# Drivers of Leverage in Slovene Blue-Chip Firms and Stock Performance Following Substantial Debt Increases

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**Abstract**

Hypotheses about capital structure are among the most frequently tested in financial literature. Usually, authors discuss different incentives for the use of leverage. Their views can be broadly classified into two main groups. The proponents of the first argue that leverage increases cash flow available to investors. With the use of debt the firm pays less taxes due to advantageous debt tax-shields. On the other hand, the proponents of the second group stress the importance of minimization of transaction cost, and information asymmetry. They point to a *pecking order* of sources of finance. In this article, I explain most frequently stated drivers that provide incentives for the more extensive use of debt and test whether they are relevant for Slovene corporations.

The second part introduces owners' point of view. I test whether raised debt levels increase long-term return to the stockholders. Namely, recently some authors pointed out, that new issues of bonds (and debt in general) do not provide positive signals. They have even found significant underperformance of the issuing companies' stock (*negative long-run returns*, compared to peers). Thus, new issues of debt cause similar underperformance effects to new stock issues. In this paper, three methods are employed to test relationship between increased levels of debt and long-term stock return in the Slovene emerging capital market.

***Key words***: *long-run stock performance, leverage, capital structure, emerging capital markets capital.*

***JEL Classification***: G32, G10, G14

**Povzetek**

V finančni teoriji je testiranje hipotez, ki se se nanašajo na sestavo virov financiranja - sestavo kapitala podjetja, zelo pogosto. Raziskovalci pogosto izpostavljajo posamezne dejavnike, zaradi katerih podjetja uporabljajo različne obsege dolžniškega financiranja. Pri tem se v grobem delijo v dva tabora. Prvi zagovarja t.i. teorijo izključevanja (*trade-off theory*), ki v zadolževanju predvsem vidi koristi z vidika dodatnih davčnih ščitov in večjega možnega izplena denarnega toka za dolgoročne vlagatelje - lastnike in upnike. Drugi tabor pa zadolževanje presoja v kontekstu doseganja želenega poslovanja podjetja ob povzročanju čim manjših transakcijskih stroškov, doseganju zmerne stopnje tveganja poslovanja in ob upoštevanju odzivanja vlagateljev v razmerah, ko le-ti v nasprotju z managerji, nimajo popolnih informacij o poslovnaju podjetja. Privrženci tega tabora razvščajo vire financiranja po vrstnem redu (*pecking order*). V članku predstavljam smiselnost dejavnikov, ki naj bi vplivali na zadolževanje podjetij (torej uporabo dolgoročnega dolga za financiranje poslovanja) in preverjam, kateri so za največje slovenske javne delniške družbe najrelevantnejši.

V drugem delu predstavljam pogled lastnikov na zadolževanje. V zadnjih letih so se namreč v literaturi pojavile razprave in empirični prispevki, ki v nasprotju z zagovorniki mehanizma nesimetričnosti informacij (ti sodijo pod okrilje teorije vrstega reda financiranja) trdijo, da padca cene delnice ne povzročajo zgolj izdaje delnic, temveč tudi izdaje obveznic oziroma povečan obseg zadolževanja podjetij. V članku s tremi različnimi metodami presojam vpliv povečanega zadolževanja slovenskih javnih delniških družb na ceno delnice na Ljubljanski borzi oz. na njihovo dolgoročno donosnost.

# 1 Introduction

Cornerstone of capital structure theory represents the pioneering work of Modegliani and Miller (1958). They introduced a world without transaction costs and taxes and derived the conclusion about capital mix irrelevance for reaching the goal of the firm. However, five years after the breakthrough they reached different conclusion after the inclusion of corporate taxes. Companies should in this setting be all-debt financed. Back then, they paved a way towards modern *trade-off theory*. Additionally, Miller (1977) included personal taxes and suggested the same solution, but this time with less benefit to investors. Trade-off theory was finally completed with the contribution of Jensen and Meckling (1976), who introduced costs of financial distress. According to this final setting the firm should use leverage to the extent where marginal benefits (tax savings) of additional debt and its costs of financial distress equalize (Jensen and Meckling, 1976).

Ross (1977) argues that usage of debt also serves as a good signaling device in case of business excellence. Beside Ross (1977), Myers and Majluf (1984) are often cited to be the three founders of information asymmetry hypothesis (signaling hypothesis) which is part of the *pecking order theory*. In addition to advantage due to lower transaction costs (caused by set hierarchy - retained earnings first, followed by new levels of debt, issued preferred stock, and only then new equity) this theory is also based on agency relationships among owners, managers and creditors. Due to the insider information and asymmetry of payoff to creditors (to them the upside potential of the project is not available) managers prefer to issue debt in cases of positive perceptions about future operations of the firm. In cases where the future is less bright, managers (and owners) prefer equity financing, which causes potential loss-sharing with new owners. As a result, additional debt financing causes positive signals, whereas new issues of common stock, negative ones (Frydenberg, 2004).

According to pecking order hypothesis, firms do not set optimal ratio between debt and equity. As a contrast, firms leave some free borrowing capacity open for eventual occurrence of profitable project that can be made. Thus, they maintain some *financial slack* in the form of greater extent of equity (e.g. they may issue more shares than needed). In cases firm needs to raise new sources of finance, they can issue debt. Contrary to issuing stock, issuance of debt does not send negative signals to investors. Stock prices are more sensitive to signaling in times information available to management substantially deviates from information available to investors in the capital market (i.e. in times of greater asymmetry of information). Vice versa, signaling does not

have great impact in times when information is well shared and observed by investors.

Literature about capital structure is substantial. Authors study determinants of capital mix that is observed in the market. They employ various techniques in numerous markets over different time-horizons (see Fama and French, 2002; Watson and Wilson, 2002, Shynam-Sunder in Myers, 1999). Despite reach research in the area, conclusions are still far from following convergence. In general, one can expect stricter following pecking order in times, when information asymmetries are large; and "following the rules" (i.e. optimal capital structure) in times when the opposite holds. Then, extent of debt financing is determined by tangibility of assets, non-debt tax-shields available, tax rate, volatility of operating profit, etc.

In the last decade during the process of transition, Slovene firms made substantial progress. On that path though, various changes in the business environment were making the progress tougher. In addition to that, firms were expected to make a gradual transition towards grater extent of use of debt and to more closely follow shareholder value approach. Namely, at the beginning of the nineties, even studied Slovene firms used only modest levels of debt and to largest extent followed wage-maximization. Mramor and Valentinčič (2001) provide reasons why this strategy was reasonable to follow in the period of economic transition. Firms only used debt vehicles when internal rate of return allowed for servicing debt contracts, which carried higher cost than equity which was nearly zero (Mramor et.al, 1999). However, the reason why Slovene firms financed new projects with more expensive debt was not to maximize value of equity, but to increase wages. Namely, despite the privatization done via voucher scheme cash flow distributed through wages was greater than benefits of internal ownership. However, this could only be done when creditors were ready to lend. This was rather uncommon, since majority of firms operated with losses. Additionally, weak possibilities for external debt financing were created by potential internal owners (managers and employees) wanting to picture weaker financial position of the firm with the goal of buying-out the firm (Mramor et.al, 1999). That means that Slovene firms did not follow the objective of shareholder value maximization, but goals of the employees, which supports the institutional argumentation of capital structure of Rajan and Zingales (1995). Figure 1 shows the dynamics of extent of debt sources of finance used in 44 Slovene blue-chip firms in the period 1997-2003. Largest Slovene firms increased *debt-to-capital ratios*, and are therefore expected to have made moves away from determinants from the circumstances described above. Firms are grouped by industry (real estate, trade, manufacturing, and transport and communication), since industry to

a large extent determines the risk profile of the firms through similar cost structures.[1]

In Slovenia, the highest debt ratio is reached by firms that operate in the real estate industry. On average *debt-to-capital* ratio amounted to 30.4 percent in 2003, and is followed by 22.6 percent in trade, 16.9 percent in manufacturing, and 7.4 percent in transport and communication, which is funded in the most conservative way.

Except in manufacturing, where firms are to a far largest extent homogenous, firms exhibit different levels of debt usage within same industries. Namely, there is only small volatility in *debt-to-capital* ratios among manufacturing firms. Besides, they are stable, whereas other industries face increasing volatility in time.[2] In general, firms do not follow the same capital structure policies. In fact, they exhibit quite different dynamics in time, but trend is sloping upward.

Comparison of Slovene largest firms and their European (EU15) counterparts as of December 31, 2002, reveals that extent of debt financing is substantially different. Data, used for that purpose Table 1, was obtained from AJPES tape for Slovene firms and Bank for the accounts of Companies Harmonized (BACH) database for EU15 firms. Although, not entirely methodologically consistent, comparison still reveals important differences in usage of debt among the studied countries. [3]

[1]Debt is calculated as ratio of long-term financial and operating liabilities, long-term debt securities, and short-term liabilities to banks in total capital of the firm. Therefore, for the period 2002-2003, numerator consists of items AOP070, AOP071, AOP072, AOP073, AOP074 and AOP077, and denominator of the same items plus equity - AOP050 (AJPES, 2004). For the period of 1997-2001, in the numerator items AOP031 and AOP034 are summed up, and denominator consists of AOP031, AOP034 and AOP021. Short-term liabilities to banks are taken into account because of the fact that Slovene firms use short term-liabilities to finance long term assets, but those debt arrangements are being rolled-over from one period to another (Berk, 2003). Short-term financial liabilities to banks represented 145 percent of all long-term liabilities of firms in 2002, and 134 percent in 2003.This contrasts the finding of Valsan (2005) for Romanian listed firms, which despite relatively high profitability use only very little short-term debt.

[2]The most leveraged firm in the real estate industry has exhibited *debt-to-capital* ratio of 89 percent. Coefficients of variation for real estate, trade, manufacturing and transport and communications are 0.59, 0.40, 0.27 and 0.83, respectively.

[3]As argued by Rajan and Zingales (1995) because of institutional differences and accounting standards, firms from different countries exhibit different debt levels. Main reason for that is degree of consolidation, degree of conservatism used by compiling financial statements (it is believed, that countries of German law (Nobes and Parker, 1991) place less emphasis on "true and fair" valuation of assets), and degree of inclusion of various marginal items in the balance sheet (i.e. lease financing). At Directorate General for Economic and Financial Affairs and European Committee of Central Balance Sheet Balance Offices

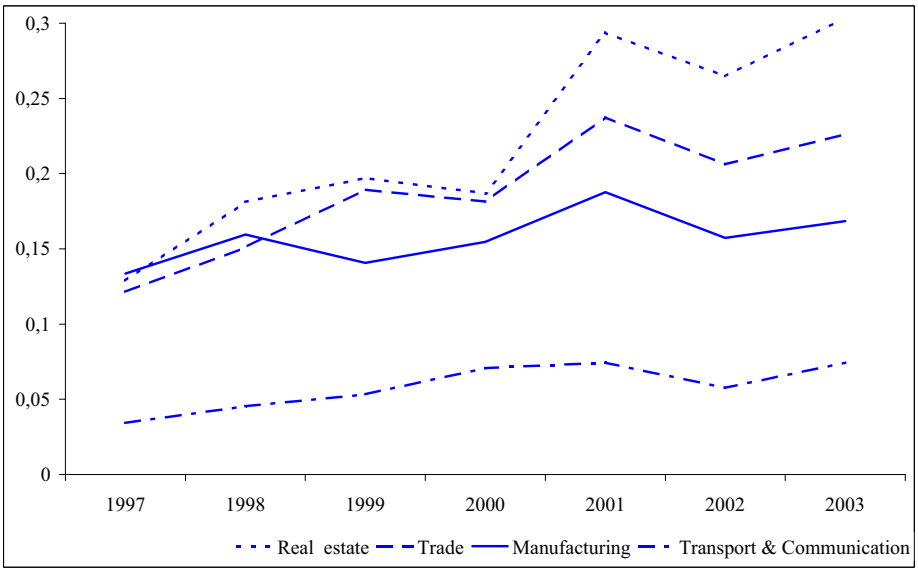


*Figure 1: Debt-to-Capital Dynamics by Industry*

*Source:AJPES database 1997-2003*

Data show that on average Slovene firms reach level of less than a half of the indebtness of European firms in the comparable industry and size. European firms operating in transport and communication, even reach ten-times higher *debt-to-capital* ratios. This paper tests for determinants that are driving extent of leverage in Slovene economy after it was substantially influenced by institutional factors.

Validity of signaling capacity has also been substantially tested in the literature, by observing the stock prices following new debt issues. Authors have

admit that several accounting options are open to member states by compiling financial statements. Despite that BACH remains relatively comparable framework for the statistical presentation of company accounts. Conceptually, comparable size of firms to Slovene *blue-chip* firms and the same items ware considered - "F.2 Creditors: Amounts payable within one year; Amounts owed to credit institutions", "Creditors: Amounts payable after more than one year" and "Capital and Reserves".

| | *Manufact* | *Trade* | *Transport* | *Real Estate* | *All ind.* |
|---|---|---|---|---|---|
| Netherlands | 33 | 42 | 71 | 33 | 45 |
| Belgium | 41 | 29 | 55 | 40 | 41 |
| France | 33 | 39 | 72 | 28 | 43 |
| Spain | 35 | 25 | 58 | 47 | 41 |
| Italy | 42 | 46 | 36 | 60 | 46 |
| Austria | 40 | 48 | 30 | 72 | 47 |
| Portugal | 28 | 45 | 63 | 61 | 49 |
| Finland | 30 | 25 | 45 | 25 | 31 |
| EU Average | 35 | 39 | 54 | 46 | 43 |
| Japan | 32 | 54 | 56 | 48 | 47 |
| Slovenia | 16 | 21 | 6 | 26 | 17 |

*Table 1: Comparison of Debt-to-Capital ratios (December 31, 2002)*
*Source: AJPES 2002 database; BACH database; author's calculation.*

founded their approach on *event studies* (Asquith and Mullins, 1986; Loderer et.al, 1991), where short-term price movements of issuing firm's stock were calculated and compared to control groups of firms. Over the last couple of years this approach has been to a great extend replaced by measuring and testing *long-horizon stock performance*, which rests upon *bootstrap testing* (Kothari and Warner, 1997). Spiess and Affleck-Graves (1995) as well as others confirmed conclusions related to equity financing, drawn from event studies. Findings were robust even in the case of accounting for Fama and French (1992) and Fama and French (1995) risk profile factors.[4] Firms with new issues of stock underperform compared to their peer group. They argue this conclusion holds regardless of the length of presence in the market (i.e. in the case of *initial public offerings* as well as *seasoned equity offerings*).

Besides the underperformance of stock issues, Spiess and Affleck-Graves (1999) document long-horizon underperformance of debt issues. Namely, stock performance of firms that issue substantial amounts of new debt has been found to be worse than stock performance of the comparable firms. Similar findings can be found in Dichev and Piotrosky (1999) as well as in Jewell and Livingston (1997). Though, underperformance is only documented for special types of debt. Negative relative performance in Dichev and Piotrosky (1999) shows up only for shares of firms that issue marketable debt, but not for closely held debt securities or bank loans. Jewell and Livingston (1997)

[4]Those are still widely accepted, but there are some voices arguing that only adjusted model might capture those factors correctly, but not their simplest model (see Daniel et.al (2001)).

argue underperformance only happens to firms that issue debt with lower credit rating.

Article has two merits. I test various determinants of leverage for *blue-chip* Slovene firms on the one hand, and perceptions of investors that are connected to new substantial levels of debt in those firms. Those perceptions are measured by employing methodology that is being found in separate papers from that field. To reach that goal, I measure stock performance of newly indebted firms compared to stock performance of their peer group firms.

# 2 Determinants of debt financing

The goal of the first part of this article is to empirically test various determinants of capital structure in Slovene *blue-chip* firms. Reasons for debt usage and thus variables that are tested by many authors, are numerous. For example, in their seminal work Titman and Wessels (1988) test for tangibility of assets (ratio of fixed to total assets), value of non-debt tax shields, growth rate, uniqueness of assets, size of the firm, volatility of operating profit, and profitability (authors use ratio of operating profit to sales). However, all test the validity of either theoretical foundation - i.e. *trade-off theory* or *pecking order theory.*

Harris and Raviv (1991) present various models used in published work of others. They add five more typical variables to the work of Titman and Wessels (1988): share of research and development expenses, share of marketing expenses, estimate of probability of financial distress, growth opportunities (Goyal et.al (2002), Pandey (2001) and Krishan and Moyer (1997), and current stock price (Hovakimian et.al, 2001).

***Hypothesis I:*** *I test the hypothesis about the determinants of leverage in 44 Slovene largest firms listed in Ljubljana Stock Exchange. Null hypothesis predict that there exists no variable that can influence the extent of debt financing, which means neither trade-off theory nor pecking order theory explains capital structure decisions of Slovene blue-chip firms.*

In the model I test the dependence of leverage $LEV$ (see footnote 1 on page 4 for definition od *debt-to-capital* ratio) on tangibility of assets $TANG$, growth rate of sales $g(S)$, market-to-book ratio $MtB$, size of the firm (measured by

sales) $ln(S)$, volatility of operating profit $DOL$[5], profitability/return on invested capital $ROIC$[6], and value of non-debt tax shield $NDTS$. Aggarwal (1981)and Krishnan and Moyer (1997) provide evidence that industry significantly impacts leverage. I use two dummy variables in the model to test for industry effects: $D_{TRADE}$ for trade, and $D_{MANUFACT}$, for manufacturing[7].

Model looks as follows:

$$\begin{aligned} LEV_i &= \alpha + \beta_1 TANG_i + \beta_2 g(S)_i + \beta_3 MtB_i + \beta_4 ln(S)_i + \\ &+ \beta_5 DOL_i + \beta_6 ROIC_i + \beta_7 NDTS_i + \beta_8 D_{TRADE,i} + \\ &+ \beta_9 D_{MANUFACT,i} + \varepsilon_i. \end{aligned} \quad (1)$$

According to the two building blocks of capital structure theory, the tested variables have the following impacts:

- *Tangibility* of assets is assumed to have positive impact on usage of debt. Higher *fixed-to-total assets* ratio provides greater possibilities for collateralizing bank loans or other debt arrangements (Myers, 1977).

- *Growth rate of sales*[8] are also assumed to have positive impact on relative level of debt (Baskin, 1989). Firms experiencing faster growth of sales generally need more current as well as fixed assets, which call for greater amount of sources of finance. When retained earnings do not suffice, firms raise debt.

-*Market-to-debt ratio* measures future growth opportunities. Empirical studies do not offer unique conclusions. On the one hand, growth opportunities are generator of higher future sales, which require more debt financing, but on the other, they indicate high firm's stock value. This could be motivation for issuance of new stock, which is cheap for the existent stockholders. Goyal et.al (2001) in the study based on U.S. defense industry confirm negative, but Titman and Wessels (1988) find support for positive impact of growth opportunities on leverage. Pandey (2001) does not find any significant differences.

[5]Instead of standard deviation of changes in operating profit, degree of operating leverage $DOL$ is used to test volatility. Reason for doing that is too short time series of operating profit available for its calculation. $DOL$ measures business risk by ratio of gross profit and operating profit, which rises with the relative extent of fixed costs.

[6]$ROIC$ is defined as ratio of operating profit after tax to net operating assets.

[7]Small number of firms does not allow inclusion of more dummies, therefore I only test additional effect for firms operating in manufacturing and trade.

[8]$g(S)$ is computed from sales of the last three years of studied period (in the model for year 2001, from sales in 2001, 2000, and 1999).

- *Size of sales* should be a driver for the greater extent of debt financing. The reason for that one can find in fact that larger firms have the ability to faster (and with greater ease) cover potential costs of financial distress. Besides, their assets are more diversified than assets of their smaller counterparts (Rajan and Zingales, 1995).

- *Degree of operating leverage* is on the contrary assumed to have negative impact. $DOL$ is used as a proxy for earnings volatility, and greater volatility should make managers more cautious by leveraging the firm, since debt causes more fixed liabilities that increase volatility of net income.

-*Profitability* should also be negatively related to *debt-to-capital* ratio. A firm that earns more income can finance its future operations with internally generated funds. That means that those firms have relatively smaller needs for debt, and should decrease usage of debt in time. Titman and Wesels, 1988, Pandey, 2001, Rajan and Zingales, 1995, and Pandey (2001), all find significant negative relationship between profitability (which can be quite differently defined) and leverage.

-*Value of non-debt tax shields* is assumed to have negative impact on relative debt levels. Debt brings tax benefits to the firms, and existence of tax benefits other than debt, decreases the need for tax benefits caused by debt, since on the long run firms can not pay negative taxes. Firms simply take advantage of other income-saving vehicles. In empirical testing, I use the approximation used by DeAngelo in Masulis (1980) and assume 12.5 percent effective corporate tax, which is documented in Poročevalec (2004):[9]

$$NDTS = EBIT - I - \frac{T}{0.125}, \tag{2}$$

where $EBIT$ represents operating income, $I$ interest payment, and $T$ amount of corporate tax paid.[10]

OLS regression specification also includes two dummy variables (for trade and manufacturing). Model is estimated for the period 2000-2001 and 2002-2003. This modeling follows the approach of Krishnan and Moyer (1997), and Pandey (2001). Despite the fact that in both time periods models with included intercept explain somewhat less variability of leverage, more appropriate model is the one that includes intercept $\alpha$. The reason is multico-

[9]Average effective corporate tax rate for Slovene firms was 12.6 percent in 2000 and 2001 and 12.5 percent in 2002.

[10]Lower amount of tax paid is the result of depreciation, amortization, interest payment, and other items: $T = 0.48(EBIT - I - NDTS)$.

| | *Dependent variable* $LEV_{2001}$ *Independent variable averages in 2000 and 2001* | | | |
|---|---|---|---|---|
| | *with intercept* | | *without intercept* | |
| | *coefficient* | *t-test* | *coefficient* | *t-test* |
| *intercept* | -0.618 | -0.880 | | |
| $TANG$ | -0.562* | -2.208 | -0.612* | -2.211 |
| $g(S)$ | -0.011 | -1.366 | -0.031 | -0.865 |
| $MtB$ | 7.38E-5* | 2.107 | 6.68E-5* | 2.450 |
| $ln(S)$ | 0.069 | 1.583 | 0.073 | 0.830 |
| $DOL$ | 0.223 | 1.326 | 0.223 | 1.893 |
| $ROIC$ | -3.033** | -2.905 | -3.033** | -2.905 |
| $NDTS$ | 9.01E-08 | 1.670 | 9.01E-08 | 1.670 |
| $D_{TRADE}$ | 0.034 | 0.301 | 0.050 | 0.200 |
| $D_{MANUFACT}$ | -0.556 | -0.890 | -0.710 | -0.760 |
| *Adj.* $R^2$ (*F-test*) | 0.532(2.77) | | 0.786(5.88) | |

*Table 2: Determinants of Leverage (2000-2001)*
*Source: Ljubljana Stock Exchange, Inc. 2000-01 database; AJPES 1999-01 database; author's calculation.*

linearity due to inclusion of industry dummy variables. Variance inflation factors - $VIF$s by some variables in the non-intercept models lie in interval between 100 and 200. In the case of intercept-models they reach maximum of 3. [11]

Debt levels are computed at the end of the two-year period for which independent variables are used. Table 2 and Table 3 indicate validity of pecking order theory for the periods 2000-2001 and 2002-2003. Namely, profitability (return on invested capital) negatively impacts leverage, finding already documented by Mramor and Valentinčič (2001). Positive and statistically significant (not in a 2002-2003 model including intercept; see Table 3) regression coefficient $\beta_3$ (*market-to-book ratio*) indicates higher degree of debt financing in firms which have higher growth opportunities. [12] This finding

[11] In addition to *OLS regression*, Pandey (2001) also suggest regressing the same variables in *pooled regression* (pooling of variables regardless of the time period) and *panel data regression*. Because the results are not substantially different from OLS regression results, pooled regression in omitted. Panel data is not appropriate approach to follow in Slovene case in that time period. The reason are changes in accounting standards, which caused substantial non-systematic gradual changes in some balance sheet and income statement items in the period of 2001-2003.

[12] Equating high $MtB$ value to high growth opportunities can still to some extent be hazardous, since at least at the beginning of the studied period Slovene capital market

supports Slovene corporate reality, which shows that firms do not issue new equity, at least new publicly traded stock.[13] In that aspect Slovene firms act differently compared to European firms, for which Bancel and Mittoo (2003) argue, that capital structure depends on current capital market conditions. They try to maintain flexibility and use cheap equity sources when stock price is high (when *market-to-book* is high).[14] What seems to be counter-intuitive, is negative impact of tangibility. Namely, greater relative fixed assets improve possibilities of using debt sources of finance. But this capacity is certainly not being capitalized. Mramor and Valentinčič (2001), who documented negative relation as well, argued that this can indicate that Slovene firms listed on the Stock exchange follow predominantly post-Keynesian theory, whereby less risky operations (operations supported with more fixed assets are assumed less risky) are financed less with debt and more with equity. Another reason, although empirically not tested, could be revaluation of the fixed assets. Namely, to compensate for inflation accountants were allowed to revalue fixed assets. This issue did not confuse banks by seeing their value of collateral available by raising new debt.

Slovene firms started to use more and more debt sources of finance. Research, based on survey[15] of Slovene CFOs in 2002 indicated three primary reasons for debt usage: decreasing trend of interest rates, current relative level of leverage, and higher expected rate of return of new projects. Maturity matching and lower business risk were indicated as less relevant.[16] Firms use cheaper debt, which helps decrease cost of capital, and leaves more cash flow from profitable projects in the hands of owners (creditors are not entitled to upside potential). Bancel and Mittoo (2003) and Bancel and Mittoo (2004) also find greater usage of debt in case of decreasing interest rates for European firms, but addition driver at work in Slovenia is real convergence of interest rate rather than mere interest rate mean-reversion.

The 2002 survey additionally shows that CFOs of the Slovene largest firms

was not believed to be semi-strong efficient (Deželan, 1999).

[13]Increased debt usage also report Kjellman and Hansen (1995) for Danish firms. Danish managers try to avoid dilution of voting control.

[14]Authors present this argument more in the time series fashion rather than cross-section, but similar logic applies to particular stock, compared to its peer group.

[15]Survey was done by Slovenian Institute of Auditors and Research Center of Faculty of Economics of University of Ljubljana. See Berk (2003a) for details.

[16]Relevance of each factor was measured on five level scale: decreasing trend of interest rates 3.57, current level of indebtness 3.54, greater return on new projects 3.43, asset-liability maturity matching 3.16 and lesser extent of business risk 3.07. Interestingly, survey results show that firms closely follow the debt levels of peer firms. Low significance of maturity matching gives additional support for inclusion of short-term bank debt into by the leverage calculation.

| | *Dependent variable* $LEV_{2003}$ *Independent variable averages in 2002 and 2003* | | | |
|---|---|---|---|---|
| | *with intercept* | | *without intercept* | |
| | *coefficient* | *t-test* | *coefficient* | *t-test* |
| *intercept* | -0.1746 | -0.4933 | | |
| $TANG$ | -0.6423* | -3.3655 | -0.485* | -2.588 |
| $g(S)$ | 0.0502 | 1.7636 | 0.0149 | 0.5315 |
| $MtB$ | 3.49E-05 | 1.6072 | 5.316E-5* | 2.4937 |
| $ln(S)$ | -0.1746 | 1.7278 | 0.0096 | 0.4516 |
| $DOL$ | 0.1381 | 0.9235 | 0.1876 | 1.2793 |
| $ROIC$ | -1.2411 | -1.4499 | -1.6090* | -2.0161 |
| $NDTS$ | 4.76E-09 | 0.1982 | -3.6198E-09 | -0.1535 |
| $D_{TRADE}$ | -0.0180 | -0.2277 | 0.1997 | 0.5256 |
| $D_{MANUFACT}$ | 0.2010 | 0.9820 | 0.1709 | 0.4922 |
| *Adj.* $R^2$ *(F-test)* | 0.432 (2.45) | | 0.733 (7.98) | |

*Table 3: Determinants of Leverage (2002-2003)*
*Source: Ljubljana Stock Exchange, Inc. 2002-03 database; AJPES 2001-03 database; author's calculation.*

estimate long term debt as about equally appealing source of finance as retained earnings, which means shift towards greater use of debt from what is documented by Mramor and Valentinčič (2001), who also performed similar survey among Slovene CFOs in 1997. Reason for that might be decreasing interest rates, current low levels of leverage, greater business opportunities and needs that can not be financed with internally generated funds.[17] Data limitation does not allow to test for the riskiness of new investement opportunities, which would help test for the validity of post-Keynesian theory, which Mramor and Valentinčič (2001) could not reject.

Traditionally, Slovene firms have used retained earnings, and without large opportunities to invest, this would to a large extent still be the case. Independence of external sources of finance is one of the highest ranked goals of Slovene firms. This is the result of privatization and resulting low negotiating power of owners compared to managers. The 2002 survey (Berk, 2003a) shows that costs of equity capital still do not reach higher than one percentage points above cost of long-term debt, indicating small equity risk premium. For the past, one should therefore not be surprised that Slovene firms were mainly equity financed (as shown in Table 1).

[17]In further empirical work one should be aware of changes in Slovene GAAP in the period between the two surveys.

# 3 Long-term Performance of Firms with Increasing Levels of Debt

***Hypothesis II:*** *In the null hypothesis, no impact of new substantial levels of debt on accounting and market performance is assumed and thus neither superior performance nor underperformance can be supported.*

Rough comparison of firms that substantially increased levels of debt compared to firms that did not change debt ratios shows, that market performance of the first group was not any higher. Firms, that increased debt ratios for more than five percent of the total assets in 1999, reached stock price increase of 116.7 percent in the following three years. However, their counterparts with unchanged debt ratios reached 117.4 percent. The same analysis in year 2000 shows, that the first group reached 64.7 percent market performance, and the second group 152.1 percent. Shortcoming of this analysis is that firms in both groups are not controlled for risk profile. Regardless of controlling for size, one would expect that the first group would exhibit greater stock performance, since Slovene firms are leveraged to a much lesser extent, and there should be more room to increase value of shareholders.

I follow Krishnan and Moyer (1997) and regress return on equity on various variables that might explain accounting return, including leverage. Additionally to the approach proposed by cited authors I also regress market return ($YLJSE$) on all variables. OLS regression model for testing relevant determinants of performance is the following:

$$\begin{aligned} ROE_i &= \alpha + \beta_1 LEV_i + \beta_2 g(S)_i + \beta_3 ln(S)_i + \beta_4 DOL_i + \beta_5 TATO_i + \\ &\quad + \beta_6 PR_i + \beta_7 D_{TRADE,i} + \beta_8 D_{MANUFACT,i} + \varepsilon_i. \end{aligned} \tag{3}$$

where, additionally to the above variables, $PR$ represents *labor productivity*(measured by costs of goods sold, adjusted for changes in inventory), and $TATO$ *total assets turnover*. Impact of additional relative debt levels of Slovene *blue-chip* firms on performance is tested in three independent ways. Results of the first are shown in Table 4 and Table 5. They are based on linear OLS regression.

Return on equity is measured on December 31 of the last year of the relevant testing time period (2001 for the period of 2000 and 2001; and 2003 for the period of 2002 and 2003). Market performance, based on *buy-and-hold*

| | *Dependent variables:* $ROE_{2001}$, $YLJSE_{2002}$ *Independent variable averages 2000 and 2001* | | | |
|---|---|---|---|---|
| | *ROE* | | *YLJSE* | |
| | *coefficient* | *t-test* | *coefficient* | *t-test* |
| *intercept* | -0.028 | -0.467 | 1.087 | 1.017 |
| $LEV$ | -0.022 | -0.671 | 0.454 | -0.796 |
| $g(S)$ | -0.001 | -0.920 | -0.018 | -0.993 |
| $ln(S)$ | 3.73E-03 | 1.035 | 0.22E-03 | 0.097 |
| $DOL$ | -0.036 | -1.223 | 0.229 | 0.466 |
| $TATO$ | 0.0435*** | 4.191 | 0.042 | .242 |
| $PR$ | 1.342E-05 | 1.217 | -2.227E-05 | -0.122 |
| $D_{TRADE}$ | -0,0439* | -2.499 | -0.335 | -1.161 |
| $D_{MANUFACT}$ | 0.054 | 1.120 | 1.005 | 0.076 |
| *Adj.* $R^2$ *(F-test)* | 0.552 (4.62) | | 0.118 (0.469) | |

*Table 4: Determinants of accounting and market performance (2000-2002)*
*Source: Ljubljana Stock Exchange, Inc. 2002 database; AJPES 1999-01 database; author's calculation.*

*strategy YLJSE* is measured in the year, following the period of accounting variables calculation.[18]

Results in Table 4 and Table 5 show that market performance of Slovene firms can not be explained by any of the selected independent variables. On the other hand, accounting performance - return on equity $ROE$, is dependent on one variable. That is total assets turnover $TATO$. That means that leverage does not drive performance of studied group of firms, but efficiency does.

Second approach is based on *bootstrapping*. This technique differs from common statistical testing in the way that it is prone to *spurious regression* (Kothari in Werner, 1997). To employ the method, one has to separate the two groups, in which firms are comparable regarding risk characteristics, but differ in certain variable that is used for testing. In my case that variable is debt ratio. First group comprises firms that substantially increased debt ratio in particular year.[19] The second group comprises firms that did not substantially increase leverage, and are comparable to the firms from the first group.[20] Firms are included in the first group regardless of year in which

[18]Calculation of market performance is four months lagged to account for the fact that until April, there is no public information on leverage.

[19]Substantial increase is defined by new debt ratio that is greater from debt ratio from previous year by five percent of total assets as in the work of Krishnan in Moyer (1997).

[20]Fama and French (1992) and Fama and French (1995) found out, that risk profile

| | *Dependent variables:* $ROE_{2002}$, $YLJSE_{2003}$ *Ind. var. avgs.: 2000 and 2001 ROE and YLJSE* | | | |
|---|---|---|---|---|
| | *ROE* | | *YLJSE* | |
| | *coefficient* | *t-test* | *coefficient* | *t-test* |
| *intercept* | -0.067 | -0.955 | 1.2339* | 2.027 |
| $LEV$ | -0.014 | -0.413 | 0.096 | 0.357 |
| $g(S)$ | 0.000 | -0.025 | 0.022 | 0.479 |
| $ln(S)$ | 1.87E-03 | 0.394 | -9.74E-03 | -0.231 |
| $DOL$ | -0.058 | -1.633 | -0.512 | -1.809 |
| $TATO$ | 0.1405** | 2.887 | 0.495 | 1.238 |
| $PR$ | 2.250E-05 | 1.808 | 6.418E-05 | 0.642 |
| $D_{TRADE}$ | -0.034 | -1.617 | -0.038 | -0.230 |
| $D_{MANUFACT}$ | 0.054 | 1.344 | 1.455 | 0.344 |
| *Adj.* $R^2$ (*F-test*) | 0.414 (2.65) | | 0.152 (0.65) | |

*Table 5: Determinants of accounting and market performance (2001-2003)*
*Source: Ljubljana Stock Exchange, Inc. 2003 database; AJPES 2000-02 database; author's calculation.*

they increased leverage. Inclusion into the second group is done firm-by-firm. For each substantially indebted firm from the first group, the most suitable non-substantially indebted counterpart is found, based on *market cap* and *market-to-book* ratio.[21] Statistical test used to test for significant differences is t-test of means for independent samples.

Table 6 shows results of bootstrapping for the period 1997-2002. Percentiles of debt increases are shown and their one-year lagged market performance, market performance of firms from the second group, and market performance of the whole capital market.

The third approach is based on the critique of Eugene Fame (1998), who argues that, bootstrapping techniques can not sufficiently solve dependence in cross section data. Buy-and-hold investment strategies arguably significantly underlie this problem. I follow Dichev and Piotroski (1999), and estimate the following model for impact of new significant levels of debt on market performance of the issuing firms' stock:

of firm's stock is possible to forecast. Two factors that determine it are size of the firm (*market capitalization*) and relationship between market value of equity and book value of equity (*market-to-book ratio*).

[21]For the second group candidate selection process 20 percent wide interval of *market-to-book* ratio is formed (10 percent in each direction). Among the candidates that qualify in that interval, firm with the smallest difference in size (*market cap*) is selected.

| | *Mean Debt-to-Capital* | *Mean Yield* | *Matched Yield* | *Market Yield* |
|---|---|---|---|---|
| 20th percentile | 0.0293 | 0.8316 | | |
| 40th percentile | 0.0390 | 0.9972 | | |
| 60th percentile | 0.0593 | 1.1362 | | |
| 80th percentile | 0.1410 | 1.3187 | | |
| More than 5 percent capital | 0.0500 | 1.1206 | 1.1467 | 1.2480 |
| Differences | | | | |
| Indebted vs. others | | | -0.0261 | -0.1274 |
| (*P-Value*) | | | (0.845) | (0.408) |

*Table 6: Bootstrap analysis of yield following material debt increases*
*Source: Ljubljana Stock Exchange, Inc. 1998-2003 database; AJPES 1997-03 database; author's calculation.*

| | $Intercept$ | $BtM$ | $MVE$ | $D_{LEV}$ |
|---|---|---|---|---|
| Mean | 1.2952 | -0.0540 | 0.0000 | -0.0223 |
| t-test | 13.059 | -1.3021 | 0.1466 | -0.3076 |

*Table 7: Yields following material debt increases: Fama-MacBeth regressions 1997-2003*
*Source: Ljubljana Stock Exchange, Inc. 1998-2003 database; AJPES 1997-2003 database; authors calculation.*

$$YLJSE_t = \alpha + \beta_1 BtM_t + \beta_2 MVE_t + \beta_3 D_{LEV,t} + \varepsilon_t. \tag{4}$$

where $YLJSE$ represents monthly performance of separate stock in time $t$, $BtM$ book-to-market value, $MVE$ market capitalization for particular stock and $D_{LEV}$ dummy variable, which has value 1 if firm has substantially increased level of debt within the year for which I estimate equation 4, and 0 otherwise. From the monthly estimates of [4], mean of time series of each regression coefficient is calculated. Ultimate testing is based on t-tests. Mean is compared to the standard error of separate regression coefficient (see Table 7).

Based on bootstrapping as well as on Fama-MacBeth regressions, I can conclude, that periods of substantial increases of debt in Slovene blue-chip firms are not followed neither by better not worse stock performance. Differences in mean market return between substantially indebted firms and non-

substantially indebted firms, as well as mean by the leverage dummy variable by Fama-MacBeth regression, point towards slight underperformance. However, differences are not significant. I can conclude that CFOs in the largest Slovene firms can not *a priori* send signals to investors about overvalued or undervalued stock price of their firms.

# 4 Conclusion

This article introduces drivers of capital structure decisions and provides empirical evidence for *blue-chip* firms from Slovene emerging capital market. In Slovene largest firms, the extent of debt financing can to a larger extent be explained by pecking order hypothesis rather than by trade-off theory. Namely, the use of debt is partly explained by return on invested capital and future growth opportunities (*market-to-book* ratio is used as a proxy), but not all specifications offer strong stratistical support. Better performace (measured by *return on invested capital*) decreases the extent to which Slovene firms are debt financed. This can be explained with greater amount of internally generated funds that can be invested into new productive capacity. This finding is in line with results of the survey done among Slovene CFOs three (Berk, 2003a) and seven years ago (Mramor and Valentinčič, 2001). Managers revealed that financial flexibility and minimal reliance on external sources of finance are their top financial objectives. Additionally, equity risk premium is still low compared to economies with longer capital market tradition. On the other hand, it has been shown that growth opportunities increase leverage (not significantly in 2003 model including intercept). This can be explained by the trade-off theory, since greater growth opportunities allow more external financing, since the revenue generation is stronger; by pecking order hypothesis, since after the depletion of retained earnings more debt is second-best to finance growth; and even by post-Keynesian theory proposed by Mramor and Valentinčič (2001) in case that new growth comes from new risky projects.

The second part of the analysis shows that leverage can explain neither higher accounting nor market performance. *Return on equity* is to a large extent explained by efficiency (significant *total assets turnover* ratio), but no significant determinant for market yield was found in this study. Slovene managers can neither signal their inside information to the investors. Material changes in *debt-to-capital* ratio are not followed by greater long-run performance. All methods employed (*OLS regression*, *bootstrapping* and *Fama-MacBeth regressions*) even show light tendency towards underperformance of firms that materially increased leverage in separate business years. However, statistical

significance was not found. One can conclude that capital structure decisions in Slovene blue-chip firms do not cause changes in value of the firms and thus the value of owners' wealth.

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