Author(s): Hundal, Shab; Eskola, Anne; Lyulyu, Sofiya

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The impact of capital structure on firm performance and risk in Finland

Authors: Shab Hundal, Anne Eskola and Sofiya Lyulyu

Abstract The decision pertaining of the capital structure is one of the most strategic, perpetual and at the same time challenging corporate decisions. Having an optimum capital structure is an important aspect of the financing of firms. Firms often struggle to create an optimum balance between their debt and equity. The current paper aims to explore whether the capital structure impacts the performance (financial and non-financial) and the financial risks of the firms in Finland. The current study is based on the secondary data of 50 large-cap Finnish public firms listed at the Helsinki stock exchange for the period 2011 to 2017. The findings of the research disclose that leverage affects most of the accounting, market, and hybrid performance measures negatively. On the other hand, the effect of leverage on the non-financial measures has been found to be insignificant. Similarly, a high level of leverage leads to increase in the total risk, while the systematic risk remains unaffected by it. The current article is one of the fewest studies that employed comprehensive analysis through multiple measures of firm performance, risk and capital structure in the context of the Finnish corporate sector.

Keywords Capital structure, firm performance, risks, return, debt, equity.

JEL Classification G32, G34, M41

1. Background

Although the corporate capital structure is one of the key strategic decisions of firms, however, this decision is not standalone by its nature as any change in the capital structure may affect other vital aspects related to firms such as their performance and risk exposure. Even more puzzling is that both theoretical and empirical literature has failed to establish any singularity between changes in the capital structure and resultant effects on performance and risk exposure of firms. In other words, both *ex-ante* theoretical arguments and *ex-post* empirical evidence show that any change in the capital structure can affect the firm value/performance and firm risk exposure differently. Therefore, one can argue that any change in the capital structure of firms can generate outcomes which are opposite to expectations of the corporate managers.

One of the key strategic goals of firms is to enhance their financial performance to meet the expectations of their investors. However, the firms also must ensure that while fulfilling the utility function of investors the solvency of firms cannot be compromised since an insolvent firm not only affects the investors unfavorably but also damage the interests of other stakeholders. Therefore, a rational firm must maintain a judicious balance between its indicators of financial performance (for example, profitability ratio) and solvency. The firm's capital structure, which is comprising of the debt and equity and represents the financing of firms, is an important determinant of the solvency of firms, among other things. Therefore, every firm strives to achieve the optimum level of capital structure. However, firm managers often struggle to create the optimum capital structure, which is expected to be compatible to the long-term financing needs, institutional characteristics and operational complexities of firms, since the firm's needs, priorities and business/economic environment are ever-changing, among other things (Chadha and Sharma 2015; Baker and Martin 2011; Donaldson and Preston 1995).

The relevance of capital structure can also be studied through the capital structure irrelevance theory propounded by Modigliani and Miller (1958). The hallmark of this theory is that only investments (assets) add to the firm and financing (capital structure) is nothing more than a façade since it only signifies different combinations of debt and equity, therefore, the financing decisions are irrelevant. Nevertheless, several subsequent studies have found that due to market imperfections (for example, taxation) it is possible to change the firm value by changing the proportion of debt in the capital structure. The trade-off theory explains that the burden of corporate tax does not fall on the debt servicing and as a result the firms can avail more interest tax shield by exposing less profit before tax to the corporate tax burden after paying higher level of finance costs to the debtholders by increasing relative share of debt in the firm financing (Kraus and Litzenberger 1976). However, the changing level of debt not only affect the firm value but also profitability and risk exposure of the firm, consequently it is possible that the benefits of debt (leverage) are outweighed by the falling profits, risk firm risk exposure, adverse investors reaction and personal income tax rate, among other things (Hundal, Sandstrom and Uskumbayeva 2018; Salim and Yadav 2012). Since the abovementioned effects of leverage are not uniform, therefore, it is utmost important to ascertain the impact of capital structure on the various measures of firm performance and firm risk exposure to make the financial planning of the firm seamless. The current study endeavors to explore the following two research questions-

1. What is the impact of capital structure on the firm performance?

2. What is the impact of capital structure on the financial risk of the firms?

To answer the research questions the unbalanced pooled secondary data of 50 Finnish publicly listed firms representing different industries were collected for the period between the period 2011-17. The data were collected from the annual reports of the firms and NASDAQ OMX Nordic database. The explained variables includes market-based (for example, price-to-earnings ratio, market value-to-book ratio, Jensen's Alpha), accounting-based (for example, return on assets, return on equity, earnings per share), hybrid performance measures (for example, Tobin's Q Proxy), non-financial performance measures (Research and Development (R&D) to total sales ratio and total intangible assets to total assets ratio) as well as the financial risk (systematic risk as measured by beta coefficient and total risk as measured by standard deviation coefficient) faced by the firms. Similarly, key explanatory variables include the debt-to-book value of equity ratio and debt-to-market value of equity ratio.

The findings of the research disclose that the rising proportion of debt in the capital structure, implying an increase in the leverage ratio, affects most of the accounting, market, and hybrid performance measures negatively. On the other hand, the effect of increasing leverage ratio on the non-financial measures has been found to be insignificant. Similarly, more leverage inclined capital structure of the firms leads to an increase in the total financial risk, however, the systematic risk is not affected by it. The current article is one of the fewest studies that employed comprehensive analysis through multiple measures of firm performance, risk and capital structure in the context of the Finnish corporate sector.

2. Literature review and theoretical underpinnings

According to Swanson, Srinidhi and Seetharaman (2003), capital structure is a mixture of debt and equity used in financing a firm's productive assets. The capital structure signifies 'the liabilities and equity' side of the balance sheet of firms and thus highlights

where money comes from. The first main component of the capital structure is equity, which is the residual interest of the shareholders in the firm value. The firm can raise equity financing by selling its shares. Often the main objective of raising equity financing is to raise financial resources to invest in the assets having a long-term impact on the firm value. The assets side of the balance sheet signifies *where money goes to*. The reward that shareholders can draw on their investment is usually the periodic dividend and appreciation in the value of their initial equity investment, although firms generally have no financial obligation to the shareowners concerning dividend payments and capital appreciation (Agarwal 2013). The reward to shareholders largely depends on the growth (actual and potential) of the firm and its operational success, among other things (Arnold 2008).

Corporate debt is characterized by the regular repayments and it includes interest obligations and part of the principal amount of debt over a specified maturity time. The debt can be in several forms such as bonds, bank borrowings, leases, commercial papers (Swanson, Srinidhi and Seetharaman 2003; Arnold 2008; Berk and DeMarzo 2017).

Otzekin (2015) argue that in order to understand capital structure determination, it is important to understand "trade-off between the benefits of debt and the costs of debt". The debt has several advantages, first, the borrowing firm is obliged to pay at the pre-determined interest rates only. Consequently, if the revenue of the firms is growing the profit of shareholders is also increasing, given that the debt repayments stay unchanged. Second, the tax deduction is another benefit associated with the debt. In the income statements of firms, the tax is deducted after the interest payments, implying that a firm can reduce its tax obligations by increasing the relative share of debt in its capital structure. This phenomenon is known as the tax shield.

Nevertheless, debt may have many unfavorable effects on the firm too. First, banks or other lenders stay higher than the shareholders in the pecking order when the firm is making repayment of its financial liabilities in a situation of its bankruptcy or liquidation. As a result of such situation, shareholders may find themselves getting exposed to additional risk, which accumulates even further since the shareholders receive dividends (if any) after the debtholders are paid interest. Shareholders can start demanding a higher risk premium in such a situation and as a result cost of capital can increase. Second, a higher proportion of debt in the total capital can adversely affect the credit ratings of the firm, consequently, the firm may face an adverse situation in the debt market with respect to the interest rates as well as the terms of loan (debt covenants) imposed by financial institutions. Third, a higher level of debt of the firm can increase its bankruptcy risk as the lenders can claim assets of the firm in case of non- compliance of terms of the loan leading to its liquidation (Hillier, Grinblatt and Titman 2012). Fourth, high leveraged firms may find it difficult to issue equity as potential as well as existing shareholders perceive such situation as an erosion of their financial stakes in such firms since the increased debt and subsequently enhanced debt servicing can leave fewer resources for shareholders. Finally, the rising debt of a firm can lead to agency conflicts between shareholders and management. The corporate managers of a firm can launch an *investment spree* financed by substantial amount of borrowing and such move by the managers can help them to *entrench* themselves deeper in the corporate echelon to such an extent that they virtually become indispensable for the firm at the expense of shareholders (Hundal 2016; Hundal 2017).

Similarly, equity is associated with several advantages. First, the shareholders, particularly those having the long-term perspective, take an informed decision to remain with the firm by investing in firm equity, resultantly firm management gets extra freedom to reinvest the financial resources into new projects, which can enhance the firm value (Zickefoose 2014). Second, from the resource dependence theory viewpoint, the shareholders of a firm not only bring financial resources, but also their experience, managerial, and technical skills and relational capital, which can increase the credibility of the firm in the market (Hundal 2016; Hundal 2017).

Nevertheless, equity has several disadvantages too. First, equity financing requires sharing the decision-making rights with the shareholders, and this put extra strain on the professional managers of the firm to function independently, and thus leading to a different type of agency problems. Second, the rate of return on equity demanded by its shareholders is often higher than the rate of interest on the debt owing to the additional risk exposure of equity owners. Even though the firm may choose not to pay to the equity holders for certain period, nonetheless, it still must share its earning with the shareholders in the future. If the firm does not pay to the shareholders, then the latter may start selling their equity stakes and thus negative stock market reaction can ensue (Zickefoose 2014; Fong Chun Cheong 2015).

Based on the above discussion, it can be understood that the capital structure decision is a long-term strategic decision, which should be taken, revised, and modified in such a way that it is compatible with the changing needs and requirements of the firm (Agarwal 2013). Theoretically, the concept of optimum capital structure underpins a situation when the financing mix cannot add value to the firm any further (Baker and Martin 2011). One of the first theories of the capital structure is known as the capital structure irrelevance proposition, which defies the relevance of any optimum capital structure since such scenario is no more than a utopia in the financial world. This theory was developed by Modigliani and Miller (1958) and it states that the firm adds to its value only through 'the asset side' that is the investing side of the balance sheet. The 'equity and liabilities' side of the balance sheet only represents financing side, which is no more than the packaging of its financial resources, therefore, the firm cannot create the value through the financing side of the balance sheet and as a result the capital structure decisions of the firm are rendered irrelevant (Frank and Goyal 2007; Salim and Yadav 2012; Focardi and Fabozzi 2004).

Similarly, Myers (2001) highlights in the trade-off theory conflicts between the debt tax shield and the threat of bankruptcy that can be caused by the debt. The optimal leverage can be achieved when the marginal present values of the debt tax shield and that of the cost of financial distress on additional debt are equal. Contrary to the popular perception that highly profitable firms borrow less, the trade-off theory underlines the opposite relationship that is more profitable firms borrow more. If the firm has a high level of profits, then it will end up paying more taxes unless it borrows substantially and pays more finance costs. Nonetheless, if such measures are followed continuously and the firm becomes over-leveraged then financial distress costs can increase and push the

firm towards bankruptcy (Frank and Goyal 2007; Brigham and Ehrhardt 2007; Sekar, Gowri and Ramyac 2014; Myers 2001). The nature of financing sources (internal and external) is not perceived to be the same and it can be stated that firms should prefer internal financing to external one because internal financing does not carry information asymmetry. However, the growing size and business complexities can necessitate firms to obtain external financing, however, some studies, for example, Fama and French (2005) and Leary and Roberts (2010) recommend firms to turn to the debt instead of raising equity if at all firms need external financing. The key argument in favor of debt is that firms issuing external equity may expose themselves to the high level of agency costs especially if they are functioning in a business environment proliferated with information asymmetries. Asquith and Mullins (1986) find that the announcement of issue new equity drops the stock price by 3%. The debt, on the other hand, is considered as the safer source of financing, as it bears a lesser downward impact on the stock price. According to pecking-order hypothesis, the retained earnings are better than the debt, and debt is better than equity, therefore, managers should borrow instead of external equity financing in order to protect the equity price from dropping and thus maximizing firm value (Frank and Goyal 2007; Sekar, Gowri and Ramyac 2014; Myers 2001). Binsbergen, Jules, Graham and Yang (2011) have developed an approach that predicts the optimum amount of debt that increases the market value of the firm without adding any additional risk exposure of the firm. They argue that the growing debt helps the firm performance to increase, nevertheless, this association is not infinite. When the firm debt reaches its *debt capacity*, the disadvantages of debt start exceeding advantages. The firm-level equilibrium is established where the marginal cost of debt and marginal benefit of debt become equal.

Otzekin (2015) has developed four predictions with respect to the leverage level of the firms based on arguments pertaining of bankruptcy costs, tax benefits, and agency costs that managers use when striving to achieve the optimal capital structure. The first prediction is that firms decrease their leverage due to the fear of higher bankruptcy cost. Furthermore, a lower leverage ratio may imply that the firm is less profitable or smaller in size and it is owning fewer tangible assets and operating in the inflationary economic situation. Secondly, the increase of debt can be caused by the higher value of tax shield. Thirdly, firms with high profitability but low growth opportunities can carry higher agency costs related to equity, therefore, such firms should have relatively more debt. Lastly, firms owning more tangible assets and having low growth opportunities are exposed to lower agency costs, therefore, firms should have relatively more debt.

Venkatraman and Ramanujam (1986) consider firm performance as a part of organizational effectiveness and divide it into two categories- financial and operational. In their model of three circles, they have presented the financial performance as a part of the business performance, which in turn is a part of the overall organizational effectiveness. The latter includes broad factors of the organization's functioning, such as resource acquisition, engagement in legitimate activities and accomplishment of the corporate goals. The business performance represents the effectiveness of a firm in achieving its financial and operational outcomes. The financial performance includes effective use of resources, growth, and profitability of the firm, whereas the operational performance represents the satisfaction of the stakeholders – any individual or group, who can influence or be influenced by the firm's actions/non-actions (Selvam, Gayathri, Vasanth and Marxiaoli 2016).

The need for the performance measurement is unnegotiable as it allows to identify the level of effective usage of the organizational resources (Al-Matari, Al-Swidi and Bt Fadzil 2014). As one of the main objectives of the firm is the shareholders' wealth maximization and meeting the expectations of its investors, therefore, financial performance measures become the essential indicators of a firm's ability to generate revenue from its business activities. Furthermore, when considering the perspective of other stakeholders of the firm, strategic or non-financial performance measures begin to occupy a pivotal place to evaluate the effectiveness of the firm's actions (Selvam, Gayathri, Vasanth and Marxiaoli 2016).

Market-based performance measures underline the expectations of the future performance of the firm. Arguably these measures incorporate historic profitability and level of past growth as well as the expected market, and firm related developments (Selvam, Gayathri, Vasanth and Marxiaoli 2016). From the perspective of the shareholders, the stock market-based performance of publicly traded firms is measured to evaluate the standing of the firm's market value in the equity market – if the stocks are overvalued, fair priced, or undervalued, among other things (Peavler 2017). The total market value of the firm, also known as market capitalization, is then calculated by multiplying the number of outstanding equity shares of the firm by its prevailing price in the stock market.

Brealey, Myers and Allen (2014) contend that the accounting measurement of firm performance represents the managerial quality. The accounting performance is often used as the measure of the profitability of firms (Vernimmen, Quiry, Le Fur, Dallocchio and Salvi 2014). According to Bajkowski (1999), financial statement analysis highlights various analytical tools that help to quantify the operating and financial conditions of firms. Profitability performance is the measure which answers the question of *how successful the business is* and whether it fully utilizes its assets and consequently whether the business makes the reasonable profit and if it can be considered as an efficient business. The accounting performance is measured by obtaining the data from the financial statements followed by calculating financial ratios and in-depth analysis based thereon.

Similarly, firms can also apply various hybrid measures of performance, for example, Tobin's Q, which is the ratio of the market value of debt and equity and the replacement cost of the assets in place (Khanna and Palepu 2001). If the ratio is more than 1, then the firm is investing in the assets which are expected to create value. Therefore, if the Tobin's Q statistic is more than 1 it underpins a favorable scenario. However, the calculation of Tobin's Q is difficult primarily because a large proportion of the corporate debt is institutional debt that is not actively traded in the debt market; therefore, Tobin's Q Proxy is measured in the current paper for the empirical analysis (Hundal 2017). The Tobin's Q Proxy is the sum of market value and shareholders' equity plus book value of debt, divided by the book value of assets. Since the Tobin's Q Proxy consists of both the market as well as the historic accounting numbers, therefore, in the current paper Tobin's Q Proxy is considered as the hybrid measure of firm performance.

Firms can also utilize several non-financial performance measures too, especially when adhering to the utility function of the firm stakeholders other than shareholders. It may be argued that classical financial measures of performance do not respond to the ever-changing dynamics of the business environment such as the developments related to the technological, and competitive environment. The non-financial performance highlights the strengths and weaknesses of business operations, overall growth, and organizational development. With the use of non-financial performance measures, the firm management can track its performance in the light of the business environment, market size, organizational structure, and firm strategy, among other things. The critics put forward an argument that financial performance primarily focuses on the short-term performance, however, non-financial measures allow the firm to assess its long-term strategic goals. The performance measures such as investments in research and development (R&D) can help to maximize the long-term utility function of stakeholders' (Bassani, Lazzarotti, Manzini, Pellegrini and Santomauro 2010; Vittorio and Federico 2009; Wingate 2015; Zizlavsky 2016). Several studies show that firms having long-term value maximization orientation give due importance to investing in R&D investments even if they are likely to compromise short-term profitability (Sougiannis 1994; Nissim and Thomas 2000). Similarly, many researchers argue that the use of intangible assets, like intellectual capital, goodwill, or customer loyalty, depicts long-term growth orientation and stakeholders' wellbeing (Wyatt 2008; Aggelopoulos, Eriotis, Georgopoulos and Tsamis 2016; Haji and Ghazali 2018). Intangible assets can be acquired externally or even self-created; the former includes mergers and acquisitions, and the latter includes the items of substantial value, however often not recorded in financial statements due to the accounting limitations (for example brand names, trademarks, patents, technology, in-process R&D and customer relationships). The association between the leverage and intangible assets of the firm is a topic of immense interest among researchers and business, and financial analysts in the modern business world. However, It may be argued that firms owning more tangible assets are capable of borrowing more because tangible assets can be redeployed and/or confiscated by the lenders at a relatively low transaction cost in case the borrower defaults. Moreover, due to the relatively easy valuation of tangible assets, the borrowing cost can be low, if these assets are used as collaterals by borrowing firms. Intangible assets often fail to match the abovementioned advantages associated with tangible assets.

The risks faced by a firm underpin the uncertainty related to the future events which can influence the fulfillment of its strategic, operational and financial objectives. From the perspectives of both firms and investors, risk-return trade-offs play a significant role (Watson and Head 2016). The shareholders often face the risk by holding shares of a firm in their portfolio whose realized dividend payouts and final share price is likely to be less than the expectations (Berk and DeMarzo 2017). The rational shareholders strive to reduce the risk level for a given return they expect to get. The quantification of risk associated with the investment is essential in the financial decision-making process. The total financial risk faced by investors is often measured by the standard deviation of its stock return, cash flows and revenue of the firm/portfolio they invest in (Watson and Head 2016). The total financial risk can be split into unsystematic, and systematic risks (Lofthouse 1994). The unsystematic risk is the firm-specific risk and it depends on various factors related to a specific industry or a firm. Investors striving to minimize the unsystematic risk diversify their portfolio by investing in the stocks of different firms belonging to different industries, sectors and even locations (Dimson 1998). The market risk, on the other hand, is measured by the systematic risk as it spreads for all the industries, and sectors and is not restricted to a specific industry or firm. The factors causing the systematic risk are, for example, business cycles, government policy, changes in the interest and exchange rates, and natural disasters (Watson and Head 2016). The systematic risk cannot be reduced by diversification, and it can be only minimized by adopting an effective risk management policy especially with the help of financial hedging.

Based on extensive literature review the following hypotheses have been developed:

H_1: The capital structure influences the firm performance.

H_{1a}: The capital structure influences the market-based firm performance.

H_{1b}: The capital structure influences the accounting-based firm performance.

H_{1c}: The capital structure influences the hybrid firm performance.

H_{1d}: The capital structure influences the non-financial firm performance.

H_2: The capital structure influences the financial risk.

H_{2a}: The capital structure influences the systematic risk.

H_{2b}: The capital structure influences the total risk.

3. Research Methodology

The data analyzed in the current research is secondary. The major sources of data are NASDAQ OMX Nordic stock market database and annual reports of the sample firms. The total sample is consisting of 50 publicly traded large cap Finnish firms. The sample firms represent various industries including oil and gas, materials production, industrials, consumer goods and services, health care, telecom, and technology. The financial institutions and utilities were excluded from the sample due to the differences in their leverage regulations. The unbalanced pooled data were collected from the 1st January 2011 to 31 December 2017, therefore, covering a period of seven years. The total number of firm-years is 323.

In the current study, leverage is presented as the principal determining variable. To measure the leverage, the debt-to-equity (D/E) ratio is used. This measure shows the extent of liabilities that a firm owes for each monetary unit of equity. If the ratio is lower than 1, the firm has more equity than debt, and the opposite if it is higher. A too high ratio may imply that the firm may be in financial distress. The lower debt-to-equity ratio may imply that the firm is following a conservative financing policy and/or its debt capacity is lower. The firms having a higher proportion of tangible assets, lower operating costs and consistent cash flows, ceteris paribus, have a higher debt capacity.

$$\frac{Debt}{Equity} Ratio\ (\mathrm{D/E}) = \frac{Total\ Liabilities}{Shareholders\ Equity_{Book\ or\ market\ value}}$$

The principal determined variables are the ratios measuring the market, accounting, non-financial performance, and risks. The investors often use market-to-book value ratio (MBVR) to compare growth in their equity investment. The MBVR represents the value that is placed by the market on the equity issued by the firm. The MBVR also shows the efficacy of the utilization of firms' assets by their managers and the subsequent reaction of the stock market (Peavler 2017). The MBVR is calculated by dividing the market value of equity by its book value.

$$Market\ to\ Book\ Value\ Ratio\ (MVBV) = \frac{Market\ Value\ of\ Equity}{Book\ Value\ of\ Equity}$$

The other measure of the market performance is the Price to Earnings ratio (PE), which can be calculated by the following formula:

$$Price\ to\ Earnings\ Ratio\ (\mathrm{PE}) = \frac{Share\ Price}{Earning\ Per\ Share}$$

The interpretation of a rising PE ratio is that the stock market is reflecting confidence in the firm's current, and expected level of the firm earnings.

The most commonly used ratios measuring accounting performance are the return on equity (ROE) and return on assets (ROA). The ROE shows how efficiently firms utilize their shareholders' equity to generate returns (net income). This ratio represents the firms' profitability, as it indicates how efficiently financial resources provided by the shareholders are utilized by the firms' managers (Oliver and Horngren 2010). The ROA also measures how efficiently firms' financial resources provided by both debtholders and shareholders are utilized. The total assets (the denominator used in the calculation of ROA) is the sum of total liabilities and shareholders' equity. Therefore, the ROA indicates the profit generated by the firms by utilizing everything they own including cash, equipment, inventory, and machinery (Bajkowski 1999). The third accounting ratio is the earnings per share (EPS), which shows the net profit earned by the firm for each outstanding equity share issued by it (Elliot and Elliot 2009). Usually, this ratio is referred as an investor ratio as the trends in the EPS are closely monitored by the shareholders and the analysts.

In order to calculate Jensen's Alpha, the daily firm stock return and market (index) return are calculated and subsequently annualized by applying the following formula:

$$Return = \frac{Closing\ price_{Current\ day} - Closing\ price_{Previous\ day}}{Closing\ price_{previous\ day}}$$

The risk-free rate of return needed to calculate the benchmark rate of return, as theorized by the Capital Asset Pricing Model (CAPM), has been taken from the Suomi Pannki (The Bank of Finland) database. The ten-year government bond rate has been used as the proxy of the risk-free rate.

The CAPM formulation is as below:

$$RA = Rf + \beta(Rm - Rf)$$

Where:

RA - required return on investing in Firm A

Rf – risk-free rate of return

β – firm-level beta (measure of the systematic risk)

Rm - market return

Table 1 shows the description of the variables used in the empirical analysis:

Table 1 Description of Variables

Variable	Label	Definition/Formulation	Source
Independent Variables			
Debt-to-Book value of Equity Ratio	DE1	This firm-level 'capital structure' variable is the ratio of book value of liabilities to the book value of shareholders' equity.	Annual Reports
Debt-to-Market Value of Equity Ratio	DE2	This firm-level 'capital structure' variable is the ratio of book value of liabilities to the market value of shareholders' equity (market capitalization).	Annual Reports& NASDAQ OMX Nordic
Dependent Variables			
Market Performance Measures			
Price to Earnings Ratio	PE	The share price of the firm divided by the earnings per share.	Annual Reports & NASDAQ OMX Nordic
Market Value to Book Value Ratio	MVBV	Market capitalization divided by the book value of shareholders' equity.	Annual Reports & NASDAQ OMX Nordic
Jenson's Alpha	JensonAlpha	The measure of over or underperformance of the firm compared to the expected return calculated by subtracting cost of equity (determined by CAPM) from the Actual return.	NASDAQ OMX Nordic
Accounting Performance Measures			
Earnings Per Share	EPS	(Net income – Dividends on preferred stock)/ Average number of outstanding shares	Annual Reports
Return on Assets	ROA	Profitability measure calculated by dividing operating profit with total assets.	Annual Reports
Return on Equity	ROE	Profitability measure calculated by dividing operating profit with shareholders' equity.	Annual Reports
Non-financial Performance Measures			
Investments in Innovations	RDSales	Innovativeness measure calculated as the ratio of investments in R&D to total sales.	Annual Reports
Intangibility Ratio	IntgTA	Intangibility measure calculated as the ratio of total intangible assets to total assets.	Annual Reports
Hybrid Performance Measure			
Tobin's Q Proxy	TobinQ	Sum of market value and shareholders' equity plus book value of debt, divided by the book value of assets.	Annual Reports & NASDAQ OMX Nordic
Risks			
Systematic Risk	BETA	The volatility of a specific stock return to the market return fluctuations.	NASDAQ OMX Nordic
Total Risk	SD	Measured by the standard deviation of a specific stock return.	NASDAQ OMX Nordic
Control Variables			
Share of Independent directors	IndDirProp	The ratio of number of independent directors to the total directors in a firm board.	Annual Reports
Current Ratio	CACL	Measure of liquidity calculated as the ratio of current assets to current Liabilities.	Annual Reports
Total Assets	Assets	Natural logarithm of total assets (LnAssets), measuring firm size (book value)	Annual Reports
Market Capitalization	MarkCap	Natural logarithm of market capitalization (LnMarkCap), measuring firm size (market value)	NASDAQ OMX Nordic

The ordinary least square (OLS) regression model in the current paper is as below:

$$y_{it} = \alpha_{it} + \sum_{k=1}^{t} \beta_k x_{it} + \varepsilon_{it}$$

Where:

y_i – Dependent variable or firm i in the period t

α_{it} – Intercept of the model

x_{it} – corresponds to the ith explanatory variable in the tth year

ε – the random error with the expected mean 0 and variance σ^2

In the empirical analysis the following multivariate OLS regression models have been used.

$$PE_{it} = \alpha_{it} + \beta_1(DE1)_{it} + \beta_2(DE2)_{it} + \beta_3(MVBV)_{it} + \beta_4(JensonAlpha)_{it} + \beta_5(EPS)_{it} + \beta_6(ROA)_{it} + \beta_7(ROE)_{it} + \beta_8(RDSales)_{it} + \beta_9(IntgTA)_{it} + \beta_{10}(TobinQ)_{it} + \beta_{11}(BETA)_{it} + \beta_{12}(SD)_{it} + \beta_{13}(IndDirProp)_{it} + \beta_{14}(CACL)_{it} + \beta_{15}(LnAssets)_{it} + \beta_{16}(LnMarkCap)_{it} + \varepsilon_i$$

$$MVBV_{it} = \alpha_{it} + \beta_1(DE1)_{it} + \beta_2(DE2)_{it} + \beta_3(PE)_{it} + \beta_4(JensonAlpha)_{it} + \beta_5(EPS)_{it} + \beta_6(ROA)_{it} + \beta_7(ROE)_{it} + \beta_8(RDSales)_{it} + \beta_9(IntgTA)_{it} + \beta_{10}(TobinQ)_{it} + \beta_{11}(BETA)_{it} + \beta_{12}(SD)_{it} + \beta_{13}(IndDirProp)_{it} + \beta_{14}(CACL)_{it} + \beta_{15}(LnAssets)_{it} + \beta_{16}(LnMarkCap)_{it} + \varepsilon_i$$

$$JensonAplpha_{it} = \alpha_{it} + \beta_1(DE1)_{it} + \beta_2(DE2)_{it} + \beta_3(MVBV)_{it} + \beta_4(PE)_{it} + \beta_5(EPS)_{it} + \beta_6(ROA)_{it} + \beta_7(ROE)_{it} + \beta_8(RDSales)_{it} + \beta_9(IntgTA)_{it} + \beta_{10}(TobinQ)_{it} + \beta_{11}(BETA)_{it} + \beta_{12}(SD)_{it} + \beta_{13}(IndDirProp)_{it} + \beta_{14}(CACL)_{it} + \beta_{15}(LnAssets)_{it} + \beta_{16}(LnMarkCap)_{it} + \varepsilon_i$$

$$EPS_{it} = \alpha_{it} + \beta_1(DE1)_{it} + \beta_2(DE2)_{it} + \beta_3(MVBV)_{it} + \beta_4(JensonAlpha)_{it} + \beta_5(PE)_{it} + \beta_6(ROA)_{it} + \beta_7(ROE)_{it} + \beta_8(RDSales)_{it} + \beta_9(IntgTA)_{it} + \beta_{10}(TobinQ)_{it} + \beta_{11}(BETA)_{it} + \beta_{12}(SD)_{it} + \beta_{13}(IndDirProp)_{it} + \beta_{14}(CACL)_{it} + \beta_{15}(LnAssets)_{it} + \beta_{16}(LnMarkCap)_{it} + \varepsilon_i$$

$$ROA_{it} = \alpha_{it} + \beta_1(DE1)_{it} + \beta_2(DE2)_{it} + \beta_3(MVBV)_{it} + \beta_4(JensonAlpha)_{it} + \beta_5(EPS)_{it} + \beta_6(PE)_{it} + \beta_7(ROE)_{it} + \beta_8(RDSales)_{it} + \beta_9(IntgTA)_{it} + \beta_{10}(TobinQ)_{it} + \beta_{11}(BETA)_{it} + \beta_{12}(SD)_{it} + \beta_{13}(IndDirProp)_{it} + \beta_{14}(CACL)_{it} + \beta_{15}(LnAssets)_{it} + \beta_{16}(LnMarkCap)_{it} + \varepsilon_i$$

$$ROE_{it} = \alpha_{it} + \beta_1(DE1)_{it} + \beta_2(DE2)_{it} + \beta_3(MVBV)_{it} + \beta_4(JensonAlpha)_{it} + \beta_5(EPS)_{it} + \beta_6(ROA)_{it} + \beta_7(PE)_{it} + \beta_8(RDSales)_{it} + \beta_9(IntgTA)_{it} + \beta_{10}(TobinQ)_{it} + \beta_{11}(BETA)_{it} + \beta_{12}(SD)_{it} + \beta_{13}(IndDirProp)_{it} + \beta_{14}(CACL)_{it} + \beta_{15}(LnAssets)_{it} + \beta_{16}(LnMarkCap)_{it} + \varepsilon_i$$

$$RDSales_{it} = \alpha_{it} + \beta_1(DE1)_{it} + \beta_2(DE2)_{it} + \beta_3(MVBV)_{it} + \beta_4(JensonAlpha)_{it} + \beta_5(EPS)_{it} + \beta_6(ROA)_{it} + \beta_7(ROE)_{it} + \beta_8(PE)_{it} + \beta_9(IntgTA)_{it} + \beta_{10}(TobinQ)_{it} + \beta_{11}(BETA)_{it} + \beta_{12}(SD)_{it} + \beta_{13}(IndDirProp)_{it} + \beta_{14}(CACL)_{it} + \beta_{15}(LnAssets)_{it} + \beta_{16}(LnMarkCap)_{it} + \varepsilon_i$$

$$IntgTA_{it} = \alpha_{it} + \beta_1(DE1)_{it} + \beta_2(DE2)_{it} + \beta_3(MVBV)_{it} + \beta_4(JensonAlpha)_{it} + \beta_5(EPS)_{it} + \beta_6(ROA)_{it} + \beta_7(ROE)_{it} + \beta_8(RDSales)_{it} + \beta_9(PE)_{it} + \beta_{10}(TobinQ)_{it} + \beta_{11}(BETA)_{it} + \beta_{12}(SD)_{it} + \beta_{13}(IndDirProp)_{it} + \beta_{14}(CACL)_{it} + \beta_{15}(LnAssets)_{it} + \beta_{16}(LnMarkCap)_{it} + \varepsilon_i$$

$$TobinQ_{it} = \alpha_{it} + \beta_1(DE1)_{it} + \beta_2(DE2)_{it} + \beta_3(MVBV)_{it} + \beta_4(JensonAlpha)_{it} + \beta_5(EPS)_{it} + \beta_6(ROA)_{it} + \beta_7(ROE)_{it} + \beta_8(RDSales)_{it} + \beta_9(IntgTA)_{it} + \beta_{10}(PE)_{it} + \beta_{11}(BETA)_{it} + \beta_{12}(SD)_{it} + \beta_{13}(IndDirProp)_{it} + \beta_{14}(CACL)_{it} + \beta_{15}(LnAssets)_{it} + \beta_{16}(LnMarkCap)_{it} + \varepsilon_i$$

$$BETA_{it} = \alpha_{it} + \beta_1(DE1)_{it} + \beta_2(DE2)_{it} + \beta_3(MVBV)_{it} + \beta_4(JensonAlpha)_{it} + \beta_5(EPS)_{it} + \beta_6(ROA)_{it} + \beta_7(ROE)_{it} + \beta_8(RDSales)_{it} + \beta_9(IntgTA)_{it} + \beta_{10}(TobinQ)_{it} + \beta_{11}(PE)_{it} + \beta_{12}(SD)_{it} + \beta_{13}(IndDirProp)_{it} + \beta_{14}(CACL)_{it} + \beta_{15}(LnAssets)_{it} + \beta_{16}(LnMarkCap)_{it} + \varepsilon_i$$

$$SD_{it} = \alpha_{it} + \beta_1(DE1)_{it} + \beta_2(DE2)_{it} + \beta_3(MVBV)_{it} + \beta_4(JensonAlpha)_{it} + \beta_5(EPS)_{it} + \beta_6(ROA)_{it} + \beta_7(ROE)_{it} + \beta_8(RDSales)_{it} + \beta_9(IntgTA)_{it} + \beta_{10}(TobinQ)_{it} + \beta_{11}(BETA)_{it} + \beta_{12}(PE)_{it} + \beta_{13}(IndDirProp)_{it} + \beta_{14}(CACL)_{it} + \beta_{15}(LnAssets)_{it} + \beta_{16}(LnMarkCap)_{it} + \varepsilon_i$$

The empirical analysis in this study include descriptive statistics and regression analysis by using the SPSS software. The Durbin-Watson (DW) test statistic indicates the endogeneity problem in the multivariate OLS regression analysis.

4. Results

In this section, the results of the analysis are presented. Table 2 represents the descriptive statistics of the variables used in the analysis. The sample mean values of DE1 is 0.84, implying that for each 1 Euro of the book value of the shareholder's equity, the sample firms borrow €0.84 of debt. On the other hand, the mean values of DE2 is 0.36, implying that for each 1 Euro of the market value of the shareholder's equity, the sample firms borrow €0.36 of debt. For the accounting performance measures, the mean ROA, ROE, and EPS are 3.87%, 6.35%, and €0.62, respectively. Similarly, the mean values of the market performance measures including PE, MVBV, and JensenAlpha are 14.74, 3.94 and 0.04, respectively. The value of MVBV ratio higher than 1, implying that on an average the sample firms are over-valued. Similarly, a positive JensenAlpha highlights that the sample firms over-perform when compared to the minimum benchmark return on equity as determined by the CAPM. The mean value of the TobinQ, a hybrid firm performance measure, is 1.92.

Similarly, the mean value of the RDSales and IntgTA, the non-financial performance indicators, are 9.87% and 13.36%, respectively. For the risk measures, the mean value of BETA and SD is 0.43 and 2.12, respectively.

Table 2 Descriptive Statistics[a] (Firm Years=323)

Variables	Range	Minimum	Maximum	Mean	Standard Deviation
DE1	20.68	0.02	20.70	0.84	2.23
DE2	8.74	0.01	8.75	0.36	1.69
PE	542.67	-161.67	381.00	14.74	42.67
MVBV	527.77	0.02	527.79	3.94	40.11
JensonAlpha	1.06	-0.34	0.72	0.04	0.14
EPS (€)	11.88	-2.44	9.44	0.62	1.26
ROA (%)	24.93	-0.45	24.48	3.87	14.78
ROE (%)	41.02	-2.11	38.91	6.35	22.61
RDSales (%)	36.17	1.25	37.42	9.87	9.06
IntgTA (%)	56.80	0.04	56.84	13.36	11.51
TobinQ	5.96	0.07	6.03	1.92	12.85
BETA	2.12	0.14	2.26	0.43	1.14
SD	11.35	0.97	12.32	2.12	1.22
IndDirProp (%)	60	40	100	73	8.22
CACL	22.87	0.12	22.99	1.62	1.76
Assets (million €)[b]	44889	12	44901	7714	362
MarkCap (million €)[b]	36375.3	2.7	36378	15356	1697

[a]The values are coefficients/percentages/Euro.

[b] Natural logarithmic values are used in the multivariate OLS regression analysis.

Table 3 highlights the OLS regression analysis results of the dependence of the market performance measures and hybrid performance measure (TobinQ) upon the two leverage variables-DE1 and DE2 and other control variables. The impact of DE1 and DE2 is significantly negative on all the market-based (except for the PE), and hybrid performance measures. The increase in the book, and market value of the equity for a given value of the debt, leads to the decline in the value of both DE1 and DE2, consequently there is a favorable impact on the MVBV, JensonAlpha, and TobinQ.

RDSales affects PE negatively. The total risk unfavorably affects market performance measures. The BETA and IndDirProp have been observed to be insignificant. Both firm-size variables- LnMarkCap and LnAssets affect the JensonAlpha positively. The values of the DW test statistic do not vary too much from the cut-off point of 2, therefore, there is no issue of endogeneity.

Table 3 Effects of Leverage on Market Performance Measuresa (Firm Years=323)

Dependent Variables	PE	MVBV	JensonAlpha	TobinQ[a]
(Constant)	9.781	-0.137	-0.140	0.153
	(0.581)	(-0.259)	(-1.079)	(0.598)
DE1	-0.968	-0.018*	-0.051*	-0.011*
	(-0.373)	(-2.191)	(-2.149)	(-2.151)
DE2	-1.278	-0.092***	-0.038***	-0.087***
	(-0.377)	(-5.737)	(-4.866)	(-9.269)
MVBV	0.109		0.075	0.996***
	(0.097)		(1.168)	(85.724)
JensonAlpha	47.304*	0.567***		0.563***
	(2.098)	(4.559)		(9.461)
PE		0.000	0.001*	0.000
		(0.011)	(2.134)	(0.003)
TobinQ	0.978	0.973***	-0.023	
	(0.088)	(85.724)	(-0.351)	
ROA	-0.565	-1.382***	0.357***	1.636***
	(-0.764)	(-9.488)	(4.369)	(11.851)
ROE	0.777	0.334***	0.065	0.355***
	(0.042)	(8.187)	(0.884)	(6.411)
EPS	0.099	0.016	0.002	0.020*
	(0.039)	(1.002)	(0.029)	(1.871)
RDSales	-103.25*	0.007	0.086	0.007
	(-1.944)	(0.596)	(0.769)	(0.605)
IntgTA	-0.679	0.003	-0.035	-0.001
	(-0.337)	(0.276)	(-0.595)	(-0.135)
SD	-0.777**	-0.061***	0.046***	0.063***
	(-3.643)	(-6.876)	(5.793)	(5.902)
BETA	6.022	0.003	-0.011	-0.004
	(0.331)	(0.251)	(-0.186)	(-0.385)
CACL	-0.289	0.034***	0.068	-0.026***
	(-0.162)	(9.627)	(1.029)	(-8.731)
LnMarkCap	-0.074	0.004	0.011*	-0.004
	(-0.028)	(0.375)	(2.206)	(-0.370)
LnAssets	0.878	-0.008	0.168*	-0.002
	(0.307)	(-0.753)	(1.712)	(-0.207)
IndDirProp	-1.872	0.002	0.039	0.001
	(-0.132)	(0.247)	(0.599)	(0.073)
R^2	0.33	0.56	0.27	0.76
DW test statistic	1.92	2.02	1.97	2.11

*<0.01, **<0.05, ***<0.1

[a] TobinQ is the hybrid performance measure.

Table 4 shows the effect of leverage on accounting performance measures. Both DE1 and DE2 affect most of the accounting measures of firm performance unfavorably implying that a higher level of debt leads to a higher level of debt servicing and as a result profit after paying finance costs diminishes and resultantly the accounting performance of firms diminishes.

The effect of RDSales and IntgTA on ROA and ROE, respectively, is unfavorable. An interpretation of this finding is that a firm investing in its non-financial measures such as R&D and intangible assets can end up sacrificing its short-term profitability. Similarly, a higher level of total risk affects ROA adversely. The effect of market risk, measured by BETA, on the accounting performance measures, is negative. This finding implies that firms facing higher market risk may find a decline in their accounting profits too. The firm size variables-LnAssets and LnMarkCap affect the accounting performance of firms positively. This finding implies that firms with a larger size can utilize their resources efficiently and reap economies of scale and resultantly generate a higher level of profit. On the other hand, IndDirProp affects EPS negatively. No endogeneity problem is detected.

Table 4 Effects of Leverage on Accounting Performance Measures (Firm Years=323)

Dependent Variables	EPS	ROA	ROE
(Constant)	-0.752	-0.003	0.151
	(-0.409)	(-0.286)	(0.148)
DE1	-0.088*	-0.018***	-0.087***
	(-1.762)	(-11.192)	(-16.321)
DE2	-0.105*	-0.072*	-0.077
	(-1.877)	(-1.911)	(-1.014)
MVBV	0.033	0.076***	0.073*
	(0.463)	(9.102)	(1.972)
JensonAlpha	0.014	0.127***	0.022
	(0.245)	(7.193)	(0.515)
PE	0.004	-0.024	0.003
	(0.082)	(-0.672)	(0.084)
TobinQ	-0.003	0.098***	0.093*
	(-0.038)	(9.939)	(2.324)
ROA	4.035***		1.424***
	(6.035)		(13.644)
ROE	0.111*	0.218***	
	(2.117)	(12.212)	
EPS		0.013***	0.021
		(11.173)	(0.489)
RDSales	0.029	-0.384***	-0.014
	(0.461)	(-15.408)	(-0.296)
IntgTA	0.004	0.039	-0.075*
	(0.075)	(1.071)	(-1.979)
SD	-0.032	-0.019***	0.049
	(-0.524)	(-17.143)	(1.117)
BETA	-0.016*	-0.019*	-0.011*
	(-2.228)	(-2.231)	(-2.219)
CACL	0.114**	0.015	-0.076*
	(3.798)	(0.361)	(-1.785)
LnMarkCap	0.082***	0.044*	0.034***
	(8.821)	(2.226)	(7.798)
LnAssets	0.245***	0.031*	0.026
	(9.492)	(2.224)	(0.667)
IndDirProp	-0.767*	0.015	-0.004
	(-2.216)	(0.399)	(-0.111)
R^2	0.45	0.71	0.63
DW test statistic	2.09	2.14	2.08

*<0.01, **<0.05, ***<0.1

Table 5 shows that capital structure does not affect OLS non-financial performance. Neither DE1 nor DE2 affects intangibility of assets ratio and R&D to sales ratio. The empirical analysis further shows that the market and hybrid performance firm measures affect both non-financial performance measures- IntTA and RDSales favorably. An interpretation of this finding is that firms giving a remarkable performance in the stock market consider the non-financial performance important too. A possible reason for such a phenomenon can be that investors acknowledge the relevance of long-term growth orientation as one of the determinants that maximize their total shareholders' return, therefore, with the increase in the market performance indicators firms may choose to increase their spending on intangible assets and R&D.

On the other hand, ROA, one of the two accounting measures analyzed in the current study, adversely affects both non-financial performance measures. The phenomenon of managerial short-termism can dissuade managers to invest in long term projects with uncertain outcomes amidst an increase in the accounting profits. Similarly, diminishing accounting profits can persuade managers to increase the firm spending on intangible assets and R&D in order to emit positive signals to investors and take advantage of the entrenchment effect.

Similarly, firms invest more in IntTA and RDSales with an increase in their size. The firms exposed to the increased market risk, measured by BETA, spend more on IntTA and RDSales. Furthermore, firms having higher CACL can find themselves in a relatively convenient position to enhance their spending on R&D for the given level of sales revenue. A firm board having a higher proportion of independent directors can persuade the overall firm board to increase its investment in the R&D and intangible assets. The DW test statistics highlight that there is no threat of endogeneity.

Table 5 Effects of Leverage on Non-financial Performance Measures (Firm Years=323)

Dependent Variables	IntTA	RDSales
(Constant)	0.969 (1.271)	(-0.028) (-1.014)
DE1	-0.050 (-0.781)	0.001 (0.001)
DE2	-0.057 (-0.892)	-0.072 (-1.309)
MVBV	0.013* (2.228)	0.016*** (9.967)
JensonAlpha	0.053*** (9.835)	0.034*** (11.624)
PE	-0.017 (-0.258)	-0.088 (-1.283)
TobinQ	0.019* (2.082)	0.184* (2.177)
ROA	-0.042* (-1.949)	-0.269*** (-11.775)
ROE	-0.026 (-0.402)	-0.005 (-0.082)
EPS	0.001 (-0.002)	0.002 (0.042)
RDSales	-0.050 (-0.777)	
IntgTA		-0.026 (-0.497)
SD	-0.576 (-0.853)	0.026 (0.447)
BETA	0.044** (2.992)	0.030** (2.969)
CACL	-0.039 (-0.602)	0.008*** (5.968)
LnMarkCap	0.007 (0.069)	0.005** (2.986)
LnAssets	0.099* (2.169)	-0.047 (-0.444)
IndDirProp	0.106* (1.951)	0.034* (1.985)
R^2 DW test statistic	0.33 1.98	0.29 2.02

*<0.01, **<0.05, ***<0.1

Table 6 highlights the effects of capital structure on the two measures of financial risk-total risk (SD) and systematic risk (BETA). The findings show that while the capital structure does not influence the systematic risk, however, its effects on total risks are significantly positive. A higher level of leverage increases the total risk exposure of firms. Since the systematic/market risks are not affected by the leverage, therefore, it can be argued that the changes in the unsystematic risk are more profound in relation to the changes in the firm leverage. Similarly, firms having higher JensonAlpha are exposed to a more total risk and market risk. The

empirical evidence further reveals that with the increase in the value of various measures of accounting performance there is an increase in the total risk as well as systematic risk. Similarly, an increase (decrease) in LnMarkCap, a measure of the market value of the firm size, leads to a decrease (increase) in the total risk faced by firms. Once again, endogeneity is nearly non-existent.

Table 6 Effects of Leverage on Risk Measures (Firm Years=323)

Dependent Variables	BETA	SD
(Constant)	-0.018 (-0.946)	0.888 (1.288)
DE1	-0.082 (-1.291)	0.095* (2.277)
DE2	0.039 (0.595)	0.184** (3.025)
MVBV	0.003 (0.054)	0.043 (0.716)
JensonAlpha	0.014* (2.217)	2.49*** (8.579)
PE	0.025 (0.403)	-0.078 (-1.248)
TobinQ	-0.004 (-0.059)	0.073 (1.119)
ROA	0.033** (3.049)	2.878*** (11.815)
ROE	0.057** (3.183)	0.064* (2.174)
EPS	0.057* (1.992)	0.009* (1.951)
RDSales	-0.010 (-0.159)	0.055 (0.967)
IntgTA	-0.047 (-0.742)	0.008 (0.143)
SD	0.029*** (5.619)	0.083 (1.497)
BETA		1.598*** (9.738)
CACL	0.109 (1.324)	
LnMarkCap	0.092 (1.375)	-0.145*** (-9.928)
LnAssets	0.107 (1.450)	0.083 (1.498)
IndDirProp	0.013 (0.206)	0.048 (0.821)
R^2	0.35	0.29
DW test statistic	2.03	2.07

*<0.01, **<0.05, ***<0.1

5. Conclusion

The corporate capital structure is related to several dimensions of firm performance and risk exposure. Nonetheless, the abovementioned association is not unidirectional. Owing to the multidimensional nature of the relationship between corporate capital structure one the one hand and firm performance and risk exposure, on the other hand, their in-depth analysis is pivotal for both academics and corporate managers. A key strategic goal of a firm is to enhance its financial performance including both accounting, and stock market performance. Nonetheless, the phenomenon of maximizing financial performance cannot be perceived without studying financial risks that firms are exposed to. Furthermore, in the modern-day corporate world, the firm performance is not confined to financial performance alone. The relevance of stakeholders of firms, other than investors, has already been well established and articulated by scholars. Interestingly, the concept of capital structure is strongly associated with the financial, non-financial performance of firms as well as the risks that these firms are exposed to.

Although scholars such as Modigliani and Miller (1958) negate the role of capital structure in the value addition of firms, nonetheless, several researchers have emphasized on the multiple dynamics of capital structure that can have a strong influence on the firm value. The capital structure, signifying the proportion of debt and equity in the firm financing, is not only capable of affecting the firm-level performance but the risks that firms are exposed to. Therefore, the principal research objectives of the current study are to explore whether the capital structure affects the firm performance and financial risk exposure of firms.

Overall, the study finds a negative relationship between the firm-level leverage, and the market and accounting performance of firms. With the increase in the debt for a given level of the book, and market value of equity, a decline in the accounting, and market performance can be witnessed. The unfavorable impact on the accounting measures can be because higher leverage implies a higher level of debt servicing and the debt tax shield associated with the leverage is not enough to offset the increased cost of debt. The unfavorable impact on the market measures can be because higher leverage implies more financial distress cost that shareholders are exposed and resultantly they can choose not to invest in highly leveraged firms or possibly demand a substantial risk premium. Nonetheless, such an effect of leverage on non-financial performance measures is insignificant. A possible argument to the abovementioned finding is that the change in non-financial performance measures can be influenced by the market performance of firms, because increasing market performance motivates firm managers to invest in R&D and intangible assets in order to increase the firm reputation and make market performance more sustainable, regardless of its capital structure. Similarly, with the increase in leverage ratio the total risk exposure of firms also increases, however, the effect of the same on systematic risk is insignificant.

The current study contributes to the extant literature on the one hand by studying the effect of leverage on the firm performance, and risk in the Finnish corporate sector, and on the other hand studying the abovementioned relationship by employing multiple measures of leverage, firm performance and risk.

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