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# **Gordon Institute of Business Science**

University of Pretoria

Research report in support of the study of:

## **The relationship between the management of payables and the return to investors**

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## ABSTRACT

Working capital management assists a firm in achieving improved liquidity through management of the components of receivables, inventory and payables. Previous studies have established that working capital has a strong positive correlation to profitability. These studies have also shown that the components of receivables and inventory have a positive correlation to profitability, while payables have an inverse relationship. The inverse correlation of payables in relation to profitability is contrary to the theory that advocates extending payables' payment terms as a means of managing working capital and improving liquidity.

This study attempted to ascertain whether, by applying a style-based test, to an extensive database of Johannesburg Stock Exchange (JSE) listed South African companies, there is evidence to support a positive relationship between returns to investors and payables days. The study further applied the style-based test to the relationship between returns to investors and the management of payables in the form of change in payables days. Further data stratification was applied to industries that are more significantly invested in payables as well as to companies of increasing or decreasing momentum to differentiate the payables strategy of an increasingly profitable company *versus* an increasingly unprofitable company.

The results of the study indicated that for those companies in industries that have significant investment in payables, management of their payables will achieve superior returns. The study also revealed that this relationship is significant for companies in the top 40% momentum return and that higher change in payables could be applied as a means of obtaining a competitive edge.

## **KEYWORDS**

Working capital management, Payables management, Change in payables.

## DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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# TABLE OF CONTENTS

<b>ABSTRACT</b> .....	<b>i</b>
<b>KEYWORDS</b> .....	<b>ii</b>
<b>DECLARATION</b> .....	<b>iii</b>
<b>ACKNOWLEDGEMENTS</b> .....	<b>iv</b>
<b>TABLE OF FIGURES</b> .....	<b>vii</b>
<b>CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM</b> .....	<b>1</b>
1.1 Economic impact on company growth and cash reserves .....	1
1.2 Working capital as a source of value, growth and cash reserves .....	2
1.3 Risks of not managing working capital.....	4
1.4 Difficulties with managing working capital.....	4
1.5 Components of working capital and correlation to profitability .....	5
1.6 The significance of working capital management of payables .....	6
<b>CHAPTER 2: LITERATURE REVIEW</b> .....	<b>10</b>
2.1 Working capital management relationship to profitability .....	10
2.2 Receivables and inventory management relationship to profitability....	11
2.3 Payables' management relationship to profitability .....	12
2.4 The significance of payables in an integrated supply chain .....	14
2.4.1 The impact of the new business model.....	14
2.4.2 The impact of supply chain management on financial performance....	16
2.5 Absolute payables days <i>versus</i> change in payables days .....	18
2.6 Impact of different industries on payables balances .....	19
2.7 Payables days management not viable as a value creation activity ....	19
2.8 Profitability as a measure of return .....	21
<b>CHAPTER 3: RESEARCH HYPOTHESIS</b> .....	<b>23</b>
3.1 Hypothesis 1 .....	23
3.2 Hypothesis 2 .....	23
3.3 Hypothesis 3.....	24
3.4 Hypothesis 4.....	25
3.5 Hypothesis 5.....	26
<b>CHAPTER 4: RESEARCH METHODOLOGY</b> .....	<b>27</b>
4.1 Research design.....	27
4.2 Style analysis.....	27
4.3 Research Instrument - Style-engine .....	27
4.4 Population.....	29
4.5 Sampling.....	29

4.6	Unit of analysis .....	30
4.7	Data collection .....	30
4.8	Data validity and reliability .....	30
4.9	Potential research limitations .....	31
	<b>CHAPTER 5: RESULTS.....</b>	<b>32</b>
5.1	Data Description .....	32
5.1.1	Absolute payables days.....	32
5.1.2	Change in payables days for all industries .....	33
5.1.3	Change in payables days for specific industries .....	33
5.1.4	Change in payables days for specific industries for top and bottom 40% respectively.....	35
5.2	Absolute payables days to return.....	37
5.3	Change in payables days to return for all industries .....	39
5.4	Change in payables days to return for specific industries.....	41
5.5	Change in payables days to return for top 40%.....	44
5.6	Change in payables days to return for bottom 40% .....	47
	<b>CHAPTER 6: DISCUSSION OF RESULTS .....</b>	<b>50</b>
6.1	Absolute payables days to return.....	50
6.2	Change in payables days to return for all industries .....	51
6.3	Change in payables days to return for specific industries.....	52
6.4	Change in payables days to return for top 40%.....	52
6.5	Change in payables days to return for bottom 40% .....	53
	<b>CHAPTER 7: CONCLUSION .....</b>	<b>56</b>
7.1	Recommendations for future research.....	57
7.1.1	Aggressive payables management to long-term return.....	57
7.1.2	Payables management to return in a supply chain network.....	58
7.1.3	The impact of settlement discounts on the payables working capital strategy	58
	<b>REFERENCES.....</b>	<b>60</b>

## TABLE OF FIGURES

Figure 1: Global outlook for GDP in 2014 .....	1
Figure 2: Comparison of Days Payable Outstanding (DPO) by region .....	7
Figure 3: New business model (Walters, 2004) .....	15
Figure 4: Average payables days per portfolio .....	32
Figure 5: Number of companies per period for specific industries .....	34
Figure 6: Percentage change in payables days per period for specific industries for Portfolio 1 and Portfolio 5.....	35
Figure 7: Number of companies per period for specific industries (top 40%)	36
Figure 8: Style – Absolute payables days: Average return for five portfolios of 32 equal weighted shares based on absolute payables days.....	37
Figure 9: Style – Change in payables days: Average return for five portfolios of 32 equal weighted shares based on change in payables days.....	39
Figure 10: Style – Change in payables days: Average return for five portfolios of 18 equal weighted shares based on change in payables days for industries with material payables .....	41
Figure 11: Style – Change in payables days: Average return for five portfolios based on change in payables days for industries with material payables and in the top 40% of momentum in return .....	44
Figure 12: Style – Change in payables days: Average return for five portfolios based on change in payables days for industries with material payables and in the bottom 40% of momentum in return .....	47



# CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

## 1.1 Economic impact on company growth and cash reserves

This Financial Management study is pertinent when the harsh economic conditions currently being encountered both locally and globally are considered. To emphasise the economic challenges being faced Cooter, Sentence, Terry and Windaus (2014) demonstrated the expected global Gross Domestic Product (GDP) growth rates for 2014 in Figure 1.

Figure 1 stresses the low single digit growth rates expected to be experienced by countries globally. The three year Cumulative Average Growth Rate (CAGR) is expected to be 1% globally and the 2014 year on year CAGR is expected to be a low 0.4%.

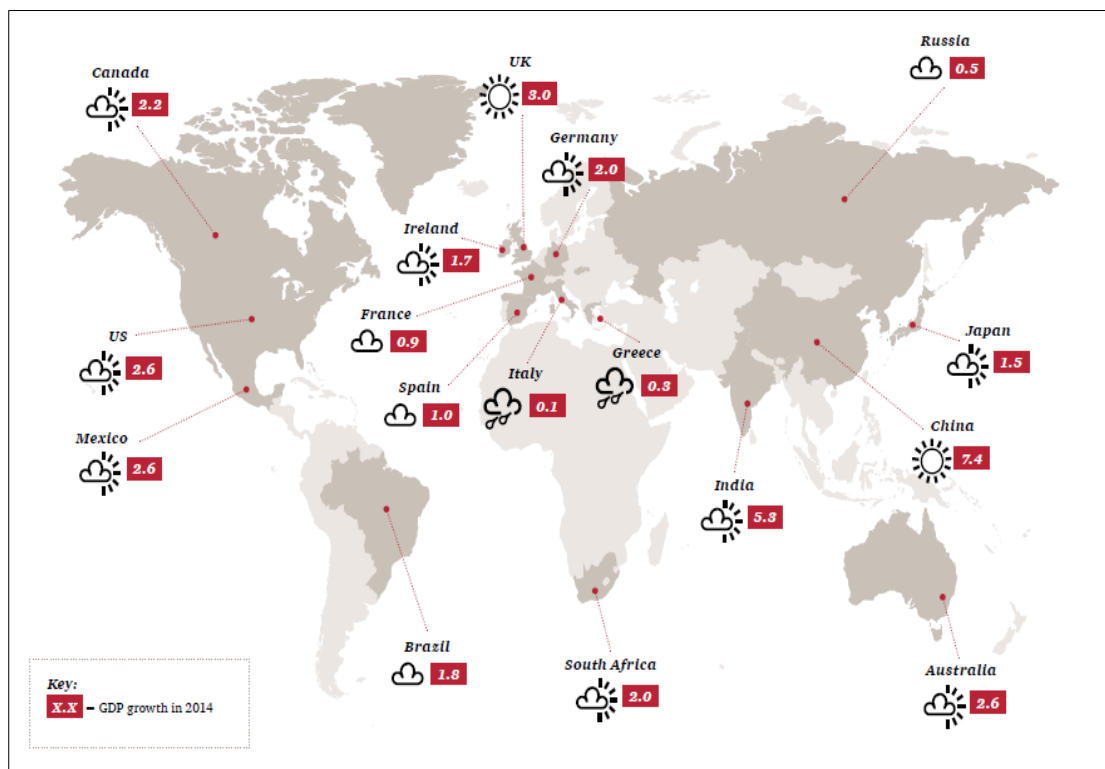


Figure 1: Global outlook for GDP in 2014

These declining global growth rates have resulted in declining company growth rates and according to Cooter *et al.* (2014) “[t]o continue to grow and enable investment, companies will require significant extra cash over the next few years. If companies continue to grow at a modest rate of 1% p.a. they would need to find an additional €309bn to finance working capital and incremental CAPEX over the next three years” (p. 26).

Dobbs, Giordano and Wenger (2009) agreed that given the recent economic crisis, companies may be forced to break the current emphasis on planning, budgeting, and investing to return to the ideology that “[c]ash once again is king, and all systems and decisions must be geared to preserve it while companies make conscious trade-offs to achieve their longer-term strategic objectives” (p 7). Dobbs, Giordano and Wenger (2009) further postulated that the management of working capital is a critical source to release cash. The cash that is released can fund growth for the company either through re-investment or by the acquisition of other companies.

## **1.2 Working capital as a source of value, growth and cash reserves**

The theory of working capital management has been prescribed by various textbooks and studies. This particular study followed the theory as prescribed in “Turning vision into value” by Price and Ward (2006) and “Understanding Financial statements” by Graham and Winfield (2010), which also propose that managing working capital (efficiency) there will be an improvement in liquidity and cash in the business. Efficiency in working capital management is based on collecting faster and slowing down disbursements (Nobanee, Abdullatif, and Al Hajjar, 2011).

Working capital investment is also relevant due to its size in relation to the investment required in a business. According to Davies and Merin (2014), “Working capital can amount to as much as several months’ worth of revenues, which isn’t trivial” (p 1). By managing working capital, companies

can liberate a significant amount of cash to sustain them during cash restrained economic conditions. Deloof (2013) further concurred by stating that “[m]ost firms have a large amount of cash invested in working capital. It can therefore be expected that the way in which working capital is managed will have a significant impact on the profitability of firms”.

Nazir and Afza (2009) emphasised the significance of considering working capital as an alternate source of growth: “Working capital management is highly important in firms as it is used to generate higher returns for stakeholders. Efficient management of working capital is very essential in the overall corporate strategy in creating shareholder value” (p 28).

Davies and Merin (2014) justified the significance of the management of working capital as a source of cash reserves in their delineation that it is beneficial for all companies. In as much, if the company is in cash flow distress, an improvement in working capital can be a support to the company. Furthermore, for those companies with healthy operations, the cash resources empower the company to reinvest the cash to directly improve value and growth, as well as flexibility in their balance-sheet, thereby improving return to investors.

To date, most studies have demonstrated the benefits of working capital management, for example Cooter *et al.* (2014) explained that “[c]ompanies that have consistently focused on optimising working capital have also shown the greatest improvements in EBITDA. These companies are benefiting not only from the cost savings from more efficient processes and reduced working capital losses, but are also profiting from the enhanced flexibility that comes from having good cash reserves” (p 22). Cooter *et al.* (2014) also stated that “[g]lobally, €0.9tn to €1.4tn of cash could be released from working capital” (p. 28).

This discussion emphasised the significance of managing working capital as a determiner of value within all entities in a time where performance is focused on delivering value to the shareholder, while having limited access to cash funding in a low growth economy.

### **1.3 Risks of not managing working capital**

Poor or no management of working capital also has implications and risks. Ashraf (2012) stated that “[e]xcessive levels of current assets can easily result in a firm’s realizing a substandard return on investment. However firms with too few current assets may incur shortages and difficulties in maintaining smooth operations, as of which many firms try to achieve the optimal level of investment in each component of current assets and liabilities” (p 60). Management of working capital to an optimal level is critical to business success and is a balance between risk and efficiency. It is not merely a means of capitalising on investment in current assets. If a company fails to manage working capital it may be eroding its profitability.

Progress to date as discussed in Cooter et al. (2014) expressed that only 9% of companies around the globe manage to improve working capital consistently over multiple years and that the companies that do achieve sustained working capital performance improvements tend to be those that are performing better than average already. Not managing working capital is risky in that competitors may effectively be managing their investment in working capital which may serve as a competitive advantage to them that may be difficult to erode. This is supported by Cooter et al. (2014) in their statement that “[c]ompanies that have historically underperformed seem to find it hard to catch up with industry leaders” (p 5).

### **1.4 Difficulties with managing working capital**

Davies and Merin (2014) communicated the difficulty with managing working capital in their statement that “[m]anaging a company’s working capital isn’t the sexiest task. It’s often painstakingly technical” (p 1). According to Cooter et al. (2014) “Improving working capital requires complex structural alignments at the very core of a business, in order to make it sustainable”, rendering the process both technical and complex (p 5).

The complexity is that there are many moving parts in the structure of a business and usually these parts have conflicting goals. The conflict between the different goals and components result in the push and pull on the working capital investment that is difficult to maintain at an optimal position.

David and Merin (2014) further elaborated on this complexity by explaining that "...not all reductions in working capital are beneficial. Too little inventory can disrupt operations. Stretching supplier terms can leak back in the form of higher prices, if not negotiated carefully, or unwittingly send a signal of distress to the market" (p 2). The result is that mismanagement of working capital is highly possible when the balance between conflicting levers is taken into account.

Another indicator of the difficulty in the management of working capital is that progress to date has been limited. Cooter et al. (2014) posited that working capital management and working capital performance has stagnated over the last five years. They discuss that after the credit crunch in 2008 companies did improve on their working capital investment but that since then the performance has not reflected much improvement.

The results up until now thus serve to confirm the difficulties in managing working capital, regardless of the acceptance of the importance of working capital management as an essential component of management of an entity, as the complexity lies in the fine balance between profitability, efficiency and liquidity as these concepts co-exist in maintaining viability of a business.

## **1.5 Components of working capital and correlation to profitability**

A common measurement of working capital management is the cash conversion cycle (CCC), which is the time difference between the purchase of raw materials for production or sale and the collection of cash from customers. Working capital management can be further divided into inventory days (ID) (time taken to convert inventory to cost of sales) *plus* receivables

days (RD) (time taken collect money from receivables) less payables days (PD) (time taken to pay payables). The measurement is in days.

$$CCC = ID + RD - PD$$

$$ID = \text{Inventory} / \text{Cost of Sales} * 365 \text{ days}$$

$$RD = \text{Receivables} / \text{Sales} * 365$$

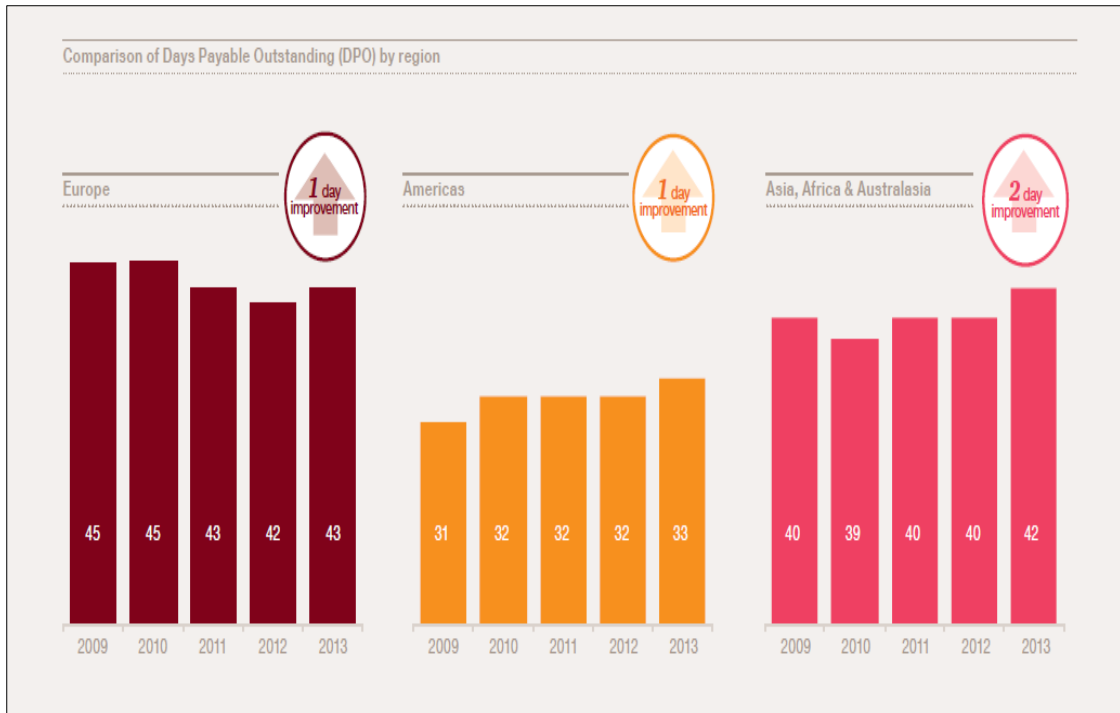
$$PD = \text{Payables} / \text{Cost of Sales} * 365 \text{ days}$$

Deloof (2003) and Sabri (2012) have demonstrated that there is a positive correlation between both working capital and profitability, and individual components of inventory and receivables, while the evidence is contradictory for payables.

The studies have identified that this contrary relationship for payables has been distorted by lower profit entities that extend payables days out of survival rather than choice. Thus, the relationship between management of payables and profitability has not been established, which raises the question that serves as the topic of this study: whether the management of working capital through payables is an appropriate alternate strategy to drive return.

## **1.6 The significance of working capital management of payables**

Cooter et al. (2014) discussed that working capital performance had shown a slight improvement over the past three years, with the result being around 2% per annum. It is interesting that payables was the only component that had shown consistent improvement globally with Europe reducing by 1 day to 43 days, America by 1% to 33 days and Asia, Africa and Australasia each exhibiting a reduction of 2 days, to 42 days.



**Figure 2: Comparison of Days Payable Outstanding (DPO) by region**

Padachi, Narasimham, Durbarry and Howorth (2008) stated that “short-term sources, more particularly trade credit and other payables, play a significant role in financing working capital” (p 58). Wilner (2000) also emphasised that firms have excessive use of trade credit despite the apparent greater cost. Padachi *et al.* (2008) stated that “[i]f a firm is forced through financial stringency to keep its working capital constant, then increased payment delays from customers must be balanced by delayed payments to suppliers” (p 46).

The implication is that companies employ significant payables investment. When adopting a working capital management policy, these companies will extend payables days if they over-invest in inventory or are not being paid on time from receivables.

Ganesh, Mohapatra and Nagarajan (2014) explained that “[o]rganizations all around the world have woken up to the fact that in order for them to successfully compete in the international markets and to sustain their competitive advantage, they must strive to imbibe and rely on effective supply

chains and networks. The management of the supply chain has thus caused a paradigm shift in the way most organizations function (Brandt 2009). Companies are seen to now focus on their core competencies and rope in external suppliers, distributors, and logistics providers in order to ensure that products are manufactured and delivered as per the demands of their customers (Zammori et al. 2009).” Hence, it is imperative as companies progress into the future, that there be a close cooperation between the various members who constitute a part in their supply chain, including that of payables, in order for them to create a competitive positioning from these relationships.

Padachi *et. al* (2008) stressed that “a lengthening of the working capital cycle is partly met by stretching the credit period from suppliers and this may impact adversely on customer-supplier relationships” (p 51). Bartram (2013) also stated that “[i]f you don't have a good relationship with your suppliers, you could end up not receiving goods when you need them. And, if you can't fulfil your commitment, that's not good for your cash flow either” (p 1). By adopting a payables management policy, you could impact your supplier relationship negatively and rather than create value, this could inadvertently erode value.

In comparison of the relative importance of working capital components, Tauringana and Afrifa's (2013) found that managements of payables for small and medium size enterprises was of more importance than even that of inventory. Deloof (2003) added that by delaying payment to creditors this will serve as an inexpensive and flexible source of financing for a firm.

When the significance of the investment in payables, the benefits from utilising payables and the results derived from previous studies considered as being contrary to theory, this study sought to test *via* a style-based study whether managing payables has a positive relationship to return to investors.

It should be noted though that previous studies are flawed in that they measure profitability. However, profitability does not measure the significance of the investment required in order to earn that return i.e. it is not a measure of efficiency. A more effective measure of efficiency is return on assets, return



on equity or the listed share price. As a result this study employed share price as a measure of efficiency of return to investors.

This study examined the relationship between the return to investors and payables to determine whether a relationship exists between return and the absolute payables days as well as return and the change in payables days as a result of payables management.

The study also aimed to determine whether, without the impact of companies in different financial positions i.e. profitable *versus* distress, a higher return can be gained from management of payables.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Working capital management relationship to profitability**

To date, working capital management studies have focused on establishing the correlation between managing working capital and the profitability of a firm. Historical studies have been conducted in both numerous countries and industries world-wide and have in these many iterations focused on confirming the relationship between working capital management and profitability.

Deloof (2003) said in his study of Belgian firms that “[m]ost firms have a large amount of cash invested in working capital. It can therefore be expected that the way in which working capital is managed will have a significant impact on the profitability of firms” (p. 585). This early study confirmed the relationship between working capital management and profitability when it was found that number of days receivable, inventories and accounts payable had a negative relationship to gross operating income.

Rehman (2006) conducted a similar study in a Pakistan context and his study similarly concluded that there is a strong negative relationship between working capital ratios and profitability of firms. A study by Lazaridis and Tryfonidis (2006) discussed the relationship between working capital management and profitability and focused the study on the Athens Stock exchange and derived the same results. Similarly Filbeck and Krueger (2005) conducted a study of the relationship between working capital management but extended it across industries and also concluded similarly.

Erasmus (2010) extended the study to South African listed industrial firms and concluded that “[b]ased on results of this study, it would appear that management could attempt to improve profitability by decreasing the overall investment in net working capital” (p 193).

More recently, the study by Bagchi and Khamrui (2012) analysed FMCG companies in India and reached the same conclusion. This has also been confirmed by study conducted by Sabri (2012), which concluded that working capital management in the form of reduced days correlates to profitability and this is in confirmation with other studies: “This result agrees with (Jose, et.al, 1996), (Wang, 2002), and (Uyar, 2009) which indicated that aggressive policy increases profitability” (p 59). Thus, recent studies have been consistent in their conclusion to prior studies that the management of working capital correlates to profitability.

Bhandari and Iyer (2013) conducted a study with a different perspective. Their study identified that business failures between 2008 and 2010 were unusually high in the United States of America. Their study then tested whether cash flow was a predictor of business failure. The result was that the model performed very well and the study therefore supported the correlation of cash flow management to performance and sustainability of a business.

Given the strong relationship of working capital management to cash flow, and the strong correlation of strong cash flow management to improved sustainability, the study concluded that the management of working capital towards achieving long term sustainability of the company was important.

## **2.2 Receivables and inventory management relationship to profitability**

Deloof (2003) identified the impact of managing working capital on the profitability of the firm and concluded that there existed evidence to support that “[t]hese results suggest that managers can create value for their shareholders by reducing the number of days accounts receivable and inventories to a reasonable minimum” (p 585). The study thus supported the theory concerning the reduction in the receivables and inventory holding days in order to release cash resources and this resulted in improved profitability.

This view was confirmed by García-Teruel, and Martínez-Solano (2007) when they said that the management of receivables and inventories can be used by managers to demonstrate their ability to create value by improving the cash conversion cycle that will result in an increase in the firm's profitability.

The studies concerning the management of working capital components of receivables and inventories therefore aligns to theory proposed in accounting and corporate finance and is connected to reducing the investment in receivables and inventory days. Studies have been consistent and there has been no study that has identified contradictions in these results.

Studies however indicate that an inconsistency lies in the management of payables. This inconsistency will be discussed comprehensively below.

### **2.3 Payables' management relationship to profitability**

Deloof (2003) highlighted in his study that payables days does not correlate to profitability. The study by Sabri (2012) also concluded that "it should be noted that the relationship between profitability and accounts payables is negative and that was concluded by (Padachi, 2006) and (Deloof, 2003) who conducted their studies on Belgium companies" (p 59). This negative result is contradictory to theory, which advises extending payables days in order to retain the cash for a longer period, and use it to fund the activities of the business including re-investment or acquisition.

Deloof (2003) also said that "[t]he negative relationship between accounts payable and profitability is consistent with the view that less profitable entities wait longer to pay their bills" and "in that case, profitability affects accounts payable policy, and not vice versa" (p 585). Deloof suggested that it was the inability of firms in distress to generate enough cash to pay their payables that resulted in extending payables days. This is not a management choice but a forced reaction and as a result, it distorts the results with regard to the relationship between the management of payables and return on investment.

Deloof (2003) also suggested an alternate explanation for this relationship when he proposed that, “[s]peeding up payments to suppliers might increase profitability because Belgian entities often receive a substantial discount for prompt payment” (p 580). Deloof suggested that companies received value from discounts for early settlement, which may not be available from the net value from late settlement of payables. The result is that companies choose to pay earlier rather than keep the cash in the business and as a result they do not adopt a policy of increasing payables balances.

Sabri (2012) concurred and added a further reason, “the inverse relation is that when an entity delays the payment of accounts payable, this may expose them to a fine of delay and harm their reputation and may lead to loss of cash discount and then reduce their return on equity” (p 59). Again, the result is that companies choose to pay earlier to avoid fines and loss of discounts in contrast to keeping the cash in the business to re-invest or acquire another business.

The study by Lazaridis (2006) however emphasised the surprise with previous studies’ results. Lazaridis revealed that “[t]his result is highly significant and does not make economic sense, since the longer a firm delays its payments the higher level of working capital levels it reserves and is used in order to increase profitability” (p 31). Lazaridis’ view is congruent with the theory of management of working capital and specifically around the management of payables.

Given the contradiction to theory and the counter-intuitive economic case there exists significant justification to warrant studying this specific component of working capital.

This study thus attempted to determine whether payables have the relationship to return to investors as proposed by theory. The study was extended to the top 40% and bottom 40% of momentum on return to counter for some of the distorting impacts that were experienced in studies to date as a result of firms in distress.

## **2.4 The significance of payables in an integrated supply chain**

Payables management forms a critical component of the supply chain under the area of procurement. As companies have become more aware of the competitive advantages of supply chain management from cost efficiency, product differentiation and value-added services (Randall and Farris, 2009), so too has the task of management of payables balances and supplier relationships become fundamentally important.

The content of this study relates to the management of payables days; that is, the time taken to pay suppliers and the impact on return of supply chain financial techniques which may impact profits through overlooked finance cost effects (Randall and Farris, 2009). Thus the topic of managing the supplier payment terms is also impacted by developments in the area of supply chain management.

The below two sections are directly connected to the impact on supply chain management regarding the development of a new business model, as well as the impact on financial performance of supply chain management, both of which emphasise the relevance and significance of payables management to companies operating in the current co-ordinated supply chain environment.

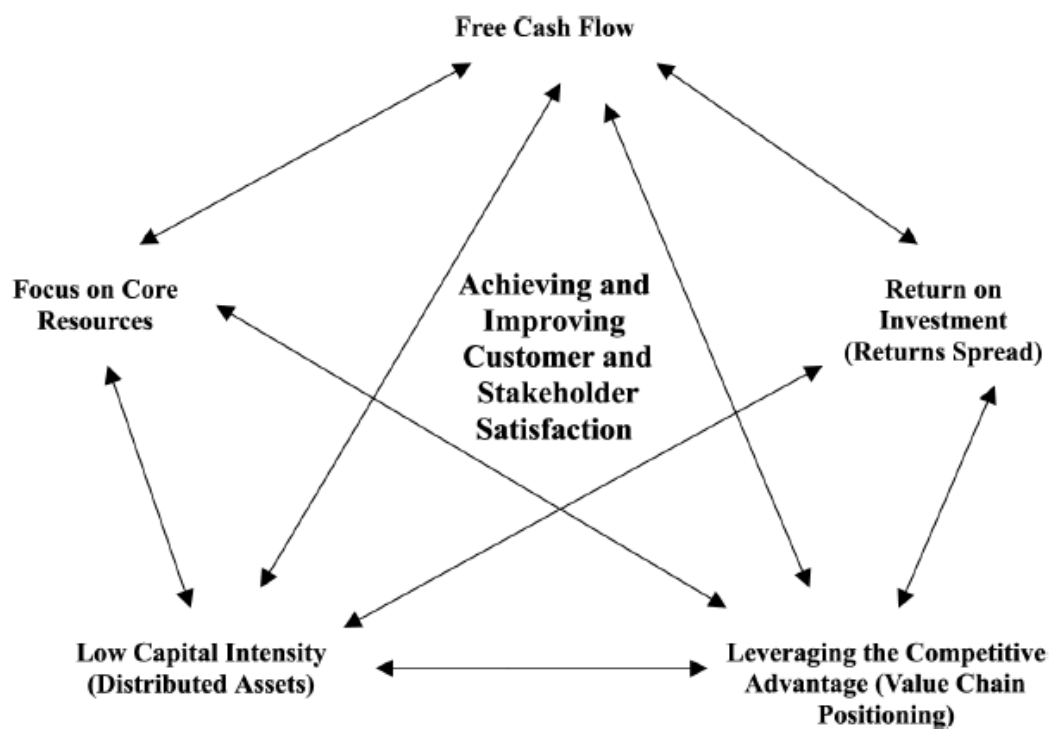
### **2.4.1 The impact of the new business model**

Changes in economic climates have brought about a change in designing business models. Previously, the business model was focused on a traditional view of managers that was based on asset ownership and vertical organisation structures. According to Walters (2004) "The prevalent view was that ownership enhanced control and profit margins" (p 346).

This has since changed with the focus moving towards flexibility, co-operation and collaboration as important features for success (Walters, 2004). Walters (2004) attributes success in current economic circumstances to management

of assets rather than just ownership and speaks to the management of assets leading to change in business structures and management behaviour.

As a result according to Walters (2004) the “new business model has five common attributes, the firm should: be cash flow driven; focus on return on investment; function with distributed (leveraged) assets or low capital intensity; do so with a single minded view on core assets and distinctive capabilities; and develop competitive advantage by relevant positioning within its industry value chain” (p 346). Refer to Figure 3 for the business model as proposed by Walters (2004).



**Figure 3: New business model (Walters, 2004)**

This view emphasises the value from managing the assets of a business through management of its working capital thereby releasing cash resources in the form of free cash flow that would otherwise be unavailable. It also further justifies the application of management of working capital through the

component of payables by stressing the need to derive value positioning through backward integration to suppliers.

The business model also relates to “low capital intensity” and Walters (2004) discusses the reduced need for re-investment resulting in higher availability of funds for other use. Walters (2004) explained that “a low level of capital intensity provides flexibility for marketing strategy options. It widens the price point options available by making lower price segments attractive and feasible. High growth markets may be funded from internal funding (with cash still available for discretionary purposes). It is difficult, usually impossible, for capital-intensive businesses to fund high growth rate from internal sources without the “benefit” of monopolistic price advantages or perhaps some other characteristic that affords sustainable competitive advantage. Furthermore the low capital intensity model also offers operational flexibility” (p 351). This study discussed that in order for companies to succeed they need to reduce their working capital investment in order to create and sustain competitive advantage.

With specific reference to payables as a component of working capital, Walters (2004) recognised that capabilities and / or capacities may not necessarily be internally available and that in the new business model, business is required to focus on where in the value chain its resources are most effectively applied and how the positioning in the value chain is utilised to gain a competitive edge for the organisation.

By management of payables, a business may either be utilising or eroding a portion of its value positioning without being aware of the repercussions of its actions.

#### **2.4.2 The impact of supply chain management on financial performance**

Shi and Yu (2013) asserted that “in academia, numerous articles with diverse research designs have been published in various research fields to examine the financial impacts of SCM (supply chain management). While many studies



seem to establish significant relationship between SCM and financial performance, others are not conclusive. Since performance measurement is critical in setting objectives, allocating resources, and determining future directions, the fragmented findings on the financial impacts of SCM call for research attentions to further explore this important subject” (p 1283).

Hofmann and Kotzab (2010) initially proposed this argument similar to Shi and Yu when they said that, “It is taken for granted that supply chain management has a significant impact on a company’s financial performance (Ellram and Liu 2002; Hofmann and Locker 2009). Evidence about the direct link between supply chain performance and stock-exchange price is shown by Singhal and Hendricks’ (2002) study. D’Avanzo, Von Lewinski, and Van Wassenhove (2003) identify a correlation between successful SCM and financial performance where they show that the growth rates of market capitalization are 7 to 26 % higher in companies with excellent SCM (“supply chain leaders”) than the average” (p 305).

Shi and Yu (2013) emphasised that the value in SCM is derived through management of relationships, internal and external. Specifically, Shi and Yu (2013) discuss the management of supplier and customer relationships and the link to financial performance and they posit that the relationship with upstream and downstream partners is one of the most important drivers of financial performance.

Using SEM (strategic enterprise management) approach, Wisner (2003) found that supplier management and CRM (customer relationship management) significantly affected SCM strategy which in turn improved firm performance.

Similarly, Ou et al. (2010) investigated the association between external and internal contextual SCM factors and various performance measures in the information industry in Taiwan. The result showed that both the external and internal SCM factors positively contribute to the improved operational and financial performance.

While the study by Shi and Yu aimed to ascertain whether the management of the supply chain would provide evidence to support a relationship to financial performance, the study attempted herein aims to extend that discussion by focusing on a component of the SCM being payables to determine whether working capital management of payables also supports a positive financial return.

In a climate where there is a strong focus on developing the supply chain integration as a form of competitive advantage, payables and supplier management have been identified as crucial components of the process.

## **2.5 Absolute payables days versus change in payables days**

Studies to date have focused on the correlation of absolute days to profitability and thus this current study will similarly consider the relationship of absolute payables days to return on investment. However the study also sought to determine the impact of management of payables through the change in payables days.

The reason this study proposed studying the change in payables days to the change in return is as a result of warning found in the study by Polakow (2010) where the study alluded to the danger of plotting actual levels rather than experiencing the real changes in a relationship.

Polakow (2010) credited the error in the results to incorrect assumptions. The assumptions applied are that data is stationary and not auto-correlated. Unfortunately, share prices are auto-correlated and non-stationary, which does not allow absolute values to be used to imply a relationship.

To counter for this, change in payables days and change in return is further considered in this study apart from absolute days, to determine whether there is a relationship between managing payables days and a return to investors.

## **2.6 Impact of different industries on payables balances**

As discussed previously, studies have been conducted on various industries. The one consistency amongst the previous industry specific studies is that they are from industries with significant investment in payables.

A study concerning the manufacturing industry conducted by Ani, Okwo, and Ugwunta (2007) emphasised the differences in investment in different industries when they explained that “For one thing, the current assets of a typical manufacturing firm accounts for over half of its total assets (Abdul and Mohamed, 2007).” (p. 966)

Filbeck and Krueger (2005) analysed the working capital management policies amongst 32 non-financial industries in the US and found that there were significant differences amongst the industries in their working capital policies. A similar study was performed by Soenen (1993) and the same conclusion was reached. Nazir and Afza (2009) also discovered that working capital policies are industry specific and that different industries have different working capital needs.

As a result the following industries were included in this study due to their material investment in payables: Industrials, Consumer Goods, Health Care, Consumer Services and Technology. The following industries were removed from the study due to their low investment in payables: Oil and Gas, Basic Materials, Telecommunications, Utilities and Financials.

## **2.7 Payables days management not viable as a value creation activity**

Rafuse (1996) postulated that “[a]n improvement of working capital by delaying payment to creditors is an inefficient and ultimately damaging practice, both to its practitioners and to the economy as a whole” (p 59).

Rafuse (1996) discussed the success of Wal-Mart and related the close supplier relationships that the company had developed as a vital strategy. The discussion compares the success of Wal-Mart to that of its once larger competitor K-Mart and emphasises the difference in approach to payment of suppliers, with Wal-Mart ensuring that its suppliers were paid timeously.

Rafuse (1996) continued to identify that “there is much more to Wal-Mart’s success than how quickly suppliers are paid. Nevertheless, responsive supply partnerships, what has been termed “shared destiny” procurement, is clearly a key element contributing to the success of Wal-Mart and the best lean, world-class companies. Sainsbury, Tesco and Marks & Spencer in the UK display a similar pattern. In essence, suppliers must be treated with the same care and consideration as employees. (No responsible manager would dream of paying his staff 50 days late)” (p 60).

Rafuse’s study connects the sharing of information and paying suppliers sooner rather than later to demonstrate that these processes facilitate a stronger and more collaborative and beneficial relationship. The view expressed by Rafuse (1996) is directly in opposition to theory that advocates extending payables payment terms as a means of extracting cash in order to drive value for the company. Rafuse (1996) further explained that by managing debtors’ and creditors’ payment terms that this is purely an administrative function which ultimately does not add value. The study proposes that to obtain value from this function, the operational processes that are of waste should be driven out, rather than value being derived from delaying payment to suppliers.

Hofmann and Kotzab (2010) concurred with the view held by Rafuse by stating that “[t]he minimization of the C2C cycle from a single company perspective does not add value to all members in a supply chain. A strong company can abuse its power by taking all the working capital improvements, and ethical conflicts may arise when the strong player causes harm to other supply chain members” (p 324).

Thus, literature on the management of payables through its payment terms is contradictory regarding the benefits and the relationship to return to investors.

This study therefore aimed to validate the existence of a relationship between managing payables as part of a working capital management policy to return to investors despite the argument that delaying payment is not a net value creation activity.

## **2.8 Profitability as a measure of return**

Nobanee, Abdullatif, and Al Hajjar (2011) stated “[e]xisting literature that examined the relationship between the efficiency of working capital management and corporate profitability used different profitability measures.” For example, Shin and Soenen (1998), as cited by Nobanee *et al.* (2011) used operational measures of profitability such as operating income plus depreciation divided by total assets, and operating income plus depreciation divided by net sales.

In the study by Deloof (2003), two measures of profitability were used. Deloof applied net operating income divided by total assets minus financial assets, and gross operating income to total assets minus financial assets. Deloof (2003) defined net operating income as sales minus costs of goods sold, including depreciation and amortisation. Deloof (2003) further defined gross operating income as the net operating income plus depreciation and amortisation. Financial assets are a significant part of total assets, which are mainly shares in other firms and stated that this was the reason why returns on assets were not considered as a measure of profitability (Deloof, 2003).

Other studies applied return on assets as a measure of profitability in the Cash Conversion Cycle (CCC), analysing the effect of the efficiency of working capital management on profitability. However, Schilling (1996) argued that return on investment is the more appropriate measure of profitability, compared with other profitability measures, when dealing with working capital

management. According to Schilling (1996), it is critical to allocate resources between working capital and capital investment.

Nobanee *et al.* (2011) stated that “[s]ince the return on investment is usually less than the return on capital investment, allocating resources on working capital, as much as to maintain optimal liquidity position, is necessary and they further justified that in following the study of Schilling (1996), the most appropriate measure of performance is to use the return on investment.”

As a result, the current study employed share price and dividend income as a measure of efficiency of return to investors.

In summary, prior studies have advised of the relationship between working capital management to profitability as well as the individual components of inventory and receivables. Previous studies have however provided evidence contrary to theory on management of payables. The significance of payables management is emphasised by the adoption of the new business model focused on integrated supply chain management and the related financial benefit from management of payables supply chain relationship. The discussion is led where it is proposed that payables management is not a value creation activity but rather an administrative function, however previous studies conclude with contradictory results. The study aims to remove errors in prior studies through the use of change in payables days, specific industries with significant investment in payables and share price rather than profitability in order to conclude on a relationship between management of payables and return.

## **CHAPTER 3: RESEARCH HYPOTHESIS**

The study examined South African Listed companies from 1985 to 2014, whose market capitalisation comprise the top 99% of JSE main board and postulated that the working capital payables days and change in working capital days has a positive relationship on the investors' return.

### **3.1 Hypothesis 1**

The following hypothesis was tested at a 95% confidence level applying a style-based study:

H<sub>10</sub>: There is a negative and/or no relationship between absolute payables days and return to investors.

H<sub>1A</sub>: There is positive relationship between absolute payables days and return to investors.

Stated alternatively as:

H<sub>10</sub>:  $P1 / P2 \leq 0$

H<sub>1A</sub>:  $P1 / P2 > 0$

Where:

P1: Absolute payables days

P2: Change in return to investors

### **3.2 Hypothesis 2**

The following secondary hypothesis was tested at a 95% confidence level applying a style-based study:

H1<sub>0</sub>: There is a negative and/or no relationship between the change in payables days and return to investors for all industries on the JSE main board.

H1<sub>A</sub>: There is positive relationship between the change in payables days and return to investors for all industries on the JSE main board.

Stated alternatively as:

H1<sub>0</sub>:  $P1_{\text{all industries}} / P2_{\text{all industries}} \leq 0$

H1<sub>A</sub>:  $P1_{\text{all industries}} / P2_{\text{all industries}} > 0$

Where:

P1: Change in payables days for all industries

P2: Change in return to investors for all industries

### 3.3 Hypothesis 3

The following hypothesis was tested at a 95% confidence level applying a style-based study:

H1<sub>0</sub>: There is a negative and/or no relationship between the change in payables days and return to investors for industries with significant investment in payables on the JSE main board.

H1<sub>A</sub>: There is positive relationship between the change in payables days and return to investors for industries with significant investment in payables on the JSE main board.

Stated alternatively as:

H1<sub>0</sub>:  $P1_{\text{industries with significant payables}} / P2_{\text{industries with significant payables}} \leq 0$

H1<sub>A</sub>:  $P1_{\text{industries with significant payables}} / P2_{\text{industries with significant payables}} > 0$



Where:

P1: Change in payables days for industries with significant investment in payables

P2: Change in return to investors for industries with significant investment in payables

### 3.4 Hypothesis 4

The following hypothesis was tested at a 95% confidence level applying a style-based study:

H1<sub>0</sub>: There is a negative and/or no relationship between the change in payables days and return to investors for top 40% of momentum on returns for industries with significant investment in payables on the JSE main board.

H1<sub>A</sub>: There is positive relationship between the change in payables days and return to investors for top 40% of momentum on returns for industries with significant investment in payables on the JSE main board.

Stated alternatively as:

H1<sub>0</sub>: P1<sub>Top 40% of industries with significant payables</sub> / P2<sub>Top 40% of industries with significant payables</sub> ≤ 0

H1<sub>A</sub>: P1<sub>Top 40% of industries with significant payables</sub> / P2<sub>Top 40% of industries with significant payables</sub> > 0

Where:

P1: Change in payables days for top 40% momentum of industries with significant investment in payables

P2: Change in return to investors for top 40% momentum of industries with significant investment in payables

### 3.5 Hypothesis 5

The following hypothesis was tested at a 95% confidence level applying a style-based study:

H1<sub>0</sub>: There is a negative and/or no relationship between the change in payables days and return to investors for bottom 40% of momentum on returns for industries with significant investment in payables on the JSE main board.

H1<sub>A</sub>: There is positive relationship between the change in payables days and return to investors for bottom 40% of momentum on returns for industries with significant investment in payables on the JSE main board.

Stated alternatively as:

H1<sub>0</sub>: P1 Bottom 40% of industries with significant payables / P2 Bottom 40% of industries with significant payables  $\leq 0$

H1<sub>A</sub>: P1 Bottom 40% of industries with significant payables / P2 Bottom 40% of industries with significant payables  $> 0$

Where:

P1: Change in payables days for bottom 40% momentum of industries with significant investment in payables

P2: Change in return to investors for bottom 40% momentum of industries with significant investment in payables

## **CHAPTER 4: RESEARCH METHODOLOGY**

### **4.1 Research design**

The research design was a quasi-experimental time-series based style analysis using the “style-engine” as developed by Muller and Ward (2013).

### **4.2 Style analysis**

Secondary financial data from the top 160 South African listed companies as collated by Muller and Ward (2013) for their study on “Style-based effects on the Johannesburg Stock exchange: A graphical time-series approach” was used on which to base the analysis of this study.

The model as built by Muller and Ward (2013) for their study entitled “style-engine” was applied to consider the relevant variables of accounts payable days to return to investors. The model is a plot of the cumulative index of each portfolio over the timeframe and visually compares the results. The model also applies a price-relative by dividing the value of highest portfolio by lowest on each day. Increasing slopes mean that the highest portfolio outperforms the lowest and *vice versa* for decreasing slopes.

The choice of style selected was a financial style and proposed that strong financial results should correspond to higher investor returns. This study selected the payables days as the attribute within financial style and proposed that there would be improved returns to investors through extension of payables days.

### **4.3 Research Instrument - Style-engine**

The style-engine was a model as built by Muller and Ward (2013) for their study titled “Style-based effects on the Johannesburg Stock exchange: A graphical time-series approach”.

The engine is based on the Microsoft Excel programme and uses VBA code to select the data from Microsoft Access databases. Inputs were parameterised to easily change settings and define styles. The parameters were the starting date (usually 31 Dec 1986), ending date (usually 31 Dec 2013), the number of portfolios required (usually five), the review period (usually three months), the number of months of back data required prior to the starting date (usually zero) and whether or not to write results and/or companies excluded into new Microsoft Excel sheets.

By using the top 160 companies in South Africa, Muller and Ward (2013) constructed five equal weighted portfolios at the start of each quarter, from 31 December 1986, after ranking the sample in terms of the particular style score (e.g. earnings yield). The return for each of the 32 shares was calculated (including any dividends) daily in each portfolio, and calculated the value of each of the five portfolios from a base of 1.0. On the last day of each quarter, the value of each portfolio was retained. This process was repeated with a revised sample of the top 160 companies. The style score (earnings yield) was recalculated using the updated (but out-of-sample prior data) and reconstituted the five equally weighted portfolios, as described above. This approach was continued for each quarter, accumulating the value of each portfolio until 31 August 2014. The engine plotted the cumulative index (value) of each portfolio over the timeframe and displayed the results visually.

Muller and Ward (2013), “A “price-relative” by dividing the value of the highest ranked portfolio by that of the lowest portfolio on each day, and plot this on the Y axis. In effect, the price-relative compares the difference between the best and worst portfolios and is akin to the excess return of an investor who holds the shares in the highest ranked portfolio over those of the lowest portfolio. Importantly, the slope of the price-relative also reveals those time periods over which the highest ranked portfolio style out-performed the lowest portfolio. In the periods when the slope of the price-relative is upwards, the highest ranked style portfolio is out-performing, and vice-versa. If the slope of the price-relative is flat for any period of time, then no out-performance is

occurring, and there is no difference between the performances of the portfolios over this period” (p. 4)

The engine data and methodology was tested. To examine the integrity of share return data it was compared to the J203T with the expectation that the index would closely track the J203T. To test the methodology, the ranking of the 160 shares in the sample was randomised each quarter by creating a style score of random numbers and ranking on these with the expectation of no clear separation between the portfolios and in anticipation that the results would provide an indication of the level of randomness in the cumulative returns from the methodology.

#### **4.4 Population**

The population was all South African listed entities. Listed entities were those entities as listed on the Johannesburg Stock Exchange (JSE) main board.

#### **4.5 Sampling**

The sample was all entities that were listed on the JSE main board stock exchange from 1985 to 2014. The sample was the top 160 companies that comprised 99% of the market capitalisation of the JSE main board.

Data was then further stratified to industries and applied to industries that traditionally have significant investment in payables. Thus the following industries were removed from the sample due to their low investment in payables: Oil and Gas, Basic Materials, Telecommunications, Utilities and Financials. The following industries were included due to their material investment in payables: Industrials, Consumer Goods, Health Care, Consumer Services and Technology.

## **4.6 Unit of analysis**

The unit of analysis is a single listed (JSE main board) company.

## **4.7 Data collection**

Data obtained from JSE listed information as compiled by Muller and Ward (2013) for their study entitled a “Style-based effects on the Johannesburg Stock exchange: A graphical time-series approach”. This data engine included all listed South African companies from 1985 to 2014 (including new listings and those that were delisted). The engine comprised of 160 of the largest companies that constitute 99% of the market capitalisation. Data included companies that delisted to ensure that survivor bias was eradicated if picked directly from JSE.

## **4.8 Data validity and reliability**

The database composed of the top 99% of market capitalisation of the JSE board. The remaining 1% was not considered based on their size. The database has been used in previous studies.

Changes in share prices were backwards adjusted in the time series data and unbundled companies' returns included in original holding for each year, until the next financial year where it was treated as two separate entities afterwards.

Returns to investors included dividend receipts, as obtained from INET. Newly listed shares were included at the start of the next quarter and those that were delisted were excluded at the end of the quarter.

Accounting variables were lagged to reflect share prices three months' later than year-end due to the delay of official release of audited year-end results.

Data also checked for errors by treating as zero for any daily returns less than -40% and more than 40%. Data was also checked for no missing variables and excluded missing data entities in that style characteristic.

#### **4.9 Potential research limitations**

The study was limited to listed South African companies and thus results may be biased towards listed companies and may contain South African specific distinctions.

By limiting the studies to specific industries, it results in inapplicability to those industries that are excluded. Also, if assumptions about material investment in payables by an industry are found to be inaccurate, results are distorted by that incorrectly included industry, and are then required to be retested.

The use of return to investors as an indicator may be impacted by numerous other factors apart from the working capital management policy towards payables. These additional factors could be considered as the basis of other studies.

The impact of restricting the study to the payables only is that the return on equity may be distorted by the management of other components of working capital.

Another major limitation is that of confounding events gathered by annual changes in payables is a tiny aspect of information evaluated by investors and is most likely to be saturated by the other confounding variables which are being evaluated.

# CHAPTER 5: RESULTS

## 5.1 Data Description

### 5.1.1 Absolute payables days

Data for the absolute payables days was the top 160 listed companies of the JSE main board. Data was collected for all sectors from 1985 to 2014. Data was ranked into five portfolios based on the size of the payables days from largest to smallest. Portfolio 1 has the largest days to Portfolio 5 with the smallest days.

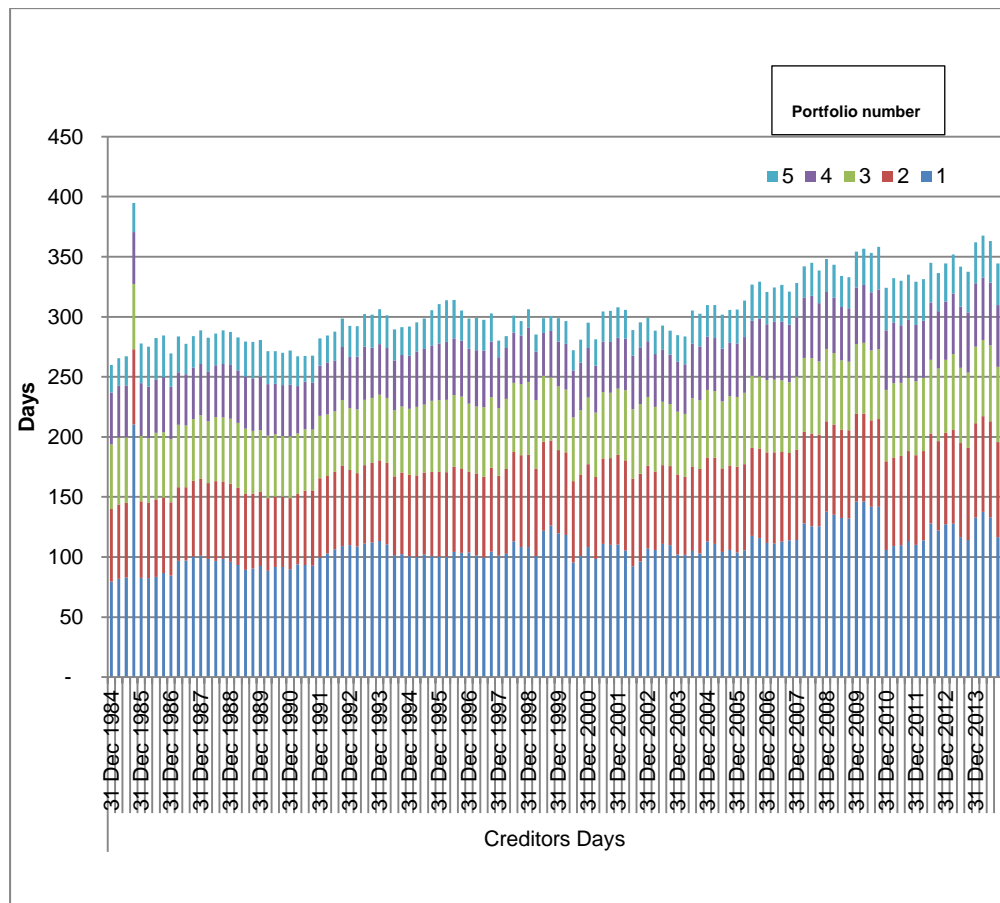


Figure 4: Average payables days per portfolio



Figure 4 displays the average days for each portfolio for each period below. Apart from the spike in Portfolio 1 in 1985 the days per each portfolio is fairly stable.

Of interest is that the absolute days have grown since December 2005 above the total 300 days, with most growth in the Portfolio 1 being the largest days. This has been exacerbated since 2008 post the financial crisis, which has impacted the performance of many companies.

### **5.1.2 Change in payables days for all industries**

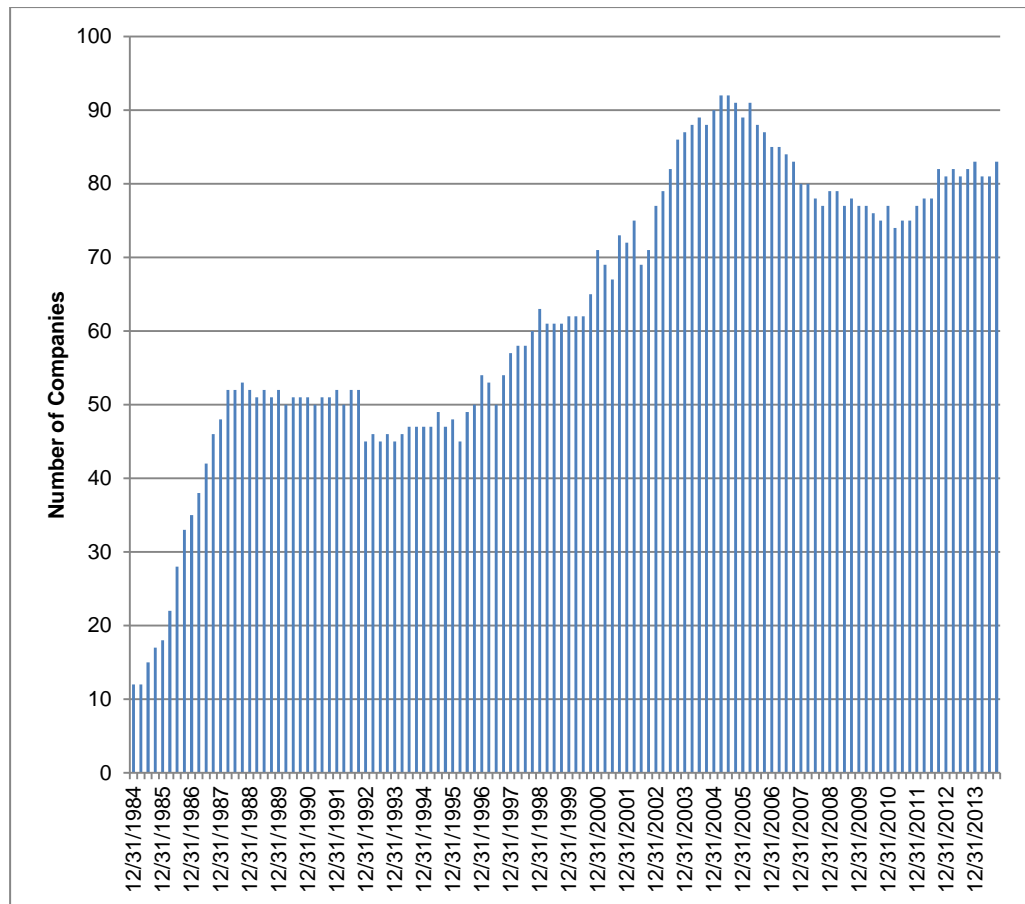
Data utilised for the payables days change is as for the absolute payables days. However the formulated change in the payables days from quarter to quarter is considered rather than absolute payables days. Data was for all sectors and stretched from 1985 to 2014.

Again the data was categorised into five portfolios. However this time Portfolio 1 contained the companies with the largest change in payables days as opposed to the largest days.

### **5.1.3 Change in payables days for specific industries**

For the change in payables days for industries with investment with material investment in payables the data above was stratified into industries.

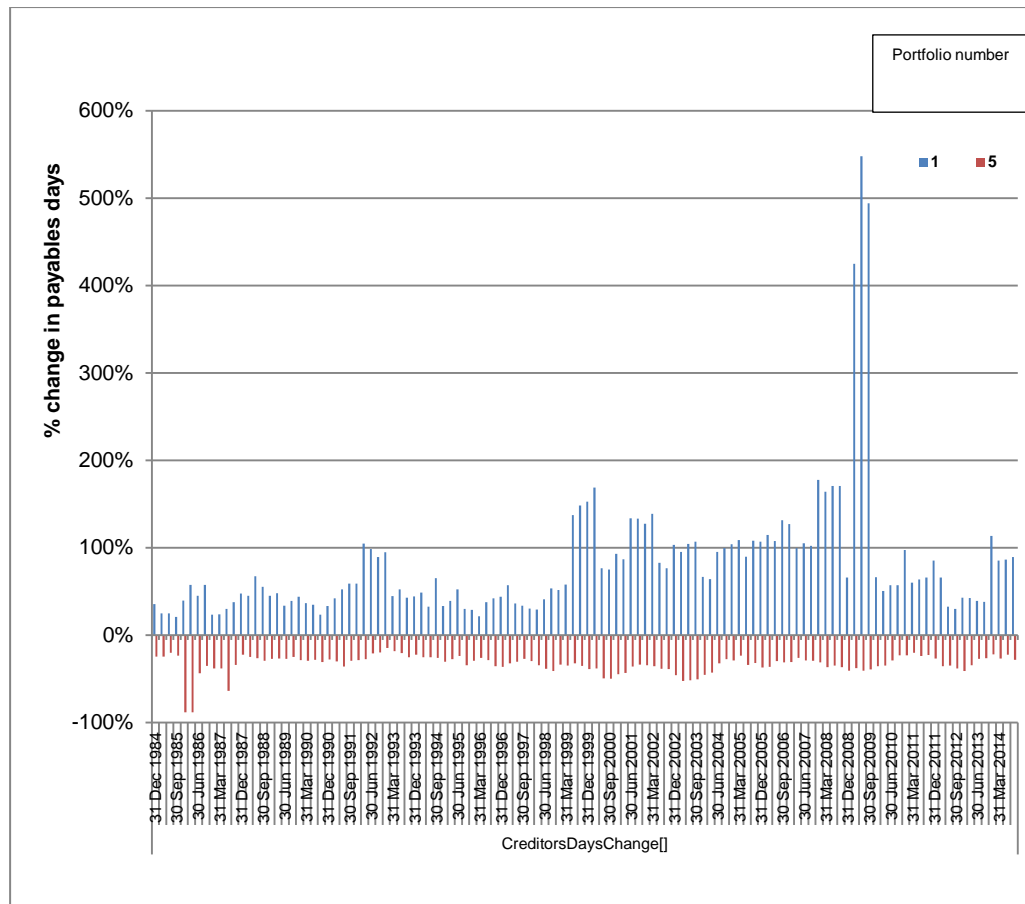
Thus the following industries were removed from the sample due to their low investment in payables: Oil and Gas, Basic Materials, Telecommunications, Utilities and Financials. The following industries were included due to their material investment in payables: Industrials, Consumer Goods, Health Care, Consumer services and Technology. The data was reduced from 160 companies to 90 companies as a result of selecting only the relevant industries.



**Figure 5: Number of companies per period for specific industries**

Figure 5 illustrates the number of companies as contained within the relevant industries on a period by period basis. The number of companies presented a decline from 2005 to 2011, with a slight recovery and steady since 2012.

Figure 6 shows the percentage change for Portfolio 1 and 5. Portfolio 1 is the portfolio with the largest change and Portfolio 5 with the smallest and it shows negative change or a decrease in payables days.



**Figure 6: Percentage change in payables days per period for specific industries for Portfolio 1 and Portfolio 5**

The data above reflects an average change per portfolio which trends. The spike in 1998 and 2008 is in-line with the financial crisis experienced in those periods and for approximately two years afterwards.

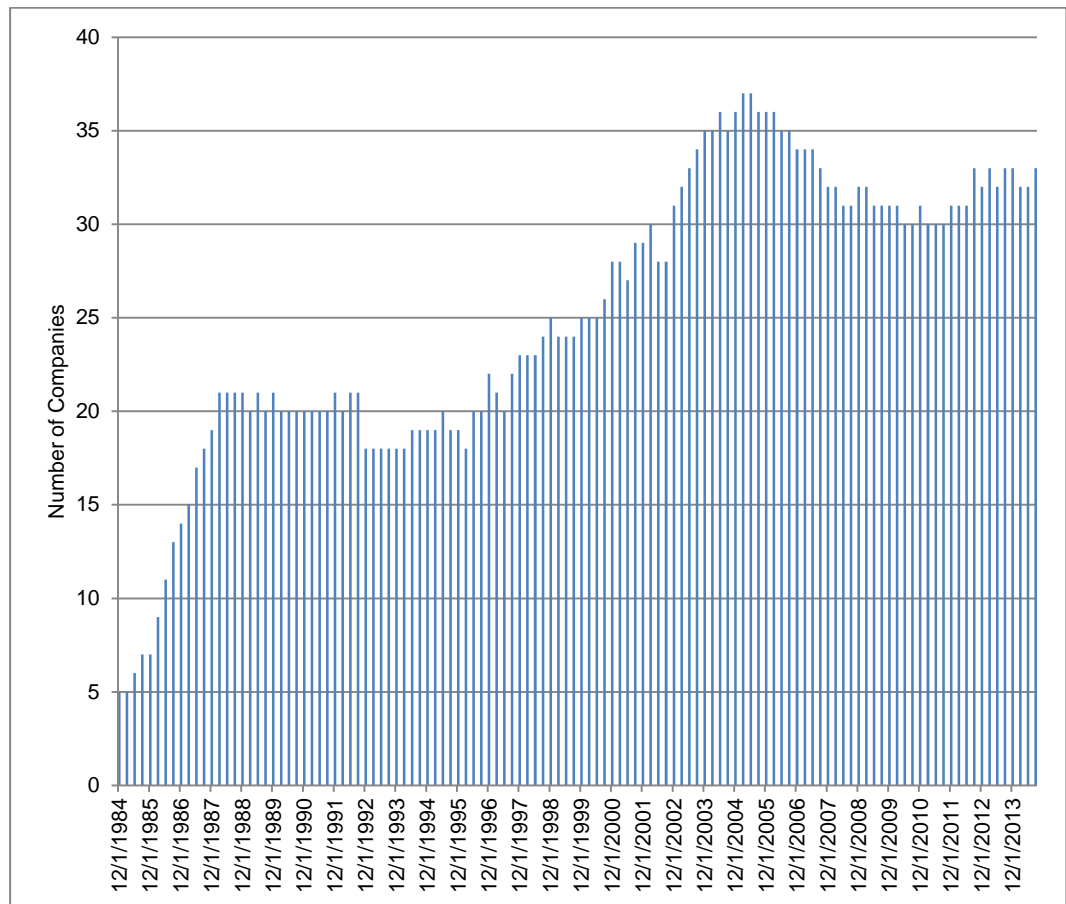
The above figure also reflects the period of most extension or change in payables in the period from 1998 to 2009, where post the financial crisis working capital management became a focus area for management.

#### **5.1.4 Change in payables days for specific industries for top and bottom 40% respectively**

Data for the top 40% momentum return and bottom 40% momentum on return is as from above data but stratified for those top and bottom performing companies in these relevant sectors. The Momentum style as developed by

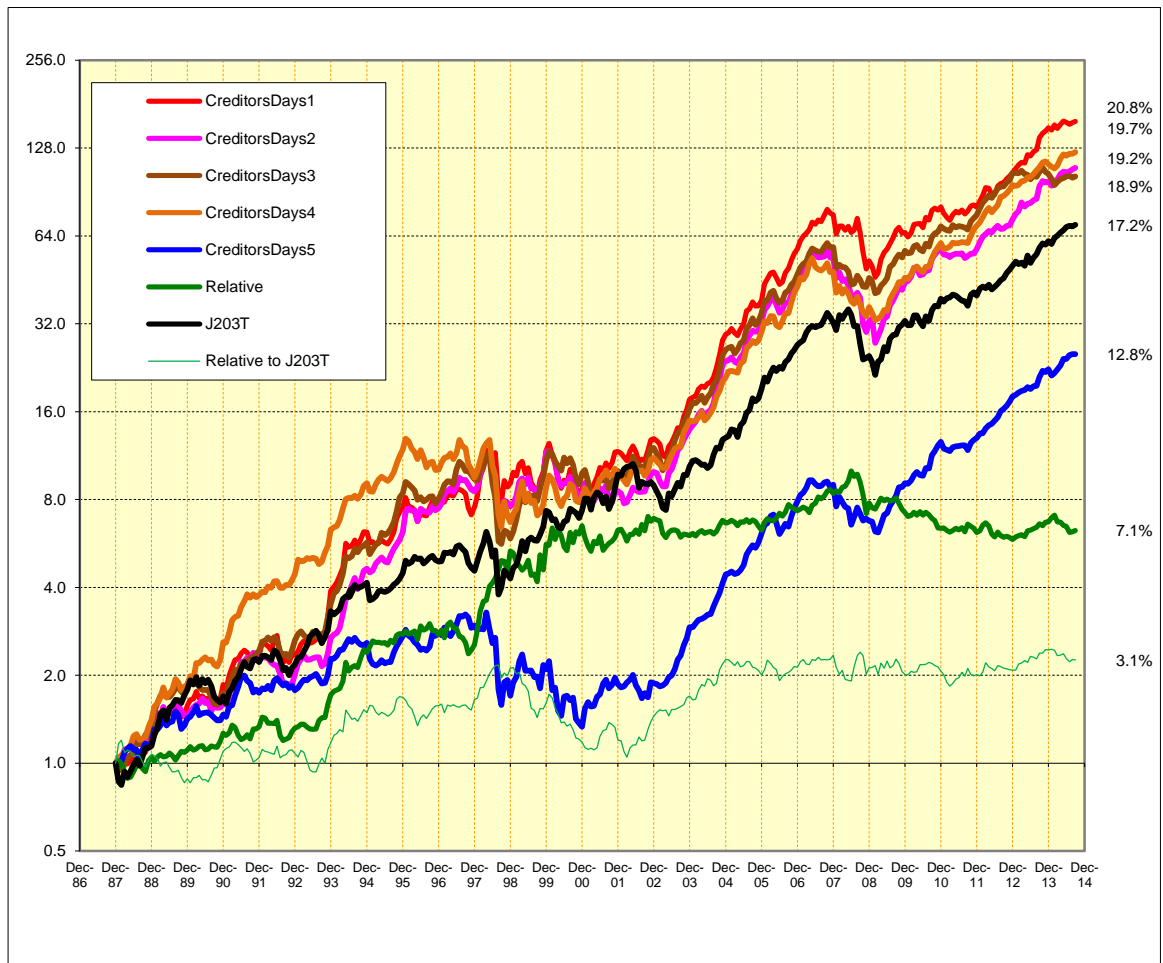
Muller and Ward (2013) was applied to determine the companies in the best and worst performing ranges.

The number of companies was derived for the total of companies in the relevant industries, however applying the top and bottom 40%. The number of companies thus reflects the same trend. See Figure 7 for the number of companies per year.



**Figure 7: Number of companies per period for specific industries (top 40%)**

## 5.2 Absolute payables days to return



**Figure 8: Style – Absolute payables days: Average return for five portfolios of 32 equal weighted shares based on absolute payables days**

H1<sub>0</sub>: There is a negative and/or no relationship between absolute payables days and return to investors.

H1<sub>A</sub>: There is positive relationship between absolute payables days and return to investors.

At the start of each review period five portfolios were created on the basis of ranked payables days at the end of the prior quarter. Portfolio 1 is CreditorsDays1 to portfolio 5 which is CreditorsDays5.

CreditorsDays1 contains the 32 companies with the largest payables days, CreditorsDays2 contains the 32 companies with the next smaller payables

days, CreditorsDays3 contains the 32 companies with the subsequent smaller payables days, CreditorsDays4 contains the 32 companies with the next smaller payables days and CreditorsDays5 the smallest 32 payables days (in total the top 160 shares).

A significant spread is observed between the best 20.8% and worst 12.8% portfolios ranked on payables days. However, the order of the portfolios was not in the expected order/ ranking throughout the time-series thus indicating that the result of the analysis did not support the hypothesis.

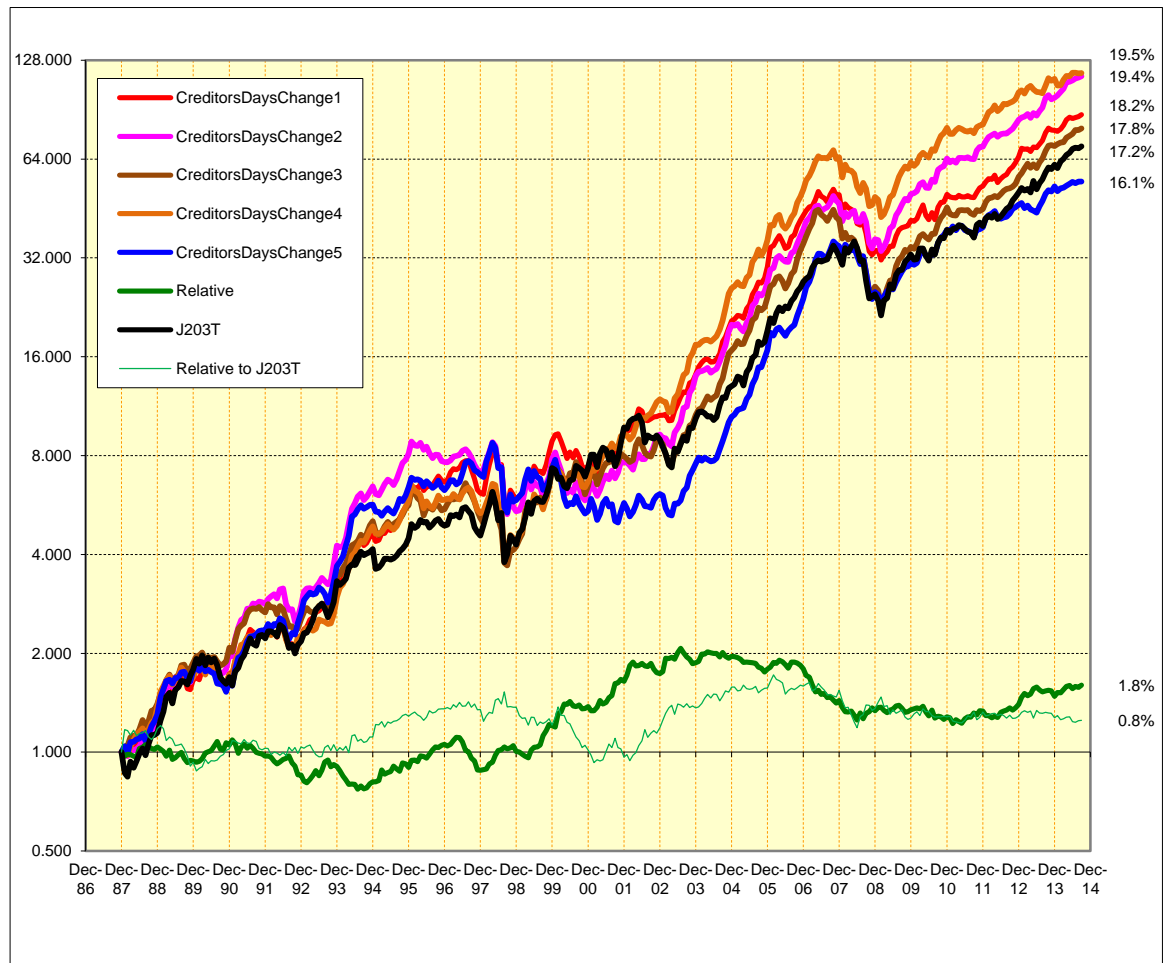
The trend in the price relative titled Relative (thick green line) was observed as being (mostly) flat from 1998 at 7.1%, indicating that subsequent to 1998, there was no relationship between the largest payables days portfolio CreditorsDays1 (red line) and the smallest payables days portfolio CreditorsDays5 (blue line). The Relative thus indicates that post 1998 there was no effect from holding higher payables days as compared to a lower payables days. This is in line with literature that 1998 was the pivotal point at which all companies focused on working capital management in reference to the financial crisis.

The J203T represents the performance of the ALSI. Compared to the J203T (black line) all portfolios, apart from the portfolio 5 - CreditorsDays5 (blue line), outperformed the index.

The Relative to J203T (thin light green line) also had no material trend to 3.1% and thus indicated that there is no evidence to support a relationship between absolute payables days and the average return to investors on the ALSI.

On the basis of these observations the findings that a higher absolute payables day's style does not exist is supported. The null hypothesis is thus not disproved i.e. there is no evidence to support the alternative that there is a relationship between higher absolute payables days and higher return to investors.

### 5.3 Change in payables days to return for all industries



**Figure 9: Style – Change in payables days: Average return for five portfolios of 32 equal weighted shares based on change in payables days**

H1<sub>0</sub>: There is a negative and/or no relationship between the change in payables days and return to investors for all industries on the JSE main board.

H1<sub>A</sub>: There is positive relationship between the change in payables days and return to investors for all industries on the JSE main board.

At the start of each review period five portfolios were created on the basis of ranked change in payables days at the end of the prior quarter. Portfolio 1 is CreditorsDaysChange1 to Portfolio 5, which is CreditorsDaysChange5.

CreditorsDaysChange1 contains the 32 companies with the largest change in payables days, CreditorsDaysChange2 contains the 32 companies with the next smaller change in payables days, CreditorsDaysChange3 contains the 32 companies with the subsequent smaller change in payables days, CreditorsDaysChange4 contains the 32 companies with the next smaller change in payables days and CreditorsDaysChange5 the smallest 32 change in payables days (in total the top 160 shares).

A significant spread was not observed between the best 19.5% and worst portfolios 16.1% ranked on change payables days. The order of the portfolios was also not in the expected order/ ranking throughout the time-series thereby indicating that the result of the analysis did not support the hypothesis.

The trend in the price relative titled Relative (thick green line) was observed as being (mostly) flat to a minimal 1.8%, indicating that there was no relationship between the largest payables days portfolio CreditorsDaysChange1 (red line) and the smallest payables days portfolio CreditorsDaysChange5 (blue line). The Relative thus indicated that there was no effect from a higher change in payables days as compared to a lower change in payables days.

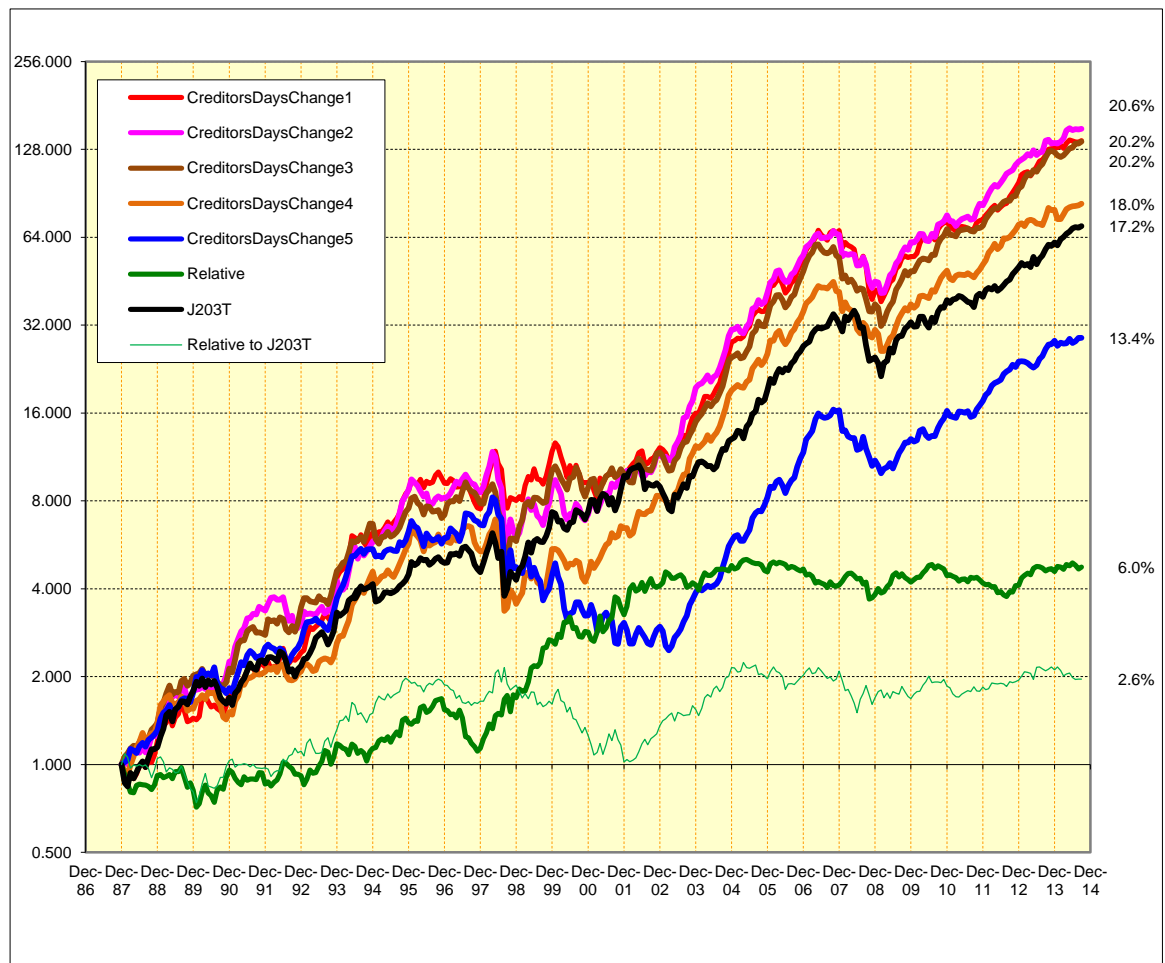
The J203T represents the performance of the ALSI. Compared to the J203T (black line) all portfolios, apart from the Portfolio 5 at certain times - CreditorsDaysChange5 (blue line), outperform the index.

The Relative to J203T (thin light green line) also had no positive trend to a minimal 0.8% and thus indicated that there is no evidence to support a relationship between change in payables days and the average return to investors on the ALSI.

On the basis of these observations it was found that a higher change in payables day's style does not exist. The null hypothesis was thus not disproved i.e. there is no evidence to support the alternative that there is a relationship between higher change payables days and higher return to investors.



## 5.4 Change in payables days to return for specific industries



**Figure 10: Style – Change in payables days: Average return for five portfolios of 18 equal weighted shares based on change in payables days for industries with material payables**

H1<sub>0</sub>: There is a negative and/or no relationship between the change in payables days and return to investors for industries with significant investment in payables on the JSE main board.

H1<sub>A</sub>: There is positive relationship between the change in payables days and return to investors for industries with significant investment in payables on the JSE main board.

The following industries were included in this study due to their material investment in payables in order to remove the distortion impact of industries with immaterial investment in payables: Industrials, Consumer Goods, Health Care, Consumer Services and Technology. Thus the following industries were removed from the sample due to their low investment in payables: Oil and Gas, Basic Materials, Telecommunications, Utilities and Financials.

At the start of each review period five portfolios were created on the basis of ranked change in payables days at the end of the prior quarter. Portfolio 1 is CreditorsDaysChange1 to Portfolio 5 which is CreditorsDaysChange5.

CreditorsDaysChange1 contains the 18 companies with the largest change in payables days, CreditorsDaysChange2 contains the 18 companies with the next smaller change in payables days, CreditorsDaysChange3 contains the 18 companies with the subsequent smaller change in payables days, CreditorsDaysChange4 contains the 18 companies with the next smaller change in payables days and CreditorsDaysChange5 the smallest 18 change in payables days (in total 90 of the top 160 shares).

A significant spread was observed between the best portfolio at 20.6% and worst at 13.4% ranked on change in payables days. The order of the portfolios was in the expected order/ ranking throughout the time-series, thereby indicating that the result of the analysis did support the hypothesis.

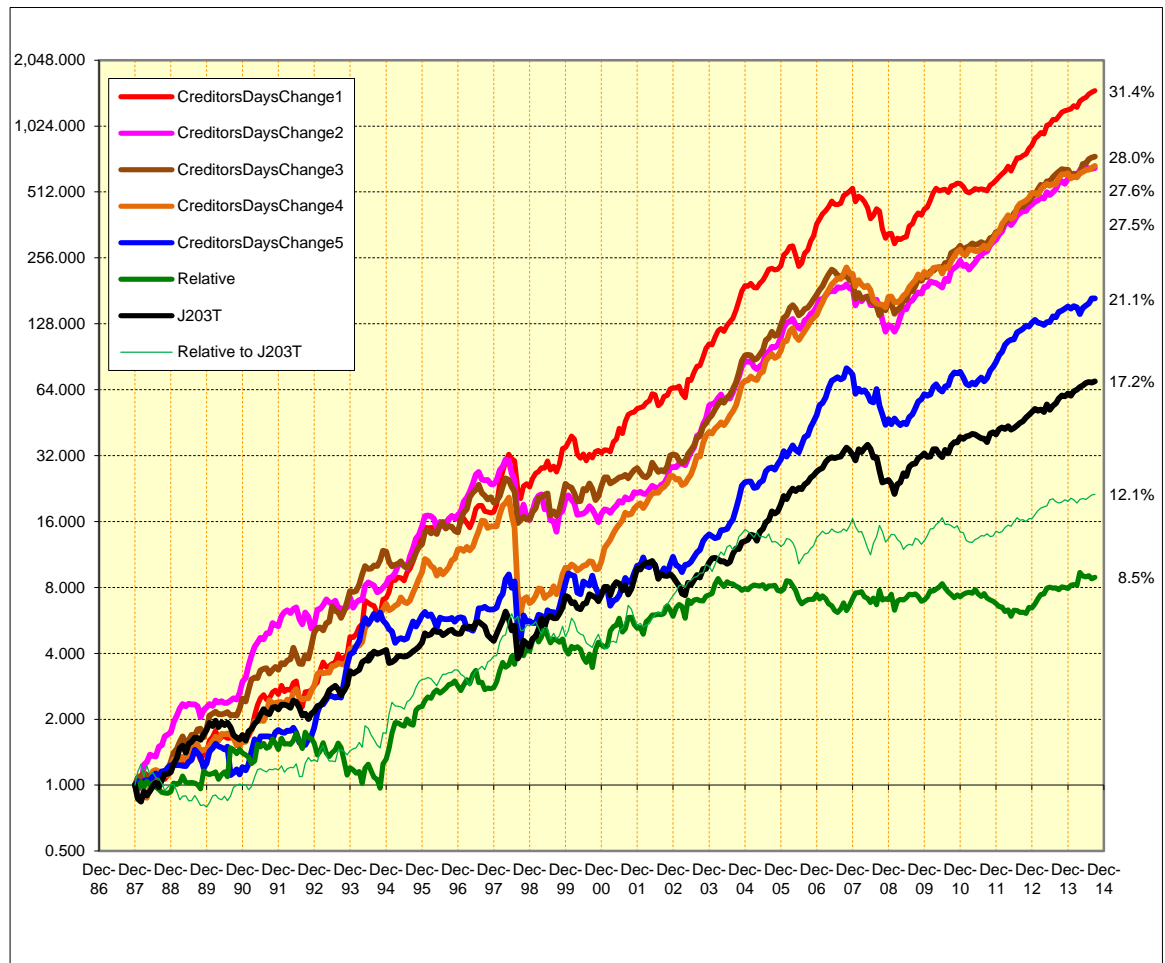
It was also observed that the trend in the price relative titled Relative (thick green line) was (mostly) upward to 6%, indicating that there is a relationship between the largest payables days portfolio CreditorsDaysChange1 (red line) and the smallest payables days portfolio CreditorsDaysChange5 (blue line). The Relative thus indicated that there is an effect from a higher change in payables days as compared to a lower change in payables days for the relevant industries. A step change was seen from the effect of the financial crisis in 1998 and is elaborated on in the discussion section of the report.

The J203T represents the performance of the ALSI. Compared to the J203T (black line) all portfolios, apart from the Portfolio 5 - CreditorsDaysChange5 (blue line), outperformed the index.

The Relative to J203T (thin light green line) also had an overall positive trend to 2.6% and thus indicated that there is some evidence to support a relationship between change in payables days and the average return to investors on the ALSI.

On the basis of these observations it was found that a higher change in payables day's style for the appropriate industries with significant investment in payables does exist. The null hypothesis is thus disproved i.e. there is evidence to support the alternative that there is a relationship between higher change in payables days and higher return to investors for industries with significant investment in payables.

## 5.5 Change in payables days to return for top 40%



**Figure 11: Style – Change in payables days: Average return for five portfolios based on change in payables days for industries with material payables and in the top 40% of momentum in return**

H1<sub>0</sub>: There is a negative and/or no relationship between the change in payables days and return to investors for top 40% of momentum on returns for industries with significant investment in payables on the JSE main board.

H1<sub>A</sub>: There is positive relationship between the change in payables days and return to investors for top 40% of momentum on returns for industries with significant investment in payables on the JSE main board.

The following industries were included in this study due to their material investment in payables in order to remove the distortion impact of industries

with immaterial investment in payables: Industrials, Consumer Goods, Health Care, Consumer Services and Technology. Thus the following industries were removed from the sample due to their low investment in payables: Oil and Gas, Basic Materials, Telecommunications, Utilities and Financials.

Companies in the above relevant industries were then applied to a momentum ranking and those in the top 40% on return were isolated. This analysis determined whether, without the distortion of lower performing companies, there is evidence to support the management of payables in the form of higher returns.

At the start of each review period five portfolios were created on the basis of ranked change in payables days at the end of the prior quarter from the top 40%. Portfolio 1 is CreditorsDaysChange1 to Portfolio 5, which is CreditorsDaysChange5.

CreditorsDaysChange1 contains the 7 companies with the largest change in payables days, CreditorsDaysChange2 contains the 7 companies with the next smaller change in payables days, CreditorsDaysChange3 contains the 7 companies with the subsequent smaller change in payables days, CreditorsDaysChange4 contains the 7 companies with the next smaller change in payables days and CreditorsDaysChange5 the smallest 7 change in payables days (in total 35 of the 90 in the relevant industries of the top 160 shares).

A significant spread was observed between the best portfolio at 31.4% and worst at 21.2% ranked on change payables days. The order of the portfolios was in the expected order/ ranking throughout the time-series thereby indicating that the result of the analysis did support the hypothesis.

It was also observed that the trend in the price relative titled Relative (thick green line) was (mostly) upward to 8.5%, indicating that there is a relationship between the largest payables days portfolio CreditorsDaysChange1 (red line) and the smallest payables days portfolio CreditorsDaysChange5 (blue line). The Relative thus indicated that there is an effect from a higher change in

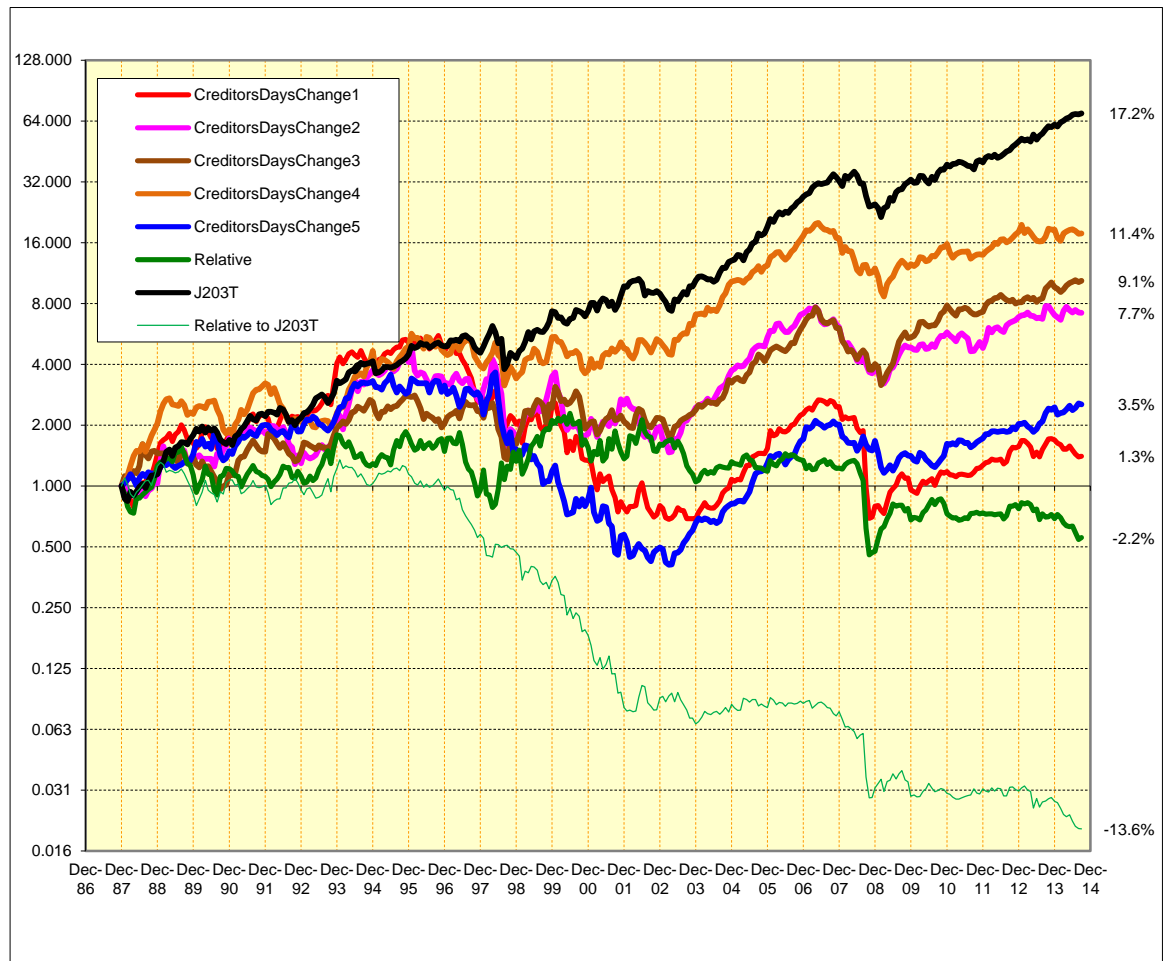
payables days as compared to a lower change in payables days for the relevant industries.

The J203T represents the performance of the ALSI. Compared to the J203T (black line) all portfolios outperformed the index.

The Relative to J203T (thin light green line) also has an overall positive trend to 12.1% and thus indicated that there is some evidence to support a relationship between change in payables days and the average return to investors on the ALSI.

On the basis of these observations it was found that a higher change in payables day's style for the appropriate industries with significant investment in payables and in the top 40% momentum return does exist. The null hypothesis is thus disproved i.e. there is evidence to support the alternative that there is a relationship between higher change in payables days and higher return to investors.

## 5.6 Change in payables days to return for bottom 40%



**Figure 12: Style – Change in payables days: Average return for five portfolios based on change in payables days for industries with material payables and in the bottom 40% of momentum in return**

H1<sub>0</sub>: There is a negative and/or no relationship between the change in payables days and return to investors for bottom 40% of momentum on returns for industries with significant investment in payables on the JSE main board.

H1<sub>A</sub>: There is positive relationship between the change in payables days and return to investors for bottom 40% of momentum on returns for industries with significant investment in payables on the JSE main board.

The following industries were included in this study due to their material investment in payables in order to remove the distortion impact of industries with immaterial investment in payables: Industrials, Consumer Goods, Health Care, Consumer Services and Technology. Thus the following industries were removed from the sample due to their low investment in payables: Oil and Gas, Basic Materials, Telecommunications, Utilities and Financials.

Companies in the above relevant industries were then applied to a momentum ranking and those in the bottom 40% on return were isolated. This analysis determined whether, without the distortion of higher performing companies, there was evidence to support the management of payables in the form of higher returns.

At the start of each review period five portfolios were created on the basis of ranked change in payables days at the end of the prior quarter from the bottom 40%. Portfolio 1 is CreditorsDaysChange1 to Portfolio 5, which is CreditorsDaysChange5.

CreditorsDaysChange1 contains the 7 companies with the largest change in payables days, CreditorsDaysChange2 contains the 7 companies with the next smaller change in payables days, CreditorsDaysChange3 contains the 7 companies with the subsequent smaller change in payables days, CreditorsDaysChange4 contains the 7 companies with the next smaller change in payables days and CreditorsDaysChange5 the smallest 7 change in payables days (in total 35 of the 90 in the relevant industries of the bottom 160 shares).

A significant spread was not observed between the best and worst portfolios ranked on change payables days. The order of the portfolios was also not in the expected order/ ranking throughout the time-series, thereby indicating that the result of the analysis did not support the hypothesis.

It was also observed that the trend in the price relative titled Relative (thick green line) was (mostly) downward to -2.2%, indicating that there was no relationship between the largest payables days change portfolio



CreditorsDaysChange1 (red line) and the smallest payables days change portfolio CreditorsDaysChange5 (blue line). The Relative thus indicated that there is no effect from a higher change in payables days as compared to a lower change in payables days for the relevant industries at the bottom 40% of momentum return.

The J203T represents the performance of the ALSI. Compared to the J203T (black line) all portfolios outperformed the index.

The Relative to J203T (thin light green line) also has an overall negative trend to -13.6% and thus indicated that there is no evidence to support a relationship between change in payables days and the average return to investors on the ALSI.

On the basis of these observations it was found that a higher change in payables day's style for the appropriate industries with significant investment in payables and in the bottom 40% momentum return does not exist. The null hypothesis is thus not disproved i.e. there is no evidence to support the alternative that there is a relationship between higher change in payables days and higher return to investors for the bottom 40% momentum return.

## **CHAPTER 6: DISCUSSION OF RESULTS**

### **6.1 Absolute payables days to return**

The absence of relationship between absolute days and return to investors indicates that the absolute value of the payables days is not what determines value for a company. The result indicated that if a company has a high payables days value this may not necessarily indicate a higher return above companies that have a relative lower payables days. This is in line with payables days being relative to a company and an industry and that across companies and industries results may be incomparable based on absolute days.

The outperformance of all portfolios, apart from CreditorsDays5 to the J203 however does indicate that investors should avoid companies with low payables days. Low payables days could be an indicator of stress as suppliers force companies to pay debt if they become aware of their financial distress. This is confirmed by Deloof (2003) when it was stated that “[c]onsistent with the hypothesis that less profitable firms wait longer to pay their bills, the number of days accounts payable is much higher for the lowest income deciles than for the other income deciles” (p. 584). This could also be a result of companies taking advantage of settlement discounts and reducing payables days with the resulting negative impact on long-term return as a consequence of lower cash resources to otherwise invest.

This result is also in support for the management of the payables days for a company rather than the absolute number being the driver of value for a company. The ensuing section deals with the change in payables days and postulates that the change determines value for the company through cash resources being released in the form of lengthening payables days.

## 6.2 Change in payables days to return for all industries

The absence of relationships between change in payables days and return to investors indicates that the hypothesis in line with management of the payables days for a company being the driver of value for a company is not proved.

When it is considered that all sectors were included, it is expected that the inclusion of companies with inconsequential investment in payables could result in a conclusion that may not be relevant for companies in industries that have significant investment in payables.

Compared to the J203 (black line) all portfolios, apart from the CreditorsDaysChange5 (blue line), outperformed the index indicating that investors should avoid companies with low or a negative change in payables days.

Of interest is that pre-1998 all portfolios outperformed the index including that of CreditorsDays5, thereby indicating that before the financial crash the payables and working capital management had received no attention and were not seen as important in relation to return. The impact on availability of cash from the crisis caused companies to consider their investment in working capital.

In order to determine whether, without the distorting impact of industries with low payables investment, there may exist a relationship between the change in payables days and return to investors, the following industries were removed from the sample due to their low investment in payables: Oil and Gas, Basic Materials, Telecommunications, Utilities and Financials.

### **6.3 Change in payables days to return for specific industries**

The study results provided a representation of a relationship between change in payables days and return to investors for specific industries, which indicates that the hypothesis in reference to the management of the payables days for a company with material investment in payables as a determinant of superior returns for a company is proved. The results revealed that between the highest and largest portfolio, a premium return of 7.2% can be achieved which motivates for a case of managing payables in industries with significant investment in payables as a means of obtaining a competitive advantage.

Compared to the J203 (black line) all portfolios, apart from the CreditorsDaysChange5 (blue line), outperformed the index indicating that investors should avoid companies with low or a negative change in payables days.

Of interest is that, similar to previous test, pre-1998 all portfolios exceeded the index. However, compared to the J203 (black line) the CreditorsDaysChange4 (light brown line), underperformed against the index from 1998 to 2002 indicating that companies with lower change in payables days achieved lower returns over that post-financial crisis period.

Of significance though is that the size of the change may not drive materially different results with Portfolios 1, 2 and 3 deriving similar returns. However the significance of the difference of 7.2% between Portfolio 1 and Portfolio 5 is in support of the management of payables as a determinant of return and competitive advantage.

### **6.4 Change in payables days to return for top 40%**

The study results indicated a representation of a relationship between change in payables days and return to investors for specific industries and in the top 40% momentum return, which indicates that the hypothesis in reference to the

management of the payables days for a company as a driver of superior returns for a company is proved. The results proved that between the highest and largest portfolio a premium return of 10.2% can be achieved, which motivates for a case of managing payables in industries with significant investment in payables and in the top 40% momentum return as a means of obtaining a competitive advantage.

The Relative (thick dark green line) indicated the difference between the largest portfolio CreditorsDaysChange1 (red line) and the smallest portfolio CreditorsDaysChange5 (blue line) and exposed that for industries with material investment in payables and in the top 40% of momentum in return, there is long term benefit from a marked improvement in payables days. The trend is a definite upward trend, indicating a strong style relationship and that for companies performing well there is competitive advantage in managing their payables.

Of interest is that, similar to previous test, pre-1998 all portfolios exceeded the index. However, compared to the J203 (black line) the CreditorsDaysChange4 (light brown line), was the most impacted by the financial crisis with recovery by 2002.

Of significance though is that the size of the change for Portfolios 2, 3 and 4 derived similar returns. However the significance of the difference between Portfolio 1 and Portfolio 5 of 10.2% is in support of the management of payables as a determinant of return and competitive advantage.

## **6.5 Change in payables days to return for bottom 40%**

The study results confirmed a lack of representation of a relationship between change in payables days and return to investors for specific industries and in the bottom 40% momentum return, which indicates that the hypothesis in reference to the management of the payables days for a company as a means to source higher cash resources for a company in financial stress is not proved.

The Relative (thick dark green line) indicated the difference between the largest portfolio CreditorsDaysChange1 (red line) and the smallest portfolio CreditorsDaysChange5 (blue line) and proved that for industries with material investment in payables and in the bottom 40% of momentum in return, there is no significant long term benefit from a marked improvement in payables days for those companies in the bottom 40% or momentum return. The trend is a definite horizontal trend indicating a poor style relationship and that for companies performing poorly there is no competitive advantage in managing their payables.

Of interest is that, similar to previous test, pre-1998 all portfolios exceeded the index. However, compared to the J203 (black line) the CreditorsDaysChange4 (light brown line), was the most impacted by the financial crisis with recovery by 2002.

It is interesting to note that Portfolio 1 CreditorsDaysChange1 (red line) with the largest change provides the lowest returns, which relates to the suppliers reacting to these companies financial stress and resulting in further reduced returns. Portfolio 5 CreditorsDaysChange5 (blue line) produces similarly low results but not as low as those companies in Portfolio 1. This is of interest as it infers that if companies are able to keep changes in payables minimal then they could achieve higher returns than if they have a large change. Thus if a company is in distress, a significant method of improving sustainability would include an agreement with suppliers with regard to payments terms.

Portfolio 2, 3 and 4 produced similar returns with smaller change producing better returns. This relates to suppliers being unwilling to withdraw from companies unless there are very strong indicators that the company will not be able to recover from its financial distress. It also confirms the impact of suppliers withdrawing from relationships based on consumer perception. The resultant impact is cyclical as this action drive down return further causing more financial distress and lower returns.

In 2008 post the financial crisis, Portfolio 5 (blue line) with the lowest change overtook Portfolio 1 (red line) with the largest change. Thus in economic

downturns companies that are in financial stress and can maintain the payables days may be able to achieve better returns.

## CHAPTER 7: CONCLUSION

The style-based analysis results revealed a relationship between management of payables in the form of change in payables days and return to investors for those companies in industries that have significant investment in payables traditionally from Industrials, Consumer Goods, Health Care, Consumer Services and Technology. These results are not applicable to the following industries that were removed from the sample due to their low investment in payables: Oil and Gas, Basic Materials, Telecommunications, Utilities and Financials.

The results of this study indicate that it is valuable for listed companies in Industrials, Consumer Goods, Health Care, Consumer Services and Technology industries in South Africa to manage their payables in order to achieve superior returns.

The study also revealed that for the above-mentioned industries, companies with a further qualifying criteria being in the top 40% momentum return, would further experience superior returns that can be obtained from significantly higher change in payables days. Thus management of payables could be used as a means of obtaining a competitive edge above competitors that already are achieving positive returns. As mentioned previously, this is supported by Cooter et al. (2014) when they stated companies can use efficient working capital management as a barrier to entry as "[c]ompanies that have historically underperformed seem to find it hard to catch up with industry leaders" (p 5).

The qualification to the above study is that it has not been compared to the value from discounts for early settlement discounts. It has also not considered the impact on close supplier relationships that forms part of the current integrated supply chain management that makes global companies successful and offers a competitive edge. The study uses past behaviour to determine the future relationship and action, however utilising the current trends in integrated supply chain management and the evolving global competitiveness



the current and future landscape may not necessarily be the same and thus the application of payables management needs to be considered holistically.

## **7.1 Recommendations for future research**

The following would be proposed directions of future study in the field of working capital management and as specifically related to payables:

### **7.1.1 Aggressive payables management to long-term return**

Nazir and Afza (2009) tested the relationship of an aggressive working capital management policy and found that “[t]he study finds a negative relationship between the profitability measures of firms and degree of aggressiveness of working capital investment and financing policies. The firms report negative returns if they follow an aggressive working capital policy” (p 32).

Nazir and Afza (2009) confirmed that “[a]lthough the results of present study are in contradiction to some earlier studies on the issue, yet, this phenomenon may be attributed to the inconsistent and volatile economic conditions of Pakistan” (p 19).

Tauringana and Afrifa’s (2013) discussion on the literature pertinent to aggressive and conservation working capital policies with regard to payables affirmed that “[f]inally, the existing research is also conflicting in respect of the relationship between AP and profitability. For example, significant positive relationships between AP and profitability consistent with the aggressive strategy are reported by Raheman and Nasr (2007), Tryfonidis and Lazaridis (2006), Alipour (2011) and Mathuva (2010). In contrast, Ramachandran and Janakiraman (2009), Nobanee and Alhajjar (2009), Deloof (2003) and Karaduman et al. (2010) all found a negative relationship consistent with the conservative strategy of WCM” (p 456).

The discussion therefore concludes that it is unclear whether aggressive or conservative strategies are positively or negatively associated with profitability.

A further consideration is that prior studies have considered the impact on overall working capital whereas a study can be drawn specifically related to payables and the impact of an aggressive payables management policy on a return to investors.

### **7.1.2 Payables management to return in a supply chain network**

The study by Nobanee et al. (2011) was reviewed, and it was found that the authors discussed that “[a]s the Japanese business environment is relatively different from that of other top economies of the world, it is interesting to examine whether the characteristics of the Japanese firm might have an effect on their cash conversion cycle and therefore their profitability. Japanese firms’ organizational structure is totally different from that of US firms and the rest of the world, after Second World War, “keiretsu” spread into financial institutions in Japan. “Keiretsu” is a unique Japanese form of corporate organization” (p. 150).

In a time of integrated supply chain networks it is strategic to consider whether this theory, with regard to management and extension of payables days, is relevant in the current environment.

### **7.1.3 The impact of settlement discounts on the payables working capital strategy**

According to Deloof (2003) “[d]elaying payments to suppliers allows a firm to assess the quality of the products bought, and can be an inexpensive and flexible source of financing for the firm. Conversely, late payment of invoices can be very costly if the firm is offered a discount for early payment” (p. 574) thus it would be an interesting future study to determine whether the offer of settlement discounts does indeed impact the payables management approach adopted.

If discounts do impact the return to shareholders, it must be determined whether this is more beneficial to the firm in the long run in terms of value creation or does the supplier eventually pass on these costs in the price of the goods or services.

## REFERENCES

- Ani, W. U., Okwa, I. M., & Ugwunta, D. O. (2007). *Asian Economic and Financial Review*, 2(8), 966–982.
- Ashraf, C. K. (2012). The Relationship between Working Capital Efficiency and Profitability. *Advances in Management*, 5(12), 60-74.
- Bagchi, B., & Khamrui, B. (2012). Relationship between Working Capital Management and Return on equity: A Study of Selected FMCG Companies in India. *Business & Economics Journal*, 2012, 1-11.
- Bartram, P. (2013). 8 Ways to Improve Working Capital. *Financial Management*, 2013. Retrieved from <http://www.fm-magazine.com/feature/list/8-ways-%E2%80%A6-improve-working-capital>
- Bhandari, S. B., & Iyer, R. (2013). Predicting business failure using cash flow statement based measures. *Managerial Finance*, 39(7), 667–676. doi:10.1108/03074351311323455
- Cooter, N., Sentence, A., Terry, C., & Windaus, D. (2014). Cash for Growth PwC Annual Global Working Capital Survey. Retrieved from <http://www.pwc.com/workingcapital>
- Davies, M., & Merin, D. (2014). Uncovering cash and insights from working capital. *Corporate Finance Practice McKinsey & Company*, 2014.
- Deloof, M. (2003). Does working capital management affect return on equity of Belgian firms? *Journal of Business Finance & Accounting*, 30(3-4), 573–588.
- Dobbs, R., Giordano, M., & Wenger, F. (2009). The CFO's role in navigating the downturn. *Corporate Finance Practice McKinsey & Company*, 30, 2009.

- Erasmus, P. D. (2010). Working capital management and return on equity: The relationship between the net trade cycle and return on assets. *Management Dynamics: Journal of the Southern African Institute for Management Scientists*, 19(1), 2–10.
- Filbeck, G., & Krueger, T. M. (2005). An Analysis of Working Capital Management Results across Industries, *American Journal of Business*, 20(2), 11–20.
- Ganesh, K., Mohapatra, S. & Nagarajan, S. (2014). *Design and Development of Knowledge Management for Manufacturing*. Switzerland: Springer International Publishing, 153-177, [http://dx.doi.org/10.1007/978-3-319-02892-7\\_9](http://dx.doi.org/10.1007/978-3-319-02892-7_9)
- García-Teruel, P. J., & Martínez-Solano, P. (2007). Effects of working capital management on SME profitability. *International Journal of Managerial Finance*, 3(2), 164–177. doi:10.1108/174391307107387industrie
- Graham, M., & Winfield, J. (2010). *Understanding Financial Statements*. Newlands, South Africa: Cape Business Seminars.
- Hofmann, E., & Kotzab, H. (2010). A Supply Chain-Oriented Approach Of Working Capital Management. *Journal of Business Logistics*, 31(2), 305–330.
- Lazaridis, I., & Tryfonidis, D. (2006). Relationship between Working Capital Management and Return on equity of Listed Entities in the Athens Stock Exchange. *Journal of Financial Management and Analysis*, 19(1), 26-35.
- Muller, C., & Ward, M. (2013). Style-based effects on the Johannesburg Stock Exchange: A graphical time-series approach. *Investments Analysts Journal*, 77, 1–16.
- Nazir, M. S., & Afza, T. (2009). Impact of aggressive working capital management policy on firms' return on equity. *The IUP Journal of Applied Finance*, 15(8), 19–30.

- Nazir, M. S., & Afza, T. (2009). Working capital requirements and the determining factors in Pakistan. *IUP Journal of Applied Finance*, 15(4), 28–38.
- Nobanee, H., Abdullatif, M., & AlHajjar, M. (2011). Cash conversion cycle and firm's performance of Japanese firms. *Asian Review of Accounting*, 19(2), 147–156. doi:10.1108/13217341111industrie1078
- Padachi, K., Narasimhan, M.S., Durbarry, R., & Howorth, C. (2008). An Analysis of Working Capital Structure and Financing Pattern of Mauritian Small Manufacturing Firms. *The Icfai Journal of Applied Finance*, 14(7), 41–62.
- Polakow, D. A. (2010). If a portfolio manager who cannot count finds a four-leaf clover, is he still lucky? *Investment Analysts Journal*, (72), 53–71.
- Price, A., & Ward, M. (2006). *Turning vision into value: Corporate finance for non-financial executives*. Pretoria, South Africa: Van Schaik Publishers.
- Rafuse, M. E. (1996). Working capital management: an urgent need to refocus. *Management Decision*, 34(2), 59–63.
- Randall, W. S., & Farris, M. T. II. (2009). Utilizing cash-to-cash to benchmark company performance. *Benchmarking: An International Journal*, 16(4), 449–461. doi:10.1108/14635770910972405
- Sabri, T. B. (2012). Different Working Capital Policies and the Return on equity of a Firm. *International Journal of Business and Management*, 7(15). doi:10.5539/ijbm.v7n15p50.
- Shi, M., & Yu, W. (2013). Supply chain management and financial performance: literature review and future directions. *International Journal of Operations & Production Management*, 33(10), 1283–1317. doi:10.1108/IJOPM-03-2012-0112
- Tauringana, V., & Afrifa, G. A. (2013). The relative importance of working capital management and its components to SMEs profitability. *Journal of*

*Small Business and Enterprise Development*, 20(3), 453–469.  
doi:10.1108/JSBED-12-2011-0029

Ward, M., Muller, C. (2010). The long-term share price reaction to Black Economic Empowerment announcements on the JSE. *Investments Analysts Journal*, 71, 27–36.

Walters, D. (2004). A business model for the new economy. *International Journal of Physical Distribution & Logistics Management*, 34(3), 346–357. doi:10.1108/09600030410533637

Wilner, B. (2000). The Exploitation of Relationships in Financial Distress: The Case of Trade Credit. *The Journal of Finance*, 55, 153-178.