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Instituto Superior de Contabilidade e Administração de Aveiro

Adriana Jose Songa

A influência do capital circulante no desempenho das empresas da Indústria de bicicletas de Portugal e Espanha

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Dissertação apresentada à Universidade de Aveiro para cumprimento dos requisitos necessários à obtenção do grau de Mestre em Finanças, realizada sob a orientação científica do Doutor César Faustino da Silva Bastos, Professor Adjunto Convidado do Instituto Superior de Contabilidade e Administração da Universidade de Aveiro

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palavras-chave Capital circulante,desempenho,dias de contas a receber,dias contas a pagar, dias de inventario, ciclo de conversão monetária, proveito operacional bruto.

resumo O estudo aborda uma revisao de literatura que enquadra a influência so capital circulante no desempenho das empresas em Portugal e Espanha no setor de bicicletas. Os dados foram extraídos da base de dados SABI de 111 empresas localizadas em Portugal e Espanha, das quais apenas 51 foram selecionadas devido ao excesso de dados em falta para os períodos de 2013-2017. Os resultados da analyse mostram que existe uma forte relação negativa entre o inventário, ciclo de tesouraria, contas a receber e o resultado operacional.

keywords

Working capital, performance, account receivable days, account payable days, inventory days, cash conversion cycle, gross operating income.

abstract

The purpose of the study was to do a literature review that examined the influence of working capital management on business performance in Portugal and Spain in the bicycle industry. Data was extracted from the data base SABI of 111 businesses located in both Portugal and Spain from which only 51 were selected due to excessive missing data for the periods 2013-2017. Data was analyzed using SPSS, correlation and multiple regression. The findings show that there is strong negative relationship between inventory, cash conversion cycle, account receivable days and gross operating income.

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List of Abbreviations

APP -Account payable period
ARP -Account receivable period
AR - Account receivable
AP - Account payable
ARD -Account receivable days
BLOAN-Bank loan
CCC -Cash Conversion Cycle
CR -Current Ratio
CF_V -Cash flow volatility
CC CONC - Commercial credit given to clients.
CURRAS -Current Asset
CF/CFLOW-Cash flow
CUOMER- Market Share
CREAC-Asset growth
CRECUOMER-Growth of market share
CRECOM- Commercial credit
CC REC-Commercial credit received
DIV - Cost of debt
DR -Debt ratio
EBIT -Earnings before income tax
EBT -Earnings before tax
EFICOS- Cost efficiency
ENDEU-Borrowings
FATA -Fixed financial asset to total asset
FE -Forecast error
FICAC-Dummy variable
FL -Firm Leverage
FCOST-Financial cost
GROSSPR- Gross operating profitability
GDP -Gross domestic profit
GOI -Gross Operating Income
GMM -Generalized method of moments
GPROF-Gross profit
IDADE- the age of the company
ID -Inventory days
ICP - Inventory conversion period
ICP -Inventory collection period
INV -Inventory
LOGAC- log of total asset
LIQUID-Liquidity
LOGED-Log of age
LTDEBT -Long term debt
LEV -Leverage
LIQ -Liquidity in general
MB -Gross margin
NTC -Net trade cycle
NPM -Net profit margin
NWC -Net working capital
NGROWTH-negative sales growth
OPM -Operating profit margin
PGROWTH- positive sale growth
PURCH-Purchase

ROA -Return on assets
ROTAC-Asset turnover
ROV - Operational sales profit
RACT -Asset turnover
ROE -Return on equity
SG -Sales growth
SDROE-Standard deviation of return on equity
SDV -Standard deviation
SOLV - Solvency in its restricted sense
SME -Small and medium enterprises
STLEV-Short term leverage
STFIND-Short term Finance debt
TC -Trade credit
TURN -Turnover
TCREC-Trade credit receivable
TCPAY- Trade credit payable
TCNET-Net trade credit
WCM -Working capital management
WC -Working Capital

1. Introduction

This dissertation is a result of a completed internship at a company called Portubike during the period 13/09/2017 and 31/03/2018. Portubike was an assembly business that used to be part of (as it closed down) the bicycle industry. The entity had an existence of more or less 3 years and as a seasonal manufacturer, the number of workers varied from 100 workers on peak seasons to less than 30 worker on low seasons. Product of a partnership, their main activities were assembling and selling high end bicycles throughout Europe. Located in the appendices of this dissertation is a summary of the most relevant aspects of my internship.

Working capital management (WCM) discusses the manner in which organizations handle their current assets and current liabilities. Businesses strive to use the right amount of working capital and administer it in the right way in order to find the optimal balance between current assets and current liabilities and ensure an overall business success as a result which includes: an increase in their profitability, and a recurrent flow of cash that allows day to day expenses to be covered whilst still maintaining a favourable liquidity status (Zietlow & Maness, 2005).

A good organization system in working capital management is crucial, particularly for production firms as it accounts for over half of its total assets. As for a trading or distribution business, WC represents even more than half of total assets and in so doing directly affects the performance of the business, unnecessary levels of current assets can easily result in a business attaining an inferior return on investment. From time to time, inaccurate course of action towards working capital management may lead to bankruptcy, even though their profitability may always be positive (Raheman & Nasr, 2007, Samiloglu & Demirgunes, 2008)**.**

Unfortunately working capital has not been given the right amount of attention it deserves in certain businesses or industries as an important business utility tool and a vital source of finance. The acquirement of the raw materials or product parts, to the continuous production and delivery of the end products is known as operating cycle or lifecycle of a business. This is one of the core objectives of working capital management. Another important objective that working capital management attempts to achieve is to preserve the cost of capital to a minimum (Merchant Solutions, 2016).

Working capital is very important for companies, according to the Institute of National Statistics (INE) in Portugal in 2016 (being it the last dated information they have) there are 1 192 102 businesses in Portugal. The businesses constitute the following in the Portuguese economy: a Total Asset of 580 364 455 (10^5 Euros), a Total Liability of 379 214 626 (10^5 Euros), total current asset of 258 071 531 (10^5 Euros), total non-current asset 322 292 924 (10^5 Euros), total current liability of 187 276 122 (10^5

Euros), total non-current liability of 191 938 504 (10^5 Euros), owners' equity of 201 149 828 (10^5 Euros) and a business volume of 340 479 969 (10^5 Euros) (INE, 2018). From these figures one can extract a number of indicators when relating to current and non-current assets and current and non-current liabilities which are reflected in the table below.

Table 1 – INE statistics summary

Portugal - 1 196 102 businesses (2016)	*Percentage (%)*
(Current asset/Total Asset)*100%	44.47
(Current Liability/Total Liability)*100%	49.39
SME's - 1 195 064 businesses	
(Current asset/Total Asset)*100%	45.44
(Current Liability/Total Liability)*100%	49.36
MICRO entities -1 150 336 businesses	
(Current asset/Total Asset)*100%	45.42
(Current Liability/Total Liability)*100%	44.29
BIG entities - 1038 businesses	
(Current asset/Total Asset)*100%	42.11
(Current Liability/Total Liability)*100%	49.45

Source: INE publications

The table above summarizes the following information about firms in Portugal:

- Total current assets represent 44.47% of the total assets of businesses in Portugal, 45.44% of the total assets of small and medium enterprises, 45.42% of the total assets of micro businesses and 42.11% of the total assets of big entities.
- Total current liabilities represent 49.39% of total liabilities of businesses in Portugal, 49.36% of total liabilities of small and medium enterprises, 44.29% total liabilities of micro businesses and 49.45% total liabilities of big entities. Overall these show us the importance and weight current assets and current liabilities have on a business's overall working capital for example current liability in small and medium enterprises and big enterprises were nearly half of total liabilities hence they cannot be left unchecked (INE, 2018). Having an interest for bicycles since I often commute with them and the

fact that we did my internship in a multinational bicycle company we found it applicable to indulge in the study of how working capital appears and is applied throughout the bicycle industry.
The Portuguese bicycle industry is made up of small and medium-sized businesses that provide jobs for more or less 7500 from which 1500 employees are directly integrated within the industry whilst the remaining 6000 are indirectly employed within the industry according to statistic in 2014. The yearly fabrication of bicycles in Portugal is over one million units, which positions Portugal on the third place as one of the major producers in the European ranking (EU 28) of the sector. There are currently more or less 20 businesses which are producers of bicycle components and more than 40 business which currently have the competence and the experience which is applicable to technology in terms of cycling and more (Critec, 2014).

The national industry association Abimota has responsibility over the bicycle industry hence through the Bike Value Portugal program has the main goal of searching and attracting further international investments so the industry can reach its full potential and weight in the local economy. So all stakeholders involved in the association or program use any opportunity presented by the association to invest substantially in production facilities, technology, engineering and logistics (AIECEP, 2018). Portugal has a strong focus of bicycle related establishments in areas around Agueda, which is south of Porto. On the one hand, the base is known to be strong with a significant rank in production within the European bicycle industry with distinguished parts makers such as Rodi, Miranda, Polisport and Miranda. On the other hand, Orbea, RTE, Avantisbike, Interbike, Miralago and AJMaias, are assembly companies in the country that are leading amidst bicycle manufacturers. Rodi and Miranda along with another partner, Ciclo Fapril partook, in a now fully operational well-known entirely automated and robotized aluminium frame factory Triangles with a growth expectation to the total capacity of 500 000 units by 2020 (AIECEP, 2018).

The objective of this paper is to analyze the influence that working capital has on firm's performance within the bicycle industry in Portugal and Spain. The research is quantitative and a correlation and multiple regression analysis was applied to analyze 51 companies using SPSS. Secondary data was extracted from the data base SABI ranging from the years 2013-2017.

The paper is divided into six different chapters whereby chapter one is the introduction, chapter two is the literature review, chapter three is the methodology, chapter four are the results and finally chapter six with the conclusion followed by the appendices.

2. Literature review

Working capital management

A number of theorists have defined working capital in various ways. It has been described: as an arithmetic variance amid two balance sheet summed up accounts the current asset and current liabilities. In other words it is the identified leftover after a firms current liabilities have been deducted from current assets on the balance sheet also known as the traditional definition of working capital (Bragg, 2017, Mars, 2009, Preve & Sarria-Allende, 2010, Sagner, 2011) which can be depicted into the following formula:

$$1. Working\ Capital = Current\ Assets - Current\ Liabilities$$

Working capital has many concepts or views: the money tied up in the daily functioning of a firm (Kortman, Wicks, & Ojeda, 2017), an art or a science that involves structuring the short term resources of a business in order to endure activities that may be in progress, assemble finances, enhance liquidity and profitability (Sanjay, 2017), a measure of operational efficiency and its small stretch of financial health (Investopedia, 2018), measures net position of firms (Fazzari & Petersen, 1993).

Working Capital was found to play a significant part when it came to an entities capital structure. After the first publication of the Adam Smith (1776) pertaining the issues around working capital the topic became prominent as it highlighted the detachment working capital had from fixed capital, though his definition of working capital doesn't differ from the current definitions today. Before Adam Smith was Dewing (1941) who in 1571 already found the separation of these two structures a key to maintaining a business's liquidity. Jose (1996) emphasizes the significance of the study by pointing out that even Miller and Modigliani's Modigliani & Miller (1958), realised the little attention that was rendered to analyse the connection between investment decisions, finance decisions and return on equity to owners when it came to managerial decisions and working capital management.

Studies on working capital management grew throughout the past few years owing to the 2008 financial crisis (Darun Ridzuan, 2008, Pirttila, 2014). Given the unreliable conditions of the credit markets revealed by the global crisis that affected most companies, it surfaced the need to thoroughly evaluate firm processes, structures and procedure changes. What was found to be common among those firms that survived the crisis was that, they were all obliged to drastically change their product growth strategies, overheads, the employment regulations and policies, and last but not least what this paper will be focusing on working capital management. Companies realised that by managing their working capital they would then be able to manage their short term finances and conquer capital

problems (Hill, Kelly, & Highfield, 2010). The business elements that are involved when relating to working capital are:

- The resourceful consumption of current assets and current liabilities of a business during the course of each stage of a company's operating cycle.
- The preparation, checking and administration of the business's collected works, payments and bank account totals.
- The supervision of debtors, inventories, creditors and international trades to reduce the financing on futile assets (Deloof, 2003).
- To collect and organize information to successfully use accessible resources and detect threats (Sagner, 2011).

Table 2 – Determinants of working capital

Working Capital	
Inventory	• Raw materials • Work In Progress • Finished Products
Receivables	• Amounts owed by Customers • Prepayments to Suppliers
Other Current Assets	• Prepaid expenses • Operating cash
Payables	• Amounts owed to suppliers • Prepayments by customers
Other Current Liabilities	• Short-term debt • Accrued expenses
Working Capital = Inventory + Account Receivables + Other Current Assets – Account Payables – Other Current Liabilities	

Determinants of Working Capital *	
Internal	External
▪ Nature and size of the business ▪ Operating efficiency ▪ Firm's production policy ▪ Firm's credit policy ▪ Availability of credit ▪ Growth of the business ▪ Profit margins ▪ Dividend policy	▪ Business cyles ▪ Changes in technology ▪ Seasonal variation ▪ Taxation policy ▪ Price level changes

** Working Capital Management, Manika Garg, Educreation Publishing, 2015*

Source: eFinancemanagement.com

It's an operation cycle doesn't run smoothly as a result of failure on the part of the management to adhere to working capital rules and needs, there might arise a working capital shortage. Therefore it's important for a firm to estimate its working capital very precisely in order to avoid unwanted build up of inventory and excess of capital.

The amount of working capital required for a business will depend on the ***business size and scale of operation***. There is no internationally rule on defining a small, medium or large firm. However, there are many existing ways to measure a firm, as a firm may appear large with one type of measurement

but small with another. Cases are the smaller the firm the more working capital demanded because these tend to encounter greater overhead costs on the one hand due to inadequate use of production supplies (Samiksha, 2014) . On the other hand small enterprises tend to be related to trading goods and although to start a small business a very small amount of fixed capital is needed, a great amount of working capital is needed to pay for daily expenses. However, in large entities the opposite occurs a large amount of fixed capital is needed in comparison to working capital in order to buy fixed assets (Diogo, 2013, kumar, 2010).

Nature of a business, refers to the sector of production a given business may be found in which can be primary, secondary or tertiary and is important to determine the amount of working capital that will be needed in the different companies. For example businesses that are into trading and financing have need of a high investment in working capital. However, public utilities and railway enterprises require in general less working capital in comparison to trading businesses as they have a bigger fixed investments and relatively because they sell services and not commodities. When it comes to manufacturing business the amount of working capital investment will depend on whether they focus on producer's goods or consumer goods whereby those focusing on producers goods generally investing less on working capital (Francis, 2014, Smriti, 2018).

Cash conversion cycle, this refers to how fast a company or business produces cash from sales of end products. For example when it comes to manufacturing company a working capital cycle of cash cycle would begin with buying the raw material and stores, converting these to inventory than add progressive labour and service costs to convert the inventory to finished goods than those as later sold giving a business cash. The longer the cycle the more working capital requirements vice-versa (Ganga, 2003).

Growth and expansion refers to the logical fact that the greater the growth of the business the higher the level of working capital that will be essential. If a business decides to expand or grow it will in the end have to increase investment in receivables and inventory in order to increase their sales unless profits are very high and can cover receivable and inventory. However, if a company is becoming small, working capital necessities also tend to drop (Bragg, 2018, Diogo, 2013, Ganga, 2003).

Account Payables this deals with payment terms done to payables where the longer the payment agreed with the supplier, the less the investment requirement for working capital necessities in effect gaining loans from suppliers. On the other hand, if payment terms are short, the business can run short of cash hence cumulating working capital necessities (Bragg, 2018).

Account receivables this refers to the payment terms firms set with their customers which needs to be thoroughly controlled. Short payment periods are advisable as quick collection and good modes of payments will in turn lead to low working capital necessities (Ganga, 2003).

Profit margin and dividend policy have a big influence on working capital because on the one hand, high net profit margins mean more money contributions towards working capital hence less working capital requirements. On the other hand, the more cash dividends distributed in elevated amounts, the less cash resources available for a business thus decreasing existing working capital. Business are advised to have constructive policies in relations to dividends thus leaving for net profits and keeping working capital at acceptable levels (Ganga, 2003).

Volume of Sales is considered one of the most vital factors that tend to affect a business level of working capital needs. In order for there to be sales operational costs are incurred in many areas, inventory is needed to produce products, receivable and payable are also directly or indirectly involved which make up working capital. Hence, when there is an increase in sales volume an increase in investment of working capital tends to follow (Diogo, 2013, Ganga, 2003).

Inventory or inventory turnover involves how fast inventory is turned into an end product and sold or how fast it leaves storing units resulting in less storing expenses. The higher the turnover the less working capital necessities. Inventory need to be thoroughly maintained at an optimum level allowing its availability throughout operation period without it being in excess or lacking (Ganga, 2003).

A business can be described as working at its optimum level when all resources needed to produce a specific product are used at minimum costs. ***Operation efficiency*** has the basic goal of putting various strategies and techniques in place which are then utilized to achieve the supplying of quality goods to clients that are cost effective and on time (Kokemuller, 2013) . Working capital is maintained in low levels when a business efficiently controls its operating costs and uses its current assets. As a result of operating efficiency a business will have an accelerated cash conversion cycle and an improved working capital status (Francis, 2014).

Credit policy, relates to buying and selling of goods on credit. A business will need a low quantity of working capital when it has a tendency of buying all products on credit and selling them by cash or advance basis. However, when a business buys products by cash and resells them on credit, as a result the money we tend to earn from sales will only be in our possession after sometime hence as a business we will be obliged to have in our reach a large amount of working capital for business continuity (Francis, 2014, kumar, 2010).

Production policy, varies per business; For instance some businesses may decide to halt or reduce their production levels in certain seasons which they may identify as off seasons. In addition during the same off seasons they may decide to decrease the amount of workers or amount of raw material purchases. As a result, working capital amounts will be less however for those that decide not to halt production during off seasons will certainly require an elevated quantity of working capital (Kumar, 2010).

Manufacturing process this is considered a determinant as the longer the period it takes to manufacture a product of complex character the greater the amount of working capital needed to fund the process. In addition, the longer the time required to make the product and the more money required to invest in the process the greater the inventory that will be held up in its production resulting in higher levels of working capital (Smriti, 2018).

Business cycle as a determinant deals with the fact that working capital necessities differ along with the variation in business activities. For example there is no necessity of greater working capital in boom periods which is when entities are flourishing as a result of augment in sales and a rise in costs of raw materials. When businesses expand their unit due to inflation, demands for working capital are created. However when there is a depression, businesses tend to have less sales and contract services resulting in a big level of working capital being stagnant in terms of unsold inventory and uncollected debts. In such situation working capital tends to come short requiring entities looking into investing more in it (Ganga, 2003).

Price levels is when prices rise, overall business's are required to keep a bigger amount of working capital due to more funds being needed to preserve current assets the same. However, the effect of price levels tend to vary from firm to firm as it may have a greater impact on some whilst little to non on others (Ganga, 2003).

Seasonal nature deals with the fact that demand of products in certain industries tend to widely fluctuate due to this nature characteristic or policies when it comes to production. Owing to this, working capital necessities tend to vary in a specific industry based on the seasonal differences. Furthermore, entities that maintain their production steady all year round will need on average a higher level of working capital to fund the lengthy inventory storage time. However, if firms decide to focus their production to be a few months before delivery time than on average, a less amount of working capital will be needed (Smriti, 2018).

Technology deals with the level of mechanisation found in a certain industry. It has been noted that the more mechanised the industry, the less working capital will be needed in comparison to labour intensive industries. This due to mechanised industries having a high investment in fixed assets in comparison to labour intensive industries (Smriti, 2018).

Taxation policies refers to the taxes that are paid on profits. Owing to this, tax liabilities cannot be avoided and working capital need to make a provision for that when it is planned. Because an increase in tax liabilities leads to pressure being exerted upon working capital (Ganga, 2003).

Baños-Caballero, García-Teruel, & Martínez-Solano (2014), analysed working capital management in relations to corporate performance in non-financial businesses in India. They believed that if an entity worked toward having an ideal level of investment in working capital it would result in a balance between costs and benefits that in turn would maximize a business's value. Using a panel data model and the GMM method (Mora, n.d.), their studies concluded that there was an existing inverse U-shaped relationship between working capital and a business's performance. When working capital level are high there was a lower business performance vice-versa though at some point a balance between the two could be found. However, they proposed that if managers didn't keep an eye on working capital they would incur problems such as a downfall in sales and lack of discounts on early account receivable clearance payments that could have been acquired if expenditures and other financial costs were cleared early. They also concluded that the more financial constraints an entity has, the higher the probability of it not applying or using their working capital at its best. Furthermore, they pointed out that financing is needed to increase working capital levels which in the end is an accumulation of more expenses in an entity. If the entity does not have the means to cover such expenses a drastic consequence can be bankruptcy.

Banos-Caballero, Garcia-Teruel, & Martinez-Solano (2012), examined the practical form of relationship between investment in working capital and corporate performance. They believe that financing conditions might play a vital role, so they also studied the effects of financial constraints on working capital and performance. They used panel data and GMM model to analyse the different variables. They came up with the same conclusion as on their previous study, there is an existing U-shaped relationship amidst working capital management and profitability. It was established that there is an optimum cycle that needs to be reached for there to be utmost profitability, not too high of an investment in working capital as it leads to lower profits and not a low investment either as it leads to higher profits which is good but reflects poor working capital.

Enqvist, Grahamb, & Nikkinen (2014), analysed the outcome of business cycles on working capital profitability and corporate performance in Finnish listed companies. They used a regression model with a Pearson analysis. It was established that the factors making up working capital such as cash conversion cycle, inventory and account receivables conversion, affect a company's profitability less during a boom and higher during an economic downturn. It was determined that proper management of inventory, a decrease in account receivable collection period and a decrease in account payable cycles leads to an increase in corporate profit levels.

Şamiloğlu & Akgün (2016), analysed the relation between working capital management and performance in terms of profitability and how it affects managers' decision making. Using a multiple linear regression model to analyse the data and concluded that there was a significant and positive relationship between accounts receivable period, cash conversion cycle and return on asset, while there was a non-important and positive relationship between inventory conversion period, accounts payable period and return on equity. There was a significant and negative relationship between accounts receivable period, accounts payable period and operating profit margin, while there was a non-important and positive relationship between inventory conversion period, cash conversion cycle and operating profit margin. There was a negative relationship between accounts receivable period, accounts payable period, cash conversion cycle and net profit margin and, a positive relationship between inventory conversion period and net profit margin. In addition, there was a significant and positive relationship concerning firm size and profitability and, a significant and negative relationship between firm leverage and profitability. Finally, there was negative relationship between accounts receivable period, accounts payable period, cash conversion cycle and net profit margin at ISE firms though, there was a positive relationship between inventory conversion period and net profit margin.

Deloof (2003), analysed the relationship between working capital management and profitability in financial firms in Belgium. Applying the correlation analysis and regression model he established that there was a significant relation amidst gross operating income and number of days in Accounts Receivable, Accounts payable and Inventory. Furthermore he suggested that managers should strive to decrease the number of days of Accounts receivable and Inventory to a more acceptable level due to the fact that his results reflected that the less profitable the firm was the more likely it was to wait a more extended period to liquidate their bills. In addition his result showed that there was a negative relationship between operating income and accounts receivable, payable and inventory. There is also a negative relationship between cash conversion cycle and corporate profitability amidst their firms.

Phuong Dong & Su (2010), did a research analysing the influence of working capital on profitability. Using the multiple regression model they established that there was an existing negative relationship

between cash conversion cycle and profitability amidst listed firms in Vietnam stock market. In addition, just like Deloof (2003), they also concluded that there was an existing negative relation between number of days of accounts receivable, number of days of inventory and profitability.

Nguti Kiio (2014), examined the effect of working capital on the financial performance of manufacturing businesses in Nairobi. Variables were analysed using a regression and correlation analysis. Results showed that there is a positive correlation between return on assets and accounts payable period, firm size and inventory conversion period whilst there was a weak correlation towards other variables. Furthermore, his findings rejected his null hypothesis which was that there was no relationship between working capital and financial performance thus accepting the alternative hypothesis that there was an existing relationship between the pair.

Casey & O'Toole (2014), did a study on whether bank constraints during financial crisis lead firms to increase their enquiry for other sorts of financing. Their research was based on small and medium enterprises. They used results from SAFE survey and applied a probability choice model and regression analysis. On the one hand, results showed that the type of alternative financing sources an entity acquires when banks hold constraints against them, depended more on the firm size and point of view towards banks and not much on the firms age or whether they were amidst crisis stricken countries. The more indebted the firm was, the more likely it would pursue trade credits as an additional source of financing. There is a significant negative relationship amidst credit rationing and the utility of grants however more studies need to confirm this fact. The bigger the firm size the more likely it is to apply for other sources of finance. On the other hand, it was found that lending constraints in countries that fell victim of the crisis didn't lead entities to an augment in searches for other financing alternatives though those found amidst countries where the crisis was at its peak did look for alternative sources.

Vieira, Pinho, & Oliveira (2013), examined Portuguese firms that rendered out trade credit as a way to finance their clients and reason why they indulge in such activities. The methodology used was panel data analysis with the application of minimum quadratic pooled method, fixed effect model, random effects model and tests for statistics models such as Hausman (1978), and White (1980), test for heteroscedasticity. Results showed that companies that had rendered out commercial credit were mostly the ones with a bigger access to the capital market. Furthermore in order to maintain longer commercial relations with clients and to apply legal price discrimination entities with a greater gross margin also rendered out commercial credit to clients. There was also a means of transaction cost reduction which was achieved by establishing a direct relationship between sales and rendering of commercial credit. Lastly, overall size, capital market accessibility, price discrimination and

transaction motives were found to be the biggest factors that influenced the amount of commercial credit that would be rendered to clients.

Pérez & Reig (2014), did a study on the reason why businesses in the manufacturing industry allowed their clients commercial credit grants. They used the ordinary least squares and used a multiple regression model. It was concluded that the greater the crisis, the higher the financial difficulties. Credit grants given to clients during a time of crisis, lead to a decrease in competitiveness. And the types of clients to whom credit purchases were allowed, were more or less the same. The only thing that varied was the diversification in activities being performed that allowed them to still perform such services.

Hyun (2017), examined the impact of the financial crises on Korean SMEs trade credit usage behaviour. Applying a panel data analysis he determined that trade credit played a vital role when it came to sources of credit during the crisis. In some countries the author observed, policies were and should further be established in order to facilitate trade creditors to get short term loans using as collateral invoices that are not paid for. As the author believed this would lead to a redistribution of credit towards small and medium businesses from banks and decrease financial burdens. SMEs financial positions and growth prospect information should be better shared with the aid of the government as this could result in an increase in external financing access because prior measures used such as mere credit guarantees lead to distorted credit allocation.

Paul & Boden (2011), analysed the reasons as to why some small and medium entities rendered out trade credits even though it might have been a risky endeavour. Conducting t tests, they established that trade credit in SMEs comes as a result of both customer and /or market requests and the prospect of strategic benefits such as enhancing information, reducing transaction costs, pricing manipulation, and ensuring reliable financing. It also promotes marketing and customer relations, though it is subject to risk. There has been noted failures to moderate risks in relation to trade credit extensions but the author believes that measures such as establishing policies should be put in place to control such transactions.

Lind, Pirttila, Viskari, Schupp, & Karri (2012), examined working capital management amidst the automotive industry in the value chain using financial value chain analysis. They believed that the method offered a more overall view of what happened in different processes starting from raw materials value of the chain until it reached the hands of the clientele. Hence, they did a study to analyse financial value chains in relation to working capital focusing on the ***cash conversion cycle***.

Results showed that variation in the cycle time of working capital went along with an alteration of stock cycle time.

Furthermore, when entities paid attention to their accounts receivables and collected debt in time, the turnover time of accounts receivable tended to become less along each stage of the automotive industry. The production policy and inventory management has a higher influence on the inventory cycle time in comparison to purchases and sales terms which in turn define more the accounts payable and receivables turnover time. In addition they believed that credit periods tied up capital in value chains as it augments capital investments, yet decreases return on investments. They tell us that interactions with other companies are very important as entities that hold a position in a value chain are reliant upon it.

Paul & Wilson (2007), researched the features that determine trade credit demand and accentuates issues such as what affects levels and periods of credit be it in or outside the agreed period. Conducting t-tests on theirs variables they concluded that the level of credit requests and the amount of time it takes to pay them off is influenced by the necessity for short term finance hence, it tends to be used to counterpart or replace other resources of incomes.

Yang (2011), investigated the effect of financial crisis on US manufacturing businesses, financing activities when it comes to trade credit and bank credit. Using ordinary least squared method he determined that on the one hand, bank credits and accounts payables were negatively related where if one increases the other decreases. On the other hand accounts receivables and bank loans happen to have a positive relationship where the more bank credits a business had the more the accounts receivable build up. In addition, he discovered that bank credits decreased in the beginning and post the crisis for 3 quarters whilst accounts receivable increase at the beginning of a crisis than decrease as post the breakout. Accounts payable gradually augmented in the beginning and post the crisis period. In addition, results showed that entities that were financially vulnerable had the tendency of cutting customer credit and pursuing more credit from suppliers. Though unconstrained firms tend to increase their accounts receivable after a crisis breakout compared to constrained entities they cut and when bank credits start to be cut they tend to high rely on account payables. Hence, concluded that constrained businesses depended more on accounts payables to finance themselves whilst unconstrained businesses didn't.

Teruel & Solano (2010), did a study where they analysed trade credit decisions making and the factors that determined being given a trade credit or being granted one in European SMEs. Panel data method was used analyse the various SMEs in the study. Results showed that larger European entities granted

more trade credit to their clients and at a cheaper rate due to their greater ability to acquire resources from the capital market such as short term financial resources and cheaper external financing. Firms with higher profits had the tendency of granting more credit and when sales volumes drop they have a tendency of issuing credit in order to boost sales.

Teruel & Solano (2010), in addition to the prior study examined decision making process that leads to business's choosing whether they are going to use suppliers as a source of financing or trade credits. Panel data analysis and GMM method was used for analysis. Result showed that SMEs when it came to account payable, they tend to establish a target level of alliances to which they try to achieve and make decision depending on that. Furthermore they also concluded that the more alternative finance a firm has the less they are likely to depend on suppliers as a source of finance. An example was given that firms that are big have a tendency of having greater access to internal and external financing at lower costs resulting in the tendency of using less supplier credit. Overall, businesses tend to reduce their account payables when they are able to produce internal fund, the general flow is that firms prefer internal sources of finance in comparison to external ones. Hence, firms' trade credit decision making is highly dependent on the entities ability to obtain other sources of funds internally. In addition, when many growth opportunities present themselves firms also have a tendency of utilising more trade credit to fund their sale development.

Gao & Wang (2017), examined the effect that working capital data could have on financial analysts forecast behaviour and characteristics towards the Chinese manufacturing industry companies. A Pearson correlation of coefficients and a multivariate analysis was used to analyse the different variable. It was established that working capital management efficiency influences an analysts decision on: whether they should continue following a certain business, doing a business evaluation on a certain firm in relation to future prospects, and the level of dispersion and accuracy of the analysis. Hence the authors believed that the significance existing between working capital efficiency and financial analyst information provided was directly or indirectly reflected on stock prices. The more efficient the working capital, the better the forecast information provided which in turn results in more accurate stock prices.

Kasozi (2017), did an analysis on working capital management and its influence on the financial execution of manufacturing firms in the Johannesburg stock exchange. Panel data methodology was used to analyse the different variables. His results were that entities that handled pro-actively well their debtors and liquidated their debts on time had a higher performance in terms of profitability in comparison to those that had a tendency not to. In addition, there was a positive relationship found amid the number of days a stock lasted and profitability whereas it was established that those entities

that stock up and preserve their stock levels experience less stock outs and can better secure financing when required. Thus, enhances operational productivity and guarantees cost-effectiveness in the long run. According to the author, manufacturing entities tend on average to carry an elevated amount of debt in their capital composition though he determined that businesses that reduce their number of account payables are inclined to achieve better in the long run than those that tend to postpone which is contradictory to other authors.

Three different aspects relating to working capital management that were covered in the paragraphs above are:

- Internal and external key factors that influence the level of working capital in a business. Examples of internal factors are size, financing or credit availability, impact on value chain analysis, credit policies of the firm, operating efficiency, stock policies and many more; external factors are the impact of the economic crisis and the sub-cycles of recession, the expanding of the economic activities, the characteristics of a specific sector and the competing company's practices.
- Literature pertaining the impact of working capital on profit and business performance.
- And other factors that were found relevant to be considered such as the impact of working capital on financial analysts practices.

In the following chapter we will be analysing the influence of working capital on firm performance through a multiple regression analysis.

3. Methodology

This chapter defines the methods that were utilised to provide answers to the research objective which is the influence of working capital on firms' performance, as stated in the introduction. The following parts of research methodology are discussed: working capital definition, formula, determinants definitions, research design, and population of interest, sampling design, and data collection procedures, inclusion and exclusion criteria's and data analysis.

This study was conducted using a descriptive research design. This type of design deals with quantitative data in this case secondary data from financial statements. The database used is called SABI. The population of the study comprised of 111 firms in both Portugal and Spain all found within the bicycle industry. The period studies was from 2013 – 2017.

The sample of my study were 51 businesses from both Portugal and Spain. The inclusion criteria for the sample were: firms had to be from Portugal and Spain, firms had to belong to the bicycle industry, they had to have data values available for at least the past five years, out of the nine variables selected to create the independent and dependent variables they had to at least have data for four variables and out of the period studied, which was 2013 – 2017, they had to at least have data for three years. The exclusion criteria were those who didn't fit the inclusion criteria mentioned previously and that possessed unreliable results based on the information they provided. It was ensured that key information was captured from documented sources for the period under study. The data collected was analysed through *SPSS software* with the application of a *multiple regression* analysis and *correlation analysis*.

Owing to the research objectives, the variables applied in this study and their measurement are mainly selected from the literature that already exists and was covered in the previous chapter in order to make a significant comparison with previous empirical studies. The variables used in this study are based on previous studies done by Deloof, (2003); Nguti Kiio, (2014); Phuong Dong & Su (2010); and Şamiloğlu & Akgün (2016), where our dependent variable is performance represented by Gross operating Income and the independent variable is working capital represented by accounts payable period, accounts receivable period, cash conversion cycle and inventory period with our control variable being size.

Table 3 – Variables used and formulas

Dependent variable	
Gross Operation Income	Gross Operating Income=(Sales-Cost of goods sold)/(total assets-financial Assets) *[for financial assets I considered bank deposits and treasury cash]*
Independent variables	
Number of days of account receivable	Number of days of account receivable,= [accounts receivable x 365]/sales
Number of days of account payable	Number of days of account payable= [accounts payable x 365]/purchases *[For purchases we considered the sum of raw material and merchandise as no specific value for purchases was found.]*
Number of days of inventory	Number of days of inventory= [inventories x 365]/cost of sales
Cash conversion cycle	Cash conversion cycle= [number of days accounts receivable + number of days inventory — number of days accounts payable].
Control variable	
Size	Size= natural logarithm of sales [ln(sales)]

Source: Adapted from Deloof, (2003), Nguti Kiio, (2014), Phuong Dong & Su, (2010), and Şamiloğlu & Akgün, (2016)

For the *Financial Assets* used in the *Gross Operating Income* formula in the table above we used the variable *treasury or cash and bank deposits* as a representative due to the original variables used by other authors not being found in my data base. In addition, the variable *purchases* was also nowhere to be found hence I used the *sum of material and merchandise* to represent it. Overall both of these adjustments agree with both the accounting definition of the original variables (CNC, 2018a, 2018b).

4. Empirical analysis results

Table 4 - Descriptive analysis

	n	*Minimum*	*Maximum*	*Median*	*Mean*	*SD*	*Skewness*	*Kurtosis*
Gross operating income(EUR)	203	-1.02	4.93	0.36	0.51	0.68	3.48	16.65
Account receivable days(DAYS)	115	0.00	709.72	72	102.57	110.35	2.85	10.72
Account payable days(DAYS)	111	0.00	3372.83	222.26	476.31	634.51	2.49	6.38
Inventory days(DAYS)	112	0.00	1054.44	162.34	234.70	197.85	1.40	2.77
Cash conversion cycle(DAYS)	104	-3289.89	1037.28	41.25	-150.73	753.39	-2.02	4.49
Size(EUR)	209	1.61	12.43	7.89	7.38	2.47	-0.35	-0.59

Source: Result from SPSS analysis

Table 4 shows us the descriptive statistics of the variables gross operating income, account receivable days, account payable days, inventory days, cash conversion cycle and size of the Portuguese and Spanish firms in the bicycle industry as of the year 2013 to 2017. "**n**" represents the number of non-missing values and these are not equal throughout the variables because there were many missing values. Though, replacing the missing values gave a total of 255 values distributed equally. The mean of all variables are positive except for the cash conversion cycle.

Table 5 – Pearson correlation matrix

	GOI	ARD	APD	ID	CCC
1. Gross operating income	-				
2. Account receivable days	-.297*	-			
3. Account payable days	.335**	-.031	-		
4. Inventory days	-.340**	.380**	-.328**	-	
5. Cash conversion cycle	-.412***	.251	-.948***	.586***	-
6. Size	-.027	-.485***	.073	-.351**	-.247*

Note. ** $p < .05$, *** $p < .005$

Source: Result from SPSS analysis

Table 5 shows a correlation coefficient matrix that can summarize the relationships that exist between the independent variables and the dependent variable. Accounts receivable days showed a negative relationship with gross operating income with a coefficient of -0.297. This means that the higher the

accounts receivable days the lower the gross operating income. Accounts payable has a positive correlation with gross operating income with a value of 0.335 meaning that the longer the entity takes for a business to pay off their supplier the better when it comes to gross operating income. Furthermore it shows that there is a negative relationship between inventory days and gross operating income with a coefficient of -0.340.This means that if the inventory days increase the gross operating income will decrease. As for cash conversion cycle of -0.412 its shows a negative correlation whereby if it increases, gross operating income will also decrease. As for size with a coefficient of -0.027 it can be established that there is a very poor to non-existing negative relationship between the variable and gross operating income.

A multiple linear regression model was used applying the enter method to analyse the variables account receivable days, account payable days, inventory days and cash conversion cycle (independent variables) influence on gross operating income. Before performing a multiple linear regression we examine if there is an existing multicollinearity, or in other words whether or not the independent variables are strongly correlated towards each other. Hence due to this fact, the variable account payable days was eliminated from the regression due to the existing multicollinearity between them. After eliminating this variable, the VIF values (Variance inflation factor) and the tolerance of the independent variables were found within normal values (the value of VIF was less than 10 and the value of tolerance was less than 0.10), suggesting a no violation of the assumption of multicollinearity.

5. **Model A [Rejected]:** $GOI_{it} = \beta_0 + \beta_1 (ARD_{it}) + \beta_2 (APD_{it}) + \beta_3 (ID_t) + \beta_4 (CCC_{it}) + \beta_5 (SIZE_{it}) + \varepsilon$

It was also analysed whether there was an existing autocorrelation between the residual models of the linear regression (the independence of the residuals). These assumptions were tested through the Durbin –Watson that varies from 0 to 4, where values close to 2 indicate that the residuals were not correlated. The value found on the current regression was of *d=1.06, that* leads one to question if the residuals are truly independent.

Furthermore the bootstrapping technic was used, it's a non-parametric robust approach where one doesn't need the assumption of there being a normal distribution. This approach calculates a 95% confidence interval when estimating the regression coefficient. If the confidence interval does not include a number 0, this means that the effect is significant.

Table 6 – Multiple linear regression

Dependent variable: gross operating income

	B	*EP B*	β	*p*	Colinearity		*95%IC Bootstrapping*	
					Tolerance	*VIF*	*Lower*	*Upper*
Block 1								
Constant	0.559	0.052		<.001			0.457	0.677
Account receivable days	-0.001	0.000	-0.217	.021	0.878	1.139	-0.001	0.000
Cash conversion cycle	-0.000	0.000	-0.263	.016	0.654	1.530	-0,000	-0.000
Inventory days	0.000	0.000	-0.160	.151	0.615	1.625	-0.001	0.000
F (3, 100) = 10.75, p < .001; R^2 = .244, R^2 ajusted = .221								
Block 2								
Constant	0.669	0.157		<.001			-0.237	1.134
Account receivable days	-0.001	0.000	-0.248	.019	0.708	1.412	-0.001	0.000
Cash conversion cycle	-0.000	0.000	-0.260	.018	0.652	1.533	-0.000	-0.000
Inventory days	0.000	0.000	-0.184	.117	0.560	1.784	-0.001	0.000
Size	-0.010	0.015	-0.074	.496	0.651	1.537	-0.057	0.030
F (4, 99) = 8.14, p < .001; R^2 = .247, R^2 adjusted = .217								

Note. *B* = non standardized coefficient of regression, *EP B* = Standard Error of non-standardized coefficient, β = Standardized coefficient of regression, VIF= Variance inflation factor, 95% IC = Confidence interval at 95%, R^2 = Coefficient of determination.

Source: Result from SPSS analysis

Table 6 shows that the first model without the control variable (block 1) explains 24.4% of the variance of gross operating income. The second model was adjusted with the inclusion of the control variable size (block 2), which resulted in all the independent variables explaining 24.7% of the variance of the gross operating income but the association between the independent variables and the gross operating income continues to be small. The adjusted R^2 also referred to as the coefficient of multiple determinations, is the percent of the alteration in the dependent described uniquely or together by the independent variable. When the control variable, size, is introduced in the second model the R^2 increases by 0.003, meaning that the size doesn't highly affect the significance of the variables when predicting the gross operating income (F change=0.466, p = 0.496).

The final regression model has a good adjustment to the data (F (4, 99) = 8.14, P<.001). In this manner, accounts receivable days, cash conversion cycle, inventory days, and size explain 24.7% of the variance of gross operating income (R^2=0.247). It's possible to verify that the independent variable that showed a higher significance in its relationship to gross operating income was account receivable

days [B = -0.001, β = -0.248, p = .019, IC 95% (-0.001, -0.000)] . Results show that if accounts receivable increase by one unit than gross operating income will decrease by 0.001 unit. It's possible to compare the contribution of each independent variable through a standardized coefficient analysis. This means that for the block 2, it can be verified that the variables that contribute the most when it comes to explain gross operating income is accounts receivable days and cash conversion cycle due to elevated Beta and p- values they present compared to the other variables. The inventory variable cannot be considered reliable for explanation owing to its p-value being too elevated in both block 1 and 2. The control variable size contributes very little to the dependent variable due to a very high p-value and very low Beta in block 2 as a result having no significance when it come to the prediction of gross operating income.

The equation to predict the gross operating income outcomes through the means of account receivable days, cash conversion cycle, and inventory days and the control variable size is as follows:

6. **Model B [Accepted]** $GOI_{it} = \beta_0 + \beta_1 (ARD_{it}) + \beta_2 (CCC_{it}) + \beta_3 (ID_t) + \beta_4 (SIZE_{it}) + \varepsilon$

OR

Gross operating income = 0.669 – 0.001Account receivable days – 0.000Cash Conversion Cycle + 0.000Inventory days – 0.010Size

Overall, we can summarize our results as follows; for table 4 one can observe an uncommon variance in the "n" values which is due to the excessive amount of missing values that were found in the sample of our original variables that were used to calculate our independent and dependent variables. As for the averages presented, all are positive except for cash conversion cycle. Table 5 highlights the negative correlation that exists between accounts receivable days, inventory days, cash conversion cycle and gross operating income and a strong positive correlation between account payable days and gross operating income. These agree with Raheman & Nasr (2007), Deloof (2003), Phuong Dong & Su (2010) and Şamiloğlu & Akgün (2016). However these author found significant existing relationships between size and gross operating income which was not the case in my study. Account payable days was removed from my model whilst cash conversion cycle remained. Table 6 in term of relationships also reveals that the variables accounts receivable days and cash conversion cycle have a high influence on the dependent variable gross operating income and that the control variable size does not have that great of an influence on the model when introduced in block 2 which differs from what other authors concluded.

5. Conclusion

The objective of the study was to analyse the influence of working capital on business performance focusing on the bicycle industry in both Portugal and Spain which in total gave us a sample of 51 firms after passing through the filter of required inclusion and exclusion criteria's. After a correlation analysis findings show that there is a strong negative relationship between accounts receivable days, inventory days, accounts payable days, cash conversion cycle and gross operating income. Though a weak to non-significant relationship was found between the control variable size and gross operating income. In the multiple regression analysis it was concluded that the introduction of the control variable size did not make much on a significant impact to the model and that the only independent variable that thoroughly explained gross operating income in this case was accounts receivable days and cash conversion cycle.

Working capital conveys essential information about the financial state of a firm for interested parties such as investors or speculators and management teams. Therefore, this study contributes to investors and managers as follows: for speculators, it allows them to estimate the capacity for an organization to pass through challenging financial periods. As for the management team, it serves as assistance to better predict any monetary or financial related challenges that may emerge. Taking everything into account, it is vital for an organization to keep enough working capital to deal with any unpredictable difficulties (Wilkinson, 2013). The limitations to my study were that the entity in which I performed my internship refused to supply me financial documents and it only had a financial existence of two years hence I couldn't study it as I had initially planned to. Furthermore, many businesses in the bicycle industry didn't have value or didn't have all the annual data or values of the variables that were being used for my analysis hence I couldn't make the period of my analysis longer or it could have further drastically reduced my sample. In addition, a panel data nor a time series analysis were conducted which in the end would have explained the variable from a different angle. I suggest future study on the same topic but using a different data base and analytical software and a study on credit policy influence in working capital necessity of firms in the automotive industry.

Appendices I

When studying the bicycle industry one deals with CONEBI (Confederation of the European Bicycle Industry). It is a result of national Bicycle industry Association of 15 different countries coming together under one policy and working together in order to reach the same objectives. Every member represented within the association is European hence Portugal is found in their midst. One of the main objectives of this association is to increase the bicycle industries and the cycling culture in Europe(Conebi, 2017). Electronically Power Assisted Cycles (EPAC) and bicycles have reached sales of up to 20 000 000 on a yearly basis throughout Europe where about 13 000 000 of these are produced in Europe.

Overall the European Bicycle industry generates up to 90 000 jobs throughout 800 SMEs. In most cases, individuals residing in Europe possess more bicycle compared to other sources of transport. The Furthermore the European bicycle industry aims to cut down the levels of CO2 in our environment thus playing a vital role when it comes to society's health, environment and transport rules and regulations contributions(Conebi, 2016, Conebi, 2017).

Portugal is turning out to be a key manufacture center when it comes to bicycles, e-bikes and parts in the whole of Europe(Ootwijn, 2015). When it comes to bicycle parts manufacturers in Portugal the most well-known ones are the following companies Orbea, RTE, Avantisbike, Miralado and Orbita. Agueda also known as the Bike Valley of Portugal and the name stands for an initiative to stimulate the mobility industry nationality and to boost the local economy by attracting potential foreign investors. Overall the country has over 50 businesses running under this initiative and approximately 35 of them are considered to have their operations running smoothly(Oortwijn,2016). There is prospect expansion on local companies such as Avantis and for larger bicycle factories to start their operations such as from Taiwan which could bring about a production capacity of more or less 300000 units. Interest has already been drawn to the country's cycling industry due to the Bike Value Portugal initiative as prospect foreign investors are being offered loans and low interests as financial support.

Local companies are investing in new machines, buildings and land to augment manufacturing capacity in the hope of meeting the forecasted growth demand on bicycles and e-bike manufacturing in Portugal. Portugal current holding the third place in Europe, when it comes to bicycle production, wants to secure its position in the global markets in terms of great accuracy, supply chain flexibility and speed which may result to shorter lead times (*it currently takes 2 to 3 weeks to produce any bicycle related article*), and technical excellence(Oortwijn, 2016).

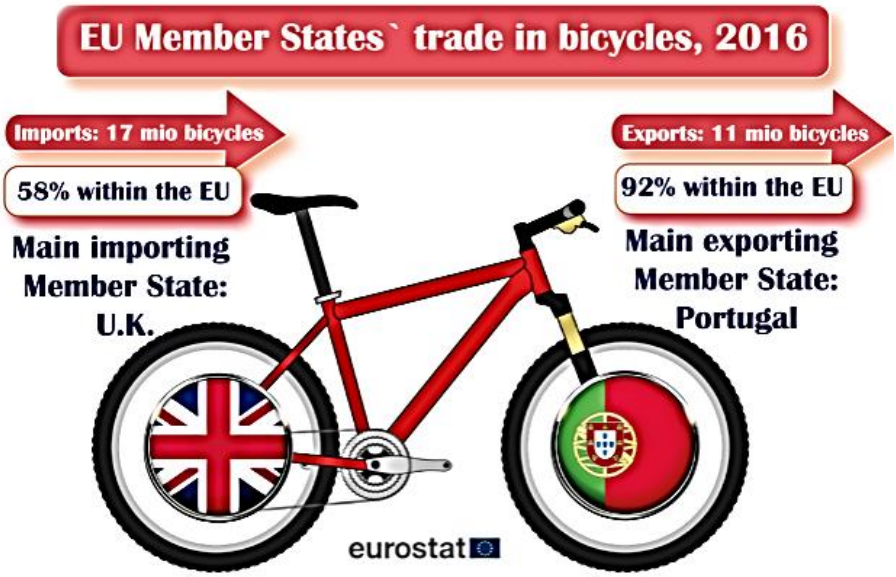
Furthermore it strives to turn this industry a source of tradeable goods and services, encourage research and development in the lines of developing technologies(Ootwijn, 2016) to be utilized throughout the manufacturing processes and on the products and to escalate exports(Oortwijn, 2016). Portugal is also known to be one of the European countries holding what is known as the biggest bike facility in the continent called RTE. RTE performs activities such as wheel assembly, bicycle assembly , painting and everything that has to do with logistics when it comes to bicycles. This company alone has a daily output of more or less 3000 bicycles daily which can vary depending on the seasons and the models of bicycle requested. In cases where big quantities are order with urgency their output numbers can increase to 3400 bikes daily (Silva, 2008).

Spanish Bicycle Market

In Spain the biggest bicycle manufacturers are called BH and Orbea. The Ministry of Energy, Tourism and Digital Agenda have announced that in 2017 alone Spain manufactured 359586 bicycles which represented 8703 more units than the previous year. This represents a growth from the year 2016 to 2017 of 2.49% which differ from the record of 5.28% increase in the previous years. Sales in 2016 were stagnated only recording a growth of 1% in 2016 however in 2017, moneywise production values embodies 100.5 million euros in revenue (Oortwijn, 2018; Schaik, 2017)The main types of bikes sold in this country are the Mountain bike and kids bikes which sales for some reason have been recorded to have declined whilst other types of bikes such as the road bike and Ebikes sales have hugely increased in sales. When it comes to Market shares Specialty Bicycle Retailers are owning most of those reaching up to 79% of shares when it comes to Hypermarkets they own 9% of shares there and in Multi sports chains they own 12% of the shares. The industry is also known to employ many people with the current figure being at 2000 people in 2016 alone (CONEBI, 2017).

Portugal has been identified by the eco news as one of the biggest exporters in the European Union of the two wheeled bikes though they don't use them a lot in their daily routine. The countries export represented 15% of all bicycles exported in the year 2016 unlike the United Kingdom that was the largest importer of bicycles in comparison to other countries as disclosed by Eurostat. In addition, just within the year 2016 bicycle exports amounted to 11 million euros in the European Union where Portugal represented 1.65 million euros of those exports and following them was Italy and the Netherlands. In relations to imports the highest levels of imports have been found to be outside the European Union in countries such as Taiwan (24%), Cambodia (18%), Bangladesh (11%) and lastly the Philippines (10%) (ECO News, 2018).

Figure 1 – EU Member States trade in bicycles 2016



Source: Eco news

Company Profile

Portubike is an assembly service partner that falls part of a group or what can be referred to as a Limited partnership (LP) in the bicycle industry. ***Limited partnership*** is a mixture between general partnerships and limited liability partnerships. It is where one partner is a general partner, and has full personal liability for the partnerships debts whilst according to the definition at least one partner's liability is limited to the amount they invested in the partnership. It has been stated that at times there could also be a silent partner within this type of partnership. This kind of partner generally is not allowed to participate in the running or daily operation of the partnership, they have a limited function to benefit from limited liability (Investopedia, 2017).

In other words, Limited partnership occurs once two or more partners combine to cooperatively manage a business in which one or more of the partners are liable only to the degree of the sum of money that the partner invested. In this type of partnership, there is no distribution of dividends however, partners benefit from direct access to the flow of income and expenses. The benefits that accompany this kind of structure is that owners are typically not liable for the debts of the company (Investopedia, 2017).

The partnership is made up of four different companies called Cronus also known as the mother company, Apollo (shareholder), Portubike the company being studied (shareholder), Sangal (shareholder), and an auxiliary Lion Bike (shareholder) which will not be covered in this paper. Each

company has a different strategical geographic location whereby Cronus the mother company is located in china, Apollo is located within the Netherlands and Portubike just like the name hints Portu- is an abbreviation for the country Portugal hence its locate within its territory along with Sangal.

Group/Partner characteristics

CRONUS

Located in Guangzhou, is the mother company that oversees all the other companies called Guangzhou Cronus bicycle Fashion Sports Co, Ltd. Established in 1993 it has over 200 different stores around the world and has of custom produced bikes for renowned international brands. The role they play within the group can be summarized as follows:

- All other partners cash flows need to go along with their order and expectations,
- They have broader knowledge of the market they plan to target,
- They manage the marketing team,
- They are responsible to go around the world featuring the partnerships bicycles in exhibitions,
- Deal with customers directly and indirectly,
- Determine sale price. (They calculate bicycle prices and adjust prices based on recommendations.)

APOLLO

Located in the Netherlands, this company is responsible for a good part of the bicycle sales of the group. Furthermore,

- Sangal is their supplier.
- They issue purchase orders to Sangal according to perform invoices that are agreed upon with customers.
- The only cost that they generally occur is distribution cost and complete bicycle costs.
- The mother company is the one that's responsible to attract customers for Apollo.

SANGAL

Located in Portugal and is responsible for the importation and purchase of bicycle parts/ raw material.

- Source of majority of operation costs the group incurs.
- They have an agreement with Portubike in terms of an assembly fee of different bicycle models that surge based on the clientele.
- Apollo is their client.
- They export complete bicycles to Apollo.

- Cronus, the mother company, is the one that decides where the purchase of raw material is going to be done.

PORTUBIKE

Also located in Portugal, the company is responsible to assemble the bicycle parts in order to generate a complete bicycle for the group.

- They are Sangal´s customers.
- Apollo is their client.
- They assemble and repair bicycles for Sangal.
- They offer storage services of complete bicycles for Apollo.
- Apollo provides them with financial support if needed.
- They do not assemble bicycle models of their own. They assemble based on the customers catalogues and at times they request to stay with some models for them to try and stay up to date with parts they should have in stock in the hope that they retained a specific customer and that they might return and order again.
- Main costs occurred are factory labour overheads and production costs.
- Deals with Portubike, Sangal and Apollo financial documents and sends a copy of all documents to Cronus with descriptive information as to what went where.

Overview: Business process

The group conducts business as follows:

- Cronus via its marketing team and successful exhibitions acquires a customer.
- Customers makes an order and shows what bike model they expect to be produced.
- Cronus determines cost to produce the bike and sale price.
- Cronus supplies the other three partners with finance to produce the bike. The amount financed is determined by calculating the difference between cost price and selling price.
- Bike model is sent to Sangal,
- Sangal buys the raw material or bicycle parts from suppliers that were indicated by Cronus.
- Sangal sends parts to Portubike to be assembled and then pays them an assembling fee.
- Portubike supplies the labour and machinery to assemble bikes and space to store.
- Finished products are labelled as Sangals property.
- Apollo pays Sangal for the finished products.
- Transport is arranged by Portubike to deliver finished products.
- Apollo or customers themselves pay for the transport (it varies per situation).
- Finished products are then delivered to customers from Portubike.

- Cronus expects a total income, financial support and expense report from the other three companies on a regular basis.

Document processing

Sea transport
In the cases where inventory arrives through shipment, once it reaches our destined Portuguese harbors, the company is notified. Once it receives notification they inform Sangal whom in turn forward us the certificate of origin of the cargo and the invoice usually via DHL. Once received we forward it to an assigned agent who is responsible to clear the products for its extraction from the harbour and assist its loading onto assigned trucks in order for them to reach our buildings.

Road transport
Unlike sea shipment the only document required in this scenario is the Bill of lading which is filled in accordingly and signed by the two parties which are involved in the initial cargo contract. This ensures that goods have been received by us and delivered by our transporter company. Portubike stays with a copy of the Bill of lading document whilst the driver stays with the original.

The estimate amount of days it takes to deliver both by sea or road may vary depending on suppliers, company one uses to transport, agents or whether papers required by different import officers are correct.

Imports

Once a purchase has been done by SANGAL to bicycle part suppliers around Asia, the different suppliers send a confirmation of purchase in the form of *a receipt, a packing list, three original bill of lading and certificate of origin* to SANGAL which then transfers them to Portubike**.** Once these documents reach their premises a digital copy of the receipt and packing list is sent to the entity responsible to transport the cargo via email and a set of the original bill of lading and certificate of origin is sent via DHL. Once the transporter company has received the documents they use it to clear the cargo from customs. They then deliver the cargo along with the receipt and bill of lading which are signed accordingly and scanned for digital copy proof along with the remaining bill of lading and certificate of origin. Then all four documents are archived as hard copy proof in the transporter company´s physical file for future auditing references.

Purchases and payments

As mentioned previously SANGAL is responsible for the purchases of bicycle parts however, no step is taken without the direct orders by Cronus. Firstly, order is received by the mother company where customer presents them with their catalogue and identifies the bicycles they wish to be produced. Cronus from there comes up with a document called the ingredient list. The ingredient list is a list that

contains the different bicycle parts existing in a specific bicycle model that needs to be produced. The research team then goes and searches for suppliers and once they find those suppliers they send them the ingredient list requesting a quotation of the pricing of each different part. Once they receive the quotation, they pick which supplier has the right quotation in terms of affordability and quality. After this has been established, Apollo is notified and is sent the ingredient list. APOLLO then issues a purchase order to SANGAL in relations to the order that is being made and in turn SANGAL then issues them a pro forma invoice in advance for the shipment they will be responsible to do. SANGAL than takes the ingredient list and makes the different orders in the different approved locations/ countries evaluated by CRONUS.

Emails are exchanged through the process and when order is completed the supplier send via email the trading terms and shipping details after orders have been paid for. Depending on the shipping method agreed upon, the type of document that accompanies the goods vary. If we are dealing with an inland delivery or better road transport the documentation that will accompany the driver would be a CMR which stands for convention relative, an invoice and a packing list. Once the products have been delivered, the suppliers than sends a certificate of origin and an import invoice to SANGAL and then SANGAL forwards these to PORTUBIKE. Upon arrival at PORTUBIKE the following documents are checked for each container delivery; CMR (inland transportation) or bill of lading (sea freight), invoice or import invoice, packing list and certificate of origin.

When it comes to international trade there are many documents involved, and could be grouped as follows: commercial documents, financial documents, transport documents, insurance documents and other international trade related documents. When administering an import on shipments, it may be required several documents or contracts that an entity must have in their possession some of which are: the export sales contract, the contract of carriage, the contract of finance and the contract of cargo insurance. Therefore, it is important to comprehend the function of each document and its necessities in international trade (HKTDC, 2017). There are several documents which are overall used in **Portubike**, the main ones are as follows:

CMR

Also described as CMR consignment note, this document represents a proof of an agreement that involves road transportation. The agreement determines the range and responsibility of the procedure that will be accomplished and distinguishes the participants involved and the merchandises being moved. It implies observance of the CMR ("Contrat de Transport International de Marchandises par Route") that oversees this document. This document consist of directions that the exporter or the importer passes to the transporter, due to this reason it automatically has to go together with the merchandises in road shipments (HKTDC, 2017). The carrier (the driver of the truck) is responsible to

make and issue the document which contains all the essential material to validate the gathering of the merchandises. The exporter (sender), is normally the one who fills in the document when the truck arrives at his store. In cases of full loads; or of grouping this type of document is customarily handled by a forwarding agent because there is an internal transport suppliers in the region that collect the merchandises put together with other merchandises from different senders to export them together to the final destination in a foreign country (HKTDC, 2017).

Bill of Lading

A bill of lading is a legal document between the transporter of goods (through shipping) and the carrier detailing the category, quantity and destination of the goods being carried. It also serves to confirm a shipment that has been received when the merchandises are delivered at the prearranged last stop. The document must go together with the shipped merchandises, regardless the form of transportation, and authorized representative from the transporter, shipper and receiver must sign as proof (HKTDC, 2017).

Invoice or import invoice

This document, can also be referred to as CMR delivery note, it is set up as a proof of a contract for products or merchandise which is carried by road. It helps determine the choice and responsibility for the operation that will be performed and classifies the parties implicated and the cargoes being transported. Its use suggests obedience to the CMR that oversees this document. This document includes the commands that the exporter or the trader gives to the transporter, so it unavoidably has to accompany the properties in road shipments (HKTDC, 2017). The transporter (the driver of the truck) is the one that responsible to issue all this document with all the necessary information to formalize the range of the personal property; however, the exporter (sender) is the one who is responsible to complete the document once the truck arrives at the business premises, when there is a full load; in case of classifications this document is normally handled by the forwarding mediator because there is usually an internal transport that's responsible to collect the belongings that will be added with other goods from different exporters to send them jointly to the final destination in a foreign country (Global Negotiator, 2017).

Packing list

Packing List is also referred to in a few other names such as a bill of parcel, unpacking note, packaging slip, (delivery) docket, delivery list, manifest or customer receipt and or shipping list. It is a document which features the substances, and frequent measurements and weight, of every single package or container. It helps to report to all interest groups implicated with the shipping, including transport agencies, government authorities, and clienteles, about the insides of the package. It helps the

interest groups to allocate the package appropriately (KK freight, 2017). In Potubike it is also used to create what they call ``ingredient lists`` or ``BOM`` and vice versa. *Ingredient list* is a list of detailed parts or components it takes to build a specific bicycle model (HKTDC, 2017).

Certificate of origin

A Certificate of Origin (CO) is a high-ranking international trade document which confirms that the merchandises in a certain shipment were entirely obtained, generated, manufactured or processed in a given country. It also helps as a means for exporters to declare their merchandise. Practically worldwide this kind of document is considered to verify the origin of imported merchandise to calculate the duty that will be charged or, at times, to determine whether the merchandise can be lawfully imported. At times they are required to adhere with Letters of Credit, foreign Customs requirement or a clients request.The COs can be issued by the chambers and can appear in two different forms:

- *Non-Preferential COs or Ordinary COs,* are identified as being one of the most common type of COs issued. They serve to confirm that the country of origin of a particular merchandise does not meet the requirements for any privileged treatment.
- *Preferential COs*,this type of CO serves to confirm that a set of particular merchandise, when exported to countries with pre-existant stretched privileges, are eligible to a discount tariffs or immune to it (ICC, 2017).

Assembly Process, Sales and Receipts

The number one general rule of any type of business transaction is that there is no sale without payment. At times however what tends to differ is the contract of payment. Overall the company renders out very little credit sales to customers on the one hand a common platform of installment plan is made available for employees that manifest interest in purchasing company products. When orders have been registered by Chronus and Apollo and purchase of the required bicycle parts have been made, the parts are sent to our establishments. Once cargo is receive, with the packing list, an assigned employee checks whether the items in the packing list received matches what is found within the cargo container if not information is sent to production department to inquire what the problem is. If all items found in the cargo container match the packing list than cargo moves to the next phase, the assembling phase. There is an established assembling plan pertaining what bicycle is going to be assembled when depending on the urgency of an order. When an order is about to be executed an ingredient list of the order´s bicycle is used as a guideline. *An ingredient* list is a list that contains the specific bicycle parts needed to assemble a specific bicycle model (Oxford University Press, 2018). Hence it is used to set all bicycle parts needed for assembly aside through a process called *`picking`*

which is just what the word hints, *`to pick out´* or *´to set aside´* . Once the order is completed in terms of assembling Apollo is notified and it organizes trucks to come and pick up and deliver the products to each different customer.

Operating Cycle

Financial document circulation Summary

These are also known as financial statements, they are used to report financial evidence about the business in a homogenous format. The common ones are statement of financial position, income statements and cash flow statement (Accounting-simplified.com, 2018). Portubike overall deals with the account paperwork of SANGAL, Apollo and Portubike itself by entering all invoices, credit notes, etc on a software called PHC and the software automatically generates all essential financial data. Then digital copies of all transactions are sent to the mother company Cronus along with an expenses report on a monthly basis for further checking.

Account payable and Supplier payment politics

Outstanding credit payment period can be classified as a business average payable period that measures the amount of time it takes a business to pay its outstanding invoices from their suppliers or trade creditors. This is calculated by dividing cost of sales by the number of days in a year. Then ending account payables or creditors divided by the result from the previous calculation (Investopedia, 2018). There are no specific politics established for big bicycle part suppliers because we are currently small and SANGAL though with previous knowledge and strings in the market due to its new government is also affected by the amount of time we have been in the market thus they have little bargaining power. In most of the cases our suppliers are the ones who have the greater bargaining power as to decide when deposits need to be paid and by how much. They tend to establish terms depending on dates that payments are going to be done. However, when it comes to small suppliers such as those for office material, wi-fi etc the entity usually uses the trimester system that is adjusted at times (Bargaining power of suppliers porters five forces model, 2018).

Account receivable period and debt collection politics

Average collection period is the estimated amount of time it takes for a business to acquire payments due by account receivables. This can be established by dividing the average balance of accounts receivable by the total credit sales for a specific period and multiplying the account receivable by the number of days in that specific period (Investopedia, 2018).

$$\text{Average Collection Period} = \frac{\text{Days x AR}}{\text{Credit Sales}}$$

Clients in general are required to pay upfront. However, only in particular cases in relation to specific clients are exception made. Orders need to be made at least 4 months in advance and debts are given 60 days to be liquidated before exportation takes place.

Quotation period

This the period extended from the time one quotes the prices of the product to the point where the customers place order (Eiteman, Stonehill, & Moffet, 2018). The quotations do not appear in the formal financial statements of our company. Orders need to be made at least 4 months in advance.

Input sourcing period

This is the period where once a quotation has been accepted by a client and the order is placed, during this period a contract is signed between the supplier and the clientele giving detail of the product that will need to be delivered and when this delivery is going to happens, how it is going to be delivered and the price and financing terms. Orders are then made of the parts that are required for the assembly of the bicycles which we as a company in general do not have in stock. Depending on the particular sale a deposit or down payment from the client is done at that point. In this specific case that would make up the first actual cash flow linked to the order as an inflow that would in turn be considered the beginning of the first cash conversion cycle for that specific transaction (n.d, 2018).

Inventory period

When parts are received the entity assembles the different parts according to the different bicycle models. The extent of time spent during bicycle assembly which is, from the moment one acquires the bicycle part stock to the time they are assembled highly depends on the type of bicycle the company is assembling. That is whether it is a re-known model or if its a custom built-to-specification bicycle. The time period spent also relies on the supply chain integration, the technology and stuff employed in Portubike itself. Supply chain integration can be defined as the manner in which all employees within the business and their trading partners work together to accomplish the same business goal through efficient and effective joined company process and data sharing (Benjabutr, 2018).

Constraints on Funds

There are many impediments that can occur when it comes to fund flows between two different continents some of which are political, tax, foreign exchange in this can Yuan to Euros, foreign exchange and liquidity consideration. This usually requires managers to plan ahead. Portubike and the other partners however, are only affected by two main constraints:

Political constraints:

- These result to blocking of transfer funds either openly or secretly.
- Open blockage is a product of government controlling the exchange rate which in turn prevents the transfer at a reasonable exchange rate.
- Secret blockage occurs when dividends or other types of fund payments are strictly restricted, heavily taxed, or unreasonably deferred in the name of bureaucratic approval (Graham, 2018).

Tax constraints:

- This usually occurs due to complex and at time inconsistent tax structures and jurisdictions through which the funds need to pass by of various national governments jurisdictions (Pondent, 2018).

Conclusion

For my final year work I decided to do an internship in order to not only complete my masters but also acquire some field experience. Throughout my time in Portubike I was treated well and given an adequate working space and tools in order to conduct my research and complete my typing work. In the beginning of my working days the company had just come from losing all their documents that were in their old computer system as a result they were in the process of putting all company data back into a new computer system called PHC. I helped them with the introduction of all documents into the system and once that was done my tasks ranged from organizing, filing, archiving and scanning in the administration department. These tasks weren't done every day so during my free time i worked on my research.

I didn't complete the pre-assigned time fully due the fact that majority of the information I needed from the company such as financial statements were not supplied, (as management seemed reluctant to give me access to them,) these were one of the main documents I needed for my research methodology since I'm was going to do a quantitative analysis. In addition, work nor tasks were being assigned anymore nor was I gaining any knowledge about other departments or additional knowledge from my department hence I found it redundant to continue going there. Furthermore the company only had an existence of no longer than 2 to 3 years being still in its infant's stage hence the information that would have been supplied wouldn't be enough to substantiate my research at the end of the day. In the end the company wasn't very stable and a month or two after I left it didn't make it through its infant stage as it closed down. Overall, my expectation were not met and I was forced to do a more extended investigation using the Portubike entity simply as an industry reference for my studies and not as the basis of my research.

Appendices II

Table 7 - Descriptive variables used in the literature review

Dependent	Independent	Formula	Source
Profitability (ROA & GOI)	CCC CR DR Sales Dummy variable:D1&D2	CCC= (Number ARD + Number ID) CR=Current ratio DR= Debt ratio Sales= log of sales	(Enqvist et al., 2014)
CRECOM (commercial credit received)	Size -(LIQUI) Growth-(CREAC;RECUOMER) ROA EFICOS ROTAC LOGAC CUOMER ENDEU LOGED Dummy variable: FICAC	LIQUI= Current asset/Liquid liabilities CREAC=(Annual total asset j – Annual total asset j -1)/Annual total asset j -1 RECUOMER=(Total Share Market year j – Total Share Market year j -1) / Total Share Market year j -1 ROA=EBIT /Total Asset EFICOS=(Costs From exploitation) / Amount net figure from sales ROTAC=Amount Net from Figure from Sales / Total Asset LOGAC=Log of total asset CUOMER=Net sales of company/Sum net sales of a number of companies together ENDEU=(liquid liabilities + Fixed liabilities)/Total liability &Own capital LOGED=log of age	(Pérez & Reig, 2014)
TC=(Account Payable & Account Receivable) Ln(cash)	Size Cash Flow Age Sale Growth Lev NWC FCF DEBT CF_Volatility	Size=log total asset(total asset – total liability) CF= Tangible Asset/Total Asset Age=Net profit margin LEV= (short term debt/total asset)& (Total debt/Equity) Ln (cash)=(Cash holding/Net asset) NWC=(current asset-short term debt)	(Hyun, 2017)

	Dummy variable=years	FCF=(operating income – interest payment – taxes) DEBT= (total liability/net assets) CF_V= industry average of prior 5 years standard deviation of FCF TC=AR/Sales Average TC= (AP/Cost of goods sold)	
FE (Absolute value of forecast) Dispersion – WC efficiency	Lev Size SROE	LEV= Total debt/Total Asset Size= log of asset SROE= SDV OF ROE firm "i" in the past 5 years	(Gao & Wang, 2017)
ROA	Sales growth Size Account receivable Account payable Debt/Leverage Inventory CCC	SG=(sales 1 – sales 0) / sales 0 ROA= EBT:Total Assets Size= log of asset AR= AR/ACP AP= AP/APP Debt= Total Debt /Total Asset INV=365x(Inv/Purchase)&365x(AP/Purchase) CCC= Inv+AR-AP	(Kasozi, 2017)
Corporate performance (market value of equity+book value of debt)/book value of assets	Net trade cycle (NTC) t Size t Leverage t Growth t Return on assets (ROA) Dummy variable: the influence of factors that the firm does not control.	NTC t= (accounts receivable/sales) x 365 + (inventories/sales) x 365 – (accounts payable/sales) x 365 Size t: natural logarithm of sales Leverage t: total debt/total assets Growth opportunities t:book value of intangibles assets/total assets Return on assets: EBIT (earnings before interest on taxes / total assets) •	(Bãnos-Caballero, Garcia-Teurel e Martínez-Solano 2014)
Operating profitability (Profitability t (PRO))	CCC Cash Conversion cycle	CCC= (accounts receivable/sales) x 365 + (inventories/purchases) x 365 – (accounts	(Bãnos-Caballero,

(PRO1:Gross operating income, PRO 2:nest operating income)	Profitability t-1 Size t Growth t Leverage t	payable/purchases) x 365 Size t: natural logarithm of sales Growth t: growth of sales [(sales t – sales t-1)/sales t-1] Leverage t: debt/total assets	Garcia-Teurel e Martínez-Solano 2012)
CCC Cash =Conversion Cycle (accounts receivable/sales) x 365 + (inventories/purchases) x 365 – (accounts payable/purchases) x 365	Cash Conversion cycle t-1 Cash flow t Leverage t Growth opportunities t Size t Age t Investment in fixed assets t Return on assets t	Cash Conversion cycle t-1=(accounts receivable/sales) x 365 + (inventories/purchases) x 365 – (accounts payable/purchases) x 365 Cash flow t: [(Net profit+depreciation)/Total assets] Leverage t: debt / total assets Growth opportunities t: (sales 1 – sales 0) / sales 0 Size t : natural logarithm of assets Age t : natural logarihm of age Investment in tangible fixed assets t : tangible fixed assets / total assets) Return on assets t : EBIT / Total assets	(Bãnos-Caballero, Garcia-Teurel e Martínez-Solano 2009)
Account receivable Account payable	Size Aged Cashflow FCost PGrowth NGrowth STLev Turn GPRoF STFind LTdebt Curras Purch LAged 2	AP= AR/Sales AR=AP/TA Lsize=log of assets LAge=log(1+age) CF=NP+Sale depreciaition FCost= FCost/(External financial cost-trade credit) PGrowth=positive sale growth NGrowth=negative sales growth STLev=Current Liability/Sales Turn=(Sale-AR)/Assets GPRoF=Gross Profit/Sales STFind=Short term Finance debt/Asset LTdebt=Long term debt/Asset Curras=Current Asset/Total asset Purch=Purchase/Asset	(Pedro Juan García-Teruel & Martínez-Solano, 2010)

PAY – (Account Payable)	Size LAge Cashflow FCost PGrowth NGrowth STFind LTdebt Curras Purch Cash holding Account receivable Inventory GDP Dummy variable= Time	Size=log of sales LAge= log(1+age) Cashflow=(NetProfit+Sale depreciation)/Total asset FCost=Financial cost/(Total debt-AP) PGrowth= positive sale growth NGrowth=negative sales growth STFind= Short term Finance debt/Asset LTdebt= Long term debt/Asset Curras=Current Asset/Total asset Purch= Purchase/Asset Cash=Cash/Asset RECEIVE=Receive/asset INVENT=Inventory/asset GDP=UKs annual value	(Pedro J García-Teruel & Martínez-Solano, 2010)
Trade credit payables Trade credit receivables Bank Loans Net trade credit	Size Inventory Sales Growth Debt To Equity ratio Cash Collateral(Land +Fixed Assets)	Size=(log of Assets) Tcpay=Trade payables/Total assets Tcrec=Trade receivables/Total assets Tcnet=(Tradereceivables-Trade payables)/Total assets Bloan=Short term debt/Total assets Sale growth=growth of sales Inventory=inventory/total assets Cash=cash/total assets Collateral=(Total land+fixed assets)/total assets D/E ratio=Long term debt/total equity	(Yang, 2011)
ROA NPM ROE OPM	APP CCC SIZE ARP ICP Leverage	Return on Asset (ROA)=Net Income(Loss)/ Average Total Asset Return on Equity (ROE)=Net Income (Loss)/ Average Shareholder Equity Operating Profit Margin (OPM)= EBIT/ Net Sales Net Profit Margin (NPM) =Net Profit	(Şamiloğlu & Akgün, 2016)

		after Taxes/ Sales Revenue Accountants Receivable Period (ARP)=365/Accounts Receivable Turnover Inventory Conversion Period(ICP) =365/ Inventory Turnover Ratio Accounts Payable Period (APP)= 365/ Accounts Payable Turnover Cash Conversion Cycle (CCC)= ARP+ICP – APP Firm Size=Natural Logarithm of Firm's Sales, lagged one year period Firm Leverage (FL)= Total Debt/ Total Asset	
Profitability: Gross Operating Income	Working Capital: number of days of account receivable, Number of days of account payable Number of days of inventory, Cash conversion cycle, Size, Sale growth, Financial debt ratio, Fixed financial asset and Net Operating Income	Gross Operating Income=(Sales-Cost of goods sold)/(total assets-financial Assets) Number of days of account receivable,= [accounts receivable x 365]/sales Number of days of account payable= [accounts payable x 365]/purchases Number of days of inventory= [inventories x 365]/cost of sales Cash conversion cycle= [number of days accounts receivable + number of days inventory — number of days accounts payable]. Size,= natural logarithm of sales Sale growth= ([this year's sales - previous year's sales]/previous year's sales) Financial debt ratio= o (financial debt/total assets Fixed financial asset= of fixed financial assets/ total assets Net Operating Income=(sales-cost of sales)/total assets-financial assets)	(Deloof, 2003a)

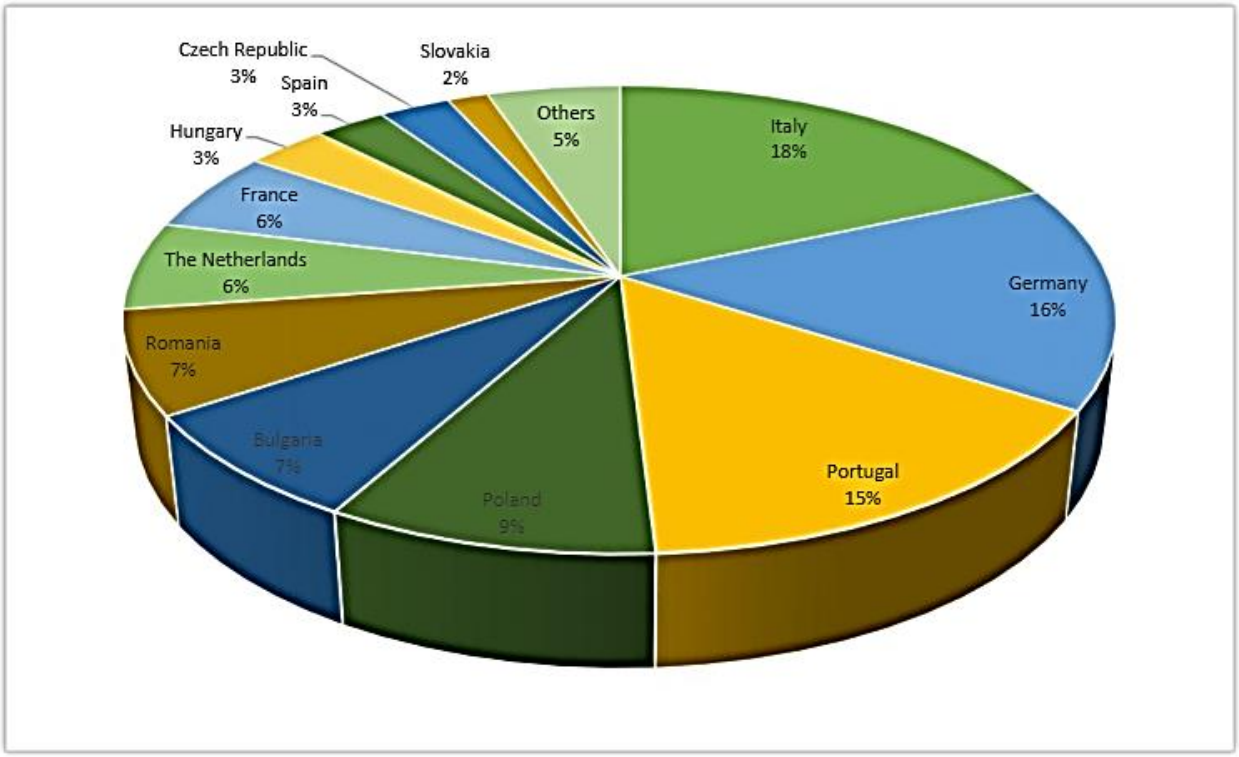
Gross operating Profit	Number of days of account receivable, Number of days of account payable Number of days of inventory, Cash conversion cycle, Size, Leverage Fixed financial assets	Number of days accounts receivable (AR)= Average of accounts receivable / Sales* 365 Number of days accounts payable (AP)= Average of accounts payable / Cost of goods sold *365 Number of days inventory (INV) = Average of inventory / Cost of goods sold * 365 Cash conversion cycle (CCC) = AR+ INV- AP Size=Natural Logarithm of sales (LOS) or ln(sale) Leverage/Debt ratio (DR)= Total debt/ Total assets Fixed financial assets (FATA) = Fixed financial assets/ Total assets Gross operating profitability (GROSSPR) = (Sales – Cost of goods sold)/ (Total assets – Financial assets)	(Phuong Dong & Su, 2010)
Performance: Return on Assets	Account receivable period Account payable period Inventory conversion period Cash conversion cycle Size Leverage	Return on Assets= Net income/Total assets Account receivable period=Average Trade Receivables x365 days/Annual Credit Sales Account payable period=Average Trade Payables x 365 days/Annual Credit Purchases Inventory conversion period=Average Inventory x365 days/ Cost of Sales Cash conversion cycle=Accounts Payment Period - Accounts Collection Period Size=Natural logarithm of total assets Leverage=Earnings Before Interest And	(Nguti Kiio, 2014)

		Taxes /Earnings Before Interest And Taxes - Interest	
Commercial credit given to clients (CC CONC)	Cost of debt (DIV), Operational sales profit (ROV), Liquidity(LIQ), Solvency (SOLV), Asset turnover (RACT), Gross margin(MB), Commercial credit received (CC REC) Dummy variable: Age (IDADE).	Commercial credit given to clients (CC CONC)=Debtors/Total Assets Cost of debt (DIV)= financial charges/(Total liability-account payable) Operational sales profit (ROV)=Operational results/sales Liquidity(LIQ)= current asset-current liability Solvency(SOLV)= Total Assets/Total liability Asset rotation(RACT)=Sales/Total Assets Gross margin(MB)=Sales – cost of goods sold)/Sales Commercial credit received(CCREC) =Account payable/Total Asset	(Vieira et al., 2013)

Source: Product of Literature review

Table 7 shows a summary of the dependent and independent variable used in the articles discussed in the literature review. Some articles present dummy variables whilst others didn't. Among common variables that were used for analysis were size, age, sales growth, account receivable and payable, inventory and cash conversion cycle. Each author used them along with other variables applying different methods to study them whereby at times formulas applied in their studies were identical. Some of these formulas above were extracted and used in this study.

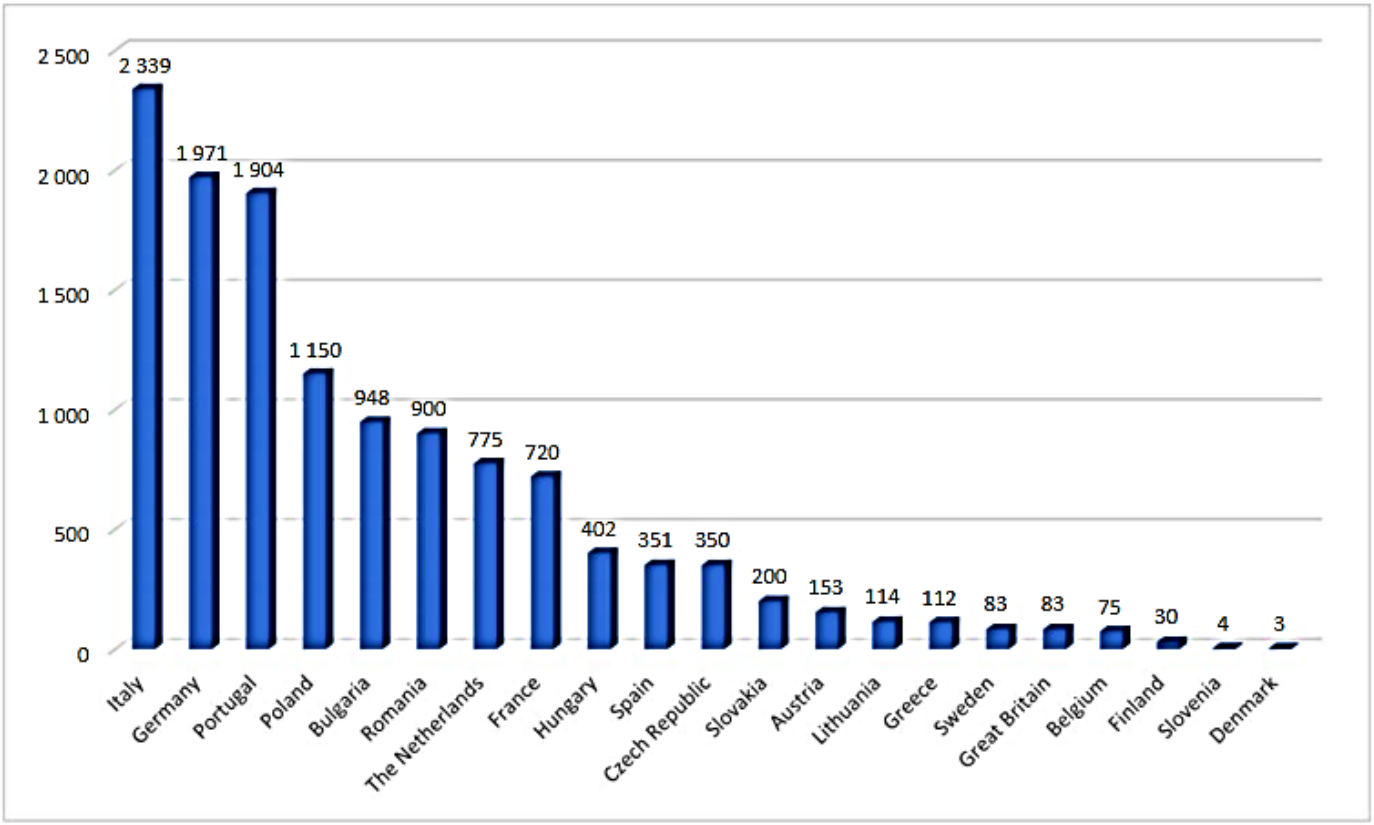
Figure 2 - 2016 European Bicycle Production (x1000 units)



Country	Italy	Germany	Portugal	Poland	Bulgaria	Romania	The Netherlands	France	Hungary	Spain	Czech Republic	Slovakia	Austria	Lithuania	Greece	Sweden	Great Britain	Belgium	Finland	Slovenia	Denmark	Croatia	Cyprus	Estonia	Ireland	Latvia	Luxembourg	Malta	EU 28
Bicycle Production (x 1,000)	2 339	1 971	1 904	1 150	948	900	775	720	402	351	350	200	153	114	112	83	83	75	30	4	3	0	0	0	0	0	0	0	12 666
Country share %	18	16	15	9	7	7	6	6	3	3	3	2	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	-

Source: Conebi (European bicycle industry)

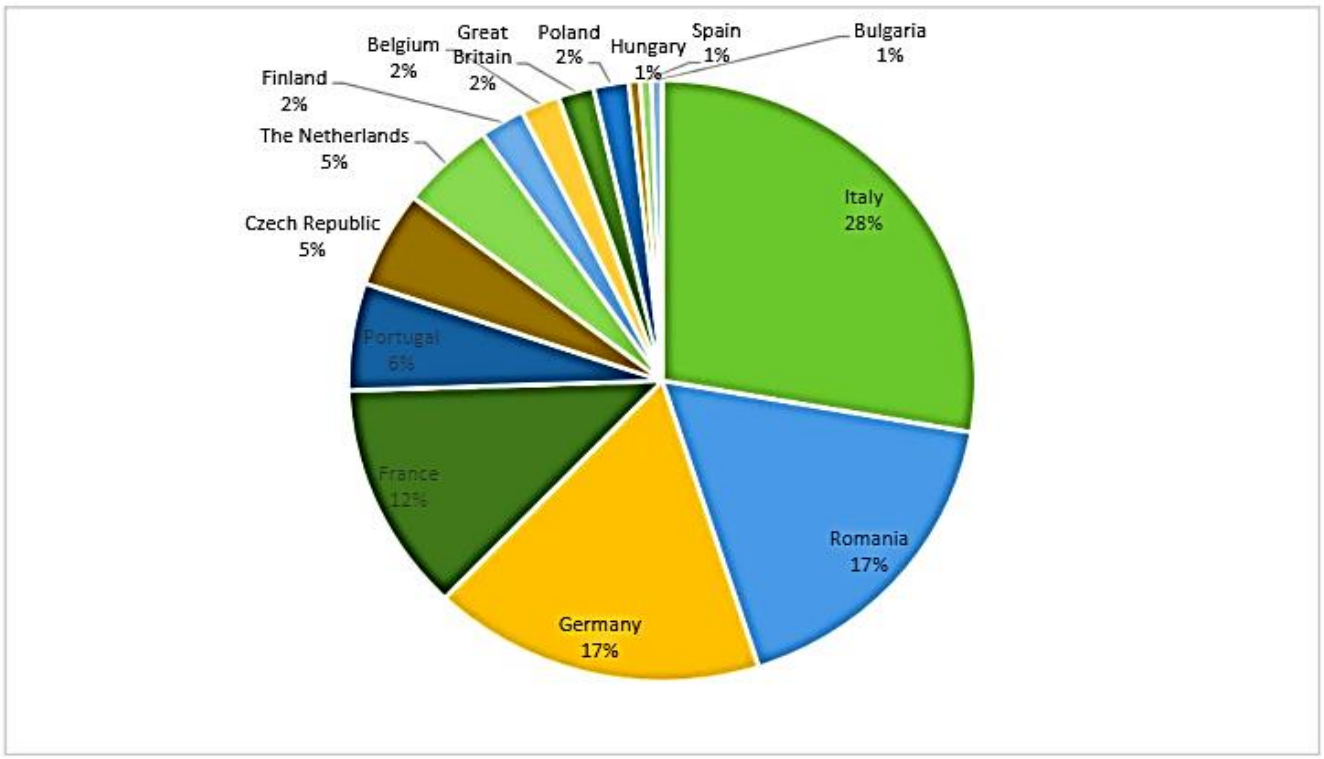
Figure 3 - 2016 European Bicycle Production Country Ranks (1000 units)



Country	Italy	Germany	Portugal	Poland	Bulgaria	Romania	The Netherlands	France	Hungary	Spain	Czech Republic	Slovakia	Austria	Lithuania	Greece	Sweden	Great Britain	Belgium	Finland	Slovenia	Denmark	Croatia	Cyprus	Estonia	Ireland	Latvia	Luxembourg	Malta	EU 28
Bicycle Production (x 1,000)	2 339	1 971	1 904	1 150	948	900	775	720	402	351	350	200	153	114	112	83	83	75	30	4	3	0	0	0	0	0	0	0	12 666
Ranking	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	16	17	18	19	20	21	21	21	21	21	21	21	

Source: Conebi (European bicycle industry)

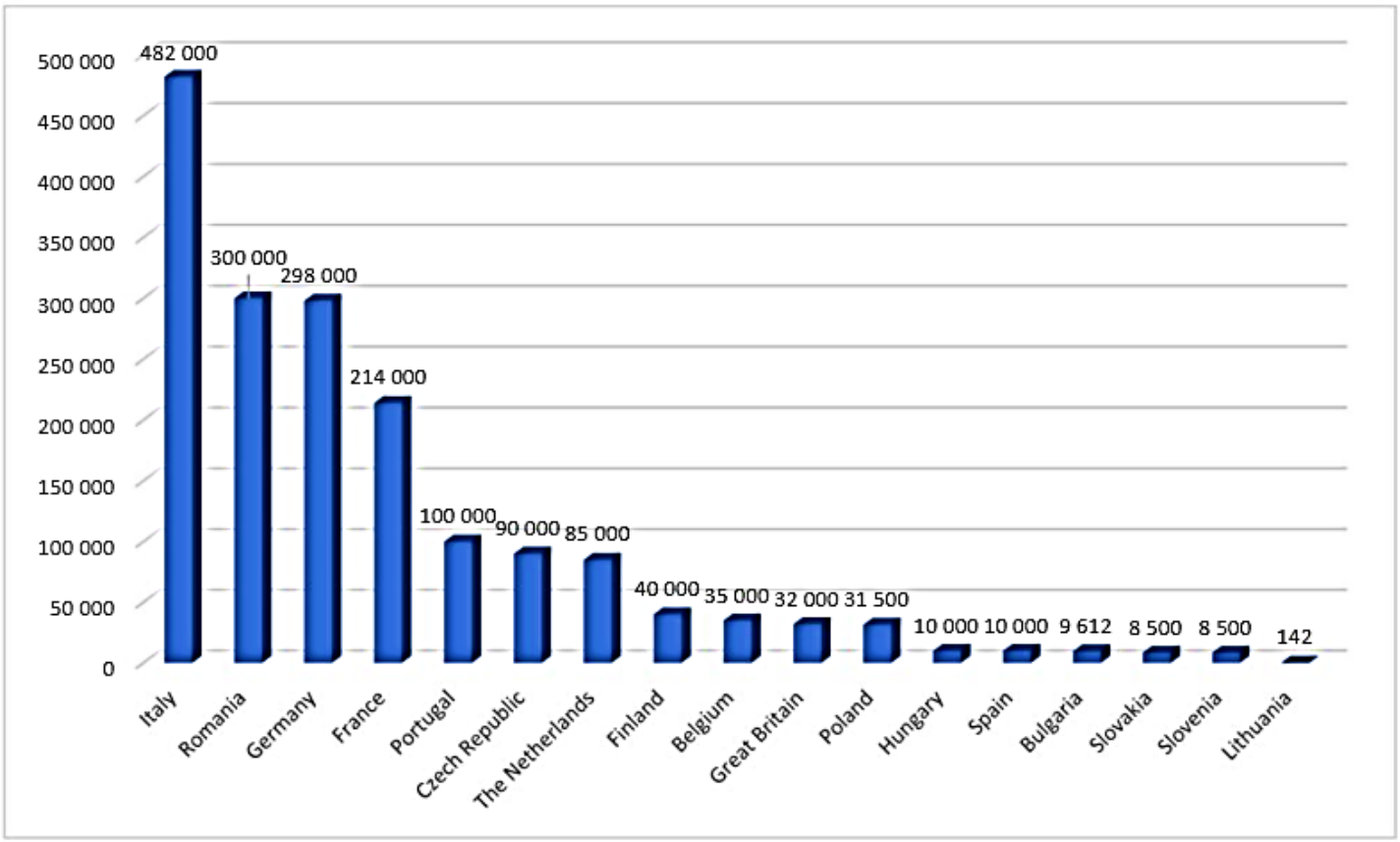
Figure 4 - European Bicycle parts and accessories production country shares (M€)



Country	Italy	Romania	Germany	France	Portugal	Czech Republic	The Netherlands	Finland	Belgium	Great Britain	Poland	Hungary	Spain	Bulgaria	Slovakia	Slovenia	Lithuania	Austria	Croatia	Cyprus	Denmark	Estonia	Greece	Ireland	Latvia	Luxembourg	Malta	Sweden	EU 28
P & A Production (M€)	482 000	300 000	298 000	214 000	100 000	90 000	85 000	40 000	35 000	32 000	31 500	10 000	10 000	9 612	8 500	8 500	142	0	0	0	0	0	0	0	0	0	0	0	1 754 254
Country Share %	27	17	17	12	6	5	5	2	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Source: Conebi (European bicycle industry)

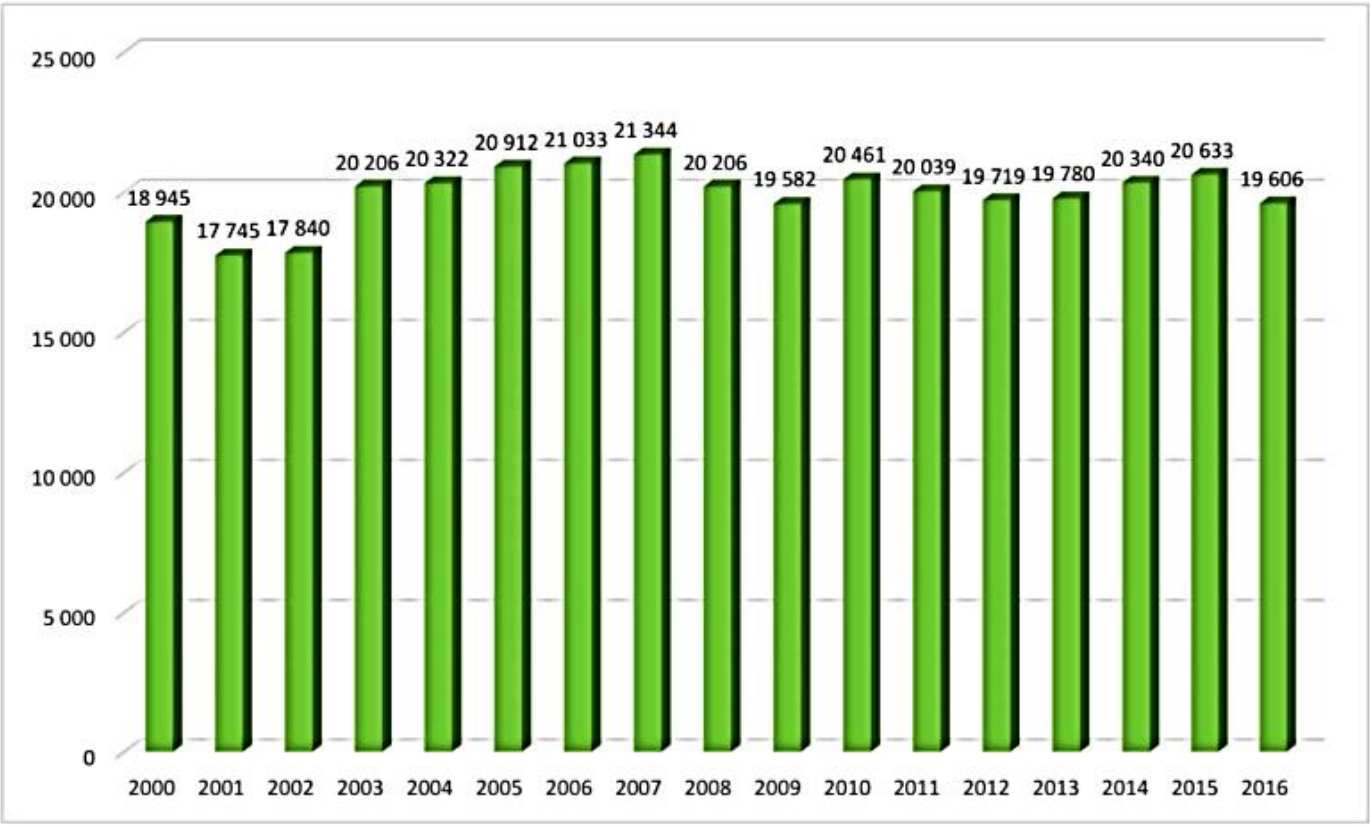
Figure 5 - 2016 European Bicycle parts and Accessories Production country ranking (M€)



Country	Italy	Romania	Germany	France	Portugal	Czech Republic	The Netherlands	Finland	Belgium	Great Britain	Poland	Hungary	Spain	Bulgaria	Slovakia	Slovenia	Lithuania	Austria	Croatia	Cyprus	Denmark	Estonia	Greece	Ireland	Latvia	Luxembourg	Malta	Sweden	EU 28
P & A Production (M€)	482 000	300 000	298 000	214 000	100 000	90 000	85 000	40 000	35 000	32 000	31 500	10 000	10 000	9 612	8 500	8 500	142	0	0	0	0	0	0	0	0	0	0	0	1 754 254
Country Share %	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	18	18	18	18	18	18	18	18	18	18	

Source: Conebi (European bicycle industry)

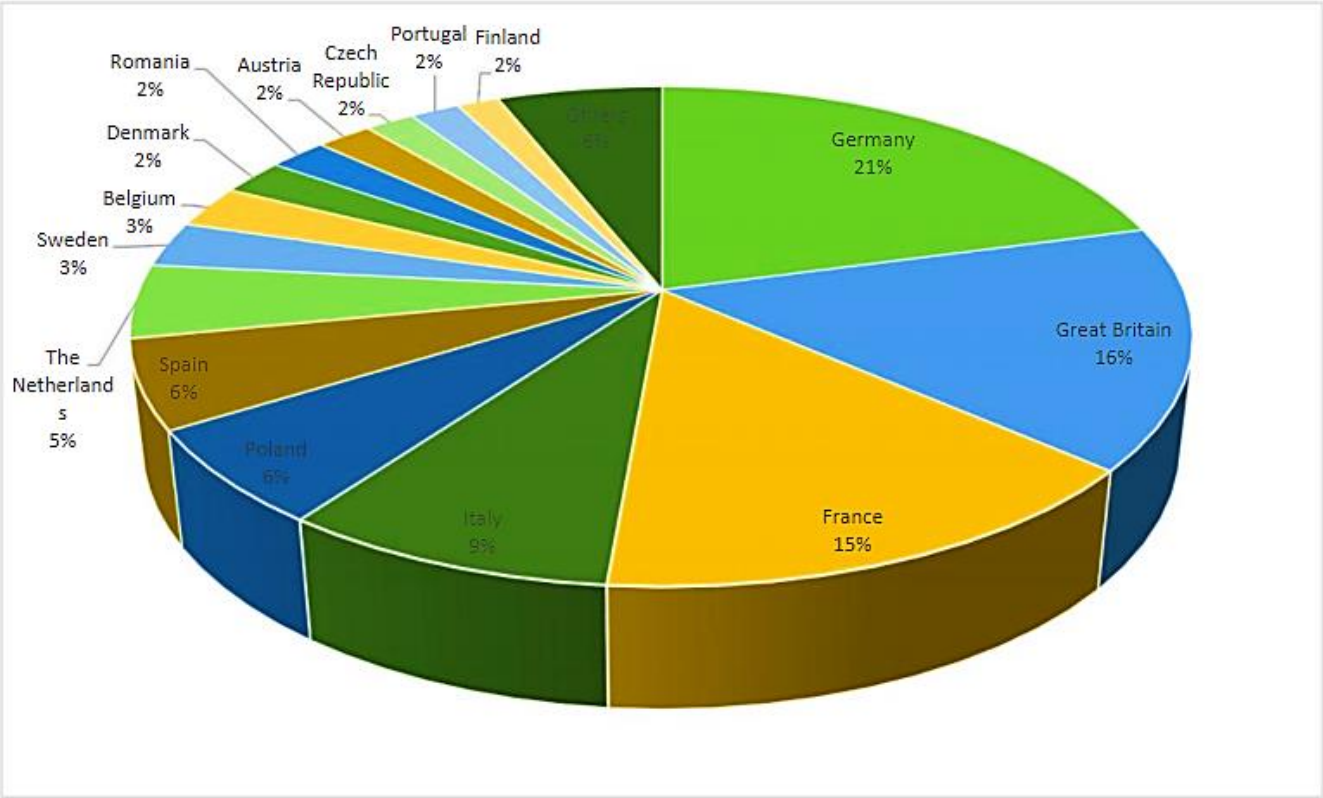
Figure 6 - European Bicycle sales (1000 units) 2000-2016



Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Bicycle Sales (x 1,000)	18 945	17 745	17 840	20 206	20 322	20 912	21 033	21 344	20 206	19 582	20 461	20 039	19 719	19 780	20 340	20 633	19 606
Evolution (%)		-6,33	0,54	13,26	0,57	2,90	0,58	1,48	-5,33	-3,09	4,49	-2,06	-1,60	0,31	2,83	1,44	-4,98

Source: Conebi (European bicycle industry)

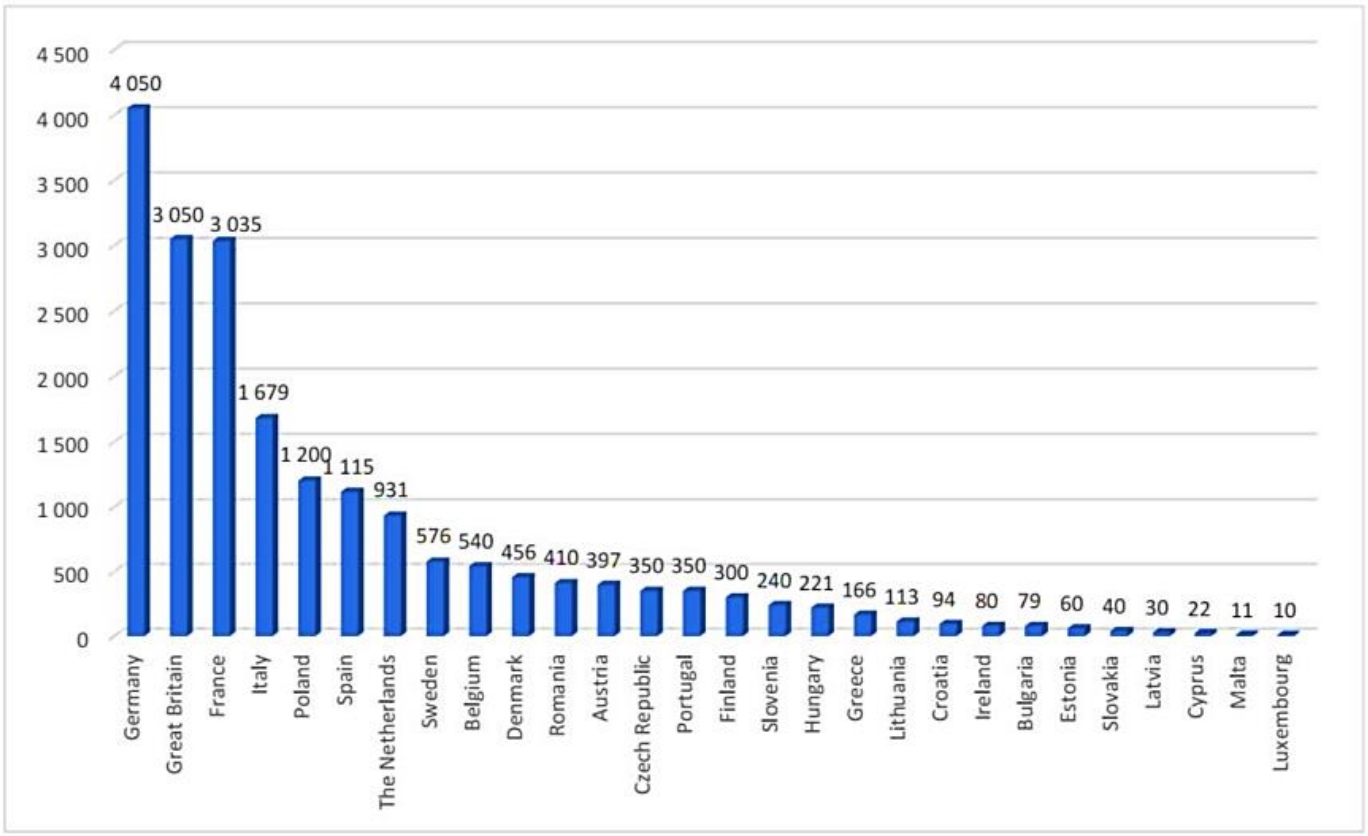
Figure 7 - 2016 European Bicycle Sales Country Shares (1000 units)



Country	Germany	Great Britain	France	Italy	Poland	Spain	The Netherlands	Sweden	Belgium	Denmark	Romania	Austria	Czech Republic	Portugal	Finland	Slovenia	Hungary	Greece	Lithuania	Croatia	Ireland	Bulgaria	Estonia	Slovakia	Latvia	Cyprus	Malta	Luxembourg	EU 28
Bicycle Sales (x 1,000)	4 050	3 050	3 035	1 679	1 200	1 115	931	576	540	456	410	397	350	350	300	240	221	166	113	94	80	79	60	40	30	22	11	10	19 606
Country share (%)	21	16	15	9	6	6	5	3	3	2	2	2	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	

Source: Conebi (European bicycle industry)

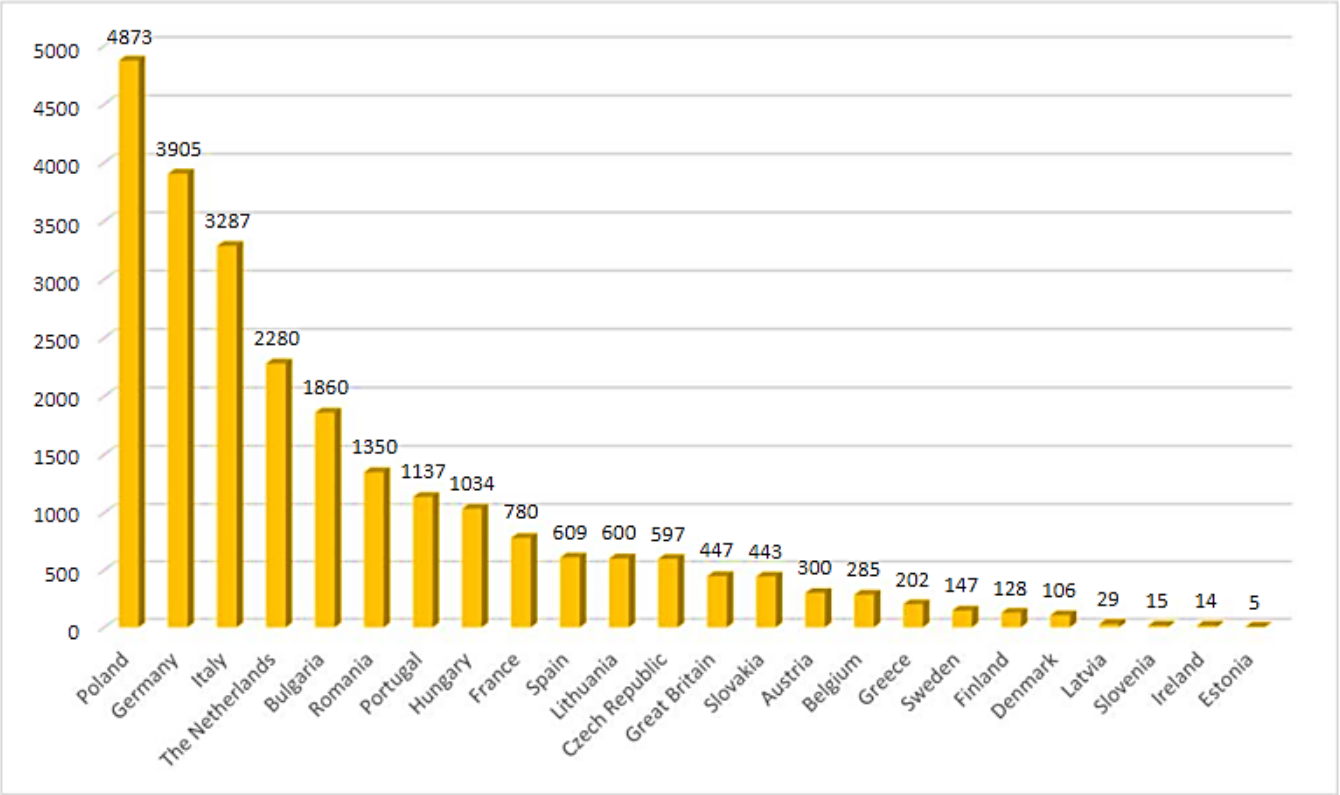
Figure 8 - 2016 European Bicycle Sales Country Ranking (1000 units)



Country	Germany	Great Britain	France	Italy	Poland	Spain	The Netherlands	Sweden	Belgium	Denmark	Romania	Austria	Czech Republic	Portugal	Finland	Slovenia	Hungary	Greece	Lithuania	Croatia	Ireland	Bulgaria	Estonia	Slovakia	Latvia	Cyprus	Malta	Luxembourg	EU 28
Bicycle Sales (x 1,000)	4 050	3 050	3 035	1 679	1 200	1 115	931	576	540	456	410	397	350	350	300	240	221	166	113	94	80	79	60	40	30	22	11	10	19 606
Country ranking (%)	1	2	3	4	5	6	7	8	9	10	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	

Source: Conebi (European bicycle industry)

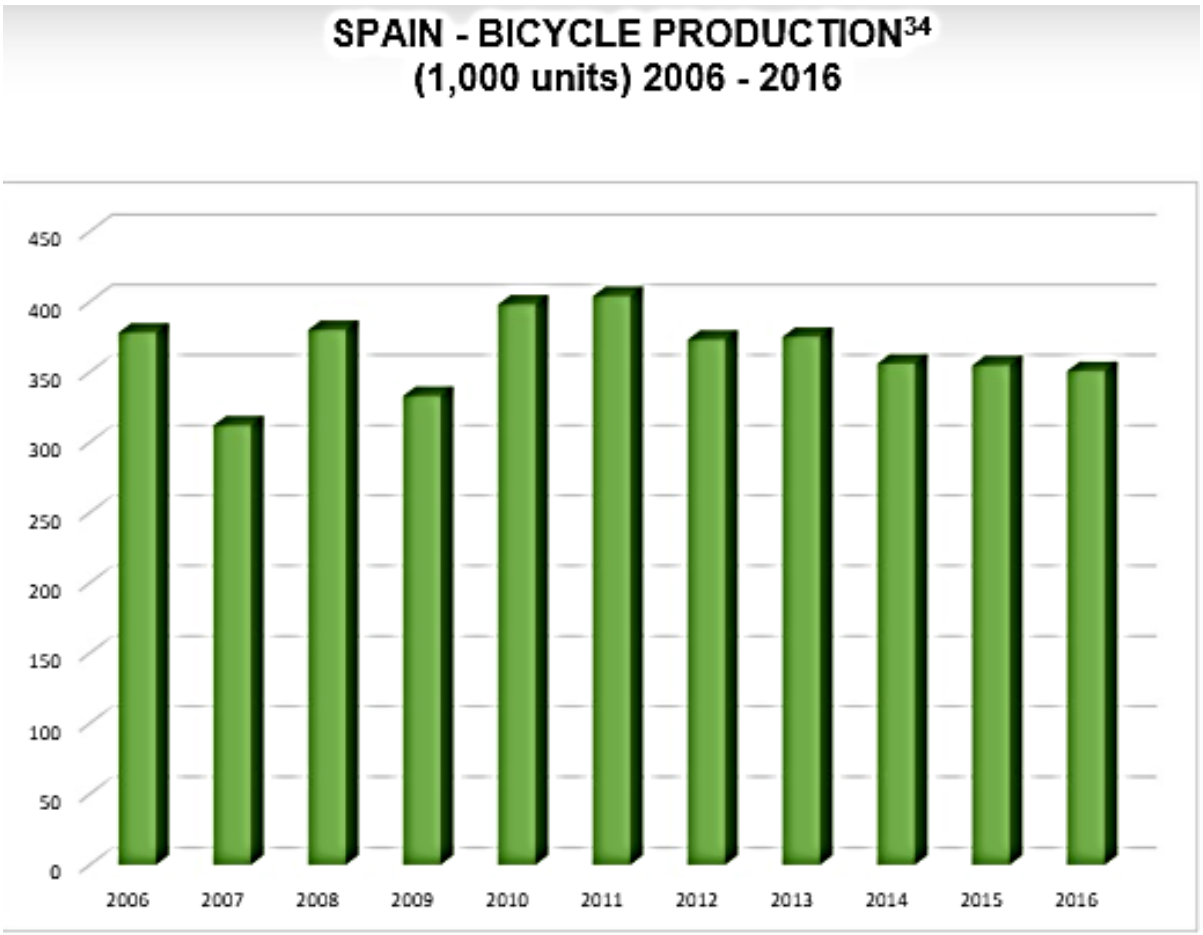
Figure 9 - 2016 Bicycle industry Employment



Country	Poland	Germany	Italy	The Netherlands	Bulgaria	Romania	Portugal	Hungary	France	Spain	Lithuania	Czech Republic	Great Britain	Slovakia	Austria	Belgium	Greece	Sweden	Finland	Denmark	Latvia	Slovenia	Ireland	Estonia	Croatia	Cyprus	Luxembourg	Malta	EU28
Bicycle Employment	4 873	3 905	3 287	2 280	1 860	1 350	1 137	1 034	780	609	600	597	447	443	300	285	202	147	128	106	29	15	14	5	0	0	0	0	24 433
Ranking	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	25	25	25	

Source: Conebi (European bicycle industry)

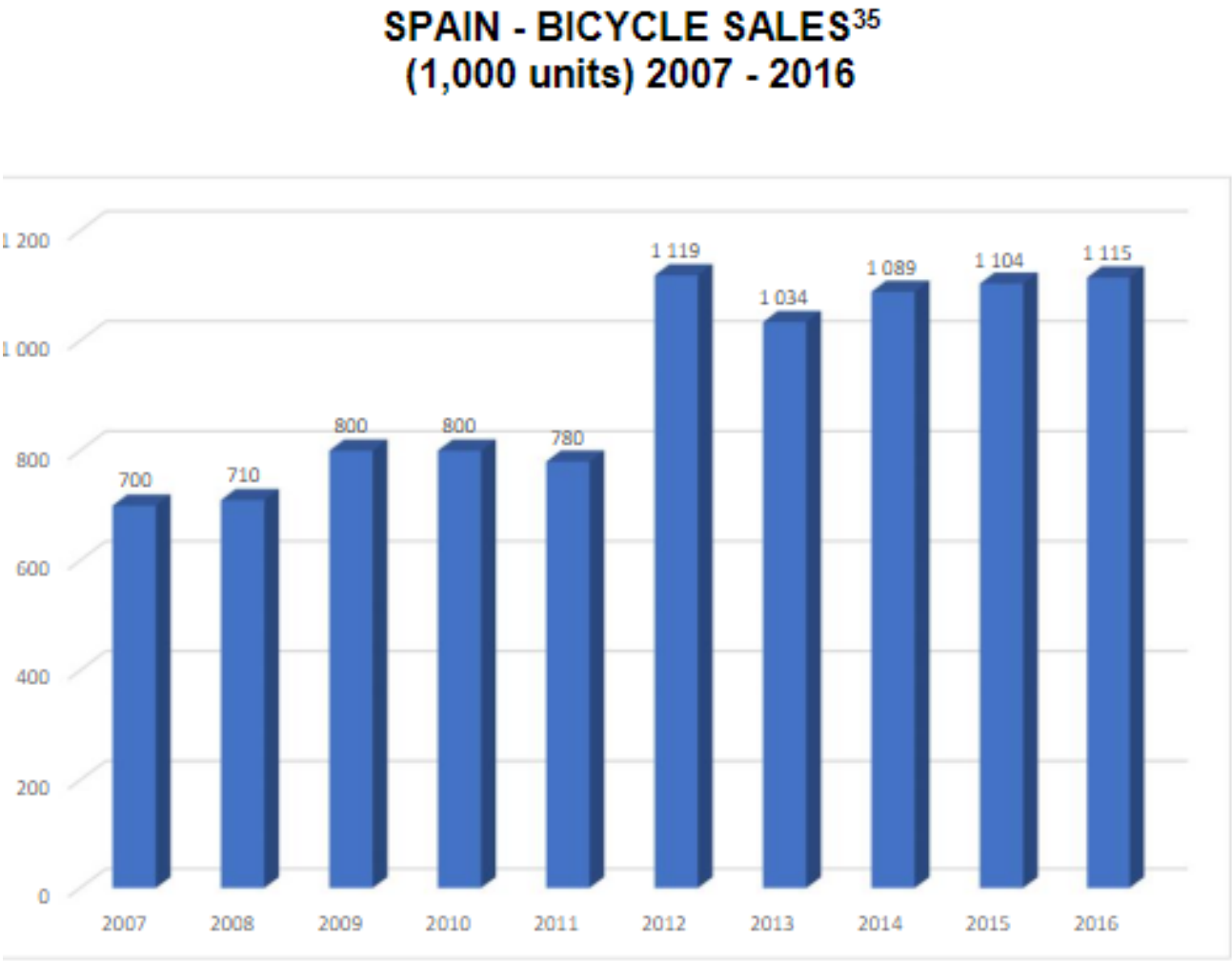
Figure 10 – Spain Bicycle production 2006-2016 (1000 units)



Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Bicycle Production (x 1,000)	378	312	380	333	398	404	373	375	356	355	351
Evolution year/year-1 (%)		-17,46	21,79	-12,37	19,52	1,51	-7,67	0,54	-5,07	-0,37	-1,09

Source: Conebi (European bicycle industry)

Figure 11 – Spain – Bicycle Sales 2007-2016 (1000 units)



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Bicycle Sales (x 1,000)	700	710	800	800	780	1 119	1 034	1 089	1 104	1 115
Evolution year/year-1 (%)	-	1,43	12,68	0,00	-2,50	43,46	-7,60	5,32	1,36	1,01

Source: Conebi (European bicycle industry)

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