BOARD OF DIRECTORS, CAPITAL STRUCTURE, INVESTMENT DECISIONS AND FIRM-PERFORMANCE: AN EMPIRICAL STUDY OF NORDIC FIRMS

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Abstract

Firms’ financing, boards of directors’ characteristics, investments, and firm-performance (financial and non-financial) occupy a pivotal place in corporate finance and corporate governance literature. The current study explores if causalities between the abovementioned four distinct albeit inter-related phenomena follow any pattern. The data comprising of 1240 firm-years belonging to Finland, Norway, Sweden, and Denmark for the period of 2003 to 2018 have been analyzed by applying multivariate linear regression and principal component analysis. The findings show that the impact of boards of directors’ characteristics is stronger on capital structure, however, weaker on investments and financial performance. The major contribution of the article is creating a set orderly and sequential causalities between financing, boards of directors’ characteristics, investments, and firm-performance.

Keywords: Financing, Investment, Capital Structure, Board of Directors, Firm Performance

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1. INTRODUCTION

In the finance literature, the concept of optimum capital structure has been discussed extensively. Academic researchers and corporate managers have been seeking endlessly to formulate the optimal capital structure; however, there is no universal and across the board understanding of this concept and its dynamics. However, it is noticeable that the notion of firm-level optimum capital structure is a mirage due to ever-changing business, and firm-specific environment. Many scholars suggest that instead of striving to achieve the specific point of optimal capital structure, firms should aim to achieve the range of it (Myers, 1984). The total capital requirements underpin the financial resources of a firm, and these resources can be utilized to acquire assets (investment), which are necessary to run firms. The capital structure underlines the relative share of debt and equity in the total capital of a firm. To find the right financing path a firm needs to balance the advantages of debt, for example, interest tax shield, and the risks associated with debt, for example, the financial distress costs. Thus, it is very important to study the pros and cons of different sources of finance. The choice of the capital structure depends on many factors such as the size of the company, industry/sector characteristics, profitability and corporate tax level, the tangibility of assets, and growth opportunities. However, corporate boards of directors play a major role in making decisions regarding the capital structure of firms they serve along with providing leadership and guidance to the
firms and at the same time participate in the monitoring and control activities. There are several determinants of the quality of corporate boards of directors, for example, independence of boards, human capital (education, experience, expertise) of directors, relational capital (multiple directorships) of directors, and board diversity (gender, nationality, ethnicity). Investments, including tangible, intangible, and financial assets, are the reflection of firms’ future and they are undertaken to enhance the firm value through the generating of added cash flow. ‘Like financing, like investment’ as the nature and type of financing determine the nature and type of investment, ceteris paribus (Hundal, Sandstrom, & Uskumbayeva, 2018). The outcome of investment can be measured by various indicators of financial, and non-financial performance measures.

Since the concept of capital structure, the board of directors’ characteristics, investments, and firm-performance are intertwined, therefore, an important research problem that needs to be addressed is whether the mutual relationships amongst the abovementioned four concepts follow a sequential pattern so that these concepts are placed in an orderly manner in relation to each other. The current study endeavors to solve this puzzle by exploring the following research questions:

- Does the board of directors’ characteristics impact the capital structure, investments, and firm-performance?
- Does the firm-level capital structure impact investments and firm-performance?
- Does firm-level investing affect firm-performance?
- Do the boards of directors, capital structure, investment expenditure, and financial performance, at the firm-level, follow an orderly and sequential pattern of causalities between them?

The secondary data has been taken for the period 2003-2018. The data sources have been firms’ official annual reports, corporate governance reports, financial statements, and the Nasdaq OMX database. The sample firms have been taken from Finland, Sweden, Norway, and Denmark. The empirical findings show that the causalities between the board of directors’ characteristics, capital structure, investments, and firm-performance follow the orderly and sequential pattern. Although the unconstrained causalities are also observed, however, they are relatively sparse and less significant. The following sections include literature review, data and methodology, results and discussion, and conclusion.

Section 2 highlights the in-depth literature review, which has helped to form various hypotheses. Section 3 addresses various aspects of the research design including data, variables, research methods and analysis model. Section 4 presents the results and discussion, whereas Section 5 underlines the main conclusions of the study.

2. LITERATURE REVIEW

Economic and business situations play an important role to influence the corporate capital structure. The financing underpins the capital structure, which is an important strategic decision and it affects various aspects of firms including their operations, investments, performance, survival, growth, and solvency. The most common sources of firm financing are equity and debt. Firms having access to an abundance of capital at the minimum cost of capital experience more opportunities to grow, expand, and acquire larger market share.

Nonetheless, the discussion is not merely confined to ascertaining low-cost finance in adequate quantity on favorable terms, but it goes beyond and includes more vital issues such as determining the optimum capital structure per se (Berk & DeMarzo, 2020). Firms endeavor to achieve financial stability, achieve the liquidity, and solvency benchmarks and generate a higher return on capital on a sustainable basis, and these objectives can be achieved when they attempt to obtain the optimal capital structure which provides impetus to sustainable growth in accordance with the firms’ settings and protects firms from risks associated with financing (Graham & Leary, 2011). The process of determining an optimal capital structure involves several exogenous and endogenous phenomena as several macro-economic determinants, firm-management features, institutional settings, industry/sector characteristics, and regulatory requirements play the vital roles in this process, other things being equal (Salim & Yadav, 2012). Business and economic factors highlight the macro-economic scenario are often uncertain and resultantly the needs and requirements of firm-level financing also remain uncertain and difficult to foresee. Similarly, the firm-management features including their leadership qualities, monitoring, control, and decision-making also influence optimal capital structure. The nature and composition of capital structure can also be influenced by corporate governance dynamics including board independence, discipline, and board of directors’ characteristics (Aguilera & Crespi-Cladera, 2016; Basu & Sen, 2015). Similarly, institutional characteristics of firms influence the capital structure of firms. For example, the influence of founder members (also known as promoters), represents an institutional characteristic of firms, also affects the choice of firm financing (Hundal, 2016, 2017). The capital structure can play an important role in the investment decisions of firms since the type, nature, and amount of capital influences the investment and firm-level financial performance. The right amount, composition of financing, and cost of capital can play an important role in maximizing return on capital, given the financial risks (Kang, Wang, & Xiao, 2018).

Modigliani and Miller (1958), in the modern theory of capital structure, describe that the capital structure of a firm is irrelevant since it does not affect the firm value. The core idea of this theory is that the cash flows of a firm are generated by its assets only and capital structure is no more than a façade since in a perfect capital market debt and equity are the perfect substitute to each other. Therefore, the firm-management should remain indifferent between various combinations of debt and equity as it has no impact on the firm value. Nonetheless, corporate tax can make the debt more attractive since interest is tax-deductible and thus provides firms with interest tax shields (Modigliani & Miller, 1963). However, one should be careful in drawing any conclusions about the favorable
outcomes of debt. An over-leveraged firm not only signifies its poor corporate governance, but it can experience financial distress costs, which can expose it to imminent bankruptcy. Similarly, interest tax shields available to a firm due to debt financing can be overwhelmed by the extra burden of personal income tax falling on the debt income. Furthermore, over-leveraged firms, owing (Myers, 1984) increases and thus it can be difficult for such firms to initiate new investment projects and complete existing ones. Therefore, according to the trade-off theory of capital structure, a firm strives to achieve the optimum combination of financing (debt, equity and any other hybrid form) where the present value of additional interest tax shield gained through the marginal dose of debt is fully offset by the present value of financial distress costs arising through the additional borrowing (Myers, 1984). Any further increase in firm leverage can be counterproductive.

According to the pecking order theory (Myers & Majluf, 1984; Myers, 1984) firms managers prefer to finance their investment projects with the internal sources (for example, retained earnings) at the early stage. When the firms experience business expansion and need more projects to finance, they can start seeking external finance, however, the managers prefer to use debt first before raising external equity (common stock). The rationale of the preference of debt over equity is that the firm managers can feel the pressure of an increase in demand for dividends by the shareholders even amidst volatility of stock prices or instability of profits, and similarly, managers can experience a trade-off between giving dividends to shareholders and investing in highly promising investment projects. Another reason why corporate managers can prefer debt over equity can be attributed to the information asymmetries. The firm managers have more information than the outside shareholders and as a result, both can have different notions of the firm’s stock price in the capital market. The corporate managers often have the perception that since financial markets are not perfect, therefore, the market value of the firm does not fully reflect the fair value of it. Owing to the information advantages that they have, corporate managers can ascertain the fair (intrinsic) value of the firm. On the other hand, outside shareholders have lesser information about the firms and, therefore, they are unable to, first, distinguish between good and bad projects, and second, ascertain the true value of the firm in the short, and long-term horizon. Owing to the information asymmetries between the firm managers and outside shareholders the firm’s stock price is often mis(under)priced. On the other hand, debt financing is subject to a lower risk of mispricing of the debt claims as well as adverse selection problems.

Dierker, Lee, and Seo (2019) find that firms prefer to issue equity capital following risk increases since any further incremental debt can add financial distress costs. They further find that firms prefer to issue debt after risk decreases since the firms having lower risk exposure are capable of doing prudent debt management, and servicing without getting any adverse reaction of their investors. Therefore, the above findings are following the trade-off theory, however, opposite to the key idea of the pecking order theory. Hundal et al. (2018) analyze a sample of Nordic companies and find that during the pre-financial crisis period (before 2007), firms producing a high accounting and market returns borrow less, to avoid higher fixed cash outflows of debt servicing thus the capital structure of such firms has been observed to be inclined in favor of equity financing. Therefore, the above finding contrasts with the gist of the pecking order theory of firm financing. However, during (2007-2011) and post-financial crisis (2012 and after) times the empirical evidence supports the idea of pecking order theory of firm financing as the sample firms giving a superior accounting and stock market performance start preferring debt to equity. Several factors are responsible for such financing patterns: high-risk premium demanded by equity investors during the adverse financial environment and the recovery period, falling interest rates, and accumulated non-performing assets with the financial institutions.

The genesis of the agency theory concerning the capital structure depends on the premise that debt can discipline managers due to the added pressure they feel to generate a minimum level of cash flows mandatory for debt servicing. The firm managers are often aware of the dire consequences that they can go through in the event the cash flows of the firm fall short of the minimum benchmark required to do the debt servicing. Consequently, the personal utility function of the managers can start aligning with that of the firm, and the discretionary behavior of managers starts diminishing too (Jensen & Meckling, 1976; Jensen, 1986). Therefore, debt can be used as a measure to minimize agency costs, and as a result, the firm-performance can improve. Nonetheless, any such generalization can be misplaced. At a lower level of debt, it is not difficult to understand the viewpoint that agency conflicts between shareholders and managers of a firm can diminish since managers have the motivation to increase the financial performance of firms to do the debt servicing. However, at a higher level of debt, managers can experience increased performance pressure and in the event of their failure to generate required cash flows to meet the debt repayment obligations there can be additional increased risk premium placed on the firm equity, which can force firm managers to borrow even more. Therefore, the firm can fall into the debt trap, and ultimately the agency costs can rise to an extent where the financial distress costs touch unprecedented heights and the fear of bankruptcy turns into reality (Jensen & Meckling, 1976).

Dawar (2014) finds that for the sample of Indian firms there exists a negative relationship between debt (both short term and long term) and the accounting performance of firms. This result underpins the inability of the financial institutions, mainly state-owned banks, to check the discretionary actions of corporate managers. Similarly, Sheikh and Wang (2011) find a negative relationship between leverage and firm-performance (profitability and liquidity) by analyzing a sample of Chinese firms in Pakistan. A remarkable follows from the above two studies that firms can finance their projects with the retained earnings at the initial stages, however, with the growing investment needs the
Firms can start financing them with the debt. Nonetheless, such a pattern of financing can affect firm-performance unfavorably. Therefore, the financing pattern suggested by the pecking order theory of firm financing does not fully align with the empirical findings. On the other hand, increased leverage exposes the firms to the enhanced agency costs, which in turn reduces the firm-performance.

The agency theory suggests that enhanced board independence can reduce agency costs in the form of managerial discretionality behavior and adverse selection, among others. Diminished agency costs can motivate managers to choose the most suitable capital structure of firms. However, Fan, Jiang, Kao, and Liu (2020) analyze the sample of Taiwanese firms and find that when firms replace non-independent directors with independent ones, the firm value declines in both the short and long run. This finding implies that the abovementioned replacement does not add anything to the board capital of firms since both non-independent, and independent directors have the same qualifications and other credentials. On the other hand, such replacements can be value-reducing to the firms because of two main reasons: first, regulatory requirements of enhanced independence of boards have made independent directors busier and thus costlier in the labor market of corporate directors, and second, independent directors have lesser knowledge and skills to tackle the firm-specific issues and challenges, therefore, they are not able to make any real contribution to the firms.

The current study explores the following hypotheses:

**H1:** Board of directors’ characteristics impact capital structure.

**H2:** Board of directors’ characteristics impact investments.

**H3:** Board of directors’ characteristics impact firm-performance.

### 3. RESEARCH DESIGN

In the current study, a sample of as many as 93 non-financial publicly traded firms listed on the Nasdaq OMX Nordic Stock Exchange has been selected to test the hypotheses. Twenty-eight firms have been chosen from Finland and Sweden each, whereas twenty and seventeen firms represent Denmark and Norway, respectively. The unbalanced pooled data covers a period of sixteen years (2003 to 2018). Due to the unavailability of data a final sample of 1240 firm-years and the country-wise classification is 353 firm-years (Finland), 352 firm-years (Sweden), 291 firm-years (Denmark) and 244 firm-years (Norway). The market data have been obtained from the two indexes of the Nasdaq OMX Nordic Stock Exchange: OMX Nordic Large Cap EUR GI (OMXNLCEURGI = 640 companies) and OMX Oslo 20 (OMXO20PI = 20 companies) as well as respective central banks, whereas, data related to the accounting and corporate governance variables have been extracted from the annual reports (especially financial statements and corporate governance reports) of the sample firms.

Table 1 highlights the description of variables falling in the ambit of multiple phenomena. These phenomena are termed as corporate governance and board of directors’ characteristics, capital structure, investment, and performance (including ‘return’ variables: accounting, market, and hybrid; ‘cost of capital’ variables; and ‘risk exposure’ variables) in the current study.

| Variables | Label | Definition/Formula |
|-----------|-------|--------------------|
| Return on assets | ROA | ROA is a measure of profitability on the assets invested by firms. It is calculated by dividing the net profit of the firms by their total assets in a year. |
| Earnings per share | EPS | EPS, a measure of profitability, is calculated by dividing the firm’s net profit by its outstanding shares of its common equity in a year. |
| Return on capital employed | ROCE | ROCE measures the firms’ profitability and efficiency of the total capital employed (debt, equity and preferred). It is calculated by dividing the net profit of the firms by their total capital employed in a year. |
| Market to book value ratio | MBVR | MBVR is a financial valuation measure that determines if the current market price of the firm is over- or undervalued in comparison with its book value. It is calculated by dividing the market capitalization of a firm with its book value of net assets in a year. |
| Tobin’s Q ratio | TQ | TQ ratio measures if the market value of a firm (debt plus equity) is over- or undervalued in comparison with the replacement cost of its assets. Generally, the market value of debt is difficult to obtain, therefore, the proxy TQ can be calculated by dividing the sum of the market value of equity plus book value of debt of the firm by its book value of total assets in a year. |
| Operating cash flow to total assets ratio | OCFA | OCFA ratio, a measure of profitability and efficiency, highlights the extent of the contribution made by operating cash flow of firm towards its book value of assets. It is calculated by dividing the operating cash flow of a firm by its total assets in a year. |
| Cost of equity | E_r | \( E_r = \frac{E}{R} \), where: \( E \) is proxied by applying the Capital Asset Pricing Model (CAPM) on a yearly basis as below: \( \beta = \frac{R_{f} + \beta_{m} \times (R_{m} - R_{f})}{R_{f}} \), \( R_{f} \) is the risk-free rate on ten-year bond issues by the treasury, \( R_{m} \) is the observed market return (Nasdaq OMX Nordic Stock Exchange Index), \( \beta \) is the measure of market (systematic) risk that a firm is exposed to. |
| Cost of debt | D_r | \( D_r \) represents the average tax-adjusted cost of debt, which is calculated by dividing the interest expense (1 - tax rate) by the total finance (interest bearing) debt in a year. |
| Weighted average cost of capital | WACC | WACC represents the total cost of capital employed by firms. The product of cost of equity and relative share of equity in the firm value and the product of cost of debt and relative share of debt in the firm value have been added. |
| Annualized stock return | Ret | Ret represents the market performance of firms. The average daily stock return of firms is annualized by applying the following formula: \( Ret = (1 + daily\ space\ return)^{365} - 1 \) |
Table 1. Description of variables (Part 2)

| Variables | Label | Definition/Formula |
|-----------|-------|--------------------|
| **Phenomenon 1: Performance** | | |
| Total risk | $R$ | $R$ represents the total risk (volatility) that the stock market performance of firms is exposed to. The average daily volatility (measured by standard deviation) of the stock return of firms is annualized. |
| Total systematic risk | $\text{SysR}$ | $\text{SysR}$ represents the portion of total risk exposure of a firm arising due to the market risk and is measured as the product of $\beta$ and annualized standard deviation of market return (Nasdaq OMX Nordic Stock Exchange Index). |
| Total unsystematic risk | $\text{UnsysR}$ | $\text{UnsysR}$ represents the portion of total risk exposure of a firm arising due to the firm-specific risk. It is a residual risk derived after subtracting $\text{SysR}$ from $R$. |
| **Board independence** | Ind-Dir | The ratio of the number of independent directors to the board size of a firm in a year. |
| Performance of CEO | CEO-Pay | The ratio of the performance-based pay to the total pay of the CEO of the firm in a year. |
| Board discipline | Discipline | The median ratio of board of directors’ meetings attendance to total meetings held in a year. |
| Directors' share ownership | Ownership | The ratio of share owned by directors (outside and executive) to the total share outstanding. |
| Education of independent directors | Edu-Bol | The median level of education of independent directors on a firm board of directors on a scale 0-4 in a year: no education (0), up-to high school (1), bachelor level (2), master level (3), doctorate (4). The education is horizontally additive by ‘+ 1’, for example, if a director has two bachelor degrees the score will be $2 + 1 = 3$, and a master level educated directors with two bachelor degrees gets the score $3 + 1 = 4$. |
| Education of executive directors | Edu-BoE | The median level of education of executive directors on a firm board of directors on a scale 0-4 in a year. The calculation process is the same as in the case of Edu-Bol. |
| Education of board of directors | Edu-BoD | The sum of Edu-Bol and Edu-BoE. |
| Experience of independent directors | Exp-Bo | The median number of years (natural logarithm) of experience of independent directors on a firm board of directors in a year. |
| Experience of executive directors | Exp-BoE | The median number of years (natural logarithm) of experience of executive directors on a firm board of directors in a year. |
| Experience of board of directors | Exp-BoD | The sum of Exp-Bo and Exp-BoE. |
| **Phenomenon 3: Capital structure** | | |
| Debt-equity (book value) ratio | $D/E_v$ | The leverage ratio of the firm is obtained by dividing the finance debt (current and non-current) by its book value of equity (a.k.a. net assets, net worth) in a year. |
| Debt-equity (market value) ratio | $D/E_m$ | The leverage ratio of the firm is obtained by dividing the finance debt (current and non-current) by its median market capitalization during a year. |
| Current debt-equity (book value) ratio | $CD/E_v$ | The short-term leverage ratio of the firm is obtained by dividing the current finance debt by its book value of equity in a year. |
| Current debt-equity (market value) ratio | $CD/E_m$ | The short-term leverage ratio of the firm is obtained by dividing the current finance debt by its market capitalization during a year. |
| Non-current debt-equity (book value) ratio | $NCD/E_v$ | The long-term leverage ratio of the firm is obtained by dividing the non-current finance debt by its book value of equity in a year. |
| Non-current debt-equity (market value) ratio | $NCD/E_m$ | The long-term leverage ratio of the firm is obtained by dividing the non-current finance debt by its market capitalization during a year. |
| Effective corporate tax rate | $\text{ETR}$ | The ratio of the actual amount of corporate tax paid by a firm to its profit before tax (gross profit), in a year. |
| **Phenomenon 4: Investment** | | |
| Total investments to assets (book value) | $IA_v$ | Total investments (including tangible, intangible, financial and those in joint ventures and associates) divided by book value of assets (firm). |
| Tangible investments to assets (book value) | $TI/IA_v$ | Total tangible investments divided by book value of assets (firm). |
| Intangible investments to assets (book value) | $ITI/IA_v$ | Total intangible investments (current and non-current) divided by book value of assets (firm). |
| Financial investments to assets (book value) | $FI/IA_v$ | Total financial investments (current and non-current) divided by book value of assets (firm). |
| **Control variable** | Total asset | The natural logarithm of total assets. |
Several econometric techniques including multivariate linear regression (MLR) and principal component analysis (PCA) have been applied to analyze the data. In a typical MLR model, the explanatory variables are represented by the X-matrix with the order \( M \times N \), whereas the explained variable is represented by a single vector, \( Y \), an \( M \times 1 \) vector, so that the model can be written as \( Y = Xb \). The solution vector \( 'b' \) is ascertained by solving \( b = (XX)'^{-1}XY \), that is by multiplying the inverse of the product of explanatory variable and its transpose with the product of transpose of explanatory variable and explained variable. The variance of the estimated solution is given by \( V(b) = (XX)'S' (XX)'^{-1} \), that is the variance of the solution vector \( 'b' \) is obtained by multiplying the inverse of the product of explanatory variable and its transpose with the product of transpose of std error vector \( 's' \), implying the filtration of unnecessary variables. Therefore, the solution vector \( 'b' \) can be obtained by solving the following equation:

\[ b = (Z'Z)^{-1}Z'Y \]  

(1)

Thus, the MLR model applied in the current study is as below:

\[ Y_{it} = \alpha_{it} + \sum_{k=1}^{p} \beta_{ik} Z_{it} + \beta_{it} R_{it} + \epsilon_{it} \]  

(2)

where, \( Y_{it} \) - explained variable of a firm \( 'i' \) in period \( 't' \), \( \alpha_{it} \) - intercept term, \( Z_{it} \) - corresponds to the \( i^{th} \) principal component, \( R_{it} \) - control variable of a firm \( 'i' \) in period \( 't' \), \( \epsilon \) - the random error-term.

**Figure 1.** Comparison between multiple linear regression and principal component analysis

**Table 2.** Principal components derived from explanatory variables representing various phenomena

| Phenomena                                      | Principal components/factors          |
|------------------------------------------------|---------------------------------------|
| Corporate governance and board of directors' characteristics | \( Z_{1} = \) Education of executive directors, \( Z_{2} = \) Education of independent directors, \( Z_{3} = \) Experience of executive directors, \( Z_{4} = \) Experience of independent directors, \( Z_{5} = \) Board discipline, \( Z_{6} = \) Board independence |
| Capital structure                              | \( Z_{1} = \) Total leverage, \( Z_{2} = \) Long-term leverage, \( Z_{3} = \) Short-term leverage |
| Investment                                     | \( Z_{1} = \) Total investment, \( Z_{2} = \) Financial investment, \( Z_{3} = \) Intangible investment |
4. RESULTS AND DISCUSSION

Descriptive statistics are given in Table 3. The mean board-level independence is 54.3%, whereas the highest and the lowest independence are 64.3% and 32%, respectively. Similarly, the median performance-based pay of the CEO of the sample firms is 61.6%, whereas the highest level is 89%. The mean values of education and experience of independent directors have been more than those of their executive director colleagues. The level of discipline, as measured by the median ratio of board of directors’ meetings attendance to total meetings held in a year, is well over 90%. The highest level of share ownership of directors is 47.2%, whereas, the mean value is 3.8%. About the capital structure variables, it is found that the mean debt-to-equity (book value) ratio is 0.575 whereas, the mean debt-to-equity (market value) ratio is 0.252. Similarly, the mean ETR is 32.4% and the highest ETR is observed to be 86.6%. The mean I/Ap is 23.5% and the highest and lowest values of I/Ap are 9.1% and 88% respectively. Regarding the performance variables, mean values of ROA, ROCE, MBVR and TQ are 10.9%, 13.1%, 1.414 and 1.269, respectively. The mean cost of debt, cost of equity and WACC are 6.3%, 4.1% and 5.7%, respectively. Furthermore, the mean systematic risk exposure of the sample firms is nearly four times more than the mean unsystematic risk faced by the sample firms.

Table 3. Descriptive statistics of key variables

| Variable       | Mean     | Median   | Standard deviation | Range    | Minimum | Maximum |
|----------------|----------|----------|--------------------|----------|---------|---------|
| Ind-Dir        | 0.543    | 0.568    | 0.039              | 0.323    | 0.120   | 0.643   |
| CEO-Pay        | 0.578    | 0.616    | 0.025              | 0.890    | 0.000   | 0.890   |
| Educ-Bol       | 2.874    | 2.883    | 0.176              | 1.729    | 1.554   | 3.283   |
| Educ-BoE       | 2.103    | 2.111    | 0.226              | 2.216    | 1.443   | 3.659   |
| Educ-BoD       | 2.687    | 2.666    | 0.190              | 1.890    | 1.528   | 3.418   |
| Exp-Bol        | 3.306    | 3.338    | 0.203              | 3.020    | 0.745   | 3.765   |
| Exp-BoE        | 3.132    | 3.101    | 0.257              | 2.899    | 0.654   | 3.553   |
| Exp-BoD        | 3.162    | 3.164    | 0.181              | 2.861    | 0.704   | 3.565   |
| Discipline     | 0.967    | 0.972    | 0.029              | 0.239    | 0.761   | 1.000   |
| Ownership      | 0.038    | 0.047    | 0.122              | 0.469    | 0.003   | 0.472   |
| D/Ep           | 0.575    | 0.569    | 57.426             | 74.923   | 0.058   | 74.981  |
| D/Emp          | 0.252    | 0.263    | 14.115             | 33.724   | 0.042   | 33.766  |
| CD/Ep          | 0.138    | 0.172    | 6.329              | 23.748   | 0.018   | 23.766  |
| CD/Emp         | 0.135    | 0.121    | 7.985              | 13.209   | 0.012   | 13.221  |
| NCD/Ep         | 0.437    | 0.397    | 13.666             | 51.174   | 0.041   | 51.215  |
| NCD/Emp        | 0.117    | 0.142    | 9.933              | 20.515   | 0.030   | 20.545  |
| ETR            | 0.324    | 0.336    | 0.976              | 1.198    | -0.332  | 0.866   |
| UA             | 0.235    | 0.244    | 0.127              | 0.789    | 0.091   | 0.880   |
| VI/A            | 0.056    | 0.054    | 0.131              | 0.255    | 0.018   | 0.273   |
| ITI/A           | 0.076    | 0.076    | 0.124              | 0.679    | 0.009   | 0.688   |
| TU/A            | 0.104    | 0.114    | 0.040              | 0.170    | 0.002   | 0.172   |
| ROA             | 0.109    | 0.111    | 0.201              | 0.565    | -0.078  | 0.487   |
| ROCE            | 0.131    | 0.137    | 0.232              | 0.664    | -0.093  | 0.571   |
| MBVR            | 1.414    | 1.330    | 0.918              | 12.664   | 0.639   | 13.303  |
| TQ              | 1.269    | 1.177    | 1.704              | 19.112   | 0.020   | 19.132  |
| OCFIA           | 0.239    | 0.267    | 11.401             | 1.122    | -0.332  | 0.790   |
| Ei             | 0.063    | 0.055    | 0.147              | 0.339    | 0.000   | 0.339   |
| D             | 0.041    | 0.076    | 0.017              | 0.193    | -0.016  | 0.177   |
| Ret             | 0.088    | 0.092    | 0.111              | 0.932    | -0.394  | 0.538   |
| UnsysR         | 0.021    | 0.028    | 0.115              | 0.100    | 0.006   | 0.106   |
| SysR           | 0.082    | 0.093    | 0.204              | 0.214    | 0.006   | 0.220   |
| R               | 0.103    | 0.121    | 0.120              | 0.314    | 0.012   | 0.326   |
| WACC            | 0.057    | 0.062    | 0.207              | 25.478   | -0.008  | 25.470  |
Table 4. Pairwise correlations of variables (Panel A)

| I/A | F/IA | IT/I/A | T/A | ROA | EPS | ROCE | MBVR | TQ | OCFA | E | WACC | Ret | UnsySR | SysR | R |
|-----|------|-------|-----|-----|-----|------|------|----|------|---|-------|-----|--------|-----|---|
| 1   | 0.55* | 0.83** | 0.87** | 0.42** | 0.05 | 0.34** | 0.08** | 0.02 | 0.23 | 0.00 | 0.17 | 0.01 | 0.01 | 0.00 | 1   |
| I/A | 1   | 0.85* | 0.13** | 0.25** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   |
| IT/I/A | 0.53** | 1   | 0.09** | 0.08** | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   |
| T/A | 0.42** | 0.34** | 1   | 0.08** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   |
| ROA | 0.27** | 0.26** | 0.13** | 1   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   |
| EPS | 0.14** | 0.14** | 0.14** | 0.14** | 1   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   |
| ROCE | 0.34** | 0.28** | 0.07 | 0.02 | 0.00 | 1   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   |
| MBVR | 0.06** | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 1   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   |
| TQ | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   |
| OCFA | 0.06** | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   |
| E | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   |
| WACC | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   | 0.00 | 0.00 | 0.00 | 0.00 | 1   |
| Ret | 0.06** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   | 0.00 | 0.00 | 0.00 | 1   |
| UnsySR | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   | 0.00 | 0.00 | 1   |
| SysR | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   | 0.00 | 1   |
| R | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1   | 1   |

Note: Significant at ** p < 0.01; * p < 0.05. Total number of observations are 1240.
Table 4 shows two panels, (A) and (B), depicting the pairwise coefficients of correlation of various explanatory variables. In the current paper, explanatory variables that have been investigated belong to four key phenomena: corporate governance and board of directors’ characteristics, capital structure, and investment. It is evident in Table 4 (Panel A) in the top-left quadrant that there is a high correlation between the variables representing the phenomenon of corporate governance and board of directors' characteristics. For example, Edu-Bol and Ind-Dir are highly positively correlated. Similarly, in the same table, a high correlation between various variables underpinning the phenomenon of capital structure has been observed in the bottom-right quadrant. For example, the correlation between D/E_5y and CD/E_5y is positive and significant.

In Table 4 (Panel B), in the top-left quadrant (I/A, TT/A, and F/A), it can be observed that there is a high correlation between the variables representing the phenomenon of investment. For example, I/A and ITI/A are highly positively correlated. Similarly, in the same table, a high correlation between various variables underpinning the firm-performance has been observed in the rest of the table. For example, ROA and ROCE are significantly positively correlated. Due to the high correlation between the variables within the various phenomena, it was considered to apply the PCA to filter-out lesser important variables and obtain key factors, which have been used as explanatory variables in the MLR analysis.

The results of MLR analysis have been given in Tables 5 to 10. Table 5 shows that Z_i (education of executive directors) affects D/E_5y and NCD/E_5y positively, whereas it affects CD/E_5y and ETR negatively. Similarly, Z_j (education of independent directors) influences D/E_5y positively, whereas it affects CD/E_5y negatively. The Z_i and Z_j, the underlying experience of executive and independent directors, respectively, affect the capsual structure variables positively except for the ETR which shows the negative effect. The Z_i and Z_j representing board discipline and independence, show mixed effects on capital structure variables, negative on total debt and non-current debt variables and positive on current debt.

**Table 5. Effects of factors (Z_i to Z_j) representing corporate governance and board of directors' characteristics on capital structure variables**

| Explained variables (a) to (g) | (a) D/E_5y | (b) D/E_5y | (c) CD/E_5y | (d) CD/E_5y | (e) NCD/E_5y | (f) NCD/E_5y | (g) ETR |
|-------------------------------|-----------|-----------|------------|------------|-------------|-------------|--------|
| Intercept                     | -0.119    | 0.221     | -0.831     | -23.222    | 21.164      | 3.534       | 1.121  |
| Z_i                           | 1.011     | -0.611    | -1.811     | -9.685     | 0.484       | 0.547       | -0.711 |
| Z_j                           | 1.117     | -0.217    | -4.796     | -1.234     | -0.919      | -0.351      | -0.098 |
| Z_k                           | 1.564     | 2.564     | 8.564      | -0.893     | 3.875       | 0.897       | -0.717 |
| Z_l                           | 4.882     | 8.098     | 14.931     | 23.056     | 4.678       | 4.767       | -2.625 |
| Z_m                           | -12.004   | -7.116    | 41.712     | 7.786      | -26.341     | -4.221      | -0.221 |
| Z_n                           | -1.344    | 0.721     | -0.751     | 11.085     | -1.902      | -2.282      | -0.082 |
| Z_o                           | 0.223     | 0.423     | 0.398      | 0.532      | 0.585       | 0.171       | 0.112  |
| Z_p                           | 1.845     | 1.923     | 2.018      | 1.994      | 2.012       | 1.951       | 1.912  |
| Durbin-Watson test            | 0.178     | 0.189     | 0.123      | 0.119      | 0.097       | 0.145       | 0.111  |

**Note:** OLS MLR estimates are shown in above table (t-statistics appear in parentheses), significant at *** p < 0.01, ** p < 0.05, and * p < 0.10. Total number of observations are 1240.

Overall, the experience and education of executive directors affect total and non-current debt positively, and the possible reason for this finding is that such directors place a high value on the interest in the tax shield and at the same time they are confident to minimize any financial distress cost related to the additional leverage. Noticeably, relatively educated executive (independent) directors are averse of short-term borrowing due to a higher debt-repayment pressure, nonetheless, the experience of both types of directors can persuade them to enhance the current debt. Interestingly, disciplined, and independent boards of directors show their favorable reaction to the current debt due to the importance of liquidity requirements. Similarly, such boards avoid non-current debt to minimize managerial slack associated with long-term debt contracts.

In Table 6, the experience of both types of directors and education of executive directors positively influences most of the firm-investment variables. Furthermore, independent, and disciplined boards have a positive impact on each type of investment, which is tangible, intangible, and financial. It is pertinent to note that the impact of factors representing corporate governance and board of directors' characteristics on investment variables though the impact is limited and uneven.
Overall, the impact of explanatory factors is largely confined to intangible, and financial investments. A possible explanation of these findings is that investments in intangible and financial assets not only need human capital (for example, education and experience) of senior directors but also require board discipline and effective monitoring and control by independent directors, whereas, decisions regarding investment in the tangible assets are less complex, relatively predictable and largely based on the similar investment experiences acquired in the past.

Table 7 highlights the effects of factors representing corporate governance and board of directors’ characteristics on performance variables (Part 1)
Table 7. Effects of factors (Z₁ to Z₇) representing corporate governance and board of directors’ characteristics on performance variables (Part 2)

| Explained variables (h) to (m) | (b) D₂ | (i) WACC | (j) Ret | (k) R | (l) SysR | (m) UnsysR |
|--------------------------------|--------|---------|--------|------|--------|----------|
| Intercept                      | 0.123  | 0.098   | -0.029 | 1.023| 1.114  | 0.654    |
| Z₁                             | -0.811 | -0.227  | 0.579  | -0.687 | 0.284 | 1.247    |
| (-1.822)                       | (-1.932)| (1.432)| (-1.792)| (1.092)| (1.887)|         |
| Z₂                             | -1.123 | -0.434  | 1.094  | -0.991 | -0.736 | -0.529   |
| (1.046)                        | (-1.483)| (1.532)| (-1.234)| (-1.563)| (-1.387)|         |
| Z₃                             | 0.876  | -0.089  | 0.864  | -0.045 | 0.435  | 0.197    |
| (1.934)                        | (-1.789)| (1.812)| (-0.746)| (1.699)| (1.281)|         |
| Z₄                             | 0.112  | 0.778   | 0.931  | 0.856  | 0.678  | 0.859    |
| (0.667)                        | (1.353)| (1.432)| (1.537)| (1.487)| (1.581)|         |
| Z₅                             | -0.739 | 0.356   | 0.912  | -0.534 | -0.829 | -0.927   |
| (1.534)                        | (0.922)| (1.454)| (-1.897)| (-1.769)| (-1.887)|         |
| Z₆                             | -0.423 | 0.062   | 0.933  | -0.083 | -0.332 | -0.292   |
| (-1.911)                       | (0.763)| (1.897)| (-1.732)| (-1.454)| (-1.788)|         |
| Lna                            | 0.089  | 0.089   | 0.498  | 0.453  | 0.336  | -0.067   |
| (0.893)                        | (0.356)| (1.867)| (0.832)| (0.789)| (1.056)|         |
| Durbin-Watson test             | 1.899  | 1.297   | 2.011  | 1.991  | 2.088  | 1.959    |
| Pseudo-R²                      | 0.126  | 0.129   | 0.129  | 0.131  | 0.119  | 0.121    |
| F-statistic                    | 1.333  | 1.723   | 1.745  | 1.665  | 1.582  | 1.639    |

Note: OLS MLR estimates are shown in above table (t-statistics appear in parentheses), significant at *** p < 0.01, ** p < 0.05, and * p < 0.10. Total number of observations are 1240.

The possible reason for such a thinned relationship between the factors representing corporate governance and board of directors’ characteristics on performance variables is that the latter depends more on operational efficiencies, nature of investment and business environment.

Table 8 highlights the effects of capital structure factors (Z₁ to Z₇) on investment variables. The total leverage ratio (Z) positively affects all the investment variable-total, tangible, intangible and financial. The long-term leverage ratio affects all the investment variables except the financial investment which shows a negative and significant regression coefficient. Interestingly, short-term leverage has no effect on investment variables. The firms can use long-term debt to finance their investments in tangible and intangible assets. More investment in tangible and intangible assets underpins favorable business opportunities for firms. Therefore, amidst favorable business opportunities, firms borrow long-term debt to invest in tangible and intangible assets, and if the need is it can even sell its financial assets (negative regression coefficient of financial investment variable). Similarly, the short-term leverage is needed primarily for liquidity management rather than making the investment in assets.

Table 8. Effects of capital structure factors (Z₁ to Z₇) on investment variables

| Explained variables (a) to (d) | (a) ITI/Aₘ | (b) ITI/Aₘ | (c) ITI/Aₘ | (d) ITI/Aₘ |
|--------------------------------|-----------|-----------|-----------|-----------|
| Intercept                      | 0.635     | 0.315     | 0.045     | 0.321     |
| Z₁                             | 0.232     | 0.118     | 0.014     | 0.017     |
| (7.898)                        | (2.013)   | (1.763)   | (1.921)   |           |
| Z₂                             | 0.136     | 0.029     | 0.213     | -0.107    |
| (6.441)                        | (11.778)  | (11.395)  | (2.453)   |           |
| Z₃                             | 0.012     | 0.012     | 0.000     | 0.000     |
| (0.008)                        | (0.786)   | (0.257)   | (0.615)   |           |
| LnA                            | 0.044     | -0.002    | 0.022     | 0.086     |
| (1.904)                        | (-0.689)  | (4.893)   | (2.414)   |           |
| Durbin-Watson test             | 1.891     | 2.063     | 1.837     | 2.124     |
| Pseudo-R²                      | 0.167     | 0.176     | 0.176     | 0.173     |
| F-statistic                    | 6.996     | 3.449     | 1.644     | 4.309     |

Note: OLS MLR estimates are shown in above table (t-statistics appear in parentheses), significant at *** p < 0.01, ** p < 0.05, and * p < 0.10. Total number of observations are 1240.

Table 9 highlights the effects of capital structure factors (Z₁ to Z₇) on performance variables. The impact of total-leverage (Z) and long-term leverage (Z) on accounting, stock market and hybrid measures (TQ) is negative and significant at a low level, whereas, the current-leverage has no impact on the abovementioned performance variables. In nutshell, a higher level of leverage invites adverse market reaction and erosion in profitability. Noticeably, none of the capital structure factors affects the cost of capital variables: E₁, E₂, and WACC. Similarly, the impact of capital structure factors (Z₁ to Z₇) on risk exposure variables - total risk, systematic risk, and unsystematic risk - is non-existent except for the total-leverage factor on total risk, albeit at a low level. The possible explanation of almost no impact of capital structure factors on the cost of capital, and risk exposure variables is that the market dynamics are more influential than firm-level leverage.
Table 9. Effects of capital structure factors (Z, to Z9) on performance variables (Part 1)

| Explained variables (a) to (q) | (a) | (b) | (c) | (d) | (e) | (f) | (g) |
|-------------------------------|-----|-----|-----|-----|-----|-----|-----|
| Intercept                     | 0.595 | 0.446 | 3.755 | 1.708 | -117.876 | 0.058 | 0.008 |
| Z1 | -0.024 | -0.001 | -0.023 | 0.033 | -0.159 | 0.005 | -0.000 |
| Z2 | 0.727 | 0.110 | -0.680 | -1.027 | -0.802 | 0.009 | 0.004 |
| Z3 | -0.002 | -0.002 | 0.578 | 0.054 | -0.329 | -0.012 | -0.000 |
| LnA | -0.261 | -0.007 | -0.638 | 0.292 | 0.063 | 0.001 | 0.009 |
| Durbin-Watson test | 2.014 | 1.903 | 2.017 | 2.003 | 1.998 | 1.933 | 1.826 |
| Pseudo-R² | 0.141 | 0.109 | 0.221 | 0.282 | 0.147 | 0.080 | 0.077 |
| F-statistic | 4.139 | 2.924 | 5.019 | 20.825 | 33.509 | 1.823 | 1.722 |

Table 9. Effects of capital structure factors (Z, to Z9) on performance variables (Part 2)

| Explained variables (b) to (m) | (b) | (i) | (j) | (k) | (l) | (m) |
|-------------------------------|-----|-----|-----|-----|-----|-----|
| Intercept                     | 0.001 | 0.001 | 0.001 | 1.023 | 0.001 | 0.001 |
| Z1 | 0.001 | 0.001 | -0.023 | 0.687 | 0.001 | 0.001 |
| Z2 | 0.008 | -0.008 | 0.001 | 0.997 | 0.008 | -0.008 |
| Z3 | -0.005 | -0.005 | 0.032 | 0.005 | -0.005 | -0.005 |
| LnA | 0.001 | 0.001 | 0.034 | 0.453 | 0.001 | 0.001 |
| Durbin-Watson test | 1.781 | 1.801 | 1.811 | 1.826 | 1.903 | 1.829 |
| Pseudo-R² | 0.099 | 0.099 | 0.087 | 0.101 | 0.099 | 0.099 |
| F-statistic | 1.632 | 1.713 | 1.635 | 1.665 | 1.713 | 1.713 |

Note: OLS MLR estimates are shown in above table (t-statistics appear in parentheses), significant at *** p < 0.01, ** p < 0.05, and * p < 0.10. Total number of observations are 1240.

Table 10 highlights the effects of investment factors (Z10 to Z12) on performance variables: financial return, cost of capital and risk exposure. The investment factors I/A, (Z10), E/A (Z11), and I/T/A (Z12) affect all types of financial performance measures based on accounting, market, and hybrid return positively and highly significantly. On the other hand, investment factors cost of capital and variables negatively. The investment factors affect total risk and systematic risk positively, whereas the effect on unsystematic risk is negative. A higher level of investment, a reflection of favorable business opportunities (ex-ante), leads to improved financial performance and reduced cost of capital (both ex-post) of the sample firms. This finding underpins successful managerial foresight, as more investment undertaken in the wake of envisaged favorable business opportunities materialize in the form of improved financial performance measured by higher financial return (accounting, market and hybrid), falling cost of capital (including cost of debt, cost of equity and WACC) and lower risk exposure of sample firms (total, market and firm-specific).

Table 10. Effects of investment factors (Z10 to Z12) on performance variables (Part 1)

| Explained variables (a) to (q) | (a) | (b) | (c) | (d) | (e) | (f) | (g) |
|-------------------------------|-----|-----|-----|-----|-----|-----|-----|
| Intercept                     | 0.121 | 0.089 | 0.125 | -3.119 | 1.197 | -0.534 | 0.123 |
| Z10 | 22.711 | 0.678 | 1.469 | 0.687 | 0.332 | -0.099 | -0.711 |
| Z11 | 0.811 | 0.237 | 0.072 | 0.567 | 0.089 | -0.085 | -0.104 |
| Z12 | 0.133 | 0.309 | 0.045 | 0.087 | 0.092 | 0.132 | 0.012 |
| LnA | 0.332 | 0.287 | 0.084 | 0.092 | 0.098 | 0.036 | 0.311 |
| Durbin-Watson test | 2.022 | 1.908 | 2.021 | 1.909 | 2.014 | 1.933 | 2.098 |
| Pseudo-R² | 0.336 | 0.332 | 0.278 | 0.174 | 0.321 | 0.029 | 0.311 |
| F-statistic | 118.732 | 9.221 | 61.643 | 4.442 | 5.047 | 4.844 | 7.379 |
Table 10. Effects of investment factors (Z_{10} to Z_{12}) on performance variables (Part 2)

| Explained variables (h) to (m) | (h) D | (i) WACC | (j) Ret | (k) R | (l) SysR | (m) UnsysR |
|-------------------------------|-------|----------|--------|-------|----------|-----------|
| Intercept                     | 0.123 | 0.098    | -0.029 | 1.023 | 1.114    | 0.654     |
| Z_{10}                        | -0.004| -0.127   | 0.734  | 0.067 | 0.219    | -0.067    |
|                               | (-0.822)| (-1.845)| (2.432)| (2.492)| (1.892)| (1.227)   |
| Z_{11}                        | -0.098| -0.1056  | 0.071  | 0.175 | 0.078    | 0.097     |
|                               | (-2.451)| (-2.383)| (2.389)| (11.169)| (2.563)| (-2.341) |
| Z_{12}                        | 0.095 | -0.054   | 0.091  | 0.078 | 0.094    | -0.091    |
|                               | (1.775)| (-1.823)| (1.209)| (2.246)| (2.353)| (1.851)   |
| LnA                           | 0.011 | 0.0113   | 0.084  | 0.043 | 0.040    | -0.127    |
|                               | (0.363)| (1.711)| (1.067)| (0.732)| (1.089)| (-1.756) |
| Durbin-Watson test            | 1.977 | 1.922    | 2.002  | 1.934 | 2.011    | 1.923     |
| Pseudo R²                     | 0.198 | 0.199    | 0.171  | 0.147 | 0.178    | 0.254     |
| F-statistic                   | 5.333 | 6.723    | 5.735  | 5.345 | 4.993    | 9.471     |

Note: OLS MLR estimates are shown in above table (t-statistics appear in parentheses), significant at *** p < 0.01, ** p < 0.05, and * p < 0.10. Total number of observations are 1240.

5. CONCLUSION

The principal objective of the current study is to explore whether mutual causalities between the four distinct phenomena - board of directors' characteristics, capital structure, investments, and firm-performance - are unconstrained or whether the abovementioned mutual causalities follow an orderly and sequential pattern.

The correlational analysis shows that there has been a high degree of association between the various proxies measuring each of the abovementioned phenomena. This finding justifies the application of the PCA in the current study to eliminate the effects of lesser important variables and instead extract key factors/components that have been included as explanatory variables in the MLR analysis. The relatively experienced and educated executive directors in the firms enhances the total, and non-current debt expectedly to enhance the interest tax shield. More experienced and educated directors can give an explicit priority to maximize the interest tax shield since it adds to the firm value and, at the same time, they can have good reasons to believe that the favorable effects of debt in the form of interest tax shield exceed the unfavorable effects of the same in the form of financial distress costs. The firms having disciplined, and independent boards of directors, witness an increase in the current debt with a potential motive to maintain a higher liquidity level; similarly, these firms avoid non-current debt to minimize managerial slack and mitigate financial distress costs.

Similarly, the impact of explanatory factors highlighting corporate governance and board of directors' characteristics on firm-level investment is limited to some favorable influence on intangible, and financial investments only. The investment in intangible and financial assets requires relatively high human capital in the form of education and experience of top leadership, board discipline and effective monitoring and control by independent directors of firms. On the other hand, the impact of the above factors on firm-performance is majorly unfounded.

Furthermore, it is evidenced that sample firms utilize long-term leverage to finance their investments in tangible and intangible assets due to better repayment planning associated with long-term leverage. Similarly, investment in tangible and intangible assets underpins favorable business opportunities available or likely to be available to firms. Therefore, amidst favorable business opportunities, sample firms borrow long-term debt to invest in tangible and intangible assets, and if the need is, they even divest their financial assets to raise more financial resources to be invested in tangible and intangible assets. The findings further show that the sample firms do not use the short-term leverage to invest since this type of leverage is primarily used to maintain the required amount of liquidity and meet operational requirements.

The impact of capital structure on market return and accounting return is adverse, whereas the effects of the same on cost of capital, and risk exposure variables are nearly absent. The possible reasons for the above results are that the higher leverage is followed by, first, the higher debt-serving and second, adverse market reactions often and therefore, accounting return and market return market are adversely affected. Similarly, one can argue that market dynamics play a more influential role in determining the cost of capital than the firm-level leverage. The change in investment favorably affects all types of financial performance measures based on accounting, market, and hybrid return, whereas, the same lowers the cost of capital variables. A higher investment leads to higher total risk and systematic risk since the outcome of an investment is always uncertain, whereas the same affects the unsystematic risk inversely since new investments can enhance the managerial discipline and accountability. A higher level of investment, a reflection of favorable business opportunities (ex-ante), leads to improved financial performance and reduced cost of capital (both ex-post) of the sample firms. This finding underpins the successful managerial foresight, as more investment undertaken in the wake of envisaged favorable business opportunities materialize in the form of improved financial performance measured by higher financial return (accounting, market and hybrid), falling cost of capital (including cost of debt, cost of equity and WACC) and lower risk exposure (total, market and firm-specific) of sample firms.

Overall, when analyzing the pattern of findings based on mutual causalities between board of
directors’ characteristics, capital structure, investments, and firm-performance the notion of the orderly and sequential pattern gets significant empirical support. The stronger causalities exist first, when board of directors’ characteristics influence capital structure, second, when capital structure influences investments and finally when investments influence financial performance. The board of directors’ characteristics are not missing causality with investments and financial performance altogether; however, their causality with investments and financial performance is not relatively strong. In a similar manner, capital structure is not missing causality with financial performance altogether, nonetheless, the strength of its causality with financial performance is weaker. The major contribution of the current study is developing a theoretical framework of an orderly and sequential pattern of mutual causalities. Furthermore, this is the first study of its kind in the Nordic corporate settings. The key implication that can be drawn from the empirical findings is that corporate finance managers should consider the distinct sets of factors when making certain key decisions related to the firms. The major limitation of the current study is that it considers the Nordic as a single homogenous unit of study/analysis and, therefore, the inter-country differences have been omitted.

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