An empirical study of the relationship between working capital policies and stock performance in Sweden

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Erik Bratland & Johannes Hornbrinck
Abstract

The purpose of this study was to investigate what impact the working capital policies have on the stock performance on the Swedish stock market during the years 2009-2012. Furthermore, the study explores if the firm size or industry of the firms have any impact on the working capital policy and if the theory of risk/return tradeoff indicating that an aggressive policy should generate a higher risk premium holds. This topic is rather unexplored since earlier studies have focused on working capital policies relationship with accounting profit rather than with stock return.

In order to come up with answers to the research questions a quantitative research method has been used and data has been collected from the companies listed on the Swedish stock exchanges annual reports and stock prices from the Thomson Reuters Datastream. A database with all numbers and calculations was then constructed in Excel in order to easily transform the numbers into SPSS where the statistical tests where done. As statistical test the Pearson’s correlation was used to find if there is and correlation between working capital and stock return, beta and standard deviation. These tests where then done again but with the companies divided into policies, firm size and sectors.

The results of this study show no clear relationship between Swedish firm’s working capital policy and the stock return. Regarding the relation with risk and return, the result indicates that working capital has a significant correlation with risk and that the aggressive policy of managing working capital is more risky. Moreover the size of firms does neither affect the relationship between working capital policies and stock return nor the risk/ return tradeoff. However, when dividing the sample into sectors especially one industry resulted in some standout findings. The industrial sector had significant correlations between level of working capital and risk/return. Concluding, there is no significant relationship between stock performance and working capital policies but after conducting this research we still regard working capital as one important component to take into account both for managers and investors.
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Glossary

Working capital - is defined as “the difference between current assets and current liabilities”. (Arnold, 2008, appendix G:30)

Working capital policy - is defined as “the set of principles and plans that establishes a course of action for dealing with current assets and current liabilities”. (Brian 2009, p. 44)

Stock market/stock exchange - “markets where government and industries can raise long-term capital and investors can buy and sell securities.” (Arnold, 2008, p. 321)

Opportunity cost - is defined as “the value foregone when investing in one alternative rather than the other”. (Arnold, 2008, appendix G:20)

Liquidity - is defined as “the degree to which an asset can be sold quickly and easily without a loss in value”. (Arnold, 2008, appendix G:17)

Cash conversion cycle – “measures the time between the purchases of raw material until the firm receives money for their finished sold product.” (Deloof, 2003, p 574)
Chapter 1: Introduction

The aim of this chapter is to provide a discussion of the background of our research problem and how we formulated our research question. The delimitation’s, research gap and the expected contribution that the study can bring will be examined in the later part of the chapter.

1.1. Problem background

According to Losbichler and Mahmoodi (2012, p. 26) “Working capital is one of the most powerful and least understood drivers for supply chain managers to improve a company’s cash flow and profitability”. Moreover, corporate financial literature have historically focused most upon long-term financial decisions, such as investments, capital structure, dividends or company valuation. Research within short-term financial management and working capital management is limited. Much of the research done before within short-term financial management have analyzed mostly financial ratios as part of working capital management, few studies have discussed working capital policies in specific. (Afza & Nazir, 2009, p. 20) Together with the capital structure and capital budgeting working capital policy can be considered as one of the basic but crucial decisions in corporate finance. In today’s competitive market firms working capital management can act as a factor increasing their competitive advantage. Reacting quicker than competitors to unanticipated changes in market variables such as interest rates or changes in raw material prices can give an advantage. (Appuhami, 2008, p. 8-9).

Working capital is a straightforward concept that makes sure that a corporation is able to fund the difference between short-term assets and short-term liabilities (Harris, 2005, p. 52). Working capital management however refers to the way a firm is managing their four major working capital accounts which includes inventory, receivables, payables and accruals. “The management of working capital involves the management of the transformation process of resources from the cash invested in inventory once payables and operating accruals are paid, through the operations or production process, followed by the selling process, and finally, the credit collection process. The management of this transformation process has a profound impact on the liquidity position of the firm” (Maness & Zietlow, 2005, p. 96). Working capital policy on the other hand refers to the basic principles and guidelines the companies use when they control their working capital management.

According to Arnold (2008, p. 535) there are three different working capital policies that can be used for management of the working capital in a corporation, the aggressive, defensive or neutral approach. Arnold refers to the latter two as relaxed and moderate approach. With aggressive policy a firm has a low level of current assets or a high level of current liabilities. In theory a high level of current assets can have a negative effect on a firm’s profitability and a low level of current assets could lead to a lower level of liquidity. A defensive policy on the other hand has a high level of current assets and low level of current liabilities, leading to a high level of liquidity. The neutral policy is a mixture between the aggressive and defensive policy. (Afza & Nazir, 2007, p.3-4)
There has been a debate within the area of working capital and the risk and return trade-off between the different policies. The aggressive policy has been connected to high risk but due to the risk this approach also yields a higher return. The defensive policy on the other hand is associated with lower risk resulting in lower returns. (Weinraub and Visscher 1998, p. 11)

Through understanding the role and drivers for working capital management to reach the right levels of working capital companies can minimize risk, prepare for uncertainty and increase performance (Harriis, 2005, p. 53). Obtaining optimum tradeoff between liquidity and profitability is an ever existing problem for today's Chief Financial executives (CFO). To find an optimal level in working capital the management has to achieve a balance between the risk and efficiency (Filbeck and Kruger, 2005, p. 11). They have to understand the tradeoff that exists between liquidity and profitability. Irrespective of if the firm is profit oriented or not they need an essential working capital. The working capital is a vital factor in maintaining the existence, liquidity, solvency and profitability of the organization/firm. (Akash et al., 2011, p. 147). The management of the working capital can increase the value for the shareholders because taking care of the liquidity can increase the profitability of the company. Deloof’s (2003, p. 585) study found that Belgian firms can manage working capital and by a reduction in the number of days accounts receivables and inventory outstanding can increase the value for shareholders. This is because by not utilizing the excess cash in firms there is a loss of potential increased value or increased profit and this can become an opportunity cost for the firm.

Tied up funds in working capital can be looked at as hidden reserves which should optimally be used for growth strategies like capital expansion. The cash flows locked within stocks or receivables can by this understanding be locked up and used in profit or firm value increasing purposes (Appuhami, 2008, p. 9).

Few have been looking at working capital from an investors point of view and whether it is relevant from investment purposes or if it can be ignored. Most of the previous studies have had the perspective of the CFO and working capitals relationship towards the accounting profit. Therefore we find it interesting to take the investors perspective and see how relevant working capital policies are for investment decisions. While the firm’s profitability or accounting profit is an important factor in a management’s performance a direct concern for shareholders is wealth maximization and firm value which stock performance shows (Bana, 2012, p. 156).

Today the financial markets are hard to understand, share prices are volatile and hard to predict. Researches and market participants have to devote significant resources into trying to achieve and understand the behavior of the expected stock return. If the expected return of the stock market changes over time and what economic indicators are then relevant for trying to predict and understand this behavior? (Lettau and Ludvigson, 2003, p. 618). By conducting this research we want to contribute with further empirical evidence within the subject and look into if the companies working capital policy is a relevant factor in the investor's decision.
1.2. Research Question and Objectives

From the problem background, we have recognized a lack of studies within the field of working capital management and in particular different working capital policies and the impact this can have towards the stock performance of firms from an investor’s point of view. The goal is to help possible investors realize whether working capital policy of the firm is of relevance to be considered when buying stocks. Accordingly, we have formulated the following research question:

*What is the impact of working capital policies on stock performance in Sweden?*

We want to answer this question by identifying the relationship between different working capital policies and the stock performance of Swedish firms. From a risk return trade-off perspective we want to measure the trade-off balances and if there could be a risk premium related to the different policies.

1.3. Research purpose

The purpose of this research is to investigate the relationship between working capital policies and stock performance of the companies listed on the NASDAQ OMX in Stockholm over the time span 2009-2012. First, by testing this relationship we intend to investigate if working capital policy matters for the stock performance. Secondly, we want to test the theory behind the risk/return trade-off and see if risk increases with an aggressive policy. Thirdly, we want to look into if there is any difference between the large, mid and small caps. The last step would be to see if the type of sector has any impact on the working capital policy’s relation with the stock performance and risk/return. Since this subject is rather unexplored we intended to be descriptive in our statistical analysis.

1.4. Research Gap and Contribution

The majority of the previous research that has been conducted within the area of working capital management has focused on the relationship with accounting profitability and not much on what effects the different policies can have. These studies have mainly examined the relation that working capital has with the net income of firms. There has not been much research done on the relationship between working capital policies and stock performance. The authors have found few articles or researches that are investigating this relation so there is an obvious research gap. Furthermore none of the articles we have found investigate the relationship between the different working capital policies and the risk return trade off of the stock for the firms. So this research is looking at this issue from another perspective in relation to previous studies.

The results of this research will be a contribution for both researchers and investors in the following ways:

Firstly, many previous studies have confirmed that there is a relationship between the working capital management and the accounting profitability of firms. Our study will however focus on the relations between working capital management and stock performance. Some studies have touched upon the issue and given vague suggestions of
a potential relationship and we will investigate this further. As far as we know, this has not yet been done on the Swedish market and not in the same time horizon as we intend to explore.

Secondly, it is always a problem for the CFO of a company to understand what level of working capital that is enough. By this research we will try help to shed some more light upon the issue of finding an optimal level of working capital that will positively affect stock performance.

Thirdly, as a scientific contribution this research can help further with the definition of the different working capital policies in determining at what levels one can be considered aggressive or defensive. Furthermore in regards to this currently there is not any complete or well determined measure of the concept of working capital policies so we intend to be descriptive in this approach in order to try exploring some different measures. This might help for future studies and CFOs in reaching a better way to in how to measure the working capital policies more accurately.

Fourthly, with today's complex financial markets and the volatility in stock prices, this research will give practical contribution in helping to establish if the working capital policy of the firm is an important financial indicator to look at when trying to predict stock prices and performance. This knowledge is of importance for stock analysts.

Finally, the study can help to determine whether the working capital policy of firms is related to the risk-return trade-off of their stock performance and if there is for example a risk premium associated to a defensive approach. This knowledge will help portfolio managers to analyze the beta of a stock.

1.5. Delimitations

This study will be limited to the companies that are listed on the NASDAQ OMX Nordic Stockholm Stock Exchange. We choose to exclude financial companies since their financial structure and financial characteristics are much different from the other companies and this structure is not as suited for the measurement of working capital which is not influencing them the same way. This means that including them could give misleading results. Furthermore we also excluded companies delisted during the time period, companies that changed their currency over the time period, companies that changed their accounting principles and lastly companies that have a closing of their annual year that is not the 31st of December since recalculation the fiscal year would be risking to lose consistency as this would have to be done from the quarterly reports which can differ from the annual reports also using their annual reports. The discussions regarding the excluded companies are explained in depth later on in this paper. The main reason why we decided to have Swedish companies as our sample is since both researchers are native swedes and have an interest in the Swedish market. Moreover the Swedish market has not been investigated in regards to this specific topic earlier.

The time frame of our study will be from 2009 to 2012. The data collection and analysis of the data will be very time consuming since we will have to study the annual reports of all companies in our sample. We have a limited amount of time to spend on this research so we figured that a time frame of four years is reasonable and will be possible to accomplish.
There are a lot of different measures to measure the degree of aggressiveness that a working capital policy has, for example current ratio, cash conversion cycle or the aggressive investment policy ratio. Due to time limitations we will not be able to examine all of these measures; we will have to choose a few. Depending on what measure we choose the results can vary which is important to be aware of.

1.6 Disposition

Chapter 1: Introduction

We provide a discussion of the background of our research problem and how we formulated our research question. The delimitation's, research gap and the expected contribution that the study can bring will be examined in the later part of the chapter.

Chapter 2: Theoretical Methodology

This chapter will first present our choice of subject, the preconceptions and what perspective the study will have. Further we will discuss the research philosophies, research approach and the research strategy. In the end of the chapter we clarify what literature and data sources we have used and what quality criteria’s we have followed.

Chapter 3: Theoretical Framework and Literature Review

In this chapter theories and concepts that are relevant for our research are presented and explained. We start with an in depth explanation of the different working capital concepts and continue with a shorter explanation of stock markets. The chapter ends with a summary of previous researches that have been done on the same topic.

Chapter 4: Practical Methodology

This chapter aims to present and explain the practical methodology of the research. First the sample, time horizon and collection method for the research are presented. Next, the different variables that will be used in our statistical tests are explained. Furthermore the statistical test used will be explained and the chapter ends with a listing of the hypotheses of the research.

Chapter 5: Empirical Results and Analysis

This chapter will start with a presentation and analysis of the descriptive statistics of this study. Then an overview of the empirical results from the statistical tests that have been done will be presented and further analyzed. The hypotheses that have been derived will also be presented and their results will be shown and examined. The aim of the chapter is to come up with enough empirical facts to clearly answer our research question.

Chapter 6: Conclusion and recommendations

This chapter will draw conclusions that this study has come up with and provide answers to the main research question and to the sub research questions. Moreover, the practical and theoretical contributions of the study will be presented. Finally, some suggestions for future research will be provided.
Chapter 2: Methodology of the research

This chapter will first present our choice of subject, the preconceptions and what perspective the study will have. Further we will discuss the research philosophies, research approach and the research strategy. In the end of the chapter we clarify what literature and data sources we have used and what quality criteria we have followed.

2.1. Choice of Subject

The authors have chosen to write their thesis within the field of finance. The first reason behind this choice of subject is that both authors have studied finance during their Master year. One of us has completed all the compulsory courses within the Masters of Finance Program at Umeå University. The other one was on an exchange semester at the University of Turin where he completed a mixture of finance and accounting courses on a Master level. Moreover, both of us are open for the possibility to have future careers within the area of finance and we have an interest in finance in general.

From the start of the project we had no specific topic in mind, instead we went through finance literature in the search for a topic of our interest. After reading about working capital and then developing the idea about relating it to stock performance we agreed upon that this was a topic that was interesting, doable and would generate new contributions to already existing research.

2.2. Preconception

According to Oxford dictionaries (2013) preconception is defined as “a preconceived idea or prejudice”. In the case of a research this means that the authors might have formed an opinion about the subject in advance. This opinion is likely to be based on the previous experiences, academic backgrounds, values and beliefs of the authors. In the research literature this has also been called that the authors introduces bias which is recommended to avoid. Researchers are advised to be objective and independent to their personal aspects and the authors of this research are aiming to not have any preconceptions during the research process. (Bryman & Bell, 2011, p. 30). In this research quantitative research methods are used by analyzing objective historical numerical data and the conclusions reached in the end of this thesis will not be influence by our preconceptions. Throughout the writing of this thesis the work has been regularly read by both colleagues and our supervisor giving us feedback and advice in keeping us from being subjective and having preconceptions influencing the study.

2.3. Perspective

The perspective is supposed to clarify to whom the results of this study could be interesting and useful for. Most of the previous research within this area has focused upon the relationship between working capital and net income, something that is more in interest for the internal stakeholders of the companies. This study however, will instead focus on the impact working capital has on stock prices, this on contrary to earlier studies are not exclusively in the internal stakeholders interest but mainly for the external shareholders. So this research point of view will be to give a deeper understanding and information to the external shareholders.
The intended audience for this thesis is as already mentioned rather large. Main targets are investors and related people such as portfolio managers and financial analysts. Second target includes CFOs and CEOs, in their task of managing the working capital of the firm with the goal of maximizing value created for stockholders. Third target is composed of managers in charge of the components of the working capital: inventory managers, credit managers, purchasing managers, sales managers. The last target is the research community in finance.

2.4. Research Onion

The research onion presents the underlying issues deciding the choice of how to collect and analyze the data. The research onion has different layers and to reach the core we need to explore all of the layers. The first layer concerns the research philosophy and what view we have. The second layer regards what research approach we are adopting. Thirdly, the research strategy is discussed and decided upon. These layers then lead down to the core of the onion, which presents the research method that will make it possible to answer the research question. (Saunders et al, 2009, p. 106-109)

![Figure 1: Our research “onion”](source)

Source: Saunders et al, 2009, p. 108

2.5. Research Philosophy

Choosing the appropriate research philosophy is a vital part when conducting a research. The term of research philosophy relates to the development of knowledge and the nature of that knowledge. This is exactly what you are doing when embarking on a research actual development of knowledge within a field (Saunders et al, 2009, p. 107). The knowledge that is developed does not have to be as big as developing a new theory but even if the purpose is of more modest ambition answering a problem in for example an organization is yet development of new knowledge (Saunders et al, 2009, p. 107).
Furthermore the methodological assumption when conducting a research is of extreme importance since this clarifies the researchers’ point of view upon knowledge and how knowledge is gained. Moreover it also establishes the perception of the researchers’ view of the world and shows assumptions taken throughout the process of the research. Assumptions taken in the research process about the view of the world are important since these are major factors in the choice of research strategy and the methods chosen as part of this strategy (Saunders et al, 2009, p. 107-109).

So for these reasons we find it of major importance to clearly state our own assumptions and to give a clear understanding of our research. There are two philosophical views which are the epistemological and the ontological positions which will be further explained below. (Saunders et al, 2009, p. 109)

2.5.1. Epistemology

Epistemology is the assumption in regards to what constitutes acceptable knowledge in a research. Epistemology is divided into two contradicting views upon what is regarded as acceptable knowledge. The main features that differentiate these two approaches are if social sciences can be studied similar to the principles of studying natural science. This relates to the view the researcher has upon emotions and feelings and whether this can be seen as a social phenomenon with an external reality or not. (Saunders et al, 2009, p. 112-113). The emotions can be regarded as acceptable knowledge or only observable factors (Bryman & Bell, 2009, p. 15-19). The two main contradicting aspects within the epistemological assumption are positivism and interpretivism and apart from these two main aspects there are also the realism and axiology perspectives within epistemology (Saunders et al, 2009, p. 112-116).

The first main feature of epistemology is the positivistic approach towards knowledge which has the view upon the reality as something external and independent to social actors. Knowledge is acceptable when it can be studied like that of natural sciences and when it can be confirmed by the senses. (Bryman & Bell, 2011, p. 15). This is done in a value-free way. The researcher takes an objective position with the aim to minimize the influential factors that can affect the generalizable results. (Saunders et al, 2009, p. 112-114). The positivistic stance towards the research is advantageous because it excludes the researchers’ personal opinions. The researcher accepts observable objects as knowledge and has a focus upon the causality. In order to generate the research strategy for the data collection it is likely to use existing theory and develop hypotheses which in turn will be tested. (Saunders et al, 2009, p. 113-114).

The second main feature, the interpretivist approach has a more subjective view towards the understanding and the relations between social entities and social actors. This view contrary to the positivistic approach does not believe that you can study the social reality according to the same methods as that of the natural sciences. (Bryman & Bell, 2011, p. 16-20). Furthermore it accepts knowledge that in positivism is disregarded like for example feelings and attitudes in order to find meaning behind the actions (Saunders et al, 2009, p. 113). The focus within this approach is instead upon finding the subjective meaning behind social action. It becomes the researchers objective to understand the basis behind human actions and understanding the underlying “common sense thinking” of people and understand and interpret their actions and their social world from their point of view. (Bryman & Bell, 2011, p. 18).
Drawbacks of the interpretivism are that the researchers have a hard time to be objective throughout the study since their perceptions and emotions can be involved in their process of interpretation of the data. Furthermore replication becomes hard to achieve within this view on the contrary to the positivistic where replication is a major factor.

Realism is another not as widespread view within the epistemology, this approach is similar to positivism in the sense that it assumes a scientific approach towards the development of knowledge. (Saunders et al, 2009, p. 114). Furthermore the realism doctrine shares some traits with the interpretivistic approach in the sense that it also has the belief that social entities can exist external to the social actors. The main feature of realism is that it wants to portrait the world in an as genuine way as possible hence it also includes factors that are disregarded within the positivistic approach. (Saunders et al, 2009, p. 114-115).

Axiology is another branch of this philosophy which emphasizes the importance personal values can play within the research. This suggests that the researcher should personally decide and formulate his or her own persona values as these are affecting the whole research process from the choice of subject, data collection to research strategy and interpretations of results. Hence by giving the reader an understanding of the researchers personal values coming into the research.(Saunders et al, 2009, p. 116).

The philosophical stance chosen for this research is the positivism. Since we are going to examine the relationship between the working capital policy of firms and their stock performance. We are going to investigate this by looking at historical data consisting mainly of numbers. By looking at the nature of numbers, there is little room for subjective interpretations of the results in this research. Furthermore we are using existing theory from which we increase our knowledge and understanding of the research subject and from which we develop our hypotheses that will be tested by statistical methods. According to Remenyi (1996, p. 10) the emphasis within positivism lies upon quantifiable observations which can be done by statistical analysis. Hence this research fits well into this philosophical stance.

The interpretivistic approach is not consistent with our purpose and research subject because it looks more into the meaning and understanding of the subjective meaning behind actions. We will have an objectivistic approach in our way of analyzing the relationship between our two variables. For this research it is important for our research results to be generalizable which is not to case in an interpretivistic approach where the results are more dependent on each specific situation.

2.5.2. Ontology

Ontology raises the concerns about reality, it enables the researcher to ask questions about the assumptions it will have towards the way the world operates and the commitments held to particular views (Saunders et al, 2009, p.110). It describes the role of social actors in the formation of social entities and deals with the existence of relationships between these different social actors which is between people, society and the world in general. “The central point of orientation here is the question of whether social entities can and should be considered objective entities that have a reality external to social actors, or whether they can and should be considered social
construction built up from the perceptions and actions of social actors” (Bryman & Bell, 2011, p. 20). Within ontology there exist two contradicting main aspects. The first aspect is the objectivism and the second one is the subjectivism or constructionism as it often is referred to as (Saunders et al, 2009, p 110-111). These two aspects provide two different views upon the perspectives of the existence and relationship between the social entities and the social actors.

The objectivistic approach is centered on the belief that the social entities exist in a reality external to social actors (Saunders et al, 2009, p. 110). This implies that the objectivistic stance views the social reality where the social actors are independent and cannot affect the social reality (Bryman & Bell, 2011, p. 21).

The opposite ontological view is the subjectivism or the term constructionism as it sometimes is referred to (Saunders et al, 2009, p 111). The constructionism is derived from the interpretivist philosophy as it is more concerned with finding the subjective meaning motivating the actions of social actors in order for it to be understood. It views reality as being socially constructed and then in contrary to the objectivistic standpoint views the social actors as dependent on the social reality. (Saunders et al, 2009, p. 111).

In this research the main focus will be upon the objectivistic position within ontology. The main focus of this research is to identify the relationship between the variables of the working capital policies with the stock performance to see if there is a casual relationship. We can treat our data objectively since we are going to apply numerical statistical methods to our analysis of it. The data in this research can be looked at as external factors that are out of our reach and we cannot influence it. So the research will be given the same result if it would be replicated using the same time-frame, variables and investigation technique. On the contrary taking a subjective approach towards the research would make the results more dependent upon the researcher’s view of reality. So for this research this view is not the appropriate to apply given that this research is using a statistical method investigating the correlation between two variables.

2.6. Research Approach

There are three main reasons for why it is important to choose the right research approach. First of all, it simplifies the process of making more informed decisions about the appropriate research design. It also helps the researcher to evaluate which of the possible research strategies that is most suitable for their research. Lastly, it enables the researcher to pick a research design that is in line with the research topic. (Saunders et al, 2009, p. 126).

The research approach determines the relationship between theory and research and can be either deductive or inductive. The deductive approach uses already existing theories to develop hypotheses that will be the basis for the empirical study. The researchers will then test their hypotheses and either confirm or reject them. (Bryman & Bell, 2011, p. 11). The deductive approach is appropriate to use if the aim is to test the relationship between two variables through a quantitative research method. In the very end, the researcher wants to generalize the results over a population and to be able to do so the sample needs to be of a sufficient numerical size. (Saunders et al., 2009, p. 124-125). Usually the deductive approach is associated with the philosophical view of positivism and objectivism (Bryman & Bell, 2011, p. 27).
The inductive approach on the other hand is known as the opposite of the deductive approach. In the inductive approach the researchers starts with collecting data and analyzing their findings. In the majority of cases the inductive approach is associated with a qualitative research method. The aim of an inductive research is to build a new theory. (Saunders et al., 2009, p. 125-126). The inductive approach is often linked to the philosophy of interpretivism and constructionism (Bryman & Bell, 2011, p. 27).

In our research we will be using the deductive approach since we are going to formulate our own hypotheses based on already existing theories and then test whether these hypotheses hold. According to Hyde (2000, p. 83) the deductive approach is recommended when testing relationships and generalizing already established theories. This is the intention with this study, we will test the relationship between working capital policies and stock performance. Taking the facts discussed above into consideration, the approach that is most suitable for our research project is the deductive approach. The steps in the deductive approach are pictured in figure 2.

**Figure 2:** Deductive Approach  
**Source:** Bryman & Bell, 2011, p. 11

2.7. Type of research

According to Saunders et al (2009, p. 139-140) a study can be exploratory, descriptive or explanatory. An exploratory study aims to ask questions, see problems from new angles and to seek new insights. A descriptive study focuses on explaining situations, events and persons. Lastly, an explanatory research establishes a causal relationship between different variables. This study will be explanatory and descriptive, explanatory since the relationship between working capital policies and stock return will be investigated and descriptive since our statistical analysis is going to be descriptive in the sense that we are going to test the different policies relationship with descriptive statistics in order to establish the different working capital policies.
2.8. Research Strategy

Research strategy is an overall plan on how the researchers will answer their research question and meet their objectives. The choice of research strategy is dependent on the research question, the research objectives, already existing knowledge and the amount of time and resources that are available for the researchers. There are seven different strategies that can be considered and it is important to remember that these strategies can be combined. (Saunders et al., 2009, p. 141). The strategies are:

*Experiment* - the purpose of an experiment is to explore if a change in one independent variable leads to a change in another dependent variable. The most common way to do an experiment is to create two groups and assign members randomly. One of these groups will then be exposed to an intervention or manipulation. Their reactions are then compared to the group who did not face manipulation, the control group. Much research within natural sciences and psychology is related to experiments. (Saunders et al., 2009, p. 142) Since we are not planning to manipulate one of the variables, this strategy will not be used in our research.

*Survey* - is mainly related to the deductive approach. A survey is often done by handing questionnaires to a selected sample, standardize the data and then have a basis for easy comparisons. (Saunders et al., 2009, p. 144) We will not be able to use this strategy since we are not planning to collect our data through questionnaires, rather from annual reports and databases.

*Case study* - is an empirical study of a particular contemporary phenomenon within its real life context using multiple sources of evidence. It is seen as the opposite of the experimental study. (Saunders et al., 2009, p. 145-146) We are not planning to study one single case so this strategy will not be used in this study.

*Action research* - the purpose of action research is to do the “research in action” rather than “research about action”. This means that the researchers get involved, in for example an organization, and takes part and observes different issues that might occur within the organization. (Saunders et al., 2009, p. 147) This strategy will not be used in our research since we are not intending to somehow take part of an organization and study their behavior.

*Grounded theory* - the data collection starts without having any initial theories to base the research upon. Instead theory is developed from the data that is collected through observations. These theories are often used as predictions in further observations. (Saunders et al., 2009, p. 148-149) The grounded theory strategy is not appropriate for this research since we did come up with our research question through studying already existing theories, which is the opposite of the idea with grounded theory.

*Ethnography* - is mainly associated with the inductive approach. The idea with ethnography is according to Saunders et al, (2009, p. 149) to “explain the social world the research subjects inhibit in a way in which they explain it”. This type of research is very time consuming. We will not use this strategy since we will be using a deductive approach and since we have a limited amount of time.
Cross sectional study - is when a particular phenomenon is researched during a particular period of time. (Saunders et al, 2012, p. 190). This research will be cross sectional since we are studying the effect of working capital policies over a specific period of time.

Longitudinal study - studies changes and developments over time. Since we only have a time frame of three years in our study and are not focusing on changes we are not applying a longitudinal study. (Saunders et al, 2012, p. 190).

Archival research - uses administrative records and documents as the main source of data. The main idea of archival research is to explain the past and eventual changes that might have occurred. (Saunders et al, 2009, p. 150) This is the research strategy that is appropriate for the study that we are doing. We are going to collect data from annual reports and stock prices from the Nasdaq OMX, which are considered to be either administrative records or documents.

This study will be an explanatory study since we are investigating a relationship and the strategy will be an archival research since we are collecting our data from administrative records and documents. The study will also be cross sectional since we are studying a particular phenomenon during a particular time period.

2.9. Research method

Bryman and Bell (2011, p. 26) present two different types of research methods, the quantitative and the qualitative method. Both methods are used to collect and analyze data. The quantitative method is mainly focusing on the collection of numerical data and the testing of theories, in other words it fits a deductive approach. (Bryman & Bell, 2011, p. 150). The qualitative method on the other hand tends to emphasize with a deep understanding and words rather than numbers. This method is more associated with the inductive approach, meaning that the goal is to generate new theories. (Bryman & Bell, 2011, p. 386). A combination of the two methods, named mixed methods research, has become increasingly used and accepted during the last decades (Bryman & Bell, 2011, p. 630).

When choosing the appropriate method it is important to consider what type of data you are aiming to collect. We want to investigate the relationship between two variables and we already know that this will be done through analyzing annual reports and historical stock prices. This means that we will collect numerical data and use the quantitative method in our study. We know that the quantitative method is most suited for our type of research and will enable us to answer the research question we have formulated. Moreover, we have already decided to have a positivistic and objectivistic view and to use the deductive approach which in most cases corresponds to choosing a quantitative method.

2.10. Validity

Validity is an important criterion within research and is concerned with whether the applied measure of concepts really measures the concept it is supposed to measure. According to Bryman & Bell (2011, p. 159-160) it can be divided into several subcategories.
Firstly, measurement validity which is one of the main features for the validity of a research. This term is concerned with whether a measure is actually measuring what it is supposed to measure. The measurement validity is in turn divided into some further categories namely, face validity, concurrent validity, predictive validity, construct validity or convergent validity. Face validity is whenever a researcher develops a new measure he should clearly establish that the measure really is reflecting the concept in question. This can be done by asking peers, more experienced people or others with relevance to the topic to be judges to the fact that the measure is getting the concept that should be focus of the attention. In order for the researchers to judge the concurrent validity of a measure, they can apply a criterion of which is known to differ and of relevance for the concept of measure. Predictive validity is another way of measuring that the intended concept in question is getting measured. It is using a future criterion instead of a present one to measure the validity. Construct validity is done by deducting hypotheses from theories relevant to the concept of measure. Lastly the convergent validity can be used to check the measurement validity of a new measure. Convergent validity is by checking the actual developed measure to other measures of the same concept that they have devised through other observation methods. (Bryman & Bell, 2011, p. 159-160)

Internal validity is in large extent related to the causality of the research. This means “whether a conclusion that incorporates a causal relationship between two or more variables holds water” (Bryman & Bell, 2011, p. 42). The main question that the internal reliability raises concern about is how confidently we can say that one independent variable really at least in some part is affecting the dependent variable. Internal validity can also be paralleled to credibility of the study in answering the question of how believable the findings are. (Bryman & Bell, 2011, p. 42-43).

The main concern with the external validity is in regards to the question of whether results of a study can be generalized beyond the research context or not. Within quantitative research the external validity plays a big part as quantitative researchers often are keen to generate representative samples. This is paralleled to the transferability of the research whether or not the findings can be applied in other contexts. (Bryman & Bell, 2011, p. 43).

Lastly, the ecological validity is whether or not the findings produced in the research can be applied to people’s everyday life. For the researcher to maintain high ecological validity they need to try intervene as little as possible to the natural setting and avoiding to create unnatural ones that would generate findings which gets manipulated by the unnatural settings and hence gets ecologically invalid (Bryman & Bell, 2011, p. 43).

In this research in order to establish the measurement validity, firstly, with the help of the establishment of face validity from our peers, supervisor with more expertise in the field and from statistical guidance from the department of statistics to make sure that we devise a measure of the correct concept in question. Furthermore in regards to the measurement validity this research uses construct validity in the way that our hypotheses and tests are based upon theory with relevance for the concept of measure.

Using a cross-sectional design can affect the internal validity of the research making it lower compared to an experimental. Since in the cross-sectional design we have to infer that one variable causes the other (Bryman & Bell, 2011, p. 163). This inference has to
be devised through our commons sense or by theoretical ideas on the relationship and there will always be a risk that this could be wrong. In this research we have developed our understanding of the inference mainly upon previous studies regarding the relationship in order to keep our internal validity high.

Since this research is conducted on all the firms listed on the NASDAQ OMX Stockholm the results will certainly be representative of the population and generalizable towards it. Furthermore it can be argued that the results can further be generalized towards other populations that share similar characteristics as our sample. When making inferences beyond the population in this thesis we have to be careful and establish that other factors and characteristics share similarities for it to be applicable. Since we are conducting a cross-sectional research we include firms with a lot of different characteristics as they operate in different industries and aim to make our sample as diverse as possible in order for the external validity to be as high as possible and make the results applicable beyond our sample.

2.11. Reliability

The main concern for reliability is the consistency of the measures of a concept (Bryman & Bell, 2011, p. 157). “According to classical test theory, any score obtained by a measuring instrument (the observed score) is composed of both the “true” score, which is unknown, and “error” in the measurement process” (Kimberlin & Winterstein, 2008, p. 2277). In the process of defining a measure of concepts the main focus is upon trying to reduce the errors in the measurement process. The reliability within research is built up around three major factors which is stability, internal reliability and the inter-observer consistency. Stability refers to whether the measure is stable over time, so having for example strong stability means that performing a measure again will have little variation over time in the results of the research. Internal reliability concerns the design and consistency of the different indicators that are used in the research to make up the scale or index. For testing the internal reliability of a research there are a couple of different methods that researchers can use like the split-half method. This is done by the researcher to make sure there does not exist any correlation between different indicators in the research that can affect or skew the results. Lastly, the inter-observer consistency of the reliability is concerned with how much of subjective judgment there is within the research. This is revolved around the researcher design of the measure of concepts and when it comes to the categorization of the data and when more than one observer is involved in the activities there can be a lack of consistency in the decisions (Bryman & Bell, 2011, p. 157-159).

Looking at the first major factor of reliability which is the stability, the data collection and analysis in this research are based on historical numbers and the results will have little variation over time if the same data collection methods and sources are used. The internal reliability of this research is not an issue since we are conducting correlation tests which will be discussed later on. Since we have historical numerical data and we categorize it according to theoretical models there is little risk of subjective judgment involved in these activities. This research in respect to the inter-observer consistency does not have to deal with interpretations or classifications of data that would need to be subjectively interpreted.
2.12. Replication

Replication concerns whether a study is possible to replicate or if the researchers have included too much of their own characteristics and expectations which could lead to biases and lack of objectivity. If a research is not possible to reproduce the validity of the study would be questioned. Due to this fact, researchers tend to be extremely explicit about every step of their research so that replication will be possible. Replication is higher in a quantitative research than in a qualitative and it is regarded to be an important quality of the method. (Bryman & Bell, 2011, p. 165-167)

In our study we will collect data from publicly available sources such as listed companies annual reports and Thompson Reuters Datastream where we take stock prices from. This means that it will be possible for other researchers to replicate our study, which makes the validity of the research higher. One limit could be that access is needed to Datastream, which we as students are provided with from Umeå University. However, stock prices can be collected from other sources such as the stock exchange pages and our study will therefore be replicable.

2.13. Literature and Data Source

There are three different types of literature sources available for researchers, they are: primary literature, secondary literature and tertiary literature. Primary literature sources are a piece of work that occurs for the first time. It can be pieces such as reports, government publications, manuscripts or memos. Secondary literature sources are publications that discuss information that has originally been published elsewhere. Books, journals, newspapers and databases are examples of secondary sources. Tertiary literature sources are used as a help to find primary and secondary literature. They include indexes, encyclopedias and bibliographies. (Saunders et al., 2009, p. 69).

Our research will consist of both primary and secondary sources. Since we are collecting information from annual reports, this will be a secondary source. The annual reports will be collected from each of the companies’ web page. It has been argued that annual reports may be biased and not objective due to the fact that the company is publishing the reports itself. (Bryman & Bell, 2011, p. 550-552). However, we do not agree upon this since all the companies have to follow principles and auditing rules. We will build our own database with numbers from annual reports where we will extract the numbers needed for our calculations for our measurement of the working capital. Since we are building a new database by our own this will become a primary source. The collection of the stock performance will be from an already established database the Thomson Reuters Datastream and hence this data will be regarded as secondary data.

The theoretical framework and literature review will be based on secondary sources such as databases, books and journals that have been collected from Umeå University Library, Business Source Premier, Google Scholar and other databases. Some of the keywords used in our search for secondary sources are working capital, working capital policies, working capital management and Cash Conversion Cycle. For the explanation of the statistical tools that are used in the research we have used statistical textbooks. The stock prices for our empirical tests have been collected from the Thomson Reuters Datastream which we have access to as students at Umeå University.
A few advantages and disadvantages have been listed about the use of secondary sources. Using secondary sources saves both time and costs for the researchers and is optimal for us since we have to complete our research within a specific time frame. The data from secondary sources is often seen to be of high quality which will help us to write a reliable research with a high quality. Moreover, there are possibilities for both longitudinal analysis and for cross-cultural analysis. The use of secondary sources may also offer the researchers new and useful interpretations. Disadvantages can be that the researcher does not have any familiarity with the data and the data can be complex, in the case of our study it means that we will have to spend some extra time making sure that we understand everything correctly. It is also said that the researcher does not have any control over the quality of the data, we however have used articles that have been peer-reviewed and are counted as reliable. We believe that this fact will leave out possible biases and mistakes. (Bryman & Bell, 2011, p. 313-321)

2.14. Ethical and societal considerations

When conducting a research it is of great importance to consider ethical and societal issues. Ethics within research refers to the standards of behavior you follow during your work and concerns the rights of those who are the subject of your work or those who might be affected by it. The first thing that we have to bear in mind during the whole research process is to show respect and trust for all parties that can either be affected or have any interest in our research. Regarding the data collection and analysis we guarantee that the secondary data and results are not made up or that they are somehow falsified. We have not been hired to conduct this study for someone so we have no pressure from others that could affect the results. Since we have no personal connection or interest in the companies that are our sample for the study, a conflict of interest or biases are not likely to occur. (Saunders et al, 2012, p. 226-235).

In order to ascertain objectivity of the research we have only collected data from official and audited records, based our theories and definitions on peer-reviewed articles and acknowledged textbooks within finance. This is done to make sure that if the study would be reconducted in the same manner with the same time frame, data and methodology the results would be the same irrespective of the researchers academic background or affiliation.

The results of this research will provide managers, investors and the society in general with deeper understanding and more knowledge about whether working capital policies have to be considered before making an investment in stocks. The results of the research will also provide new knowledge within the field of corporate finance and how this relates to financial markets. Moreover, the research will maintain an objective stance avoiding errors in the result or conclusion due to personal opinions or beliefs. The researches have carefully considered the above mentioned points to ensure that the data, findings and conclusion are reliable.
Chapter 3: Theoretical Framework and Literature Review

In this chapter theories and concepts that are relevant for our research are presented and explained. We start with an in depth explanation of the different working capital concepts and continue with an explanation of stock markets. The chapter ends with a summary of previous researches that have been done on the same topic since we will build our empirical part from them.

3.1. Working Capital

The need for good working capital management has existed ever since humans started doing business. However, the concept has been more and more acknowledged since managers have realized what benefits a well-managed working capital can generate. Not even the smallest firms can ignore their working capital but when a firm grows, the management of working capital becomes even more crucial and specialists within the area are employed to take high-quality working capital decisions. According to Arnold (2008, p. 515) working capital can be defined as “the difference between current assets and current liabilities”. Current assets include inventory, account receivables, cash and short term investments. Current liabilities involve account payables and short-term borrowings. Each and one of these accounts are going to be explained later on in this chapter. We have compared definitions from other sources and concluded that this definition often is used and the one that we are going to follow when we refer to working capital in this research.

Working capital management refers to the way that firms are managing their current assets and their current liabilities. If the companies are using the right working capital management through finding the optimal balance between current assets and current liabilities, they are likely to increase their profitability and have a continual flow of cash. (Maness & Zietlow, 2005, p. 97). When the concept of working capital management is mentioned in this thesis this is the definition that we are referring to.

Apart from being unprofitable having a poor management of the working capital is crucial for firm’s survival. The cash flow timeline of firms is a major component in the management of the companies working capital, this is related to the cash flow and timing of the cash flow of the companies. If firms are managing this poorly they are in the risk zone of having liquidity issues which in turn can lead to inability to pay the bills and in worst case bankruptcy (Maness & Zietlow, 2005, p. 5). The cash flow timeline relates to the respective working capital accounts on a time dimension scale. When resources are idle for a long time in inventory, receivables or collection float they are losing value. On the other hand if the longer resources can be retained by legitimate delay of cash payment of payables and accruals value is gained. So the time between the date when the firm receives the cash and the date the cash is paid is called the conversion period. Usually firms will have to pay for resources received before they receive the cash from the manufacturing or selling process. From this perspective the shorter the conversion period is the more efficient are the management of the working capital accounts and less value is lost due to working capital activities (Maness & Zietlow, 2005, p. 6). Finding the optimal working capital is a big debate today, and one of the extreme views is that the optimal level of net working capital should be zero. From this perspective working capital is viewed as an idle resource that provides little or no value at all. The value is then created by the firms fixed assets which are
producing the products of the firms through the raw materials purchased. The production process within firms then creates value that did not exist before. (Maness & Zietlow, 2005, p. 16).

Previous studies have shown that in order to reduce the working capital amount and create a more efficient management firms have to eliminate the non-value adding times. The firms often need a certain amount of working capital in order to deal with unpredictable in and outflows of cash. In order to grasp cash out and inflows of the firms the cash conversion cycle can be an appropriate measure to look at. Firms can then through an understanding of the timing of their cash flows reach a more efficient management of their working capital. By gaining better control of their working capital components the firms can increase their performance as they with more knowledge easier can find an appropriate mixture of how to allocate and invest their available resources in order to maximize the economic benefit (Hofman & Kotzab, 2010, 308-309).

3.2 Current Assets

The current assets are normally said to be the accounts that over the course of the business or operating cycle are going to be turned into cash (Brooks, 2013, p. 58). Current assets are crucial for a company in order to be able to meet obligations that become due. Current assets are expected to give a rise to cash that is needed to pay current liabilities so the relationship and management of these two accounts are important. (Horngren, Sundem, Elliott & Philbrick, 2012, p. 166). If the current assets are understood and managed in the correct way the optimal level of each asset is more likely to be reached. This will lead to minimized risk, a preparation for uncertainty and increased overall performance for the firms. The increased performance will show through both increased accounting profits and higher stock returns. (Harris, 2005, p. 52). The current assets account includes several categories:

3.2.1 Accounts Receivables

Accounts receivables or trade receivables which it sometimes is called are the amounts a company has outstanding or the customers owe them where the company has delivered a good or service and given the customer an extending credit (Horngren et al, 2012, p. 62). In the world today most sales are through credit and this trend is growing. Credit sales make it challenging for companies to measure revenue and managing the assets. It is of importance that they manage the accounts receivables well so they receive their payments in time. The main benefit for companies to offer trade credit is that it can boost the sales of the company (Horngren et al, 2012, p. 254). It is common that today's companies have large investments in receivables yet there is evidence that a lot of companies lack formal policies for how to manage their receivables and credit extension policy (Maness & Zietlow, 2005, p. 128-129).

For the financial managers to be able to add value for the company’s shareholders they can properly influence three areas: the company’s aggregate investment in receivables, the credit terms and the credit standards (Maness & Zietlow, 2005, p. 129). Figure 3.1 can show how the management of receivables has influence upon the shareholder value. This figure highlights the major issues for how the financial manager can through credit
management influence the potential share value. (Maness & Zietlow, 2005, p. 129-130).

Offering customers a credit is an opportunity cost since the money could be invested elsewhere and create a higher firm value. However, if the firm reduces their account receivables there is a risk of lower profitability since some customers might turn to competitors that offer credits so by offering credit the firm can increase their total sales.

For the firms to achieve an efficient collection period or cash flow, the credit management plays a big role. The manager of the trade credit must first decide upon if the customer should be granted the credit. As a general framework for this decision the financial manager can use the five C’s of credit. This means that he will have to insure the customer’s Character, Capacity to pay, Collateral and Capital. After this assessment it is the final C in the analyzing procedure and that is to determine the current business conditions. When this is done he will have to form the credit terms that will be offered to the customer. Generally the longer period granted the longer the customer will take to pay. An issue for firms here is that they cannot set this credit terms independently, in order to stay competitive in the industry they must offer credit terms that can compete with the other firms in the industry (Maness & Zietlow, 2005, p. 15).

![Figure 3: Credit management influence on shareholder value.](source: Maness & Zietlow, 2009, p. 129)

### 3.2.2 Inventory

Inventory and the management of this component in the current assets are important for companies since this generates revenue. The inventory includes raw materials, work in progress products, and finished goods. (Brooks, 2013, p. 430) (Maness & Zietlow, 2005, p.100). Managing inventory is a challenge for the companies, finding the appropriate inventory level becomes a tradeoff between the additional cost of carrying too many items in the inventory and sales lost because inventory is running out or stoppage costs associated with raw materials running out. Too much inventory creates additional costs in form of storage costs, potential spoilage and obsolescence (Brooks,
Furthermore a challenge when it comes to inventory management is another trade-off between the cost difference of stocking inventory and the cost of holding inventory. For example if costs of ordering items decreases you can order fewer items per order and hence stock less items and in this way reduce cost but in the case of vice versa and an increase in ordering cost you will order larger quantities as it then might become cheaper to stock items (Maness & Zietlow, 2005, p. 101). The goal of the financial manager becomes to choose an order quantity that results in the optimal trade-off between ordering costs and holding cost which will result in that the cost of managing the inventory is as low as possible (Maness & Zietlow, 2005, p. 102-103)

There are several different aspects in how a company can manage the inventory leading to minimizing the costs.

The first method is the ABC inventory management method. This method sorts the inventory into three different categories depending on how critical they are for the company. Group A will for example include large-dollar items or items that have high spoilage and will need closer attention and are often checked on a daily basis in order to prevent potential spoilage. Group B is essential items but not with the same spoilage risk as in group A. Moreover group B is checked on periodic basis and the cost of storing these items are not as high as the one in A. The last group C is nonessential items which are monitored infrequently and often only ordered when the inventory level hits zero (Brooks, 2013, p. 430).

A second aspect is the redundant inventory items which aim to keep items in backup if the current operations fail (Brooks, 2013, p. 431-432). For example this works in a similar way to having a backup power generator if there would be a power outage. This is more of a method that can be used additionally with other methods rather than a standalone inventory policy.

A third aspect and common method in finding the appropriate level of inventory is the economic order quantity (EOQ). The EOQ is used to minimize the total cost that is associated with the inventory management. It is the balance between the ordering cost and holding costs (figure 4) and the EOQ level can be derived from the formula in figure 5 The EOQ derived from the formula is the quantity of items which should be order each time (Maness & Zietlow, 2005, p. 103).
The fourth aspect is the just-in-time (JIT), this is another type of method in handling the inventory. Using a JIT system means that a company is trying to produce only what is needed with only the necessary raw materials at the needed time, hence reducing or eliminating waste and improving the productivity. In other words the company works closely with suppliers and customer to reduce the time they have finished goods in inventory and the overall inventory and through this reduce the holding costs. (Brooks, 2013, p. 436).

3.2.3 Cash

One important decision that firms have to make is regarding their allocation of total assets to cash and securities. This decision is highly related to the working capital investment decisions within the firm and also regarded to be linked towards the company’s risk posture (Maness & Zietlow, 2005, p. 532). It could be questioned why a company would hold big amounts of cash when they instead could invest in short-term securities that pay interest. One reason for this preference of holding cash over securities is to have liquid assets ready to pay bills that come to due and holding securities which you would need to sell every time a payment comes to due can incur high transaction costs. The management of cash is something that the financial manager will have to approach in similar fashion to management of the inventory. It becomes a trade-off in weighing the opportunity cost in lost interest of holding cost compared to
the savings of the transaction cost associated to investments in short-term securities (Brealey et al, 2011, p. 794-795).

Maness & Zietlow (2005, p. 533) suggest three different approaches towards the management of how to allocate the portion of assets between cash and short-term investments; a low liquidity strategy, moderate liquidity strategy or high liquidity strategy. The low liquidity strategy is focused on keeping the allocation of assets to cash and securities at a minimum, if the firms does this without overinvestment in receivables or inventory this should enhance profit with the drawback of increasing the business risk (Maness & Zietlow, 2005, p. 533). Firms operating with the low liquidity strategy are most likely within a business where the future is relatively stable and they are more certain about their future needs of cash flow and hence there is not a need for a significant level of liquid reserves (Maness & Zietlow, 2005, p. 41). Moderate liquidity strategy on the other hand uses a greater investment in cash and securities leading to a smaller risk associated to it. Lastly, the high liquidity strategy which is a higher proportion of the total assets allocated towards the holding of cash and securities. Bankruptcy risk and risk of default on securities are lower but so is the profitability within this strategy (Maness & Zietlow, 2005, p. 533).

Financial managers have to decide how much of their total assets should be allocated towards cash or securities. This becomes the work for the cash manager to first determine the “target mix” for the company which refers to their ideal allocation of cash and securities. This can be done on the basis of historical averages, some financial model or simulation. When this target mix is set within the firms the second management that has to be done revolving the cash is to manage the balance when it deviates from the target mix (Maness & Zietlow, 2005, p. 535). As mentioned above this will come to the cash manager to weigh the trade-off between the opportunity of the interest forgone for holding cash compared to the transaction costs associated with the short-term securities (Brealey et al, 2011, p. 794).

What mainly separates these different approaches towards the cash management is the risk/return trade-off this can relate to the firms preferences and risk averseness. Abuzar (2004, p. 58) has found in his study about liquidity management that even though there sometimes are liquidity levels that are desirable firms sometimes will have unavoidable levels of liquidity. His study finds evidence that unnecessary costs and losses of companies can be attributable by the firms holding excessive liquidity (Abuzar, 2004, p. 58).

3.2.4 Short term Investments

Short term investments are investments which are done temporary in marketable securities with cash that otherwise would be idle. These are investments that are highly liquid and normally companies expect to convert items in this account into cash within 12 months after the date on the balance sheet. Even though this might not be the case every time they are classified as current assets as companies have the intention to convert them to cash if needed. Short term investments include any kind of notes, bonds and stocks that can be readily sold (Horngren et al, 2012, p. 498). Here the management will have to make two decisions, first how much of their total assets they are going to allocate to the cash and short term investment accounts. This decision is closely linked together with the working capital investment decision. Secondly they will have to
decide how they are going to allocate their most liquid assets between cash and short term securities (Maness & Zietlow, 2005, p. 532). In order to be able to meet the current liabilities that comes to due companies need liquid assets. Cash being the most liquid assets there is an opportunity cost associated to it in form of forgone investment interest income or increased interest expense. On the other hand there is transaction costs associated with the securities purchases, sales and related funds transfers. As mentioned in the section about cash the management of the company will have to set a target mix of their ideal mix of cash and securities (Maness & Zietlow, 2005, p. 535).

3.3 Current liabilities

Current liabilities are liabilities that come due within the next year or within the normal operating cycle if it would be longer than one year. Current liabilities are closely related to current assets since current assets are supposed to raise the cash that is needed to pay the current liabilities. (Horngren et al, 2012, p. 166). The liabilities accounts include the following categories:

3.3.1 Account payables

Account payables are generated from the day-to-day activities of firms. When firms purchase supplies or services that will be used in their production but do not pay for them immediately it goes in under the category of account payables. These supplies and services are bought on credit and are then used to generate income before the invoice has been paid. Sometimes suppliers offer a cash discount for early payments. However, this is not always beneficial for the buyer. The discount rate must be higher than the interest rate the company would have to pay for a loan over the same period as the discount period. If no discount rate is offered the company benefits the most from using the whole credit time and pay on the last possible date. Paying after due date will give a penalty cost and should be avoided. Using account payables as financing can be called a spontaneous source of financing. (Maness & Zietlow, 2005, p. 236). The advantages with account payables are that they are convenient, informal, cheap and available for companies of all sizes (Arnold, 2008, p. 481-482).

3.3.2 Short-term borrowings

If a company has excess cash they can use it for making new investment but if they in opposite have cash shortages they might not have any other option than making a short-term borrowing. Banks are the main suppliers of short-term borrowings and they often come as a loan. Finance companies also have big sources of cash, however they mainly finance receivables and inventories. Moreover, firms can sell short-term commercial paper or medium-term notes to banks. Banks then relend the money to another firm or individuals and can make a profit by charging the borrowers a higher rate of interest than they have offered to the lender. Sometimes it can ease to take use of a bank to arrange these commercial papers, it saves the lender the trouble to search for borrowers. (Brealey et al, 2011, p.805-810).
3.4 Working Capital Policies

According to Brian (2009, p. 44) “Working capital policy is that set of principles and plans that establishes a course of action for dealing with current assets and current liabilities”. The main objective in the working capital management is to maintain an optimal balance between the working capital components (Filbeck & Krueger, 2005, p. 11). In other words the main focus is on improvement of the company’s flow of funds which is the strategy to maintain an efficient level of current assets and liabilities. So the company has larger inflows of cash then outflows but it’s not limited to the actual in and outflows but also to the timing of the cash flow is of great importance. (Brooks, 2013, p. 414) Working capital policies can be divided into three different categories (Arnold, 2008, p. 535-536);

- Aggressive policy
- Neutral policy
- Defensive policy

A common distinguishing factor amongst the different working capital policies is the size of the level of working capital (Current assets minus current liabilities). Belt (2009, p. 44) on the other hand argues that this is not the best way to distinguish between these different policies and that this measure is misleading especially for smaller businesses. Instead he believes it is easier to look at the matching of the cash inflows to cash requirements. Furthermore he argues that the real determinants of the working capital are the liquidity of the current assets of the firm and the “deferability” of the current liabilities of the company.

Adopting an aggressive working capital policy means that the firm is working with a low level of current assets as percentage of the total assets. It can also be when they adopt a financing decision in having a high amount of current liabilities as percentage of their total liabilities. (Afza & Nazir, 2007, p. 11). A risk associated with the aggressive approach is that a low level of current assets could lead to low level of liquidity and stock-outs and then make it more difficult for the company to maintain smooth operations (Afza & Nazir, 2009, p. 19-21). Arnold (2008, p. 535-536) describes the aggressive policy as something that likely is taking place within companies that are operating in an environment with great certainty over their future cash flows and operations, this enables them to keep their working capital at low levels. Companies would hold minimal stocks of cash and inventories and would push customers to pay early while pushing trade creditors and suppliers to increase their time-interval between the receipt and payment for their inputs. The aggressive working capital policy can be associated with higher risk and return. The benefits of adopting an aggressive policy is varying between industries and also within industries; Belt (2009, p. 46) listed some industrial characteristics were an aggressive working capital policy can be beneficial, First, above-average profit margins, secondly, current assets that are high proportion of total assets, thirdly high proportions of current liability financing and lastly if there is an above average inventory turnover. So the benefits out of the traditional way of looking at an aggressive working capital policy (low working capital) are by gaining higher profits from the reduction of costs. The main risk with the aggressive policy is the potential inability to meet upcoming short-term obligations. Having large levels of current liabilities compared to the current assets increase the risk of not being able to pay short-term obligations and then increase risk for failure and bankruptcy.
The defensive working capital policies emphasizes that the company is having large cash or near-cash balances, generous customer credit and high amount of inventories. Adopting this approach can be beneficial for firms that are working within an uncertain environment where they need the extra buffer of inventory in order to not risk the opportunity cost of lost sales because of for example stock-outs or production stoppages. Furthermore they can also have customers that demand a longer credit then the suppliers can offer so therefore they need to stock up more in order to be able to meet their customers credit demands. (Arnold, 2008, p. 535). Money tied up in the working capital accounts have opportunity cost associated to it. Furthermore there are also costs in form of storage costs and administration cost (Arnold, 2008, p. 529).

Arnold (2008, p. 530) states that the working capital investments are of great importance for companies success and can rely much upon having well thought out policies in how to manage this. The defensive policy towards working capital management on the contrary to the aggressive policy is associated to lower risk and return, the larger amount invested in current assets reduces the risk of the firm but can lead to a lower profitability. (Afza & Nazir, 2009, p. 21).

Neutral working capital policy is lying in between the aggressive and defensive policies. The neutral working capital policy in comparison to the aggressive and defensive is far less explored and there is little previous research about it. However, it can be established that the companies that apply a neutral working capital policy are trying to balance the advantages and the drawbacks from both policies. This is done as an attempt to increase the profitability of their business. We can see in Figure 6 how the different working capital policies differ towards each other. This research intends to help with the definition of the working capital policies and also try to establish the neutral working capital policy.

**Figure 6:** The different working capital policies
(Source: Arnold, 2008, p. 536)
3.5 Cash Conversion Cycle

The cash conversion cycle is a popular measure of the working capital management. It measures the number of days in average between the purchases of raw material until the firm receives money for their finished sold product. (Deloof, 2003, p. 574).

According to Brooks (2013, p. 414) the cash conversion cycle can be calculated with the following formula:

\[
\text{Cash Conversion Cycle} = \text{Production Cycle} + \text{Collection Cycle} - \text{Payment Cycle}
\]

The first component is the production cycle. It is calculated in three steps:

\[
\text{Average Inventory} = \frac{\text{Beginning Inventory} + \text{Ending Inventory}}{2}
\]

\[
\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}
\]

\[
\text{Product Cycle} = \frac{365}{\text{Inventory Turnover}}
\]

The second component is the collection cycle. There are three steps to calculate the collection cycle:

\[
\text{Average Acc Receivables} = \frac{\text{Beg Acc Receivable} + \text{End Acc Receivable}}{2}
\]

\[
\text{Acc Receivable Turnover} = \frac{\text{Total Sales}}{\text{Average Acc Receivables}}
\]

\[
\text{Collection Cycle} = \frac{365}{\text{Acc Receivable Turnover}}
\]

The third component is the payment cycle. It is calculated as following:

\[
\text{Average Acc Payables} = \frac{\text{Beg Acc Payables} + \text{End Acc Payables}}{2}
\]

\[
\text{Acc Payables Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Acc Payables}}
\]

\[
\text{Payment Cycle} = \frac{365}{\text{Acc Payables Turnover}}
\]

The production cycle represents the time that it takes for a firm to produce and then sell their product. The collection cycle estimates how long on average it takes for customers to pay for their products. Customers who pay on delivery are not part of the collection.
cycle but both cash sales and credit sales are tracked. Since companies often pay suppliers after delivery, cash does not flow out at the same time as an order from the suppliers is placed. This delayed outflow is called account payables cycle or payment cycle. (Brooks, 2013, p. 414-417)

The cash conversion cycle can be used to determine what working capital policy a company has implemented which is what we are going to use it for. If this cycle is short with a low number of days, the firm has fewer resources that are needed to be tied up meaning that the amount of current liabilities are high. If this is the case, the company is using an aggressive working capital policy. If the cycle instead is long, more money is invested in the current assets and the defensive working capital policy is used. If the cycle is somewhere in between what is estimated to be an aggressive or defensive policy it is called a neutral policy. (Arnold, 2008, p. 530-536)

It is said that most companies in general benefit from having a reasonably short cash conversion cycle since it will generate more value for the shareholders in the long-run. Big corporations are moving more and more towards having a working capital close to zero due to this fact. (Maness & Zietlow, 2005, p. 15). Deloof’s research (2003, p. 574) argues for the opposite saying that a long cash conversion cycle might increase profitability since it often leads to higher sales. However, he also takes into account that profitability and returns can decrease with the cash conversion cycle, if the cost of investments in working capital increases faster than the benefits of holding more inventories and concede more trade credit to customers.

The cash conversion cycle can in some cases show a negative number of days. This does not have to be something bad; instead it indicates that the company is using their customers and suppliers as a source of interest-free financing, instead of having cash tied up in their own operating process. A negative cycle can be very attractive for company growth. (Hofmann & Kotzab, 2010, p. 310)

3.6 Measures for the different working capital policies

Investment Policy

The first measure is the investment policy (IP) and it is used to measure variables of working capital. This ratio is used to determine what type of investment policy a company has adopted. In this study we will use this ratio as one variable along with the cash conversion cycle to determine what working capital policy a company has adopted. If this ratio is low, it means that the company is following a rather aggressive policy. (Afza & Nazir 2009, p. 23)

\[ IP = \frac{Current\ Assets}{Total\ Assets} \]

Financing Policy

The second ratio is the financing policy (FP) and it is utilizing higher levels of current liabilities and not much long term debt. The current liabilities to total asset ratio is used in this research to determine what working capital policy a firm has adopted. If the ratio is high, it means that the company is following a relative aggressive policy. (Afza & Nazir 2009, p. 23)
Working capital to total assets ratio

Finally, the working capital to total assets ratio has normally been used as a measure of the company’s liquidity. Where a low or negative ratio indicates that the firm may have difficulties covering their current liabilities. However this can also be an indicator of the firm’s working capital policy and management. Where a low or negative ratio indicates that the firm is operating with a low working capital which would mean that they are having an efficient working capital management. Using this ratio is appropriate since we are comparing companies of different sizes and using the total assets removes the issue of size difference.

\[ FP = \frac{\text{Current Liabilities}}{\text{Total assets}} \]

\[ WC/TA = \frac{\text{Working Capital (CA – CL)}}{\text{Total Assets}} \]

3.7 Risk return tradeoff

The goal for all financial managers and investors is to maximize the return while at the same time minimize the risk. The risk return tradeoff is concerned with how much risk one can bear and at the same time remain comfortable and satisfied with the return that an investment generates. (Brooks, 2013, p. 242) Relating the risk and return tradeoff to working capital and especially to the different working capital policies, there has been some discussions within the area. The aggressive policy has been connected with high risk which logically also yields a higher return. The defensive policy on the other hand is associated with lower risk resulting in lower returns. (Weinraub and Visscher 1998, p. 11).

Within the financial markets you can separate between two different types of risk, specific risk and market risk. The specific risk is something that investors through diversification can eliminate within their portfolios. This risk refers to risk specially revolved around individual companies but which can also be something companies share only with their immediate competitors. Apart from this specific risk as stated there is the market risk which is the unavoidable risk regardless of the diversification of the portfolio. (Brealey et al, 2011, p. 198). This study will investigate if there is a possibility for investors through looking at the firm’s working capital policy to determine the risk and potential reward of an investment.

In order to find out the risk of an individual security you will need to take the market risk of that security into considerations as well. This will then come down to measuring how sensitive the actual security is to the market movements. This sensitivity to the market movements is usually measured by the beta. If the stocks have a beta that is greater than 1.0 this means that it amplifies the markets movements. Furthermore beta values from 0 to 1 means that the stocks are moving in the same way as the market movements but not as far. (Brealey et al, 2011, p. 202).
The beta calculations are important for investors since this measure can help with the determinations of the portfolio risk. Since as stated above it is important for investors to be aware of the different risk and returns of their portfolios. The stocks betas hence become important since the portfolio beta will be determined by the average betas of the stocks included in the portfolio. (Brealey et al, 2011, p. 203-204).

\[ \beta_i = \frac{\sigma_{im}}{\sigma_{m}^2} \]

The calculation from a statistical perspective would be calculated as in the formula above, where the \( \sigma_{im} \) is the covariance between the stock returns and the market returns and \( \sigma_{m}^2 \) is the variance of the returns in the market. This measure of the covariance divided by the variance will measure a single stock's contribution to the portfolio risk. (Brealey et al, 2011, p. 204).

However, it is not enough to consider the beta when evaluating risk. Standard deviation has to be taken into consideration as well since it in finance often is used to measure the total risk of assets and it also includes the diversifiable risk. The standard deviation shows how much the spread deviates from the mean and a bigger spread means a higher standard deviation. Standard deviation can also be used for measuring the uncertainty of future returns. (Hull, 2012, p. 2-9)

### 3.8 Stock market and return

Stocks are a type of security or asset that gives an investor partly ownership in a corporation and the right to part of the corporation's earnings. Stocks are traded on two major markets, the primary market and the secondary market. The primary market is the market where companies first sell their shares to the public. When a company goes public and sells stocks on the primary market it opens its ownership to anyone who has the money to invest. The secondary market offers the possibility for current or new stockholders to either sell their stocks or buy more stocks. Companies choose to issue stocks to get direct financing for their business activities. Investors are purchasing stocks either to receive a regular income from stock dividends or to make money from short term fluctuations in stock price. (Brooks, 2013, p. 210-214). The stocks represent the equity of the firms and the value of the stocks is reflecting the company’s performance (Arnold, 2008, p. 361). Today's stock markets are complex and finding a potential profitable stock to purchase can be hard. Investors can however analyze the balance sheets of companies that they are interested in to evaluate their performance. The balance sheets reflect how the companies have performed in the past but more importantly they can help in giving an indication on what the companies plan for the future and if their stocks will generate high returns.

Stock returns are often used when analyzing financial data rather than raw stock prices. The advantage of using returns is that they show the revenues that are relative to the size of the initial investment. Moreover returns are said to be more appropriate to use when conducting statistical analyzes. There are two different measures of returns, the net returns and the log returns. (Ruppert, 2004, p. 75-76). The net returns are calculated using the following formula:
Where Pt-Pt-1 is the revenue during the holding period and Pt-1 is the initial investment at the start of the holding period.

Log Returns are calculated in the following way:

\[ r_t = \log(1 + R_t) = \log \left( \frac{P_t}{P_{t-1}} \right) = P_t - P_{t-1} \]

Where P is the “log price” and t and t-1 represent the time of the price. One advantage with using log returns rather than net returns is the simplicity of multiperiod returns and they give more statistical freedom. Since many stocks pay dividends it is possible to include the dividends into the calculations of return. (Ruppert, 2004, p. 75-78). However in this research we have chosen to focus upon only the price returns.

**3.9 OMX Stockholm Stock Exchange**

The Stockholm Stock Exchange was founded in 1863 and is the primary stock exchange of the Nordic countries. 253 companies are listed on the Stockholm Stock Exchange and they are divided into three different segments. The Large Cap segments include companies with a market value over one billion Euro. Companies with a market value between 150 million and one billion Euro are categorized as Mid Caps and companies valued under 150 million Euro are called Small Caps. The companies values are revised every six months. (Nasdaqomxnordic, 2013). The 253 companies on the Stockholm stock exchange are categorized in the following:

- Large Cap 61
- Mid Cap 67
- Small Cap 125

(Nasdaqomxnordic, 2013)

The companies are also classified depending on what industry they belong to. There are ten different industry sectors and they are oil & gas, basic materials, industrials, consumer goods, healthcare, consumer service, telecommunications, utilities, financials and technology. (Nasdaqomxnordic, 2013).

**3.10 Previous studies on working capital, the different policies and firm performance**

Working capital is not only interesting and important for the company’s management but also for academic researchers. A lot of research has been carried out on the concept, however as far as we have found little that is related to the different working capital policies and their effects to firms stock performance. Instead researchers have focused on both working capital management and firm profitability or on the different working capital policies and how they affect firm performance.
3.10.1 Working capital management and firm performance

Lazaridis and Tryfonidis (2006, p. 26-35) investigated the relationship between corporate profitability and working capital management on companies listed on the Athens Stock Exchange. They used a sample of 131 firms over the timespan 2001-2004. The cash conversion cycle measures the working capital management and gross operating income is used to measure profitability. The regression analysis presents a negative relationship between cash conversion cycle and profitability which confirms the view that a decrease in the cash conversion cycle will generate more profit. Furthermore, they substitute the cash conversion cycle for accounts payables and find a negative relationship between gross operating profit and accounts payables as well. According to the researchers this makes sense since the longer a firm delays its payments the higher level of working capital levels it reserves and uses in order to increase profitability. In the next analysis account payables are replaced with account receivables and it shows a negative relationship to gross operating profit. This indicates that managers can increase profitability by reducing the credit time given to customers. In the last regression analysis they use inventory and gross operating profit and once again find a negative relationship. This result is however not statistically significant. The conclusion is that managers can increase profits by keeping the cash conversion cycle on an optimal level.

Gill, Biger & Mathur (2010, p. 1-8) conducted a research with the goal to extend the work of Lazaridis and Tryfonidis. They explore the relationship between working capital management and profitability but this time on 88 American firms listed on the New York stock exchange during the years 2005-2007. Using Pearson's correlation they found a negative correlation between the gross operating profit and accounts receivables. This indicates that if the average collection period increases it will have a negative impact on the profitability. From their regression analysis they received a positive and significant result between the cash conversion cycle and profitability, however the higher the cash conversion cycle, the higher the profitability of the firm. They concluded that profitability can increase if firms manage their working capital well.

A study by Deloof (2003, p. 573-585) examined the relationship between working capital management and firm performance in Belgium. The sample used in the research was 1,009 large Belgian nonfinancial firms and the time horizon was 1992-1996. The cash conversion cycle is used to measure the working capital management and gross operating income is used to measure the profitability of the firms. Pearson's correlation shows a negative relationship between the cash conversion cycle, number of days account receivable, number of days inventories, number of day account payable towards firm profitability. The regression analysis however shows a negative relationship between the cash conversion cycle and profitability but it is not high enough to be significant. The conclusion drawn from this research is that companies can increase shareholder value by reducing number of day’s accounts receivable and inventories as much as possible.

Vishani & Shah (2007, p. 267-281) have conducted a study that focuses upon the working capital management and its relationship towards profitability. The study has a main focus upon the interrelationship between liquidity and profitability. They have conducted the study upon the Indian consumer electronic business during the timespan
1994-1995 to 2004-2005. They have measure the relationship between the liquidity and profitability through simple correlation coefficient and test of its significance. They have used Current ratio, finished goods inventory holding period, average collection period and average payment period of the companies they studied, for the measurement of profitability they used return on capital employed ratio. Their findings were that they could not establish any relationship within the industry between liquidity and profitability. This phenomenon was something that varies within the industry between companies. Furthermore they found that working capital management policies have fundamental impact upon the firms profit performance.

Awad & Al-Ewesat (2012) did a study in Palestine where they investigated the impact working capital had upon stock prices in the Palestinian Exchange (PEX). They conducted this study through testing different working capital indicators with extracted from the financial reports of the companies on the PEX. The variables they used within the study to measure the working capital was the current ratio, receivables turnover and inventory turnover and for the measure of the stock price they used the earnings per share as the indicator. They tested this through regression analysis and econometric techniques of Unit root test, co-integration and granger causality test. The findings of this research were that for firms listed on the PEX the working capital components was affecting the stock price.

Kahn et al. (2011) examines the hypothesis that working capital management has effect on profitability and that there is a trade-off between risk and return. The sample of the study was 92 Pakistani firms from the textile sector over the period 2001-2008. Pearson’s correlation analysis and a regression analysis are used to test if there is a correlation between working capital, profitability and the risk. The results of the analysis indicate that working capital have sound effect on profitability. Moreover they establish that there is a risk-return trade-off factor.

3.10.2 Working capital policies

Sabri (2012, p. 50-59) has investigated how different working capital policies affect the profitability of Jordanian companies. The study has a sample of 45 firms and is conducted over the period 2000-2007. First the researchers establish whether the firms have a low cash conversion cycle and are using the aggressive policy or if they have a high cash conversion cycle and are conservative. When the companies are categorized into either aggressive or conservative policy they are then tested against profitability of the firms. The results give the indication that the aggressive policy increases profitability of the firm’s and is recommended for managers to use.

The study by Weinraub & Visscher (1998) investigated if there are any significant differences in the relative relationship between aggressive and conservative working capital policies between industries. In order to determine the aggressiveness of the firm’s working capital policy they used a ratio of current assets to total assets where a lower ratio would indicate a more aggressive approach. The sample they investigated was a total of 216 companies divided into ten different industries during the time period of 1984-1993. In their results they found that it’s common that when a company is following an aggressive policy towards working capital assets it is often balanced with a more conservative working capital financial policy. Moreover they also found that there was stability in the relative industry ranking of aggressive/conservative asset policies.
over time.

Afza & Nazir’s (2007, p. 11-21) study investigated the relationship between working capital policies and profitability. Furthermore they looked into how the different working capital policies are related to the risk of these firms. This study used two different working capital policies in their measure, aggressive and conservative. They studied 208 listed companies on the Karachi Stock exchange during the time period 1998-2005. The test that has been used is a cross-sectional regression model between the working capital policies, profitability and the risk of the firms. Their findings were that there was a negative relationship between both the working capital policies and profitability of the firms and also between the level of current assets, liabilities and the risk of the firms.

In further studies Afza & Nazir (2009, p. 19-30) investigates the impact that an aggressive working capital policy has upon firms profitability. Their sample in this study was on 204 nonfinancial firms listed on the Karachi stock exchange the firms was distributed into 17 various industry sectors and the time period was 1998-2005. In order to define the difference between the aggressive and conservative working capital policy, they used the aggressive investment policy (AIP) and the use of this measure was an extension of an earlier study by Weinraub and Visscher (1998). AIP is when the firms have minimal level of investment in current assets in comparison to the fixed assets. On the contrary a conservative approach has a greater amount of capital in liquid assets and hence the opportunity cost of less profitability. Furthermore in order to evaluate the aggressive working capital policies and financing policies they used return on assets and Tobin's q (Total market value of a firm/Total asset). Their study found that an aggressive approach does not generate more profit compared to the more conservative as far as book value is concerned. Furthermore they found that investors give more weight into stocks from firms that adopt an aggressive approach towards their management of the working capital.

In Belts (2009) study working capital policies are explored in depth with a focus on small businesses. He concludes that working capital should be expressed in terms of asset liquidity, deferability of sales and composition of financing rather than in simply current assets minus current liabilities.

3.13 Summary of Theoretical Framework

Working capital is the guideline for this thesis. The definition of working capital has been extracted from corporate finance literature. The main aspects of the working capital is built up around the balance sheet accounts current assets and current liabilities and is concerned with the firm’s division of liquidity and how they manage their liquid assets.

To evaluate and compare firm’s different working capital management we have decided to look at their respective working capital policies. The policies can be categorized into aggressive, neutral or defensive. The cash conversion cycle measures the number of days in average between the purchases of raw material until the firm receives money for their sold product. We will use the cash conversion cycle along with the aggressive investment policy, aggressive financing policy and the ratio of working capital to total assets in order to determine the working capital policy of the firms. A similar method
was used in previous studies by both Afza & Nazir(2007) and Deloof(2003).

In contrast to the previous research done within this topic this thesis will investigate the impact working capital policy has on the firm’s stock performance rather than on their accounting profitability, since our intention is to create a bridge between accounting data and firm’s equity value. From the stock prices we will calculate the stock returns and investigate the relation between the stock returns and working capital policies.

In previous studies the different working capital policies have been linked to the financial concept of the risk and return trade-off. This has shown that the aggressive approach is related to a greater return with a higher risk and the defensive on the other hand is associated with lower risk and lower return. This study will investigate if this statement can be applied on the Swedish market.

Previous studies have come to the conclusion that a well-managed working capital leads to increased profitability. However, it is hard to determine what the optimal level of working capital is and many firms struggle to find this level. Therefore we find it relevant to put in research around the cash conversion cycle and working capital ratio as drivers for the stock return, especially on the Swedish market where little research regarding this subject has been done.
Chapter 4: Practical Methodology

This chapter aims to present and explain the practical methodology of the research. First the sample, time horizon and collection method for the research are presented. Next, the different variables that will be used in our statistical tests are explained. Furthermore the statistical test used will be explained and the chapter ends with a listing of the hypotheses.

4.1 Data sample

Our data sample is composed of all companies listed on the Nasdaq OMX Stockholm including all three segments, Large Cap, Mid Cap and Small Cap. Some companies will however be excluded from our sample due to different reasons. We first excluded all the companies within the financial sector; this was due to the fact that financial firms have a different financial characteristics. Working capital management is very much interrelated to the supply chain management and this includes credit policy, inventory management and the general management of the cash in- and outflows from suppliers and customers (Maness & Zietlow, 2005, p.99). These characteristics does not exist within the financial sector as they are operating in a different way, so including them within this study could mean that they would bias the results or create misleading result of the study.

Before we started the data collection we decided to eliminate firms that are using a different fiscal year and not closing their annual year the 31st of December. The main and foremost reason for these eliminations is due to our time constraint and that we will have to finish the thesis in time for our deadline. In order to get consistency the reports would have to be recalculated by transforming the different quarterly reports into the same fiscal year as the rest of the reports. This would be very time consuming and could create flawed numbers. Moreover, the firms with different fiscal years have a risk of the sample being biased by seasonality which would skew the results and make the research less reliable. Some companies will be excluded due to the reason of them being listed after the time span we have in our study and also if they have been delisted during our time span. This as we would then not being able to collect the same data from these firms as from the others within our sample. Furthermore, two companies are excluded since they have changed the currency they are presenting their numbers in during our sample period. Since the exchange rates fluctuate over the years we have decided to not convert the currencies, it would result in misleading numbers and instead we excluded these companies from our sample. One company made a change in their accounting principles and is unsuitable to include due to inconsistency in their reporting’s. The firms with financial data missing includes some firms where we did not find annual reports for some years within our study and also includes firms that have missing data in the annual reports, for example no sales which then could influence the results too much. Lastly, there are a few companies that have extremely high or low numbers compared to earlier years and after evaluating them on a deeper level we consider them to be outliers that would be to influential and hence skew results in our statistical analysis. In order to identify clear outliers we have used SPSS and testing our data for normality.
Table 1: Excluded companies

The companies in table 1 are all excluded from our sample. From the beginning the sample consisted out of 253 listed companies. After the exclusions due to the above mentioned reasons the sample is 155 companies. For each company we have collected financial data from their annual reports between the years 2009-2012. This gave us a total of 620 observations. Table 2 shows how many companies from each sector are included in our study.

Table 2: Companies in our sample divided into sectors.

4.2 Time Horizon

The time period over which we are conducting the study will be from 2009-2012. The main reasoning behind the choice of time frame is that it is long enough to see trends in our observations and results. Since the data covers more than one year the results can be generalized and are more trustworthy. However, an even longer time period is always preferred but since the data collection of this research is very time consuming and the fact that the researchers have a deadline the chosen time frame is both reasonable and possible to accomplish.

Even though our actual time frame is between 2009-2012 we have collected some data from 2008 as well. The reason for this is that in the calculation of the cash conversion cycle numbers for the beginning of the years are needed, and the beginning of year 2009 is equal to the ending of year 2008.

4.3 Data collection method

The first step of the data collection in our study has been collected manually from the firm’s annual reports. We designed our own database in Excel where we collected all the numbers directly from the annual reports in order to get the variables used in our
We decided upon manually making the calculation instead of extracting ratios from the annual reports in order to get the calculations coherent for all the firms. This increases the validity and creates more accurate results. The accounts needed for our variables/calculations were:

- Total Sales
- Cost of Goods Sold
- Fixed Assets
- Current Assets
- Current Liabilities
- Accounts Receivables
- Inventory
- Account Payables

For the accounts payables, accounts receivables and inventory we also collected the numbers from the year before our sample period. This was since these calculations needed an average based on the beginning and ending accounts. The other accounts were collected over the four years in our time horizon. We used the year end or 2011 Q4 reports as proxy for companies that had not released their annual reports for 2012 before the 25th of April 2012. This due to the time limit and we had to start with the statistical tests in order to be able to conclude the study in time. Since our sample is as big as 155 companies and over the time span of four years the data collection was a very time consuming process. This part of our data is collected manually and we are well aware of the risk that human errors could occur. However we are double-checking the numbers in an attempt to avoid or minimize the risk of errors.

The second step in our data collection consisted of collecting historical data on stock prices of each firm and it has been collected through the official database called Thomson Reuters DataStream. The prices we collected were the daily stock prices for the companies throughout our time horizon.

When these two steps were completed we combined the data and finalized our Excel database. We placed all the numbers collected from the annual reports together with the stock prices in the Excel sheets and conducted the calculations in Excel since doing the calculations in Excel is time efficient and rather simple compared to doing it manually. Lastly, the size and to what segment each company belongs to is coded so that it easily can be transferred to SPSS where the statistical test will be done.

### 4.4 Determination of the policies

There is little evidence from previous studies in regards to how to make a clear distinction between the different policies. There is no defined level which you can use as to categorize the firms into different policies. We have chosen a simple method were we divide our sample in three different policies based on the 2009 results of their working capital to total assets ratio. It would have been optimal to use the numbers for 2012 but since some of the numbers for 2012 are taken from year end reports and not annual reports we decided to use the 2009 numbers. It also made more sense to use the first year of the sample rather than using a year in the middle of our sample. The information in regards to the different policies that exists from previous studies are that the lowest level of working capital should indicate a more aggressive approach hence
the group with the lowest working capital to total assets ratio will be categorized within the aggressive group. Furthermore we will then place the next third with the lowest values into the defensive group and lastly the third in between the aggressive and defensive policies will be placed in the neutral group.

The distribution of companies in each group will be as follows;

Aggressive; 52
Neutral; 51
Defensive; 52

Since both the cash conversion cycle and the working capital to total assets ratio can be used to determine the working capital policy of the firms, we have decided to only use one of them, we chose to use the working capital to total assets ratio. We decided upon this firstly because of the fact that we have included a lot of different companies from for example the service sector within our sample and then using the cash conversion cycle as our main variable measure could risk skewing the results of the analysis since inventory is a part of this measure and this is something that firms within this sector lacks. Furthermore using the ratio will be good since this will become scale free and ignores the size and it makes a more viable measure between the different sizes of the listed companies on for example the large cap and small cap. Since a lot of earlier studies used the cash conversion cycle and yet have not found any clear distinction in a specific range to categorize the different policies we wanted to explore this subject further by testing a new measure of the concept that might shed more light on the phenomenon and contribute with more new knowledge within the field.

4.5 Normality

Many statistical tests assume that the data sample is approximately normally distributed. In order to check if the data is normally distributed there are two different methods available. Firstly, normal probability plots can be used and if there is a systematic deviation of the plots from a straight line this means that the data is non-normal distributed. If the plots however are reasonably close to the line the data can be seen as normal distributed. (Ruppert, 2004, p. 23-24) Secondly, in some cases it can be hard to establish if the data is normal distributed by just looking at the scatter plot and then other tests of normality can be performed. These tests can easily be done in SPSS. If the data is not normally distributed a nonparametric test is most appropriate to do such as Spearman's rho (Moore, et al, 2009, p. 440)

4.6 Variables method

4.6.1 Calculation of Return

Data on daily stock prices has been collected from DataStream. However, in our tests we will use returns rather than raw stock prices. Moreover we have decided to use log returns instead of the normal net returns. The reason for this is basically the simplicity of multi period returns and the fact that log returns give more statistical freedom. We have calculated the log returns using the following formula:

\[
r_t = \log(1 + R_t) = \log \left( \frac{P_t}{P_{t-1}} \right) = P_t - P_{t-1}
\]
This calculation gives us the daily log returns. As the next step we calculated an average for the daily return over each year. To finally find the average yearly return the average daily return was multiplied by the number of trading days in each respective year. (Ruppert, 2004, p. 77-78).

4.6.2 Beta

For us to calculate the beta we have used log returns calculated from the individual stock prices and the Stockholm price index. In order to get the stock return in percentages we did as mentioned above derived the daily log return. The price index used was also on a daily basis and calculated in similar fashion to the stock return with the daily log return. Both these calculations were done manually. Finally for us to calculate the beta we derived the covariance between the individual stocks return and the price index return and divided it by the variance in the price index. The index used is the Stockholm price index.

\[ \beta_i = \frac{\sigma_{im}}{\sigma_m^2} \]

4.6.3 Measures for the different working capital policies

\[
\begin{align*}
\text{Working Capital (CA – CL)} & = \frac{\text{Current Liabilities}}{\text{Total assets}} \\
\text{AFP} & = \frac{\text{Current Liabilities}}{\text{Total assets}} \\
\text{AIP} & = \frac{\text{Current Assets}}{\text{Total Assets}}
\end{align*}
\]

4.6.4 Cash conversion cycle

In order to determine what working capital policy each company has applied. The cash conversion cycle has been calculated directly in an excel sheet.

The formula for the cash conversion cycle is:

\[
\text{Cash Conversion Cycle} = \text{Production Cycle} + \text{Collection Cycle} - \text{Payment Cycle}
\]

Where:

\[
\begin{align*}
\text{Product Cycle} & = \frac{365}{\text{Inventory Turnover}} \\
\text{Collection Cycle} & = \frac{365}{\text{Accounts Receivable Turnover}}
\end{align*}
\]
4.6.5 Sectors

The companies on the Stockholm Stock Exchange are divided into different sectors depending on what type of business they run. There are ten different sectors and since we are examine if the different sectors affect the working capital policy the sector is one variable in our tests. However since first the financial sector was eliminated because of it having a distinctive financial structure which would differ from the rest of the sample. Furthermore, after the eliminations of the outliers we had to combine some of the sector in order to make the sample size of the particular sector significant. Here we combined the Industrial sector with oil & gas since we ended up with only one company left in the oil & gas sector. Moreover the telecommunications sector consisted of three companies which we combined together with the technology sector. This finally lead to six different sectors in our sample including; Basic Materials, Consumer Goods, Consumer Services, Healthcare, Industrials & Oil and Technology & Telecommunications.

4.6.6 Size

The companies that are a part of our study are divided into three different size segments, large caps, mid-caps and small caps. Since we are investigating if there are any differences between the sizes of companies their size will act as one variable in our tests.

4.7 Data analysis

For the analysis of our data we have used the SPSS, statistical computer software. In SPSS statistical tests are performed on our collected data and the results will be analyzed. The statistic test that is included in our study are:

4.7.1 Pearson’s correlation

We will start the analysis procedure with one of the most commonly used methods, the calculation of correlation. It is called the coefficient of correlation or simply Pearson’s correlation. It is used to determine the strength of association between two variables (Warrack, 2003, p. 634). In order to do a Pearson correlation test four different assumptions need to be taken into consideration. First, the variables must be either interval or ratio measurements. Second, the variables must be approximately normally distributed. Third, the relationship between the two variables must be rather linear, meaning that if plotted on a scatter plot they form a straight line and not a curve (Moore, et al, 2009, p. 113). Lastly, the data should have no significant outliers. (Statistics laerd, 2013). Pearson’s correlation will be calculated through the use of SPSS and the following formula is used:

\[ r = \frac{cov_{xy}}{S_x S_y} \]

In the formula above covxy is the covariance for the sample and SxSy is the standard deviation. The correlation coefficient, also referred to as the r-value, will have a value
somewhere between -1 and +1. If the value is +1 it represents a perfect positive correlation meaning that the two variables are precisely related. If the values on one variable increase the values on the other will increase as well. A value of -1 means the opposite, a perfect negative correlation. If the correlation is 0 it means that the variables are perfectly independent. Often the results are located somewhere in between -1 and +1 and determined with. (Saunders et al, 2009, p. 459).

4.7.2 Descriptive statistics

Since the subject is rather unexplored especially in the sense that there is no clear way in how to measure the different working capital policies we have decided to start our statistical analysis with an extensive part about descriptive statistics and basics in order to try establish if there is a clear distinction between the different policies. The hypothesis will be formulated as follows:

**Hypothesis 1:** There is no difference between the mean return for the firms with aggressive policy and the mean return for the market.

\[ \bar{x}_1 - \bar{x} = 0 \]

H0 = 0
Ha ≠ 0

**Hypothesis 2:** There is no difference between the standard deviation of the return for the firms with aggressive policy and the standard deviation of the return for the market.

\[ \sigma_1 - \sigma = 0 \]

H0 = 0
Ha ≠ 0

**Hypothesis 3-6:** Will be the same as hypothesis 1-2 except that they will be for the neutral and defensive policy.

**Hypothesis 7-330:** The rest of our study will concern what relationship each independent variable (WC/TA, CCC, IP and FP) has to the dependent variables (stock return, beta and standard deviation) in each working capital policy, segment and size. Due to the number of variables we have derived a very large amount of hypotheses and all of them will not be presented here. The rest of the hypotheses will be presented in chapter 5 along with the process of rejecting or accepting them.

4.8 Statistical Terms

When understanding and analyzing the results of the statistical tests there are a few different terms that are needed to be understood, they include: statistical significance and P-value.

Statistical significance provides an indication of how confident you can be that your findings are strong enough and can be generalized to the whole population from which the sample is collected. In most business researches the maximum level of statistical significance that is acceptable is p < 0.05. This means that there are less than 5 possibilities in 100 that show a false relation. If instead the significance level is p < 0.01
the chance is 1 in 100 that the results are not significant. When determining the statistical significance two types of errors can be made, type 1 and type 2 errors. Type 1 errors means that the null hypothesis is rejected when it in fact should have been accepted. This means that the results have arisen by chance and false conclusions are drawn. Type 2 errors are the opposite, the null hypothesis is accepted when it should be rejected. (Bryman & Bell, 2011, p. 353-355)

The P-value is the probability of obtaining a test statistic taking a value as extreme as the one that was actually observed, assuming that the null hypothesis is true. If the P-value is lower than the significance level decided for it indicates that the result would be very unlikely under the null hypothesis and the hypothesis should be rejected. (Moore et al, 2009, p. 382)
Chapter 5: Empirical Results and Analysis

This chapter will start with a presentation and analysis of the descriptive statistics of this study. Then an overview of the empirical results from the statistical tests that have been done will be presented and further analyzed. The hypotheses that have been derived will also be presented and their results will be shown and examined. The aim of the chapter is to come up with enough empirical facts to clearly answer our research question.

5.1 Trends

Figure 7 shows the development of the SPI price over the years of this study. We can by this briefly see how the market was performing over this time. First in the beginning of the period there was a growing trend which might be due to the recovery from the financial crisis.

Through only observing the graph we will not be able to reach conclusions in regards to our research question. However it can be interesting to look at it to see if there has been any drastic move or unexpected events in the market which could affect and skew the final results of the study.

![Figure 7: SPI trend](image)

Figure 7: SPI trend
5.2 Test of normality
The normality has been checked on our dependent variables average annual stock return, beta and standard deviation. The distributions of these have been plotted in histograms and Q-Q plots to see the distribution of the data.

Stock return

![Figure 8: QQ-plot stock return](image)

![Figure 9: Histogram stock return](image)

Beta

![Figure 10: QQ-plot beta](image)

![Figure 11: Histogram beta](image)
Looking at both the Q-Q plot and the histogram for each of our dependent variables, it tells us that there are a small number of outliers within each sample. Furthermore, we can see that the samples have large number of observations in around the mean values. This is why some normality test might disregard the normality of the data. For the stock return and beta this is however not a problem and the data is normally distributed. The standard deviation however, is not as clearly normally distributed. However, starting to eliminate values would become more of a manipulation of the data rather than fixing the normality issue which is not an option. For larger number of observations it is normally harder to get the data totally normal distributed, especially in practical work with real world observations like in this case. Moreover, when performing business related statistical tests the level for accepting normality is often a bit lower. Lastly, according to the central limit theorem when a sample is large the sampling distribution of the sample mean is approximately normal distributed (Moore et al, 2009, p. 299). Taking this into account and since only the normality of the standard deviation can be questioned we still take the decision to regard our data as normally distributed and perform parametric statistics tests.

5.3 Descriptive statistics

The descriptive statistics that will be presented consist out of four tables showing a summary of the total sample, the aggressive policy, the neutral policy and the defensive policy. In order to answer our hypotheses we will compare the standard deviation of the return between the different policies and the whole market. We choose to look at both the standard deviation for the return and the mean since seeing the dispersion from the mean gives a better reflection of the potential higher return since it would be reflected by a higher standard deviation. The higher return would also then come with a higher risk which is why the mean return might not be the best measure since depending on the performance over the year some companies might have larger losses, making the mean return rather low hence not reflecting exactly how it is. So the measure of the standard deviation of the stock return will more clearly give an indication of the variance within the data group and hence within a group has a high risk and high reward it should likely be reflected by a higher standard deviation.
Table 3: “Descriptive Statistics for Entire Market”

Table 3 presents the descriptive statistics for the whole sample of 155 companies over the years 2009-2012. It shows that the average stock return for the whole period is 9.33% and the standard deviation is 47.18%. The table also tells us that the working capital to total asset ratio is 19.55% on average and has a standard deviation of 20%. The cash conversion cycle has a mean of 70 days, which tells us that it takes on average 70 days for capital that is tied up in working capital to convert into cash. The standard deviation of the cash conversion cycle was 74 days. Moreover, the mean beta is 0.237 and the standard deviation of the beta is 0.169. The average standard deviation for the whole sample is 0.026.

It is interesting to see that there is quite a large dispersion of the range of the cash conversion cycle within the sample. This can be due to the fact that our sample includes firms in different industries which have different characteristics when it comes to the management practices and structures of the business.

Table 4: “Descriptive Statistics for the Aggressive policy”

Table 4 shows the descriptive statistics for the 52 companies that have been categorized into the group applying an aggressive working capital policy. The mean stock return for the aggressive companies is 2.7% and the standard deviation is 53.5%. The working capital to total asset ratio is 1.2% on average and the standard deviation is 13.1%. Furthermore, the table shows that the mean cash conversion cycle is 41 days and the standard deviation is 53, 5 days. The beta has a mean of 0.231 and a standard deviation of 0.174. Lastly, the mean standard deviation for the aggressive companies is 0.028.

If we look at the WC/TA we can see that some companies with the lowest working capital even have a minus value of their working capital. This can reflect that the company are efficient and sells their goods before they pay their suppliers for it. However, this could also be an indication that the companies are facing liquidity issues and are on the brink of bankruptcy. This is something that cannot solely be determined by looking at the working capital but in order to determine which of the above scenarios
a company is facing you would have to look further into a comparison of their inventory and accounts payable.

In order to determine the differences between the different policies and the entire market we have tested the hypotheses introduced in chapter 4.

**Hypothesis 1**: There is no difference between the mean return for the firms with aggressive policy and the mean return for the market.

\[ \bar{x}_1 - \bar{x} = 0 \]

H0 = 0

Ha ≠ 0

**Hypothesis 2**: There is no difference between the standard deviation of the return for the firms with aggressive policy and the standard deviation for the market.

\[ \sigma_1 - \sigma = 0 \]

H0 = 0

Ha ≠ 0

Both of the null hypotheses can be rejected since neither the difference of returns nor the difference of standard deviations of the returns are equal to zero. The mean return is about 6.5% smaller for the aggressive policy compared to the whole market. The aggressive policy has a 6.3% larger standard deviation than the whole market.

In earlier studies the aggressive working capital policy has been connected with a high risk which the descriptive statistics indicate could be true. The standard deviation is higher for the aggressive policy than for the whole market which can mean that the companies that are following this policy are exposed for higher risk. Adopting the aggressive working capital policy is risky in the way that the firm is working on a low level of current assets which in hard financial times easily can result in devastating consequences such as the risk of bankruptcy. However, according to the theory of risk return tradeoff bearing this higher risk should be rewarded with a higher return. This is not the case here since the mean return for the aggressive policy is lower than for the whole market. One reason for this could be the fact that the mean return can be a misleading measure. The stock returns of companies can vary a lot over years which can lead to a skewed mean. Moreover, the higher risk is not a guarantee for higher return, if the high risk results in unsuccessful operations the return will become lower. This means that from these results we cannot confirm that the aggressive policy yields both higher risk and higher return which was suggested in the study of Weinraub & Visscher (1998).
Table 5: “Descriptive Statistics for Neutral policy”

Table 5 shows the descriptive statistics for the 51 companies categorized in the group with a neutral working capital policy. The mean stock return for the neutral companies is 12.9% and the standard deviation is 44.9%. The working capital to total asset ratio is 17.3% on average and the standard deviation is 13.1%. Moreover the average cash conversion cycle for the neutral companies is 70.7 days and the standard deviation is 53.5 days. The mean beta is 0.258 and the standard deviation of the beta is 0.168. Finally the mean standard deviation for the neutral firms is 0.024.

**Hypothesis 3:** There is no difference between the mean return for the firms with neutral policy and the mean return for the market.

\[ \bar{x}_1 - \bar{x} = 0 \]

H0 = 0

Ha ≠ 0

**Hypothesis 4:** There is no difference between the standard deviation of the stock return for the firms with neutral policy and the standard deviation for the market.

\[ \sigma_1 - \sigma = 0 \]

H0 = 0

Ha ≠ 0

One again both of the null hypotheses are rejected since the mean return of the neutral policy is 3.56% larger than the mean return of the whole market. The standard deviation of the stock return is 2.24% smaller for the neutral policy compared to the whole market.

The neutral working capital policy is by far the less explored policy and not much research has been carried out on it. However, since it is expected to be in-between the aggressive and the defensive policy we could expect the values to be rather close to the mean of the whole market. This is also true according to the descriptive statistics, especially in regards to the standard deviation which we have argued to be the most suitable measure. The neutral policy is exposed to almost the same risks as the market as a whole. Companies following the neutral policy could aim to bear some risk, to get a higher return, but not too much which could put them in problems during hard financial times. The mean return for the neutral policy is higher than for the whole market which once again indicates that the mean return might not be the most appropriate measure and that it is not really following the risk return tradeoff since according to the descriptive
statistics the neutral policy has higher returns than the aggressive policy. This should in theory not be the case since the aggressive policy is exposed for higher risk.

<table>
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<th>Maximum</th>
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</table>

Table 6 “Descriptive Statistics for Defensive policy”

Table 6 presents the descriptive statistics for the 52 companies that are applying a defensive working capital policy. On average the stock return for the defensive companies is 12.4% with a standard deviation of 41.7%. The working capital to total asset ratio is 40% and has a standard deviation of 15%. The cash conversion cycle is 98 days on average with a standard deviation of 67 days. Furthermore, the beta of the defensive companies is 0.222 with a standard deviation of 0.165. The mean standard deviation of the defensive firms is 0.026.

**Hypothesis 5:** There is no difference between the mean return for the firms with defensive policy and the mean return for the market.

\[ \bar{x}_1 - \bar{x} = 0 \]

H0 = 0

Ha ≠ 0

**Hypothesis 6:** There is no difference between the standard deviation of the return for the firms with defensive policy and the standard deviation for the market.

\[ \sigma_1 - \sigma = 0 \]

H0 = 0

Ha ≠ 0

The last two null hypotheses can be rejected as well. The mean stock return of the defensive policy is 3.09% larger than the mean stock return for the whole market. Moreover the standard deviation of the defensive policy is 5.45% smaller than for the whole market.

The defensive working capital policy has a lower standard deviation than the whole market, meaning that there are exposed for a lower risk. This is since the companies applying this policy are having bigger amount of current assets making their operations more secure. The reason for following the defensive policy could be that the firms are operating in unsecure businesses or environments. The fact that the defensive groups mean stock return is higher than the whole market can be because they performed well during the time horizon that this study covered or due to the fact that firms organized in to the other groups performed worse and then lowers the market mean for the return.
Summing up hypotheses 1-6 we can see that the aggressive policy is exposed for the highest risk, the neutral for a bit less risk and the defensive for the lowest risk. This is in line with the theory of risk and return tradeoff, which says that the aggressive policy is risky and the defensive rather safe. However, according to theory, the high risk should be connected with higher return which the descriptive statistics do not indicate. This could have to do with the fact that the mean stock return is not the best measure, since stock returns can vary a lot over the years and create a misleading mean. Bearing a high risk should still be rewarded with higher return, even though these hypotheses do not confirm that. To explore this further looking at a larger time horizon would be suggested as our time period of only four years could not be regarded as sufficient in order to find clear indications of the actual return companies yield. The standard deviation however gives an indication that since the volatility for the aggressive firms is higher a more active investor who is trading on price speculative basis could have interest of these facts. This will however be deeper analyzed further on in this research.

5.4 Results of the correlation tests

The upcoming section will present the results of the correlation analyses with the corresponding hypothesis testing. We will start by presenting and analyzing the variables for the whole market to provide an overall picture. In order to analyze and answer our sub-questions we will then present each correlation test with their corresponding hypotheses narrowed down into policies, size and sectors. After the correlation tables a summary of whether the hypotheses are accepted or rejected is provided. Lastly, an analysis/discussion of the results will be presented. Due to the large amount of tests it is impossible to discuss all findings so only the most interesting and relevant results will be discussed.

5.4.1 Whole market

The hypotheses we have derived will provide answers to our correlation analysis between our explanatory variables and the independent variables. The test for the whole market has been conducted in order to see if the variables have any correlation amongst them at all.

**Hypotheses 7-18:**

**H0 = there is no relationship between X and Y:** See table 7 for detailed variables

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<td>.284</td>
<td>-.036</td>
<td></td>
<td>.057</td>
</tr>
<tr>
<td>IP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP</td>
<td>Pearson Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP</td>
<td>.063</td>
<td>.117</td>
<td>-.122**</td>
<td></td>
<td>.082*</td>
</tr>
<tr>
<td>FP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FP</td>
<td>Pearson Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FP</td>
<td>-.037</td>
<td>.357</td>
<td>-.098*</td>
<td></td>
<td>.097*</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.05 level (2-tailed).**

**. Correlation is significant at the 0.01 level (2-tailed).**

**Table 7: Correlation between the explanatory variables and the whole market.**

Table 7 shows the correlation between the working capital measures and stock return, beta and standard deviation. This correlation test has been conducted in order to see if the variables have any correlation amongst them at all. The null hypotheses for the
WC/TA and stock return can be rejected indicating a weak linear relationship which is
statistical significant. Moreover, in the case of the correlation with the beta we can
reject two null hypotheses, for the IP and FP. Both indicate statistical significant weak
negative correlations. For the standard deviation we once again reject the null
hypotheses for IP and FP which point towards weak linear relationships between the
variables. The results for hypotheses 7-18 are summarized blow in table 8.

### Table 8: “Results of hypotheses 7-18”

<table>
<thead>
<tr>
<th>Policy</th>
<th>SR</th>
<th>Beta</th>
<th>Std. D</th>
</tr>
</thead>
<tbody>
<tr>
<td>WC/TA</td>
<td>Rejected</td>
<td>Accepted</td>
<td>Accepted</td>
</tr>
<tr>
<td>CCC</td>
<td>Accepted</td>
<td>Rejected</td>
<td>Accepted</td>
</tr>
<tr>
<td>IP</td>
<td>Accepted</td>
<td>Rejected</td>
<td>Rejected</td>
</tr>
<tr>
<td>FP</td>
<td>Accepted</td>
<td>Rejected</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

5.4.2 The whole market divided into policies

After the establishment of the variables general relationship with our different measures
of the working capital management we have divided the whole sample further as
explained in chapter 4 into the three different working capital policies. We have
conducted hypotheses testing within these different groups in similar fashion as for the
whole market. The results of the correlation analysis can be seen in Table 9 and the
results of the tests in Table 10.

### Hypotheses 19-54:

H0 = there is no relationship between X and Y: See table 9 for detailed variables

### Table 9: “Correlation for the whole market divided into policies”

First off we retain the null hypothesis for all variables within in all policies when
measuring towards the stock performance. There were no statistical significant
observations for linear relationships amongst these variables. However for the measure towards the Beta we found evidence of several linear relationships between the different variables. First the WC/TA shows statistical significance in all three different policy groups. For the defensive policy it signifies a negative r-value which means that they have an inverse linear relationship, for the aggressive and neutral the r-value is positive. The neutral policy with the lower r-value signifies a weaker relationship then for the defensive and aggressive policies which has a stronger linear relationship. Furthermore within the aggressive policy we reject the null hypothesis for the FP variable which points towards an inverse relationship with the beta. CCC in the neutral policy has a weak statistical significant relationship. IP shows indications of an inverse relationship within the defensive policy which is statistical significant so the null hypothesis can be rejected. The standard deviation similar to the Beta has statistical significant linear relationship with the WC/TA within all policies. IP shows a positive R-value with the defensive policy. CCC shows statistical significant for the defensive policy with a quite weak relationship. Lastly the null hypothesis for FP can be rejected within the aggressive policy with a weak linear relationship.

<table>
<thead>
<tr>
<th></th>
<th>Aggressive</th>
<th>Neutral</th>
<th>Defensive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SR</td>
<td>Beta</td>
<td>Std. D</td>
</tr>
<tr>
<td>WC/TA</td>
<td>Accepted</td>
<td>Rejected</td>
<td>Rejected</td>
</tr>
<tr>
<td>CCC</td>
<td>Accepted</td>
<td>Accepted</td>
<td>Accepted</td>
</tr>
<tr>
<td>IP</td>
<td>Accepted</td>
<td>Accepted</td>
<td>Accepted</td>
</tr>
<tr>
<td>FP</td>
<td>Accepted</td>
<td>Rejected</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

**Table 10: “Results for Hypotheses 19-54”**
5.4.3 Correlation divided into firm size

One aim of this study is to investigate how firm size is related to the different working capital policies. In order to closer examine this we have derived the following hypotheses:

Hypotheses 55-90:

H0 = There is no relationship between X and Y: See table 11 for detailed variables.

<table>
<thead>
<tr>
<th>Size</th>
<th>N</th>
<th>X\Y</th>
<th>Stock return</th>
<th>Beta</th>
<th>Std. D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large cap</td>
<td>56</td>
<td>WC/TA</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
<td>-1.11,937</td>
<td>0.213,116</td>
</tr>
<tr>
<td></td>
<td>56</td>
<td>CCC</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
<td>,041,765</td>
<td>-1.134,325</td>
</tr>
<tr>
<td></td>
<td>56</td>
<td>IP</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
<td>-0.065,633</td>
<td>0.157,248</td>
</tr>
<tr>
<td></td>
<td>56</td>
<td>FP</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
<td>-0.056,684</td>
<td>0.035,796</td>
</tr>
<tr>
<td>Mid cap</td>
<td>40</td>
<td>WC/TA</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
<td>,154,341</td>
<td>0.407**,009</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>CCC</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
<td>,041,800</td>
<td>0.012,940</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>IP</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
<td>,325*,041</td>
<td>0.267,096</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>FP</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
<td>,283,077</td>
<td>-0.044,787</td>
</tr>
<tr>
<td>Small cap</td>
<td>112</td>
<td>WC/TA</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
<td>,083,386</td>
<td>0.125,189</td>
</tr>
<tr>
<td></td>
<td>112</td>
<td>CCC</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
<td>,072,453</td>
<td>0.000,998</td>
</tr>
<tr>
<td></td>
<td>112</td>
<td>IP</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
<td>-0.011,907</td>
<td>-0.143,134</td>
</tr>
<tr>
<td></td>
<td>112</td>
<td>FP</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
<td>-0.079,406</td>
<td>-0.235*,013</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table. 11: “Correlation of the aggressive working capital policy divided into firm size”

A summary of the results of the hypothesis testing from the correlation analysis with the aggressive policy are exhibited in Tables 17-20. We can only reject the null hypothesis between the working capital measures and stock return in one case which is for the IP for the midcaps. Furthermore between the working capital measures and Beta we can reject the null hypothesis in two cases. First for the WC/TA within the mid cap segment with an r-value of ,407 that signifies a moderately strong linear relationship. Secondly, in the segments of small caps there is a negative correlation with the FP which suggests that there could be an inverse relationship between these variables meaning that the beta would move opposite to the firm’s level of current liabilities. Correlation between the different working capital variables and the standard deviation of the firms shows several statistical significant results. WC/TA for the large caps has a positive correlation and for the mid and small caps this is contrary and indicates a negative relationship. For the IP there is only evidence of a linear relationship is within the mid cap segment with an r-value of ,489 suggesting a rather strong negative correlation that would suggests a lower level of current assets with in the mid caps would increase the unsystematic risk of the firms. Looking at the financing policy for the large and mid caps this linear relationship is negative was on the other hand for the small caps it would be positive. Meaning that for large and mid cap an increase in financing through current liabilities
would decrease the unsystematic risk where for the small caps financing this way would yield an increase of unsystematic risk.

**Hypotheses 91-126:**

H0 = There is no relationship between X and Y: See table 12 for detailed variables.

<table>
<thead>
<tr>
<th>Size</th>
<th>N</th>
<th>X\Y</th>
<th>Stock return</th>
<th>Beta</th>
<th>Std. D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large cap</td>
<td>52</td>
<td>WC/TA</td>
<td>Pearson Correlation</td>
<td>-0.063</td>
<td>-0.202</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.660</td>
<td>0.151</td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>CCC</td>
<td>Pearson Correlation</td>
<td>0.153</td>
<td>0.071</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.279</td>
<td>0.618</td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>IP</td>
<td>Pearson Correlation</td>
<td>-0.014</td>
<td>0.223</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.919</td>
<td>0.113</td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>FP</td>
<td>Pearson Correlation</td>
<td>0.023</td>
<td>0.377**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.869</td>
<td>0.006</td>
</tr>
<tr>
<td>Mid cap</td>
<td>40</td>
<td>WC/TA</td>
<td>Pearson Correlation</td>
<td>-0.024</td>
<td>0.055</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.883</td>
<td>0.735</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>CCC</td>
<td>Pearson Correlation</td>
<td>-0.077</td>
<td>-0.282</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.637</td>
<td>0.077</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>IP</td>
<td>Pearson Correlation</td>
<td>-0.088</td>
<td>0.245</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.587</td>
<td>0.128</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>FP</td>
<td>Pearson Correlation</td>
<td>-0.042</td>
<td>0.285</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.797</td>
<td>0.075</td>
</tr>
<tr>
<td>Small cap</td>
<td>112</td>
<td>WC/TA</td>
<td>Pearson Correlation</td>
<td>-0.025</td>
<td>0.142</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.793</td>
<td>0.136</td>
</tr>
<tr>
<td></td>
<td>112</td>
<td>CCC</td>
<td>Pearson Correlation</td>
<td>0.026</td>
<td>-0.077</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.783</td>
<td>0.421</td>
</tr>
<tr>
<td></td>
<td>112</td>
<td>IP</td>
<td>Pearson Correlation</td>
<td>0.004</td>
<td>0.068</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.967</td>
<td>0.479</td>
</tr>
<tr>
<td></td>
<td>112</td>
<td>FP</td>
<td>Pearson Correlation</td>
<td>0.017</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.856</td>
<td>0.989</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.05 level (2-tailed).**

**. Correlation is significant at the 0.01 level (2-tailed).**

**Table. 12:** “Correlation for the neutral working capital policy divided into firm size”

A summary of the results for the correlation analysis of the neutral working capital policy in table 12 can be seen in tables 17-20. We retain the null hypothesis for working capital measures and stock return. We cannot find any linear relationship for the companies applying a neutral working capital policy and their stock return. For Beta we find one statistical significant relationship which is for the FP in the large cap segment. This would mean that for the large firms adopting a neutral approach to working capital a larger financing through current liabilities is linked towards a higher volatility in the market. Standard deviation is the variable giving the most significant results for the neutral policy as was also the case within the aggressive. The cash conversion cycle for the large cap shows a positive correlation means a longer cash conversion cycle are connected to a higher historical volatility and then also a larger unsystematic risk for the companies as individual investments. The IP and FP both show negative correlation for the mid cap segment this is in accordance to the above mentioned correlations for the mid cap segment in the aggressive policy.
Hypotheses 127-162:

H0 = There is no relationship between X and Y: See table 13 for detailed variables.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X\Y</th>
<th>Stock return</th>
<th>Beta</th>
<th>Std. D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large cap</td>
<td>40</td>
<td>WC/TA</td>
<td>Pearson Correlation</td>
<td>-148</td>
<td>-118</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>362</td>
<td>388</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>CCC</td>
<td>Pearson Correlation</td>
<td>-200</td>
<td>-199</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>-216</td>
<td>-218</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>IP</td>
<td>Pearson Correlation</td>
<td>-186</td>
<td>-195</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>-251</td>
<td>-228</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>FP</td>
<td>Pearson Correlation</td>
<td>-124</td>
<td>-141</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>446</td>
<td>385</td>
</tr>
<tr>
<td>Mid cap</td>
<td>52</td>
<td>WC/TA</td>
<td>Pearson Correlation</td>
<td>-194</td>
<td>-306</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>169</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>CCC</td>
<td>Pearson Correlation</td>
<td>-087</td>
<td>-024</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>540</td>
<td>868</td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>IP</td>
<td>Pearson Correlation</td>
<td>-307</td>
<td>-288</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>027</td>
<td>039</td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>FP</td>
<td>Pearson Correlation</td>
<td>081</td>
<td>114</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>567</td>
<td>422</td>
</tr>
<tr>
<td>Small cap</td>
<td>116</td>
<td>WC/TA</td>
<td>Pearson Correlation</td>
<td>-010</td>
<td>-101</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>914</td>
<td>017</td>
</tr>
<tr>
<td></td>
<td>116</td>
<td>CCC</td>
<td>Pearson Correlation</td>
<td>-085</td>
<td>-070</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>365</td>
<td>070</td>
</tr>
<tr>
<td></td>
<td>116</td>
<td>IP</td>
<td>Pearson Correlation</td>
<td>051</td>
<td>128</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>585</td>
<td>172</td>
</tr>
<tr>
<td></td>
<td>116</td>
<td>FP</td>
<td>Pearson Correlation</td>
<td>058</td>
<td>070</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>536</td>
<td>456</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 13: “Correlation for the defensive working capital policy divided into firm size.

For the defensive policy a summary of the results of the hypothesis testing of the correlation analysis can be found in Tables 17-20. The null hypothesis in the correlation analysis for the stock return can only be rejected for IP in the mid cap segment. With a positive correlation an increase in the current assets found to be statistically significant related to an increase in the stock return for these firms during the studied time period. For the standard deviation six null hypotheses are rejected indicating that working capital could affect stock volatility and the risk.

5.4.4 Correlation divided into sectors

Another purpose of this study was to investigate what role the different sectors have in regards to working capital policies. The following hypotheses have been derived to check this relation.
**Hypotheses 163-234:**

H0 = There is no relationship between X and Y: See table 14 for detailed variables.

<table>
<thead>
<tr>
<th>Sector</th>
<th>N</th>
<th>X\Y</th>
<th>Stock return Correlation</th>
<th>Beta</th>
<th>Std. D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic Materials</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 WC/TA Pearson Correlation</td>
<td>.093</td>
<td>-.209</td>
<td>.477</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.732</td>
<td>.437</td>
<td>.062</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 CCC Pearson Correlation</td>
<td>-.377</td>
<td>.406</td>
<td>-.520*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.150</td>
<td>.118</td>
<td>.039</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 IP Pearson Correlation</td>
<td>-.203</td>
<td>-.535*</td>
<td>-.312</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.451</td>
<td>.032</td>
<td>.240</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 FP Pearson Correlation</td>
<td>-.227</td>
<td>.471</td>
<td>-.444</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.398</td>
<td>.065</td>
<td>.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Consumer Goods</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 WC/TA Pearson Correlation</td>
<td>-.106</td>
<td>.577</td>
<td>-.465</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.743</td>
<td>.049</td>
<td>.127</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 CCC Pearson Correlation</td>
<td>.141</td>
<td>-.677*</td>
<td>.030</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.663</td>
<td>.016</td>
<td>.926</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 IP Pearson Correlation</td>
<td>.086</td>
<td>.942***</td>
<td>-.537</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.791</td>
<td>.000</td>
<td>.072</td>
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<td>.281</td>
<td>.701*</td>
<td>-.269</td>
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<tr>
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<td>.011</td>
<td>.397</td>
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<tr>
<td>32 WC/TA Pearson Correlation</td>
<td>.041</td>
<td>.513**</td>
<td>-.238</td>
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<tr>
<td>Sig. (2-tailed)</td>
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<td>.003</td>
<td>.190</td>
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<td>.467</td>
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<tr>
<td>32 IP Pearson Correlation</td>
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<td>.480***</td>
<td>-.515**</td>
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<td>-.238</td>
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<td>.383</td>
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<td>-.725**</td>
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<td><strong>Industrial &amp; oil</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>96 WC/TA Pearson Correlation</td>
<td>.212*</td>
<td>.401***</td>
<td>-.399**</td>
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<tr>
<td>Sig. (2-tailed)</td>
<td>.038</td>
<td>.000</td>
<td>.000</td>
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<td>.422**</td>
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<td>96 IP Pearson Correlation</td>
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<td>-.002</td>
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<td>.984</td>
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<tr>
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<td>-.273**</td>
<td>.371**</td>
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<td>Sig. (2-tailed)</td>
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<td>.007</td>
<td>.000</td>
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<td><strong>Technology &amp; Telecommunications</strong></td>
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</tr>
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<td>40 WC/TA Pearson Correlation</td>
<td>-.017</td>
<td>.269</td>
<td>.069</td>
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<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
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<td>.670</td>
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<td>40 CCC Pearson Correlation</td>
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<td>.476**</td>
<td>.147</td>
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<tr>
<td>Sig. (2-tailed)</td>
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<td>.002</td>
<td>.364</td>
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<tr>
<td>40 IP Pearson Correlation</td>
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<td>-.253</td>
<td>.172</td>
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</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.305</td>
<td>.115</td>
<td>.288</td>
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<tr>
<td>40 FP Pearson Correlation</td>
<td>.146</td>
<td>.416**</td>
<td>.086</td>
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</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.367</td>
<td>.008</td>
<td>.596</td>
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</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

**Table 14:** “Correlation for the aggressive policies divided into sectors”

In Tables 17-20 we can see the detailed results for the hypotheses from the correlation analysis within the aggressive policy. Measuring towards stock return yields two significant results were the null hypotheses can be rejected. Both of these are within the industrial sector and show a positive linear relationship for both WC/TA and the cash conversion cycle.
However when looking at the beta and standard deviation there is more evidence for linear relationships but some of the sectors have a quite low number of observations so these could be created by chance and are not as significant. In the correlation between the working capital measures and beta the null hypothesis can be rejected in 13 cases and for the stock return in seven cases. This gives some indications that working capital or parts of it does affect the firms’ stock volatility. There is evidence for this within all sectors and especially within the industrial sector where we only retain the null hypothesis for the IP.

**Hypotheses 235-306:**

H0 = There is no relationship between X and Y: See table 15 for detailed variables.

<table>
<thead>
<tr>
<th>Sector</th>
<th>N</th>
<th>X\Y</th>
<th>Stock return</th>
<th>Beta</th>
<th>St. D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Materials</td>
<td>28</td>
<td>WC/TA</td>
<td>-0.20, 0.308</td>
<td>0.164</td>
<td>0.936</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>CCC</td>
<td>0.031, 0.874</td>
<td>0.359</td>
<td>0.634</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>IP</td>
<td>-0.191, 0.331</td>
<td>0.532</td>
<td>0.993</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>FP</td>
<td>0.018, 0.929</td>
<td>0.360</td>
<td>0.908</td>
</tr>
<tr>
<td>Consumer Goods</td>
<td>28</td>
<td>WC/TA</td>
<td>0.186, 0.344</td>
<td>0.935</td>
<td>0.325</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>CCC</td>
<td>-0.310, 0.108</td>
<td>0.23</td>
<td>0.551</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>IP</td>
<td>0.171, 0.383</td>
<td>0.072</td>
<td>0.326</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>FP</td>
<td>-0.029, 0.882</td>
<td>0.115</td>
<td>0.930</td>
</tr>
<tr>
<td>Consumer Service</td>
<td>8</td>
<td>WC/TA</td>
<td>0.440, 0.275</td>
<td>0.399</td>
<td>0.138</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>CCC</td>
<td>0.348, 0.120</td>
<td>0.853</td>
<td>0.102</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>IP</td>
<td>0.594, 0.604</td>
<td>0.026</td>
<td>0.580</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>FP</td>
<td>0.113, 0.113</td>
<td>0.952</td>
<td>0.132</td>
</tr>
<tr>
<td>Healthcare</td>
<td>32</td>
<td>WC/TA</td>
<td>-0.210, 0.249</td>
<td>0.817</td>
<td>0.338</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>CCC</td>
<td>0.185, 0.312</td>
<td>-0.192</td>
<td>0.118</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>IP</td>
<td>-0.253, 0.163</td>
<td>-0.084</td>
<td>0.396</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>FP</td>
<td>-0.160, 0.381</td>
<td>-0.079</td>
<td>0.415</td>
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<tr>
<td>Industrial &amp; oil</td>
<td>60</td>
<td>WC/TA</td>
<td>0.126, 0.339</td>
<td>-0.436</td>
<td>0.094</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>CCC</td>
<td>0.174, 0.184</td>
<td>-0.205</td>
<td>0.141</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>IP</td>
<td>0.096, 0.464</td>
<td>0.026</td>
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</tr>
<tr>
<td></td>
<td>60</td>
<td>FP</td>
<td>-0.156, 0.233</td>
<td>-0.118</td>
<td>-0.013</td>
</tr>
<tr>
<td>Technology &amp;</td>
<td>48</td>
<td>WC/TA</td>
<td>0.065, 0.661</td>
<td>0.091</td>
<td>0.407</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>48</td>
<td>CCC</td>
<td>0.001, 0.994</td>
<td>0.857</td>
<td>0.004</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>IP</td>
<td>0.005, 0.971</td>
<td>0.096</td>
<td>0.242</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>FP</td>
<td>0.066, 0.658</td>
<td>-0.037</td>
<td>-0.055</td>
</tr>
</tbody>
</table>

**Note:** Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Table 15: “Correlation for the neutral policy divided into sectors”
Table 15 shows the results of the correlation in the neutral policy for the sectors. All the null hypotheses between the working capital measures and stock return can be accepted, indicating that there is no correlation between stock return and working capital. For the beta however, there are some statistical significant relationships and three null hypotheses are rejected. In the consumer goods sector the CCC has a rather strong negative correlation with beta. Moreover, in the Industrial & oil sector both the WC/TA and IP are rejected and indicates negative correlations as well. For the standard deviation IP and FP are rejected in the healthcare sector showing rather strong correlations. Lastly the null hypothesis for the WC/TA in the technology and telecommunications sector is rejected.
Lastly the WC/TA in rather strong. The FP in the consumer service sector has strong negative correlation. In the consumer goods sector there is a negative correlation which can be regarded as relation. For the beta the CCC in the technology and telecommunications sector which indicates a negative correlation shown in table 16.

<table>
<thead>
<tr>
<th>Sector</th>
<th>N</th>
<th>XY</th>
<th>Stock return</th>
<th>Beta</th>
<th>Std. D</th>
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<td>Pearson Correlation</td>
<td>.003</td>
<td>- .402**</td>
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<td>.007</td>
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<tr>
<td></td>
<td>16</td>
<td>CCC</td>
<td>Pearson Correlation</td>
<td>.024</td>
<td>- .051</td>
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<td>Sig. (2-tailed)</td>
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<td>.742</td>
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<td>IP</td>
<td>Pearson Correlation</td>
<td>.121</td>
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<td>.158</td>
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<td>Pearson Correlation</td>
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<td>- .284</td>
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<td></td>
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<td>.061</td>
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<td>WC/TA</td>
<td>Pearson Correlation</td>
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<td>.857</td>
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<td>CCC</td>
<td>Pearson Correlation</td>
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<td>.005</td>
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<td>FP</td>
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<td>Pearson Correlation</td>
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<td>CCC</td>
<td>Pearson Correlation</td>
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<td>- .407**</td>
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<td>Sig. (2-tailed)</td>
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<td>IP</td>
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<td>- .204</td>
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<td>Sig. (2-tailed)</td>
<td>.157</td>
<td>.070</td>
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<tr>
<td>Industrial &amp; oil</td>
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<td>Pearson Correlation</td>
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<td>- .407**</td>
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<td>96</td>
<td>CCC</td>
<td>Pearson Correlation</td>
<td>- .104</td>
<td>.005</td>
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<td>Sig. (2-tailed)</td>
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<td>.968</td>
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<td>96</td>
<td>IP</td>
<td>Pearson Correlation</td>
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<td>- .204</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>Sig. (2-tailed)</td>
<td>.157</td>
<td>.070</td>
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<tr>
<td></td>
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<td>FP</td>
<td>Pearson Correlation</td>
<td>-.079</td>
<td>.131</td>
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<td></td>
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<td>Sig. (2-tailed)</td>
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<td>.247</td>
</tr>
<tr>
<td>Technology &amp; Telecommunications</td>
<td>40</td>
<td>WC/TA</td>
<td>Pearson Correlation</td>
<td>.127</td>
<td>.023</td>
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<td>.879</td>
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<td>Pearson Correlation</td>
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<td>.120</td>
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<td>.418</td>
</tr>
<tr>
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<td>40</td>
<td>IP</td>
<td>Pearson Correlation</td>
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<td>- .066</td>
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<td></td>
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<td>Sig. (2-tailed)</td>
<td>.095</td>
<td>.656</td>
</tr>
<tr>
<td></td>
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<td>FP</td>
<td>Pearson Correlation</td>
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<td>.082</td>
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<td></td>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.299</td>
<td>.582</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 16: “Correlation for the defensive policy divided into sector”

The correlations for working capital measures and sectors in the defensive policy are shown in table 16. For the stock return the only null hypothesis that can be rejected is the CCC in the technology and telecommunications sector which indicates a negative relation. For the beta the null hypothesis is rejected in three cases. First for the WC/TA in the consumer goods sector there is a negative correlation which can be regarded as rather strong. The FP in the consumer service sector has strong negative correlation. Lastly the WC/TA in the industrial & oil sector is rejected with a negative correlation.
For the standard deviation seven null hypotheses are rejected which indicates that that
the volatility can be affected by the working capital.

5.5 Summary of the results of the hypotheses

<table>
<thead>
<tr>
<th>Aggressive</th>
<th>Neutral</th>
<th>Defensive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SR</td>
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Table 17: Summary hypotheses for WC/TA

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Table 18: Summary hypotheses for CCC

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Table 19: Summary hypotheses for IP

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Table 20: Summary hypotheses for FP
5.6 Discussion and analysis

Starting with the findings presented in the descriptive statistics we identified that there was an indication that the historical volatility of our sample was in line with what theory states about the relationship between the different working capital policies and risk. Showing that the aggressive working capital policy was associated with high risk and the defensive with rather low risk. However theory says that high risk should be accompanied by a higher return which was not the case within the time period we studied, this can be due to other reason such as a bad financial situation in the world rather than the theory not being true.

In order to get an overall picture a correlation test of the whole market was performed before dividing the sample up into policies, sectors and segments. For the stock return the tests for the whole market shows a very weak but statistical significant relationship between stock return and the WC/TA. This indicates that working capital had some but very little influence on stock return. The positive correlation is contradictory to what Afza & Nazir’s (2007) and Sabri’s (2012) earlier studies have come up with which was that the aggressive approach having a lower level of working capital is associated with higher accounting profitability. This is not the case according to our results for market performance looking at our whole sample. Further when looking at the correlation tests for the whole market we can see that both the firm’s liability and asset management do have an effect on the firms’ beta and standard deviation. However these are very weak relationships. As for the IP this is contrary to what Afza & Nazir (2007) concluded in their discussion when they had a defined aggressive approach associated with a lower amount of current assets. The relationship in this study indicates an extremely weak r-value which could point towards independence of the variables rather than an actual linear relationship. The second observation though is in line with what Afza & Nazir (2007) conclude in regards to the financing policy, showing that an increase in financing by current liabilities would be related to aggressiveness which has an association to a higher risk. Their earlier study looked more on the interaction between these two variables as a high IP can be followed by a higher FP resulting in a lower WC/TA ratio and aggressive approach. A firm adopting an aggressive approach doesn’t necessarily have a low amount of current assets, it becomes an interaction between the two main accounts (current assets & current liabilities) which make up the working capital. This is what Weinraub & Visscher (1998) came up with in their research. The correlation test for the whole market however only signifies the relationship the variables have with each other for the whole sample. Since our sample is quite diverse and covers several different industrial sectors which all have different ways and characteristics for the management of working capital just looking at the variables in this way is not sufficient and can create results that are misleading.

When dividing the market into the three working capital policies, aggressive, neutral and defensive the relationship with stock returns changes. This can be since market measures like stock return has more macroeconomic factors influencing its outcome and these factors are not taken into consideration in this study. As earlier studies by Deloof (2003), Afza & Nazir (2007) and Vishani & Shah (2007) found the relationship between profitability and working capital was based upon accounting profitability which is not exposed to these factors to the same extent. Our study cannot be said to be contradictory to these findings but we can see that working capital does not have the same relationship towards stock return as previous has been concluded for the accounting profitability. This could also question whether our division of the firms into the policies
was made through an appropriate method or if using another determinant for the categorization into policies would yield different results. For firms working with a low level of working capital there is evidence that they would increase the volatility of the firms by reducing them further. The negative correlation reflects what previous studies have further discussed around the risk phenomenon. However firms with neutral and defensive approaches get the opposite relationship with volatility where an increase in working capital would cause the firms to be more volatile. This might be due to the fact that they increase their risk or have had bad performances during some time due to inefficiency in their cash conversion and collected a large amount of receivables which the linear relationships with beta and standard deviation between CCC for neutral and IP for defensive could point towards. However for neutral CCC and standard deviation the relationship isn’t statistical significant and the r-values are relative low. This is something that would need to be investigated further in order to directly determine whether the assumptions about the relationship with risk, return and the different working capital policies hold. Earlier studies by Kahn et al (2012) had similar findings where they found relationships between working capital and risk, but as in our study it was hard to find the direction and to exactly determine how this relationship is.

5.6.1 The effect of Size segment

When looking at the effect of size the stock return yields little to none interesting observations. These poor relationships towards stock return could provide some evidence to the fact that looking at working capital cross-sectional between industries does give a misguided picture. This point towards what previous research by Belt (2009) stated, benefits of adopting an aggressive policy is varying between industries but also within industries. This means that what is optimal in regards to the level and management of working capital is something individual for each firm and stating that one approach is more profitable for their market performance is not necessarily correct. Looking at the working capital management as a factor for investment decisions should not be disregarded however one should bear in mind that there might not be a generalizable way in how it should be handled in order to be more profitable since this might be individual for each firm.

Furthermore, for the aggressive policy we can see that the WC/TA is positively related towards the standard deviation for the large cap where for the mid and small cap there is a negative correlation. This can be supported in what theory suggests about the fact that an aggressive approach is often likely to take place within companies that are operating in an environment with great certainty over future cash flows and operations which enables them to keep their working capital levels low. Large companies that are operating and have well-built up supply chains and stable operations can keep their operations stable over time compared to smaller companies which are not as influential for their suppliers creating a greater volatility in their market performance by keeping lower working capital levels. Belt (2009) study suggest that small business often have harder to forecast i.e. sales. However the observations for the small caps do not fall within the conditions to be statistical significant, so we cannot conclude that this is the case.

One other interesting finding is that for the mid cap firms there is a clear linear relationship between their investment policy and the volatility in the firms for all policies. These negative relationships for the aggressive and neutral policies are in
accordance to earlier findings from Afza & Nazir (2007) saying that there is a relationship between the firm’s levels of current assets and current liabilities and the risk. This is further to some extent supported between the different sizes as there are relations for both IP and FP with standard deviation and beta in all size groups, however dispersed around the different policies and without any general pattern. We cannot say for certain that this is true since we have findings that are both contradictory and supporting to Afza & Nazir’s (2007) findings.

The cash conversion cycles are quite dispersed and do not show any clear relations throughout the different policies and sizes. This can be since this is a measure fitting more within industries that are specifically focused upon all the major components of the working capital. Since these samples include for example service companies which do not possess inventory at all using this as a general measure for working capital might not be an appropriate measure. What previous studies found in regards to a negative relationship between the CCC and account profit of the firms does not hold for this study when measuring towards the firms’ market performance. Further since we have categorized the companies in a way previous studies have not we can see that when using a new measure for categorizing the relative aggressiveness of the firms it yields new results. Since working capital management yet remains a quite unexplored and complex phenomenon the results of this study supports the fact that further research and exploration of this is needed. From the descriptive statistics in our study we can see that categorizing the firms according to the WC/TA yields an average CCC that is in accordance to how earlier studies have categorized the degree of aggressiveness with the lowest CCC being the most aggressive. The statistical evidence in this research points to that we cannot see any relation between the CCC and the market performance of the firms on the Swedish stock exchange, nor is there any relation to the risk and return of the firms and this is the case in all tests.

So far we cannot conclude anything regarding differences in the size and how the working capital measures affects the firms stock return nor the risk and return tradeoff. We can only see that parts of the working capital are affecting firms’ volatility but this is irrespective of the size difference.

5.6.2 The effect of sector

In regards to what we discussed above around Belt’s (2009) statement that working capital management is something more varied between industries we have analyzed our sample further through categorizing it into sectors. This is done in order to be able to answer the sub question regarding if sector is influencing the importance working capital plays on stock return and the risk and return.

First off the aggressive policy has interesting finding for foremost the industrial sector. The industrial sector which in theory should be a sector that is composed and relay largely on the factors included in working capital have larger investments within the working capital accounts than other sectors. First, the positive correlation between the WC/TA and stock return indicates that it would be better for firms with very low working capital to increase this level to generate higher returns. However some of the firms with a very low working capital and even quite big negative working capital can be due to our ranking of the firms that might not necessarily only account for policy but
firms which have serious liquidity issues and having bad performing years can be included in the aggressive group and hence affect the results some. In the industrial sector we find that the WC/TA is statistical significant with the beta within all the different policy groups and for the standard deviation both for the aggressive and neutral policy. This indicates that an increase in the WC/TA would increase the volatility of the stock. It is evident that working capital does influence the risk of the firms in the industrial sector since the linear relationships with beta gives indications of this. The negative relation to the standard deviation for the aggressive policy along with a relatively high r-value points towards that the unsystematic risk of the firms in the sector increases as the WC/TA decreases. This is according to what previous studies have found in regards that a lower working capital amount is associated towards a higher risk and return trade-off. However the relationship shows contrary behavior for the defensive policy within the industrial sector. This might be because firms within this sector collect too much redundant cost in form of inventory, poor credit and payment management which decreases the performance and becomes volatile within the market due to poor management throughout the years. From these results we can conclude that the working capital is an influential factor within the industrial sector. However determining exactly how working capital optimally should be managed and at what level cannot be concluded from over tests.

The firms within the consumer service sector applying the aggressive policy and having low amounts of working capital have the same patterns as in the industrial sector. Their lower working capital being related to a higher unsystematic risk. Apart from this Afza & Nazir (2007) findings revolving the IP and FP are both confirmed and contradictory to our results. The negative correlation between the IP and FP in this sector can be firms with a low level of current assets and also operating with a lower amount of current liabilities resulting in a low working capital which makes these firms more exposed to risk. These accounts separately have a stronger r-value then the measure for the total working capital. This can be what Weinraub & Visscher (1998) and Afza & Nazir (2007) found that often when firms adopt an aggressive IP they are following this with a more conservative FP. Meaning that in this case the most risk exposure revolves around operating with a low level of current assets in combination with the conservative FP which is a low level of current liabilities. From our statistical tests this points toward higher historical volatility and risk. Operating with a low amount of current assets is also in theory something associated with being more risk full since this can create liquidity issues which in turn can lead to difficulties in meeting short term obligations that come due.

Furthermore there are some statistical significant findings that are dispersed seeming quite random distributed between the sectors, measures and policies. These can be due to the lack of observations that exists within some sectors causing some of the results being created by chance or random. So these findings will be disregarded for this studies purpose and have to be further explored using a larger number of observations to reach results that could be more significant.

5.6.3 Weak correlations

Since the results of the correlation tests resulted in almost none or very weak relationships between working capital, policy and stock performance we have to question whether stock return is the most appropriate measure to use. Instead it could
have been more appropriate to use a market measure of profitability like Tobins q, which is what Afza and Nazir (2007) used in their research. Testing working capital towards stock performance is something quite unexplored and not something that has been done to a large extent in previous researches. Instead much of the earlier studies have explored the relationship between working capital and accounting profit. One reason for both the limited amount of previous research and the lack of statistical significant results in our study can be that there are so many other factors influence the stock performance compared to the firms accounting profitability. For example macroeconomic factors could have a large impact on the stock return and its volatility. These macroeconomic factors could be inflation, interest rates or the current financial situation in the world and these factors are out of the firm’s control and also unreasonable to take into account in this study, although it is important to be aware of them and their effects.

Further reasons for the fact that there necessarily isn’t a direct relationship between the aggressive working capital and stock return can be due to the fact that the optimal working capital level which would in theory increase the firm’s profitability can differ a lot amongst companies. What might be considered aggressive or defensive within one industry might not be the same in other industries. This can be another reason to why listing the firms and then divide them into policies can be misguiding and place each firm in exactly the policy they actually belong to. This is a phenomenon that needs further exploration in order to find measure and a good determination of firms’ optimal and best working capital practices.

We can see that working capital is a factor that shows indications of influencing the volatility of the firm’s stock movements and by looking at the correlation for the whole market even in a weak way the stock return. However we don’t find any direct relation between the different policy groups and the return in any of our correlation analyses. Working capital can however still be worth to consider when evaluating an investment. One has to bear in mind that it is hard to find a definitive way or specific level that is supposed to be optimal. Working capital alone is not the sufficient measure to evaluate an investment but in combination with other variables and deeper analysis of the accounts it can be a starting point to look at. Important to bear in mind is that the management of working capital is individual for each firm or sometimes sectorial. Since working capital management is closely tied to the firms supply chain management it can differ much between industries. For firms to find optimal levels and develop efficient management of their working capital they could need close collaboration between supply management and their financial departments.

Something to consider is if companies really are considering their policy towards working capital on the concept of working capital as a whole or if they approach it by splitting the policies between management of their current assets and current liabilities. A firm with an aggressive working capital should in theory have a high amount of current assets followed by a high amount of current liabilities, which would then yield in total a lower working capital. The study by Afza & Nazir (2007) found that companies that are adopting an aggressive IP often are followed by the more conservative FP or vice versa. If this for example would be focused on reaping the benefits of financing through current liabilities and payables as a cheap non-interest bearing loan the benefits would not be balanced by a higher level of current assets and payables were the management borrows cheap and non-interest bearing. One could see
tendencies that the firms have to consider all account separately rather than focusing on the working capital as a whole meaning that they focus on credit management, inventory, payables and receivables separately. Moreover they have to consider the timing of cash flows and the differences in certainty over the future. If firms have a greater outlook over their future and their future timing of cash flows they will have it easier developing and establishing more aggressive approaches towards working capital which would generate more profitability, as Harris (2005) suggests. The probability would appear as both accounting profitability and higher stock return. This could be why it is particularly hard to determine how working capital should be managed in a general way for the firms. The findings in this study are helping to support this and investors who have a general tendencies to focus more on capital structure and fixed assets before investing are not necessarily wrong, but this study shows that working capital should not fully be disregarded and rather be something that is looked at together with capital structure and fixed assets when evaluating an investment.

This study included three different working capital policies on contrary to what earlier studies by i.e. Weinraub & Visscher (1998), Afza & Nazir (2007) and Sabri (2012) did, they only investigated two policies, the aggressive and conservative. The aim of this study was to enlighten the policies more closely. Our findings however do not contribute with a new definitive way in how to measure and establish the different policies. But the findings of this research show that there are relations regarding the phenomenon which can be helpful in future studies establishing an optimal measure of the working capital policies.

Sabri’s (2012) study on the Jordanian market reached the conclusion that the aggressive approach was more profitable and gave the recommendation that managers should adopt this working capital approach. However, this study and earlier theory’s suggests that working capital is not a simple concept and many factors play a vital role in the management. Firms can be operating within a sector with high competition and in order be a profitable firm there is need for example a more generous credit policy. There are many factors influencing the working capital that can force the firms to have certain levels of working capital even if some lower levels in theory should be more profitable. The trade-off between risk and efficiency is what affects this and some firms operating in greater uncertainty may be more risk-averse meaning that they value less risk higher than a potential higher return.

5.6.4 Summary

To conclude this discussion we can see that the working capital plays a role that affects the firm’s stock performance, mainly in the case of the volatility of firms. We cannot through the findings of this research support earlier studies revolving around the risk and return trade-off and the different working capital policies, however we can see that the working capital is related to the risk and return of the market performance for the firms included in this study. Sectors have an important role for how working capital affects the market performance of the firm. The findings show that sectors play a bigger role than the size difference of companies. Even though we cannot conclude much from the findings of this research, we can now see that working capital does not influence the stock return in the same way it affects the accounting profitability. This constitutes new knowledge within the field of working capital. We can however confirm some of the
earlier studies from Kahn et al (2012) regarding the fact that working capital has an effect upon the risk of the firms.
Chapter 6: Conclusion and recommendations

This chapter will draw conclusions that this study has come up with and provide answers to the main research question and to the sub research questions. Moreover, the practical and theoretical contributions of the study will be presented. Finally, some suggestions for future research will be provided.

6.1 Conclusion

The main objective of this research was to explore the relationship between working capital and the stock return of the firms listed on the OMX Stockholm stock exchange. In order to examine this we conducted several statistical tests using the Pearson correlation. We collected the needed data from the firm’s annual reports enabling us to calculate the measures of the working capital. The needed numbers for the stock return calculations where collected from the Thomson Reuters DataStream.

To enable us to answer the main research question we developed several sub-questions which we analyzed statistically with the use of hypotheses. These tests gave little evidence of direct relation between the working capital policies and stock return. We categorized the whole market into the different policies, sectors and size. There was only some statistical significant relationship for the working capital policies and stock return found. We found that working capital is best looked at when separating the firms according to their respective industry. We could not establish any direct relation between the different policies and stock performance for the market as a whole. We could only conclude that the assumptions about optimal working capital levels are sectorial or individual for each company.

Further we looked at the risk and return relationship of stocks for the different companies. These tests yielded more significant results. For some sectors we found evidence that supports previous research within this subject. There was also some observation that was contradictory to previous research.

Below we present short answers to first the sub-questions and then the main research question.

- First, identifying the relationship between different working capital policies and the stock return of Swedish firms

According to this study we find no direct relationships for the Swedish firm’s working capital policy and the stock return. We had to retain most of the null hypotheses in our correlation tests between the different working capital measures and the stock return. We only found weak relationship between the working capital levels and stock return for the whole market, but categorizing the sample into policies yielded no relations with the stock return.

- Secondly, we want to test the theory behind the risk/return trade-off and see if risk increases with an aggressive policy

In this research we could see that working capital standalone does have linear relationships with the risk and return of the companies on the Swedish stock exchange. We found some statistical significance that there is a relationship between increasing
risk and a more aggressive approach in managing the working capital. However, these cases cannot be seen as sufficient enough to determine this theory.

- *Thirdly, we want to look into if there is any difference between the large, mid and small caps.*

We found no significant differences in the working capital measures and their relations to the stock performance and risk and return for the firms when categorizing them into size and segments. The results were dispersed differently amongst the sizes and there were no clear differences or patterns between the sizes.

- *The last step would be to see if the type of industry has any impact on the working capital policy’s relation with the stock performance and risk/return*

In our test where we investigated the differences between the sectors we found some significant differences. Mainly for the industrial sector were there where many different correlations between level of working capital and risk/return. This was the case for all sectors throughout the different policies. This was confirmed in Belt’s (2009) study, his theory said that working capital policies depend on industry and that the benefits of adopting the different policies vary among industries. We could conclude that there was a significant difference between sectors and that working capital relates to risk and return.

**Main research question;**

- *What is the impact of working capital policies on stock performance in Sweden?*

First, we can see that there was no direct relationship between the working capital policies and stock return. Further we found some evidence of how working capital policy does affect the volatility of the stocks. This evidence was found within all of our different correlation tests when the sample was divided into different policies. These empirical results give an indication of that working capital plays a part in the firms’ stock performance. However it is hard to find a clear pattern in what way or which level that would be related to a higher risk and return trade-off. The findings in this research can conclude that there are sectorial differences in how the working capital management affects stock performance in Sweden. We found patterns of this in our correlation tests after dividing the sample into different sectors. Lastly, we can say that working capital does have relation with the volatility of the stock performance in Sweden and working capital impacts stock performance differently across sectors.

**6.2 Contributions**

Before conducting this research there was a lack of empirical studies that investigated the impact that working capital policy had on stock performance. Previous research often focused on the relationship towards accounting profit instead so there was an obvious knowledge gap and new research was needed. With this study we wanted to contribute with new empirical results within this rather unexplored topic. This has been done by correlation analyzes on how the different policies affect stock performance. Although the empirical results overall show no relation between stock return and
working capital policies the study still provided new empirical findings which can be useful for investors.

Furthermore, we wanted to provide deeper understandings for the different working capital policies which could be helpful in both future studies and for managers. This has been done through in-depth discussions about working capital in general but also shed light upon the different working capital policies and how they can be measured. Moreover, we aimed to provide stock analysts with information on whether they should pay working capital policies attention before making investment decisions. This study indicates that there is no clear relation between the policies and stock return, however we still argue that working capital could be important to consider before placing an investment since there could be relationships if another more appropriate measure than the stock return where used. Lastly, we wanted to investigate whether working capital policies are related to the risk-return trade-off of stock performance which could be helpful for portfolio managers. Regarding the risk-return, this research contributes in the way of confirming that working capital is related to risk and return, however this research does not confirm that one policy is more risky than the other since the correlation tests do not yield any apparent patterns.

This evidence can be beneficial for portfolio managers as we can see that working capital do affect the beta of the stock. One should however bear in mind that when looking at the working capital as indication of beta movements this should be done in combination with other potential factors that affect the stock volatility. This fact helps the predictors of future stock performance that one should not disregard working capital fully.

For manager these findings can give them a better view of the fact that there might be no clear and best way of managing working capital. It is something that can be different from firm to firm so they might have to analyze this phenomenon within their organization and between different departments to find what might be the optimal level for their firm.

6.3 Quality Criteria

The following section will examine how well the concepts of validity, reliability and replication that where explained in the theoretical methodology are fulfilled in this study.

The validity of this research is in regards to the criterion that the research measure of concepts really measures the concept it is supposed to measure (2.10). In order to establish the validity of this research we start with assessing the measurement validity. One of the variables used within this study was WC/TA which has not been used in previous studies as a measure for the working capital policies. We have determined the measurement validity first in in the form of the face validity through discussions and asking peers or others with relevant knowledge of the topic. These discussions and answers helped us to confirm that this variable is measuring the concept that it is supposed to do. Furthermore elements of the construct validity have been added for the establishment of the correct measure, the variables are all based upon theories and previous research within this field and the exception to some extent is the WC/TA but the elements of the this variable is connected to both the IP and FP which have been
widely used in previous research when investigating the working capital policies. The CCC is also a common measure of the working capital which we have extracted from previous research.

Internal validity of this research could be questioned to some extent, the results from our empirical chapter indicates quite the dispersion between the different variables hence there is some indications for potential relationships. However for our conclusion these observations alone are not strong evidence enough of a linear relationship between the variables. The conclusion of no relationship between the working capital policy and stock performance is evident from our observations. The risk of internal validity in this research could also be since we infer one variable causing the other. However, since we are using a correlation test which is only measuring a linear relationship between the variables and not assuming that any of the variables infer the other the internal validity is high. Further the assumption that working capital policies would infer stock performance or risk is devised from theories and previous research and we have developed a good understanding of this inference in order for us to keep the internal validity of the research high.

The external validity of the research is high, since the research is conducted on the Swedish market the results can be considered representative for this geographical area and generalizable towards it. Since we within our statistical tests take the different characteristics of firms into account such as size and sectors, this diversification of the sample signifies that it well represents the market. However it can be questioned whether these findings can be generalizable to another population than where the sample is take form. If this is the case this population will have to share a lot of similar market conditions and characteristics in order to be applicable. Since the sample is well represented from the population the external validity can be considered fulfilled in the research.

For the reliability of the research, we can consider the stability as high since the data collection and analysis is based on historical data which will not change over time if the study was to be copied and conducted again using the same sources for the data collection. Since we are conducting correlation analysis there is little risk of having issues with internal reliability since the measure between the different variables do not risk to have any correlations between themselves. Basing the research on theoretical models with historical data there is no subjective judgment involved in these activities from the authors. We can see that the reliability of this research can be assessed to be consistence with the quality criteria’s for quantitative research.

The replication of this study can be regarded as high. This is since we carefully are explaining each step of what we have done in our practical methodology. We describe our sample, the time horizon, the collection method and how the statistical tests are performed. Moreover since we are presenting our personal background in the theoretical methodology researchers intending to replicate our study can take this into account. These points will give other researchers the possibility to replicate our study.

6.4 Suggestions for further research

We are well aware of the limitations in this study, which have arisen due to the time limitations for the study, the limited resources and because of the complexity of the
topic. We have investigated the relationship that working capital policy has on stock performance, however we believe that this relationship could be investigated in other ways as well, confirming some of our results but also possible present different results. Therefore we present a few suggestions for what future researchers could investigate.

In future researches it would be interesting and appropriate to use the same sample as in this study but use other statistical tests to see whether the results are the same or not. Other tests might be more appropriate than Pearson’s correlation however we do not have the needed statistical knowledge to perform these tests.

Furthermore, since there is a lack of studies within this field it would be interesting to see if the same results would appear if the study was repeated but with another sample. Preferable in a different Scandinavian country that has a similar market as Sweden. Moreover the same study could be repeated a few years from now to see if the results are similar, since the financial environment could be different in the future and generate different findings.

Another possible future research could be to conduct a similar research on the same topic but using other measures for the market performance of the firms. For example using Tobin’s q or P/E instead of the stock return since this would be a measure of the market valuation that is more related to the firms’ performance than the stock return is.

Furthermore, studies could be done with a focus upon developing a more complete measure of the working capital and on what criterion firms shall be categorized into the three different policies.

It would also be interesting is to conduct a quantitative study around the working capital policies. Through in-depth interviews with firms management one can try to establish how much they focus on their working capital management and if they have set policies for the working capital as a whole or if they rather have divided the focus upon the different accounts included in the working capital separately. This would help increasing the knowledge about working capital and how much firms focus on it. This will also be a contribution to earlier studies and increase the knowledge for academics, investors and managers.
Reference list


NASDAQ OMX Nordic (2013). Rules for the Construction and Maintenance of the NASDAQ OMX Nordic All-Share. [<https://indexes.nasdaqomx.com/docs/Methodology_OMXNORDIC.pdf>] [Retrieved 2013-03-14]


Appendix 1: Companies included in the study divided into segments

**Lage Cap**

Boliden AB  
Holmen AB  
Lundin Mining Corporation  
BillerudKorsnäs AB  
SSAB AB  
Stora Enso Oyj  
Autoliv Inc  
Electrolux AB  
Swedish Match AB  
Husqvarna AB  
Oriflame Cosmetics  
Axfood AB  
Modern Times Group MTG  
Hakon Invest  
Hennes & Mauritz AB  
Meda AB  
AstraZeneca PLC  
Getinge AB  
Alfa Laval AB  
Alliance oil Company Ltd.  
SAAB AB  
SCANIA AB  
Securitas AB  
Trelleborg AB  
ASSA ABLOY AV  
Peab AB  
Sandvik AB  
Skanska AB  
Volvo AB  
ABB Ltd  
Atlas Copco AB  
NCC AB  
NIBE Industrier AB  
SKF AB  
TeliaSonera AB  
Axis AB  
Ericsson Telefon AB

**Mid Caps**

HEXPOL AB  
Höganäs AB  
Nobia AB  
Duni Ab  
Haldex AB  
AarhusKarlshamn AB
Black Earth Farming Ltd
Fenix Outdoor AB
Mekonomen AB
New Wave Group
Bilia AB
Eniro AB
Rezidor Hotel Group AB
SAS AB
Betsson AB
Net Entertainment NE AB
Swedol AB
Swedish Orphan Biovitrum AB
Aerocrine AB
BioGaia Ab
Gunnebo AB
Loomis AB
Nolato AB
Proffice AB
AF AB
Industrade AB
Lindab International AB
SWECO AB
Beijer AB
Beijer Alma AB
Fagerhult AB
Industrial & Financial Systems AB
HiQ International AB

Small Caps

ProfilGruppen AB
BE Group AB
Rottneros AB
Midsona AB
Lammhults Design Group AB
Opcon AB
VBG GROUP AB
Björn Borg AB
KABE AB
Odd Molly International AB
Trigon Agria
Nordic Service Partners Holding AB
TradeDoubler AB
Electra Gruppen AB
Feelgood Svenska AB
Ortivus AB
BioInvent International AB
CellaVision AB
Elos AB
Global Health Patner AB
Vitrolife AB
Artimplant AB
Biotage AB
Probi AB
Bong AB
Cision AB
Concordia Maritime AB
Geveko AB
Image Systems AB
Intellecta AB
ITAB Shop Concept AB
Note AB
Rederi AB Transatlantic
Rövik Timber AB
Semcon AB
Studsvik AB
XANO Industri AB
Beijer Electronics AB
BTS Group AB
CTT Systems AB
eWork Scandinavia AB
PartnerTech AB
Polia AB
Uniflex AB
Acram AB
Consilium AB
Duroc AB
Malmbergs Elektra AB
Micronic Mydata AB
Nederman Holding AB
OEM International AB
Precise Biometrics AB
Pricer AB
Rejlerkoncernen AB
SinterCast AB
Svedbergs i Dalstorp AB
AllTele Allmänna Svenska Teefonab
Cybercom Group AB
FormPipe Software AB
HMS Networks AB
Know It AB
Phonera AB
Proact IT Group AB
SjärnaFyrkant AB
Vitec Software Group AB
Acando AB
AddNode Group AB
Anoto Group AB
Aspiro AB
DGC One AB
DORO AB
I.A.R Systems Group AB
MSC Konsult AB
Prevas AB
ReadSoft AB
Sigma AB
Avega Group AB
Connecta AB
Enea AB
Micro Systemations AB
MultiQ International AB
Net Insight AB
NOVOTEK AB
Seamless Distribution AB
Softronic AB