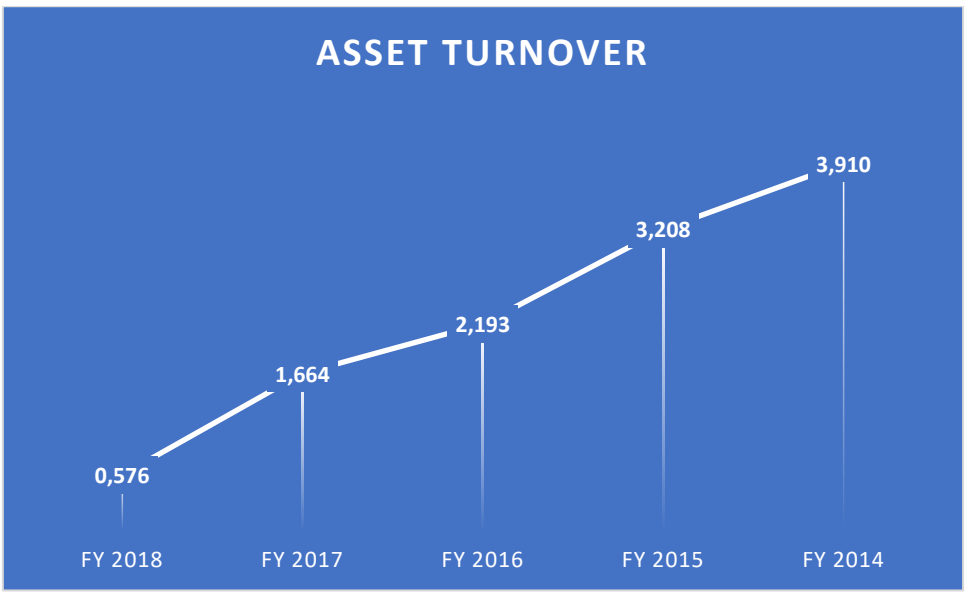
9.1.3 Homebrew

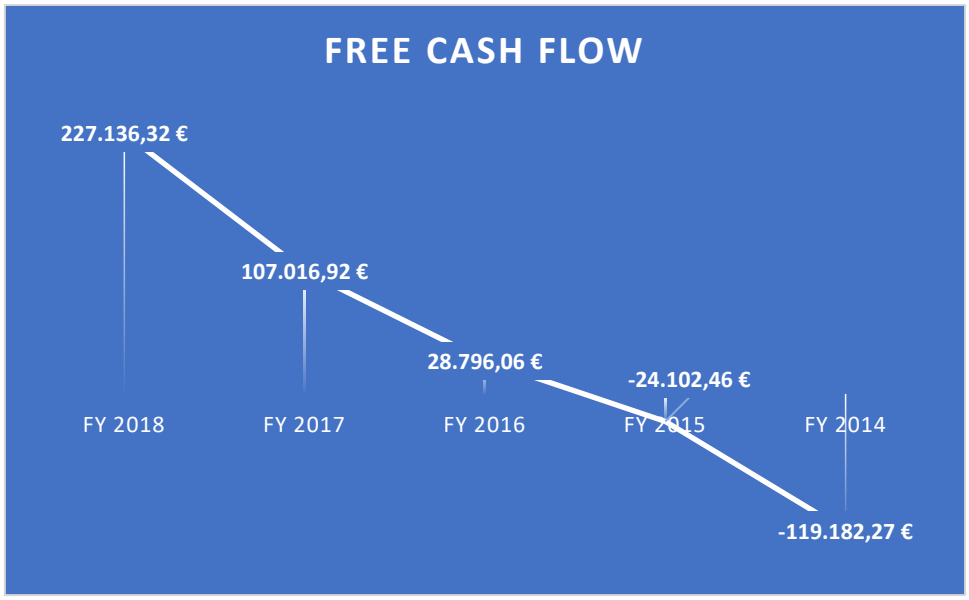
Homebrew					
	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014
Profitability					
RoE	19,011%	22,951%	26,070%	35,565%	2,381%
Operating Profit	14,120%	5,803%	4,948%	4,334%	0,250%
RoCE	15,936%	15,835%	13,499%	25,040%	2,764%
Liquidity					
Current ratio	2,870	2,692	2,084	2,653	3,446
Acid test	1,370	1,239	1,495	1,069	0,811
Efficiency					
Inventory days	104,040	38,287	19,469	23,576	27,153
T. receivable days	413,760	125,559	67,814	48,256	34,440
T. payable days	203,901	87,226	111,899	105,292	104,066
Asset turnover	0,576	1,664	2,193	3,208	3,910
Gearing					
Gearing ratio	43,174%	54,419%	64,812%	49,940%	36,454%
Others					
CAPEX	-137325,220	9380,550	77001,590	121620,080	138975,090
Free cash flow	-0,654	12,408	1,374	0,802	0,142
Altman Z-score	1,156	2,019	2,482	3,460	3,733

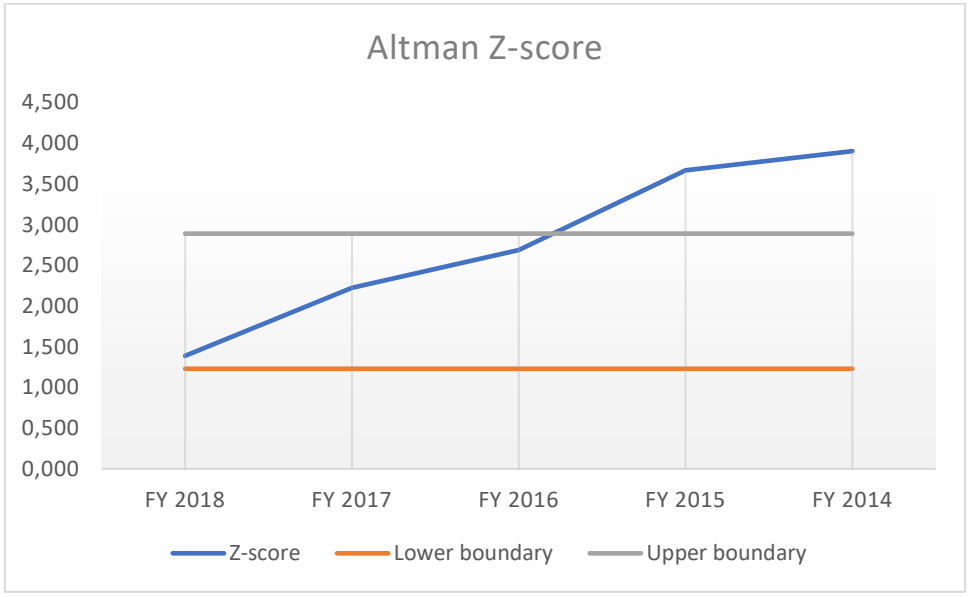



Liquidity ratios
Current ratio
Acid test
4,000
3,500
3,000
2,500
2,000
1,500
1,000
0,500
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014


Efficiency ratios
Inventory days
T. receivable days
T. payable days
Days
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

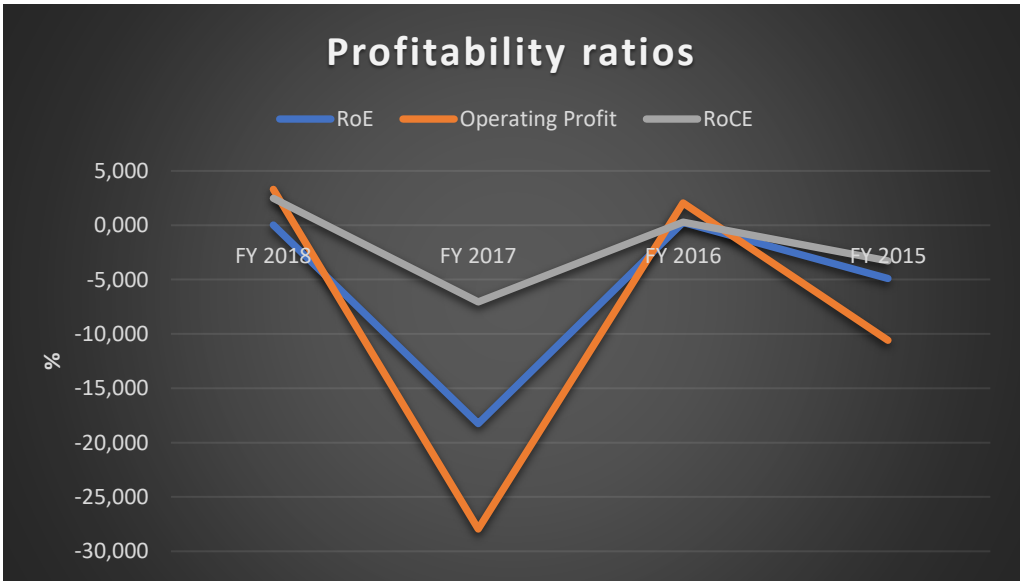

ASSET TURNOVER
0,576
1,664
2,193
3,208
3,910
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

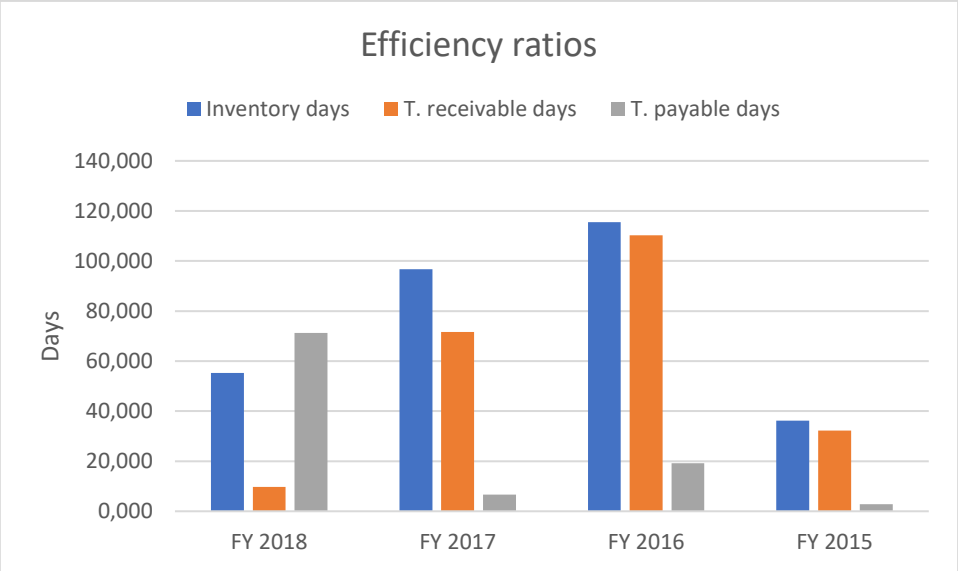

FREE CASH FLOW
227.136,32 €
107.016,92 €
28.796,06 €
-24.102,46 €
-119.182,27 €
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

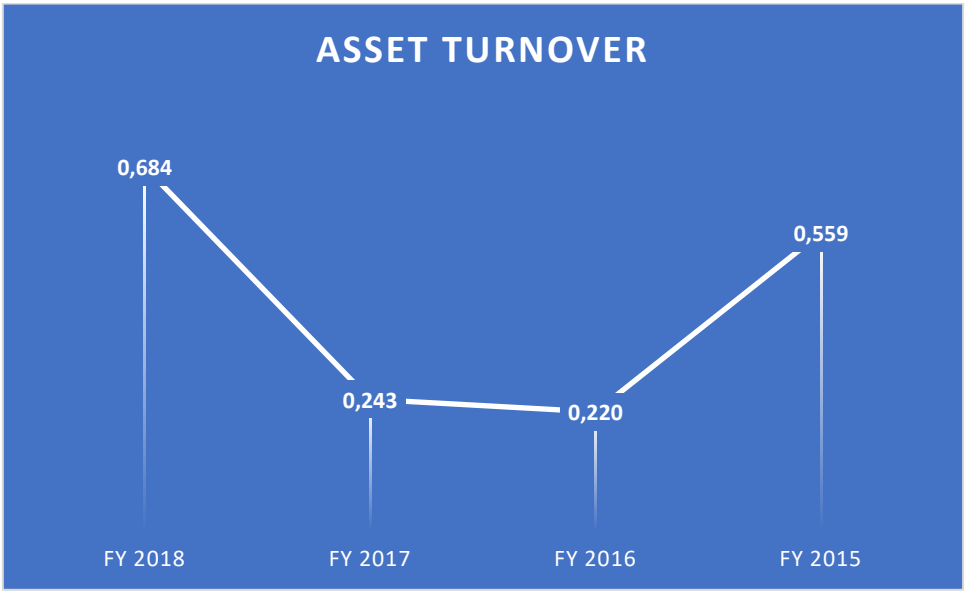

Altman Z-score
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
0,500
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014
Z-score
Lower boundary
Upper boundary

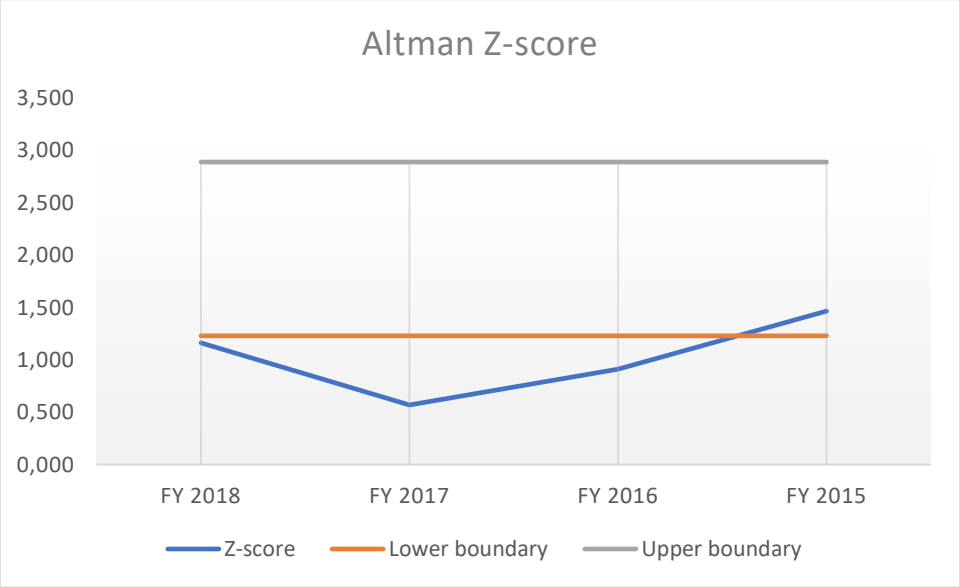
9.1.4 Garage Beer Co.

Garage Beer Co				
	FY 2018	FY 2017	FY 2016	FY 2015
Profitability				
RoE	0,015%	-18,250%	0,260%	-4,904%
Operating Profit	3,301%	-27,949%	2,062%	-10,596%
RoCE	2,479%	-7,053%	0,290%	-3,270%
Liquidity				
Current ratio	3,192	174,606	17,994	1,244
Acid test	1,797	154,490	17,177	1,068
Efficiency				
Inventory days	55,245	96,733	115,561	36,247
T. receivable days	9,678	71,613	110,301	32,183
T. payable days	71,251	6,656	19,201	2,835
Asset turnover	0,684	0,243	0,220	0,559
Gearing				
Gearing ratio	59,532%	63,307%	58,168%	29,920%
Others				
CAPEX	314967,900	455595,290	587870,920	563101,660
Free cash flow	-231287,210	-583707,410	-563236,420	-553998,900
Altman Z-score	1,125	0,523	0,816	0,933



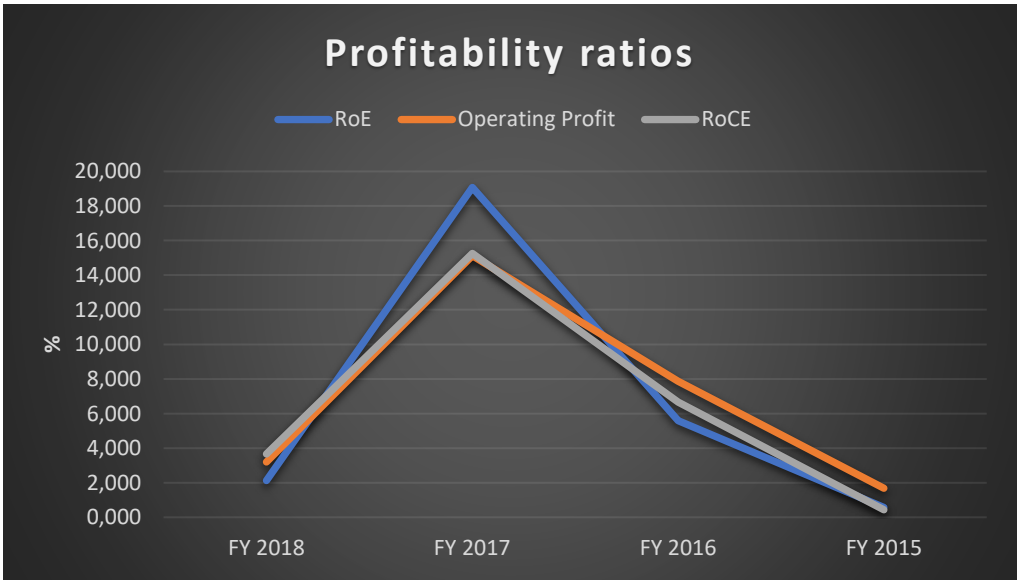

Efficiency ratios
Inventory days
T. receivable days
T. payable days
Days
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0,000
FY 2018
FY 2017
FY 2016
FY 2015

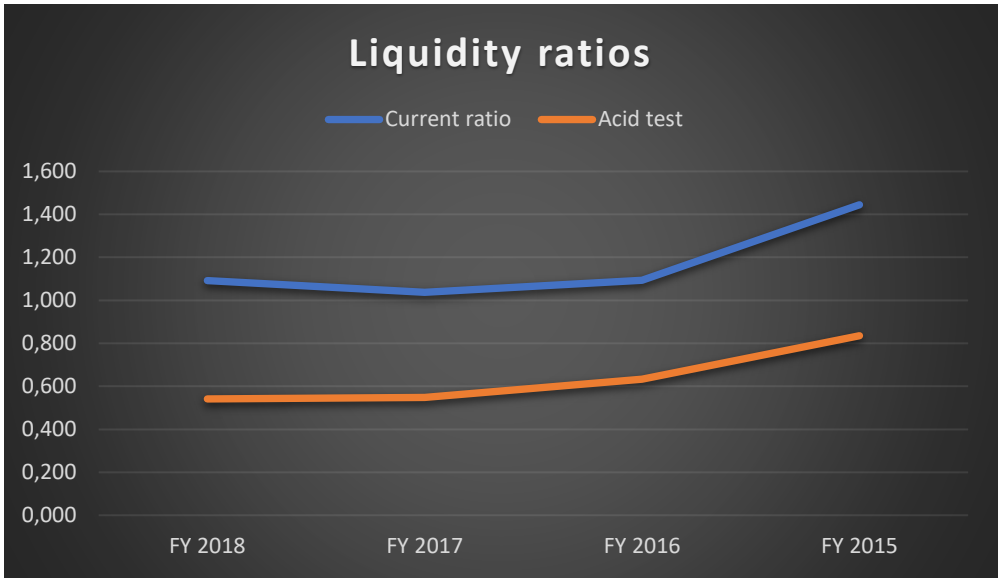

ASSET TURNOVER
0,684
0,243
0,220
0,559
FY 2018
FY 2017
FY 2016
FY 2015

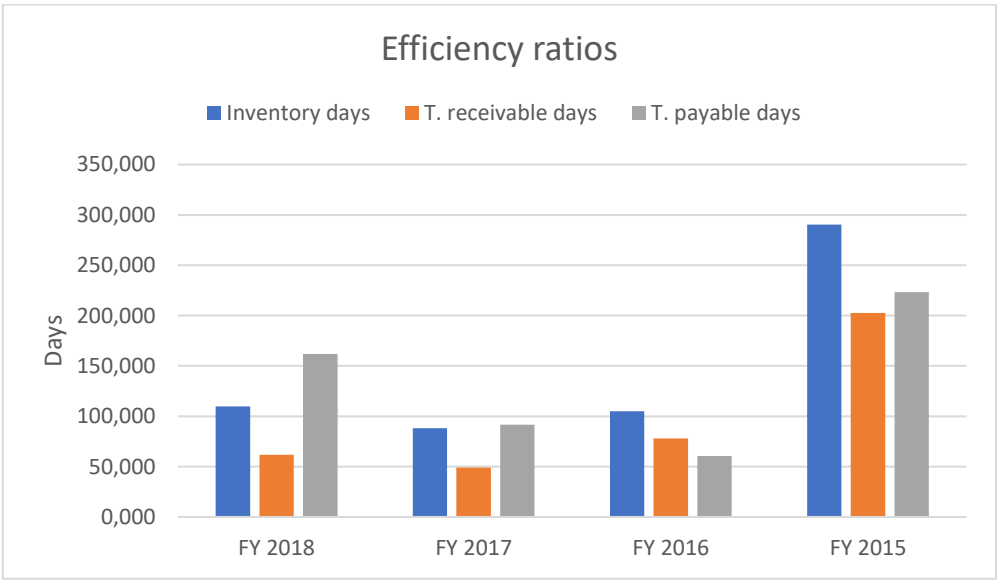

Altman Z-score
3,500
3,000
2,500
2,000
1,500
1,000
0,500
0,000
FY 2018
FY 2017
FY 2016
FY 2015
Z-score
Lower boundary
Upper boundary

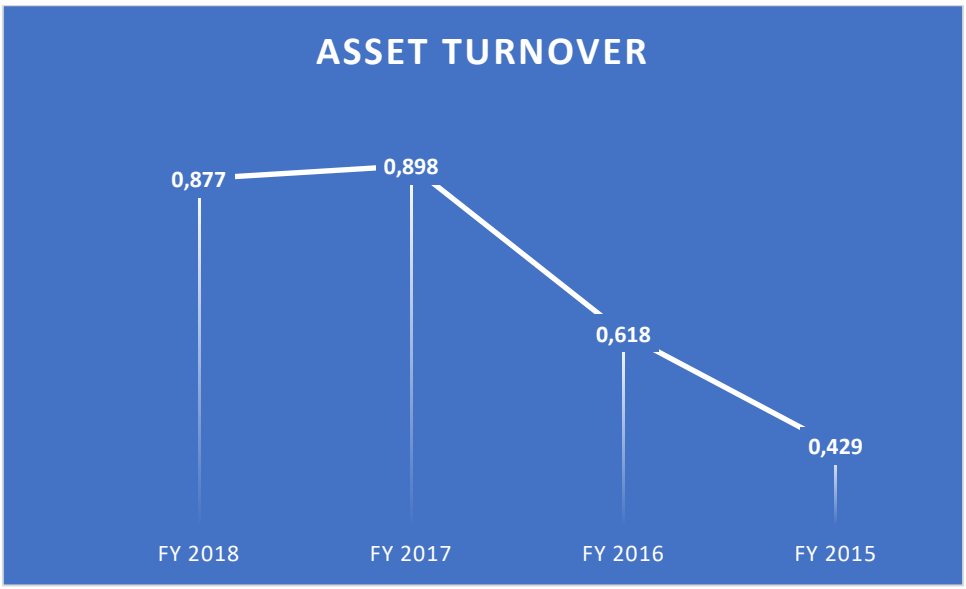
9.1.5 La Pirata

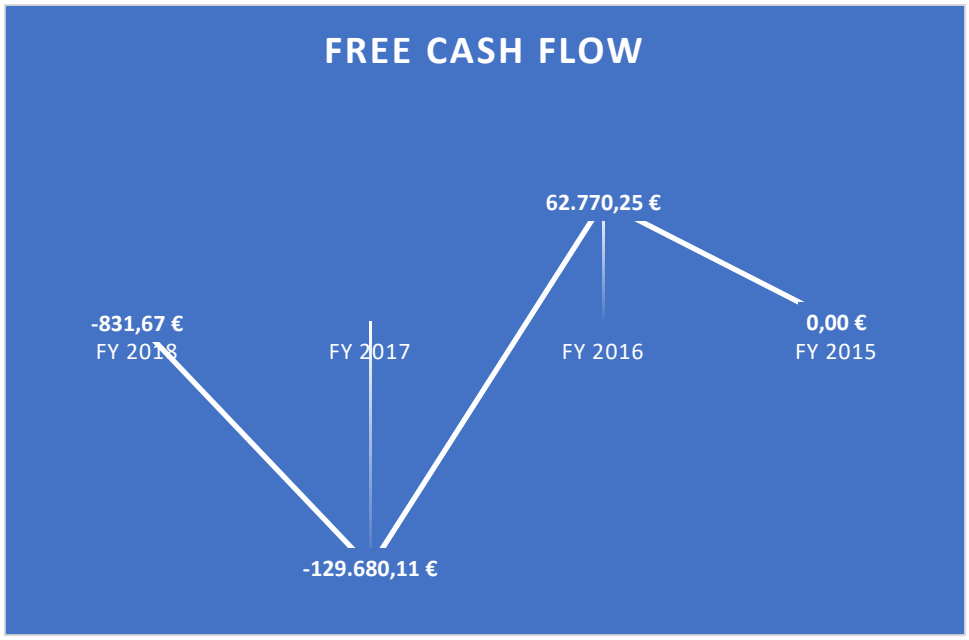
La Pirata				
	FY 2018	FY 2017	FY 2016	FY 2015
Profitability				
RoE	2,121%	19,073%	5,581%	0,568%
Operating Profit	3,199%	15,129%	7,869%	1,679%
RoCE	3,665%	15,258%	6,666%	0,433%
Liquidity				
Current ratio	1,092	1,037	1,094	1,445
Acid test	0,541	0,548	0,634	0,835
Efficiency				
Inventory days	109,599	88,210	105,092	290,413
T. receivable days	61,748	49,009	78,086	202,661
T. payable days	161,960	91,709	60,558	223,357
Asset turnover	0,877	0,898	0,618	0,429
Gearing				
Gearing ratio	43,648%	50,033%	54,671%	63,883%
Others				
CAPEX	92702,400	267308,230	13280,660	-
Free cash flow	-831,672	-129680,110	62770,250	-
Altman Z-score	1,224	1,409	1,035	0,459

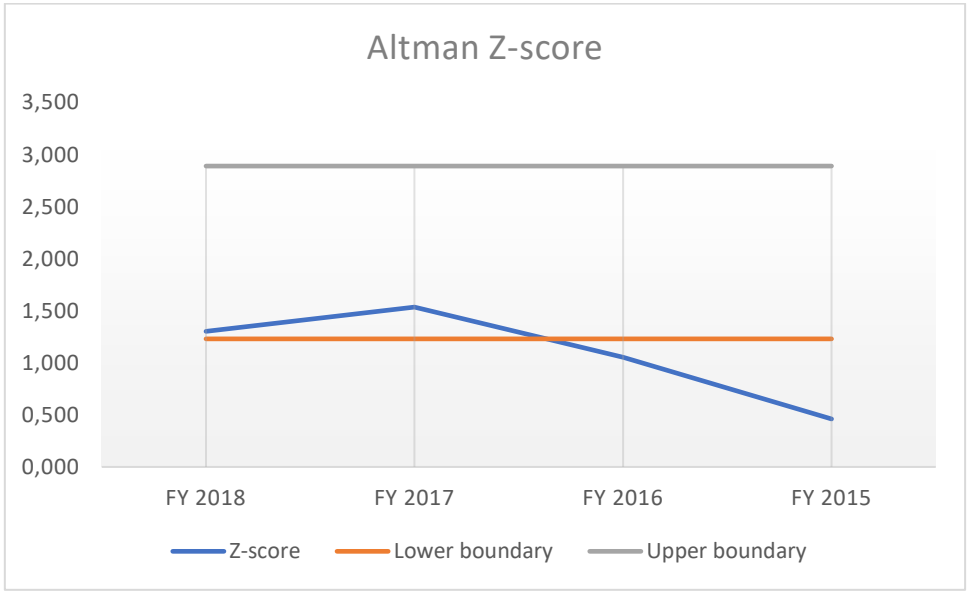



Liquidity ratios
Current ratio
Acid test
1,600
1,400
1,200
1,000
0,800
0,600
0,400
0,200
0,000
FY 2018
FY 2017
FY 2016
FY 2015


Efficiency ratios
Inventory days
T. receivable days
T. payable days
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0,000
Days
FY 2018
FY 2017
FY 2016
FY 2015

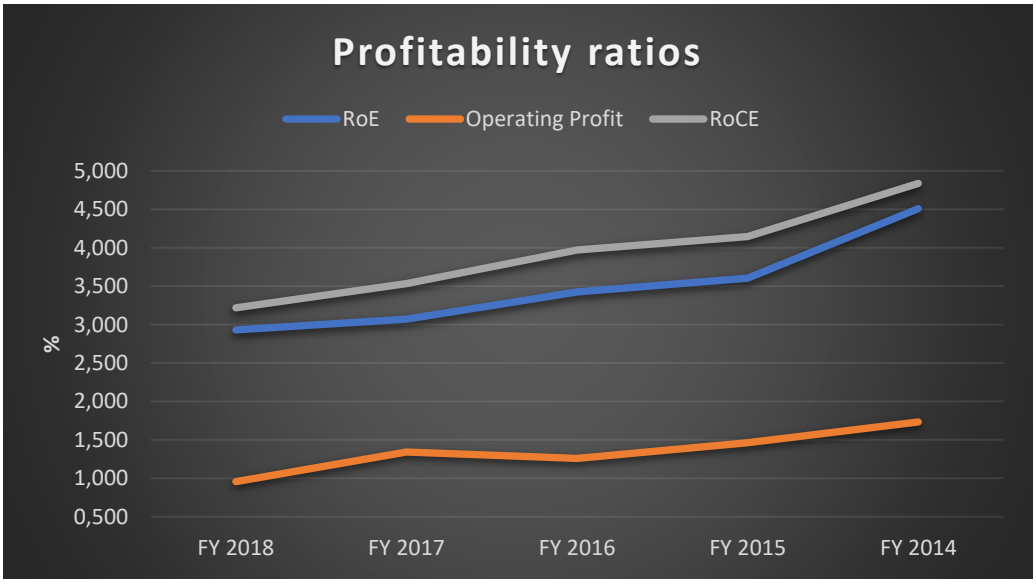

ASSET TURNOVER
0,877
0,898
0,618
0,429
FY 2018
FY 2017
FY 2016
FY 2015

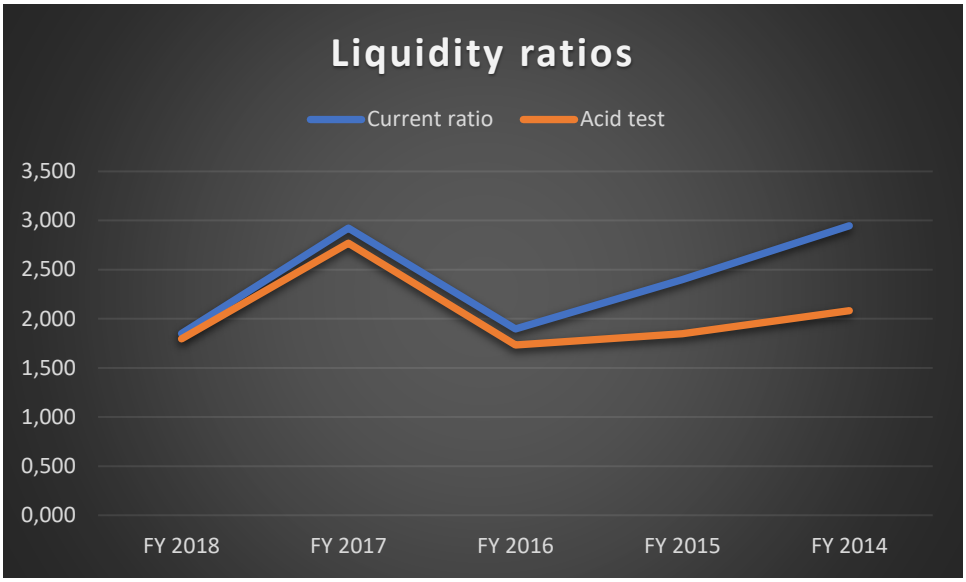

FREE CASH FLOW
-831,67 €
FY 2018
FY 2017
-129.680,11 €
62.770,25 €
FY 2016
0,00 €
FY 2015

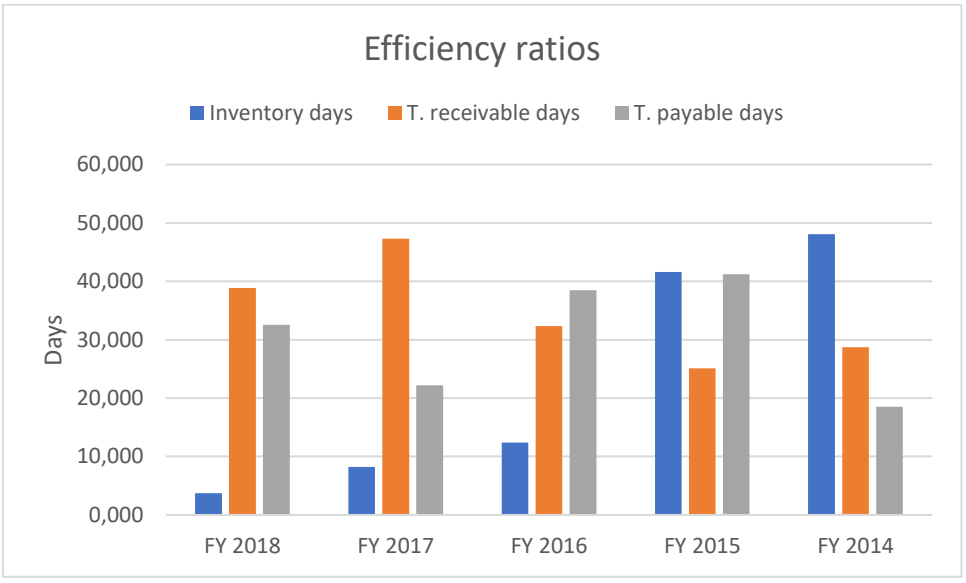

Altman Z-score
3,500
3,000
2,500
2,000
1,500
1,000
0,500
0,000
FY 2018
FY 2017
FY 2016
FY 2015
Z-score
Lower boundary
Upper boundary

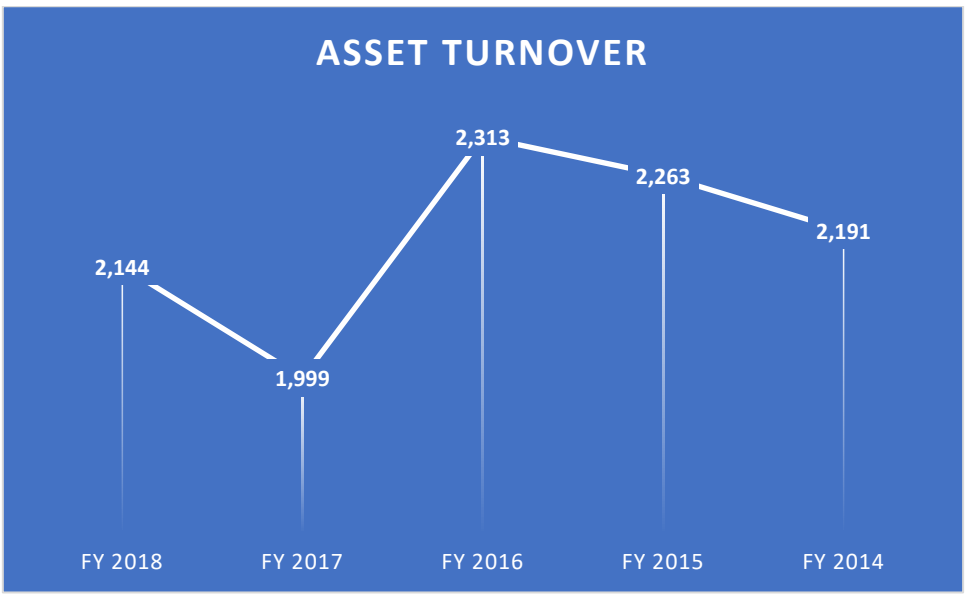
9.1.6 Societat Cervesera Artesenca

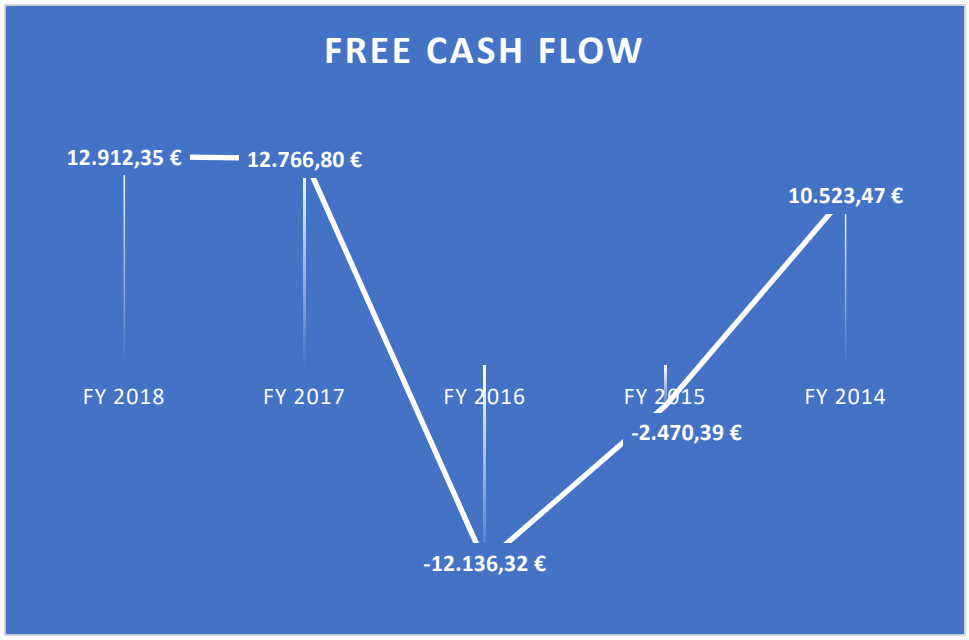
Societat Cervesera Artesenca					
	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014
Profitability					
RoE	2,931%	3,071%	3,424%	3,606%	4,509%
Operating Profit	0,957%	1,343%	1,258%	1,462%	1,733%
RoCE	3,219%	3,534%	3,969%	4,144%	4,837%
Liquidity					
Current ratio	1,850	2,921	1,895	2,400	2,947
Acid test	1,797	2,769	1,733	1,846	2,082
Efficiency					
Inventory days	3,711	8,229	12,371	41,622	48,074
T. receivable days	38,841	47,325	32,347	25,121	28,724
T. payable days	32,535	22,208	38,474	41,217	18,516
Asset turnover	2,144	1,999	2,313	2,263	2,191
Gearing					
Gearing ratio	22,048%	18,743%	21,376%	23,073%	19,459%
Others					
CAPEX	17,430	1544,440	25756,700	13134,530	35,350
Free cash flow	12912,350	12766,800	-12136,320	-2470,390	10523,470
Altman Z-score	3,200	3,288	3,069	3,007	3,375

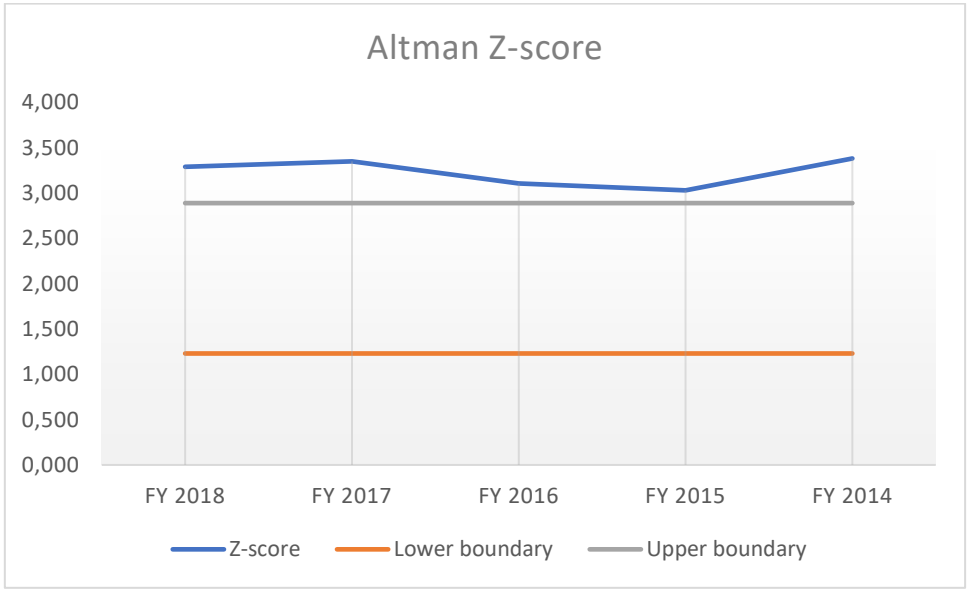



Liquidity ratios
Current ratio
Acid test
3,500
3,000
2,500
2,000
1,500
1,000
0,500
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014


Efficiency ratios
Inventory days
T. receivable days
T. payable days
60,000
50,000
40,000
30,000
20,000
10,000
0,000
Days
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

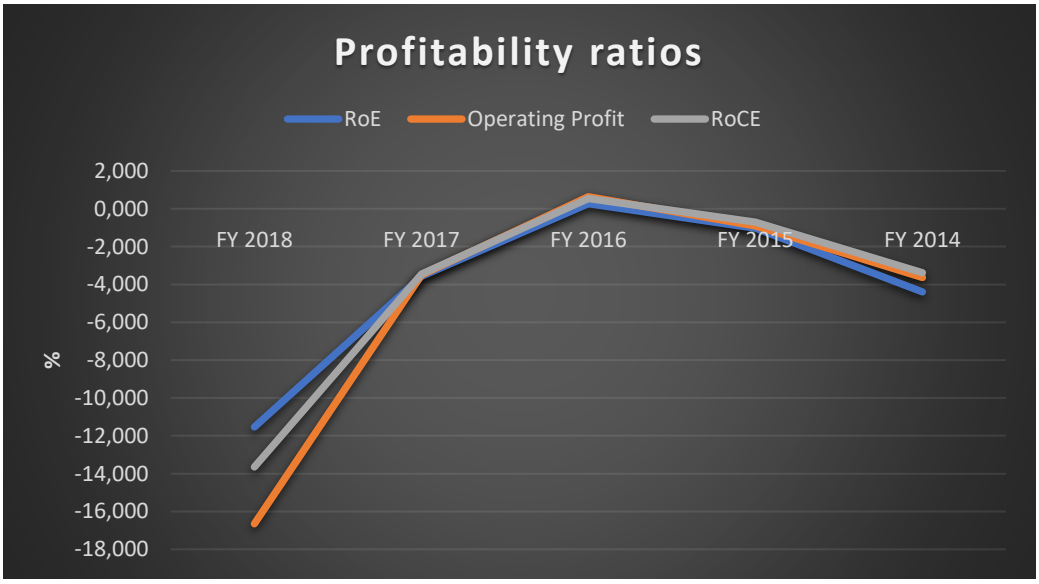

ASSET TURNOVER
2,144
1,999
2,313
2,263
2,191
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

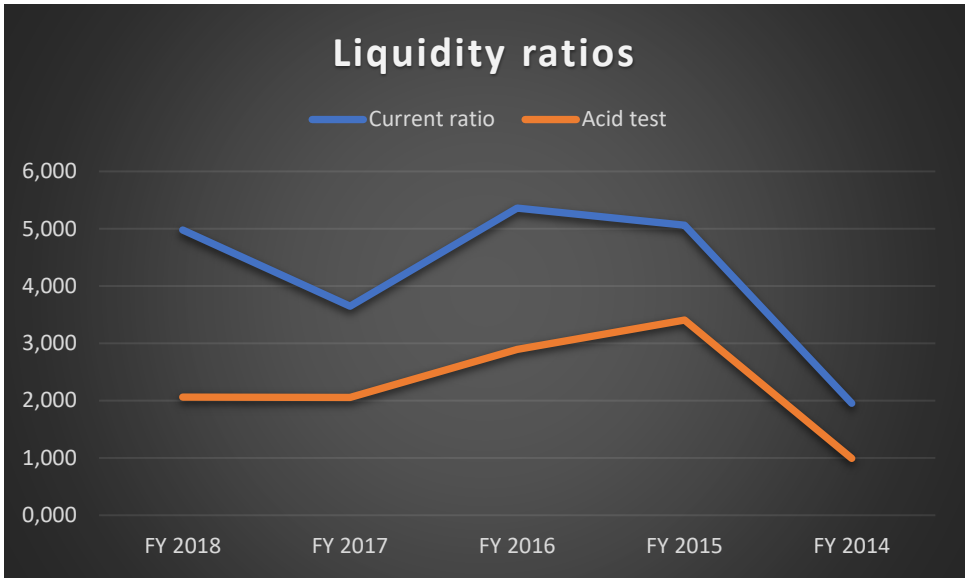

FREE CASH FLOW
12.912,35 €
12.766,80 €
-12.136,32 €
-2.470,39 €
10.523,47 €
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

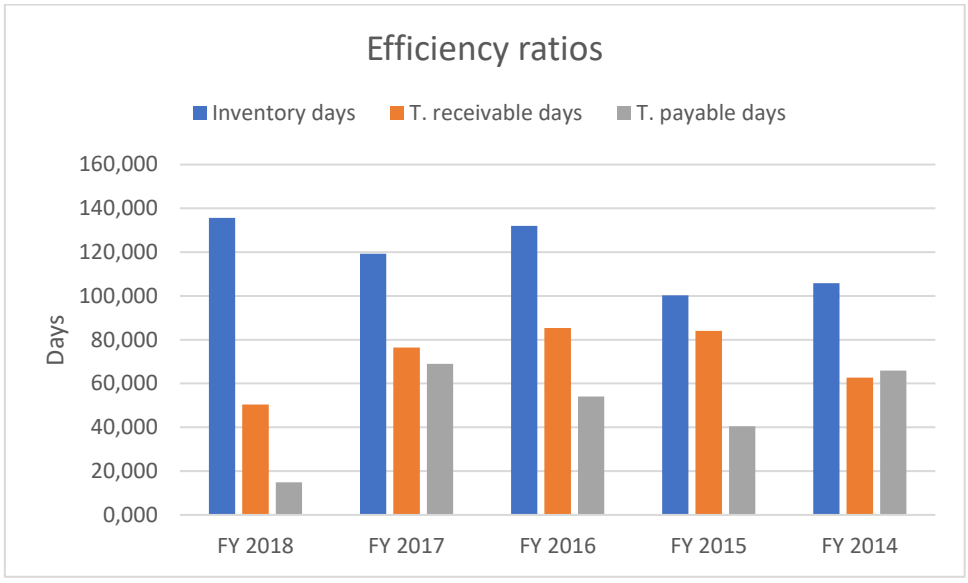

Altman Z-score
4,000
3,500
3,000
2,500
2,000
1,500
1,000
0,500
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014
Z-score
Lower boundary
Upper boundary

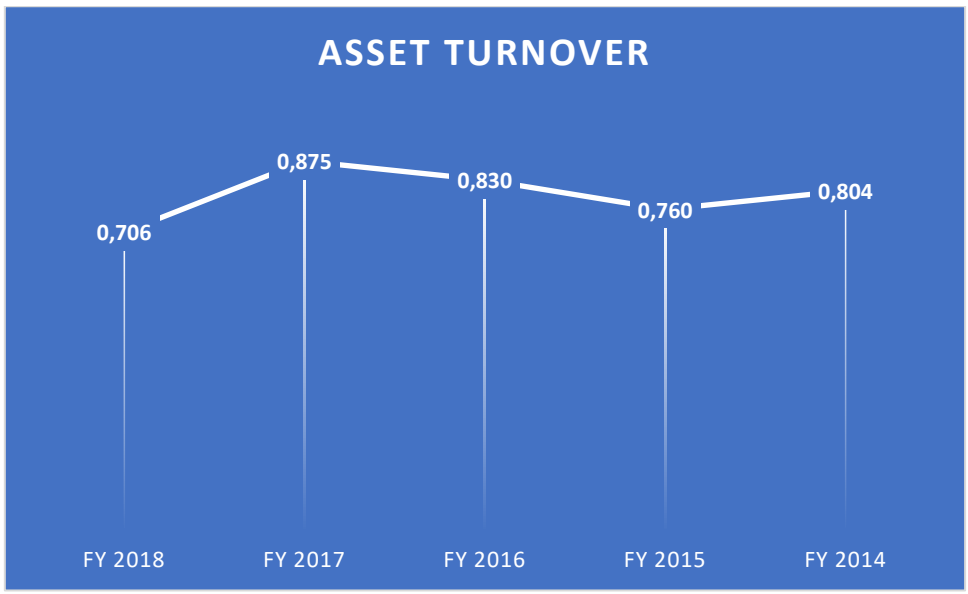
9.1.7 Rosita

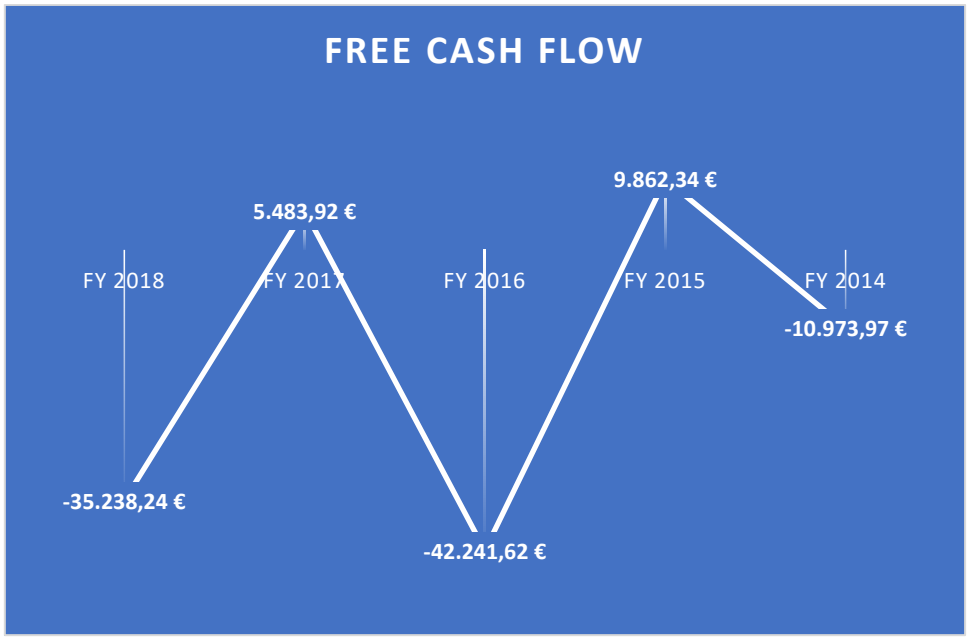
Rosita					
	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014
Profitability					
RoE	-11,536%	-3,567%	0,266%	-1,036%	-4,395%
Operating Profit	-16,653%	-3,502%	0,639%	-0,908%	-3,630%
RoCE	-13,649%	-3,443%	0,541%	-0,711%	-3,376%
Liquidity					
Current ratio	4,978%	3,648	5,360	5,063	1,954
Acid test	2,060%	2,059	2,891	3,406	0,992
Efficiency					
Inventory days	135,708	119,217	132,040	100,302	105,880
T. receivable days	50,481	76,377	85,300	84,025	62,653
T. payable days	14,930	69,025	54,025	40,468	65,892
Asset turnover	0,706	0,875	0,830	0,760	0,804
Gearing					
Gearing ratio	9,402%	10,100%	11,260%	12,959%	28,371%
Others					
CAPEX	1113,970	1224,570	69856,370	7009,850	18188,760
Free cash flow	-35238,240	5483,920	-42241,620	9862,340	-10973,969
Altman Z-score	2,967	2,684	3,011	5,477	1,469

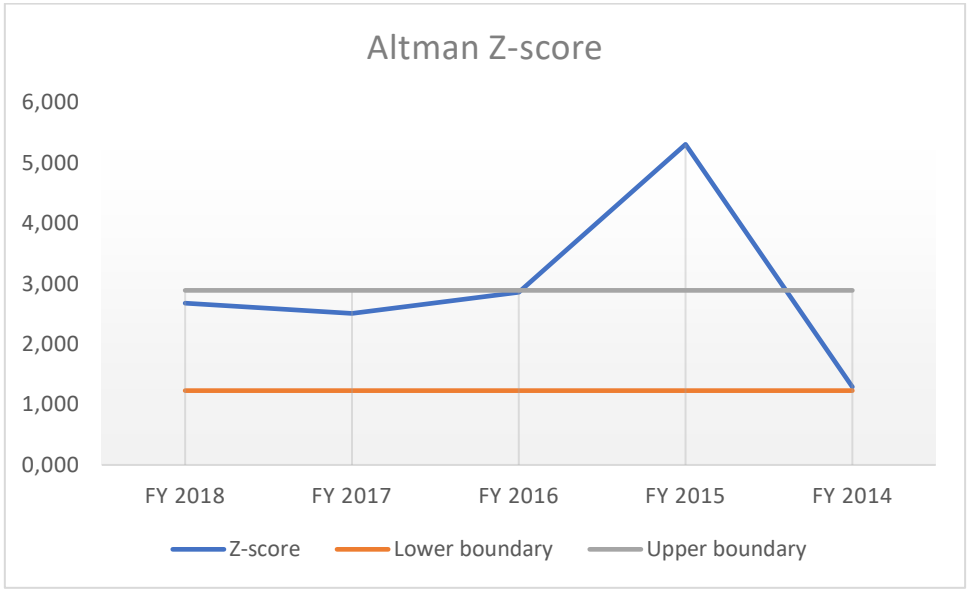



Liquidity ratios
Current ratio
Acid test
6,000
5,000
4,000
3,000
2,000
1,000
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014


Efficiency ratios
Inventory days
T. receivable days
T. payable days
Days
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

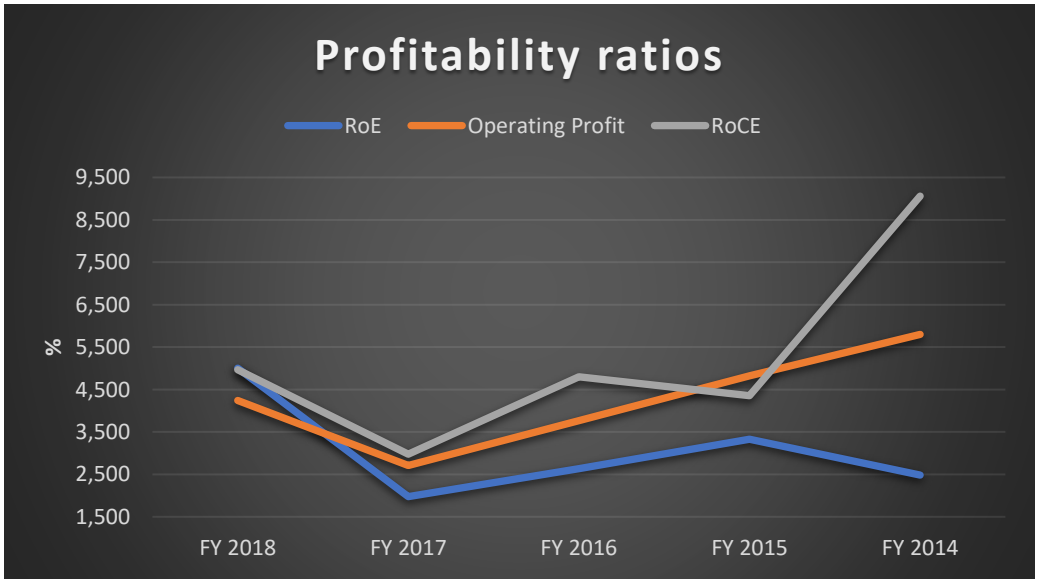

ASSET TURNOVER
0,706
0,875
0,830
0,760
0,804
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

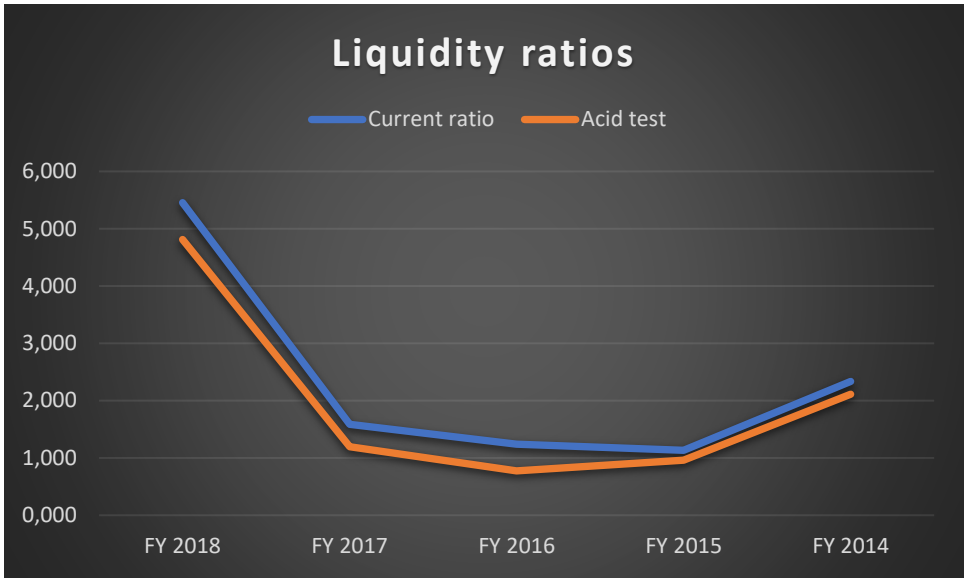

FREE CASH FLOW
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014
-35.238,24 €
5.483,92 €
-42.241,62 €
9.862,34 €
-10.973,97 €

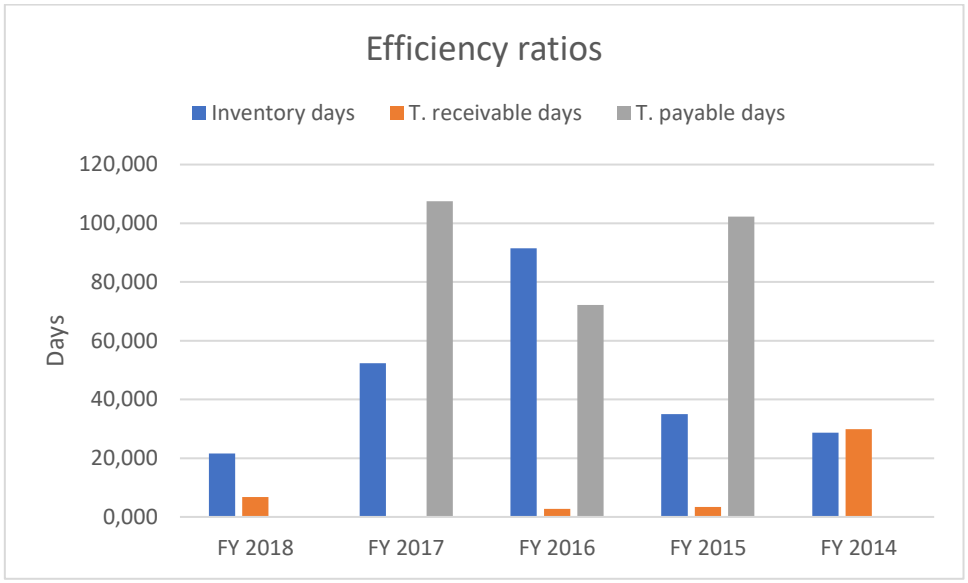

Altman Z-score
6,000
5,000
4,000
3,000
2,000
1,000
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014
Z-score
Lower boundary
Upper boundary

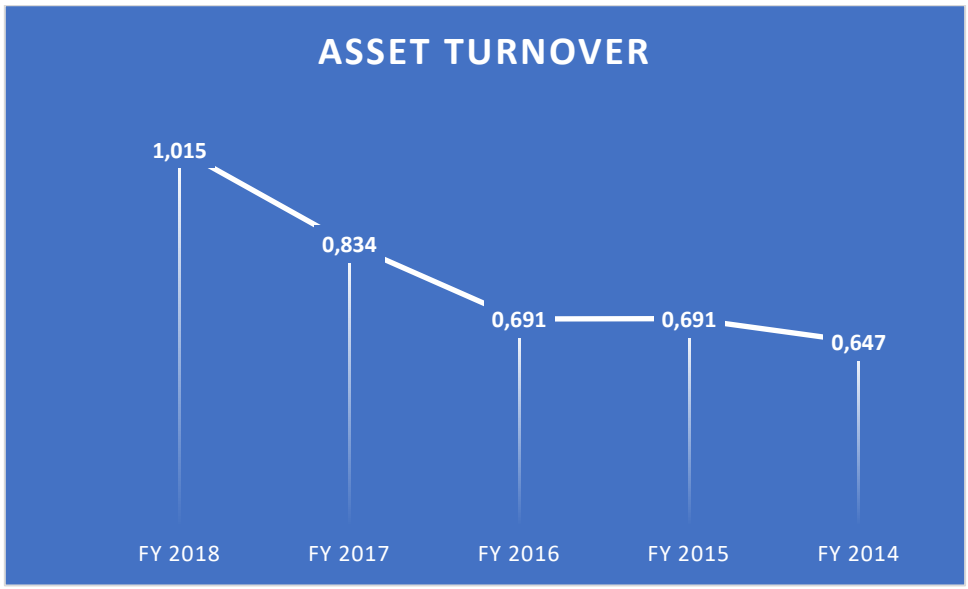
9.1.8 Or i Plata Cervesers

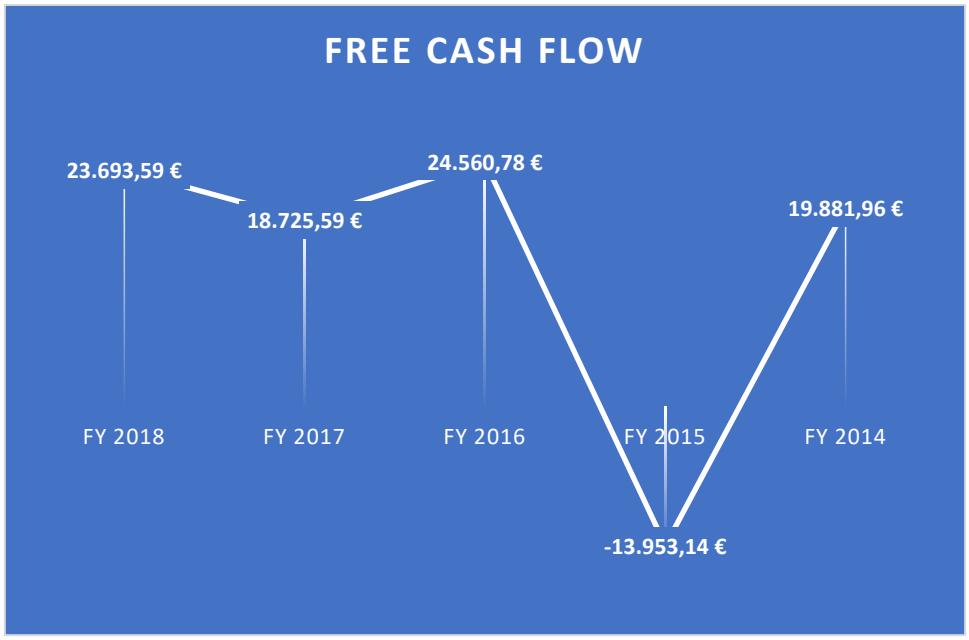
Or i Plata Cervesers					
	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014
Profitability					
RoE	5,004%	1,975%	2,638%	3,329%	2,486%
Operating Profit	4,243%	2,709%	3,768%	4,826%	5,800%
RoCE	4,965%	2,976%	4,798%	4,355%	9,060%
Liquidity					
Current ratio	5,454	1,586	1,240	1,133	2,333
Acid test	4,812	1,194	0,774	0,961	2,110
Efficiency					
Inventory days	21,603	52,293	91,464	35,011	28,709
T. receivable days	6,791	0,095	2,693	3,353	29,892
T. payable days	0,000	107,543	72,135	102,231	0,000
Asset turnover	1,015	0,834	0,691	0,691	0,647
Gearing					
Gearing ratio	49,893%	52,193%	55,668%	60,675%	71,196%
Others					
CAPEX	2213,460	5177,560	0,000	37070,240	916,520
Free cash flow	23693,590	18725,590	24560,780	-13953,140	19881,960
Altman Z-score	1,809	1,302	1,072	1,000	1,133

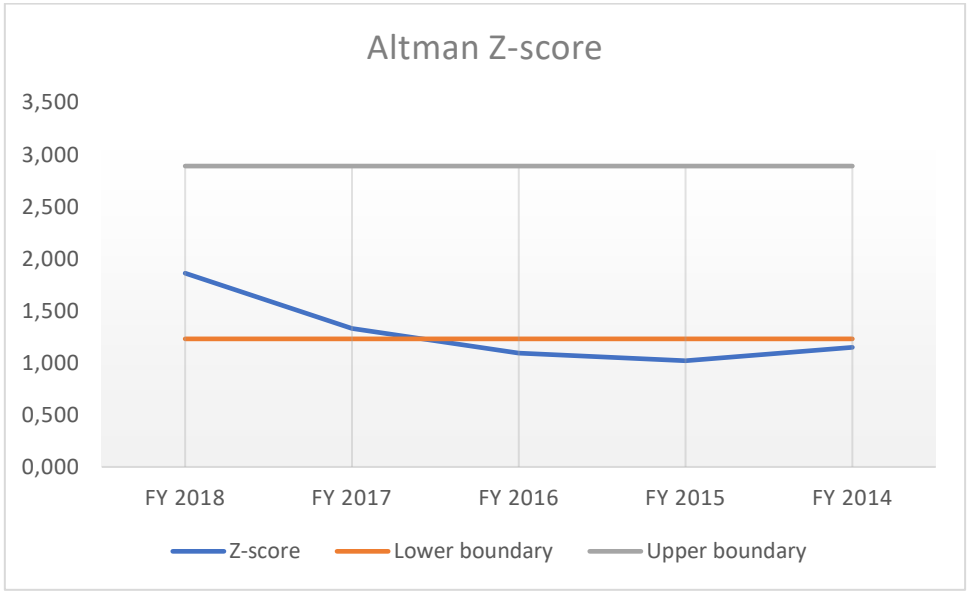



Liquidity ratios
Current ratio
Acid test
6,000
5,000
4,000
3,000
2,000
1,000
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014


Efficiency ratios
Inventory days
T. receivable days
T. payable days
120,000
100,000
80,000
60,000
40,000
20,000
0,000
Days
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

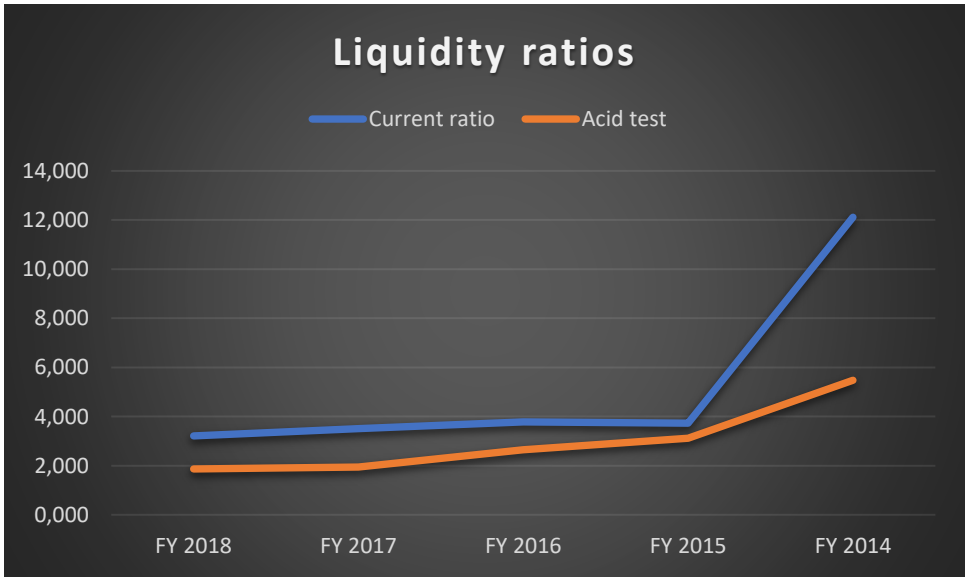

ASSET TURNOVER
1,015
0,834
0,691
0,691
0,647
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

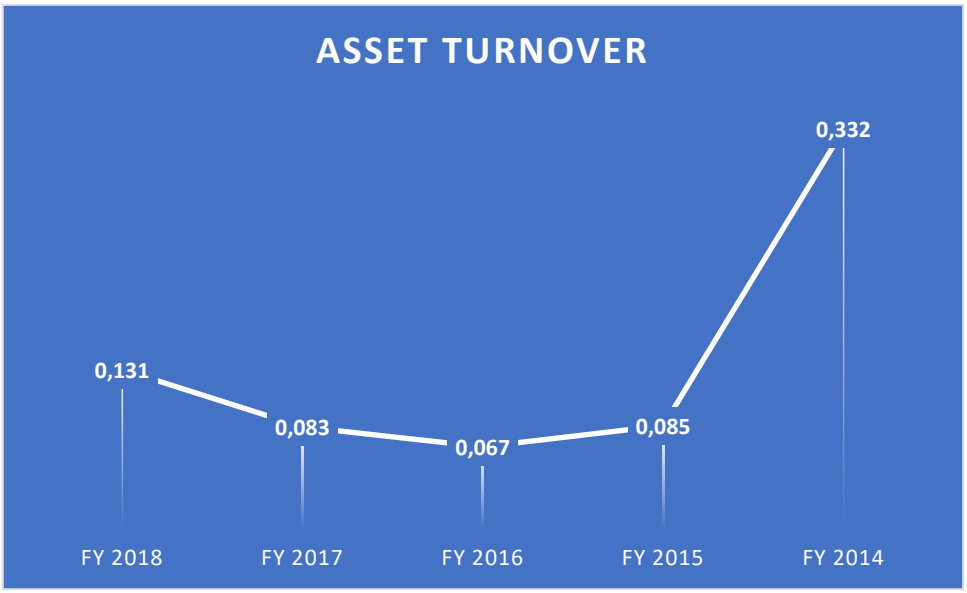

FREE CASH FLOW
23.693,59 €
18.725,59 €
24.560,78 €
-13.953,14 €
19.881,96 €
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014

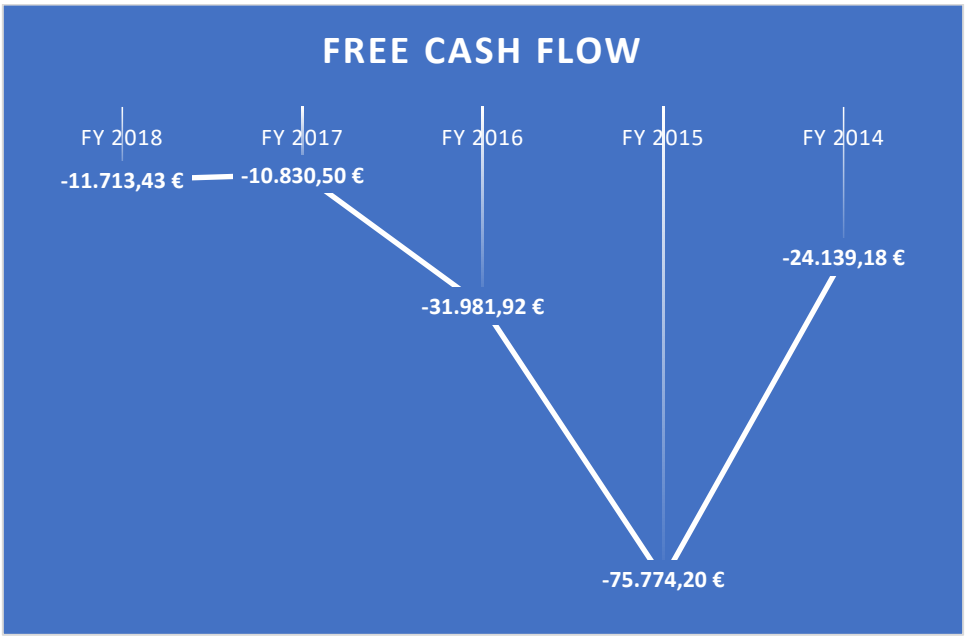

Altman Z-score
3,500
3,000
2,500
2,000
1,500
1,000
0,500
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014
Z-score
Lower boundary
Upper boundary

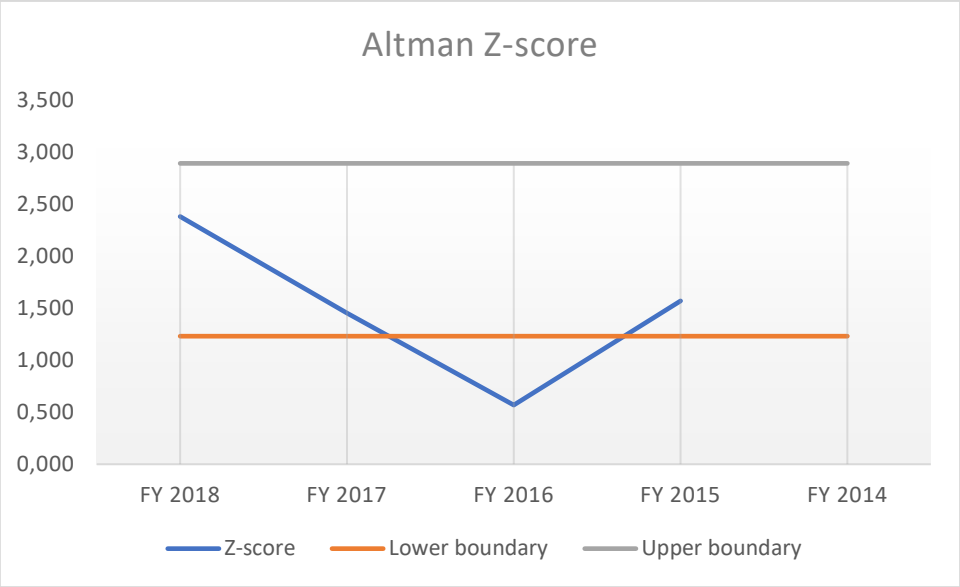
9.1.9 Malta 51

Malta 51					
	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014
Profitability					
RoE	-20,451%	-19,525%	-32,263%	-12,165%	-43,256%
Operating Profit	-178,641%	-257,318%	-508,623%	-254,601%	-337,123%
RoCE	-25,418%	-23,105%	-36,815%	-14,671%	-57,675%
Liquidity					
Current ratio	3,210	3,505	3,784	3,728	12,114
Acid test	1,865	1,949	2,648	3,119	5,476
Efficiency					
Inventory days	324,391	618,959	531,851	592,630	751,547
T. receivable days	40,129	93,362	330,861	851,968	227,562
T. payable days	33,551	0,000	11,194	0,000	0,000
Asset turnover	0,131	0,083	0,067	0,085	0,332
Gearing					
Gearing ratio	5,004%	8,861%	12,968%	9,551%	0,000
Others					
CAPEX	863,500	749,300	9214,220	64493,730	12555,100
Free cash flow	-11713,430	-10830,500	-31981,919	-75774,200	-24139,180
Altman Z-score	3,220	2,105	1,062	1,824	-




ASSET TURNOVER
0,131
0,083
0,067
0,085
0,332
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014


FREE CASH FLOW
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014
-11.713,43 €
-10.830,50 €
-31.981,92 €
-75.774,20 €
-24.139,18 €


Altman Z-score
3,500
3,000
2,500
2,000
1,500
1,000
0,500
0,000
FY 2018
FY 2017
FY 2016
FY 2015
FY 2014
Z-score
Lower boundary
Upper boundary

9.2 Appendix 2 – Index for industry premium

BME (n.d.) – Index for industry premium

Date: 31 Dec 2013

BOLETÍN DE COTIZACIÓN
Bolsa de Madrid

BOLSA DE MADRID

BME

ÍNDICES SECTORIALES Y SUBSECTORIALES BOLSA DE MADRID (Base 29-12-2004=1.000)
SECTORIAL AND SUBSECTORIAL INDEXES MADRID STOCK EXCHANGE (Base 29-12-2004=1.000)

	Indice Normal *Normal Index*				Indice Total *Total Index*			
	31 DIC.2013	Prec. *Prev.*	Cierre *Close*	Dif % *Dif %*	31 DIC.2013	Prec. *Prev.*	Cierre *Close*	Dif % *Dif %*
PETROLEO Y ENERGIA	**1.110,94**	**1.244,06**	**1.242,30**	**-0,14**	**1.712,18**	**2.104,44**	**2.101,75**	**-0,13**
Petróleo	1.011,22	859,15	858,05	-0,13	1.542,45	1.456,07	1.454,20	-0,13
Electricidad y Gas	1.178,03	1.435,76	1.433,89	-0,13	1.849,02	2.454,77	2.451,94	-0,12
Energias Renovables	485,64	458,74	443,43	-3,34	510,71	486,84	470,60	-3,34
MATERIALES BASICOS,IND.Y CONS.	**1.173,12**	**1.146,50**	**1.152,30**	**+0,51**	**1.967,02**	**2.008,39**	**2.018,49**	**+0,50**
Minerales,Metales y Transform.	1.022,40	1.070,94	1.068,34	-0,24	1.336,90	1.431,14	1.427,67	-0,24
Fabric.y Montaje Bienes Equipo	1.165,43	953,02	952,39	-0,07	1.925,54	1.631,28	1.630,35	-0,06
Construcción	1.247,56	1.346,51	1.358,51	+0,89	1.919,84	2.185,16	2.204,27	+0,87
Materiales de Construcción	131,14	78,14	76,90	-1,59	167,88	100,03	98,45	-1,58
Industria Química	54,95	44,30	45,46	+2,62	103,87	83,75	85,94	+2,61
Ingeniería y Otros	2.961,53	2.459,01	2.457,78	-0,05	7.766,05	6.668,50	6.664,42	-0,06
Aeroespacial	2.596,70	1.916,05	1.927,24	+0,58	2.874,40	2.146,63	2.159,17	+0,58
BIENES DE CONSUMO	**3.679,89**	**3.632,05**	**3.624,84**	**-0,20**	**4.802,27**	**4.846,53**	**4.836,97**	**-0,20**
Alimentación y Bebidas	1.910,42	1.814,75	1.810,35	-0,24	2.568,95	2.503,19	2.497,08	-0,24
Textil,Vestido y Calzado	5.254,59	5.202,85	5.198,45	-0,08	6.461,50	6.539,49	6.533,96	-0,08
Papel y Artes Gráficas	935,44	812,19	825,38	+1,62	1.563,69	1.433,66	1.456,66	+1,60
Prod.Farmaceut.y Biotecnología	2.027,41	2.021,29	2.007,95	-0,66	3.156,55	3.196,34	3.175,45	-0,65
Otros Bienes de Consumo	2.765,63	2.985,84	2.947,07	-1,30	3.832,51	4.421,75	4.364,33	-1,30
SERVICIOS DE CONSUMO	**1.191,80**	**1.306,17**	**1.310,66**	**+0,34**	**1.955,56**	**2.209,82**	**2.217,35**	**+0,34**
Ocio, Turismo y Hostelería	603,22	509,26	509,11	-0,03	691,52	585,16	584,97	-0,03
Comercio	124,15	108,39	107,36	-0,95	218,37	195,41	193,55	-0,95
Medios Comunicac. y Publicidad	517,50	573,17	572,78	-0,07	763,15	849,79	849,21	-0,07
Transportes y Distribución	2.721,55	3.453,26	3.481,38	+0,81	3.248,64	4.122,06	4.155,63	+0,81
Autopistas y Aparcamientos	1.553,19	1.649,37	1.658,97	+0,58	3.527,57	4.091,89	4.115,69	+0,58
Otros Servicios	2.031,88	1.935,89	1.920,75	-0,78	2.456,68	2.394,48	2.375,74	-0,78
SERVS.FINANCIEROS E INMOBILIA.	**741,55**	**754,04**	**752,19**	**-0,25**	**1.346,41**	**1.454,17**	**1.450,60**	**-0,25**
Bancos y Cajas de Ahorros	675,40	687,65	685,97	-0,24	1.208,31	1.306,03	1.302,83	-0,25
Seguros	1.847,35	1.687,02	1.677,65	-0,56	2.765,85	2.632,73	2.618,07	-0,56
Sociedades Cartera y Holdings	1.772,61	1.696,04	1.716,80	+1,22	2.437,12	2.393,80	2.423,81	+1,25
Inmobiliarias y Otros	136,95	186,90	186,72	-0,10	224,17	558,52	557,96	-0,10
Servicios de Inversion	889,25	1.034,70	1.031,00	-0,36	1.623,17	1.985,19	1.978,09	-0,36
TECNOLOGIA Y TELECOMUNICACION.	**975,06**	**994,52**	**999,69**	**+0,52**	**1.635,85**	**1.755,10**	**1.764,18**	**+0,52**
Telecomunicaciones y Otros	874,92	894,14	897,39	+0,36	1.488,51	1.611,27	1.617,14	+0,36
Electrónica y Software	1.983,08	2.005,87	2.029,00	+1,15	2.594,50	2.678,91	2.709,74	+1,15

Energías Renovables: Base 29-06-2007=1.000

Servicios de Inversión: Base 29-12-2006=1.000

Date: 31st December 2014

BOLETÍN DE COTIZACIÓN
Bolsa de Madrid

BOLSA DE MADRID

BME

ÍNDICES SECTORIALES Y SUBSECTORIALES BOLSA DE MADRID (Base 29-12-2004=1.000)
SECTORIAL AND SUBSECTORIAL INDEXES MADRID STOCK EXCHANGE (Base 29-12-2004=1.000)

	Indice Normal *Normal Index*				Indice Total *Total Index*			
	31 DIC.2014	Prec. *Prev.*	Cierre *Close*	Dif % *Dif %*	31 DIC.2014	Prec. *Prev.*	Cierre *Close*	Dif % *Dif %*
PETROLEO Y ENERGIA	**1.242,30**	**1.242,30**	**1.240,02**	**-0,18**	**2.101,75**	**2.101,75**	**2.103,84**	**+0,10**
Petróleo	858,05	858,05	859,43	+0,16	1.454,20	1.454,20	1.456,54	+0,16
Electricidad y Gas	1.433,89	1.433,89	1.429,87	-0,28	2.451,94	2.451,94	2.453,75	+0,07
Energias Renovables	443,43	443,43	456,60	+2,97	470,60	470,60	484,57	+2,97
MATERIALES BASICOS,IND.Y CONS.	**1.152,30**	**1.152,30**	**1.165,95**	**+1,18**	**2.018,49**	**2.018,49**	**2.042,39**	**+1,18**
Minerales,Metales y Transform.	1.068,34	1.068,34	1.073,01	+0,44	1.427,67	1.427,67	1.433,91	+0,44
Fabric.y Montaje Bienes Equipo	952,39	952,39	978,04	+2,69	1.630,35	1.630,35	1.674,25	+2,69
Construcción	1.358,51	1.358,51	1.369,49	+0,81	2.204,27	2.204,27	2.222,09	+0,81
Materiales de Construcción	76,90	76,90	79,54	+3,43	98,45	98,45	101,83	+3,43
Industria Química	45,46	45,46	47,20	+3,83	85,94	85,94	89,22	+3,82
Ingeniería y Otros	2.457,78	2.457,78	2.507,26	+2,01	6.664,42	6.664,42	6.798,59	+2,01
Aeroespacial	1.927,24	1.927,24	1.941,69	+0,75	2.159,17	2.159,17	2.175,36	+0,75
BIENES DE CONSUMO	**3.624,84**	**3.624,84**	**3.644,04**	**+0,53**	**4.836,97**	**4.836,97**	**4.862,59**	**+0,53**
Alimentación y Bebidas	1.810,35	1.810,35	1.814,58	+0,23	2.497,08	2.497,08	2.502,92	+0,23
Textil,Vestido y Calzado	5.198,45	5.198,45	5.215,95	+0,34	6.533,96	6.533,96	6.555,96	+0,34
Papel y Artes Gráficas	825,38	825,38	827,75	+0,29	1.456,66	1.456,66	1.460,85	+0,29
Prod.Farmaceut.y Biotecnología	2.007,95	2.007,95	2.034,35	+1,31	3.175,45	3.175,45	3.217,20	+1,31
Otros Bienes de Consumo	2.947,07	2.947,07	2.974,21	+0,92	4.364,33	4.364,33	4.404,53	+0,92
SERVICIOS DE CONSUMO	**1.310,66**	**1.310,66**	**1.319,30**	**+0,66**	**2.217,35**	**2.217,35**	**2.231,96**	**+0,66**
Ocio, Turismo y Hostelería	509,11	509,11	509,11	+0,00	584,97	584,97	584,97	+0,00
Comercio	107,36	107,36	109,13	+1,65	193,55	193,55	196,75	+1,65
Medios Comunicac. y Publicidad	572,78	572,78	576,59	+0,67	849,21	849,21	854,86	+0,67
Transportes y Distribución	3.481,38	3.481,38	3.489,07	+0,22	4.155,63	4.155,63	4.164,81	+0,22
Autopistas y Aparcamientos	1.658,97	1.658,97	1.673,11	+0,85	4.115,69	4.115,69	4.150,76	+0,85
Otros Servicios	1.920,75	1.920,75	1.944,06	+1,21	2.375,74	2.375,74	2.404,57	+1,21
SERVS.FINANCIEROS E INMOBILIA.	**752,19**	**752,19**	**762,36**	**+1,35**	**1.450,60**	**1.450,60**	**1.470,21**	**+1,35**
Bancos y Cajas de Ahorros	685,97	685,97	695,07	+1,33	1.302,83	1.302,83	1.320,11	+1,33
Seguros	1.677,65	1.677,65	1.699,10	+1,28	2.618,07	2.618,07	2.651,55	+1,28
Sociedades Cartera y Holdings	1.716,80	1.716,80	1.725,36	+0,50	2.423,81	2.423,81	2.435,89	+0,50
Inmobiliarias y Otros	186,72	186,72	193,61	+3,69	557,96	557,96	578,55	+3,69
Servicios de Inversion	1.031,00	1.031,00	1.054,89	+2,32	1.978,09	1.978,09	2.023,92	+2,32
Sociedades de Inversión Inmobi	1.000,00	1.000,00	1.012,04	+1,20	1.000,00	1.000,00	1.012,04	+1,20
TECNOLOGIA Y TELECOMUNICACION.	**999,69**	**999,69**	**996,72**	**-0,30**	**1.764,18**	**1.764,18**	**1.758,93**	**-0,30**
Telecomunicaciones y Otros	897,39	897,39	895,06	-0,26	1.617,14	1.617,14	1.612,94	-0,26
Electrónica y Software	2.029,00	2.029,00	2.019,39	-0,47	2.709,74	2.709,74	2.696,90	-0,47

Energías Renovables: Base 29-06-2007=1.000

Servicios de Inversión: Base 29-12-2006=1.000

Date: 31st December 2015

BOLETÍN DE COTIZACIÓN
Bolsa de Madrid

BOLSA DE MADRID

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ÍNDICES SECTORIALES Y SUBSECTORIALES BOLSA DE MADRID (Base 29-12-2004=1.000)
SECTORIAL AND SUBSECTORIAL INDEXES MADRID STOCK EXCHANGE (Base 29-12-2004=1.000)

	Indice Normal *Normal Index*				Indice Total *Total Index*			
	31 DIC.2015	Prec. *Prev.*	Cierre *Close*	Dif % *Dif %*	31 DIC.2015	Prec. *Prev.*	Cierre *Close*	Dif % *Dif %*
PETROLEO Y ENERGIA	**1.249,55**	**1.259,07**	**1.259,37**	**+0,02**	**2.200,93**	**2.340,76**	**2.341,31**	**+0,02**
Petróleo	558,60	744,06	740,75	-0,44	1.019,37	1.429,47	1.423,11	-0,44
Electricidad y Gas	1.571,06	1.501,72	1.503,55	+0,12	2.777,90	2.803,31	2.806,70	+0,12
Energias Renovables	464,62	452,07	459,77	+1,70	513,21	535,23	544,43	+1,72
MATERIALES BASICOS,IND.Y CONS.	**1.175,97**	**1.197,96**	**1.199,04**	**+0,09**	**2.147,16**	**2.270,10**	**2.271,99**	**+0,08**
Minerales,Metales y Transform.	739,49	1.101,45	1.100,44	-0,09	1.019,07	1.631,14	1.629,65	-0,09
Fabric.y Montaje Bienes Equipo	1.418,65	1.514,29	1.529,53	+1,01	2.497,37	2.731,34	2.758,21	+0,98
Construcción	1.425,28	1.316,67	1.312,91	-0,29	2.428,55	2.333,10	2.326,33	-0,29
Materiales de Construcción	97,76	124,61	124,18	-0,35	125,15	159,52	158,96	-0,35
Industria Química	71,26	212,85	212,85	+0,00	134,70	402,35	402,35	+0,00
Ingeniería y Otros	1.485,70	1.630,03	1.632,70	+0,16	4.171,83	4.710,01	4.717,64	+0,16
Aeroespacial	2.911,37	2.897,38	2.918,36	+0,72	3.316,20	3.367,93	3.392,32	+0,72
BIENES DE CONSUMO	**4.745,85**	**4.742,38**	**4.754,44**	**+0,25**	**6.448,40**	**6.594,96**	**6.611,82**	**+0,26**
Alimentación y Bebidas	2.287,52	2.165,42	2.163,70	-0,08	3.238,28	3.145,63	3.142,98	-0,08
Textil,Vestido y Calzado	6.947,35	7.113,14	7.130,18	+0,24	8.880,27	9.272,63	9.294,85	+0,24
Papel y Artes Gráficas	1.082,82	1.037,44	1.044,18	+0,65	1.990,86	2.361,06	2.376,14	+0,64
Prod.Farmaceut.y Biotecnología	2.480,17	2.311,64	2.320,59	+0,39	3.991,95	3.788,96	3.803,72	+0,39
Otros Bienes de Consumo	3.610,17	3.775,36	3.800,18	+0,66	5.425,65	5.766,67	5.804,58	+0,66
SERVICIOS DE CONSUMO	**1.446,79**	**1.334,56**	**1.331,15**	**-0,26**	**2.527,69**	**2.449,50**	**2.443,24**	**-0,26**
Ocio, Turismo y Hostelería	677,09	646,99	645,05	-0,30	778,87	745,33	743,12	-0,30
Comercio	103,87	88,70	89,00	+0,34	192,52	170,70	171,29	+0,35
Medios Comunicac. y Publicidad	515,37	557,98	559,77	+0,32	774,30	875,13	877,96	+0,32
Transportes y Distribución	4.510,14	3.820,88	3.802,11	-0,49	5.440,64	4.764,92	4.741,37	-0,49
Autopistas y Aparcamientos	1.527,75	1.486,69	1.480,02	-0,45	4.147,36	4.461,37	4.441,33	-0,45
Otros Servicios	1.706,86	2.379,75	2.399,48	+0,83	2.159,36	3.133,32	3.159,29	+0,83
SERVS.FINANCIEROS E INMOBILIA.	**570,03**	**556,76**	**561,08**	**+0,78**	**1.157,71**	**1.194,89**	**1.204,17**	**+0,78**
Bancos y Cajas de Ahorros	507,37	494,19	498,18	+0,81	1.013,21	1.044,14	1.052,58	+0,81
Seguros	1.593,45	1.815,98	1.840,78	+1,37	2.595,62	3.096,54	3.138,67	+1,36
Sociedades Cartera y Holdings	1.677,28	1.784,16	1.796,31	+0,68	2.462,08	2.702,02	2.720,46	+0,68
Inmobiliarias y Otros	221,01	215,93	215,87	-0,03	669,23	680,18	679,96	-0,03
Servicios de Inversion	999,65	910,19	904,30	-0,65	2.021,95	1.965,49	1.952,75	-0,65
Sociedades de Inversión Inmobi	1.379,61	1.239,90	1.241,02	+0,09	1.668,04	1.549,06	1.550,39	+0,09
TECNOLOGIA Y TELECOMUNICACION.	**947,98**	**861,46**	**862,47**	**+0,12**	**1.773,21**	**1.716,12**	**1.718,24**	**+0,12**
Telecomunicaciones y Otros	786,95	671,96	674,90	+0,44	1.514,62	1.400,19	1.406,32	+0,44
Electrónica y Software	2.479,87	2.693,57	2.674,77	-0,70	3.417,27	3.782,34	3.755,95	-0,70

Energías Renovables: Base 29-06-2007=1.000

Servicios de Inversión: Base 29-12-2006=1.000

Date: 30th December 2016

BOLETÍN DE COTIZACIÓN
Bolsa de Madrid

BOLSA DE MADRID

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ÍNDICES SECTORIALES Y SUBSECTORIALES BOLSA DE MADRID (Base 29-12-2004=1.000)
SECTORIAL AND SUBSECTORIAL INDEXES MADRID STOCK EXCHANGE (Base 29-12-2004=1.000)

	Indice Normal *Normal Index*				Indice Total *Total Index*			
	30 DIC.2016	Prec. *Prev.*	Cierre *Close*	Dif % *Dif %*	30 DIC.2016	Prec. *Prev.*	Cierre *Close*	Dif % *Dif %*
PETROLEO Y ENERGIA	**1.259,37**	**1.313,16**	**1.308,71**	**-0,34**	**2.341,31**	**2.569,99**	**2.561,20**	**-0,34**
Petróleo	740,75	829,90	813,89	-1,93	1.423,11	1.684,74	1.652,24	-1,93
Electricidad y Gas	1.503,55	1.532,17	1.533,95	+0,12	2.806,70	3.008,04	3.011,39	+0,11
Energias Renovables	459,77	593,26	591,87	-0,23	544,43	748,88	747,20	-0,22
MATERIALES BASICOS,IND.Y CONS.	**1.199,04**	**1.235,53**	**1.230,10**	**-0,44**	**2.271,99**	**2.461,30**	**2.450,50**	**-0,44**
Minerales,Metales y Transform.	1.100,44	1.263,01	1.256,32	-0,53	1.629,65	1.905,83	1.895,73	-0,53
Fabric.y Montaje Bienes Equipo	1.529,53	1.244,71	1.234,48	-0,82	2.758,21	2.538,82	2.517,98	-0,82
Construcción	1.312,91	1.447,37	1.443,35	-0,28	2.326,33	2.652,85	2.645,45	-0,28
Materiales de Construcción	124,18	119,34	114,92	-3,70	158,96	152,76	147,10	-3,71
Industria Química	212,85	336,63	330,84	-1,72	402,35	644,23	633,16	-1,72
Ingeniería y Otros	1.632,70	1.476,29	1.471,70	-0,31	4.717,64	4.365,03	4.351,89	-0,30
Aeroespacial	2.918,36	3.904,35	3.890,37	-0,36	3.392,32	4.612,42	4.595,90	-0,36
BIENES DE CONSUMO	**4.754,44**	**4.676,24**	**4.655,17**	**-0,45**	**6.611,82**	**6.637,67**	**6.607,68**	**-0,45**
Alimentación y Bebidas	2.163,70	2.274,75	2.275,35	+0,03	3.142,98	3.389,78	3.390,71	+0,03
Textil,Vestido y Calzado	7.130,18	6.414,77	6.386,65	-0,44	9.294,85	8.535,27	8.497,86	-0,44
Papel y Artes Gráficas	1.044,18	1.950,84	1.925,60	-1,29	2.376,14	4.654,36	4.593,67	-1,30
Prod.Farmaceut.y Biotecnología	2.320,59	2.686,80	2.659,08	-1,03	3.803,72	4.472,94	4.426,83	-1,03
Otros Bienes de Consumo	3.800,18	6.340,09	6.565,00	+3,55	5.804,58	9.833,69	10.182,53	+3,55
SERVICIOS DE CONSUMO	**1.331,15**	**1.647,47**	**1.641,00**	**-0,39**	**2.443,24**	**3.136,19**	**3.124,03**	**-0,39**
Ocio, Turismo y Hostelería	645,05	666,38	667,09	+0,11	743,12	774,39	775,25	+0,11
Comercio	89,00	81,75	82,04	+0,35	171,29	163,57	164,15	+0,35
Medios Comunicac. y Publicidad	559,77	468,84	469,54	+0,15	877,96	777,88	779,23	+0,17
Transportes y Distribución	3.802,11	5.067,07	5.029,76	-0,74	4.741,37	6.512,46	6.464,62	-0,73
Autopistas y Aparcamientos	1.480,02	2.068,36	2.065,02	-0,16	4.441,33	6.499,42	6.488,93	-0,16
Otros Servicios	2.399,48	2.661,84	2.648,75	-0,49	3.159,29	3.737,47	3.719,14	-0,49
SERVS.FINANCIEROS E INMOBILIA.	**561,08**	**622,73**	**619,98**	**-0,44**	**1.204,17**	**1.399,34**	**1.393,17**	**-0,44**
Bancos y Cajas de Ahorros	498,18	553,55	550,77	-0,50	1.052,58	1.225,96	1.219,82	-0,50
Seguros	1.840,78	1.846,31	1.843,10	-0,17	3.138,67	3.278,38	3.272,66	-0,17
Sociedades Cartera y Holdings	1.796,31	2.171,92	2.151,62	-0,93	2.720,46	3.370,80	3.339,47	-0,93
Inmobiliarias y Otros	215,87	251,40	253,91	+1,00	679,96	797,82	805,71	+0,99
Servicios de Inversion	904,30	861,94	865,80	+0,45	1.952,75	1.975,74	1.984,59	+0,45
Sociedades de Inversión Inmobi	1.241,02	1.470,83	1.474,55	+0,25	1.550,39	1.895,46	1.900,29	+0,25
TECNOLOGIA Y TELECOMUNICACION.	**862,47**	**934,76**	**926,90**	**-0,84**	**1.718,24**	**1.923,05**	**1.906,88**	**-0,84**
Telecomunicaciones y Otros	674,90	645,74	640,22	-0,85	1.406,32	1.401,58	1.389,61	-0,85
Electrónica y Software	2.674,77	3.684,58	3.654,41	-0,82	3.755,95	5.267,45	5.224,32	-0,82

Energías Renovables: Base 29-06-2007=1.000

Servicios de Inversión: Base 29-12-2006=1.000

Date: 29th December 2017

BOLETÍN DE COTIZACIÓN
Bolsa de Madrid

BOLSA DE MADRID

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ÍNDICES SECTORIALES Y SUBSECTORIALES BOLSA DE MADRID (Base 29-12-2004=1.000)
SECTORIAL AND SUBSECTORIAL INDEXES MADRID STOCK EXCHANGE (Base 29-12-2004=1.000)

	Indice Normal *Normal Index*				Indice Total *Total Index*			
	29 DIC.2017	Prec. *Prev.*	Cierre *Close*	Dif % *Dif %*	29 DIC.2017	Prec. *Prev.*	Cierre *Close*	Dif % *Dif %*
PETROLEO Y ENERGIA	**1.308,71**	**1.376,19**	**1.388,34**	**+0,88**	**2.561,20**	**2.839,89**	**2.864,98**	**+0,88**
Petróleo	813,89	781,88	777,18	-0,60	1.652,24	1.681,62	1.671,53	-0,60
Electricidad y Gas	1.533,95	1.649,79	1.670,97	+1,28	3.011,39	3.410,52	3.454,34	+1,28
Energias Renovables	591,87	655,66	648,91	-1,03	747,20	841,60	832,93	-1,03
MATERIALES BASICOS,IND.Y CONS.	**1.230,10**	**1.105,79**	**1.124,10**	**+1,66**	**2.450,50**	**2.283,67**	**2.321,15**	**+1,64**
Minerales,Metales y Transform.	1.256,32	921,31	938,73	+1,89	1.895,73	1.471,03	1.498,98	+1,90
Fabric.y Montaje Bienes Equipo	1.234,48	1.086,01	1.106,17	+1,86	2.517,98	2.243,97	2.285,76	+1,86
Construcción	1.443,35	1.371,12	1.394,65	+1,72	2.645,45	2.616,64	2.661,25	+1,70
Materiales de Construcción	114,92	39,19	38,60	-1,51	147,10	50,17	49,41	-1,51
Industria Química	330,84	357,67	360,22	+0,71	633,16	692,18	697,11	+0,71
Ingeniería y Otros	1.471,70	1.141,95	1.158,88	+1,48	4.351,89	3.558,20	3.605,56	+1,33
Aeroespacial	3.890,37	3.916,01	3.904,35	-0,30	4.595,90	4.702,98	4.688,99	-0,30
BIENES DE CONSUMO	**4.655,17**	**3.865,68**	**3.875,57**	**+0,26**	**6.607,68**	**5.658,34**	**5.673,77**	**+0,27**
Alimentación y Bebidas	2.275,35	2.068,64	2.084,04	+0,74	3.390,71	3.170,23	3.193,78	+0,74
Textil,Vestido y Calzado	6.386,65	4.923,26	4.914,29	-0,18	8.497,86	6.748,67	6.736,38	-0,18
Papel y Artes Gráficas	1.925,60	2.107,62	2.155,73	+2,28	4.593,67	5.502,58	5.639,32	+2,49
Prod.Farmaceut.y Biotecnología	2.659,08	2.475,54	2.489,80	+0,58	4.426,83	4.199,61	4.223,74	+0,57
Otros Bienes de Consumo	6.565,00	5.895,70	6.017,85	+2,07	10.182,53	9.712,32	9.913,54	+2,07
SERVICIOS DE CONSUMO	**1.641,00**	**1.311,38**	**1.317,85**	**+0,49**	**3.124,03**	**2.585,79**	**2.598,63**	**+0,50**
Ocio, Turismo y Hostelería	667,09	433,45	435,42	+0,45	775,25	510,79	513,17	+0,47
Comercio	82,04	9,21	8,96	-2,71	164,15	19,78	19,25	-2,68
Medios Comunicac. y Publicidad	469,54	274,35	278,78	+1,61	779,23	497,07	505,03	+1,60
Transportes y Distribución	5.029,76	4.432,03	4.449,50	+0,39	6.464,62	5.928,43	5.952,13	+0,40
Autopistas y Aparcamientos	2.065,02	2.043,87	2.043,87	+0,00	6.488,93	6.563,75	6.563,75	+0,00
Otros Servicios	2.648,75	1.807,99	1.843,50	+1,96	3.719,14	2.599,09	2.650,20	+1,97
SERVS.FINANCIEROS E INMOBILIA.	**619,98**	**449,32**	**452,10**	**+0,62**	**1.393,17**	**1.052,13**	**1.058,62**	**+0,62**
Bancos y Cajas de Ahorros	550,77	388,56	390,95	+0,62	1.219,82	897,49	903,00	+0,61
Seguros	1.843,10	1.617,09	1.607,15	-0,61	3.272,66	3.003,70	2.985,02	-0,62
Sociedades Cartera y Holdings	2.151,62	1.935,31	1.983,36	+2,48	3.339,47	3.098,41	3.175,73	+2,50
Inmobiliarias y Otros	253,91	191,96	187,53	-2,31	805,71	611,49	597,35	-2,31
Servicios de Inversion	865,80	808,86	803,62	-0,65	1.984,59	1.973,76	1.960,94	-0,65
Sociedades de Inversión Inmobi	1.474,55	1.486,90	1.427,91	-3,97	1.900,29	1.974,69	1.896,62	-3,95
TECNOLOGIA Y TELECOMUNICACION.	**926,90**	**879,43**	**876,32**	**-0,35**	**1.906,88**	**1.872,20**	**1.865,54**	**-0,36**
Telecomunicaciones y Otros	640,22	588,79	587,60	-0,20	1.389,61	1.339,13	1.336,35	-0,21
Electrónica y Software	3.654,41	3.673,28	3.652,54	-0,56	5.224,32	5.340,05	5.309,90	-0,56

Energías Renovables: Base 29-06-2007=1.000

Servicios de Inversión: Base 29-12-2006=1.000

Date: 31st December 2018

BOLETÍN DE COTIZACIÓN
Bolsa de Madrid

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ÍNDICES SECTORIALES Y SUBSECTORIALES BOLSA DE MADRID (Base 29-12-2004=1.000)
SECTORIAL AND SUBSECTORIAL INDEXES MADRID STOCK EXCHANGE (Base 29-12-2004=1.000)

	Indice Normal *Normal Index*				Indice Total *Total Index*			
	31 DIC.2018	Prec. *Prev.*	Cierre *Close*	Dif % *Dif %*	31 DIC.2018	Prec. *Prev.*	Cierre *Close*	Dif % *Dif %*
PETROLEO Y ENERGIA	**1.388,34**	**1.609,44**	**1.588,00**	**-1,33**	**2.864,98**	**3.498,59**	**3.451,86**	**-1,34**
Petróleo	777,18	779,67	768,90	-1,38	1.671,53	1.790,91	1.766,19	-1,38
Electricidad y Gas	1.670,97	2.005,94	1.979,16	-1,34	3.454,34	4.355,48	4.297,17	-1,34
Energias Renovables	648,91	1.034,19	1.040,83	+0,64	832,93	1.327,46	1.335,98	+0,64
MATERIALES BASICOS,IND.Y CONS.	**1.124,10**	**1.397,91**	**1.403,44**	**+0,40**	**2.321,15**	**2.978,82**	**2.992,21**	**+0,45**
Minerales,Metales y Transform.	938,73	988,25	979,81	-0,85	1.498,98	1.632,90	1.628,76	-0,25
Fabric.y Montaje Bienes Equipo	1.106,17	1.338,47	1.339,42	+0,07	2.285,76	2.812,53	2.814,50	+0,07
Construcción	1.394,65	1.786,35	1.800,03	+0,77	2.661,25	3.547,71	3.574,90	+0,77
Materiales de Construcción	38,60	37,57	35,66	-5,08	49,41	48,09	45,63	-5,12
Industria Química	360,22	301,92	296,13	-1,92	697,11	601,51	589,99	-1,92
Ingeniería y Otros	1.158,88	1.370,73	1.379,83	+0,66	3.605,56	4.298,27	4.326,51	+0,66
Aeroespacial	3.904,35	6.119,22	6.067,01	-0,85	4.688,99	7.452,60	7.389,01	-0,85
BIENES DE CONSUMO	**3.875,57**	**5.269,11**	**5.223,81**	**-0,86**	**5.673,77**	**7.946,98**	**7.878,70**	**-0,86**
Alimentación y Bebidas	2.084,04	2.145,92	2.120,71	-1,17	3.193,78	3.447,49	3.406,97	-1,18
Textil,Vestido y Calzado	4.914,29	6.973,89	6.908,68	-0,94	6.736,38	9.869,59	9.777,28	-0,94
Papel y Artes Gráficas	2.155,73	1.610,56	1.613,42	+0,18	5.639,32	4.321,65	4.329,40	+0,18
Prod.Farmaceut.y Biotecnología	2.489,80	3.463,55	3.436,27	-0,79	4.223,74	5.968,48	5.921,39	-0,79
Otros Bienes de Consumo	6.017,85	7.994,63	8.011,73	+0,21	9.913,54	14.007,34	14.037,31	+0,21
SERVICIOS DE CONSUMO	**1.317,85**	**1.446,34**	**1.431,62**	**-1,02**	**2.598,63**	**3.095,28**	**3.063,72**	**-1,02**
Ocio, Turismo y Hostelería	435,42	467,49	465,38	-0,45	513,17	558,67	556,13	-0,45
Comercio	8,96	7,12	7,01	-1,54	19,25	47,72	47,16	-1,17
Medios Comunicac. y Publicidad	278,78	268,29	270,32	+0,76	505,03	528,76	532,69	+0,74
Transportes y Distribución	4.449,50	5.071,87	5.007,86	-1,26	5.952,13	7.383,20	7.290,73	-1,25
Otros Servicios	1.843,50	1.458,57	1.457,42	-0,08	2.650,20	2.173,47	2.171,79	-0,08
SERVICIOS FINANCIEROS	**452,10**	**441,92**	**440,43**	**-0,34**	**1.058,62**	**1.088,49**	**1.084,79**	**-0,34**
Bancos y Cajas de Ahorros	390,95	378,75	377,47	-0,34	903,00	920,32	917,21	-0,34
Seguros	1.607,15	1.615,41	1.599,76	-0,97	2.985,02	3.143,59	3.113,02	-0,97
Sociedades Cartera y Holdings	1.983,36	2.235,20	2.243,77	+0,38	3.175,73	3.699,46	3.713,54	+0,38
Servicios de Inversion	803,62	1.105,00	1.108,76	+0,34	1.960,94	2.851,76	2.861,45	+0,34
TECNOLOGIA Y TELECOMUNICACION.	**876,32**	**921,03**	**915,62**	**-0,59**	**1.865,54**	**2.052,47**	**2.040,43**	**-0,59**
Telecomunicaciones y Otros	587,60	565,95	561,01	-0,87	1.336,35	1.374,24	1.362,38	-0,86
Electrónica y Software	3.652,54	4.384,51	4.376,88	-0,17	5.309,90	6.482,57	6.471,30	-0,17
SERVICIOS INMOBILIARIOS	**1.000,00**	**1.155,14**	**1.156,58**	**+0,12**	**1.000,00**	**1.191,51**	**1.192,99**	**+0,12**
Inmobiliarias y Otros	187,53	165,20	166,97	+1,07	597,35	531,42	537,13	+1,07
SOCIMI	1.427,91	1.765,38	1.764,22	-0,07	1.896,62	2.430,27	2.428,70	-0,06

Energías Renovables: Base 29-06-2007=1.000
Servicios de Inversión: Base 29-12-2006=1.000
Servicios Inmobiliarios: Base 31-12-2018=1.000
SOCIMI: Base 31-12-2014=1.000

9.3 Appendix 3 – Cost of equity

9.3.1 Build Up Discount Rate

	Build Up Discount Rate					
	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018
	07/06/2013					28/12/2018
BME index, all shares	19,99 €					24,52 €
Rf		**1,64**	**1,807**	**1,33**	**1,45**	**1,444**
Rm (5 year change)				**4,120**		
Food&Beverage index	2.568,95 €	2.497,08 €	3.238,28 €	3.142,98 €	3.390,71 €	3.193,78 €
Industry premium		**-2,798**	**29,683**	**-2,943**	**7,882**	**-5,808**
Boston Beer Co. — Equity		$436.140.000,00	$461.220.000,00	$446.580.000,00	$423.520.000,00	$460.320.000,00
Share price	$218,68	$280,27	$177,52	$169,85	$191,10	$245,88
Growth %		28,164	-36,661	-4,321	12,511	28,666
Average Equity 5 years				$445.556.000,00		
Average growth				5,672		
Craft Brew Alliance — Equity		$115.417.000,00	$118.738.000,00	$119.661.000,00	$130.791.000,00	$136.435.000,00
Share Price	$16,53	$12,85	$8,37	$16,90	$19,20	$15,41
Growth %		-22,263	-34,864	101,912	13,609	-19,740
Average Equity 5 years				$124.208.400,00		
Average growth				7,731		
Interest Expense		$431.000,00	$572.000,00	$709.000,00	$715.000,00	$614.000,00
Long-term debt		$13.720.000,00	$18.991.000,00	$27.946.000,00	$32.599.000,00	$46.573.000,00
Cd		3,141	3,012	2,537	2,193	1,318
Vic Brewery — Equity		-22.574,65 €	-17.627,97 €	6.788,44 €	23.949,80 €	58.396,29 €
R company size		-	-	**23,565**	**21,532**	**20,094**
Interest Expense		5.713,72 €	5.050,25 €	4.353,26 €	4.776,86 €	4.372,26 €
Long-term debt		64.568,48 €	54.648,47 €	81.808,33 €	101.493,43 €	80.357,14 €
Cd		8,849	9,241	5,321	4,707	5,441
R company specific		**5,708**	**6,229**	**2,784**	**2,513**	**4,123**
Ke		-	-	**28,856**	**37,497**	**23,973**
Societat Cervesera Artesenca — Equity		101.455,85 €	105.251,15 €	108.982,56 €	112.445,89 €	76.075,90 €
Return company size		**19,203**	**19,144**	**19,088**	**19,037**	**19,667**
Interest Expense		950,01 €	746,98 €	631,74 €	296,41 €	167,98 €
Long-term debt		24.511,55 €	31.568,91 €	29.629,13 €	25.936,95 €	21.516,95 €
Cd		3,876	2,366	2,132	1,143	0,781
R company specific		**0,734**	**-0,646**	**-0,405**	**-1,051**	**-0,538**
Ke		**22,900**	**54,108**	**21,190**	**31,439**	**18,886**
Rosita — Equity		381.563,78 €	625.139,34 €	626.807,34 €	605.219,93 €	542.621,47 €
Return company size		**17,067**	**16,270**	**16,266**	**16,323**	**16,499**
Interest Expense		4.375,82 €	399,80 €	1.546,88 €	2.271,00 €	1.715,26 €

	Long-term debt		151.128,75 €	8.207,74 €	79.536,02 €	67.999,80 €	56.311,28 €
	Cd		2,895	4,871	1,945	3,340	3,046
	R company specific		**-0,246**	**1,859**	**-0,592**	**1,146**	**1,728**
	Ke		**19,783**	**53,739**	**18,181**	**30,921**	**17,982**
Or i Plata Cervesers	Equity		64.176,16 €	64.938,49 €	64.966,73 €	65.819,76 €	68.952,98 €
	Return company size		**19,942**	**19,923**	**19,922**	**19,901**	**19,826**
	Interest Expense		6.814,95 €	4.775,32 €	3.568,57 €	2.742,70 €	2.337,20 €
	Long-term debt		120.470,13 €	100.194,45 €	81.577,60 €	71.859,72 €	68.659,72 €
	Cd		5,657	4,766	4,374	3,817	3,404
	R company specific		**2,516**	**1,754**	**1,837**	**1,623**	**2,086**
	Ke		**25,420**	**57,287**	**24,267**	**34,976**	**21,668**
Companyia Cervesera del Montseny	Equity		231.698,69 €	236.157,81 €	263.048,47 €	249.598,78 €	277.542,44 €
	Return company size		**17,871**	**17,840**	**17,666**	**17,751**	**17,580**
	Interest Expense		3.744,43 €	5.696,83 €	9.126,25 €	17.093,57 €	19.729,61 €
	Long-term debt		189.652,18 €	186.474,37 €	527.626,33 €	654.457,17 €	819.680,72 €
	Cd		1,974	3,055	1,730	2,612	2,407
	R company specific		**-1,167**	**0,043**	**-0,807**	**0,419**	**1,089**
	Ke		**19,666**	**53,493**	**19,366**	**31,622**	**18,425**
Malta 51	Equity		30.317,84 €	105.307,12 €	100.184,89 €	101.389,01 €	100.778,79 €
	Return company size		**21,151**	**19,143**	**19,223**	**19,204**	**19,214**
	Interest Expense		0,00 €	0,00 €	717,40 €	690,78 €	514,96 €
	Long-term debt		0,00 €	11.120,38 €	14.927,37 €	9.857,48 €	5.308,99 €
	Cd		0,000	0,000	4,806	7,008	9,700
	R company specific		**-3,141**	**-3,012**	**2,269**	**4,814**	**8,381**
	Ke		**20,972**	**51,741**	**23,999**	**37,471**	**27,351**
La Pirata	Equity		-	201.142,89 €	213.031,23 €	326.876,80 €	386.391,44 €
	Return company size		**-**	**18,099**	**18,007**	**17,316**	**17,046**
	Interest Expense		-	888,86 €	15.449,26 €	16.481,55 €	13.743,83 €
	Long-term debt		-	355.778,54 €	256.938,36 €	327.312,33 €	299.284,59 €
	Cd		-	0,250	6,013	5,035	4,592
	R company specific		**-**	**-2,762**	**3,476**	**2,842**	**3,274**
	Ke		**-**	**50,947**	**23,990**	**33,610**	**20,076**
Homebrew	Equity		119.772,70 €	185.881,89 €	251.431,09 €	326.325,88 €	402.926,59 €
	Return company size		**18,935**	**18,227**	**17,739**	**17,319**	**16,979**
	Interest Expense		1.057,52 €	3.149,69 €	8.857,49 €	13.516,08 €	10.861,63 €
	Long-term debt		68.707,81 €	185.435,92 €	463.108,44 €	389.596,26 €	306.130,39 €
	Cd		1,539	1,699	1,913	3,469	3,548
	R company specific		**-1,602**	**-1,313**	**-0,624**	**1,276**	**2,230**
	Ke		**20,296**	**52,523**	**19,622**	**32,047**	**18,964**
Garage Beer Co.	Equity		-	398.468,98 €	1.072.006,62 €	906.559,37 €	872.424,12 €
	Return company size		**-**	**16,997**	**15,400**	**15,671**	**15,733**
	Interest Expense			972,50 €	4.724,90 €	47.836,95 €	52.263,92 €
	Long-term debt			170.120,00 €	1.490.652,54 €	1.564.121,24 €	1.283.388,30 €

	Cd			0,572	0,317	3,058	4,072
	R company specific			**-2,440**	**-2,220**	**0,865**	**2,754**
	Ke			**50,166**	**15,687**	**29,988**	**18,243**

9.3.2 Capital Asset Pricing Model

	Capital Asset Pricing Model						
		FY2013	FY2014	FY2015	FY2016	FY2017	FY2018
		07/06/2013					28/12/2018
	BME	19,99					24,52
	Rf		**1,64**	**1,807**	**1,33**	**1,45**	**1,444**
	Rm (yearly change)				**4,120**		
	D/E Craft Brew Alliance		0,119	0,160	0,234	0,249	0,341
	Corporate tax rate USA		0,21	0,21	0,21	0,21	0,21
	β (5 yr. mly.) Craft Brew All.		0,7	0,7	0,7	0,7	0,7
	Unlevered β Craft Brew All.		0,640	0,621	0,591	0,585	0,551
Companyia Cervesera Montseny	D/E		0,819	0,790	2,006	2,622	2,953
	β		0,393	0,368	0,889	1,150	1,221
	Ke		**2,614**	**2,658**	**3,811**	**4,521**	**4,712**
Garage Beer Co	D/E		-	0,427	1,391	1,725	1,471
	β		-	0,199	0,616	0,757	0,608
	Ke		**-**	**2,267**	**3,050**	**3,471**	**3,072**
Societat Cervesera Artesenca	D/E		0,242	0,300	0,272	0,231	0,283
	β		0,116	0,140	0,120	0,101	0,117
	Ke		**1,928**	**2,130**	**1,666**	**1,720**	**1,757**
Rosita	D/E		0,396	0,013	0,127	0,112	0,104
	β		0,190	0,006	0,056	0,049	0,043
	Ke		**2,111**	**1,821**	**1,487**	**1,582**	**1,559**
Homebrew	D/E		0,574	0,998	1,842	1,194	0,760
	β		0,275	0,465	0,816	0,524	0,314
	Ke		**2,323**	**2,883**	**3,608**	**2,848**	**2,285**
Malta 51	D/E		-	0,106	0,149	0,097	0,053
	β		-	0,049	0,066	0,043	0,022
	Ke		-	**1,921**	**1,514**	**1,564**	**1,502**
Vic Brewery	D/E		-2,860	-3,100	12,051	4,238	1,376
	β		-1,373	-1,445	5,341	1,859	0,569
	Ke		**-1,764**	**-1,535**	**16,232**	**6,413**	**2,967**
Or i Plata Cervesers	D/E		1,877	1,543	1,256	1,092	0,996
	β		0,901	0,719	0,557	0,479	0,412
	Ke		**3,874**	**3,470**	**2,883**	**2,729**	**2,546**
La Pirata	D/E		-	1,769	1,206	1,001	0,775
	β		-	0,824	0,535	0,439	0,320
	Ke		-	**3,714**	**2,821**	**2,623**	**2,301**
	Corporate tax rate Spain		0,25	0,25	0,25	0,25	0,25

9.4 Appendix 4 – WACC

9.4.1 Build Up Discount Rate

		FY2014	FY2015	FY2016	FY2017	FY2018
Corporate Tax		**0,25**	**0,25**	**0,25**	**0,25**	**0,25**
Vic Brewery	E/(D+E)	-	-	0,077	0,191	0,421
	D/(D+E)	-	-	0,923	0,809	0,579
	Kd	-	-	6,931	3,991	3,530
	Ke	-	-	28,856	37,497	23,973
	WACC	**-**	**-**	**8,611**	**10,388**	**12,134**
Societat Cervesera Artesenca	E/(D+E)	0,805	0,769	0,786	0,813	0,780
	D/(D+E)	0,195	0,231	0,214	0,187	0,220
	Kd	2,907	1,775	1,599	0,857	0,586
	Ke	22,900	54,108	21,190	31,439	18,886
	WACC	**19,009**	**42,033**	**17,002**	**25,707**	**14,851**
Rosita	E/(D+E)	0,716	0,987	0,887	0,899	0,906
	D/(D+E)	0,284	0,013	0,113	0,101	0,094
	Kd	2,172	3,653	1,459	2,505	2,285
	Ke	19,783	53,739	18,181	30,921	17,982
	WACC	**14,786**	**53,090**	**16,298**	**28,051**	**16,506**
Or i Plata Cervesers	E/(D+E)	0,348	0,393	0,443	0,478	0,501
	D/(D+E)	0,652	0,607	0,557	0,522	0,499
	Kd	4,243	3,575	3,281	2,863	2,553
	Ke	25,420	57,287	24,267	34,976	21,668
	WACC	**11,603**	**24,697**	**12,584**	**18,215**	**12,131**
Companyia Cervesera del Montseny	E/(D+E)	0,550	0,559	0,333	0,276	0,253
	D/(D+E)	0,450	0,441	0,667	0,724	0,747
	Kd	1,481	2,291	1,297	1,959	1,805
	Ke	19,666	53,493	19,366	31,622	18,425
	WACC	**11,481**	**30,902**	**7,309**	**10,148**	**6,009**
Malta 51	E/(D+E)	1	0,904	0,870	0,911	0,950
	D/(D+E)	0	0,096	0,130	0,089	0,050
	Kd	0	0	3,604	5,256	7,275
	Ke	20,972	51,741	23,999	37,471	27,351
	WACC	**20,972**	**46,799**	**21,355**	**34,616**	**26,347**
La Pirata	E/(D+E)	-	0,361	0,453	0,500	0,564
	D/(D+E)	-	0,639	0,547	0,500	0,436
	Kd	-	0,187	4,510	3,777	3,444
	Ke	-	50,947	23,990	33,610	20,076
	WACC	**-**	**18,520**	**13,340**	**18,683**	**12,817**
Homebrew	E/(D+E)	0,635	0,501	0,352	0,456	0,568
	D/(D+E)	0,365	0,499	0,648	0,544	0,432
	Kd	1,154	1,274	1,434	2,602	2,661
	Ke	20,296	52,523	19,622	32,047	18,964

	WACC	**13,318**	**26,929**	**7,834**	**16,023**	**11,926**
Garage Beer Co.	E/(D+E)	-	0,701	0,418	0,367	0,405
	D/(D+E)	-	0,299	0,582	0,633	0,595
	Kd	-	0,429	0,238	2,294	3,054
	Ke	-	50,166	15,687	29,988	18,243
	WACC	**-**	**35,285**	**6,701**	**12,456**	**9,201**

9.4.2 Capital Asset Pricing Model

		FY2014	FY2015	FY2016	FY2017	FY2018
Corporate Tax		0,25	0,25	0,25	0,25	0,25
Vic Brewery	E/(D+E)	-	-	0,077	0,191	0,421
	D/(D+E)	-	-	0,923	0,809	0,579
	Kd	-	-	6,931	3,991	3,530
	Ke	-3,728	-3,62	26,799	10,021	4,233
	WACC	**-**	**-**	**8,453**	**5,142**	**3,826**
Societat Cervesera Artesenca	E/(D+E)	0,805	0,769	0,786	0,813	0,780
	D/(D+E)	0,195	0,231	0,214	0,187	0,220
	Kd	2,907	1,775	1,599	0,857	0,586
	Ke	2,093	2,332	1,905	1,917	2,017
	WACC	**2,252**	**2,203**	**1,839**	**1,718**	**1,702**
Rosita	E/(D+E)	0,716	0,987	0,887	0,899	0,906
	D/(D+E)	0,284	0,013	0,113	0,101	0,094
	Kd	2,172	3,653	1,459	2,505	2,285
	Ke	2,383	1,830	1,598	1,677	1,654
	WACC	**2,323**	**1,854**	**1,582**	**1,761**	**1,714**
Or i Plata Cervesers	E/(D+E)	0,348	0,393	0,443	0,478	0,501
	D/(D+E)	0,652	0,607	0,557	0,522	0,499
	Kd	4,243	3,575	3,281	2,863	2,553
	Ke	5,163	4,508	3,984	3,658	3,462
	WACC	**4,563**	**3,942**	**3,592**	**3,243**	**3,009**
Companyia Cervesera del Montseny	E/(D+E)	0,550	0,559	0,333	0,276	0,253
	D/(D+E)	0,450	0,441	0,667	0,724	0,747
	Kd	1,481	2,291	1,297	1,959	1,805
	Ke	3,176	3,190	5,570	6,754	7,431
	WACC	**2,413**	**2,793**	**2,719**	**3,283**	**3,228**
Malta 51	E/(D+E)	1,000	0,904	0,870	0,911	0,950
	D/(D+E)	0,000	0,096	0,130	0,089	0,050
	Kd	0,000	0,000	3,604	5,256	7,275
	Ke	-	1,992	1,645	1,647	1,551
	WACC	**-**	**1,802**	**1,899**	**1,966**	**1,837**
La Pirata	E/(D+E)	-	0,361	0,453	0,500	0,564
	D/(D+E)	-	0,639	0,547	0,500	0,436

	Kd	-	0,187	4,510	3,777	3,444
	Ke	-	4,904	3,879	3,475	3,014
	WACC	**-**	**1,891**	**4,224**	**3,626**	**3,202**
Homebrew	E/(D+E)	0,635	0,501	0,352	0,456	0,568
	D/(D+E)	0,365	0,499	0,648	0,544	0,432
	Kd	1,154	1,274	1,434	2,602	2,661
	Ke	2,717	3,553	5,223	3,865	2,984
	WACC	**2,147**	**2,415**	**2,767**	**3,178**	**2,845**
Garage Beer Co.	E/(D+E)	-	0,701	0,418	0,367	0,405
	D/(D+E)	-	0,299	0,582	0,633	0,595
	Kd	-	0,429	0,238	2,294	3,054
	Ke	-	2,555	4,269	4,940	4,426
	WACC	**-**	**1,918**	**1,924**	**3,265**	**3,609**