

Financing in Chaos.

An evaluation of how differing financing methods between retail firms in Sweden affected their performance during the Covid-19 pandemic.

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Abstract

The varied approach that firms took during the Covid-19 pandemic saw many outcomes of firm performance. The strategic decisions taken, ultimately had an impact as to whether a firm was successful in overcoming challenges that they faced. With uncertainty to their future, firms sought to continue operations and survive with different methods. Financing operations has and always will be how a firm can continue to exist. The Covid-19 pandemic placed firms in a unique and somewhat unusual position in regards to this. The purpose of this paper is to study if certain financing measures in a period of economic downturn can be more favourable and prove more successful in maintaining their working capital and funds needed to function. By assessing firms against predetermined measures of performance the differing strategies of financing and their effect on a firm's performance will identify advantageous actions of financing. The results of the study showed that association between financing decisions and firm performance is faintly present in an economic downturn context. In particular the risks associated with utilising short term liabilities as a source for working capital as well as financing carry risks which are deemed to be too great to warrant/ justify their immediate inclusion in financing strategies. The reason for this lies within the context of the report where the main feature of the COVID-19 pandemic was the uncertainty and instability it brought to people and companies. Firm's in the Swedish retail sector can reap rewards from making calculated financing decisions when their income streams are affected. In turn helping them navigate the macroeconomic volatility that the Covid-19 pandemic accompanied.

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List of Abbreviations:	TEV	Total Enterprise Value
	P/EPS	Price over Earning Per Share
	EPS	Earnings Per Share
	ROE	Return on Equity
	ROA	Return on Assets
	ROC	Return on Capital
	ICR	Interest Coverage Ratio
	QR	Quick Ratio
	EBIT	Earning before interest and tax

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1 Introduction

1.1 Background

The link between a firm's financing methods and its performance as a result of those decisions has been investigated by many academic reports but to the best of our knowledge has not been investigated thoroughly from the impact of Covid-19 pandemic. Modigliani and Miller (1958) stated that in perfectly efficient capital markets a firm's capital structure does not have an effect on its value. With proposition 1 specifically stating that the value of the firm that finances exclusively through equity is equal to that of the firm with a financing mix of debt and equity. Proposition 2 however, incorporates taxes and interest becomes deductible from tax. Here, capital structure and a firm's financing decisions are relevant (Modigliani, Miller, 1963), especially within the markets that exist today. New literature has started to expand and develop the links between financing methods and their effect on how well a firm can perform.

The Covid-19 pandemic magnified the strategies firms employ when their conventional income methods are weakened. Studies of firm behaviour in times of economic distress are present but a lack of current literature especially regarding financing during the Covid-19 pandemic opens avenues for future reference on how firms can seek to behave with their financing choices. Differing nature of firms capital structures is expected, however, are there patterns discernible between certain firms and how they behaved during the Covid-19 pandemic, leading to a blueprint or winning tactic to finance in an assured and safe way during market volatility.

Mid-March 2020 saw Europe become the focal point of the Covid-19 pandemic with the region reporting figures of confirmed cases above 40% (World Health Organization). Partly, the ramifications on business operations can be attributed to the proceeding governmental measures implemented to try and limit the damage being caused by the virus. Initially, the uncertainty of the severity of the pandemic caused panic and the stop of all non-essential business activities. Namely, quarantining and lockdown measures caused the biggest harm to businesses, where the lack of activity saw firms face significant risk of running out of money to sustain themselves (Cowling et al. 2020).

Financing as a means to maintain operations was a key component of focus. Bank funding as one of the principal methods of financing saw credit constraints interfere with firms' abilities to resort to this method to address pandemic-induced effects on liquidity and cash-flow (Khan, 2022), especially regarding long-term debt. As expected, lending standards consequently tightened for companies with worsened creditworthiness (Bodovski et al. 2021).

1.2 Purpose

As a result of the circumstances the purpose of the study is to find correlations between certain financing options and their effect on firm performance. Key performance indicators will serve as the basis from which financing methods are examined and evaluated. The result is a set of actionable financing measures during the Covid-19 pandemic that served firms the best and may serve as the leading methods in future crises. This will help in the event of such a crisis, like the Covid-19 pandemic, occurring again. The study will cover the following sections: firstly theory, including relevant literature that highlights links between financing and its effect on firms. Secondly, hypotheses that will be the base of tests to verify or disprove said links. Following this, the methodology which describes in detail the process of research, collection of data, analysis of results. Next, discussion of results with implications and limitations and finally, a summary/ conclusion with recommendations of the study performed.

1.3 Delimitations

The report aims to investigate the public Swedish market, considering only firms operating within retailing or consumer goods. Limiting the scope of the research to only retail and consumer goods as well as the Swedish market will allow for a broader understanding how the industry has adjusted its approach going into the pandemic. This did not include companies that have been operating during a limited time period nor gone bankrupt, allowing for a full picture. Therefore, this research will only include companies that are currently operating and subsidiaries to operating companies within the specified requirements.

1.4 Outline

Section one has placed the foundations for the research paper wherein the study consists of how financing decisions made by publicly traded firms in the Swedish retail sector affected

their performance and whether an optimal method of financing emerged to act as the preferred solution in a time of economic downturn. For the purposes of this report the Covid-19 pandemic was used. Section two contains previous literature on the topic as well as the theoretical framework that was utilised with hypotheses embedded in the section. Section three is where the method is described and explained with justification of its use. Section four includes the results with a review of the tests performed. Section five is the discussion portion of the report with an examination of the results gathered and the method. Section six includes conclusions. In section seven, suggestions for future research are presented. Finally, section eight for references.

2 Theory

The theory section will comprise the academic literature and theories that have been used to compose and develop our hypotheses. We solicit the literature as a basis for the hypothesis formation from work which pertains to firm activity in crises and financing methods. A theoretical framework precedes this which acts as a premise for the reasoning of the report.

2.1 Literature Review

Existing literature and theories on financing are abundant. Within this, financing methods pertaining to their impact on firm performance and evaluation of differing financing methods and their theoretical and practical outcomes on firms has been significantly developed over time. Exploring this further is the central aim of this report, wherein financing methods are compared and contrasted to understand their effect on firm performance. This is in order to provide firms with greater knowledge via statistical evidence, on how best to conduct their financing decisions. The scope utilised to further understand financing decisions and their impact will directly relate to the contributions this academic report could provide. With these financing decisions being placed in the Covid-19 pandemic, a period which in the report is classed as a period of economic volatility and using firms in the Swedish retail sector, a niche subset of the firms that were affected globally.

With the scope established, literature which aims to explore financing decisions during times of economic volatility are less commonplace and so using more general financing theories and placing them in the Covid-19 context is required. The literature which explores financing decisions on Swedish retail firms is also brief and so supporting the thesis regarding this will

originate from evidence gathered by reports analysing different retail sectors and observing if similarities apply.

Previous research has established the importance of financing decisions due to its integral role in allowing firms to continue operating. Financing decisions that are misjudged or performed wrongly can lead to bankruptcy (Doan. 2019). A consensus amongst literature on financing, posits that debt and equity should work in tandem to support the firm maximising performance (Sultan. 2015), (Gonzalez. 2013), (Hamid et al. 2015). The combination of which is classified into aggressive and conservative working capital policy (Baños-Caballero et al. 2016). Building on the theory of firms adopting an aggressive working capital approach in which companies take on more liabilities whilst utilising less internal income generation to finance themselves through investing internally. Findings show that short and long term debt, as well as trade credit have a negative effect on firm performance, specifically profitability (Yazdanfar and Ohman, 2014). Although the report by Yazdanfar and Ohman. (2014) does not provide information regarding whether firms the Swedish firms investigated are employing conservative or aggressive working capital policy, it does highlight that a high debt ratio, where the liabilities in a firm are greater than its assets, increases agency costs and leads to less control of the firm, especially if interest on loans rise (Yazdanfar and Ohman, 2014). Agency costs imply the relationship between creditors and the person(s) responsible for the continued operation of the firm and the control they possess at a given moment in time (Myers, 2001). These agency costs are lowered if a firm has opted to utilise more equity capital as the source of their financing (Holmes and Kent, 1991). This is directly linked to the conservative and aggressive working capital policy as the decision to utilise more debt is a feature of aggressive working capital financing.

The contention between equity and debt financing is a clear aspect of previous literature and the capital structure that is formed by firms as a result of their financing decisions and its role in dictating firm performance. Hence, this report aims to continue building on the existing contributions in the field.

Lastly, whilst assessing the relationship between financing methods and firm performance the overall premise of the report seeks to discover how this relationship specifically behaves during the COVID-19 pandemic. A period like the pandemic is referred to as a period of economic distress. Criteria for an event to be classified as such must include uncertainty and

instability to employment as well as deprivation and strain on the economy (Voy-danoff, 2014). These macroeconomic factors alter how firms behave regarding their financing, with differing strategies regarding leverage, equity financing, and capital management. Thereby reinforcing the aim of the report where the performance impact of these strategies designed to navigate the pandemic is crucial to understand and answer the question whether firms can aptly behave to become as immune to the shocks and distress a period of economic volatility can bring.

2.2 Theoretical framework

The report will be based on the theory Erel et al. (2012) developed, where he investigates firms' ability to raise capital during a macroeconomic downturn. They establish that well-rated firms according to valuation metrics are able to handle economic volatility better than low-rated firms, since they have the ability to quickly raise capital in the form of both debt and equity. The report will build on this and further investigate the findings in a modern context. Macroeconomics are believed to have implications on how firms raise capital and the requirements needed for them to do so (Erel et al. 2012). A number of theories have tried to explain the relationship with firms ability, capital demand, and the ways firms raise capital in certain macroeconomic conditions. The historic research has focused on two major theories, where the first examines demand of capital, which focuses on information asymmetries. The second is supply of capital-based theories, which argue that downturns decrease supply of capital, especially for poorly rated firms. This in fact, is explained by "credit crunch" and "flight-to-quality" theories.

Erel et al. (2012) examined two questions "First, do macroeconomic conditions affect capital raising at all?" and "Second, which theories best explain the observed patterns of particular types of capital raising?". In fact, their study proved that there is a clear relation between how macroeconomic conditions determine capital raising for firms. However, most importantly for this research, what types of companies were able to raise capital during a recession.

The financial soundness of a firm defines if they are able to raise capital or not, since the likelihood of a lower-rated firm to increase their capital decreases as the market conditions worsen. Regardless of measuring recession by NBER¹-definition, growth rate by GDP, or

¹ National Bureau of Economic Research

credit tightness measured by a Federal Reserve survey of bankers. Erel (2012) mentions that the likelihood of any raised capital for these low-rated firms do indeed correlate with the worsened market, and that the only increased in-flow of capital is by privately placed equity and debt. This proves Erel's (2012) hypothesis that when macroeconomic conditions worsen, capital supply shifts and relatively poorly-rated firms cannot raise capital publicly and therefore have to rely on private placements. Contrary, supply of capital does not seem to decrease for high-rated firms, where equity has no relation with business cycles. Public issuance in fact increases for these companies, proving the theory on "flight-to-quality", where investors seek to shift their attention towards lower risk investments, and the theory on "credit crunch" where capital becomes scarce and is therefore focused on high-quality firms. An implication of these arguments is that highly-valued firms should seek to lower their costs of capital and focus on replenishing the firm's liquidity. Meanwhile, low-rated firms should only raise capital when it is absolutely necessary since the cost of capital is noticeably higher for them. Therefore, the low-rated firm's focus should be to immediately spend their capital raised.

2.3 Explanation of variables and performance metrics

The determined performance metrics used in all testing are based on capital iq's given valuation metrics. These metrics will be used as a template to determine a firm's performance, profitability and financial health. Which provides a developed understanding of a firm's performance and financial health. It includes values both from the income statement, balance sheet and public stock market to calculate the given key ratios.

2.3.1 *Return On Assets*

ROA (return on assets) is a ratio used to analyse how profitable a firm is in relation to its total assets. It can determine how well a company utilises its assets and if they are doing it efficiently. It is calculated by dividing net income by total assets.

$$\text{Return on Assets} = \frac{\text{Net Operating profit after tax}}{\text{Average assets}}$$

2.3.2 *ROE*

ROE (return on equity) is a gauge on a firm's profitability and how efficiently it is generating profit. ROE can be described as return on net assets since assets minus debt equals to shareholder's equity. ROE is calculated by taking net income over shareholder's equity.

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Average Equity}}$$

2.3.3 Return On Capital

ROC (return on capital) displays how profitable a company is in relation to its capital. Capital is both equity and liabilities. Meaning that ROC describes how much revenue is made in the capital raised. ROC is calculated by taking net income over total capital.

$$\text{Return On Capital} = \frac{\text{Net income}}{\text{Average Capital}}$$

2.3.4 Gross Profit Growth %

Gross profit growth takes in consideration the prior years gross profit and describes in percentage how much it has grown.

$$\text{Gross Profit Growth \%} = \frac{\text{Gross profit}(t)}{\text{Gross profit}(t-1)}$$

2.3.5 P/LTM Diluted EPS before extra

P/EPS essentially P/E ratio, describes earning per share in relation to market share price, which takes both market evaluation and book value profits into consideration. Generating a figure that describes how many years it will take for an investor to regain their invested money. A normal valuation ratio for investors on the stock market.

$$\text{P/LTM Diluted EPS before extra} = \frac{\text{Stock Price}}{\text{Diluted EPS before extra}}$$

2.3.6 Total Enterprise Value

TEV (total enterprise value) is a valuation on how much the company is worth. It is used to evaluate several companies and takes both book value and market value into consideration. Often used to compare companies with varying levels of debt. Compared to market capitalisation, TEV provides a better ratio for comparisons since companies often have different capital structures.

$$\begin{aligned} \text{TEV} = & \text{Market Capitalisation} + \text{BV Total Debt} + \text{BV Preferred Stock} \\ & + \text{BV Minority Interest} - \text{Cash and Short Term Investments} \end{aligned}$$

2.3.7 Net Income Growth %

Net Income growth presents the percentage change in the net income from the prior year to the current year. This percentage delta would show a growth or a shrinking of net income.

$$\text{Net Income Growth \%} = \frac{\text{Net Income}(t)}{\text{Net Income}(t-1)}$$

2.3.8 Equity Ratio

The dependent variable used in the regression test was 2017-2019's debt ratio, determined to be the years before the pandemic. By choosing the years before the pandemic it displays the firm's entry conditions to the pandemic, and using the performance metrics of 2020 and 2021, it shows the performance of the pandemic years. Allowing for explanation of correlation between debt ratio and the performance of 2020 and 2021. Debt ratio is calculated by taking total liabilities divided by total assets, and equity ratio is calculated by taking total equity divided by total assets. Therefore, summing equity and debt ratio together it is equal to one, explaining why they are each other's opposites. The performance metrics used were the determined ratios explained earlier.

$$\text{Equity Ratio} = \frac{\text{Total Equity}}{\text{Total Assets}} \quad \text{Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

2.3.9 Quick Ratio

The variables which were involved in the regression were the 2017-2019 quick ratio of the companies in the dataset and the performance metrics of the same firms in the sample of 2020 and 2021. The reason for using data of the respective years of 2017-2019 for the quick ratio and the 2020-2021 performance metric data is to best represent how firms could have exhibited preparedness for the pandemic by having a strong quick ratio. A quick ratio of 1 shows that a firm has the exact amount of assets which can be liquidated to meet all of its short-term debt.

A firm's quick ratio represents the company's ability to liquidate itself to meet short-term obligations. The quick ratio and its influence of firms financing decisions to take on more debt with a strong quick ratio was hypothesised to be a factor that would provide firms with

needed flexibility during the pandemic, hence its inclusion within the regression for hypothesis 1.

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Total Current Liabilities}}$$

2.3.10 Interest Coverage Ratio

Primarily, the data needs to be defined before and after the pandemic, therefore the years 2017-2019 were used, while the pandemic was defined as 2020-2021. To construct a ratio that was comparing all years prior to the pandemic and average mean was used to give one single variable for comparison and correlational analysis.

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest Expenses}}$$

The variable used was interest coverage ratio (ICR), and subsequently mean of 2017-2019 (ICR). The variable was calculated by taking the firm's EBIT (earnings before interest and tax) divided by interest expenses. Allowing for a rational value displaying how much of interest expenses are covered by EBIT. Where a value of 1 is often described as absolute minimum, where the company exactly covers interests due.

A grouping was developed to determine a high and low ICR. The divider used was the S&P Global Inc. average ICR of 30.7 (Finbox), simplified to 30. Meaning in our testing a low would be considered under 30 and high over 30. Though, an ICR of 1 is minimum, a recommended ICR is above 2, though many companies exceed those numbers. The maximum in this dataset was 110. Tested against the two groupings of ICR was the defined performance metrics.

2.4 Hypothesis development

Within this section literature and theories on the subject are presented. The literature and theories included are utilised to base the hypotheses. The hypotheses are placed where relevant literature precedes. Each hypothesis is based on an aspect of financing and how it could relate to a firm's performance. Previous studies that have reported similar findings on the implications of financing decisions are used. Literature and theories on different methods of financing on differing parts of a company's capital structure are used to inform the

hypotheses made. Furthermore, general aspects of firms' decision making in times of economic volatility is included to provide further insights into why and how financing is an area of concern for companies and requires attention. Finally, theories and literature on how to extract information about firm performance is presented and acts as the consistent testing foundation for verifying all hypotheses.

2.4.1 H1, Quick ratio

Insolvency risk increases in times of crisis from shortages in cash flow and liquidity, leading to difficulties maintaining necessary amounts of working capital, the role of which is to aid in absorbing shock in changes that result in rapid cash flow decline (Simon et al. 2021). As a result, firms sought to maintain liquidity and working capital through various methods of financing. The result of these differing strategies is still ongoing as the pandemic begins to subside but the effects are visible as firms navigated the obstacles Covid-19 brought along.

Having noted the importance of working capital on a firm's operations and its role in supporting firms' continued operations when cash flow is negatively affected, the methods of financing working capital therefore becomes relevant. Three primary ways to do so include internal generation via cash maintained after capital expenditures and operating expenses, often called free-cash-flow. Or via long-term and short-term debt obligations (Baños-Caballero et al. 2016). Due to easier eligibility requirements for taking on short-term debt obligations (Guadagno, 2016) firms may have sought to utilise this method of financing amidst uncertainty and panic. However, during financial stability, short-term debt is considered a more expensive option compared to long-term loans. Debt categorised as short-term is required to be repaid or utilised within a financial year's time, which normally entitles higher rates due to increased risk for the creditors as well as more fluctuating expenses for the loan receiver. A firm's quick ratio can provide information on their ability to pay back short-term debt, where it takes liquid assets and accounts receivable over current liabilities providing an indication for how long a company can repay its current debt. As a result firms with a higher quick ratio have been more prepared for the pandemic due to their increased ability to acquire short-term debt to supply immediate monetary requirements. Subsequently a hypothesis can be formed.

Hypothesis I: Firms with a strong quick ratio are better prepared. Which in turn will lead to improved performance.

A quick ratio of 1 is considered to be the required level, this means that a firm has the ability to liquidate its assets to pay off the short-term liabilities which the firm possesses.

Given the circumstances of the Covid-19 pandemic, firms converting their original financing methods to ones which could keep them afloat in the meantime is a method to buy some time. With this the working capital in the firm can stay consistent for the short term while the company continues to operate with the intention of business resuming post pandemic.

2.4.2 H2, Conservative and aggressive capital financing

The strategic decision making behind the source of a firm's working capital can be described as working capital policy. Firms can opt for either an aggressive or conservative working capital policy (Altaf, Ahmad, 2019). An aggressive working capital policy is utilised by firms when they engage in investing lesser amounts in current assets alongside a larger involvement with short-term credit (Nazir, Talat, 2009). The contrast is a conservative working capital policy which is the opposite of the aggressive working capital policy, where a firm would behave by large investments in current assets with lesser involvement in short-term credit (Altaf, Ahmad, 2019). The purpose of the proceeding competing hypotheses is to ascertain which particular capital financing strategy is more advantageous. This will subsequently have the intention of providing evidence of either conservative or aggressive being the preferred choice during an economic downturn for Swedish retail companies. Thereby assessing whether firm performance in relation to each working capital policy forms the following hypothesis.

Hypothesis 2, competing hypotheses:

2a) A conservative working capital financing approach is more beneficial to firm performance in a time of economic distress, compared to an aggressive approach.

2b) An aggressive working capital financing approach is more beneficial to firm performance in a time of economic distress, compared to a conservative approach.

The reliance of short-term credit coupled with the effect of economic uncertainty and disruption from the Covid-19 pandemic on interest rates could prove decisive on firm performance (Simon et al. 2021). Hence the importance of investigation on the particular area.

2.4.3 H3, Interest coverage ratio and debt interconnection

A firm's interest coverage ratio could also have a role in dictating the financing methods utilised for working capital. Interest coverage ratio is calculated as the ratio between earnings before interest and tax to a firm's financial expenses (Schmidlin, 2014). The ratio provides an insight into financial constraints a company could be facing as the inability to repay debt obligations directly links to bankruptcy risk. The greater the interest coverage ratio the easier a firm can repay its debt, meaning that firms with favourable interest coverage ratio can handle leveraging themselves when financing for working capital. The effect this has on firms' choices on how to finance is based on their expectations of being able to repay debt and is relevant as already has been established, financing decisions play a role in firm performance. The valuation metrics interest coverage ratio indicates the financial health of a company, thereby a high ratio; a healthy company. Previous studies by Chavali & Rosario (2018) proved a positive relationship between capital structure and interest coverage ratio. However, we liked to investigate the relationship between interest coverage ratio and firm performance in an economic downturn. Therefore, based on interest coverage ratio the following hypothesis can be formed.

Hypothesis 3: A firm with a high interest coverage ratio is performing better.

Interest coverage ratio implies a firm's ability to meet its liability payments (Chavali, Rosario, 2018). Firms with a better ICR possess the ability to take on more debt as they can sustain current payments and could add and cover more. Within a time of economic volatility the capability to do so could place firms in a position to adjust their capital structure by financing more of their operations from debt and not incur negative financial consequences.

The hypotheses will serve as the basis for experimentation where links can be drawn between a firms' working capital policy and their sources of financing. With this, the performance of firms based on these financing decisions can be identified by a selection of performance indicators. This will aim to show correlation between certain methods of financing and how firms performed subject to those decisions. Return on equity (ROE), return on assets (ROA), and earnings per share (EPS), are measures that have been shown to provide insights into firm performance (Bahhouth, 2014). Price to earning ratios show characteristic of growth in earnings and so is also indicative of firm performance. Growth rates will also be considered.

To cover both top and bottom line information, net income growth and gross profit growth will be used as metrics to measure the performance of financing decisions.

2.4.4 H4, Equity ratio and conservative financing nature

Considering long-term investments firms are required to fulfil two criteria. First one being, it should gain sufficient and appropriate return on the invested capital. Second, companies can, in the long run, operate successfully only if they have solid capital structure and cash flow. Debt ratio which will hereby be discussed evaluates a firm's financial stability and which should not be underestimated especially not in the business world (Schmidlin, 2014).

Equity ratio describes how large shares of assets are funded by shareholders equity. Comparable to debt ratio which indicates how large a share is funded by debt. Companies with high equity ratios are often considered to be conservatively financed and a low equity ratio indicates a firm being heavily leveraged. In contrast to equity, debt has the advantage of being tax deductible, as interest expenses are often tax deductible, making the total tax burden of the company lower. Furthermore, when obtaining debt, it is often considered a cheaper alternative than shareholders equity since credit providers claim senior rank to equity in cases of insolvency. Therefore, credit providers will claim less compensation for capital since the risk of lending is lower than obtaining equity. Since debt is cheaper than equity and holds less risk, a certain proportion of borrowed capital can be found in businesses, which in turn lowers the cost of capital. A minimal amount of debt is considered to be sensible, for example when acquiring working capital, then firms often hold credit from suppliers or revolving credit lines (Schmidlin, 2014).

However, with increased debt and higher leverage a company is itself increasing their risk. Since an increasing interest burden and the fact that in time debt has to be repaid or restructured. This is especially prevalent in times of downturn which can be seen with the pandemic. Since a fixed rate of interest payment will persist, profit margins may be affected which hinder a firm's ability to repay their obligations. Contrasting to debt, capital provided by equity does not mature nor does it require any obligations to pay out dividends. Therefore, in difficult economic times a financial cushion in the form of equity will allow the company to remain liquid and provide them financial flexibility. Therefore, long-term investors and capital creditors should give preference towards companies with sufficiently high equity ratios that allows the firm to overcome extreme downturns (Schmidlin, 2014).

A low equity ratio indicates that a firm is leveraged and it has a majority debt in their capital structure. Conversely, a high ratio indicates a conservative financing strategy, and creditors would look to extend terms because they are considered less risky, the firms know how to gather and fund assets requirements without incurring substantial debt. The higher the ratio, the stronger indication that the company is financed efficiently and are able to repay their debts. Henceforth, questioning if a conservative firm has the ability to keep interest expenses low and maintain profitable margins compared to heavily leveraged companies where the interest expenses are catching up on revenue which therefore minimises margins, is relevant. Providing guidance on how to prepare for an extreme downturn and analysing if conservative capital in fact has been more profitable in the Covid-19-pandemic. Therefore, a hypothesis can be formed.

Hypothesis 4: A firm with a lower Debt ratio is able to use their conservative nature and maintain profitability throughout the pandemic.

The composition of debt and equity for a firm is relevant to its performance. As such the differing capital structures of firms in the Covid-19 pandemic highlights the strategy of some firms opting to finance less debt relative to their competitors. Using the debt ratio as a benchmark to the market with an industry average, looking at firms above and below the benchmark and their performance with a more or less leveraged position will highlight the success of the decision to finance more debt and lever up during the pandemic.

Firms that generate high earnings are not issuing more debt and therefore decreasing their debt leverage. The companies that do have a large enough revenue stream are expected to use less debt capital compared to equity than those who do not reach sufficient earnings. The firms who instead have to rely on heavy leverage have been observed to be less profitable (Myers, Majluf, 1984). As well as capital structure and profitability being highly interrelated (Chiang, Venkatesh, 1988).

According to pecking order theory, debt is seen as more valuable when additional financing is required. The pecking order theory pertains to the cost of financing increasing when information is asymmetric. Supporters of this theory believe that using equity issuance as financing is seen as detrimental. In larger firms equity issuance is a more common way to

finance as opposed to debt issuance (Das et al. 2021). Seeing whether this is consistent during the Covid-19 pandemic will be testament to whether firms could maintain operations through equity issuance despite volatility. Assessing whether firms that might have been forced to levered up or took the path of doing so and their performance to firms that could keep debt at levels pre-pandemic will show the outcome of these choices when evaluated with performance metrics.

The capital structure of the firms and their composition of debt and equity financing in a time of volatility could reveal how larger firms are better suited to financing through either equity or debt. Whether the debt ratio acting more than a comparability metric in the hypothesis will either highlight the risks of adjusting capital structure in a firm or whether reactionary adaptations of capital structure by increasing debt or equity in response to the pandemic was a viable survival and potentially successful route.

3 Method

Within the methodology section we present how our data was collected and collated as well as the statistical tests performed on each hypothesis. A justification of why each certain variable was selected and our performance metrics used across all tests is also provided.

3.1 Screening & Data sources

The company screening was built upon several predetermined criterias set out to analyse and group Swedish publicly traded companies within consumer discretionary (automobiles and components, consumer durables and apparel, consumer services, and retailing) and consumer staples (food and staples retailing, food, beverage and tobacco, and household and personal products). Screening was to only include currently operating companies and subsidiaries acting in the mentioned industries. This will exclude firms that might have been present during pre-pandemic and earlier stages of the pandemic but been forced to either liquidate, sell, go out of business or reorganise. Since the report aims to analyse firms' ideal preparatory financial requirements and its effect on performance now and in the future.

Furthermore, the financial information used in the screening spanned across year 2017-2021, which enables a pre-pandemic, during pandemic, and forward analyses. Due to limited information and a non-completed year, the report could not include year 2022's financial

information. The valuation based data consisted of: *Total Enterprise Value*, *Price/ Diluted EPS before Extra* (included since it provides a broader understanding than simple EPS), *Quick Ratio* and *Debt ratio*. Moreover, the profitability based data consists of: *Return on Assets %*, *Return on Capital %*, and *Return on Equity %*. As well as the growth metrics *Gross profit growth* and *net income growth*. The samples were collected from a database called Capital Iq.

3.2 Sample

The scope that was utilised to form a sample of firms was limited to firms in retail, in Sweden. There were three main criteria requirements for a firm to be selected and included into the sample set. Firstly, the firm was required to have been operational between 2017 to 2021. Secondly, the firms were expected to be publicly traded limited companies in the Swedish Aktiebolag. Thirdly, the retail companies that were included fell under two sub categories. Consumer discretionary and consumer staples. Firms that had either experienced bankruptcy or had been acquired at any time between 2017-2021 were not considered and therefore were excluded from the sample.

Table 1. Sample filtering process	No. of firms	No. of firms excluded
Country/ Region of incorporation: Sweden	22734	-
Industry Classifications: Consumer Discretionary (Primary) Or Consumer Staples (Primary)	2933	(19801)
Geographic Locations: Sweden (Primary)	2915	(18)
Company type: Public Company	149	(2766)
Company Status: Operating Or Operating and Subsidiaries	132	(17)
Dataset Sample	132	(22602)

The reason for these selection criteria was to have a focused sample. The Swedish retail market was an industry that was affected by Covid-19. The market did have to adapt to the changes that Covid-19 brought along. This places the Swedish retail sector as a prime scope to analyse and examine the ramifications of their business and financing actions. The retail sector globally saw significant volatility across 2020-2021 where Covid-19 was the most prominent macro factor influencing the market. Sweden was less influenced by factors such as governmental damage limitation policy. This could include lockdowns, quarantines, and

halting of business activities. The Swedish government was more relaxed in mandating these measures, however, were still present through stints of the Covid-19 pandemic. As a result, Swedish publicly traded firms were faced with obstacles to their operations which entailed business decisions pertaining to financing to be made, hence the selection of the market to be examined and analysed.

From this, 132 eligible companies were identified to be involved in the study. Due to the publicly traded nature of all 132 companies, financial data could be extracted from their publicly visible statements.

3.4 Hypothesis 1 Testing

Hypothesis 1 of the study looks to show causality between firms with a strong quick ratio pre-pandemic and their subsequent ability to better handle challenges posed during the pandemic in regards to their financing ability.

For hypothesis 1, a linear regression was used to find the association between quick ratio and its effect on the predetermined performance metrics. A regression was selected because the link between how the firms within the dataset performed and their quick ratio could be identified. The variable quick ratio was used as the independent variable for the years 2017-2019 tested against its influence on the performance metrics. The tests were divided into two separate regressions, where one looked at quick ratios effect on 2020 performance and the second on 2021's performance. To give a clearer indication of affect duration and to discover if quick ratio can act as a short term immediate solution or longer-term profitability.

3.5 Hypothesis 2 Testing

Hypothesis II looks to find a preferred option of working capital financing policy. The two alternatives for the hypothesis were either conservative working capital policy or aggressive working capital policy. The two were then tested against the performance metrics.

3.5.1 Variables

The variables of conservative and aggressive working capital policy were constructed first. Firms that utilised a conservative working capital policy were sorted through calculating the mean of the samples current assets between 2017-2019. If this value was lower than the mean

of their current assets of 2020-2021 then the firm passed the initial criteria. Next, if the firm's mean of total current debt in the years of 2017 to 2019 was higher than the mean of the total current debt in the years of 2020 to 2021 then the firm passed the second criteria and was classified as a firm which employed a conservative working capital policy. The two criteria work together to display the firms that have increased their current assets and decreased their total current debt.

For a firm to be classified as one that employed an aggressive working capital policy it needed to fulfil the same criteria but in the opposite manner. If a firm's mean of their current assets in the fiscal years of 2017 to 2019 was higher than the mean of their current assets in 2020 and 2021 then the firm passed the first criteria. Then, if the firm's mean of their total current debt in the years between 2017 and 2019 was lower than that of the mean of their total current debt in the years of 2020 and 2021 then they were placed into the aggressive working capital category. Firms in the aggressive category have decreased their current assets and increased their total current debt.

The performance metrics in the years 2020 and 2021 were then used as the indicators of the performance of each working capital management policy to decipher whether firms in one category performed better than the other.

3.5.2 SPSS Testing, Non-Parametric Sample Test & Mean Comparison

The data was not normally distributed and the sample sizes were not large enough to justify assuming normal distribution. As a result, a non-parametric Mann-Whitney U test was used to establish if significance was present between the conservative and aggressive policies and the performance metrics. Within the test the null hypothesis would either be retained or rejected. If retained no significance was found.

The Mann-Whitney U test displayed a large majority of results where the null hypothesis should be retained. This meant that further testing to identify significant patterns and causality was not possible. Because of this, means tests were utilised to provide some indication of association between conservative and aggressive strategy in a naive manner to try and provide some insight and compensate for the lack of significance.

Means tests were performed for conservative working capital firms against 2020 and 2021 performance data and the same for aggressive working capital firms against 2020 and 2021 performance data. The eventual comparison of those means could provide connections between the working capital policies and superior performance for one, albeit not statistically significant.

3.6 Hypothesis 3 Testing

Hypothesis 3, a firm with high interest coverage ratio will perform better was analysed by investigating the differences between having a low and a high ratio as well as the causality between having a strong interest coverage ratio pre-pandemic (2017-2019) and firm performance during the pandemic (2020-2021). Since, interest coverage ratio displays a firm's ability to pay off short term liabilities it is believed to have direct relation with the company's solvency, in turn allowing for profitability.

The data set was not normally distributed nor were the two developed groups large enough to analyse the results in a parametric independent sample t-test. Therefore, a non-parametric Mann-Whitney U test was conducted to determine a significant correlation between ICR and performance. Where significance levels and a decision column displays if to reject or retain the null hypothesis (no relation).

Since, the non-parametric test displayed a majority of not significant results. A descriptive comparison of means was used to naively analyse if a difference in the groups could be found. Even though the non-parametric test already displayed no significance, the naive mean comparison was used to determine if there was an observational difference in the groups, made for exploratory sake.

3.7 Hypothesis 4 Testing

The testing on hypothesis 4 was to determine if having leveraged or conservative debt strategy is the most profitable for a firm. As well as determine if there is a correlation between debt ratio/ equity ratio and profitability. Explaining which one has been the most profitable during the pandemic. Since, these ratios are polar opposites of each other only one was used during the testing, since if one is positively correlated the second will be negatively.

To determine if debt ratio and equity ratio had an influential correlation to the performance metrics a regression test was made. Where debt ratio of years 2017, 2018 and 2019 was used as the independent variables and each performance metrics as the dependent. To enable an analysis of performance impact on a broader time period we conducted two linear regression tests on years 2020 and 2021 to determine if pre-pandemic debt ratio impacted pandemic and post-pandemic financial performance. As mentioned above only debt ratio was used during the testing since debt ratio and equity ratio are polar opposites, only one is required to be used to explain the prerequisites needed to have good performance.

4 Results

This section includes presentation of descriptive statistics for the variables used in hypothesis testing as well as non-parametric samples test and respective regression analysis. Observing the pre-pandemic requisites of profitability and the effect they have had on performance metrics during the pandemic.

4.1 Results for H1

To investigate hypothesis 1, two regression tests were performed. The test's purpose was to show the effect of quick ratio on firm performance. The initial test was done by looking at the performance indicators for 2020 and the second test by looking at the performance indicators in 2021. Across both tests quick ratio data from our sample spanning the years 2017-2019 was used to assess its effect.

Hypothesis 1. 2020

Coefficients	Quick Ratio:					
	Years					
Metrics	<u>2017</u>		<u>2018</u>		<u>2019</u>	
2020	B	Sig.	B	Sig.	B	Sig.
Return on	3.7***	(<.001)	-9***	(<.001)	4.7***	(.008)

Assets:						
Return on Capital:	6.3***	(<i><.001</i>)	-15***	(<i><.001</i>)	7.4**	(<i>.011</i>)
Return on Equity:	22***	(<i><.001</i>)	-48***	(<i><.001</i>)	22**	(<i>.010</i>)
Gross profit Growth:	11***	(<i>.007</i>)	8.8**	(<i>.038</i>)	1.4	(<i>.844</i>)
Earning per share:	-22	(<i>0.154</i>)	81***	(<i>.001</i>)	-30***	(<i>.014</i>)
Net income Growth:	13	(<i>.788</i>)	-11	(<i>.886</i>)	-16	(<i>.678</i>)

Note: Independent variable: Quick ratio

Asterix indicates significance level at the 10 percent (), 5 percent (**) and 1 percent (***) level*

From the results of hypothesis 1 testing we observe that quick ratios in 2017 and 2019 have a statistically significant positive impact on ROA, ROC, and ROE and have a statistically significant positive impact across 2017 and 2018 on gross profit growth in 2020. Lastly, the quick ratio has an overall net positive impact on EPS with a positive beta coefficient of 81 in 2018 with a 1% significance.

Analysing the results shows that financial health through quick ratio pre-pandemic particularly in 2017 had a statistically significant positive effect on all performance metrics aside from EPS and net income growth. Similar can be said for quick ratio in 2019 where it is likely that firms were in a better position to perform during the pandemic of 2020 with ROA, ROC, and ROE showing positive beta coefficients with statistical significance.

Hypothesis 1. 2021

Coefficients	Quick Ratio:		
Metrics	Years		
2021	<u>2017</u>	<u>2018</u>	<u>2019</u>

	B	Sig.	B	Sig.	B	Sig.
Return on Assets:	1.9*	(.061)	-5.4***	(<.001)	4.2**	(.037)
Return on Capital:	2.7	(.255)	-7**	(.010)	5.4	(.247)
Return on Equity:	4.8	(.214)	-11.6***	(.010)	6.1	(.427)
Gross profit Growth:	-2.1	(.553)	4	(.296)	4	(.560)
Earning per share:	-7.6	(.407)	20	(.263)	1.2	(.842)
Net income Growth:	-146	(.456)	195	(.513)	22	(.881)

Note: Independent variable: Quick ratio

Asterix indicates significance level at the 10 percent (), 5 percent (**) and 1 percent (***) level*

Within 2021 the results observed are different to 2020. The region of statistical significance comes in 2018's quick ratio impact on 2021 performance metrics. Here ROA, ROC and ROE all show negative beta coefficients, whereby the quick ratio in 2018 had a negative impact on those performance metrics with statistical significance. Only ROA in 2017 and 2019 show a positive beta coefficient with the required significance levels.

4.2 Results for H2

4.2.1 Non-Parametric Mann-Whitney U test 2020

Within the Mann-Whitney U test for the non-parametric sample of firms regarding their aggressive or working capital policy five out of seven of the decisions show to retain the null hypothesis because of no statistical significance.

Table 5: Hypothesis test summary

	Null Hypothesis	Sig. ^{a,b}	Decision
1	The distribution of Net Income, 1 Yr Growth % 2020 is the same across categories of Aggressive or Conservative	0.163	Retain the null hypothesis.
2	The distribution of Total Enterprise Value 2020 is the same across categories of Aggressive or Conservative	0.014	Reject the null hypothesis.
3	The distribution of P/LTM Diluted EPS 2020 is the same across categories of Aggressive or Conservative	0.001	Reject the null hypothesis.
4	The distribution of Gross Profit, 1 Yr Growth % 2020 is the same across categories of Aggressive or Conservative	0.226	Retain the null hypothesis.
5	The distribution of Return on Equity 2020 is the same across categories of Aggressive or Conservative	0.868	Retain the null hypothesis.
6	The distribution of Return on Capital 2020 is the same across categories of Aggressive or Conservative	0.624	Retain the null hypothesis.
7	The distribution of Return on Assets 2020 is the same across categories of Aggressive or Conservative	0.744	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

4.2.2 Naive Descriptives: Mean Comparison Conservative 2020

Within the mean comparison descriptives test the sample was split into the firms that fulfilled the criteria of being a conservative firm during the pandemic. Those firms for the purposes of analysis were represented as either aggressive or conservative in SPSS. Assumptions can be made from the comparison of mean but as mentioned will not be from a statistically significant test.

Table 6: Aggressive/Conservative

		ROA 2020	ROC 2020	ROE 2020	Gross Profit 2020	EPS 2020	TEV 2020	N_Incom e 2020
Aggressive	Mean	-14.84	-65.24	-56.88	-28.5	17.05	5496.74	-46.8
	N	11	11	10	10	2	9	1
	Std. Deviation	30.288	189.628	89.794	50.046	2.758	12468.321	.
Conservative	Mean	-6.33	-14.67	-47.12	41.25	16.11	2414.22	123.86
	N	26	26	26	25	11	20	14

Std.
Deviation 30.459 56.441 187.372 98.562 5.379 4386.528 173.255

4.2.4 Non-Parametric Mann-Whitney U test 2021

Continuing the testing into 2021, once again due to the non normal distribution of the data the non-parametric Mann-Whitney U test was performed for the aggressive and conservative working capital strategies. In this case all but one of the summaries resulted in the retaining of the null hypothesis displaying that significance only existed in one of the tests.

Table 7: Hypothesis Test Summary

	Null Hypothesis	Sig. ^{a,b}	Decision
1	The distribution of Net Income, 1 Yr Growth % 2021 is the same across categories of Aggressive or Conservative	0.987	Retain the null hypothesis.
2	The distribution of Total Enterprise Value 2021 is the same across categories of Aggressive or Conservative	0.024	Reject the null hypothesis.
3	The distribution of P/LTM Diluted EPS 2021 is the same across categories of Aggressive or Conservative	0.292	Retain the null hypothesis.
4	The distribution of Gross Profit, 1 Yr Growth % 2021 is the same across categories of Aggressive or Conservative	0.351	Retain the null hypothesis.
5	The distribution of Return on Equity 2021 is the same across categories of Aggressive or Conservative	0.665	Retain the null hypothesis.
6	The distribution of Return on Capital 2021 is the same across categories of Aggressive or Conservative	0.312	Retain the null hypothesis.
7	The distribution of Return on Assets 2021 is the same across categories of Aggressive or Conservative	0.497	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

4.2.4 Naive Descriptives: Mean Comparison Conservative 2021

Here table 8 shows the descriptives of mean comparisons made for the conservative firms but against 2021 performance data. The classification, like previously, displays firms that fill the criteria to be conservative are represented by a “conservative” and those which are not are represented by a “aggressive”.

Table 8: Aggressive/Conservative

		ROA 2021	ROC 2021	ROE 2021	Gross Profit 2021	EPS 2021	TEV 2021	N_Income 2021
Aggressive	Mean	-9.18	-11.11	-105.34	22.52	20.8	5177.13	67.63
	N	10	10	10	9	3	11	3
	Std.						13032.40	
	Deviation	23.831	34.353	153.507	32.652	2.787	1	22.141
Conservative	Mean	-1.64	-0.65	-0.82	27.36	31.36	2967.56	31.08
	N	23	23	23	23	17	25	15
	Std.							
	Deviation	23.252	32.482	52.968	46.202	31.412	5045.51	80.523

4.3 Results for H3

4.3.1 Non-parametric independent samples test 2020

The table 9 shows the given null hypothesis on the main performance metrics correlation with ICR following our hypothesis that higher interest coverage ratio equals to better performance. Where a good interest coverage ratio is defined to be above 30 (Finbox). We note that the significance on all except No.5 is rejected i.e. not significant, and No.5 being there is a difference between the groups when it comes to performance on ROE.

Table 9: Hypothesis Test

Summary 2020	Null Hypothesis	Sig. ^{a,b}	Decision
1	The distribution of Net Income, 1 Yr Growth % 2020 is the same across categories of Good_IntRatio.	.340	Retain the null hypothesis.
2	The distribution of Total Enterprise Value 2020 is the same across categories of Good_IntRatio.	.489	Retain the null hypothesis.
3	The distribution of P/LTM Diluted EPS 2020 is the same across categories of Good_IntRatio.	.542	Retain the null hypothesis.
4	The distribution of Gross Profit, 1 Yr Growth % 2020 is the same across categories of Good_IntRatio.	.880	Retain the null hypothesis.
5	The distribution of Return on Equity % 2020 is the same across categories of Good_IntRatio.	.050	Reject the null hypothesis.
6	The distribution of Return on Capital % 2020 is the same across categories of Good_IntRatio.	.156	Retain the null hypothesis.
7	The distribution of Return on Assets % 2020 is the same across categories of Good_IntRatio.	.168	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance
is displayed.

4.3.2 Naive Descriptives: Mean comparison 2020

As six out of seven variables were not significant we observed a descriptive mean comparison between the variables, to naively interpret the differences. Naively in this sense means we are observing the result with the expectation that it will be true and significant. However, we already proved that it is not significant, but this test is done for explorational sake.

The table 10 shows the numerical difference between the groups, minimum and maximum differences, mean difference, and the standard deviation of the two groups. We observe that the mean on high ICR is stronger on the variables: Gross Profit, ROE, ROC and ROA. Meanwhile, net income and TEV is weaker on the high ICR. Though, on both weaker variables the Std. deviation much larger than on low ICR. The ROE was significant when looking at the Mann-Whitney test and comparing the means the high ICR had a higher mean than the low ICR. Proving that if a firm has high ICR in 2019 they indeed performed a stronger ROE.

Table 10:
Descriptive
Statistics 2020

		N	Minimu m	Maximu m	Mean	Std. Deviation
Low ICR	Net Income, 1 Yr Growth % 2020	36	-66	621	72.06	145.084
	Total Enterprise Value 2020	46	23	237235	17030.04	39255.094
	P/LTM Diluted EPS Before Extra 2020	29	7	218	31.89	39.889
	Gross Profit, 1 Yr Growth % 2020	55	-81	81	4.08	31.321
	Return on Equity % 2020	53	-298	98	-8.71	68.031
	Return on Capital % 2020	56	-72	57	4.30	16.336
	Return on Assets % 2020	56	-25	30	3.29	7.272
	Valid N (listwise)	28				
High ICR	Net Income, 1 Yr Growth % 2020	18	-99	180	28.39	81.926

Total Enterprise Value 2020	16	120	360426	26429.84	89308.016
P/LTM Diluted EPS Before Extra 2020	14	15	240	49.16	64.858
Gross Profit, 1 Yr Growth % 2020	21	-47	108	8.75	39.421
Return on Equity % 2020	21	-6	412	43.30	89.726
Return on Capital % 2020	21	-3	64	14.73	17.490
Return on Assets % 2020	21	-2	26	7.23	7.289
Valid N (listwise)	13				

4.3.2 Non parametric independent samples test 2021

Table 11 shows the given null hypothesis for the same grouping of good ICR but for the year 2021. Saying that there is a significant difference in the ICR grouping. We see that in 2021 there is a significant difference between the groups when it comes to ROE, ROC and ROA, compared to the prior test in 2020 where only ROE had a significant difference.

Table 11: Hypothesis Test Summary 2021

	Null Hypothesis	Sig. ^{a,b}	Decision
1	The distribution of Net Income, 1 Yr Growth % 2021 is the same across categories of Good_IntRatio.	.334	Retain the null hypothesis.
2	The distribution of Total Enterprise Value 2021 is the same across categories of Good_IntRatio.	.339	Retain the null hypothesis.
3	The distribution of P/LTM Diluted EPS 2021 is the same across categories of Good_IntRatio.	.616	Retain the null hypothesis.
4	The distribution of Gross Profit, 1 Yr Growth % 2021 is the same across categories of Good_IntRatio.	.163	Retain the null hypothesis.
5	The distribution of Return on Equity % 2021 is the same across categories of Good_IntRatio.	.038	Reject the null hypothesis.
6	The distribution of Return on Capital % 2021 is the same across categories of Good_IntRatio.	.035	Reject the null hypothesis.
7	The distribution of Return on Assets % 2021 is the same across categories of Good_IntRatio.	.017	Reject the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

4.3.2 Naive Descriptives: Mean comparison 2021

This time in 2021 every variable except TEV was stronger for the high ICR. We also found from the Mann-Whitney test that ROE, ROC and ROA were significantly different between the groups. Meaning that having a high ICR in 2019 will increase profitability when it comes to ROE, ROC and ROA. Analysing the standard deviation in the two groups there are extreme variations in net income growth as well as TEV. However, those variables were not significantly different between the two ICR groups.

Table 12:
Descriptive
Statistics

		N	Minimum	Maximum	Mean	Std. Deviation
Low ICR	Net Income, 1 Yr Growth % 2021	38	-73	357	40.47	93.926
	Total Enterprise Value 2021	54	26	269685	22050.04	50442.270
	P/LTM Diluted EPS Before Extra 2021	40	3	191	30.20	34.130
	Gross Profit, 1 Yr Growth % 2021	54	-35	142	16.62	28.826
	Return on Equity % 2021	52	-354	73	-4.28	61.998
	Return on Capital % 2021	55	-255	59	-.85	39.849
	Return on Assets % 2021]	55	-45	32	2.39	10.752
	Valid N (listwise)	35				
High ICR	Net Income, 1 Yr Growth % 2021	17	-91	3700	301.76	898.726
	Total Enterprise Value 2021	21	116	326340	19767.12	70605.522
	P/LTM Diluted EPS Before Extra 2021	20	2	107	34.53	30.381
	Gross Profit, 1 Yr Growth % 2021	19	-59	101	24.85	34.981
	Return on Equity % 2021	19	-84	56	16.78	29.039
	Return on Capital % 2021	19	-12	45	12.10	13.154
	Return on Assets % 2021]	19	-5	23	7.51	6.833
	Valid N (listwise)	17				

4.4 Results for H4

To investigate hypothesis 4, two regression tests on the effect of debt ratio on firm performance were conducted. Where the first test is looking at firm performance of 2020 and the debt ratio effect. The second test displays 2021's performance and debt ratio effect.

Table 13.	Debt Ratio:					
Metrics	Years:					
2020	<u>2017</u>		<u>2018</u>		<u>2019</u>	
	B	Sig.	B	Sig.	B	Sig.
Return on Assets:	7.7	(.553)	23	(.134)	-22*	(.032)
Return on Capital:	14	(.725)	84*	(.058)	-55**	(.026)
Return on Equity:	54	(.663)	274**	(.045)	-285***	(<.001)
Gross profit Growth:	25	(.746)	1.5	(.986)	-98**	(.037)
Earning per share:	-174*	(.068)	154	(.141)	-45	(.441)
Net income Growth:	143	(.579)	-191	(.509)	91	(.579)

Note: Independent variable: Debt ratio

Asterix indicates significance level at the 10 percent (), 5 percent (**) and 1 percent (***) level*

The first test of 2020 shows significance on four points, debt ratio of 2018 affecting ROE and 2019 debt ratio affecting ROC, ROE and gross profit growth. Whereas ROE shows a 1 percent significance level with a beta coefficient of -285, following our hypothesis.

Analysing the results shows that the debt ratio of 2017 and 2018 will have a minor impact on firm performance in 2020, however, 2019's debt ratio has significant results on three out of six performance metrics. Displaying that if a firm had developed a high debt ratio the year

before the pandemic, they will experience worse performance than if they would go the opposite direction and aim for a high equity ratio.

Table 14.	Debt Ratio:					
Metrics	Years					
2021	<u>2017</u>		<u>2018</u>		<u>2019</u>	
	B	Sig.	B	Sig.	B	Sig.
Return on Assets:	10	(.752)	25	(.369)	3.8	(.126)
Return on Capital:	-3.5	(.947)	50	(.367)	-32	(.285)
Return on Equity:	121	(.166)	-96	(.313)	-26	(.614)
Gross profit Growth:	23	(.752)	-64	(.433)	-13	(.757)
Earning per share:	-41	(.526)	57	(.434)	-62	(.132)
Net income Growth:	-903	(.376)	1254	(.272)	-494	(.442)

Note: Independent variable: Debt ratio

Asterix indicates significance level at the 10 percent (), 5 percent (**) and 1 percent (***) level*

For the second test of 2017-2019's debt ratio, effects on firm performance in 2021 are inconclusive if they provide negative or positive beta coefficients. However, 2019's beta shows a similar behaviour as the prior 2020 test where most metrics have negative coefficients. Though, no results show any significance levels which do not allow for any conclusions in the year 2021.

The regression tests provide an indication that if firms have had the ability to increase equity the year before the pandemic they will indeed experience better performance the year after.

This follows Myers and Majluf (1984) argument that firms that are more leveraged are usually less profitable. Arguably investors should look for companies who are heavier equity financed when expecting downturns similar to the Covid-pandemic, since increased equity ratio and decreased debt ratio the year before the downturn allows for increased financial performance (Schmidlin, 2014). What can be seen in the regression tests is that historical debt ratio does not have a long-term effect on firm performance and therefore should be used as a short-term extinguisher for potential economic downturn. According to Myers and Majluf (1984) the high debt ratio might indicate that firms obtain less earnings than those with high equity ratios pointing to a less profitable firm. The behaviour explained with high debt ratio being correlated with less performance affirms the theory of Chiang and Venkatesh (1988), where firm performance and capital structure is highly intercorrelated, thus exposing the eventual best strategy to prepare for an economic downturn similar to the covid-19 pandemic.

5 Discussion

5.1 Research method

5.1.1 Data selection

The data was collected through Capital Iq's platform in the form of a secondary source. Making our research dependent on the platform and its validity, as well as assuming that there is no discrepancy between firms' own reported financial statements and Capital Iq's data. The sample selected and screened is rather small, only consisting of 132 individual companies. According to capital Iq these 132 companies are the representation of the Swedish industry within discretionary and consumer staples. Since the sample group size was small it affected the statistical testing, where several descriptives describe many missing data points. This might be a result of companies not publicly displaying their financial statements as early as 2017 or not being publicly traded. Since missing data points and the small sample affected our grouping where the sample size in the groups could be observed to be majorly uneven. As well as the minor sample size the variables tested did not follow a normal distribution and had major standard deviation, resulting in the inability to perform the predetermined tests. Instead we had to depend on non-parametric tests and naive observations of mean differences. Further on, the full aspect of pandemic performance could not be observed since year 2022 has not yet been finalised nor full financial information being public.

5.1.2 Issues relating to measuring financial performance

Regarding measuring firm performance, identifying a preferable capital structure, financing choice, or ratio for a firm to possess during the Covid-19 pandemic is difficult when using a set of consistent measures of firm performance. The selection of our performance measures came from a combination of literature (Schmidlin, 2014) and partly on what information we could obtain from Capital IQ. All of the indicators of financial performance we believed would give us a range of information across the firms' financial statements to place us in the best position to prove or disprove hypotheses.

Despite these efforts we recognise that firms value certain performance indicators more than others and focusing on those has provided them their own definition of success and as such might not fit into our definition of success. Furthermore, although all the firms fell into the umbrella category of retail and subsequently being either a consumer staple or consumer discretionary firm there are sub industry deviations as well as the firms placing efforts in diversification. These deviations naturally mean that strategies of the firms within the sample will differ and as a result affects their financing and capital structure decisions which will ultimately affect our data. Recognising this helps us to provide a more insightful discussion on what we believe to be preferable methods of financing and firm position, this means there will not be a "one size fits all" solution.

5.2 Discussion Hypothesis 1

Pertaining to hypothesis 1, a mix of statistically inconclusive results as well as some hypothesis contradictory results emerge. The hypothesis was originally based on having a strong quick ratio in the years leading up to the pandemic would make firms more inclined to take on more short-term debt. As such this would aid with financing operations when income streams were disrupted by the pandemic and this would lead to improved performance during 2020 (Guadagno, 2016) which was in the middle of the height of the pandemic. In turn resulting in improved performance.

Quick ratio in 2017 and 2019 overall supported the hypothesis due to significant levels of positive causality on the performance metrics of the firms in the sample. However, within the results, instances of statistical non significance are also present and so the impact of quick ratio to the respective performance measures can not be concluded and inferences on their

causality also can not be made. This in particular relates to net income growth across 2017 to 2019 and gross profit growth in 2019. 2018 saw the opposite effect which was not anticipated by the hypothesis where quick ratio had a negative causality on performance. This was also seen in 2021. The possible cause for this could be the overall decrease in performance of firms as the pandemic began to affect firms and a lag between liquidity and performance could have been present.

Further analysing the data, the overall net beta coefficient across statistically significant results is useful to calculate. In 2020 quick ratio had a net beta of -0.6 for ROA. For ROC the net beta was -1.3, for ROE the net beta was -4 and the two instances of positive beta coefficients were for gross profit growth of +19.8 and EPS with +51. The table with the performance metrics of 2021 was more difficult to analyse due to lack of significance, however, ROA had a net beta of +0.7.

From this firms can and should look to utilise a healthy quick ratio to reap marked improvements in gross profit growth and EPS but does not apply to ROA, ROC, and ROE. As such, firms with this information can look to their quick ratio as a source for maintaining and improving performance for EPS and gross profit growth, which follows Guadagno's (2016) assumption that short-term debt is preferable in times of downturn since it is a cheaper option to long term debt or equity financing. Should a firm's objectives align with this information then having the knowledge gathered from the tests on hypothesis 1 could be useful.

5.3 Discussion Hypothesis 2

For hypothesis 2 assessing whether a conservative or aggressive working capital approach will rely on a statistically non-significant comparison of means on performance metric data for 2020 and 2021. The non parametric Mann-Whitney U test that was performed to show decisions on whether the null hypothesis should be retained or rejected showed for both 2020 and 2021 that there was no statistical significance other than for EPS and TEV in 2020 and TEV for 2021 data.

The means comparison tests performed as a result of the majority of the null hypothesis being retained showed that every naive analysis showed that conservative working capital

management overall had preferable means to aggressive working capital management in 2020. Aggressive strategy was marginally better for EPS and better for TEV however, the remainder of the performance metrics favoured a conservative approach. This could either be from exhibiting a greater positive influence or by being a less severe negative influence.

Moving onto the mean comparisons for 2021. Conservative working capital policy had more favourable means in all performance metric categories aside from TEV and net income. One possible reason we theorised that TEV is preferred for aggressive firms is that part of being classified as being an aggressive firm entails increasing debt during the pandemic. TEV of firms is linked to increasing debt (Fernando, 2019). TEV increases when a firm's market value of debt increases. TEV does not take into account the probability of default on this debt and so firms which are requiring a significant amount of debt to be taken on to finance their operations may be underperforming but have their TEV increasing. This is supported by the other performance metrics being more favourable with firms utilising a conservative approach.

A verdict on the hypothesis can be made in a naive manner. The hypothesis cannot be proven from a statistical standpoint however, based on the comparisons of means there is some visibility that conservative firms are performing better during the pandemic or are more immune to the macro financial effects of the pandemic. Based on this we believe that opting for a conservative working capital approach is favoured over an aggressive one as firms benefit from more flexibility and operate in a less risky position (Baños-Caballero et al. 2016). Firms during a time of economic volatility should look to finance themselves internally through investing in their current assets and reduce their liabilities.

5.4 Discussion Hypothesis 3

The Mann-Whitney U test on 2020 analysis on relationship between ICR and performance metrics showed that the only significant relation is between ICR and ROE, with a significance level of 0.05. The other performance metrics variables were above 0.05 in significance and therefore we have to retain the null hypothesis, meaning that there is no correlation between a good ICR and performance. Observing the mean difference in the descriptive test in 2020, firms with high ICR do have higher ROE values than the companies with low ICR. Meanwhile, the non-parametric test in 2021 displays a difference in the groups in relation to the performance metrics: ROE, ROC and ROA. Furthermore, the prior

behaviour of high ICR can be seen in 2021 where the ROE, ROC and ROA are indeed higher for the companies with high ICR.

An interesting behaviour observed is that in 2020 all metrics were higher in the high ICR group except for the net income. Similarly in the year 2021 all metrics could be observed as higher except total enterprise value, meanwhile net income in this instance did indeed perform better for the high ICR group.

Even though a clear pattern of majority non-significance between groupings can be observed, a pattern of higher performance metrics for the high ICR is displayed and likelihood of increased performance is discovered, though not statistically proven. Disproving our hypothesis but at the same time we can recommend firms to have high ICR (Meryana & Setinay, 2021) as it does provide greater stability and a level of safety against their short term liabilities. Specifically, if firms' desire to increase their ROE short term, and ROE, ROC and ROA long term then a high ICR can facilitate this. The high standard deviation in the performance metrics can be an explanatory factor for the non-significant results as well as there being a small sample size and varying ratios between the companies.

5.5 Discussion Hypothesis 4

The regression tests proved in the short term follow our hypothesis and Schmidlin's (2014) theory that high equity ratio will allow a company to perform better in downturns. The test is looking at the regression between debt ratio and our performance metrics. Where a negative coefficient is following our hypothesis and theoretical background that a conservative nature is more beneficial when going into a downturn. The 2020 test showed a 5 percent and 1 percent significant p-value for ROE affected by the 2018 debt ratio and ROC, ROE and gross profit affected by 2019's debt ratio. Meanwhile the 2021 test showed no significant p-value. Where the 2019 debt ratio affected variables are confirming the hypothesis that conservative nature is preferable since the beta coefficient is negative and therefore proving an increased debt ratio will in turn lead to less performance. Meanwhile the results on 2018 debt ratio affected variables have a positive beta coefficient and therefore proving a positive relation between 2018's debt ratio and performance in 2020. Which in turn allows for an interpretation that a short term option is to have a low debt ratio the year before a potential downturn which would lead to increased performance the year after, though not earlier than one year before the economic downturn. However, low debt ratio does not maintain its

benefit in the long term which could be seen in the second regression tests since no significant results were obtained. It is building on Schmidlin's (2014) theory that high equity ratio is beneficial for firms performance and is following the idea that a less leveraged company is more financially beneficial (Myers, Majluf, 1984)

There is a relationship between debt ratio and financial performance, however not as expected where the positive impact of lowering debt ratio is only obtained when decreasing the ratio the year before the imminent downturn. Though the other financial performance metrics did not display a significant result and therefore retained the null hypothesis, which means that conservative or leveraged debt do not positively affect a company's performance during a downturn. Meanwhile, 2019 debt ratio affected variables are negatively related and therefore following our hypothesis. Increased debt ratio is, however, positively related if decreased in 2018 and therefore going against our hypothesis.

Overall, firms can place themselves in better positions regarding performance based on their financing actions. And this primarily includes being more careful with the debt they take on, as well as having enough liquidity to be able to handle fluctuations in the market. The ratios we have looked at are considered to be important indicators of how a firm can adjust its capital structure; we believe that having the flexibility to either lever up or finance internally via equity can financially protect a firm against external macroeconomic conditions.

6 Conclusion

The aim of this report is to examine if firms can prepare and adjust their capital financing strategy in order to prepare and protect themselves during a downturn or financial crisis, the crises used to base the results from was the Covid-19 pandemic. To examine if there is an apparent relationship with financing and performance, three regression models, four Mann-Whitney U models and four descriptive mean comparisons were made.

With hypothesis 1, the regression outputting only one significant result meant that we could not conclusively draw links to support the hypothesis between quick ratio pre-pandemic in 2019 and the performance measures of the firms in 2020. The lack of statistical significance made it hard to draw any inferences from the regression and as such the hypothesis for this study could not be proved correct. However, the statistical significance between quick ratio

and ROA was noted and the implications of which were noted in the discussion. The eventual findings were that there could not be any causality established between a firm's quick ratio and a firm's ability to be more prepared for the pandemic because of the financing flexibility we hypothesised it could offer to firms.

For hypothesis 2, the data required non-parametric Mann-Whitney U tests performed due to the distribution not being normal. From these tests on aggressive and conservative firm's in 2020 and 2021 on the performance metrics the null hypothesis was rejected only twice where the performance metric which displayed significance to the two differing working capital management strategies being TEV. Because of this, mean comparison tests were utilised in order to investigate the results of conservative and aggressive firms and their consequences on their financial performance, in a naive manner. When analysing this data, conservative working capital policy companies performed notably superior to aggressive firms apart from TEV. The findings of this hypothesis as a result of these mean comparisons was that conservative working capital strategy was a better business decision during the pandemic. The behaviour that conservative firms exhibit is what other firms should seek to replicate from the results of the mean comparisons, however, it should be noted this conclusion was not statistically significant.

In the testing of hypothesis 3 we discovered that only some financial performance metrics were significant namely: ROE (2020 and 2021), ROC (2021) and ROA (2021). Where these ratios were indeed performing better when the firm had a high interest coverage ratio. Following our hypothesis that companies that have had the ability to pay their interests and maintain a high ratio before the pandemic have also been able to continue to finance themselves in rougher times. As well as the significant test results on ROE, ROC and ROA we found a pattern between the two groups where the majority of performance metrics were indeed higher for the companies that had a high ICR. Though this naive observation is not supported by statistical proof but by simply observing the means between the groups. Why the results inherently have no significance can be explained by several factors. One being the high standard variation within the performance metrics, second being the non-normally distributed data sample and lastly a small data set with limited amount of data points.

The results from hypothesis 4 testing displayed a significance level in the year 2020 affected by debt ratio as of 2018 and 2019, on the performance metrics ROE (2018) and ROC, ROE

and gross profit margin (2019). Where 2019 affected metrics had negative coefficients confirming our hypothesis. Meanwhile, ROE affected by 2018 had a positive coefficient going against our hypothesis. Whereas, all other performance metrics did not show any sign of significance. All together these results do not confirm nor reject our prior expectations, therefore further investigation is required in order to confirm our initial hypothesis that a conservative debt strategy is more beneficial in a financial downturn. However, what can be seen from our sample is that debt ratio has a negative significant coefficient the year before the pandemic, which entails increased performance if the firm instead increases their equity ratio the year before an economic downturn.

To conclude the hypothesis broadly the statistical significance of our findings was not present for us to concretely provide a recommendation for firms and their financing behaviour during times of economic volatility such as the Covid-19 pandemic. Despite this, there were instances of statistical significance and can be taken into consideration for firms looking for a more optimal set of financing actions to employ, in addition our naive observations also provide preferred solutions to financing and capital structure based on firm performance and financial ratios.

Hypothesis	Result
1 Firms with a strong quick ratio are better prepared. Which in turn will lead to improved performance.	Partially proven
2a A conservative working capital financing approach is more beneficial to firm performance in a time of economic distress, compared to an aggressive approach.	Not statistically proven, though naive observation pattern shows a positive relation
2b An aggressive working capital financing approach is more beneficial to firm performance in a time of economic distress, compared to a conservative approach.	Not statistically proven, though naive observation pattern shows a negative relation
3 A firm with a high interest coverage ratio is performing better.	Not statistically proven, though naive observation pattern shows a positive relation
4 A firm with a lower Debt ratio is able to use their conservative nature and maintain profitability throughout the pandemic.	Partially proven

6.1 Managerial & Theoretical Implications

The report has provided a series of mixed results, with the hypotheses being partially proven and disproven. The tests performed illustrate how the theoretical framework used from Erel et al. (2012) further reinforces that firms should be reluctant to immediately supply their working capital from financing sources which involve taking on more debt, particularly short term debt. The consequences of doing so as explored by Baños-Caballero, (2016) place firms in higher risk positions. Furthermore, a main aspect to this thesis has been the context which has been used in all of the testing scenarios. It can be said that the pandemic and periods of economic distress in general magnify the consequences of capital structuring decisions as restrictions on people and firms' took hold.

The outcome of the study has provided observations across all hypotheses. This has mainly been partial and statistically not significant. However, we believe that there can be insights relevant for firms which can be implemented during times of macroeconomic downturn. Across hypothesis 2 and 4 the underperformance of firms that were more leveraged was apparent from naive investigation and regression tests. Based on this, firms should be more reluctant to lever up in such times due to risk of default, which would compound the situation the firm is already in (Simon et al. 2021). Instead financing through internal means via investing in business operations to generate more cash flow is recommended. Maintaining equity levels as opposed to increasing debt, particularly short-term debt is part of this recommendation. Even so, firms and their financial goals are extremely varied and as mentioned in the discussion section, the variation on how firms are affected by times of economic distress also vary greatly. The suggestions have a wide scope and the intricate/finer details of capital structure and financing decisions are not addressed within this report which are integral to firm performance. Seeking to implement the recommendations should be done so with a careful approach; one which considers many alternatives and ensures that it fits the firm's financial composition as well as their goals.

The theory which Erel et al (2012) developed where companies who are poorly rated will not perform as well as highly rated firms during an economic crisis follows our argument when looking at the metrics quick ratio and debt ratio. Our results showed that companies who have a good quick ratio the year before the pandemic experienced for most parts increased performance, as well as companies who had low debt ratio i.e. high equity ratio the year before the pandemic also experienced increased performance. As per conservative and aggressive capital structure and interest coverage ratio there were no definite results,

however, we discovered potential patterns of increased performance when adapting a conservative method as well as increased performance when having high interest coverage ratio.

It is clear from the research performed here that the current literature which aims to provide firms with the necessary knowledge on capital structuring decisions, working capital management decisions and financing decisions does not wholly reach a consensus. This is likely due to the differing macroeconomic factors that accompany the research conducted prior to the pandemic which have a significant impact on findings and the nature of which firms choose to adjust their operations in response to external factors. The pandemic was no different and as more research is done on how firms' financed and subsequently performed during COVID-19, will a more rigid framework and consensus emerge on how firms' should seek to finance themselves.

7 Future Research

Conducting this research and analysing Swedish firms' financial statements have partially proved that there are certain strategies and preparations managers can implement in order to cope with a macroeconomic downturn. This indeed allows further investigation and research to continue analysing and prove significant relations with certain capital strategies. Our research has been limited due to the firms' variations in financial data as well as the broad scope of our sample but limited number of data points.

With more limited and carefully selected data future research will be able to analyse differences between SMEs and large corporations. It will allow research to investigate financial capital data that is normally distributed so that a clearer pattern can be discovered and further prove our hypotheses. We do believe that in the future researchers will be able to look back at the pandemic with a more objective perspective than we could, since we are living in the events and cannot see the whole perspective and cannot either analyse future decisions. The scope of our research only looked at the Swedish retail market, but to further understand financial strategies future research may look broader with a bigger data sample and towards more industries, allowing them to compare and find more patterns than discussed in this report. As well as prove our conclusions are correct or not.

As for suggestions on how research should be conducted in the same or a similar field a larger dataset would have been beneficial. Sweden as a market in retail is small but is also well established. In addition the data use should be more refined, in this sense more detail should be applied in cleansing and shaping the data, ideally to assume and or have normal distribution. Furthermore, the statistically significant portions of the tests completed could be investigated further with future reports expanding on causality found within this report. For hypothesis 1 this would be the link between quick ratio pre economic downturn and the statistically significant metrics found in the results. Hypothesis 2 contained statistical significance between conservative and aggressive firms and TEV and EPS in 2020 and TEV in 2021. Hypothesis 3 found statistical significance between ICR and ROE in 2020 and significance between ICR and ROE, ROC, and ROA in 2021. Finally, hypothesis 4 showed statistical significance between ROE and debt equity from 2018, in the year 2020, and ROC, ROE and gross profit affected by debt equity in 2019, in performance 2020. However no significance could be seen in the year 2021. These can be researched further and the addition of data on 2022 could reveal more about these relationships.

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