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Net Working Capital fluctuations due to the Pandemic

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Introduction to the work

In 1928 and 1929 the markets are euphoric. The roaring 20s are roaring even on the market.

Stocks and bonds are bought in order to be sold at a higher price. The first (perhaps) speculative bubble of the market is born.

On October 24 and 29, 1929, in Wall Street millions of stock traders try to sell shares and bonds in their possession without finding buyers. There is an excess of supply without demand. Stocks and bonds loose value.

The market collapses, it's Black Thursday. The Great Depression begins.

The Great Depression causes such serious imbalances that it undermines the entire capitalist system, now widespread in most of the planet. The crisis of 1929 will, in fact, be remembered, together with the two world wars, as one of the most terrible events of the entire twentieth century.

The consequences are a disaster. The financial crisis immediately turns into a crisis of the real economy (unemployment rates soar from 4% to 30%).

In this context it was John Meynard Keynes who wrote that "practical men, who believe they are quite free from all intellectual influence, are generally slaves of some deceased economist" (Keynes, 1936). Keynes, perhaps, overestimated the ability of men to learn from their mistakes.

The same will happen in 2008 with the Great Recession which, albeit for different reasons, will bring markets around the world to their knees until 2011.

The Great Recession was a global economic crisis that began in the United States of America in 2007 following a housing market crisis triggered by the burst of a real estate bubble (subprime crisis) producing a major financial crisis in the American economy.

When we talk about the 1929 market collapse, we should be aware that we are talking from the future. We are in 2022 and the markets are much more advanced, safe, observed and observable than more than ninety years ago.

On January 28, 2020 stock markets around the world are flying high, according to experts the markets are risk-off.

The Milan Stock Exchange closes at +2.61%. The best of the day is Atlantia, whose stock closes up 6.38% to 22.33 euros.

On February 12, 2020, Dow Jones Industrial Average, NASDAQ and the S&P 500 index hit record highs, which will be repeated on February 19 for NASDAQ and S&P 500.

But on February 28, 2020, the world is still shaking. And it's shaking very much. The markets are collapsing. It is the largest stock crash since the 2007-2008 financial crisis.

Investing is the same as burning money.

Securities lose value by becoming waste paper and billions of dollars become smoke.

It is no secret that every crisis has similarities, it is not surprising that when a new crisis begins we look for an answer or a little light in the history. But each crisis is different and is unique in its own way, cancelling previous anti-crisis strategies that turn out to be not too useful.

History and economics have taught us that every crisis has a cause, that there are periods of up and down, that curves inflected into down correspond to depression and upward-flexing curves to expansion. Depression leads to crisis and both are synonymous with loss.

True, every crisis has a cause. There were many causes of the crisis of 1929, first of all the absence of an empirically studied and confused economic science with the

obsessive pursuit of balance, speculation on securities, the bad banking structure and the wrong distribution of income.

Accommodative monetary policy and poorly controlled financial innovations triggered the financial crisis that began in 2007.

Both collapses, with extreme probability, are derived from a form of nostalgia for the Enlightenment. The theories written from the eighteenth century, in fact, sought to recreate all the ideal market conditions described by Smith and Hume, ignoring how the growth of economies of scale in the modern economy and the work and behaviour of economists had shown that men were no longer beings with the behaviour of homo economicus.

It was, therefore, inevitable that the expansion of this type of economy ended badly. (Termin, 2010)

What, in an advanced, controlled, studied, observed and observable market, but above all rich in anti-default tools, could have caused one of the biggest financial crises of the last century? A bat in Central China.

The stories of the news tell of a virus that has made the so-called leap of species, from animal to human, from bat to person, that from a place as big as a football field (the market of the Central China town of Wuhan) has spread all over the world (accomplice, of course, globalization).

It was the market of Wuhan where it all began on December 16, 2019, with the first recorded case of what is perceived to be a virus of the SARS family, later called Coronavirus or Covid-19. The news spreads in January, when China is completely invaded by the new, deadly virus - pneumonia.

The markets of the world are breathless, but they operate regularly.

The Coronavirus, after being thought isolated to China and to some cruises, definitively frightens the world in February 2020.

Infections increase immeasurably and without rules (the news reports even not to order packages from China, only two years later it will be understood that the virus does not remain on the surfaces for more than 6 hours), the number of deaths increases, hospitals are overcrowded and the world is in emergency: since March 11, 2020 the Coronavirus is officially a dangerous and frightening global pandemic. The fear of the virus swirls investor expectations, the most widely used words are "distrust" "confusion" "misinformation" "fear". Words that are opposed to the market and that manage to make it collapse, in fact, between 24 and 28 February 2020.

All this indicates that every economic or financial crisis that has occurred over the last few centuries has its roots in the economy or finance itselves.

In the case of the economic crisis resulting from the Coronavirus, we are faced with a new and different cause.

The effects of the pandemic have been involved in fuelling the recession and the crisis. The danger and virality of the virus have stopped thousands of companies, without sparing anyone, stopping dozens of countries in the world.

Stopping businesses has resulted in stopping consumption. This has led to the loss of employment and wages, and a further decrease in demand which has, again, slowed production. Proof of this is the collapse of the GDP of European countries.

The aim of this study is to better understand what happened to the net working capital of companies that are part of geographical Europe, to all those companies which, in any case, have been affected by the Coronavirus.

The aim is to study companies operating in Europe, with administrative and/or production offices in Europe in four different sectors:

1- the pharmaceutical one;

2- that of large-scale organized distribution;

3- the car manufacturing sector;

4- clothing and accessories.

It is a moral and civic duty to understand what surrounds us and what involves the society of which we are part in order to know it better, and as a European citizen I would like to understand to the roots what and why shocked my society during the pandemic.

I will find answers in the experience of those who have lived it, including myself and my peers, and in the studies of the social sciences.

But among the social sciences that deal with studying the human being and society through the scientific method, one stands out: the economy.

The term economy comes from the ancient Greek οἶκος (oikos), "house" and νόμος (nomos), "norm" or "law". For the Greeks, therefore, the economy represented the proper management of the house. The problem of the correct management of the house (therefore of the economy) is trivial, apparently, and is the attempt to administer finding balance between the availability of the goods that are needed and desired and the goods and services that are available. Men have limitless needs and aspirations, but the limited resources available force them to choose which needs to meet, setting priorities. (Fiori, 2017)

Understanding what has happened to companies, what has involved them, studying their warehouses, credits or trade debts during the pandemic is, in fact, my duty as an economist, and the answers, which may be simple, complex or controversial, can be found only in the data, therefore in the balance sheets.

"Science is built up of data, as a house is with stones. But a collection of data is no more a science than a heap of stones is a house."

Henri Poincaré (1854-1912)[1]

An overview on net working capital

1.1 Definition of net working capital

During his lessons Aswath Damodaran, known as the Dean of Valuation, Professor of Finance at Stern School of Business (New York University), defines working capital in the following way:

"In accounting terms, the working capital is the difference between current assets (inventory, cash and accounts receivable) and current liabilities (accounts payables, short term debt and debt due within the next year).

A cleaner definition of working capital from a cash flow perspective is the difference between non-cash current assets (inventory and accounts receivable) and non-debt current liabilities (accounts payable).

Any investment in this measure of working capital ties up cash. Therefore, any increases (decreases) in working capital will reduce (increase) cash flows in that period.

When forecasting future growth, it is important to forecast the effects of such growth on working capital needs and building these effects into the cash flows."

Net working capital is therefore a capital size given by the difference between the assets and the operating liabilities (identified through the reclassification of the

[1] Mathematician, physicist, philosopher. The last of Universalists.

balance sheet according to a management logic). It is the budget items that emerge from the normal business processes of purchase, production and sale (regardless of the time horizon of realization of the asset or settlement of liabilities).

Operating net working capital also includes working assets or liabilities which, although entered in the balance sheet "over 12 months", are of an operational nature.

On the other hand, all assets that, despite having a financial manifestation in the short term, are not part of the operating net working capital, are not the result of operating activities, such as:

- current shares of medium/long-term debts with credit institutions;
- investments in government bonds;
- receivables and payables from shareholders of a financial nature;
- receivables and payables for the purchase of fixed assets.

The items directly related to the purchase, production and sale operations are therefore inventories, receivables and trade debts and these are precisely those which form the so-called net commercial working capital.

To these are added those items whose manifestation is only indirectly linked to the conduct of such operations, such as:

- operational accruals and accruals and deferred income;
- debts to employees and social security institutions;
- tax debts and claims;
- tax credits and debts;
- repayments to others and debts to others.

1.1.1 The working capital cycle

The working capital cycle represents that period of time that elapses from the moment of the payment of the productive factors (that is of the goods understood

as raw material of production) to the moment of the collection of the revenues obtained with the products sold.

If we analyze on an axis of time the temporal consequence of the operating cycles and their financial repercussions, we can see how:

- from the time of purchase, the inputs acquired lie in stock or pass through production for a certain period of time, until the product is sold;
- from the moment of sale, the credit to customers remains to be collected for a certain period called the average time of collection of the receivables, until it is collected;
- from the time of purchase, the debt to suppliers remains to be paid for a certain period of time called the average time of payment of trade debts, until it is paid.

All this leads to the understanding of how a positive cycle of cash flow involves a need to be financed as the collection of credits is after the payment of debts, while a negative cycle of cash implies a surplus to be invested as the collection of claims is prior to the payment of debts.

Information on the average time that elapses between payment by suppliers and collection by customers is relevant to the liquidity situation.

The wider this period, the more critical the financial situation of the enterprise will be, as there are huge needs to finance generated by current operating cycles. The smaller the period, the greater the financial elasticity of the enterprise in the short term.

When this cycle reverses (it is collected from the customers before paying the suppliers), it means that the operating cycles current they don’t generate financial requirements, but they generate cash for a sure period.

At this point we could theoretically compare the net working capital to a sort of sponge: if the sponge increases its size (dilatation) it means that it has absorbed water, in our point of view it means that a company has absorbed liquidity (cash), in other words the company has produced more but has not been able to sell everything (therefore there is an inventory which has increased), or has sold more but has found it harder to collect (and therefore also the credits have increased, and it has therefore delayed the moment of transformation of those credits into cash. If, on the other hand, the NWC decreases from one year to the next, it means that the company has managed to empty the warehouse.

Therefore, financially, the decreasing net working capital means that the warehouse has been emptied, or that the payables to suppliers have increased. Summarizing, a decrease in net working capital can be translated in a generation of liquidity and an increase in an absorption of liquidity.

Short-term liquidity control requires a knowledge of:

- the rate of transformation into liquid form of the individual value classes of the circulating asset;
- the rate of extinction of current liabilities.

It is a matter of investigating the average times with which the financial flows linked to how the current management cycles of purchase, transformation and sale take place.

The budget allows to calculate these average durations:

- the average time of collection of receivables by customers,
- the average storage time of stocks,
- the average time of payment of suppliers by the company

through:

- credit rotation quotients,

- stock rotation quotients,
- debt turnover ratio,

measuring average collection, stock and payment times (expressed in days).

1) The turnover quotient of the warehouse is represented by (Inventory/Sales) * 365 days and it represents the average days of finished goods inside the warehouse;
2) the credit turnover ratio is represented by (Receivables/Sales) * 365 days and it represents the average days of receivables collection;
3) the payables turnover ratio is represented by (Payables/Purchases) * 365 days and it represents the average days of the payment of debts.

Regarding the quotient of the inventory it is good to specify that:

- at the numerator the average stock is considered because a flow data is compared with a stock data;
- the denominator can be considered, instead of sales, the cost of sales to avoid comparing a data valued at cost with one valued at price.

To what it concerns to the quotient of spin of credits and debts:

- average receivables and payables are taken into account by comparing a given flow with a given stock;
- in order to ensure consistency with the denominator, it is preferable to separate taxes from claims and debts.

The rotation indices can be expressed analytically by the following formulas:

1) Trade credit rotation indices: sales revenue / trade receivables;
2) index of turnover of debts to suppliers: purchases of goods and services / trade payables
3) index of rotation of inventories of raw materials and finished products: cost of goods sold / inventory of finished products (and not even raw materials).

In the presence of differentiated productions (involving different commercial policies), it would be appropriate to determine the average time of collection of credits to customers (or average time of renewal of credits) for each of them and, where appropriate, to make them an average weighted by the size of the claims.

The prospective analysis of net working capital allows an estimation of the net financial needs resulting from the course of the operating cycle.

Government of this magnitude is of paramount importance in order to ensure the financial balance of the characteristic management.

In order to properly manage the net working capital and to optimize the financial needs arising from it, it is necessary to understand the main factors underlying this size.

These factors can be classified into:

- volume of realized turnover;
- production policies;
- commercial policies with customers and suppliers.

We can therefore say that in the presence of an increase in turnover for the company arises the need to find additional financial resources to be used in the expansion of working capital.

In the case of a healthy and well-structured company, an increase in turnover is usually accompanied by probably satisfactory income results (unless accompanied by aggressive pricing policies) which, however, could be frustrated if the financial dynamics are not promptly managed, which can significantly influence the results achieved. To properly manage this phenomenon it can be interesting to relate the value of net working capital to turnover: this indicator called the rate of the circulating currency thus allows to express the efficiency of the company in terms of the use of working capital for each single unit of turnover.

Inventories from a management perspective represent investments that need to be financed.

For this reason the management of the supplies must be put into effect not only making reference to the necessities and the productive constraints, but also keeping under control the income and financial reflexes deriving from the cover of the financial requirements that these generate.

A decrease of the permanence time of the supplies inside of the company allows to reach a financial advantage deriving from the reduction of the net working capital obviously if this does not compromise the economic and commercial technical constraints in the complex.

Collection policies certainly play a dominant role in determining the development of net working capital and therefore the financial needs of current activity.

Credit policies should therefore also be considered the basis of their financial implications and not only in terms of sales volumes:

- credit terms usually have negative impacts on financial balances;
- deferred average payment time positively influences the value of net working capital and decreases dependence on the banking world;
- the acquisition of discounts is convenient from the point of view of margins, but requires the waiver of deferred payments (in the latter case it must be assessed whether the costs related to debt are greater than the advantages achieved with the commercial discount).

Very often companies can no longer have bank financing for any reason or not wanting to take on short-term debts (maybe now less accessible than in the past) and they must find other ways: one of them is to shift the burden of financing from the bank to the supplier.

A first road consists exactly in the lengthening of the times of payment of the suppliers allowing in this way the enterprise to finance its own operating cycle without the resource to the indebtedness bank: obviously this choice is not maneuverable in the same way by all companies, as it depends on various factors such as the characteristics of the market and the contractual strength of the company.

Concluding with what is net working capital: a company with a low or decreasing net working capital can be translated as a company with a lower investment in working capital, a high or rising net working capital denotes a greater investment in working capital. In this definition a greater net working capital can serve to improve the business performance stimulating the sales, preventing interruptions of production, strengthening the relationship of along term with the own customers, influencing the purchase of goods in the periods of low demand (G.A. Afrifa, 2016).

1.2 Main factors of net working capital

Net working capital factors are three:

1) account receivables;
2) account payables;
3) inventory.

1.2.1 Account receivables

Account receivables are credits. The word "Credit" comes from the Latin "creditus" meaning "giving custody of" (Treccani).

Credit is an instrument of circulation which intervenes to allow those forms of exchange which would not be possible in the monetary system due to the

insufficiency of the currency, or to limit the cost of money circulation in those cases where circulation by credit is cheaper. The main purpose of credit is to trade between different entities.

Account receivables are credits which have a commercial (and not financial) nature. Within an enterprise, account receivables are to be understood as all receivables that are headed to the enterprise because of assets which have been sold to customers who have not paid yet (in whole or in part). In fact, companies need to manage their accounts (whether these companies are customers or supplier companies) and agree with each other to defer payments in the way that suits them best.

Since the sale is made to a customer, the credit automatically arises; it can be paid immediately or at a distance of a time that may vary (generally it is a matter of agreeing to pay it within one or a few months) depending on accounting needs.

Accounts receivable from customers are debts owed from them to the company and, as they have not yet been collected, the need arises for a provision in case they are not realized (to cover any loss). There are also frequent cases in which the failure to realize the credits leads the company to turn to external institutions (such as banks or other institutions) to collect (even if in part less) credit: an example can be the factoring[2]. The banks or other agencies in this case will, for a fee, collect the credit and pass it on to the company, or in the worst case, to legally prosecute the debtors. Within the balance sheet, receivables are classified as current, due within twelve months from their arising.

[2] Factoring can be defined as a way of not losing receivables, especially when the debt holder is not perceived as solvent. In the factory practice a "factor" buys the receivables from the firm, paying for them, and he will hold credits against the (perceived) non solvent. It is not always used in this case, but also when a firm needs to have immediate cash.

Loans, of all the items in the financial statements, are very influential on the liquidity of companies, so it is necessary to pay particular attention to them.

The fact is that if the time limit for payment of credits is reduced, the liquidity of the companies increases, and as a result of this the interest of the companies is always to shorten the time for payment of credits. This end can be pursued in different ways, for example by stimulating customers with some type of discounts.

Loans represent significant investments for many companies and they manage (or at least try to manage) them efficiently in order to make profit. Attention should be paid to credits, among other current business items, payment and credit management, the importance of customer profitability analysis and the importance of the time structure of credits. (G. Menkinoski, 2016)

Credits, in a nutshell, represent rights to demand, at an identified or identifiable deadline, a fixed or determinable amount of cash or goods/services having an equivalent value, from customers or other entities.

1.2.2 Account payables

Account payables are debits. The word “debit” comes from the Latin “debitus”, which meant “obligation” or “duty”, “obligation” forced by a moral law or by an underwritten commitment, from a someone else’s right or because required from the circumstances or from opportunities. (Treccani)

Account payables are those debts that companies owe to their suppliers, representing liabilities.

Unlike credits, these arise when companies buy from their suppliers when they choose to defer payment, paying after a certain amount of time.

Postponing a payment has no negative connotation. Postponing a payment, in the case of a company a real organization of different deadlines of many payments, is much more healthy than bad because it means management and, although the management is not always healthy and sometimes is also missing, is synonymous with organization.

Over the years, as debts such as receivables are recorded through invoicing from accounting, it has become necessary to modernize this process more and more. Certainly, especially in recent years, electronic invoicing has proved to be of great help, processing everything automatically and minimizing any form of error.

The liabilities side of the balance sheet shall include liabilities to suppliers or debts arising from transactions relating to the characteristic management of the undertaking. They include invoices already received and accounted for and invoices to be received at the end of the year from suppliers relating to operations already completed and therefore within the competence of the reporting exercise.

Liabilities to suppliers should only be recognized in the balance sheet, in accordance with the accrual principle, if the costs have accrued, and net of any trade discounts.

The amount of liabilities to suppliers may, after the first recognition, change as a result of possible returns and billing adjustments, the causes of which may be caused by:

- defective goods,
- goods in excess of orders,
- differences in quality,
- delays in delivery,
- application of prices other than those agreed,
- counting errors in invoices,

- adjustments for tests,
- other.

When these events occur, if significant and if certain, the nominal value of the debts shall be adjusted to the amount defined with the counterparty.

In accordance with the basic budgetary postulates, the cost criterion and the principle of prudence, the amount of debts relating to the acquisition of goods and services for which a deferred payment or their expiry significantly exceeds the year, it is necessary to separate the implicit passive interest. Although, as is often the case in commercial practice, deferred interest is not contractually fixed but is implicit in the amount of debt, it is necessary that the debt is exposed in the balance sheet at the market value of the short-term asset.

Finally, it should be noted that debts to suppliers and debts to subsidiaries, associates or parent companies are not to be classified, even if they are debts arising from characteristic management transactions, as they are to be included in the specific items on the liabilities side of the balance sheet.

The notes to the financial statements shall indicate the valuation criteria used, the reasons for the main changes, debts with a maturity of more than five years, debts collateralized on social assets and the nature of the collateral.

1.2.3 Inventory

The term “inventory” comes from the Latin “inventarium”, meaning “list”, “register where to find something in a place”. (Treccani)

It literally means collection of data and proper description of objects, documents, goods, existing in a certain moment in a known place.

Inventories are resources of any kind having an economic value (consisting of raw materials, work-in progress, finished goods, consumables and stores. Thus inventory control is all about planning and devising procedures to maintain an optimal level of resources. (Chandra Bose D., 2006)

In the case of a company the term refers to all those goods that a company owns for the purpose of sale (but also of production). In the specific case of the inventory that is inserted in the computation of the net working capital we speak of inventory merely referring it to the value of the not-sold-goods that are in warehouse.

Warehouse management is a very important management issue required for a company. Having a large amount of goods in stock is not always synonymous with having unsold goods, but can be synonymous with "stock", for example in cases where the company wants to keep a stock of goods in preparation for high demand (for example seasonal), or in other cases.

It is not difficult to evaluate a credit or a debt (certainly it is more difficult to predict their devaluation), being these monetary measures. Certainly the appraisal of the inventory can turn out more difficult for an enterprise, because it demands to supply a correct appraisal of the objective value the warehouse has. This is not easy, especially for those companies where the production processes are long, or for those that are subject to sudden fluctuations in prices because they are related to changes in the prices of raw materials.

This difficulty of appraisal is met by the international standard IAS 2, called "Inventories", in order to obtain to the enterprises a correct appraisal of the goods in warehouse through various methods (that they must remain coherent during the years).

1.3 Oscillations of net working capital

Seen that NWC is calculated as Account Receivables + Inventory – Account Payables, it varies is one of these three markers vary.

A NWC increase may depend on:

- An increase in account receivable
- An increase of the inventory
- A decrease in account payables

A NWC decrease may depend on:

- A decrease in account receivable
- A decrease of the inventory
- An increase in account payables

These are the indicators leading what will be the reference indicator and the subject of study of this thesis to increase or decrease.

Going in order, however, how do these indicators swing?

Account receivables, so credits, increase when the company, selling its products, is not paid immediately and for a certain period of time makes credit to its customer. Increasing the receivables means doing without available cash, but it means that when the credits will be collected, liquidity will be generated. This is why when net working capital increases as a result of the increase in credits it is absorbing liquidity and when it decreases, because the credits are collected, it produces liquidity. By now, we assume the notion that cash generation is healthy for a company.

Debts fluctuate when they arise or when they are paid. By paying a debt (thus decreasing their amount as a result of the payment) the working capital will increase, but at the same time there will be a cash outlay, so a decrease in liquidity.

On the other hand, contracting new debts by increasing their amount, in a certain sense means "saving" liquidity, and the working capital would decrease.

Inventory's fluctuations produce the same effects of the oscillations of receivables.

In any case we can not give for sure that, for example, an increase in credits will lead to the working capital increasement, because in the same period of time inventory and debts can also increase or decrease. Working capital does not depend on a single indicator, but on three and at the same time, and it can never overlook any of the three.

For this reason net working capital's fluctuations are the outcome of the algebraic sum of three different fluctuations, the ones up listed, and this is the starting point for our following analysis on what happened, inside the European listed firms, during the lockdown year (due to the pandemic).

"If we knew what it was we were doing, it would not be called research, would it?"

Albert Einstein (1879-1955)[3]

Literature review and research hypothesis

2.1 Research proposal

The purpose of the following work is to understand what has been the trend of the net working capital of companies in the four sectors:

- Pharmaceutical
- Apparel & Accessories
- Food Retail & Distribution
- Auto & Truck Manufacturers

The ultimate goal is to understand what happened in 2020 in these sectors and to their net working capital which, as anticipated in the first chapter, is an important indicator of the liquidity performance of a company, contextualizing the reflection of the theory on practice.

The aim of the study is to understand whether there were or not fluctuations of the net working capital during the pandemic, of what size and in which specific sectors, and then to answer to the question: what were the quantitative variations (in %) in net working capital in 2020 compared to previous years?

2.1 Literature review

Today literature is meeting and helping us with previous studies on this subject, studies that were carried out during 2020 with reference, in particular in the paper by Elena Carletti et al. (Firm – Level Evidence from Italy), to the months of lockdown (those that went from March to May 2020).

[3] German phisycist, father of the theory of relativity.

In this case it wasn't net working capital the objective to be considered, but all the balance sheet indicators of the individual companies of the analysis (in particular turnover and losses).

2.2.1 The Covid-19 Shock and Equity Shortfall: Firm-Level Evidence from Italy: analysis from the paper of Carletti et al. (2020).

The paper concerns The Covid-19 Shock and Equity Shortfall of only Italian firms, considering a cluster of 80 972 companies, mainly unlisted.

This paper was published on August 8, 2020, a few months after the end of the lockdown that affected Italy in the March-May 2020 quarter, and it is about the forecast of the loss of profits and equity deficits caused by the lockdown.

Since this paper is a forecast, the data that have been taken into account are those up to 2018, taking into account that in 2020 in Italy for all companies having to draw up the financial statement and balance sheets based on the civil law and not on the international accounting standards (such as for listed companies) there was an extension for the publication of three months (instead of publishing the financial statement by the end of April, it was allowed to publish it by the end of June for all companies). Since the data study started in May, there was still no availability of the 2019 financial reports for all companies to consider, for this reason the analysis starts from the closing of the 2018. In other words, all data after the closing of the 2018 financial statements are estimates and not historical real data.

In the paper, Italian non-financial active companies were studied (at least until the closing of the financial statements in 2018) with more than 10 employees and at least 2 mln of total assets (always in 2018). All companies classified as micro-enterprises, all of those with negative equity and all whose sum between net profit and equity was negative at the end of 2018 were exluded from being part of the

cluster of firms object of the analysis. The reason of this exclusion lies in the fact that to investigate the impact of Covid (but above all to estimate the extent of what appeared to be a damage in a crisis still in its beginning) on solvent companies, so not for all those companies that were in trouble anyway, for any reason. The evaluation of Carletti et al. focuses exclusively on companies that can bring to the surface an assessment of the incremental effect of Covid on financial performance and the strong discomfort of Italian companies.

The data were collected and reclassified into three sub-samples: small, medium and large firms, which were ranked by geographical area and sectors.

The analysis went ahead with a strong hypothesis: that a three-month lockdown may have generated an aggregate decline in profits of about 10% of GDP and the balance sheet data have been updated with the fraction of value added lost, in each sector, because of the lockdown.

In the months that followed March 2020, the lockdown imposed rising costs with revenues that, at the same time, vanished, bringing out a liquidity crisis, a great classic of all economic crises. According to the authors of this paper, draining liquidity for the malfunctioning of companies and burning equity capital are the two pillars of every major economic crisis.

Liquidity support, even if precious to enable enterprises to survive during lockdown, is insufficient in the medium and long term; when additional liquidity reaches companies in the form of debt, it tends to increase their debt and risk of insolvency, generating excessive debt, which discourages all forms of investment.

This underlines the importance of assessing the extent of the erosion of the equity capital of enterprises caused by the pandemic shock and, at least as important, its distribution between enterprises and sectors of the economy, to determine which are more likely to be undercapitalized. Unlike typical macroeconomic shocks, the

COVID-19 shock has affected several sectors with widely differing severity: some companies have been hardly hit by the lockdown and social distancing requirements triggered by the pandemic, while others, such as those in high-tech sectors, have thrived.

The paper is only based on Italy, having been it the first economy in Europe to be seriously affected by the COVID-19 epidemic. Forecasts of net income loss (due to the lockdown) were made on a large and representative sample of 80,972 Italian companies, representing a substantial part of the Italian economy. Drawing on such a large dataset, composed mainly of private companies, allows to quantify the overall changes in corporate leverage and the consequent inconveniences due to the lockdown, to identify the characteristics of the most severely affected enterprises in terms of size, pre-crisis leverage, ownership structure, sector and geographical location.

To identify the effects of the COVID-19 shock, it has been assumed that they lead to a decline in corporate revenues in each sector proportionally to the fraction of value added lost in the corresponding industrial sector as a result of the lockdown, taking into account the salary allowances paid to inactive workers and the tax reduction. This fraction is based on information on how essential each sector is for the population, as deemed by the government, and how much its activity depends on the close physical contact between workers and with customers. On the basis of the profit reduction estimated by the enterprises, the resulting erosion of equity for all enterprises and the equity gap for the sub-sample of firms in difficulty were taken into account, or those with a negative book value of equity (equity), as well as their distribution by characteristics of enterprise.

The results of the study showed that the companies that most easily enter a crisis are the

smaller ones, but also those with lower profitability, lower capitalization and worse access to the stock market (listed companies are much less likely to get into trouble). Moreover, such enterprises are generally much more labor-intensive than other enterprises, as they have much more employees than the total assets and a cost structure where labor costs weigh relatively more on total costs.

Among the various sectors, the results of the analysis were different: the decline in profits was concentrated on the manufacturing and wholesale sector, which are respectively the first and the third sector for total assets and number of employees in Italy.

Surprisingly, the profits and equity levels of businesses in the recreational services and tourism sectors have been mildly affected by the lockdown. However, the profitability of these sectors could also have been affected by social distancing policies for a longer time than other sectors, due to the reduced physical distance between employees and customers in these sectors, and in general, consumer demand is sluggish for prolonged periods, according to the analysis.

From a geographical point of view the losses of the lockdown have been more concentrated in the regions of the North, where it has center the majority of the Italian manufacturing enterprises, above all the greatest ones.

In the paper, the authors predicted an impact of the COVID-19 shock on the profits and equity levels of Italian companies by exploiting their different exposure to lockdown resulting from the health restrictions imposed by the government during the pandemic. They were able to demonstrate that the losses caused by the pandemic to Italian companies could have led to a significant erosion of their assets, to the point that in the absence of any recapitalization or debt restructuring, a 3-month lockdown would have resulted in an aggregate annual decline in profits of about 10% of GDP, resulting in financial suffering for 17% of companies in the sample.

It has been brought to light how each sector reacts in its own way, sometimes in a different way from other sectors, how companies of different sizes react differently: certainly small or medium-sized enterprises will have more difficulties than larger and stronger firms, certainly, among other things, companies with a high debt before Covid-19 will suffer more penalties than those less indebted. The listed ones, based on this analysis, have less probability to enter in crisis.

The study suggests that the virus is likely to lead to failures and numerous layoffs, some of the potential long-term damages to the Italian economy.

The provisions of public liquidity through debt financing, encouraged in those months by guarantees on the loans provided by the Italian Government, are not supported by the authors: providing more debt to already heavily indebted companies is equivalent to keeping companies alive only temporarily, without effectively restoring their creditworthiness.

The results of this paper exclude all companies in any sector which, prior to the lockdown, had debt or were in crisis. The results, therefore, suggest a somewhat pessimistic forecast, since excluding all these companies from the cluster means to assume that they will fail. Ex post facto we can reject this hypothesis, especially with regard to those sectors (such as pharmaceuticals) that during Covid-19 have proved not only to be acyclic but definitely countercyclical. Apart from this large proportion of companies, the analysis can not be considered entirely complete.

On the other hand, the premise of the hypothesis can also be considered, in part, optimistic since the relapses of the supply chain between the various sectors during the lockdown are not considered.

The calculations are then based on the presumption that, according to ISTAT, after three months of lockdown there was a 10% drop in GDP, without assuming that these three months will have continued and gone on, in a different way, with

different implications for each sector, limiting the analysis to a too short period of time, assuming (maybe too much) optimistically that after three months the situation would have returned to the pre pandemic levels. In addition to dismembering GDP and its respective 10% sector-by-sector loss proportionately may have been not effective for two reasons: the first is that there was a lack of income statements and balance sheets data for 2019 (which would have been published a month after the study mentioned above) so the share of participation in the GDP of each sector is not precise; secondly, there were about 4000 companies (listed or not) which were excluded from the sample because of negative equity but which, looking from the future, brought their budget in line during the pandemic itself (like in countercyclical sectors) or which had already done it during 2019.

2.2.2 How stock markets reacted to COVID-19? Evidence from 25 countries: a synthesis of Deepa et al.'s paper.

Bannigidadmath Deepa (lecturer in Finance at Edith Cowan University School of Business and Law) did a different study than the one just listed. Deepa, who also participates in our analysis with her contribute to the literature, has concentrated her study elsewhere: what happened to the stock markets all around the world (those mentioned in the introduction of this work) when news like the lockdown or the blocking of flights in each country were given?

The purpose of the paper by Deepa et al. (2022) is to investigate how governments and their stock market policies reacted to the shock caused by COVID-19.

In this study 25 different countries were considered, in which in 20% of cases state incentives, blocking of geographical movements of people and a travel ban did not cause any reaction in equity returns. For almost half of the countries studied, the effect on yields was negative.

Of the abovementioned study it is important to consider that it is a totally empirical study, based exclusively on the collection of actual and verified data, concerning the months between January and August 2020.

The paper's starting hypothesis is that a priori it is not known what the effect of government policies on equity returns may be because while policies, such as lockdown, help mitigate the spread of the virus, they also reduce the economic activity, and the study of Deepa is aimed to understand what may have been the political decisions that have impacted the markets above all.

This paper is based on an empirical analysis of the data, having examined the impact of COVID-19

on the performance of the reference stock index of 25 countries.

The 25 countries of reference were:

1. Austria
2. Belgium
3. Brasil
4. Canada
5. Chile
6. China
7. France
8. Germany
9. India
10. Ireland
11. Israel
12. Italy
13. Japan
14. Netherlands

15. Peru
16. Poland
17. Portugal
18. Russia
19. S. Korea
20. Spain
21. Sweden
22. Switzerland
23. Turkey
24. UK
25. US

Country by country daily returns were calculated for each company, after studying the dates of the main events such as: lockdown, stimulus package, travel ban (as reported in the following table).

Country	Lockdown	Stimulus package	Travel ban
US	19-Mar-20	6-Mar-20	31-Jan-20
Spain	14-Mar-20	17-Mar-20	10-Mar-20
Italy	10-Mar-20	11-Mar-20	10-Mar-20
France	16-Mar-20	17-Mar-20	17-Mar-20
Germany	20-Mar-20	1-Mar-20	17-Mar-20
UK	16-Mar-20	17-Mar-20	25-Mar-20
China	23-Jan-20	1-Feb-20	27-Mar-20
Turkey	12-Mar-20	18-Mar-20	13-Mar-20
Belgium	17-Mar-20	28-Mar-20	20-Mar-20
Netherlands	15-Mar-20	18-Mar-20	17-Mar-20
Brazil	21-Mar-20	16-Mar-20	27-Mar-20
Canada	16-Mar-20	18-Mar-20	16-Mar-20
Russia	30-Mar-20	24-Mar-20	31-Jan-20
Switzerland	13-Mar-20	16-Mar-20	17-Mar-20
Portugal	18-Mar-20	18-Mar-20	17-Mar-20
Austria	10-Mar-20	18-Mar-20	17-Mar-20
India	24-Mar-20	19-Mar-20	3-Mar-20
Israel	19-Mar-20	30-Mar-20	30-Jan-20
Ireland	12-Mar-20	16-Mar-20	NA
Sweden	11-Mar-20	15-Mar-20	2-Mar-20
Peru	30-Mar-20	30-Mar-20	15-Mar-20
S. Korea	24-Feb-20	4-Mar-20	6-Mar-20
Japan	13-Mar-20	5-Mar-20	1-Feb-20
Chile	19-Mar-20	19-Mar-20	16-Mar-20
Poland	10-Mar-20	19-Mar-20	13-Mar-20

This set of time data (ranging from early January to late August 2020) focuses on those that have been the 25 most affected countries in terms of number of cases and number of deaths.

In 11 out of 25 countries, the day the stimulus package was imposed, there was a significant and negative effect on equity returns. The most affected country was the

United Kingdom, followed by Ireland, Canada and Brazil. Only in 3 countries (Germany, Russia and Poland) the stimulus package had a positive effect on yields. Also the lockdown had a negative effect on stock yields in 10 countries, with the United Kingdom being the first to lose equity returns, followed by Turkey and Germany, while there were only two countries with a positive effect (Israel and Poland).

When the travel ban was imposed, eight countries had positive effects on the stock exchange: Germany, United Kingdom, Turkey, and Poland. In three countries (China, Canada and Russia) the effect was negative.

Of the three events mentioned, the lockdown and stimulus package had a statistically significant negative effect on returns in 40% and 44% of markets respectively.

The study also reveals the effects during the days following the events.

Monetary policy has also been matter of a study by Deepa, in particular the effects that this may have caused to equity returns (each stock market responds differently to monetary policy).

In the sample, changes in monetary policy occurred in 13/25 countries. On the day the first exchange rate change was announced, yields on three markets (United States, Israel and Poland) increased while only two countries (United Kingdom and China) recorded a decline in yields.

The paper set out to assess what the stock market response might have been in 25 countries after targeted policies: lockdown, stimulus package and travel ban, along with monetary policy.

Through an empirical study it was possible to see how each country reacted in its own way, and there was no homogeneity of any kind. In 30% of the 25 countries studied, monetary policies did not take into account what the effects on the stock

market might have been, while in 40% of the markets the results at certain events produced reversals of returns or drifts.

The aim of the study was to understand the reactions of the markets to certain unusual events and exceptional monetary policies, aimed primarily at limiting the effects of COVID-19 on the market. However, although there have been singular maneuvers aimed at this rescue, in most cases the maneuvers of governments had more negative than positive effects.

2.3 Effects of the COVID-19 Global Crisis on the Working Capital Management Policy: Evidence from Poland. Analysis from the paper of Zimon, Grzegorz and Hossein Tarighi.

Zimon Grzegorz and Hossein Tarighi offer another and different perspective, closer to the analysis we intend to develop, what happened to the management of the net working capital of Polish companies during 2020?

The paper written by Zimon et al., published on 9 April 2021, aims to study the effects of the pandemic on the management of net working capital in Polish companies, not specifically in the general companies, but in the ones operating in the management of the group purchases.

Zimon, like many other researchers, wondered what were, on the field, the effects that, from the pandemic, shocked the economy. Let us remember once again that COVID-19 has caused an economic and financial crisis that had different causes than the major crises of the past.

The study focuses on the management, at an operational level, of net working capital, which we know is a relevant indicator from the point of view of the liquidity

of companies even not in time of a crisis, but during a crisis, even more so if sudden, increasing care must be taken not to make hasty decisions that may cause losses.

The subjects of the research are small and medium-sized enterprises belonging to the purchasing groups. Small and medium-sized enterprises, for their part, feed a third of Europe's GDP and help to reduce unemployment and increase economic growth. This category of companies is more exposed to crises respect to a solid and larger reality, since the insolvency of their clients can lead to bankruptcy, therefore closure.

The companies that operate in the management of the group purchases have one disadvantage: they compete with companies that are much more competitive than them, which have many more competences and which have a purchase power (contractual power) greater regarding theirs.

This category of companies (group purchases) means that several companies together, typically belonging to the same industry, collaborate to purchase material, data, cash flows from suppliers to final recipients. In essence, they are small and medium-sized enterprises that, by making purchases together, create a scale effect that allows a recovery of efficiency compared to large companies in the same industry. Being in this network has more than one benefit: obtaining advantageous prices, trade credits, more competition and, last but not least, creating a network of trust and cooperation with other companies.

Therefore, Zimon analyzes 61 of these companies operating in Poland, proposing to understand the changes compared to the management of net working capital during the first months of 2020 and what were the practices considered efficient at the management level.

The subjects of the study were 61 small and medium-sized companies operating in Group Purchase Organizations, and the reports analyzed were those from 2015 to

2020, considering the years from 2015 to 2019 as preceding the pandemic and 2020 as the year of the pandemic.

What emerged from the analysis was that companies have adopted a policy deemed moderate-conservative on the management of net working capital.

Evidence has shown that these companies have some financial security and a lower credit rotation than the debt rotation.

What happened during the first months of the pandemic, going to study the balance sheet for the Polish budget, showed that companies have increased their turnover and consequently their credits, attracting more customers to the market, and at the same time they deferred their payments to suppliers as much as possible.

All companies, large or small, need liquidity to grow economically and liquidity management is complex since it concerns profitability: current receivables and payables.

Zimon's analysis showed that in the first months of 2020, the management of short-term credit did not see major changes. The liquidity risk has impacted, perhaps, little on the companies that have been taken into consideration, maybe because there were stocks to cope with a crisis.

The turnover of the warehouse has recorded an increase, this thanks to a conservative politic that has increased its levels. On the other hand, it is true that a company with high income levels is expected not to lower its inventory or keep it at a level considered optimal.

The results show that the pandemic in Poland has led the most important companies to adopt an aggressive policy, but in an important, larger, stronger company, income levels are higher and liquidity problems are lower. The general policy of small businesses in the years under review has been moderate in terms of working capital and has gradually become more aggressive.

The analysis carried out by Zimon took place in early 2021, compared to small and medium-sized enterprises. The point is that at that juncture, the one in which Zimon collected his data, there was not yet the availability of the accounts for the twelve months of 2020 of all the 61 companies considered, but in some cases it had been published only the first half or quarter.

Zimon talks about small or medium-sized companies, not listed companies that draw up their balance sheets in the international IAS language, so that companies whose financial statements are more difficult to analyze or interpret, not being a faithful reflection of what is happening on the market. These factors, namely that they are small companies, companies that draw up their balance sheet not in an international form therefore not internationally understandable, together with the most important factor that not all budgets were available makes the analysis somewhat uncertain. Among other things, a cluster of 61 companies can undoubtedly be considered limited and does not allow the generalization of the results obtained.

Zimon Grzegorz and Hossein Tarighi offer an analysis which is eclosed within the Polish borders, representing an important starting point for the analysis that will take shape in the next chapter, but which, differently, knows no political boundaries and expands throughout all geographical Europe.

Net Working Capital Fluctuations due to the Pandemic.

3.1 Introduction and structure of the study

The purpose of the following work is to evaluate and quantify the changes in the net working capital of companies in the main economic sectors.

The analysis focuses on the years from 2015 to 2020, considering the years 2015-2019 as years previous the pandemic, so a period in when firms did not suffer from severe shocks, and considering the year 2020 as the year of pandemic shock.

The cluster takes four industries into account:

- The Pharmaceutical industry;
- The Food Retail and Distribution industry;
- The Apparel & Accessories industry;
- The Auto & Truck Manufacturers industry.

The industries considered are four in order to better contextualize, at the end of the work, how the effects of the pandemic may have been different between the various industries.

For each sector, more than 20 companies were considered, for a total of 117 companies covered.

The companies considered are listed on the stock exchange and are part of and operate in what is geographical Europe. Economics is not the science of Politics, and in this analysis there is no room for consideration of political boundaries.

The economy knows no boundaries, but division is needed because each area has its own laws and, whether we like it or not, the economy reflects them.

The first assumption is that no firm is equal to the other, but all are part of an industry. In our case, each sector has undergone a reclassification of the

companies that are part of it by small, medium and large capitalization, depending on the fact that all the companies involved are listed on the stock exchange:

- Small Market Capitalization meaning a Market Capitalization between $ 300 000 000 and $ 2 000 000
- Medium Market Capitalization meaning a Market Capitalization between $ 2,000,000 and $ 10,000,000
- Big Market Capitalization meaning a Market Capitalization above $ 10 000 000 000.

The analysis started by the the study of all the balance sheets and financial statement of the companies, downloaded by Refinitiv data bank. All data shown by now in this work are expressed in million and in Euro.

3.2 The Pharmaceutical Industry

The pharmaceutical industry as a whole includes activities related to the research, production and sale of pharmacologically active, synthetic or extractive substances, pharmaceutical formulations for human and veterinary use, diagnostic products and vaccines.

It is precisely because of its connotation close to research that it is remarkably part of the analysis. The pharmaceutical sector during the pandemic has been shown to help by saving thousands of lives by finding more than one cure for COVID-19.

Nowadays pharmaceutical companies dominate the world market, being present in all countries, through their distribution subsidiaries and in some cases with a local production. They have the financial and technological resources necessary for the manufacture in large quantities of high-quality drugs and the research and development of new drugs.

Local pharmaceutical companies in developing countries do not contribute significantly to the creation of new drugs, and their production techniques and the quality of their products have difficulty in competing with those of the multinationals of the most industrialized countries. Moreover, the policies of developing countries often discourage the investment of capital necessary for modern technologies for research and the production of new medicines.

The firms which have been taken into account for the study have been the following ones:

Firms with a small market capitalization:

- Benchmark Holdings PLC
- Pharming Group NV
- Pharmanutra SpA

- Camurus AB
- Cosmo Pharmaceuticals NV
- Faes Farma SA
- Fagron NV
- Karo Pharma AB
- Eckert & Ziegler Strahlen und Medizintechnik AG
- Bavarian Nordic A/S

Firms with a medium market capitalization:

- Almirall SA
- Siegfried Holding AG
- ALK-Abello A/S
- Dermapharm Holding SE
- Laboratorios Farmaceuticos ROVI SA
- H Lundbeck A/S
- Perrigo Company PLC
- Hikma Pharmaceuticals PLC
- Orion Oyj
- Jazz Pharmaceuticals PLC
- Ipsen SA

Firms with a big market capitalization:

- Recordati industria chimica
- Vifor Pharma AG
- Horizon Therapeutics PLC

- Bayer AG
- GlaxoSmithKline PLC
- Sanofi SA
- Novo Nordisk A/S
- AstraZeneca PLC
- Novartis AG
- Roche Holding AG

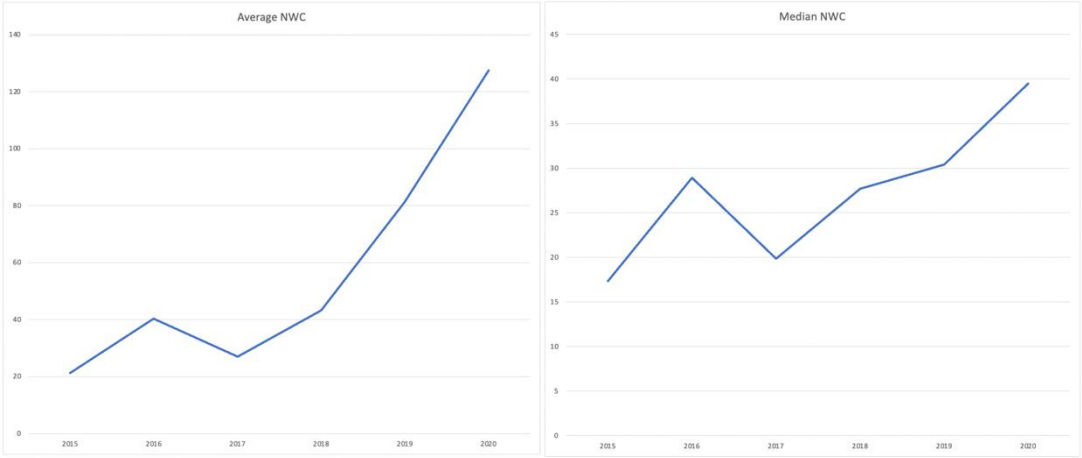
Summary table:

Company Name	Country of Domicil	TRBC Sector	Organisation Typ	Organisation Sub Typ	Market Cap (USD)
Benchmark Holdings PLC	United Kingdom	Pharmaceuticals (NEC)	Public Company	Company	521.365.210,00
Pharming Group NV	Netherlands	Pharmaceuticals (NEC)	Public Company	Company	589.028.147,00
Pharmanutra SpA	Italy	Pharmaceuticals (NEC)	Public Company	Company	699.237.413,00
Camurus AB	Sweden	Pharmaceuticals (NEC)	Public Company	Company	825.121.784,00
Cosmo Pharmaceuticals NV	Ireland	Pharmaceuticals (NEC)	Public Company	Company	1.094.685.311,00
Faes Farma SA	Spain	Pharmaceuticals (NEC)	Public Company	Company	1.242.689.118,00
Fagron NV	Belgium	Pharmaceuticals (NEC)	Public Company	Company	1.248.884.637,00
Karo Pharma AB	Sweden	Pharmaceuticals (NEC)	Public Company	Company	1.401.083.710,00
Eckert & Ziegler Strahlen und Medizintechnik A	Germany	Pharmaceuticals (NEC)	Public Company	Company	1.535.198.067,00
Bavarian Nordic A/S	Denmark	Pharmaceuticals (NEC)	Public Company	Company	1.721.592.954,00
Almirall SA	Spain	Pharmaceuticals (NEC)	Public Company	Company	2.161.438.872,00
Siegfried Holding AG	Switzerland	Pharmaceuticals (NEC)	Public Company	Company	3.215.305.480,00
ALK-Abello A/S	Denmark	Pharmaceuticals (NEC)	Public Company	Company	3.672.332.184,00
Dermapharm Holding SE	Germany	Pharmaceuticals (NEC)	Public Company	Company	4.028.944.650,00
Laboratorios Farmaceuticos ROVI SA	Spain	Pharmaceuticals (NEC)	Public Company	Company	4.335.388.621,00
H Lundbeck A/S	Denmark	Pharmaceuticals (NEC)	Public Company	Company	4.560.681.015,00
Perrigo Company PLC	Ireland	Pharmaceuticals (NEC)	Public Company	Company	4.937.593.947,00
Hikma Pharmaceuticals PLC	United Kingdom	Pharmaceuticals (NEC)	Public Company	Company	6.193.025.278,00
Orion Oyj	Finland	Pharmaceuticals (NEC)	Public Company	Company	7.167.043.159,00
Jazz Pharmaceuticals PLC	Ireland	Pharmaceuticals (NEC)	Public Company	Company	8.476.049.349,00
Ipsen SA	France	Pharmaceuticals (NEC)	Public Company	Company	9.380.471.964,00
Recordati Industria Chimica e Farmaceutica SpA	Italy	Pharmaceuticals (NEC)	Public Company	Company	10.937.877.216,00
Vifor Pharma AG	Switzerland	Pharmaceuticals (NEC)	Public Company	Company	11.434.074.877,00
Horizon Therapeutics PLC	Ireland	Pharmaceuticals (NEC)	Public Company	Company	21.178.278.077,00
Bayer AG	Germany	Pharmaceuticals (NEC)	Public Company	Company	60.058.924.374,00
GlaxoSmithKline PLC	United Kingdom	Pharmaceuticals (NEC)	Public Company	Company	108.257.749.911,00
Sanofi SA	France	Pharmaceuticals (NEC)	Public Company	Company	133.082.547.736,00
Novo Nordisk A/S	Denmark	Pharmaceuticals (NEC)	Public Company	Company	178.562.295.299,00
AstraZeneca PLC	United Kingdom	Pharmaceuticals (NEC)	Public Company	Company	185.319.310.839,00
Novartis AG	Switzerland	Pharmaceuticals (NEC)	Public Company	Company	210.895.086.319,00
Roche Holding AG	Switzerland	Pharmaceuticals (NEC)	Public Company	Company	304.234.297.216,00

3.2.1 Firms with a small market capitalization.

General summary of what happened to the net working capital of firms with a small market capitalization:

	2015	2016	2017	2018	2019	2020
Average NWC	21,271	40,414	26,95	43,303	81,282	127,414
Median NWC	17,36	28,945	19,855	27,68	30,43	39,51
Average change in NWC	0	19,143	-13,464	16,353	37,979	46,132
Median change in NWC	0	8,215	-1,99	4,73	16,33	6,08



Among small-cap companies in the pharmaceutical industry, there is an increase in the net working capital (between 2019 and 2020) of 56.755% : NWC 2020 = NWC 2019 *(1+56.755%).

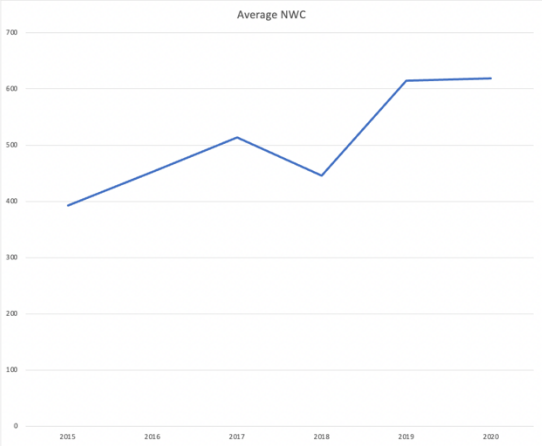
This increase is attributable, on average, to the increase in account receivables and inventories at the same time and to a non-proportional increase in debts. Debts did not increase, but rather decreased, in two companies in the cluster: Pharmaneutra SpA and Fagron. In the case of Phamaneutra the account payables decreased of 1.9% between 2019 and 2020 while in the case of Fagron of 11.8%.

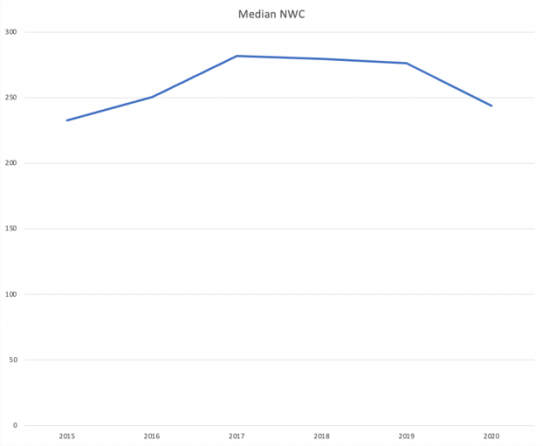
Basically throughout 2020 companies of this industry increased their net working capital of a percentage which exceeded 50% compared to 2019: the average NWC of European small-cap pharmaceutical companies rised from 81.28 to 127.41 million.

3.2.2 Firms with a medium market capitalization.

General summary of what happened to the net working capital of firms with a medium market capitalization:

	2015	2016	2017	2018	2019	2020
Average NWC	392,3427273	452,3909091	513,7	445,470909	614,933636	618,767273
Median NWC	232,5	250,5	281,7	279,4	276,1	243,7
Average change in NWC	0	60	61	-68	169	4
Median change in NWC	0	10	13	-2	61	18





Among the mid-cap companies in the pharmaceutical sector, during 2020, there has been an increase in the NWC of 0.62%: NWC 2020 = NWC 2019 (1+0.62%). This increase is significantly lower than in companies in the same sector that are much less capitalized.

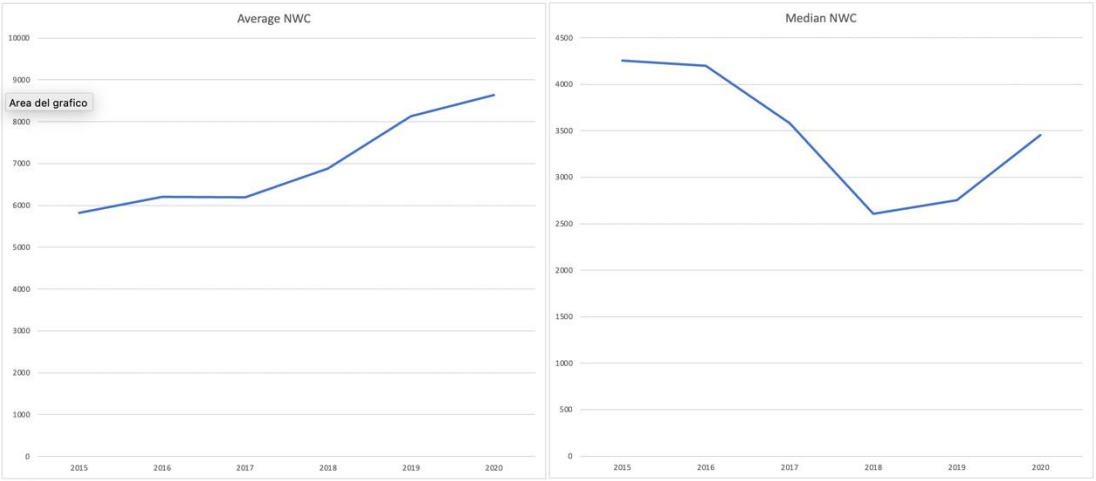
In the case of this cluster we note, in particular, that the company ALK-Abello is the one with a greater increase in its debts (590.12%: from 81 million to 559 million).

Summarily, although many companies have resorted to the increase in their account payables, unlike small-cap companies, we see an increase in the average net working capital of 0.62%, from 614.9 million to 618.8 million

3.2.3 Firms with a big market capitalization.

General summary of what happened to the net working capital of firms with a big market capitalization:

	2015	2016	2017	2018	2019	2020
Average NWC	5826,652	6200,652	6188,491	6885,308	8130,713	8644,495
Median NWC	4252,5	4200	3582	2607,3	2753	3451,5
Average change in NWC	0	374	-12	697	1.245	514
Median change in NWC	0	36	-171	139	45	152



Among the large-cap companies in the pharmaceutical sector, there has been an increase in the NWC of 6.32% in 2020.

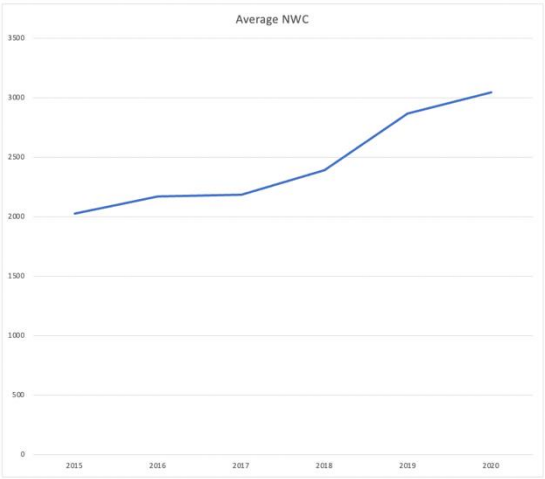
This increase is attributable, on average, to the increase of the inventories (only in the case of Vifor Pharma there is a reduction of the inventory). Account receivables increased, on average, of 0.667%, while account payable increased of 0.35%.

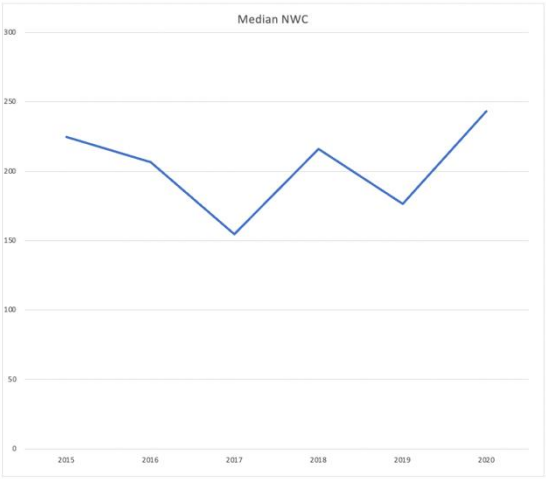
3.2.4 General summary.

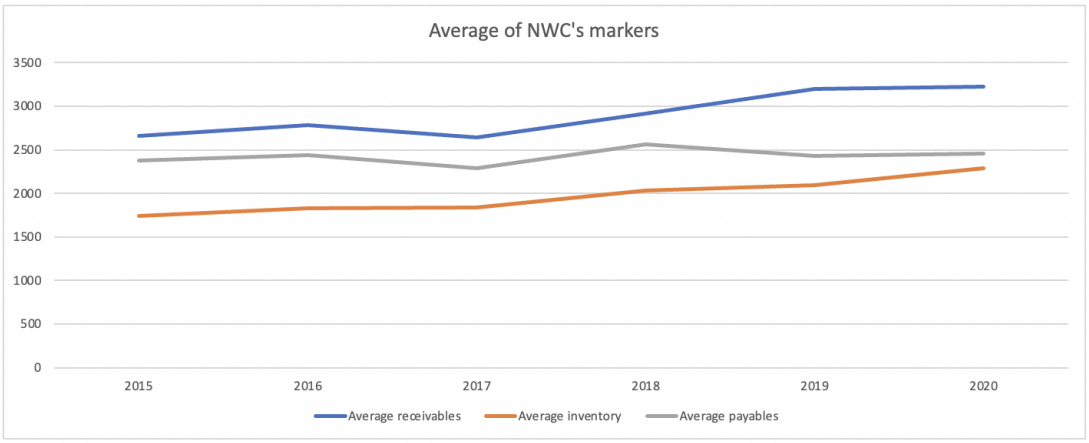
	2015	2016	2017	2018	2019	2020
Average NWC	2025,645161	2173,7729	2187,2616	2393,1061	2867,2329	3049,2106
Average change in NWC		148,12774	13,48871	205,84452	474,12677	181,97774
Median NWC	224,6	206,7	154,51	216	176,43	243,38
Median change in NWC		10,99	1,27	5,46	30	20,83

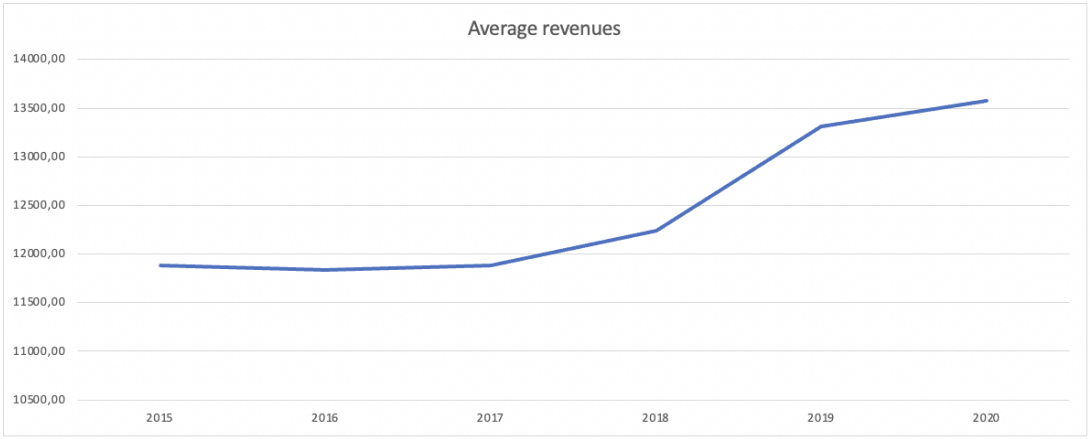
	2015	2016	2017	2018	2019	2020
Average receivables	2658,73129	2782,1726	2640,6294	2918,1887	3202,1568	3223,0068
Average inventory	1745,084516	1831,3971	1838,1126	2035,0813	2092,829	2284,6752
Average payables	2378,170645	2439,7968	2291,4803	2560,1639	2427,7529	2458,4713
Average revenues	11879,36	11832,54	11882,45	12241,56	13310,33	13572,15

	2015	2016	2017	2018	2019	2020
Median receivables	204,1	228,9	224,13	281,28	374,33	396,49
Median inventory	107,4	158,8	167,4	198,5	226,89	258,1
Median payables	185,2	188,5	185,42	207,31	289,52	411,2
Median revenues	1020,56	1073,50	1284,02	1345,99	1474,79	1839,24









Generally, the pharmaceutical sector has seen an increase of net working capital in 2020.

Account receivables, on average, increased by 0.65%, inventories of 9.2% and debts of 1.3%.

Given this, it is possible to deduce that the increase of the NWC happened due to the increase of the inventories of these companies.

If, as we have seen, the companies with a small, medium and big capitalization have had different effects, this is proved carrying out an osservation of the deviation of net working capital, account receivables, inventory and account payables compared to the 2020 average for the entire industry.

In particular if we fix the average value of the net working capital of the entire sector of 2020 (pair to 3049K euros) we see companies of smaller capitalization deviate of the -95%, approximately, regarding this value. In other terms, if the average net working capital has been 3049K, that average of the pharmaceutical companies with a small market capitalization has been inferior of 95%. This percentage recurs, however, not only for the working capital, but also, always in negative measure, regarding account receivables, account payables and inventory of the same fragment of industry.

Even mid-cap companies have deviated from the market average but in a smaller percentage, net working capital has been lower of 80% than the average. The deviation of the indicators varied: account payables were 71% lower than the market average, inventories 74% and receivables 78%.

Only the companies with a big market capitalization have exceeded the average of almost 200%, in fact the net working capital of these is greater than the average of 183,5%, and also the markers of the net working capital are all over the average of at least 170%.

During the pandemic, pharmaceutical companies were crucial, if not vital. The increase of the warehouses does not have a negative connotation, it does not represent an “unsold” inventory but rather a reserve. An increase in warehouses, in fact, in 2020, in this sector, meant an increase in the demand for drugs

produced by these companies; the increase is to be considered as a function of a forecast of the increase in demand.

The European pharmaceutical sector is a sector that is able, in a certain sense, to absorb crises without suffering heavily (Confindustria, 2012). This is what the theory says, but practice also gives us evidence of it.

In the specific case of the analyzed companies, to have also divided them by dimension (by level of capitalization of market therefore by availability of resources) allows us to bring to light as the course of the management of the net working capital has been different between them. The sector, especially for bigger companies, has been able to put the research potential to use during the pandemic. Surely the recourse to debt (mainly from banks) has played a key role in the sectoral growth during COVID-19: pharmaceutical companies have been able to finance their research to find vaccines. In the most difficult time of 2020, when everything seemed lost and “trust” was not the watchword of either the banks or the investors, the pharmaceutical companies started the study and testing of vaccines, remaining, unlike many other companies, operational.

3.3 The Food Retail & Distribution industry

The food retail and distribution sector indicates a type of retail sale of food and non-food consumer products, achieved through the concentration of markets of great surfaces and the management of commercial chains that belong to a single brand. The advantages of the unification of distribution under a single coordination and administration are different: the presence of economies of scale, the control of promotional strategies, the possibility of more favorable rental conditions, the common management of environments, pricing policies, the implementation of commercial policies and advertising campaigns, procurement (choice of suppliers and purchase management). In general, large retailers are distinguished, with large companies of international importance managing the points of sale, and organized distribution, with retailers that combine for some activities such as purchases, sales promotions, and so on.

The firms which have been taken into account for the study have been the following ones:

Firms with a small market capitalization:

- Mercator dd
- CarrefourSA Carrefour Sabanci Ticaret Merkezi AS
- Eurocash SA
- Tallinna Kaubamaja Grupp AS
- Migros Ticaret AS
- Distribuidora Internacional de Alimentacion SA
- Lenta Plc
- Sligro Food Group NV

- Marr SpA

Firms with a medium market capitalization

- Sonae SGPS SA
- Casino Guichard Perrachon SA
- Metro AG
- Axfood AB
- Etablissementen Franz Colruyt NV
- X5 Retail Group NV
- Magnit PAO
- Dino Polska SA
- J Sainsbury PLC
- Hellofresh SE

Firms with a big market capitalization:

- Kesko Oyj
- Jeronimo Martins SGPS SA
- Carrefour SA
- Tesco PLC
- Koninklijke Ahold Delhaize NV

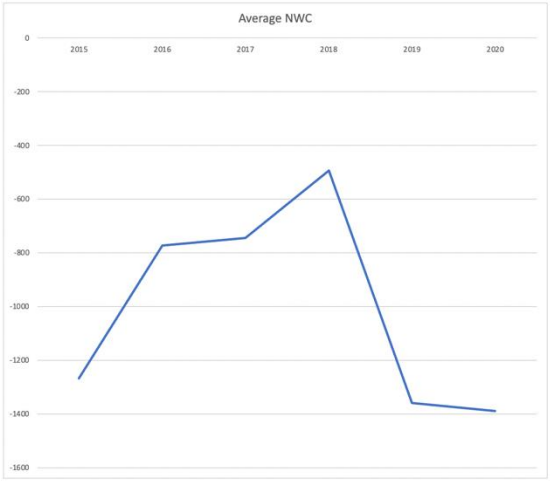
Summary table:

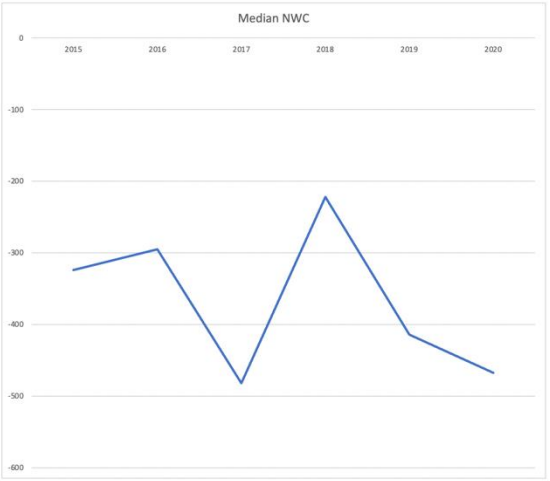
Company Name	Country of Domicile	TRBC Sector	Organisation Type	Organisation Sub Type	Market Cap (USD)
Mercator dd	Slovenia	Supermarkets & Convenience Stores	Public Company	Company	311.706.572,00
CarrefourSA Carrefour Sabanci Ticaret Merkezi AS	Turkey	Supermarkets & Convenience Stores	Public Company	Company	359.084.499,00
Eurocash SA	Poland	Food Retail & Distribution (NEC)	Public Company	Company	369.950.210,00
Tallinna Kaubamaja Grupp AS	Estonia	Supermarkets & Convenience Stores	Public Company	Company	522.882.039,00
Migros Ticaret AS	Turkey	Supermarkets & Convenience Stores	Public Company	Company	538.016.111,00
Distribuidora Internacional de Alimentacion SA	Spain	Food Retail & Distribution (NEC)	Public Company	Company	992.613.466,00
Lenta Plc	Russia	Supermarkets & Convenience Stores	Public Company	Company	1.107.600.328,00
Sligro Food Group NV	Netherlands	Food Wholesale	Public Company	Company	1.204.931.514,00
Marr SpA	Italy	Food Wholesale	Public Company	Company	1.381.995.171,00
Sonae SGPS SA	Portugal	Supermarkets & Convenience Stores	Public Company	Company	2.273.256.800,00
Casino Guichard Perrachon SA	France	Food Retail & Distribution (NEC)	Public Company	Company	2.435.346.806,00
Metro AG	Germany	Food Retail & Distribution (NEC)	Public Company	Company	4.039.880.464,00
Axfood AB	Sweden	Supermarkets & Convenience Stores	Public Company	Company	5.403.178.538,00
Etablissementen Franz Colruyt NV	Belgium	Food Retail & Distribution (NEC)	Public Company	Company	5.442.574.862,00
X5 Retail Group NV	Russia	Supermarkets & Convenience Stores	Public Company	Company	6.251.316.172,00
Magnit PAO	Russia	Food Retail & Distribution (NEC)	Public Company	Company	6.658.365.251,00
Dino Polska SA	Poland	Supermarkets & Convenience Stores	Public Company	Company	7.119.428.271,00
J Sainsbury PLC	United Kingdom	Supermarkets & Convenience Stores	Public Company	Company	8.810.613.812,00
Hellofresh SE	Germany	Food Retail & Distribution (NEC)	Public Company	Company	9.426.562.933,00
Kesko Oyj	Finland	Supermarkets & Convenience Stores	Public Company	Company	11.584.411.171,00
Jeronimo Martins SGPS SA	Portugal	Food Retail & Distribution (NEC)	Public Company	Company	14.241.332.858,00
Carrefour SA	France	Supermarkets & Convenience Stores	Public Company	Company	15.969.161.821,00
Tesco PLC	United Kingdom	Food Retail & Distribution (NEC)	Public Company	Company	30.551.008.573,00
Koninklijke Ahold Delhaize NV	Netherlands	Food Retail & Distribution (NEC)	Public Company	Company	32.064.989.648,00

3.3.1 Firms with a small market capitalization.

General summary of what happened to the net working capital of firms with a small market capitalization:

	2015	2016	2017	2018	2019	2020
Average NWC	-1268,3522	-772,63667	-744,32333	-493,16444	-1358,9333	-1387,7089
Median NWC	-324,19	-295,25	-481,83	-221,95	-414,2	-467,31
Average change in NWC		495,715556	28,3133333	251,158889	-865,76889	-28,775556
Median change in NWC		-12	-5,36	-2,61	-12,19	-23,21





In the case of companies with a small market capitalization we see a decrease, on average, of net working capital of 2.12% between 2019 and 2020.

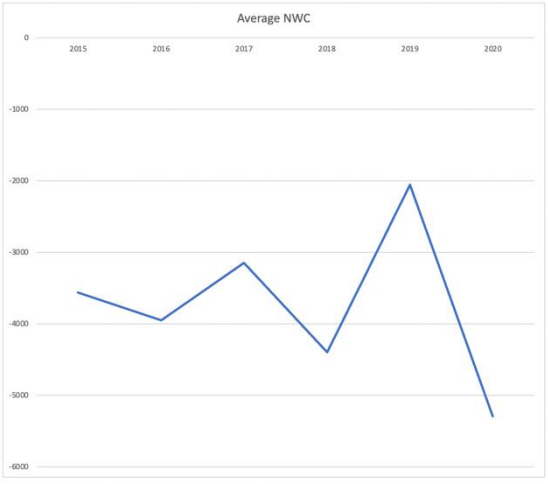
This decrease is due to the fact that, in particular, there has been an increase in debts (equal to 10.39%). Inventories also increased (of 10.16%), and the credits as well (of 19.73%).

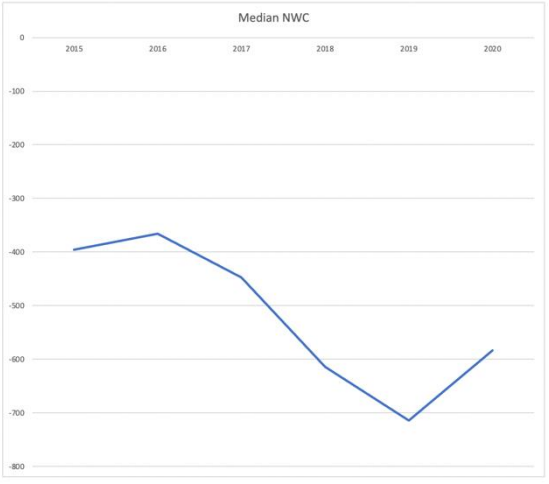
In substance the net working capital of 2020 is diminished regarding the one of the previous year as a result of an increase of the account payables in this specific case.

3.3.2 Firms with a medium market capitalization.

General summary of what happened to the net working capital of firms with a medium market capitalization:

	2015	2016	2017	2018	2019	2020
Average NWC	-3567,222	-3951,644	-3150,401	-4403,41	-2060,847	-5292,513
Median NWC	-395,885	-365,765	-447,585	-614,16	-714,555	-582,985
Average change in NWC		-384,422	801,243	-1253,009	2342,563	-3231,666
Median change in NWC		-2,645	-27,64	-232,295	108,95	-45,27





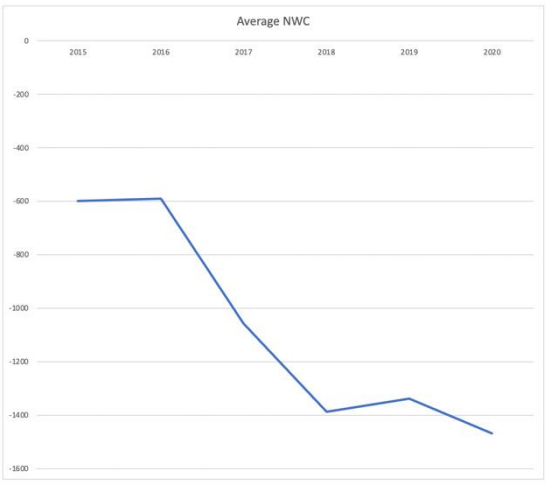
From 2019 to 2020, in the food retail and distribution industry, companies with a medium market capitalization have seen the average net working capital from -2060.8 to -5292.5 million. Here, as in the case of companies in the same sector with a small market capitalization, the reason lies in the increase in account payables: these rise by 8.64%, much more than the increase in inventory and

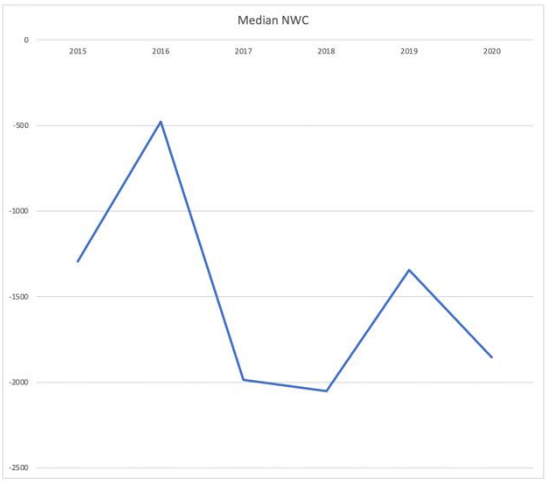
credits. In 2020 account receivables increased by 2.8% and average inventories by 1.05%.

3.3.3 Firms with a big market capitalization.

General summary of what happened to the net working capital of firms with a big market capitalization:

	2015	2016	2017	2018	2019	2020
Average NWC	-598,106	-590,448	-1057,256	-1386,76	-1336,952	-1467,236
Median NWC	-1294	-477	-1987	-2051	-1344	-1853
Average change in NWC		7,658	-466,808	-329,504	49,808	-130,284
Median change in NWC		-132,71	-78	-64	-221,96	-281,2





In the case of companies with a big market capitalization (we are talking about well-known companies such as Tesco, Kesko, Carrefur,.) there is a reduction in net working capital. This indicator was up in 2019 compared to 2018, but in 2020 it shows a decrease of 9.74%: from an average of -1336.9 to -1467.2 million. 2020 has, therefore, reversed the trend of net working capital in this segment of companies, which from an increase has suffered a reduction.

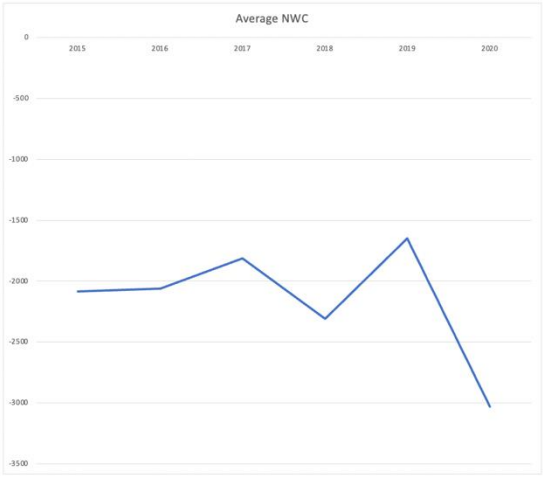
Credits, debts and inventory all decreased, in particular trade receivables lost more than ten percentage points, inventories decreased by 7.8% and debts decreased by 6.1% in 2020.

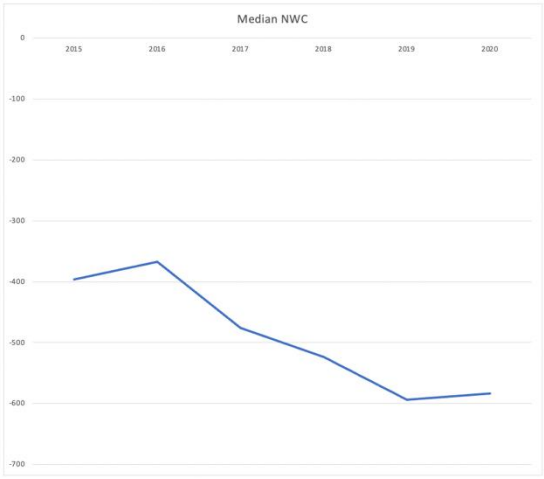
3.3.4 General summary.

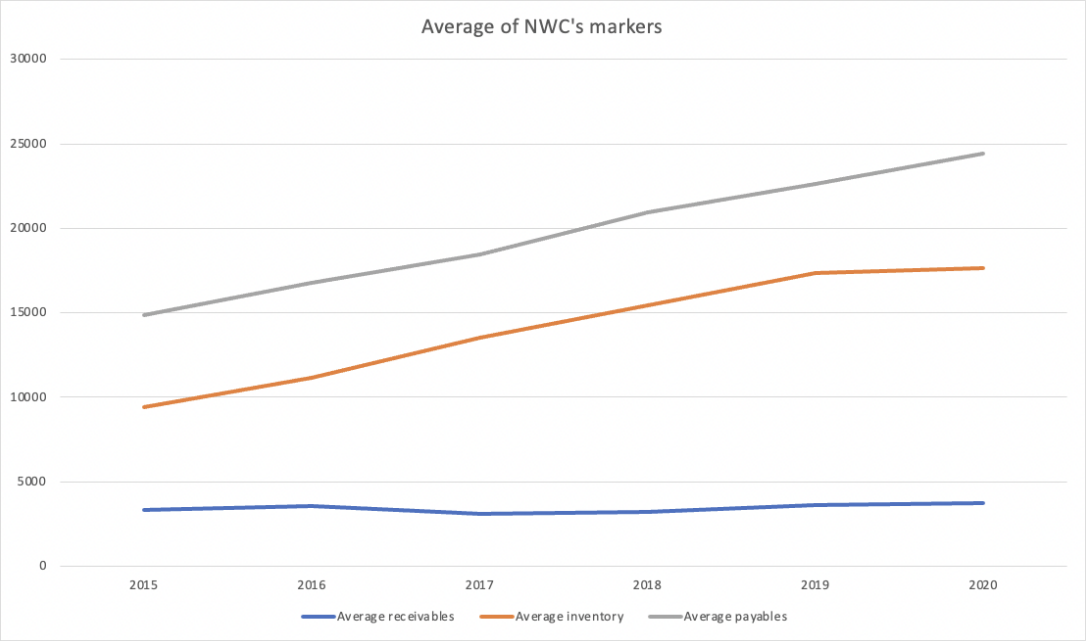
	2015	2016	2017	2018	2019	2020
Average NWC	-2086,58	-2059,2671	-1812,05	-2308,5992	-1646,8179	-3031,2788
Average change in NWC		27,312917	247,21708	-496,54917	661,78125	-1384,4608
Median NWC	-395,885	-367,175	-475,415	-523,065	-593,59	-582,985
Median change in NWC		-11	-27,32	-45,905	-4,29	-46,555

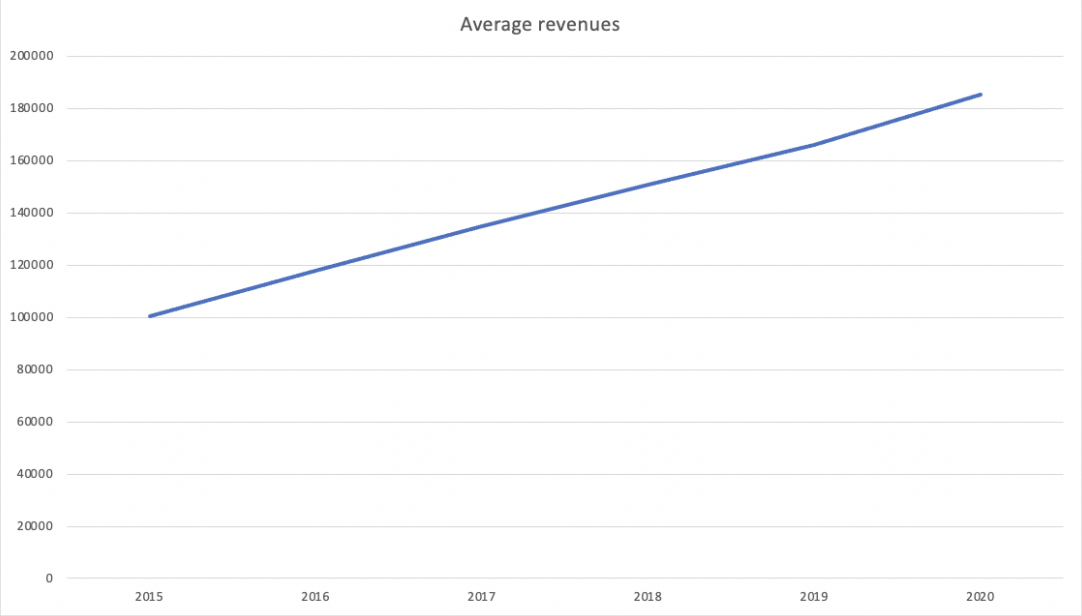
	2015	2016	2017	2018	2019	2020
Average receivables	3347,0079	3538,4417	3113,215	3203,1271	3624,0242	3709,6888
Average inventory	9415,7375	11168,731	13519,344	15432,14	17357,243	17656,653
Average payables	14849,325	16766,44	18444,609	20943,866	22628,085	24397,621
Average revenues	100527,03	117833,04	135121,89	150975,86	166084,34	185580,44

	2015	2016	2017	2018	2019	2020
Median receivables	617,9	701,05	665,6	683,4	616,7	727,085
Median inventory	848,815	968,7	1125,975	1133,22	1157,73	1207,31
Median payables	2365,985	2672,805	3550,635	3640,21	3692	3617,5
Median revenues	11558,90	12840,48	15810,10	18027,04	20751,49	22352,27









In general, the food retail and distribution industry, considering all the companies that are part of the cluster (small, medium and large capitalization) sees an average net working capital decreasing by about 84 percentage points in 2020. Revenues in this sector averagely increased of 11.7% (from 166,084 millions to 185,580 millions), so we are dealing with a sector that, during the pandemic, has had the opportunity to work and generate revenues. However the debts have

grown a lot (7.8%), and for sure the delays of payment towards the own suppliers have increased.

The evolution of receivables and inventories has been to the rise: between 2019 and 2020 the average receivables increased of 2.4% and the inventories of 1.7%.

If, as we have said, the companies with a small, medium and big capitalization have had different effects, this is proved carrying out an osservation of the deviation of net working capital, account receivables, inventory and account payables compared to the 2020 average for the entire industry.

In particular if we fix the average value of the industry's net working capital of 2020 (that it has been negative and pairs to -3031K euros) we see that the companies of smaller capitalization deviate of 54% approximately regarding to this value. In other words, if the average net working capital has been of -3031K, that average of the companies of the food retail & distribution with a small capitalization of market has been major of 54% (that is pairs to approximately to -1387K euros). This percentage, however, is valid only for the working capital, because the course of the inventory is different regarding the average, being smaller of 69%, while payables are inferior than the average of the sector of 66% and account receivables of 57%.

Even mid-cap companies have deviated from the market average but in a smaller percentage, net working capital has been higher than average. The deviation of the indicators varied: payables were 59% higher than the market average, inventories of 105% and receivables of 94%.

The big capitalization's companies have, instead, underperformed the average of the sector: the net working capital of these has been lower than the average of 52%, and also the markers of the net working capital have been all inferior to the average.

Certainly during the lockdown if we heard about a sector other than the pharmaceutical one it was the food retail and distribution sector. This has changed its way of being, undergoing a real transition, which has also opened up to very different sectors (such as apparel and accessories): e-commerce. The purchase of food (therefore a good of first necessity) considered inviolable by every European state even during the tightest of lockdowns, has meant that supermarkets suffered yes, a boom in demand, but also in a different way than usual. First of all at the beginning there was a kind of supermarket fever, in which everyone, moved by uncertainty, made stocks of food. Only in a second time the frequency of the purchases has been rationalized. However, what is curious to highlight is that this sector, a sector in which the contact with the customer is fundamental (the customer goes to the supermarket and chooses the product to be purchased by making his assessments, such as the expiration date), has moved towards buying online. The "fear" has not stopped anyone for any reason, and supermarkets have found themselves facing not only increased demand, but also increased demand for online shopping. This change of paradigm (which for having invaded this field has decidedly revolutionized all the others), had for sure to the safety, is also revealed, like everything, in net working capital with the increase of the inventory (for storages) and in the increase of payables (to suppliers).

3.4 The Apparel & Accessories industry

The apparel and accessories industry deals with the production of textile products, namely the preparation of natural and synthetic fibres, the production of yarns and the processing of yarns into fabrics .From the production point of view, the supply chain begins with the supply of resources and the processing of raw materials, then passes to the production and processing phase and ends with the distribution of the product and the sale. From a commercial point of view, the whole chain is driven by the demand of consumers, whose purchasing choices are regularly monitored through a system of lean retailing, which collects information directly from shopping malls and transmits it to manufacturers. In the apparel and accessories industry, where production times are higher than in the clothing industry, capital investment and specialized work play an important role.

The apparel industry is a key component of the European manufacturing sector in terms of production, value added creation and employment, and the Italian apparel industry is the largest in Europe.

The firms which have been taken into account for the study have been the following ones:

Firms with a small market capitalization:

- Calida Holding AG
- Van de Velde NV
- Kordsa Teknik Tekstil AS
- Safilo Group SpA
- Marimekko Oyj
- New Wave Group AB
- OVS SpA

- Aksa Akrilik Kimya Sanayii AS
- Coats Group PLC

Firms with a medium market capitalization:

- Samsonite International SA
- Salvatore Ferragamo SpA
- SASA Polyester Sanayi AS
- Brunello Cucinelli SpA
- Hugo Boss AG

Firms with a big market capitalization:

- Capri Holdings Ltd
- Pandora A/S
- Burberry Group PLC
- JD Sports Fashion PLC
- Prada SpA
- Swatch Group AG
- Moncler SpA
- Zalando SE
- H & M Hennes & Mauritz AB
- Compagnie Financiere Richemont SA
- EssilorLuxottica SA
- Industria de Diseno Textil SA
- Kering SA
- Hermes International SCA
- LVMH Moet Hennessy Louis Vuitton SE

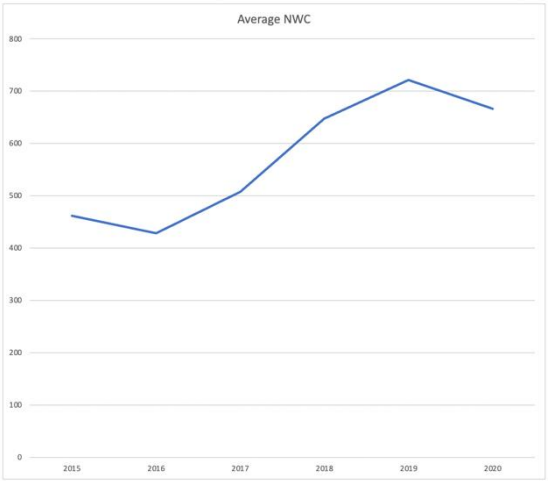
Summary table:

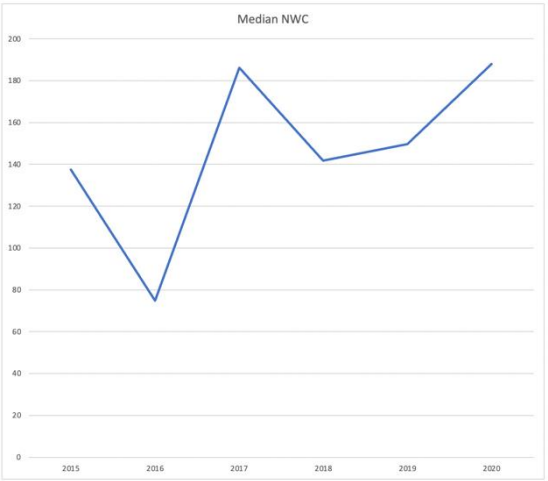
Company Name	Country of Domicile	TRBC Sector	Organisation Type	Organisation Sub Type	Market Cap (USD)
Calida Holding AG	Switzerland	Apparel & Accessories (NEC)	Public Company	Company	482.317.083,00
Van de Velde NV	Belgium	Lingerie	Public Company	Company	491.859.300,00
Kordsa Teknik Tekstil AS	Turkey	Synthetic Fabrics	Public Company	Company	493.986.538,00
Safilo Group SpA	Italy	Fashion Eyewear	Public Company	Company	662.249.598,00
Marimekko Oyj	Finland	Apparel & Accessories (NEC)	Public Company	Company	663.827.368,00
New Wave Group AB	Sweden	Apparel & Accessories (NEC)	Public Company	Company	706.816.050,00
OVS SpA	Italy	Apparel & Accessories (NEC)	Public Company	Company	756.465.025,00
Aksa Akrilik Kimya Sanayii AS	Turkey	Textiles & Leather Goods (NEC)	Public Company	Company	853.135.792,00
Coats Group PLC	United Kingdom	Textiles & Leather Goods (NEC)	Public Company	Company	1.223.186.280,00
Samsonite International SA	Luxembourg	Apparel & Accessories (NEC)	Public Company	Company	3.289.638.058,00
Salvatore Ferragamo SpA	Italy	Apparel & Accessories (NEC)	Public Company	Company	3.779.127.924,00
SASA Polyester Sanayi AS	Turkey	Textiles & Leather Goods (NEC)	Public Company	Company	3.833.879.908,00
Brunello Cucinelli SpA	Italy	Apparel & Accessories Retailers (NEC)	Public Company	Company	3.962.164.500,00
Hugo Boss AG	Germany	Apparel & Accessories (NEC)	Public Company	Company	4.480.713.600,00
Capri Holdings Ltd	United Kingdom	Apparel & Accessories Retailers (NEC)	Public Company	Company	10.009.792.679,00
Pandora A/S	Denmark	Jewelry	Public Company	Company	10.806.613.684,00
Burberry Group PLC	United Kingdom	Apparel & Accessories Retailers (NEC)	Public Company	Company	11.083.775.505,00
JD Sports Fashion PLC	United Kingdom	Sports & Outdoors Retailers	Public Company	Company	11.251.282.629,00
Prada SpA	Italy	Apparel & Accessories Retailers (NEC)	Public Company	Company	15.694.986.463,00
Swatch Group AG	Switzerland	Watches	Public Company	Company	15.910.475.499,00
Moncler SpA	Italy	Apparel & Accessories (NEC)	Public Company	Company	16.966.430.884,00
Zalando SE	Germany	Apparel & Accessories Retailers (NEC)	Public Company	Company	17.193.576.162,00
H & M Hennes & Mauritz AB	Sweden	Apparel & Accessories Retailers (NEC)	Public Company	Company	26.565.643.217,00
Compagnie Financiere Richemont SA	Switzerland	Jewelry	Public Company	Company	72.630.347.259,00
EssilorLuxottica SA	France	Fashion Eyewear	Public Company	Company	81.282.921.487,00
Industria de Diseno Textil SA	Spain	Apparel & Accessories Retailers (NEC)	Public Company	Company	87.004.846.813,00
Kering SA	France	Apparel & Accessories Retailers (NEC)	Public Company	Company	90.815.191.171,00
Hermes International SCA	France	Handbags & Luggage	Public Company	Company	144.425.289.780,00
LVMH Moet Hennessy Louis Vuitton S	France	Apparel & Accessories (NEC)	Public Company	Company	382.539.939.750,00

3.4.1 Firms with a small market capitalization.

General summary of what happened to the net working capital of firms with a small market capitalization:

	2015	2016	2017	2018	2019	2020
Average NWC	461,913333	428,478889	507,691111	647,106667	721,336667	666,151111
Median NWC	137,6	74,84	186,1	141,8	149,7	187,98
Average change in NWC		-33,434444	79,2122222	139,415556	74,23	-55,185556
Median change in NWC		0,88	63,35	11,48	-1,88	-1,15





In the case of the firms of the Apparel & Accessories industry with a small market capitalization, we notice a decrease of the average net working capital between 2019 and 2020 of 7.65%: from 721 to 666 million.

This annual decrease mainly happened because of the decrease of the inventories (12%).

In 2020 account payables decreased by 7.3% compared to 2019 and account receivables increased of 0.3%.

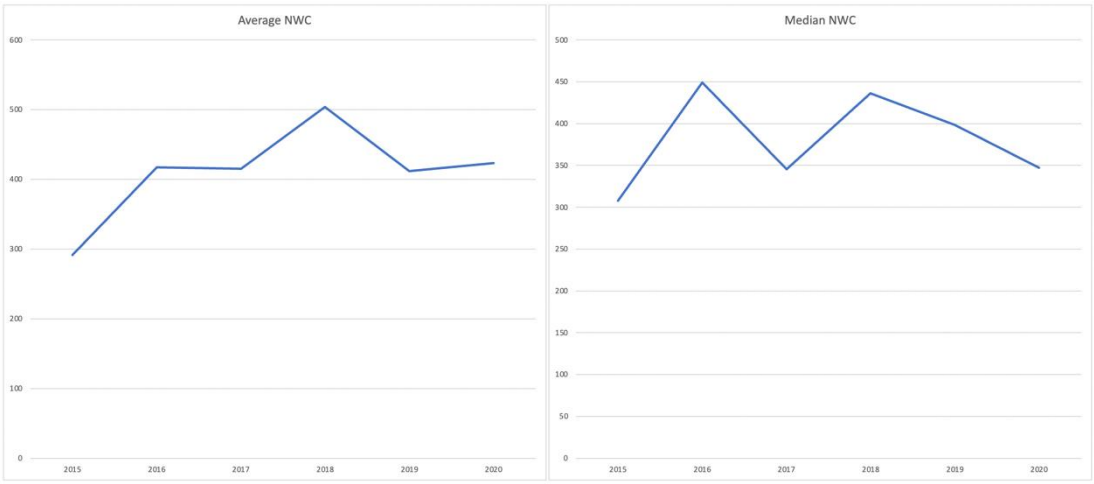
For this reason the decrease of the net working capital can mainly be attributed to the decrease of the inventory fluctuations.

The emptying of warehouses in 2020 is due to the fact many companies of this industry, especially the smallest ones, have been closed and therefore have not produced. By not producing they sold the unsold, or the goods that were in the warehouses.

3.4.2 Firms with a medium market capitalization.

General summary of what happened to the net working capital of firms with a medium market capitalization:

	2015	2016	2017	2018	2019	2020
Average NWC	291,71	417,422	414,994	503,866	412,064	423,638
Median NWC	307,7	448,95	345,37	436,4	398,4	347,04
Average change in NWC		125,712	-2,428	88,872	-91,802	11,574
Median change in NWC		104,17	-8,68	74,17	-20,7	-21,39



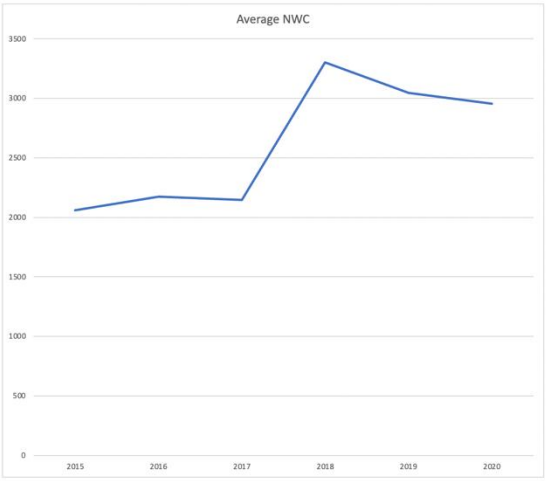
In the case of companies with a medium market capitalization, between 2019 and 2020 we note an increase in the average net working capital of 2.8 percentage

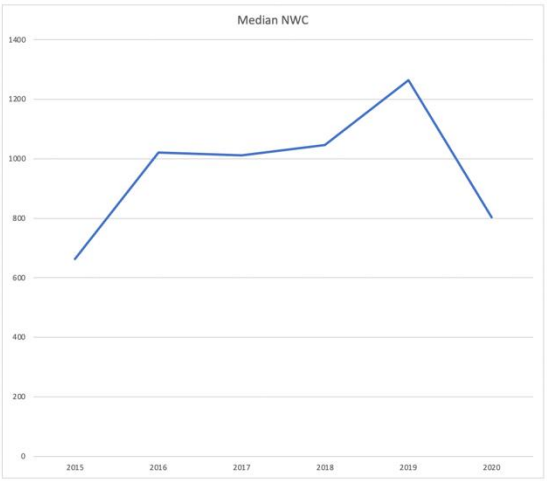
points. This increase, in this specific segment of the Apparel & Accessories industry, is due to the increase in inventories (as opposed to small cap companies). The average inventories increased in 2020 of 15.7%. However, account receivables fell in the same year from an average of 284.3 million to an average of 257.7 million (about 9.3%) and account payables increased by 11%.

3.4.3 Firms with a big market capitalization.

General summary of what happened to the net working capital of firms with a big market capitalization:

	2015	2016	2017	2018	2019	2020
Average NWC	2058,50867	2174,68	2147,682	3303,156	3043,66067	2954,676
Median NWC	662,89	1020,3	1011,9	1045,5	1264,2	803,17
Average change in NWC		116,171333	-26,998	1155,474	-259,49533	-88,984667
Median change in NWC		86,5	-47	-26,92	28,3	-36,58





In the case of companies with the highest market capitalization we are talking about big names, to name a few Prada, Burberry, EssilorLuxottica, Kering and LVMH. What happened to these companies in 2020 was that the average net working capital decreased, because account receivables decreased.

Average account receivables lost 18.02 percentage points in 2020 compared to 2019, while inventories and debts decreased respectively of 1.6% and 9.97%. The highest decrease was in account receivables, so credits. This led net working capital

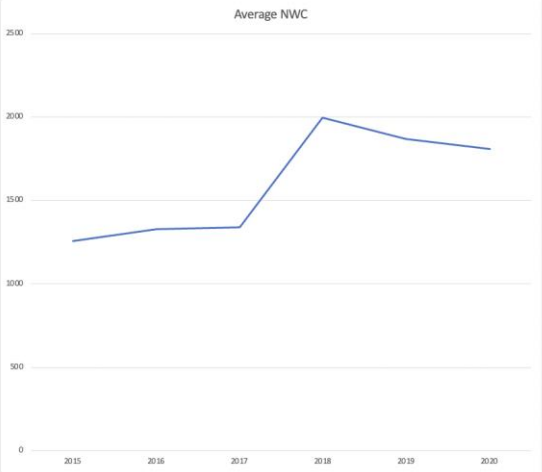
to lose 2.92%, from an average of 3043.6 million in 2019 to an average of 2954.6 million in 2020.

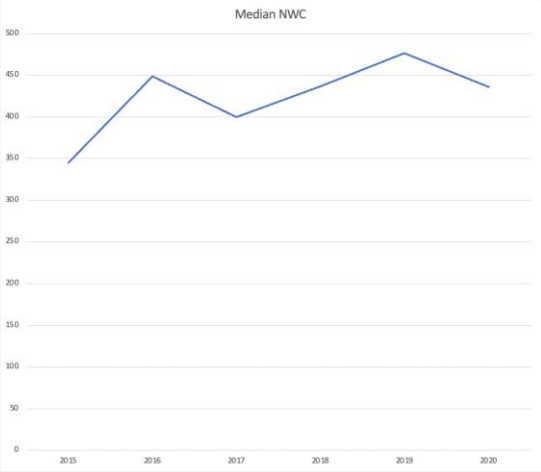
3.4.4 General summary.

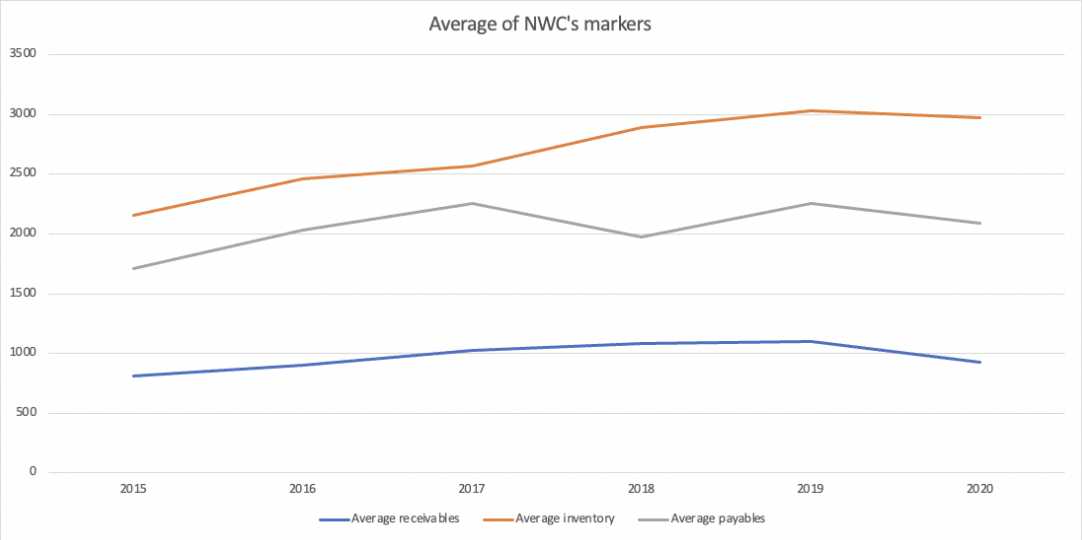
	2015	2016	2017	2018	2019	2020
Average NWC	1258,393	1329,78	1339,98	1996,229	1869,216	1808,058
Average change in NWC		71,3869	10,2	656,2486	-127,0128	-61,15759
Median NWC	344,78	448,95	400,03	436,4	476,19	436
Median change in NWC		10,48	-0,55	12,57	7,9	-17,95

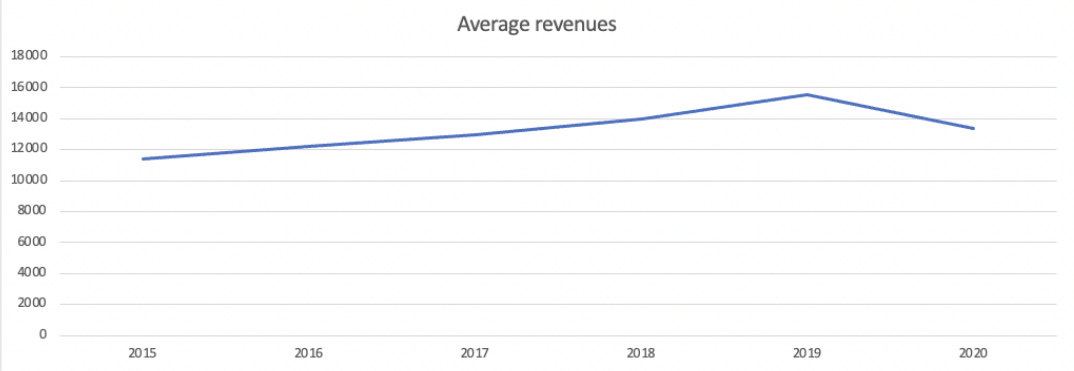
	2015	2016	2017	2018	2019	2020
Average receivables	813,3262	900,4103	1024,976	1083,88	1096,464	926,5886
Average inventory	2155,855	2458,553	2572,291	2890,476	3030,687	2972,831
Average payables	1710,788	2029,183	2257,288	1978,127	2257,935	2091,362
Average revenues	11381,88	12204,1	12962,73	13957,85	15590,95	13356,44

	2015	2016	2017	2018	2019	2020
Median receivables	283,5	357,79	402,07	424,67	472,57	451,47
Median inventory	424,72	486,7	536,84	617,95	712,61	666,22
Median payables	384,8	423,1	417,9	503,5	584,9	521,2
Median revenues	2523,20	2623,36	2761,71	3537,55	3645,90	4536,34









Summarily, without distinction between small, medium, and large capitalization companies, what we see in the Apparel & Accessories industry is a decrease in net working capital in 2020.

Going down more in the specific the average net working capital decreased of 3.27%, passing from 1869,2 million in 2019 to 1808 million in 2020.

The reason for this decrease lies in the reduction of account receivables by 15.5 percentage points between 2019 and 2020 and the reduction of inventories by 1.9%. Also the account payables diminished but of a much smaller percentage regarding the account receivables in 2020 (7.3%, that is approximately the half regarding the decrease of the credits).

We are talking about an industry that has decreased its turnover in 2020 by 14.3%, the decrease in turnover is due to the stop, in most European countries of production. Closed establishments have meant non-produced merchandise and non-produced merchandise has meant loss of revenue.

If, as we have said, the companies with a small, medium and big capitalization have had different effects, this is proved carrying out an osservation of the deviation of net working capital, account receivables, inventory and account payables compared to the 2020 average for the entire industry.

In particular if we fix the average value of the industry of the net working capital of 2020 (it has been equal to 1808K euros) we see that the companies of smaller capitalization deviate of -63% approximately regarding this value. This percentage occurs, however, not only for the working capital, but also, always in negative measure, regarding account receivables, account payables and inventory of the same fragment of industry: account receivables of small-cap companies have been 55% lower than average, inventories of 79% and payables of 82%.

Even mid-cap companies have deviated from the market average but in a different percentage, net working capital has been lower than the average of 76%. The deviation of the indicators varied: payables were 79% lower than the market average, inventories of 80% and receivables of 72%.

Only the companies with a bigger market-cap have exceeded the average : in fact the net working capital of these is 63% greater than the average and also the markers of the net working capital are all advanced to the average of at least 50%.

In France and in Italy there are the most important textile districts of the world, we are talking about companies of the calibre of Hermès, Prada, LVMH, industry leader. If, as we have said in the food retail and distribution sector, in the period

of the pandemic and especially of the lockdown, there has been a growth in online sales, certainly in this sector things have not gone differently.

If the pharmaceutical sector has continued to operate and so has that of food retail and distribution, this was not valid, in 2020, for manufacturing companies, and among these also those that affect the production of textiles or accessories (such as leather bags).

What must be specified is that, not representing the clothing (except the one for newborns) a commodity that can be purchased in an international emergency, the companies have been closed. The offices and production of this sector have closed their doors for more than a month. However, it must be said that no one saves himself, and since the dawn of time a closed company can not generate profits. But the companies of this industry have found a way: online sales. Most of the companies and fashion brands had, already long before the pandemic, online websites where it was possible to buy and during the lockdown, where retail stores were closed, they were exploited to the maximum for the sale of storages. Surely it has not been possible to create ex novo garments to sell week by week (as in the case of fast fashion), but it was possible to decrease the warehouses selling the goods previously produced. Obviously this trend is also proved by the inventory of the entire industry we see in decrease between 2019 and 2020.

3.5 The Auto & Truck Manufacturers industry.

The auto and truck manufacturer industry manages a productive activity of the secondary sector of the economy aimed at the production of automobiles or trucks.

It is that branch of the manufacturing industry that deals with the design, construction, marketing and sale of motor vehicles.

This sector has already been marked by a deep crisis, the one of 2009, in which about 10 million cars were sold in total in the USA, but was it ready to face the pandemic?

The firms which have been taken into account for the study have been the following ones:

Firms with a small market capitalization:

- Saf-Holland Se
- Akwel SA
- Elringklinger AG
- JOST Werke AG
- Autoneum Holding AG
- Piaggio & C SpA
- Schaeffler AG
- Burelle SA
- Inter Cars SA
- TI Fluid Systems PLC

Firms with a medium market capitalization:

- Tofas Turk Otomobil Fabrikasi AS
- PIERER Mobility AG
- Inchcape PLC
- Daetwyler Holding AG
- Brembo SpA
- Adient PLC
- Rheinmetall AG

- Pirelli & C SpA
- Faurecia SE
- Ford Otomotiv Sanayi AS
- Valeo SE
- HELLA GmbH & Co KGaA
- Autoliv Inc

Firms with a big market capitalization:

- Renault SA
- Porsche Automobil Holding SE
- Continental AG
- Volvo Car AB
- Compagnie Generale des Etablissements Michelin SCA
- Aptiv PLC
- Stellantis NV
- Bayerische Motoren Werke AG
- Mercedes-Benz Group AG
- Volkswagen AG

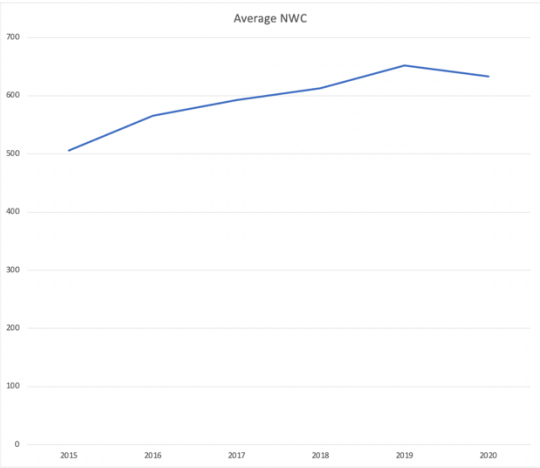
Summary table:

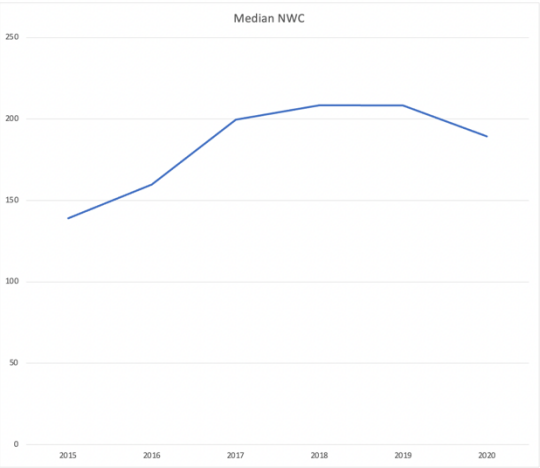
Company Name	Country of Domicile	TRBC Sector	Organisation Type	Organisation Sub Type	Market Cap (USD)
Saf-Holland Se	Germany	Auto & Truck Manufacturers (NEC)	Public Company	Company	573.724.964,00
Akwel SA	France	Engine & Powertrain Systems	Public Company	Company	669.281.434,00
Elringklinger AG	Germany	Auto, Truck & Motorcycle Parts (NEC	Public Company	Company	684.544.499,00
JOST Werke AG	Germany	Auto, Truck & Motorcycle Parts (NEC	Public Company	Company	702.812.512,00
Autoneum Holding AG	Switzerland	Auto, Truck & Motorcycle Parts (NEC	Public Company	Company	799.179.953,00
Piaggio & C SpA	Italy	Motorcycles & Scooters	Public Company	Company	1.113.802.319,00
Schaeffler AG	Germany	Auto, Truck & Motorcycle Parts (NEC	Public Company	Company	1.180.608.600,00
Burelle SA	France	Automotive Body Parts	Public Company	Company	1.242.077.021,00
Inter Cars SA	Poland	Auto & Truck Parts Wholesale	Public Company	Company	1.573.055.014,00
TI Fluid Systems PLC	United Kingdom	Auto, Truck & Motorcycle Parts (NEC	Public Company	Company	1.618.181.663,00
Tofas Turk Otomobil Fabrikasi AS	Turkey	Automobiles & Multi Utility Vehicles	Public Company	Company	2.991.046.811,00
PIERER Mobility AG	Austria	Motorcycles & Scooters	Public Company	Company	3.249.807.902,00
Inchcape PLC	United Kingdom	Auto & Truck Parts Wholesale	Public Company	Company	4.271.399.147,00
Daetwyler Holding AG	Switzerland	Industrial Rubber Products	Public Company	Company	4.314.412.850,00
Brembo SpA	Italy	Automotive Systems	Public Company	Company	4.371.609.920,00
Adient PLC	Ireland	Automotive Accessories	Public Company	Company	4.562.053.485,00
Rheinmetall AG	Germany	Engine & Powertrain Systems	Public Company	Company	4.730.785.132,00
Pirelli & C SpA	Italy	Tire & Tube Manufacturers	Public Company	Company	6.412.215.000,00
Faurecia SE	France	Auto, Truck & Motorcycle Parts (NEC	Public Company	Company	6.572.489.888,00
Ford Otomotiv Sanayi AS	Turkey	Automobiles & Multi Utility Vehicles	Public Company	Company	6.808.002.292,00
Valeo SE	France	Auto, Truck & Motorcycle Parts (NEC	Public Company	Company	6.898.117.240,00
HELLA GmbH & Co KGaA	Germany	Auto, Truck & Motorcycle Parts (NEC	Public Company	Company	7.844.450.062,00
Autoliv Inc	Sweden	Auto, Truck & Motorcycle Parts (NEC	Public Company	Company	8.687.459.298,00
Renault SA	France	Auto & Truck Manufacturers (NEC)	Public Company	Company	11.242.777.186,00
Porsche Automobil Holding SE	Germany	Auto & Truck Manufacturers (NEC)	Public Company	Company	15.742.528.593,00
Continental AG	Germany	Auto, Truck & Motorcycle Parts (NEC	Public Company	Company	19.191.919.109,00
Volvo Car AB	Sweden	Auto & Truck Wholesale	Public Company	Company	20.566.943.612,00
Compagnie Generale des Etablissements Michelin SCA	France	Tires & Rubber Products (NEC)	Public Company	Company	26.365.019.795,00
Aptiv PLC	Ireland	Auto, Truck & Motorcycle Parts (NEC	Public Company	Company	38.183.070.861,00
Stellantis NV	Netherlands	Automobiles & Multi Utility Vehicles	Public Company	Company	57.991.151.991,00
Bayerische Motoren Werke AG	Germany	Auto & Truck Manufacturers (NEC)	Public Company	Company	66.957.715.137,00
Mercedes-Benz Group AG	Germany	Auto & Truck Manufacturers (NEC)	Public Company	Company	88.712.686.337,00
Volkswagen AG	Germany	Auto & Truck Manufacturers (NEC)	Public Company	Company	126.811.921.257,00

3.5.1 Firms with a small market capitalization.

General summary of what happened to the net working capital of firms with a small market capitalization:

	2015	2016	2017	2018	2019	2020
Average NWC	505,852	565,172	592,367	613,157	651,936	632,796
Median NWC	139,155	159,685	199,465	208,485	208,275	189,275
Average change in NWC		59,32	27,195	20,79	38,779	-19,14
Median change in NWC		21,23	17,87	19,39	3,195	-29,545





In the case of firms with a small market capitalization belonging to the Auto & Truck Manufacturers industry, there has been a decrease in net working capital in

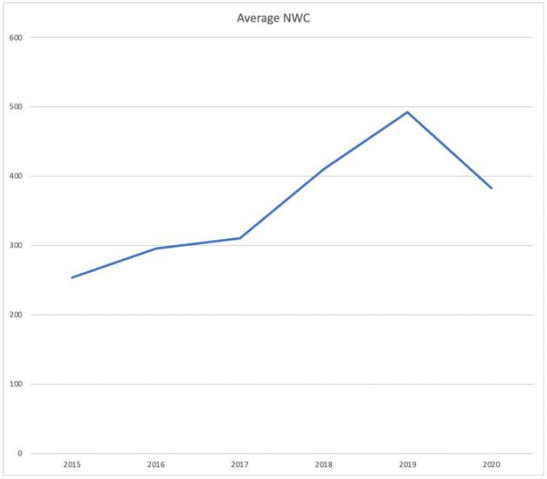
2020. In particular, this indicator decreased by 2.9% between 2019 and 2020, from an average of 651.9 million to 632 million.

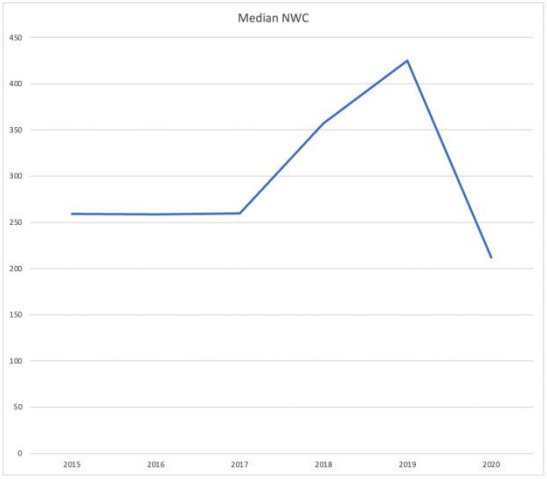
The reason lies in the fact that account receivables, account payables and inventories have decreased. On average, account receivables decreased by 5.75% between 2019 and 2020, inventories fell by 5.2% and debts by 8%.

3.5.2 Firms with a medium market capitalization.

General summary of what happened to the net working capital of firms with a medium market capitalization:

	2015	2016	2017	2018	2019	2020
Average NWC	253,400769	295,683846	310,506154	409,958462	492,339231	383,077692
Median NWC	259,08	258,9	259,82	356,84	424,75	211,8
Average change in NWC		42,2830769	14,8223077	99,4523077	82,3807692	-109,26154
Median change in NWC		44,8	21	23,9	91,1	-25,4





Companies in this industry with an medium market capitalization had a decreasing net working capital between 2019 and 2020 of 22.19%. This strong decrease made the average net working capital fluctuate from 492 to 383 million.

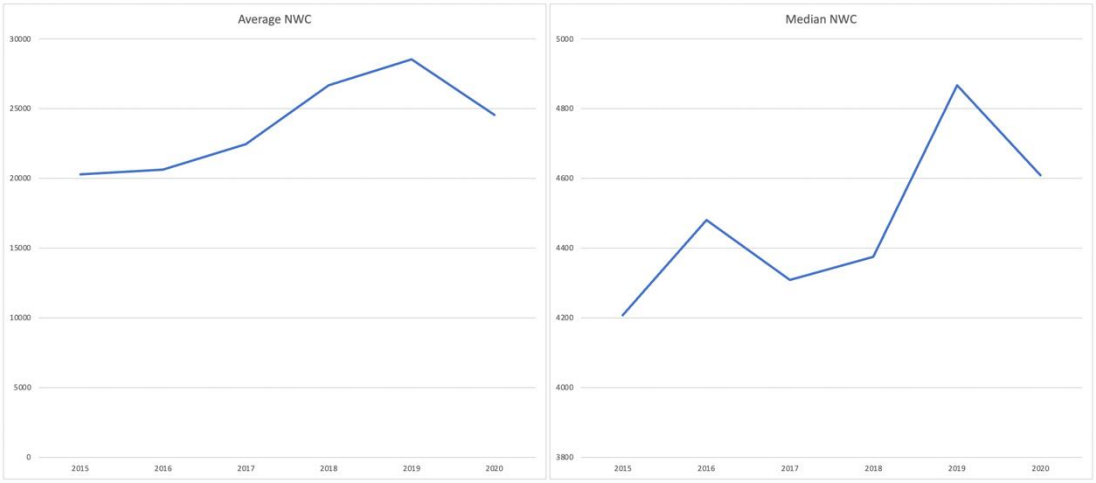
The reason for this is that account payables increased significantly between 2019 and 2020: from 2284 million to 2838 million, so 24.27%.

Account receivables and inventory also averagely increased, account receivables increased on of 23% in 2020nwhile inventories increased of a lower percentage (3%).

3.5.3 Firms with a big market capitalization.

General summary of what happened to the net working capital of firms with a big market capitalization:

	2015	2016	2017	2018	2019	2020
Average NWC	20297,26	20641,82	22457,49	26665,34	28519,23	24558,41
Median NWC	4206,8	4480,6	4308,45	4375,2	4867,15	4609,05
Average change in NWC		344,56	1815,67	4207,85	1853,89	-3960,82
Median change in NWC		274	1.435	2.124	862	-2.936



When we talk about companies in the Auto & Truck Manufacturers sector with big market capitalization we talk about names such as Stellantis, Volvo Car, Mercedes-Benz Group and the more capitalized Volkswagen.

Overall, the average net working capital decreased between 2019 and 2020 by 13.8 percentage points, from 28519.2 million in 2019 to 24558.4 in 2020.

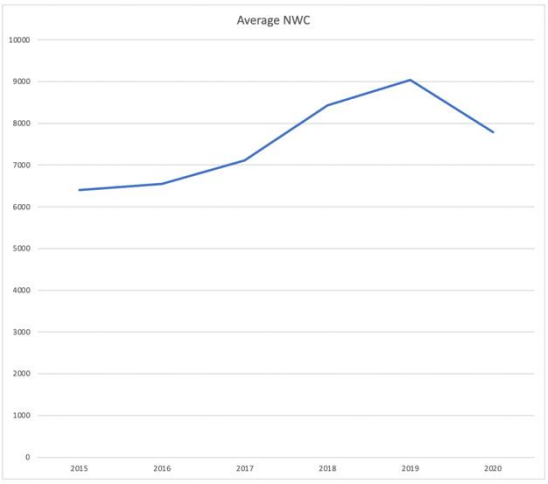
The reason lies in the fact that account payables increased during 2020 (1.29%), while account receivables and inventories decreased (8.13% and 8.62% respectively).

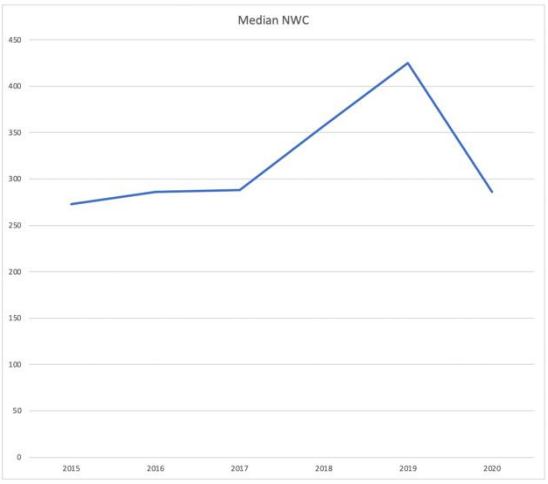
3.5.4 General summary.

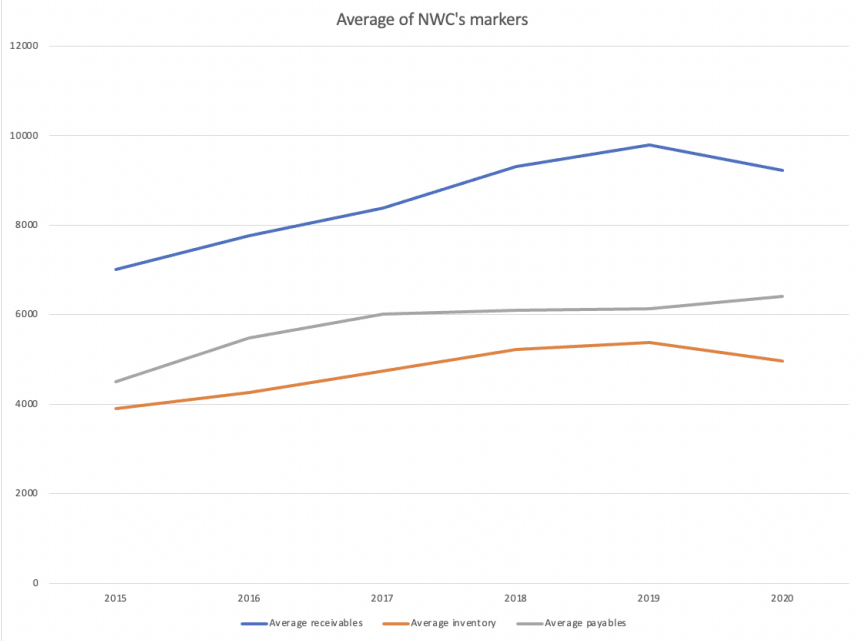
	2015	2016	2017	2018	2019	2020
Average NWC	6403,79788	6542,84273	7107,12576	8427,71	9033,69909	7784,60818
Average change in NWC		139,044848	564,28303	1320,58424	605,989091	-1249,0909
Median NWC	272,66	286	288,2	356,84	424,75	285,8
Median change in NWC		44,8	33,17	31,24	69,36	-58,3

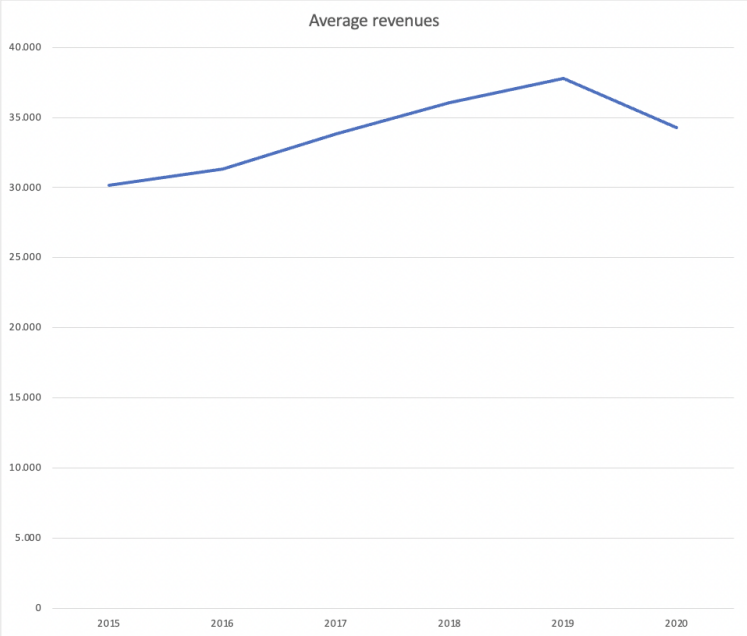
	2015	2016	2017	2018	2019	2020
Average receivables	7002,47939	7766,78818	8382,05848	9314,08515	9797,5903	9223,56606
Average inventory	3900,77212	4255,78818	4739,15636	5218,18879	5371,64848	4963,95333
Average payables	4499,45364	5479,73364	6014,08909	6104,56394	6135,5397	6402,91121
Average revenues	30.189	31.335	33.844	36.055	37.796	34.258

	2015	2016	2017	2018	2019	2020
Median receivables	1232	1419	1327	1686	1653,5	1641
Median inventory	848,58	873,96	1055,58	1128,47	1093,75	1216,2
Median payables	1487	1702	2174	1913,7	1811,75	1669,43
Median revenues	6836,30	7838,40	8136,80	8678,20	8764,26	7447,40









Overall, breaking down any distinction between small, medium and large capitalization in this sector, the average net working capital has suffered a decrease of 13% in 2020, from an average of 9034 million in 2019 to an average of 7785 million in 2020.

Averagely, account receivables decreased of 5.9% between 2019 and 2020, inventories decreased by 7.6% and account payables increased by 4.36%.

The reason for the decrease in the average net working capital of this sector is therefore the increase in debts during the pandemic.

If, as we have said, the companies with a small, medium and big capitalization have had different effects, this is proved carrying out an osservation of the deviation of net working capital, account receivables, inventory and account payables compared to the 2020 average for the entire industry.

In particular if we fix the average value of the industry of the net working capital of 2020 (equal to 7785K euros) we see that the companies of smaller capitalization diverge of -92% from this value. This percentage occurs, however, not only for the working capital, but also, always in negative measure, regarding account receivables, account payables and inventory of the same fragment of industry: account receivables of the companies with a small capitalization were 93% lower than the average ones, inventories of 88% and payables of 91%.

Even mid-cap companies have deviated from the market average but in a smaller percentage, net working capital has been lower than the average of 95%. The deviation of the indicators varied: payables were 56% lower than the market average, inventories of 79% and receivables of 77%.

Only the companies with a bigger capitalization have exceeded the average of almost 200%, in fact the net working capital of these is greater than the average of 215%, and also the markers of the net working capital are all advanced to the average of at least 160%.

If, as we have said, the manufacturing sector in general has continued to sell (even if differently) during the lockdown, this has not been universally valid but the nature of the product must always be contextualized. The auto & truck manufacturers are those that deal with the production of the cars or the trucks, therefore of goods generally standardized but not of first necessity neither of usual

purchase. Companies frequently use and have used truck transport even during the pandemic (those who sold), but 2020 wasn't the year of investments in mobility, at least not in the months of the pandemic. It is true that the world is moving (and at a fast pace) towards the transition of a green and more sustainable mobility, it is true that there are many investments in electric or hybrid cars, but this has not happened mainly in 2020, a year in which the investments were oriented towards what could, one way or another, give companies the opportunity to invest immediately in something that would make them breathe financially. The automotive sector is not an emergency sector: no one during a global pandemic should have had as priority to buy a new car because travel has been limited by regulations. This has led the sector to move similarly to the one of textile manufacturing: selling what had already been produced (the warehouse). To prove it, the net working capital of the industry is in decrease in 2020, regarding 2019, mainly for the decrease of the inventory and the account receivables.

Results of the research and further answers

4.1 General results of the research

Summing up what happened to the four sectors under analysis, it has to be said that each sector has reacted differently to the lockdown and the pandemic.

The study did not focus on the hardest months of the Covid-19 (therefore the months from March to June 2020) but considered the whole year 2020, thus incorporating not only the strategies followed during the lockdown but also those pursued during the following months.

Not only have all sectors reacted in their own way, but also within the industry itself there has been a difference between smaller and larger companies.

In the case of the pharmaceutical sector, the effects on small cap companies have been much more amplified than those in large cap companies.

In companies with a smaller capitalization we find companies that are objectively smaller and "less strong" or "less robust" than the larger ones. These have seen their 2020's net working capital increase vertiginously thanks to the increase of the warehouses of 75% (between 2019 and 2020) and thanks to the increase of the account receivables that is gone up of 32%, while the account payables are increased of 47%, approximately. The increase of the inventory has regarded also the more capitalized companies of the same field, even if in smaller percentage, while credits and account payables are increased little more than 0%, in much lower measure regarding the less capitalized companies.

This scheme is valid not only for pharmaceutical companies but also for the other three sectors under analysis: the effects in larger capitalization companies have been much more dampened than in the smaller ones. In all cases we see a stronger increase or decrease of receivables, payables and inventories in the less capitalized

companies while we observe a more weakened trend of 2020 compared to 2019 in the most capitalized companies.

This leads to infer that, as we are more generally inclined to think, corporate capital is never indifferent and the largest capitalization allows to afford to face a crisis which is economic (when costs exceed revenues) and financial (when the money runs out). The economic crises for a company can happen not only for a pandemic, but enough an increase of the prices of the raw materials in order to make so that the costs (often variable, is thought to the energy) exceed the revenues (sales are often made at fixed prices before payment of raw materials). In these cases a well structured company, strong of capital, can bear the crisis for a longer period regarding a company with less resources and the financial crisis will manifest itself, to parity of course, successively. It is no secret that in a crisis situation companies resort to financing (to banks first of all but also to private investors through bonds). However, the funding is always granted to companies which have or have always had a good performance, which have a strong know-how of the field in which they operate, which have the ability to repay, therefore, a financing.

More generally, having always worked well, having always had an excellent performance, having set aside reserves, having the possibility of being helped by funding meant that the highest capitalization companies could withstand the Covid-19 effect and incorporate it in the best possible way, with the least deviation to them possible, compared to 2019.

4.2 Further answers: results of an interview to Marcello Braglia (Accountant & Deloitte Tax & Legal Partner, Bologna).

The pandemic effects led many companies to do "shopping research" and therefore the sellers have emptied their inventories and many have bought to make stocks of goods. With production somewhat diminished/slowed down, inventories have, somewhat, diminished in quantities, in some sectors.

On the credit side in some sectors, where there has been an increase in prices, account payables have also grown a lot, and this has increased the net working capital (but this has happened even more after the pandemic and more between 2021 and 2022 with the increase in energy prices). Those who had difficulties in financing themselves resorted to deferred payment to buy, but those who had more problems resorted to the banks to finance the circulating currency, for the sake of liquidity.

There have been companies that have had similar situations during the pandemic, having credit lines reduced by suppliers, and this has meant that these companies did not expand as much as they could. During the months of lockdown in 2020, there were few companies in which banks had confidence and certainly those in which the most trust was placed were the most important pharmaceutical companies.

One issue that has led companies in difficulty was that of debt collection, because those who sell to the consumer or invoice and collect cash not ready but collect at 30 or 60 or 90 days, has seen a slowdown in payments and had difficulties, with the risk of insolvency. Many companies have closed, and in general, for example in Italy, the debt devaluation funds in the balance sheets have increased a lot. In some cases, credit write-down funds are increased due to the closures of client companies,

in other cases due to questions of uncertainty (excessively large deferrals, for example).

The pandemic broke out suddenly and so did its effects. This caused total panic and great concern in the first months, even in the most solid companies (the ones that have always gone well). All companies, even the most robust ones, have taken advantage of all the "parachutes" possible such as the redundancy fund; the sharp drop in the turnover has led companies to trust the government incentives and to have a reduction in many costs. Having had a strong cost cut (travel costs, marketing costs, personnel costs) has led some companies to have good results simply by selling the inventory. In summary, some companies have happened to improve their performance simply by not having any kind of cost during lockdown (no cost and little turnover that translated directly into profit).

Everyone needed to get organized. The organization led companies to react despite the fact that during the lockdown it was not possible to predict anything and many investments were blocked pending the evolution of the pandemic and the guidelines.

Those who were in difficulty were those who did not have employees in the office but needed employees in the production and, at that time, did not have them. Many tertiary entities have emptied their offices but, in a short time, have organized the work from home. Smart working eventually proved to allow an increase in productivity and efficiency and from being a temporary organization turned out to be an effective method in the work even without pandemic, in a sense accelerated the time. Smart working has allowed workers to meet a balance between private life and work. For many companies, smart working has been a benefit of the pandemic, because it has allowed many companies to improve the performance of their employees (and it is a way of working that is still used in 2022).

In concrete terms, even the ECB's maneuvers, such as the so-called "liquidity bazooka", have had an excellent psychological impact on companies but on a practical level things have turned out differently. The idea that there was liquidity around aroused confidence and made people think that there was no crisis.

The companies that received liquidity, specifically, were few and were companies that did not need it. Those who were a little in trouble with the 2019 budget did not receive any funding. Large companies did not receive incentives because they were targeted at small and medium-sized enterprises. The small and medium-sized enterprises that received some incentive were companies without any previous suffering. The aid was a pat on the back for a few and very few were really useful.

The incentive that most of all helped companies was the layoffs.

The companies, but in general the whole market, have not adopted strategies in the moment of crisis to abandon them, on the contrary, these have been carried out and invested. New distribution channels, new distribution strategies have changed the way companies operate, a way of operating that had not been foreseen but that has brought positive results after the peak of the emergency.

The emergency has awakened companies from the general torpor and has shaken them for the better in many cases. Virtuous companies with capable managers have progressed and have pushed the accelerator. The companies that have gone bankrupt and closed have been those that had always invested little, often badly, and that have always followed traditional ways of operating without ever innovating. It was a cold shower for many but, sometimes, taking a cold shower could awake.

Conclusion

In September 2011 CERN in Geneva confirmed that neutrinos were about 60 nanoseconds faster than light over a distance of 730 km (6 km/second more), claiming to have exceeded the speed of light.

In 2022, eleven years later, we rationalize that data doesn't run, data is frozen, and anyone can access it at any time. The news, which once ran at the speed of a van carrying newspapers, today runs on sources such as Twitter, Facebook, news sites and the web more generally. There is no more conflict of any nature with the speed of light, moving the world with data.

Discovering about the pandemic has brought down markets of all around the world, causing a catastrophic economic and financial crisis, bankrupting an indefinite number of companies and closing others. In such a deserted field, however, someone had to take care of something and have a role. The firms which worked during the pandemic and its hardest months have shown strength and resilience, going against the wind with taut and stable sails. The resilience of companies, especially pharmaceuticals, has led to the development of more than one vaccine in less than a year since the outbreak of the pandemic, aided by technology and access to shared data.

The world two years ago was running too fast to fall behind on any front, and only those who had this awareness had the foresight to invest during the pandemic, to continue to operate even without aid, to grow, to list, to merge, to acquire. Despite the panic of the first few weeks, the European companies, equipped with masks, gloves and sanitizing gels (at first purchased from Asian countries), have put into operation the great engine of industry in another form and following other strategies.

In conclusion of this work the pandemic has shortened the time, managers have had to make decisions in a short time, many companies already in crisis have closed before the end of 2020 (companies in crisis that could become a bad apple of the market dragging other companies into crisis for a much longer period), many other companies were born behind the push of new needs.

On the one hand, not all ills come to harm and waking up companies from the general torpor was a bad medicine but right in some respects, seeing the glass half full and with the cynicism that only an economist can have.

The pandemic has changed people, people have changed companies, and companies have changed the world in the last two years.

Abstract

This work, entitled “Net Working Capital Fluctuations due to the Pandemic”, studies what happened to the net working capital of four-sector enterprises in the year of the pandemic, comparing it with previous years.

There has been a lot of research that focused on the shock of Covid-19, from which emerged papers such as "The COVID-19 Shock and Equity Shortfall: Firm-Level Evidence from Italy" (Carletti et al.), "How markets stock reacted to COVID-19? Evidence from 25 countries" (Deepa et al.), "Effects of the COVID-19 Global Crisis on the Working Capital Management Policy: Evidence from Poland" (Zimon & Tarighi), sources of inspiration and starting points for this work.

in this study were considered 31 companies of the pharmaceutical industry, 24 companies of the food retail & distribution industry, 33 companies of the auto & truck manufacturers industry and 29 companies of the apparel & accessories industry.

All the companies considered are listed on a stock exchange and belong to the geographic Europe (in which they operate). Having considered only listed companies was a choice made according to the availability of data, and therefore the balance sheets, available in international form.

The balance sheets and financial statements analyzed were those from 2015 to 2020, considering the years 2015-2019 as of ordinary management, then with a trend without strong exogenous shocks, and considering 2020 as the year with the market shock caused by the pandemic.

After having classified the companies of the cluster into ones with small, medium, big capitalization the net working capital was calculated for all the reference years.

What emerged from the various shifts of net working capital between 2019 and 2020 was different for each sector under analysis, as it was different, within the same sector, what happened to a big company, heavily capitalized, compared to a smaller one.

The pharmaceutical sector has, on average, increased its inventories by 9% compared to 2019, also receivables and payables increased by a percentage close to 1% bringing the average net working capital of the industry to an increase of 6.35%.

The net working capital of the food retail & distribution industry, on the other hand, decreased further compared to 2019 (a year in which it was already decreasing) after an increase in payables.

In the apparel & accessories and auto & truck manufacturers industries we still observe a decrease. In the case of apparel & accessories, the decrease in net working capital was caused by a stronger decrease in receivables (15.5%), but also payables decreased, bringing the net working capital to decrease by 3.3%

In the auto & truck manufacturers case, instead, besides the decrease of the receivables and the inventories, we observe an increase of the payables, and this defines a decrease of the average industry's net working capital of 2020 of 13.8% regarding 2019.

Within the same industry there is evidence that the effects on the indicator net working capital are more amplified in the less capitalized and more flattened companies, weakened in those more strong of capital.

To this as to everything there is an explanation and a contextualization, in fact this evidence leads to deduce and confirm that never the capital at the disposal of an enterprise is indifferent. The more capitalized companies have held, conclusively, the effect Covid-19 in a different way (more weakened) regarding the companies with less available capital.

The strategic choice to invest, during the pandemic, in the right place at the right time has been the maneuver that every company and every manager had to face, but the richest companies in capital have had greater opportunities and margins of choice.

Every cloud has a silver lining, and Covid-19 has represented a cloud that killed over 2 million people in the world, but which has, in its own way, awakened so many companies from the general torpor. It has been a major shock in terms of operational and financial strategies that, in a certain way, has sped things up.

"As for the future, your task is not to foresee it, but to enable it."

Antoine de Saint Exupery

Appendix to chapter III

Pharmaceutical sector - firms with a small market capitalization.

Bavarian Nordic A/S (BAVA.CO)

	2015	2016	2017	2018	2019	2020
Receivables	161,75	158,29	47,71	52,57	69,03	176,02
Inventory	91	146,98	111,85	78,69	100,76	521,08
Payables	160,79	164,39	160,21	188,85	189,52	490,87
NWC	91,96	140,88	-0,65	-57,59	-19,73	206,23
Variation of NWC		48,92	-141,53	-56,94	37,86	225,96
Revenues	1020,56	1006,74	1370,15	500,62	675,49	1839,24
NWC / Revenues	9,011%	13,994%	-0,047%	-11,504%	-2,921%	11,213%

Benchmark Holdings PLC (BMKB.L)

	2015	2016	2017	2018	2019	2020
Receivables	15,35	34,29	35,72	36,51	49,29	29,45
Inventory	10,31	30,06	30,85	32,38	38,63	34,77
Payables	24,37	31,23	35,1	29,62	26,13	30,92
NWC	1,29	33,12	31,47	39,27	61,79	33,3
Variation of NWC		31,83	-1,65	7,8	22,52	-28,49
Revenues	44,2	109,38	140,17	131,64	124,01	105,57
NWC / Revenues	2,919%	30,280%	22,451%	29,831%	49,827%	31,543%

Camurus AB (CAMX.ST)

	2015	2016	2017	2018	2019	2020
Receivables	27,1	24,14	11,56	12,95	41,35	89,61
Inventory	3,24	12,38	3,55	9,83	33,09	111,35
Payables	77,6	72,79	87,75	107,14	105,59	157,12
NWC	-47,26	-36,27	-72,64	-84,36	-31,15	43,84
Variation of NWC		10,99	-36,37	-11,72	53,21	74,99
Revenues	154,8	113,74	54,31	49,32	105,61	336
NWC / Revenues	-30,530%	-31,889%	-133,751%	-171,046%	-29,495%	13,048%

Cosmo Pharmaceuticals NV (COPN.S)

	2015	2016	2017	2018	2019	2020
Receivables	19,07	17,78	19,84	18,87	25,8	31,62
Inventory	2,25	2,3	3,24	3,94	6,14	5,71
Payables	4,62	7,19	12,52	9,94	8,93	9,27
NWC	16,7	12,89	10,56	12,87	23,01	28,06
Variation of NWC		-3,81	-2,33	2,31	10,14	5,05
Revenues	60,61	67,66	67,24	65,62	62,5	60,95
NWC / Revenues	27,553%	19,051%	15,705%	19,613%	36,816%	46,038%

Eckert & Ziegler Strahlen und Medizintechnik AG (EUZG.DE)

	2015	2016	2017	2018	2019	2020
Receivables	21,39	23,21	24,31	28,31	29,48	28,2
Inventory	25,05	25,1	26,77	28,76	31,22	33,57
Payables	7,53	6,39	4,5	6,49	4,49	5,02
NWC	38,91	41,92	46,58	50,58	56,21	56,75
Variation of NWC		3,01	4,66	4	5,63	0,54
Revenues	139,75	137,94	138,63	168,71	178,49	176,14
NWC / Revenues	27,843%	30,390%	33,600%	29,980%	31,492%	32,219%

Faes Farma SA (FAE.MC)

	2015	2016	2017	2018	2019	2020
Receivables	46,26	49,06	76,25	81,54	96,81	104,91
Inventory	34,03	38,29	49,87	59,31	71,45	91,59
Payables	22,65	26,04	39,01	46,56	47,91	55,32
NWC	57,64	61,31	87,11	94,29	120,35	141,18
Variation of NWC		3,67	25,8	7,18	26,06	20,83
Revenues	204,72	228,64	274,58	324,31	357,4	380,24
NWC / Revenues	28,156%	26,815%	31,725%	29,074%	33,674%	37,129%

Fagron NV (FAGRO.BR)

	2015	2016	2017	2018	2019	2020
Receivables	45,12	56,71	42,79	47,49	55,03	57,84
Inventory	67,25	60,05	62,87	74,66	77,48	79,79
Payables	104,49	91,99	85,03	91,33	104,44	102,45
NWC	7,88	24,77	20,63	30,82	28,07	35,18
Variation of NWC		16,89	-4,14	10,19	-2,75	7,11
Revenues	427,56	421,84	433,53	471,68	534,7	555,97
NWC / Revenues	1,843%	5,872%	4,759%	6,534%	5,250%	6,328%

Karo Pharma AB (KARO.ST)

	2015	2016	2017	2018	2019	2020
Receivables	44,36	84,56	171,1	307,04	515,46	660,08
Inventory	35,83	79,1	109,95	192,14	395,28	451,51
Payables	58,57	67,12	160,48	186,16	376,97	417,11
NWC	21,62	96,54	120,57	313,02	533,77	694,48
Variation of NWC		74,92	24,03	192,45	220,75	160,71
Revenues	69,1	347,26	657,61	1615,11	1901,2	2882,87
NWC / Revenues	31,288%	27,800%	18,335%	19,381%	28,075%	24,090%

Pharming Group NV (PHAR.AS)

	2015	2016	2017	2018	2019	2020
Receivables	2,99	11,39	10,18	16	23,46	25,97
Inventory	16,23	17,94	18,33	17,32	14,47	17,23
Payables	1,2	5,87	9,43	8,78	5,14	18,08
NWC	18,02	23,46	19,08	24,54	32,79	25,12
Variation of NWC		5,44	-4,38	5,46	8,25	-7,67
Revenues	10,83	15,87	89,62	135,13	169,02	185,69
NWC / Revenues	166,390%	147,826%	21,290%	18,160%	19,400%	13,528%

Pharmanutra SpA (PHNU.MI)

	2015	2016	2017	2018	2019	2020
Receivables	7,88	8,96	10,26	14,5	15,62	16,72
Inventory	1,35	1,1	1,88	2,15	1,85	1,89
Payables	3,28	4,54	5,35	7,06	9,76	8,61
NWC	5,95	5,52	6,79	9,59	7,71	10
Variation of NWC		-0,43	1,27	2,8	-1,88	2,29
Revenues	26,14	32,78	37,79	46,67	53,62	56,45
NWC / Revenues	22,762%	16,840%	17,968%	20,549%	14,379%	17,715%

Pharmaceutical sector - firms with a medium market capitalization.

ALK-Abello A/S (ALKb.CO)

	2015	2016	2017	2018	2019	2020
Receivables	382	409	489	527	665	684
Inventory	520	676	875	993	1056	1093
Payables	299	132	121	135	81	559
NWC	603	953	1243	1385	1640	1218
Variation of NWC		350	290	142	255	-422
Revenues	2569	3005	2910	2915	3274	3491
NWC / Revenues	23,472%	31,714%	42,715%	47,513%	50,092%	34,890%

Almirall SA (ALM.MC)

	2015	2016	2017	2018	2019	2020
Receivables	188,57	176,15	147,41	231,68	243	183,94
Inventory	87,12	91,04	83,74	92,33	106,42	130,15
Payables	273,94	329,75	302,39	222,49	289,52	195,65
NWC	1,75	-62,56	-71,24	101,52	59,9	118,44
Variation of NWC		-64,31	-8,68	172,76	-41,62	58,54
Revenues	684,99	764,36	639,38	756,93	855,34	807,43
NWC / Revenues	0,255%	-8,185%	-11,142%	13,412%	7,003%	14,669%

Dermapharm Holding SE (DMPG.DE)

	2015	2016	2017	2018	2019	2020
Receivables	60,81	66,51	102,89	36,88	52,69	57,84
Inventory	76,96	84,78	81,69	116,97	175,64	205,73
Payables	23,25	33,07	30,07	40,8	54,49	71,72
NWC	114,52	118,22	154,51	113,05	173,84	191,85
Variation of NWC		3,7	36,29	-41,46	60,79	18,01
Revenues	384,84	444,48	467,12	572,42	700,88	793,83
NWC / Revenues	29,758%	26,597%	33,077%	19,749%	24,803%	24,168%

Hikma Pharmaceuticals PLC (HIK.L)

	2015	2016	2017	2018	2019	2020
Receivables	452	717	719	748	749	734
Inventory	251	459	488	528	568	757
Payables	261	329	352	448	459	454
NWC	442	847	855	828	858	1037
Variation of NWC		405	8	-27	30	179
Revenues	1440	1950	1936	2076	2203	2341
NWC / Revenues	30,694%	43,436%	44,163%	39,884%	38,947%	44,297%

Ipsen SA (IPN.PA)

	2015	2016	2017	2018	2019	2020
Receivables	447,3	472,7	546,7	582,7	667,8	625,2
Inventory	107,4	113,3	167,4	198,5	214	213,9
Payables	322,2	379,3	491,3	565,2	715,4	695,7
NWC	232,5	206,7	222,8	216	166,4	143,4
Variation of NWC		-25,8	16,1	-6,8	-49,6	-23
Revenues	1443,9	1584,6	1908,7	2224,8	2576,2	2591,6
NWC / Revenues	16,102%	13,044%	11,673%	9,709%	6,459%	5,533%

Jazz Pharmaceuticals PLC (JAZZ.O)

	2015	2016	2017	2018	2019	2020
Receivables	209,69	234,24	224,13	263,84	355,99	396,49
Inventory	19,45	34,05	43,25	52,96	78,61	95,4
Payables	181,83	210,5	215,85	296,62	294,27	355,87
NWC	47,31	57,79	51,53	20,18	140,33	136,02
Variation of NWC		10,48	-6,26	-31,35	120,15	-4,31
Revenues	1316,82	1477,26	1601,4	1869,47	2135,6	2346,66
NWC / Revenues	3,593%	3,912%	3,218%	1,079%	6,571%	5,796%

H Lundbeck A/S (LUN.CO)

	2015	2016	2017	2018	2019	2020
Receivables	3762	3600	3641	3116	3620	3638
Inventory	2217	1528	1376	1753	2204	2163
Payables	4351	3652	3204	4078	3933	3742
NWC	1628	1476	1813	791	1891	2059
Variation of NWC		-152	337	-1022	1100	168
Revenues	14594	15634	17234	18117	17036	17672
NWC / Revenues	11,155%	9,441%	10,520%	4,366%	11,100%	11,651%

Orion Oyj (ORNBV.HE)

	2015	2016	2017	2018	2019	2020
Receivables	204,1	211,5	213,8	200,6	208,5	173,9
Inventory	205,7	227,5	225,4	222,1	230,3	258,1
Payables	185,2	188,5	157,5	143,3	162,7	188,3
NWC	224,6	250,5	281,7	279,4	276,1	243,7
Variation of NWC		25,9	31,2	-2,3	-3,3	-32,4
Revenues	1015,6	1073,5	1033,6	977,5	1051	1078,1
NWC / Revenues	22,115%	23,335%	27,254%	28,583%	26,270%	22,605%

Perrigo Company PLC (PRGO.K)

	2015	2016	2017	2018	2019	2020
Receivables	1189	1176	1130,8	1073,1	1269,5	1073,9
Inventory	898,7	795	806,9	878	967,3	1200,2
Payables	1425,1	1226,1	1245,7	1241,5	1259,8	1301,2
NWC	662,6	744,9	692	709,6	977	972,9
Variation of NWC		82,3	-52,9	17,6	267,4	-4,1
Revenues	2632,3	5280,7	4946	4731,7	4837,4	5063,3
NWC / Revenues	25,172%	14,106%	13,991%	14,997%	20,197%	19,215%

Laboratorios Farmaceuticos ROVI SA (ROVI.MC)

	2015	2016	2017	2018	2019	2020
Receivables	60,97	58,31	51,98	63,59	91,65	84,2
Inventory	63,86	67,39	75,49	94,86	158,81	227,2
Payables	41,62	54,97	46,56	53,05	74,03	68,02
NWC	83,21	70,73	80,91	105,4	176,43	243,38
Variation of NWC		-12,48	10,18	24,49	71,03	66,95
Revenues	246,01	265,17	275,65	303,2	381,31	419,96
NWC / Revenues	33,824%	26,673%	29,352%	34,763%	46,269%	57,953%

Siegfried Holding AG (SFZN.S)

	2015	2016	2017	2018	2019	2020
Receivables	130,11	163,32	195,39	227,37	258,28	275,36
Inventory	256,92	243,67	248,29	227,55	256,96	272,43
Payables	110,75	92,97	116,19	103,89	109,97	105,04
NWC	276,28	314,02	327,49	351,03	405,27	442,75
Variation of NWC		37,74	13,47	23,54	54,24	37,48
Revenues	480,57	717,73	750,47	794,3	833,51	845,06
NWC / Revenues	57,490%	43,752%	43,638%	44,194%	48,622%	52,393%

Pharmaceutical sector - firms with a big market capitalization.

AstraZeneca PLC (AZN.L)

	2015	2016	2017	2018	2019	2020
Receivables	5591	4001	4275	4345	5181	5651
Inventory	2143	2334	3035	2890	3193	4024
Payables	6659	6085	7405	6868	6859	7344
NWC	1075	250	-95	367	1515	2331
Variation of NWC		-825	-345	462	1148	816
Revenues	23641	21319	20152	21049	23565	25890
NWC / Revenues	4,547%	1,173%	-0,471%	1,744%	6,429%	9,003%

Bayer AG (BAYGn.DE)

	2015	2016	2017	2018	2019	2020
Receivables	11393	14734	11031	14137	14851	12472
Inventory	8550	8408	6550	11132	10650	10961
Payables	6928	7494	5293	6405	6769	5683
NWC	13015	15648	12288	18864	18732	17750
Variation of NWC		2633	-3360	6576	-132	-982
Revenues	46085	34943	35015	36742	43545	41400
NWC / Revenues	28,241%	44,782%	35,094%	51,342%	43,018%	42,874%

GlaxoSmithKline PLC (GSK.L)

	2015	2016	2017	2018	2019	2020
Receivables	5488	5.917,0	5950	6322	7148	7264
Inventory	4716	5102	5557	5476	5947	5996
Payables	8444	10040	10457	12180	13255	14110
NWC	1760	979	1050	-382	-160	-850
Variation of NWC		-781	71	-1.432	222	-690
Revenues	23923,00	27889,00	30186,00	30821,00	33754,00	34099,00
NWC / Revenues	7,357%	3,510%	3,478%	-1,239%	-0,474%	-2,493%

Vifor Pharma AG (VIFN.S)

	2015	2016	2017	2018	2019	2020
Receivables	581,81	703,6	412	523,3	479,1	492,4
Inventory	383,81	432,5	232	281,7	348,6	339,8
Payables	529,23	748,7	398,2	396,4	429,3	411,2
NWC	436,39	387,4	245,8	408,6	398,4	421
Variation of NWC		-48,99	-141,6	162,8	-10,2	22,6
Revenues	3791,59	1167	1291,7	1584,6	1877,2	1705,6
NWC / Revenues	11,509%	33,196%	19,029%	25,786%	21,223%	24,683%

Horizon Therapeutics PLC (HZNP.O)

	2015	2016	2017	2018	2019	2020
Receivables	210,44	305,73	405,21	464,73	408,69	659,7
Inventory	23,07	184,98	73,07	55,29	53,8	75,28
Payables	341,47	575,84	763,33	690,59	690,23	841,39
NWC	-107,96	-85,13	-285,05	-170,57	-227,74	-106,41
Variation of NWC		22,83	-199,92	114,48	-57,17	121,33
Revenues	757,04	981,12	1056,23	1207,57	1300,03	2200,43
NWC / Revenues	-14,261%	-8,677%	-26,987%	-14,125%	-17,518%	-4,836%

Novartis AG (NOVN.S)

	2015	2016	2017	2018	2019	2020
Receivables	10553	10208	11101	11036	10337	10036
Inventory	6226	6255	6867	6956	5982	7131
Payables	10034	9042	9980	10505	10384	10606
NWC	6745	7421	7988	7487	5935	6561
Variation of NWC		676	567	-501	-1552	626
Revenues	49440	48518	42338	44751	47445	48659
NWC / Revenues	13,643%	15,295%	18,867%	16,730%	12,509%	13,484%

Novo Nordisk A/S (NOVOb.CO)

	2015	2016	2017	2018	2019	2020
Receivables	21613	22613	21938	24836	29152	32184
Inventory	12758	14341	15373	16336	17641	18536
Payables	16208	17062	12409	13771	6836	6315
NWC	18163	19892	24902	27401	39957	44405
Variation of NWC		1729	5010	2499	12556	4448
Revenues	107927	111780	111696	111831	122021	126946
NWC / Revenues	16,829%	17,796%	22,294%	24,502%	32,746%	34,979%

Recordati Industria Chimica e Farmaceutica SpA (RECI.MI)

	2015	2016	2017	2018	2019	2020
Receivables	203,6	228,9	282,48	281,28	374,33	313,86
Inventory	143,09	158,8	179,1	206,08	226,89	251,25
Payables	106,6	167,45	185,42	207,31	220,75	171,75
NWC	240,09	220,25	276,16	280,05	380,47	393,36
Variation of NWC		-19,84	55,91	3,89	100,42	12,89
Revenues	1042,25	1147,95	1284,02	1345,99	1474,79	1443,45
NWC / Revenues	23,036%	19,186%	21,507%	20,806%	25,798%	27,251%

Roche Holding AG (ROG.S)

	2015	2016	2017	2018	2019	2020
Receivables	10456	10733	11337	11487	12150	11740
Inventory	7648	7928	7407	6621	6055	7194
Payables	10796	11049	12630	13302	14214	14362
NWC	7308	7612	6114	4806	3991	4572
Variation of NWC		304	-1498	-1308	-815	581
Revenues	48145	50576	53299	56846	61466	58323
NWC / Revenues	15,179%	15,051%	11,471%	8,454%	6,493%	7,839%

Sanofi SA (SASY.PA)

	2015	2016	2017	2018	2019	2020
Receivables	8853	9050	7216	9345	10083	9953
Inventory	6516	6896	6818	7477	7994	8352
Payables	5737	6264	4633	7030	7291	7337
NWC	9632	9682	9401	9792	10786	10968
Variation of NWC		50	-281	391	994	182
Revenues	34542	33809	35072	34463	36126	36041
NWC / Revenues	27,885%	28,637%	26,805%	28,413%	29,857%	30,432%

Food Retail & Distribution sector - firms with a small market capitalization.

CarrefourSA Carrefour Sabanci Ticaret Merkezi AS (CRFSA.IS)

	2015	2016	2017	2018	2019	2020
Receivables	87,61	342,27	322,07	373,27	440,26	618,07
Inventory	614,05	559,6	602,37	639,17	787,92	1051,61
Payables	1025,85	1197,12	1406,27	1553,64	1788,83	2365,48
NWC	-324,19	-295,25	-481,83	-541,2	-560,65	-695,8
Variation of NWC		28,94	-186,58	-59,37	-19,45	-135,15
Revenues	3932,51	4493,87	4556,67	5203,36	6385,7	7914,99
NWC / Revenues	-8,244%	-6,570%	-10,574%	-10,401%	-8,780%	-8,791%

Distribuidora Internacional de Alimentacion SA (DIDA.MC)

	2015	2016	2017	2018	2019	2020
Receivables	346,88	253,42	261,23	241,66	196,08	187,05
Inventory	562,49	669,59	609	597,36	496,52	445,76
Payables	1583,58	1926,07	1707,15	1343,95	1106,8	1100,12
NWC	-674,21	-1003,06	-836,92	-504,93	-414,2	-467,31
Variation of NWC		-328,85	166,14	331,99	90,73	-53,11
Revenues	8925,45	8669,26	8217,67	7576,09	6870,44	6882,37
NWC / Revenues	-7,554%	-11,570%	-10,184%	-6,665%	-6,029%	-6,790%

Eurocash SA (EUR.WA)

	2015	2016	2017	2018	2019	2020
Receivables	1652,05	1904,62	1837,5	1478,02	1517,66	1450,55
Inventory	967,93	1088,91	1320,25	1292	1271,27	1363,01
Payables	3295,45	3543,84	4043,5	3924,62	3942,51	3886,51
NWC	-675,47	-550,31	-885,75	-1154,6	-1153,58	-1072,95
Variation of NWC		125,16	-335,44	-268,85	1,02	80,63
Revenues	20318,21	21219,9	20849,46	22832,89	24852,24	25411,04
NWC / Revenues	-3,324%	-2,593%	-4,248%	-5,057%	-4,642%	-4,222%

Lenta Plc (LNTAq.L)

	2015	2016	2017	2018	2019	2020
Receivables	14904,66	20956,73	13831,53	12264,98	8767,47	11264,22
Inventory	22781,73	27490,94	36933,13	41500,85	38453,27	42071,53
Payables	46515,76	52160,97	53248,63	53401,28	54157,54	59351,29
NWC	-8829,37	-3713,3	-2483,97	364,55	-6936,8	-6015,54
Variation of NWC		5116,07	1229,33	2848,52	-7301,35	921,26
Revenues	252763,08	306352,09	365177,59	413562,2	417500,02	445543,83
NWC / Revenues	-3,493%	-1,212%	-0,680%	0,088%	-1,662%	-1,350%

Marr SpA (MARR.MI)

	2015	2016	2017	2018	2019	2020
Receivables	422,6	423,83	430,07	433,52	413,77	334,87
Inventory	119,86	142,34	147,55	158,88	170,4	134,58
Payables	278,13	318	334,81	329,28	333,24	241,73
NWC	264,33	248,17	242,81	263,12	250,93	227,72
Variation of NWC		-16,16	-5,36	20,31	-12,19	-23,21
Revenues	1440,29	1502,56	1585,78	1627,88	1651,39	1048,4
NWC / Revenues	18,353%	16,516%	15,312%	16,163%	15,195%	21,721%

Mercator dd (MELR.LJ)

	2015	2016	2017	2018	2019	2020
Receivables	258,15	205,44	227,22	157,83	152,19	88,52
Inventory	280,85	224,33	210,23	210,32	211,09	202,46
Payables	588,12	590,02	626,96	590,1	579,5	451,47
NWC	-49,12	-160,25	-189,51	-221,95	-216,22	-160,49
Variation of NWC		-111,13	-29,26	-32,44	5,73	55,73
Revenues	2467,43	2199,59	2152,17	2101,38	2138,74	2170,02
NWC / Revenues	-1,991%	-7,285%	-8,806%	-10,562%	-10,110%	-7,396%

Migros Ticaret AS (MGROS.IS)

	2015	2016	2017	2018	2019	2020
Receivables	55,77	66,7	139,42	198,18	173,82	202,38
Inventory	1052,68	1212,07	1908,25	2249,05	2666,45	3339,58
Payables	2350,97	2858,61	4240,34	5215,02	6148,77	7904,01
NWC	-1242,52	-1579,84	-2192,67	-2767,79	-3308,5	-4362,05
Variation of NWC		-337,32	-612,83	-575,12	-540,71	-1053,55
Revenues	9389,83	11059,22	15344,05	18717,36	22864,76	28790,19
NWC / Revenues	-13,233%	-14,285%	-14,290%	-14,787%	-14,470%	-15,151%

Sligro Food Group NV (SLIGR.AS)

	2015	2016	2017	2018	2019	2020
Receivables	144	192	198	252	268	140
Inventory	220	245	207	217	230	188
Payables	260	345	292	358	404	274
NWC	104	92	113	111	94	54
Variation of NWC		-12	21	-2	-17	-40
Revenues	1829	1986	2142	2346	2395	1946
NWC / Revenues	5,686%	4,632%	5,275%	4,731%	3,925%	2,775%

Tallinna Kaubamaja Grupp AS (TKM1T.TL)

	2015	2016	2017	2018	2019	2020
Receivables	17,77	11,29	12,36	13,4	13,84	14,36
Inventory	61,11	70,19	75,82	78,21	78,31	77,33
Payables	67,5	73,37	72,25	78,29	77,53	88,65
NWC	11,38	8,11	15,93	13,32	14,62	3,04
Variation of NWC		-3,27	7,82	-2,61	1,3	-11,58
Revenues	555,45	598,41	651,26	681,18	717,22	741,94
NWC / Revenues	2,049%	1,355%	2,446%	1,955%	2,038%	0,410%

Food Retail & Distribution sector - firms with a medium market capitalization.

Axfood AB (AXFO.ST)

	2015	2016	2017	2018	2019	2020
Receivables	1530	1603	1676	1877	2038	1963
Inventory	2035	2191	2263	2340	2387	2670
Payables	4663	4937	5262	5914	5718	6546
NWC	-1098	-1143	-1323	-1697	-1293	-1913
Variation of NWC		-45	-180	-374	404	-620
Revenues	41247	43355	45968	48085	50740	53696
NWC / Revenues	-2,662%	-2,636%	-2,878%	-3,529%	-2,548%	-3,563%

Metro AG (B4B.DE)

	2015	2016	2017	2018	2019	2020
Receivables	1371	1459	1514	1341	672	1078
Inventory	3117	3063	3046	2108	1917	1860
Payables	5755	5606	5501	4637	3572	3468
NWC	-1267	-1084	-941	-1188	-983	-530
Variation of NWC		183	143	-247	205	453
Revenues	37496	36549	29903	26792	27082	25632
NWC / Revenues	-3,379%	-2,966%	-3,147%	-4,434%	-3,630%	-2,068%

Casino Guichard Perrachon SA (CASP.PA)

	2015	2016	2017	2018	2019	2020
Receivables	2606	2132	2001	2061	1599	1788
Inventory	4884	3990	3815	3834	3775	3209
Payables	9904	8382	8023	8051	8806	8855
NWC	-2414	-2260	-2207	-2156	-3432	-3858
Variation of NWC		154	53	51	-1276	-426
Revenues	35312	36030	37490	34329	34645	31912
NWC / Revenues	-6,836%	-6,273%	-5,887%	-6,280%	-9,906%	-12,089%

Etablissementen Franz Colruyt NV (COLR.BR)

	2015	2016	2017	2018	2019	2020
Receivables	527,5	521,5	460,7	521,5	561,4	589
Inventory	602,7	640,7	600,3	592,5	630,7	629,4
Payables	1527,6	1601,3	1530	1579,4	1627,6	1753,1
NWC	-397,4	-439,1	-469	-465,4	-435,5	-534,7
Variation of NWC		-41,7	-29,9	3,6	29,9	-99,2
Revenues	8916,8	9177,5	9493,5	9030,6	9433,9	9581
NWC / Revenues	-4,457%	-4,785%	-4,940%	-5,154%	-4,616%	-5,581%

Dino Polska SA (DNP.WA)

	2015	2016	2017	2018	2019	2020
Receivables	21,79	34,28	38,07	38,53	78,25	86,82
Inventory	212,15	276,54	368,26	445,36	624	875,15
Payables	439,06	593,54	832,5	1166,31	1504,83	1740,14
NWC	-205,12	-282,72	-426,17	-682,42	-802,58	-778,17
Variation of NWC		-77,6	-143,45	-256,25	-120,16	24,41
Revenues	2589,58	3369,52	4462,84	5838,53	7646,55	10125,82
NWC / Revenues	-7,921%	-8,391%	-9,549%	-11,688%	-10,496%	-7,685%

Hellofresh SE (HFGG.DE)

	2015	2016	2017	2018	2019	2020
Receivables	11,49	9,31	14,2	18,5	19,7	48,9
Inventory	5,61	10,1	13,8	22,5	44,1	113,7
Payables	45,53	43,13	77,1	120,8	153,2	337,8
NWC	-28,43	-23,72	-49,1	-79,8	-89,4	-175,2
Variation of NWC		4,71	-25,38	-30,7	-9,6	-85,8
Revenues	304,95	596,99	904,9	1279,2	1809	3749,9
NWC / Revenues	-9,323%	-3,973%	-5,426%	-6,238%	-4,942%	-4,672%

Magnit PAO (MGNT.MM)

	2015	2016	2017	2018	2019	2020
Receivables	1091,32	1546,95	3151,11	7345,83	16588,07	9301,26
Inventory	116578,33	136263,74	156709,28	182140,5	218873,59	205949,19
Payables	104008,55	104376,16	117000,82	148977,91	182942,12	196179,24
NWC	13661,1	33434,53	42859,57	40508,42	52519,54	19071,21
Variation of NWC		19773,43	9425,04	-2351,15	12011,12	-33448,33
Revenues	953360,15	1073569,37	1143314,41	1237015,46	1368705,39	1553777,35
NWC / Revenues	1,433%	3,114%	3,749%	3,275%	3,837%	1,227%

X5 Retail Group NV (PJPq.L)

	2015	2016	2017	2018	2019	2020
Receivables	38116	34947	28695	27172	31453	39260
Inventory	57887	73801	99300	115990	127462	144393
Payables	140119	176751	197909	222923	226602	249784
NWC	-44116	-68003	-69914	-79761	-67687	-66131
Variation of NWC		-23887	-1911	-9847	12074	1556
Revenues	808532	1033354	1294510	1531697	1733220	1975679
NWC / Revenues	-5,456%	-6,581%	-5,401%	-5,207%	-3,905%	-3,347%

J Sainsbury PLC (SBRY.L)

	2015	2016	2017	2018	2019	2020
Receivables	1971	2096	3260	3947	4104	4590
Inventory	997	968	1775	1810	1929	1732
Payables	2381	2487	3741	3724	3812	3767
NWC	587	577	1294	2033	2221	2555
Variation of NWC		-10	717	739	188	334
Revenues	23775	23506	26224	28456	29007	28993
NWC / Revenues	2,469%	2,455%	4,934%	7,144%	7,657%	8,812%

Sonae SGPS SA (YSO.LS)

	2015	2016	2017	2018	2019	2020
Receivables	243,65	270,49	279,25	318,85	302,01	329,94
Inventory	634,76	696,3	713,25	671,32	663,92	636,07
Payables	1272,78	1259,22	1320,81	1536,07	1592,46	1597,28
NWC	-394,37	-292,43	-328,31	-545,9	-626,53	-631,27
Variation of NWC		101,94	-35,88	-217,59	-80,63	-4,74
Revenues	5014,24	5329,49	5505,82	5890,9	6433,33	6827,02
NWC / Revenues	-7,865%	-5,487%	-5,963%	-9,267%	-9,739%	-9,247%

Food Retail & Distribution sector - firms with a big market capitalization.

Koninklijke Ahold Delhaize NV (AD.AS)

	2015	2016	2017	2018	2019	2020
Receivables	851	1624	1760	1801	1944	2033
Inventory	1676	3288	3077	3196	3347	3245
Payables	3821	5389	7342	8061	8649	9473
NWC	-1294	-477	-2505	-3064	-3358	-4195
Variation of NWC		817	-2028	-559	-294	-837
Revenues	38203	49695	62890	62791	66260	74736
NWC / Revenues	-3,387%	-0,960%	-3,983%	-4,880%	-5,068%	-5,613%

Carrefour SA (CARR.PA)

	2015	2016	2017	2018	2019	2020
Receivables	7512	8208	8013	7670	7953	6913
Inventory	6362	7039	6690	6135	5867	5326
Payables	15522	17156	16690	15856	15164	14092
NWC	-1648	-1909	-1987	-2051	-1344	-1853
Variation of NWC		-261	-78	-64	707	-509
Revenues	76945	76645	78897	72355	72397	70719
NWC / Revenues	-2,142%	-2,491%	-2,518%	-2,835%	-1,856%	-2,620%

Jeronimo Martins SGPS SA (JMT.LS)

	2015	2016	2017	2018	2019	2020
Receivables	278,65	313,17	392,93	440,68	436,16	410,49
Inventory	638,75	719,8	847,06	974,44	1044,19	978,71
Payables	2689,53	2937,81	3360,27	3556,42	3843,61	3867,68
NWC	-1772,13	-1904,84	-2120,28	-2141,3	-2363,26	-2478,48
Variation of NWC		-132,71	-215,44	-21,02	-221,96	-115,22
Revenues	13727,96	14621,74	16276,15	17336,71	18638,22	19293,5
NWC / Revenues	-12,909%	-13,027%	-13,027%	-12,351%	-12,680%	-12,846%

Kesko Oyj (KESKOB.HE)

	2015	2016	2017	2018	2019	2020
Receivables	708,3	880,6	870,5	845,3	846,9	836,1
Inventory	729,7	969,4	931,7	904,9	1027,1	835,6
Payables	1046,4	1385,4	1332,2	982,7	1417,5	1496,4
NWC	391,6	464,6	470	767,5	456,5	175,3
Variation of NWC		73	5,4	297,5	-311	-281,2
Revenues	8678,9	10180,4	10492	10382,8	10720,3	10669,2
NWC / Revenues	4,512%	4,564%	4,480%	7,392%	4,258%	1,643%

Tesco PLC (TSCO.L)

	2015	2016	2017	2018	2019	2020
Receivables	5599	4921	5332	6064	6438	5505
Inventory	2957	2430	2301	2264	2617	2433
Payables	7224	6477	6777	8773	9131	6923
NWC	1332	874	856	-445	-76	1015
Variation of NWC		-458	-18	-1301	369	1091
Revenues	56925	53933	55917	57493	63911	58091
NWC / Revenues	2,340%	1,621%	1,531%	-0,774%	-0,119%	1,747%

Apparel & Accessories sector - firms with a small market capitalization.

Aksa Akrilik Kimya Sanayii AS (AKSA.IS)

	2015	2016	2017	2018	2019	2020
Receivables	479,17	618,83	743,47	947,13	737,19	830,72
Inventory	185,07	217,52	419,11	485,19	672,3	630,97
Payables	318,75	501,99	762,55	785,04	933,3	797,74
NWC	345,49	334,36	400,03	647,28	476,19	663,95
Variation of NWC		-11,13	65,67	247,25	-171,09	187,76
Revenues	2030,01	1954,39	2761,71	3537,55	3645,9	4109,86
NWC / Revenues	17,019%	17,108%	14,485%	18,297%	13,061%	16,155%

Calida Holding AG (CALN.S)

	2015	2016	2017	2018	2019	2020
Receivables	54,64	54,95	57,04	50,52	43,04	34,9
Inventory	80,72	79,06	89,22	101,91	89,56	74,58
Payables	60,83	59,17	68,75	74,99	67,41	62,24
NWC	74,53	74,84	77,51	77,44	65,19	47,24
Variation of NWC		0,31	2,67	-0,07	-12,25	-17,95
Revenues	358,98	370,88	380,63	409,48	372,04	248,95
NWC / Revenues	20,762%	20,179%	20,364%	18,912%	17,522%	18,976%

Coats Group PLC (COA.L)

	2015	2016	2017	2018	2019	2020
Receivables	249,9	238,4	257,9	240,3	253,4	265,4
Inventory	204	205,8	232,2	185,4	172,5	187
Payables	316,3	580	304	283,9	276,2	261,9
NWC	137,6	-135,8	186,1	141,8	149,7	190,5
Variation of NWC		-273,4	321,9	-44,3	7,9	40,8
Revenues	1472,5	1457,3	1356,1	1414,7	1388,7	1163,3
NWC / Revenues	9,345%	-9,319%	13,723%	10,023%	10,780%	16,376%

OVS SpA (OVS.MI)

	2015	2016	2017	2018	2019	2020
Receivables	160,16	74,85	78,72	140,92	111,55	104,72
Inventory	287,61	289,68	340,58	387,94	410,96	393,09
Payables	458,17	464,46	455,88	503,5	456,31	423,45
NWC	-10,4	-99,93	-36,58	25,36	66,2	74,36
Variation of NWC		-89,53	63,35	61,94	40,84	8,16
Revenues	656,99	1319,48	1362,62	1525,69	1457,15	1374,78
NWC / Revenues	-1,583%	-7,573%	-2,685%	1,662%	4,543%	5,409%

Safilo Group SpA (SFLG.MI)

	2015	2016	2017	2018	2019	2020
Receivables	270,45	276,82	232,59	217,13	211,25	206,52
Inventory	254,08	272,82	257,72	237,71	235,8	197,29
Payables	264,39	288,62	253,68	206,73	212,58	215,83
NWC	260,14	261,02	236,63	248,11	234,47	187,98
Variation of NWC		0,88	-24,39	11,48	-13,64	-46,49
Revenues	1278,96	1252,93	1035,34	910,74	939,04	780,3
NWC / Revenues	20,340%	20,833%	22,855%	27,243%	24,969%	24,091%

Van de Velde NV (VELD.BR)

	2015	2016	2017	2018	2019	2020
Receivables	18,24	18,86	20,99	25,74	21,92	10,67
Inventory	39,16	42,49	41,98	46,7	36,95	39,35
Payables	15,28	15,98	20,35	26,94	23,64	18,43
NWC	42,12	45,37	42,62	45,5	35,23	31,59
Variation of NWC		3,25	-2,75	2,88	-10,27	-3,64
Revenues	208,96	206,61	208,99	205,15	195,54	152,34
NWC / Revenues	20,157%	21,959%	20,393%	22,179%	18,017%	20,737%

New Wave Group AB (NEWAb.ST)

	2015	2016	2017	2018	2019	2020
Receivables	879,7	987,7	1073,9	1225,5	1321,8	1136,9
Inventory	2447,8	2496,4	2643,4	3230,9	3557,9	2883
Payables	562,8	709,9	773,8	1067,6	908,2	816,1
NWC	2764,7	2774,2	2943,5	3388,8	3971,5	3203,8
Variation of NWC		9,5	169,3	445,3	582,7	-767,7
Revenues	4964,7	5237,1	5597,3	6290,6	6903,5	6098,8
NWC / Revenues	55,687%	52,972%	52,588%	53,871%	57,529%	52,532%

Kordsa Teknik Tekstil AS (KORDS.IS)

	2015	2016	2017	2018	2019	2020
Receivables	313,95	383,61	494,46	845,04	999,31	1120,62
Inventory	424,72	537,38	585,3	1047,58	1231,05	1225,31
Payables	209,81	335,54	376,6	659,03	751,01	763,04
NWC	528,86	585,45	703,16	1233,59	1479,35	1582,89
Variation of NWC		56,59	117,71	530,43	245,76	103,54
Revenues	1734,76	1908,35	2485,17	3946,72	5137,36	4536,34
NWC / Revenues	30,486%	30,678%	28,294%	31,256%	28,796%	34,894%

Marimekko Oyj (MEKKO.HE)

	2015	2016	2017	2018	2019	2020
Receivables	4,45	5,99	5,66	5,72	6,13	7,57
Inventory	18,49	21,36	20,92	22,11	22,56	22,44
Payables	8,76	10,55	10,33	11,75	14,49	16,96
NWC	14,18	16,8	16,25	16,08	14,2	13,05
Variation of NWC		2,62	-0,55	-0,17	-1,88	-1,15
Revenues	95,65	99,61	102,32	111,88	125,42	123,57
NWC / Revenues	14,825%	16,866%	15,882%	14,373%	11,322%	10,561%

Apparel & Accessories sector - firms with a medium market capitalization.

Hugo Boss AG (BOSSn.DE)

	2015	2016	2017	2018	2019	2020
Receivables	277,03	285,21	271,02	276,52	267,68	203,35
Inventory	559,51	567,97	536,84	617,95	626,51	618,46
Payables	288,5	294,66	311,54	323,98	344,4	331,72
NWC	548,04	558,52	496,32	570,49	549,79	490,09
Variation of NWC		10,48	-62,2	74,17	-20,7	-59,7
Revenues	2746,66	2623,36	2653,52	2719,78	2800,35	1881,67
NWC / Revenues	19,953%	21,290%	18,704%	20,976%	19,633%	26,045%

SASA Polyester Sanayi AS (SASA.IS)

	2015	2016	2017	2018	2019	2020
Receivables	229,68	566,59	707,04	792,58	501,97	704,55
Inventory	202,66	177,16	266,42	560,65	751,54	1338,24
Payables	124,64	119,2	203,92	323,78	688,04	1237,38
NWC	307,7	624,55	769,54	1029,45	565,47	805,41
Variation of NWC		316,85	144,99	259,91	-463,98	239,94
Revenues	1111,41	1182,91	1655,21	2178,95	2763,75	5040,95
NWC / Revenues	27,686%	52,798%	46,492%	47,245%	20,460%	15,977%

Samsonite International SA (1910.HK)

	2015	2016	2017	2018	2019	2020
Receivables	283,5	357,79	411,46	420,9	396	141
Inventory	349,08	421,33	582,99	622,6	587,3	455,9
Payables	501,28	465,43	649,08	607,1	584,9	322,4
NWC	131,3	313,69	345,37	436,4	398,4	274,5
Variation of NWC		182,39	31,68	91,03	-38	-123,9
Revenues	2432,48	2810,5	3490,92	3797	3638,8	1536,7
NWC / Revenues	5,398%	11,161%	9,893%	11,493%	10,949%	17,863%

Brunello Cucinelli SpA (BCU.MI)

	2015	2016	2017	2018	2019	2020
Receivables	60,34	59,44	56,03	72,42	71,58	93,93
Inventory	143,96	154,81	152,65	161,76	204,87	208,35
Payables	77,57	72,85	75,96	88,89	98,22	101,13
NWC	126,73	141,4	132,72	145,29	178,23	201,15
Variation of NWC		14,67	-8,68	12,57	32,94	22,92
Revenues	414,15	455,97	511,71	553	607,76	544,01
NWC / Revenues	30,600%	31,011%	25,937%	26,273%	29,326%	36,975%

Salvatore Ferragamo SpA (SFER.MI)

	2015	2016	2017	2018	2019	2020
Receivables	203,04	261,68	215,04	190,81	184,13	145,84
Inventory	351,13	374,71	325,52	362,95	389,53	341,64
Payables	209,39	187,44	209,54	216,06	205,23	140,44
NWC	344,78	448,95	331,02	337,7	368,43	347,04
Variation of NWC		104,17	-117,93	6,68	30,73	-21,39
Revenues	1418,5	1427,96	1383,32	1337,32	1365,67	908,44
NWC / Revenues	24,306%	31,440%	23,929%	25,252%	26,978%	38,202%

Apparel & Accessories sector - firms with a big market capitalization.

Prada SpA (1913.HK)

	2015	2016	2017	2018	2019	2020
Receivables	460,76	420,55	402,07	424,67	472,57	451,47
Inventory	656,9	693,95	569,93	631,79	712,61	666,22
Payables	454,77	298,08	334,64	334,93	345,43	314,52
NWC	662,89	816,42	637,36	721,53	839,75	803,17
Variation of NWC		153,53	-179,06	84,17	118,22	-36,58
Revenues	3513,44	3504,34	2696,64	3098,07	3183,34	2390,87
NWC / Revenues	18,867%	23,297%	23,635%	23,290%	26,380%	33,593%

Burberry Group PLC (BRBY.L)

	2015	2016	2017	2018	2019	2020
Receivables	243,5	253	246,7	172,7	215,3	267,5
Inventory	436,6	486,7	505,3	411,8	465,1	450,5
Payables	384,8	357,9	417,9	416,7	484,3	420,6
NWC	295,3	381,8	334,1	167,8	196,1	297,4
Variation of NWC		86,5	-47,7	-166,3	28,3	101,3
Revenues	2523,2	2514,7	2766	2732,8	2720,2	2633,1
NWC / Revenues	11,703%	15,183%	12,079%	6,140%	7,209%	11,295%

Compagnie Financiere Richemont SA (CFR.S)

	2015	2016	2017	2018	2019	2020
Receivables	1071	1021	996	995	1036	783
Inventory	5438	5345	5302	4943	6186	6658
Payables	457	487	466	888	1458	1188
NWC	6052	5879	5832	5050	5764	6253
Variation of NWC		-173	-47	-782	714	489
Revenues	10410	11076	10647	11013	13989	14238
NWC / Revenues	58,136%	53,079%	54,776%	45,855%	41,204%	43,918%

Capri Holdings Ltd (CPRI.K)

	2015	2016	2017	2018	2019	2020
Receivables	375,7	316,8	277,8	299,9	392	308
Inventory	519,9	546,8	549,3	660,7	953	827
Payables	276,4	307,4	326,4	583,8	707	678
NWC	619,2	556,2	500,7	376,8	638	457
Variation of NWC		-63	-55,5	-123,9	261,2	-181
Revenues	4371,47	4712,1	4493,7	4718,6	5238	5551
NWC / Revenues	14,165%	11,804%	11,142%	7,985%	12,180%	8,233%

EssilorLuxottica SA (ESLX.PA)

	2015	2016	2017	2018	2019	2020
Receivables	1550	1724	1113	2891	2974	2670
Inventory	1099	1125	832	2034	2166	1930
Payables	995	1062	907	1745	2775	2864
NWC	1654	1787	1038	3180	2365	1736
Variation of NWC		133	-749	2142	-815	-629
Revenues	6716	7115	9184	10833	17390	14429
NWC / Revenues	24,628%	25,116%	11,302%	29,355%	13,600%	12,031%

H & M Hennes & Mauritz AB (HMb.ST)

	2015	2016	2017	2018	2019	2020
Receivables	5869	7414	9546	9384	8399	6177
Inventory	24833	31732	33712	37721	37823	38209
Payables	30344	37323	41730	29967	33557	29392
NWC	358	1823	1528	17138	12665	14994
Variation of NWC		1465	-295	15610	-4473	2329
Revenues	180861	192267	200004	210400	232755	187031
NWC / Revenues	0,198%	0,948%	0,764%	8,145%	5,441%	8,017%

Hermes International SCA (HRMS.PA)

	2015	2016	2017	2018	2019	2020
Receivables	517,8	528,3	541,5	498	537,2	506,3
Inventory	949,2	915,1	896,2	963,6	1132,6	1289,4
Payables	402,5	423,1	425,8	416,1	405,6	372,6
NWC	1064,5	1020,3	1011,9	1045,5	1264,2	1423,1
Variation of NWC		-44,2	-8,4	33,6	218,7	158,9
Revenues	4841	5202,2	5549,2	5966,1	6883,4	6389,4
NWC / Revenues	21,989%	19,613%	18,235%	17,524%	18,366%	22,273%

Industria de Diseno Textil SA (ITX.MC)

	2015	2016	2017	2018	2019	2020
Receivables	930,1	757,89	968,5	888	928	954
Inventory	1859,52	2195,02	2549,2	2685	2716	2269
Payables	2765,22	3401,09	3847,84	3932	4171	4476
NWC	24,4	-448,18	-330,14	-359	-527	-1253
Variation of NWC		-472,58	118,04	-28,86	-168	-726
Revenues	18116,53	20900,44	23310,53	25336	26145	28286
NWC / Revenues	0,135%	-2,144%	-1,416%	-1,417%	-2,016%	-4,430%

JD Sports Fashion PLC (JD.L)

	2015	2016	2017	2018	2019	2020
Receivables	16,18	25,89	73,08	87,6	82,3	81,6
Inventory	225,02	238,32	348,01	478	763,8	811,8
Payables	157,86	164,35	223,51	285,8	440,1	521,2
NWC	83,34	99,86	197,58	279,8	406	372,2
Variation of NWC		16,52	97,72	82,22	126,2	-33,8
Revenues	1522,25	1821,65	2378,69	3161,4	4717,8	6110,8
NWC / Revenues	5,475%	5,482%	8,306%	8,851%	8,606%	6,091%

LVMH Moet Hennessy Louis Vuitton SE (LVMH.PA)

	2015	2016	2017	2018	2019	2020
Receivables	4062	4102	4825	5021	5500	4678
Inventory	10096	10546	10888	12485	13717	13016
Payables	5871	6190	6804	7772	8475	7567
NWC	8287	8458	8909	9734	10742	10127
Variation of NWC		171	451	825	1008	-615
Revenues	35664	37600	42636	46826	53670	44651
NWC / Revenues	23,236%	22,495%	20,895%	20,788%	20,015%	22,680%

Moncler SpA (MONC.MI)

	2015	2016	2017	2018	2019	2020
Receivables	108,27	118,15	173,14	175,51	184,74	190,01
Inventory	134,06	135,85	136,16	173,15	208,87	202,77
Payables	129,53	159	204,87	271,15	288,55	243,51
NWC	112,8	95	104,43	77,51	105,06	149,27
Variation of NWC		-17,8	9,43	-26,92	27,55	44,21
Revenues	880,39	1040,31	1193,7	1420,07	1627,7	1440,41
NWC / Revenues	12,813%	9,132%	8,748%	5,458%	6,455%	10,363%

Pandora A/S (PNDORA.CO)

	2015	2016	2017	2018	2019	2020
Receivables	2276	2569	2869	2658	3114	1698
Inventory	2357	2729	2729	3158	2137	1949
Payables	1329	1622	1695	2253	3095	3211
NWC	3304	3676	3903	3563	2156	436
Variation of NWC		372	227	-340	-1407	-1720
Revenues	16737	20281	22781	22806	21868	19009
NWC / Revenues	19,741%	18,125%	17,133%	15,623%	9,859%	2,294%

Kering SA (PRTP.PA)

	2015	2016	2017	2018	2019	2020
Receivables	1260,9	1302	1445,1	940,1	1276,7	1424,7
Inventory	2191,2	2432,2	2699,1	2414,7	2959,2	2845,5
Payables	948,6	1106,7	1251,4	754,4	817,6	678,2
NWC	2503,5	2627,5	2892,8	2600,4	3418,3	3592
Variation of NWC		124	265,3	-292,4	817,9	173,7
Revenues	11584,2	12384,9	10815,9	13665,2	15883,5	13100,2
NWC / Revenues	21,611%	21,215%	26,746%	19,029%	21,521%	27,419%

Swatch Group AG (UHR.S)

	2015	2016	2017	2018	2019	2020
Receivables	1180	1093	1276	1075	988	915
Inventory	6151	6259	6318	6917	6852	6315
Payables	986	862	1157	1166	1075	942
NWC	6345	6490	6437	6826	6765	6288
Variation of NWC		145	-53	389	-61	-477
Revenues	8451	7553	7989	8475	8243	5595
NWC / Revenues	75,080%	85,926%	80,573%	80,543%	82,070%	112,386%

Zalando SE (ZALG.DE)

	2015	2016	2017	2018	2019	2020
Receivables	181	275,6	346,1	470,8	570,7	759,8
Inventory	25,4	59,6	67,4	75,7	108,4	157,3
Payables	694,7	976,9	1194	1400,5	1821,6	2272,1
NWC	-488,3	-641,7	-780,5	-854	-1142,5	-1355
Variation of NWC		-153,4	-138,8	-73,5	-288,5	-212,5
Revenues	2958,2	3639	4489	5387,9	6482,5	7982
NWC / Revenues	-16,507%	-17,634%	-17,387%	-15,850%	-17,624%	-16,976%

Auto & Truck Manufacturer sector - firms with a small market capitalization.

Akwel SA (AKW.PA)

	2015	2016	2017	2018	2019	2020
Receivables	174,36	194,34	208,73	228,78	233,45	234,16
Inventory	86,15	98,92	125,4	136,62	145,67	127,91
Payables	130,4	140,09	160	160,03	160,47	159,12
NWC	130,11	153,17	174,13	205,37	218,65	202,95
Variation of NWC		23,06	20,96	31,24	13,28	-15,7
Revenues	860,36	963,64	1024,22	1062,17	1101,16	937,18
NWC / Revenues	15,12%	15,89%	17,00%	19,33%	19,86%	21,66%

Autoneum Holding AG (AUTON.S)

	2015	2016	2017	2018	2019	2020
Receivables	320,8	337,4	356,9	356,3	358,8	319,9
Inventory	130,9	148,2	206,9	231,8	193,8	154
Payables	304,9	319,4	339	376,5	354,7	298,3
NWC	146,8	166,2	224,8	211,6	197,9	175,6
Variation of NWC		19,4	58,6	-13,2	-13,7	-22,3
Revenues	2.086	2.153	2.203	2.282	2.297	1.741
NWC / Revenues	7,0377%	7,7209%	10,2043%	9,2746%	8,6141%	10,0885%

Burelle SA (BULY.PA)

	2015	2016	2017	2018	2019	2020
Receivables	782,35	1107,33	1276,84	1123,94	1136,58	1105,91
Inventory	347,41	388,69	414,01	737,11	735,9	656,81
Payables	1203,75	1484,65	1521,47	1903,44	1845,46	1669,43
NWC	-73,99	11,37	169,38	-42,39	26,97	93,29
Variation of NWC		85,36	158,01	-211,77	69,36	66,32
Revenues	5.012	5.860	6.436	7.248	8.499	7.085
NWC / Revenues	-1,4763%	0,1940%	2,6316%	-0,5848%	0,3173%	1,3167%

Inter Cars SA (CARP.WA)

	2015	2016	2017	2018	2019	2020
Receivables	538,69	706,36	744,86	875,2	1018,81	1007,99
Inventory	1251,72	1510,12	1771,18	2200,79	2.062,8	2223,12
Payables	445,86	545,34	511,62	733,41	614,98	593,17
NWC	1344,55	1671,14	2004,42	2342,58	2466,65	2637,94
Variation of NWC		326,59	333,28	338,16	124,07	171,29
Revenues	4.796	5.973	6.878	7.943	8.764	9.159
NWC / Revenues	28,0360%	27,9761%	29,1432%	29,4915%	28,1444%	28,8011%

JOST Werke AG (JSTG.DE)

	2015	2016	2017	2018	2019	2020
Receivables	94,02	93,51	109,56	115,41	94,74	127,93
Inventory	92,6	90,42	96,91	110,89	108,17	136,34
Payables	73,73	59,46	74,79	82,62	66,12	129,22
NWC	112,89	124,47	131,68	143,68	136,79	135,05
Variation of NWC		11,58	7,21	12	-6,89	-1,74
Revenues	649,8	633,95	701,31	755,41	736,35	794,41
NWC / Revenues	17,37%	19,63%	18,78%	19,02%	18,58%	17,00%

Piaggio & C SpA (PIA.MI)

	2015	2016	2017	2018	2019	2020
Receivables	123,75	118,96	112,9	119,79	120,41	117,7
Inventory	212,81	208,46	218,62	224,11	214,68	189,86
Payables	408,97	425,02	439,38	462,54	509,29	518,55
NWC	-72,41	-97,6	-107,86	-118,64	-174,2	-210,99
Variation of NWC		-25,19	-10,26	-10,78	-55,56	-36,79
Revenues	1295,29	1313,11	1342,45	1389,55	1521,33	1313,69
NWC / Revenues	-5,59%	-7,43%	-8,03%	-8,54%	-11,45%	-16,06%

Saf-Holland Se (SFQ.DE)

	2015	2016	2017	2018	2019	2020
Receivables	120,7	122,4	140,31	153,31	139,18	109,44
Inventory	118,01	129,38	133,75	179,37	168,13	126,42
Payables	107,2	124,01	131,51	152,56	135,07	130,88
NWC	131,51	127,77	142,55	180,12	172,24	104,98
Variation of NWC		-3,74	14,78	37,57	-7,88	-67,26
Revenues	1060,7	1041,99	1138,93	1300,56	1284,16	959,52
NWC / Revenues	12,40%	12,26%	12,52%	13,85%	13,41%	10,94%

Schaeffler AG (SHA_p.DE)

	2015	2016	2017	2018	2019	2020
Receivables	2272	2482	2496	2374	2511	2278
Inventory	1812	1905	2017	2183	2132	1881
Payables	1487	1702	2174	2259	2012	1704
NWC	2597	2685	2339	2298	2631	2455
Variation of NWC		88	-346	-41	333	-176
Revenues	13179	13338	14021	14241	14427	12600
NWC / Revenues	19,71%	20,13%	16,68%	16,14%	18,24%	19,48%

TI Fluid Systems PLC (TIFS.L)

	2015	2016	2017	2018	2019	2020
Receivables	532,3	622,7	596,5	582,7	588,2	548,5
Inventory	263,3	298,5	329,3	352,8	367,1	351,4
Payables	577	635,2	637,6	608,4	611,2	614,1
NWC	218,6	286	288,2	327,1	344,1	285,8
Variation of NWC		67,4	2,2	38,9	17	-58,3
Revenues	3095,2	3348,6	3490,9	3472,8	3411,1	2814,5
NWC / Revenues	7,06%	8,54%	8,26%	9,42%	10,09%	10,15%

Elringklinger AG (ZILGn.DE)

	2015	2016	2017	2018	2019	2020
Receivables	289,74	303,33	309,66	321,18	302,19	279,76
Inventory	321,9	328,33	369,55	401,39	356,48	300,5
Payables	88,18	107,46	121,84	138,42	159,41	131,92
NWC	523,46	524,2	557,37	584,15	499,26	448,34
Variation of NWC		0,74	33,17	26,78	-84,89	-50,92
Revenues	1507,25	1557,44	1664,04	1699	1727,03	1480,44
NWC / Revenues	34,73%	33,66%	33,49%	34,38%	28,91%	30,28%

Auto & Truck Manufacturer sector - firms with a medium market capitalization.

Adient PLC (ADNT.K)

	2015	2016	2017	2018	2019	2020
Receivables	2134	2082	2224	2091	1905	1641
Inventory	701	660	735	824	793	685
Payables	3045	3206	3402	3432	3073	2553
NWC	-210	-464	-443	-517	-375	-227
Variation of NWC		-254	21	-74	142	148
Revenues	20023	16790	16213	17439	16526	12670
NWC / Revenues	-1,05%	-2,76%	-2,73%	-2,96%	-2,27%	-1,79%

Autoliv Inc (ALV)

	2015	2016	2017	2018	2019	2020
Receivables	1821	1996,1	2198,5	1701,2	1653,5	1865,8
Inventory	711,4	773,4	859,1	757,9	740,9	798,3
Payables	1925,2	2117,5	2309,4	1913,7	1757,9	2486,4
NWC	607,2	652	748,2	545,4	636,5	177,7
Variation of NWC		44,8	96,2	-202,8	91,1	-458,8
Revenues	9169,6	7921,6	8136,8	8678,2	8547,6	7447,4
NWC / Revenues	6,62%	8,23%	9,20%	6,28%	7,45%	2,39%

Brembo SpA (BRBI.MI)

	2015	2016	2017	2018	2019	2020
Receivables	347,6	401,22	456,17	479,55	487,81	504,78
Inventory	247,66	283,19	311,12	342,04	342,2	354,89
Payables	421,12	491,95	536,65	662,56	548,84	551,11
NWC	174,14	192,46	230,64	159,03	281,17	308,56
Variation of NWC		18,32	38,18	-71,61	122,14	27,39
Revenues	2073,25	2279,1	2463,62	2640,01	2591,67	2208,64
NWC / Revenues	8,40%	8,44%	9,36%	6,02%	10,85%	13,97%

Daetwyler Holding AG (DAE.S)

	2015	2016	2017	2018	2019	2020
Receivables	193,5	209,3	222,1	218	179,2	189,8
Inventory	169,4	178,7	215,8	230,9	141,3	123,5
Payables	124,1	129,1	127,3	123,5	131	101,5
NWC	238,8	258,9	310,6	325,4	189,5	211,8
Variation of NWC		20,1	51,7	14,8	-135,9	22,3
Revenues	1165,2	1215,8	1291,4	1060,9	1050,5	823,3
NWC / Revenues	20,49%	21,29%	24,05%	30,67%	18,04%	25,73%

Faurecia SE (EPED.PA)

	2015	2016	2017	2018	2019	2020
Receivables	2044,3	2052,4	2354,9	2393,6	3154,8	3970,2
Inventory	1105,2	1264	1387,5	1431,7	1552,8	1431,3
Payables	3988,7	4312,4	4846,7	5180,6	6069	6788,3
NWC	-839,2	-996	-1104,3	-1355,3	-1361,4	-1386,8
Variation of NWC		-156,8	-108,3	-251	-6,1	-25,4
Revenues	18770,4	18710,5	16962,1	17524,7	17768,3	14444,6
NWC / Revenues	-4,47%	-5,32%	-6,51%	-7,73%	-7,66%	-9,60%

Ford Otomotiv Sanayi AS (FROTO.IS)

	2015	2016	2017	2018	2019	2020
Receivables	1783,91	2158,22	3357,53	3143,98	4106,96	5755,64
Inventory	1000,16	1054,43	1152,49	1864,65	1827,4	2449,04
Payables	2442,68	2780,72	4043,28	4199,96	4806,87	8164,81
NWC	341,39	431,93	466,74	808,67	1127,49	39,87
Variation of NWC		90,54	34,81	341,93	318,82	-1087,62
Revenues	16746,4	18289,11	25341,29	33292,03	39209,02	49451,41
NWC / Revenues	2,04%	2,36%	1,84%	2,43%	2,88%	0,08%

HELLA GmbH & Co KGaA (HLE.DE)

	2015	2016	2017	2018	2019	2020
Receivables	949,29	1039,77	1163,53	1267,08	1252,05	806,56
Inventory	608,85	607,58	663,53	761,49	810,28	881,52
Payables	829,24	909,78	978,2	1048	974,6	768,68
NWC	728,9	737,57	848,86	980,57	1087,73	919,4
Variation of NWC		8,67	111,29	131,71	107,16	-168,33
Revenues	5834,69	6351,89	6584,75	7060,34	6989,98	5829,42
NWC / Revenues	12,49%	11,61%	12,89%	13,89%	15,56%	15,77%

Inchcape PLC (INCH.L)

	2015	2016	2017	2018	2019	2020
Receivables	234,3	344	472,9	535,2	416	335,8
Inventory	1224,4	1549,4	1768,6	1851,9	1566,9	1216,2
Payables	1552,1	1892,5	2234,9	2356,6	541,8	390,8
NWC	-93,4	0,9	6,6	30,5	1441,1	1161,2
Variation of NWC		94,3	5,7	23,9	1410,6	-279,9
Revenues	6836,3	7838,4	8953,3	9277	9379,7	6837,8
NWC / Revenues	-1,37%	0,01%	0,07%	0,33%	15,36%	16,98%

Pirelli & C SpA (PIRC.MI)

	2015	2016	2017	2018	2019	2020
Receivables	781,85	1107,97	1088,49	1086,01	1142,75	1096,02
Inventory	848,58	873,96	940,67	1128,47	1093,75	836,44
Payables	1371,35	1546,17	1945,86	1857,64	1811,75	1507,55
NWC	259,08	435,76	83,3	356,84	424,75	424,91
Variation of NWC		176,68	-352,46	273,54	67,91	0,16
Revenues	5021,03	4976,4	5352,28	5194,47	5323,05	4302,13
NWC / Revenues	5,16%	8,76%	1,56%	6,87%	7,98%	9,88%

PIERER Mobility AG (PMAG.S)

	2015	2016	2017	2018	2019	2020
Receivables	141,38	158,63	176,34	197,91	209,53	173,27
Inventory	242,68	251,99	296,95	286,53	321,64	298,74
Payables	111,4	159,16	213,47	227,75	257,7	292,39
NWC	272,66	251,46	259,82	256,69	273,47	179,62
Variation of NWC		-21,2	8,36	-3,13	16,78	-93,85
Revenues	1223,57	1342,96	1354,06	1462,23	1520,14	1530,38
NWC / Revenues	22,28%	18,72%	19,19%	17,55%	17,99%	11,74%

Rheinmetall AG (RHMG.DE)

	2015	2016	2017	2018	2019	2020
Receivables	1232	1419	1327	1686	1735	1669
Inventory	1026	1098	1172	1259	1463	1573
Payables	872	824	810	1043	938	966
NWC	1386	1693	1689	1902	2260	2276
Variation of NWC		307	-4	213	358	16
Revenues	5183	5602	5896	6148	6255	5875
NWC / Revenues	26,74%	30,22%	28,65%	30,94%	36,13%	38,74%

Tofas Turk Otomobil Fabrikasi AS (TOASO.IS)

	2015	2016	2017	2018	2019	2020
Receivables	2138,28	2755,97	3105,41	3384,17	3234,92	6897,02
Inventory	548,25	920,14	1055,58	1076,67	749,13	1523,97
Payables	2545,89	3461,2	3963,87	3394,18	4014,95	7625,24
NWC	140,64	214,91	197,12	1066,66	-30,9	795,75
Variation of NWC		74,27	-17,79	869,54	-1097,56	826,65
Revenues	9920,72	14235,95	17467,81	18603,33	18896,91	23556,75
NWC / Revenues	1,42%	1,51%	1,13%	5,73%	-0,16%	3,38%

Valeo SE (VLOF.PA)

	2015	2016	2017	2018	2019	2020
Receivables	2351	2927	3432	3339	3312	3214
Inventory	1161	1393	1706	1906	1896	1582
Payables	3224	3885	4395	4475	4762	4697
NWC	288	435	743	770	446	99
Variation of NWC		147	308	27	-324	-347
Revenues	14544	16519	18484	19124	19477	16436
NWC / Revenues	1,98%	2,63%	4,02%	4,03%	2,29%	0,60%

Auto & Truck Manufacturer sector - firms with a big market capitalization.

Aptiv PLC (APTV.K)

	2015	2016	2017	2018	2019	2020
Receivables	3017	2306	2785	2795	2829	3016
Inventory	1181	859	1083	1277	1286	1297
Payables	3340	2806	3015	3100	3250	3558
NWC	858	359	853	972	865	755
Variation of NWC		-499	494	119	-107	-110
Revenues	10864	12274	12884	14435	14357	13066
NWC / Revenues	7,90%	2,92%	6,62%	6,73%	6,02%	5,78%

Bayerische Motoren Werke AG (BMWG.DE)

	2015	2016	2017	2018	2019	2020
Receivables	33310	34991	36346	42624	45134	39156
Inventory	11071	11841	12707	14248	15891	14896
Payables	11911	13557	12963	9669	10182	8644
NWC	32470	33275	36090	47203	50843	45408
Variation of NWC		805	2815	11113	3640	-5435
Revenues	92175	94163	98282	96855	104210	98990
NWC / Revenues	35,23%	35,34%	36,72%	48,74%	48,79%	45,87%

Continental AG (CONG.DE)

	2015	2016	2017	2018	2019	2020
Receivables	7784,7	8580,1	8907,8	8681,5	9110,6	8668,5
Inventory	3360,1	3753,2	4128,2	4521,1	4694,4	4238,2
Payables	6763,2	7562,1	8289,1	8747,2	8479,7	7169,6
NWC	4381,6	4771,2	4746,9	4455,4	5325,3	5737,1
Variation of NWC		389,6	-24,3	-291,5	869,9	411,8
Revenues	39232	40549,5	44009,5	44404,4	44478,4	37722,3
NWC / Revenues	11,17%	11,77%	10,79%	10,03%	11,97%	15,21%

Mercedes-Benz Group AG (MBGn.DE)

	2015	2016	2017	2018	2019	2020
Receivables	49449	54063	57378	64743	69604	58682
Inventory	23760	25384	25686	29489	29757	26444
Payables	13708	15186	17823	19328	17303	17781
NWC	59501	64261	65241	74904	82058	67345
Variation of NWC		4760	980	9663	7154	-14713
Revenues	149467	153261	164154	167362	172745	154309
NWC / Revenues	39,81%	41,93%	39,74%	44,76%	47,50%	43,64%

Compagnie Generale des Etablissements Michelin SCA (MICP.PA)

	2015	2016	2017	2018	2019	2020
Receivables	2843	3144	3160	3556	3727	3110
Inventory	4289	4480	4508	4702	4694	3959
Payables	3100	3434	3798	3963	4012	3588
NWC	4032	4190	3870	4295	4409	3481
Variation of NWC		158	-320	425	114	-928
Revenues	21199	20907	21960	22028	24135	20469
NWC / Revenues	19,02%	20,04%	17,62%	19,50%	18,27%	17,01%

Porsche Automobil Holding SE (PSHG_p.DE)

	2015	2016	2017	2018	2019	2020
Receivables	5	1	31	30	64	25
Inventory	0	0	3	3	4	5
Payables	5	6	10	8	11	13
NWC	0	-5	24	25	57	17
Variation of NWC		-5	29	1	32	-40
Revenues	0	1	34	103	116	107
NWC / Revenues	0%	-500,00%	70,59%	24,27%	49,14%	15,89%

Renault SA (RENA.PA)

	2015	2016	2017	2018	2019	2020
Receivables	32808	39805	41663	47519	50782	45638
Inventory	4128	5813	6328	5879	5780	5640
Payables	10612	10980	9955	12188	12296	10971
NWC	26324	34638	38036	41210	44266	40307
Variation of NWC		8314	3398	3174	3056	-3959
Revenues	45327	51243	58770	57419	55537	43474
NWC / Revenues	58,08%	67,60%	64,72%	71,77%	79,71%	92,72%

Stellantis NV (STLA.MI)

	2015	2016	2017	2018	2019	2020
Receivables	6882	7479	8102	7607	7000	5634
Inventory	11351	12121	12922	10694	9722	8094
Payables	25021	26771	26306	22509	24696	23615
NWC	-6788	-7171	-5282	-4208	-7974	-9887
Variation of NWC		-383	1889	1074	-3766	-1913
Revenues	110595	105237	105146	109819	107652	86354
NWC / Revenues	-6,14%	-6,81%	-5,02%	-3,83%	-7,41%	-11,45%

Volvo Car AB (VOLCARb.ST)

	2015	2016	2017	2018	2019	2020
Receivables	9166	13079	17117	21850	20759	23384
Inventory	20306	21198	30665	35163	38911	35513
Payables	26282	46477	57342	61540	63342	70438
NWC	3190	-12200	-9560	-4527	-3672	-11541
Variation of NWC		-15390	2640	5033	855	-7869
Revenues	164043	180902	208646	252653	274117	262833
NWC / Revenues	1,94%	-6,74%	-4,58%	-1,79%	-1,34%	-4,39%

Volkswagen AG (VOWG_p.DE)

	2015	2016	2017	2018	2019	2020
Receivables	64416	68116	73187	80186	85018	82816
Inventory	35048	38978	40415	45745	46742	43823
Payables	20460	22794	23046	23607	22745	22677
NWC	79004	84300	90556	102324	109015	103962
Variation of NWC		5296	6256	11768	6691	-5053
Revenues	213292	217267	229550	235849	252632	222884
NWC / Revenues	37,04%	38,80%	39,45%	43,39%	43,15%	46,64%

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