

THE PUZZLE OF ZERO-LEVERAGE CAPITAL STRUCTURE IN THE EMERGING MARKETS

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1. INTRODUCTION

For the past several decades there were a lot of research in the field of financing policy, particularly capital structure choice, while the fast-changing world and development of financial markets cause the creation of puzzles which cannot be explained by existed financial theories. One of these puzzles is the presence of firms following the zero or low leverage policy. The proportion of zero-leverage (ZL) firms varies from country to country making the situation blur regarding the motives of ZL or low leverage (almost zero-leverage – AZL) choice.

Whereas the majority theories try somehow to answer the question about ZL choice, the question of this puzzle remains opened. Analyzing the ZL phenomenon, we should consider that such low debt level may not be voluntary chosen. The mysterious fact in this issue comes from the motives, which force firms to follow no-debt policy, such as the peculiarities of financial constraints and flexibility.

In this research, we focus on the ZL phenomenon of firms' CS from the emerging markets, making a focus on the motives which cause these firms to adopt low or zero leverage policy. Our research tends to explain the ZL financing policy from different perspectives: the impact of financial constraints and flexibility, the influence of firm-(micro) and country- (macro) specific characteristics as well as corporate governance ones on the ZL choice, the interdependency between debt, payout and governance policies. Such complex and deep analysis hasn't been made yet regarding emerging capital markets.

We follow the methodology of several papers to compare and to determine in details: (1) patterns of financial flexibility and financial constraints; (2) motives of ZL choice among firms from emerging markets.

Our research demonstrates the results of CS choice among the large and small public companies with zero leverage (ZL), almost zero leverage (AZL) from countries classified as emerging markets (Asia, South America, Eastern Europe, Africa).

2. LITERATURE REVIEW

Financial flexibility and constraint motives

The ZL puzzle explanation can be made from two perspectives: financial constraints and financial flexibility. We can consider financial flexibility as an ability to act rationally in the time of unexpected changes in firm's cash flows or investment opportunities. The decision to issue debt is desirable, whilst the borrowing opportunity costs suggests that the target CS is more conservative than predicted by the trade-off model, and firms which stay financially flexible keep big cash holdings.

The low-debt firms try to settle financial flexibility by preserving debt capacity and issue debt at a time when it is possible to exploit the growth opportunities, while the firms with high-unused debt capacities and high level of financial flexibility make higher future investments than less financially flexible entities. Financially flexible firms are able to reduce investment distortions due to their better access to debt markets during crisis times and are aiming to save debt capacity for more constrained future periods.

There are various suggestions about the characteristics of financially constrained firms. The presence of asymmetric information related to asset risk leads to increased costs of debt issuance, and as a result firms are rationed by lenders. Also, the new borrowers without a good reputation may face difficulties in getting debt financing. The other explanation can come from

the point that constrained firms rely on bank financing to pass through liquidity shocks. While constrained firms do not have sufficient debt capacity they have to follow the ZL policy. The recent research of ZL puzzle in emerging markets shows that financially constrained are more likely to eschew debt whereas there is a group of highly profitable ZL firms that appear to be “self-sufficient” to meet their financing requirements.

Micro- and macroeconomic characteristics

The possible explanation of the ZL phenomenon can be related to the country-specific factors which force firms to use debt conservative policy. Firms are more likely to have high debt ratios among countries with more stable and healthier economic conditions. It has been found a negative relationship between the likelihood of a firm to be classified as ZL and the relative size of the deposits in a country.

Countries with high creditor protection and a common law show the higher fraction of ZL firms. Fan et al. (2012) show that a country’s legal system explains a high proportion of the variation in debt level, with common law systems being associated with lower debt ratios.

The extra explanation of the leverage choice can be made according to the country’s bankruptcy law which principles play an important role in setting the debt ratio acceptable for creditors. At the same time, in countries with equity-friendly procedures there is an explicit bankruptcy code specifying and restricting the rights and claims of creditors while facilitating the reorganization of a business.

From the firm-specific characteristics, ZL firms tend to be smaller, keep higher cash reserves, show higher market-to-book ratios and higher payout ratios. However, it is a complex task to harmonize all described and observed characteristics of ZL firms in the line of standard capital structure theories.

The recent study regarding motives influence on CS choice, such as financial constraints, flexibility and distress, has shown the dynamic behavior regarding debt policy. Additionally, the higher asset volatility increases the expected likelihood that firms will be ZL, whereas the higher age and size affect debt choice positively.

ZL phenomenon helps us understand particularly debt conservatism and generalize firms’ CS aligned to dividend policy.

Corporate governance characteristics

While there are some conflicting evidence about the effects of corporate governance mechanisms on ZL policy in developed economies, we try to examine the motives associated with governance and managerial characteristics among firms from emerging capital markets.

The choice to follow ZL policy can be potentially caused by the mechanisms of corporate governance that affect the behavior of firms’ managers and can cause debtless capital structure. The corporate governance characteristics can influence the financing policy choice through the managerial entrenchment and personal motives of managers.

Some theoretical models study the implications of managerial qualities such as optimism and overconfidence on leverage decisions, while the heterogeneous beliefs among managers and investors can lead to debt restrain in capital structure.

3. METHODOLOGY

The definition of motives’ measures

Financial constraints

We use the SA index because it takes into account the size and age of the firm – the influential firm characteristics, especially for emerging markets. This index is based negatively on size and age, and positively on size-squared:

$$SA = -0.737SIZE + 0.043SIZE^2 - 0.040AGE \quad (1)$$

where, Size is the logarithm of the total assets, Age is the number of years the firms is listed or did IPO¹.

The higher value of index, the more constrained a firm is. We use the index grouping over quintiles and drop the third quintile due to misspecification issue².

Financial flexibility

We come to the conclusion to use the measure which is closely correlated with financial flexibility and this measure is based on the excess cash level calculated through an optimal cash holdings model to find the required level of cash reserve. The construction of the equation is made as follow³:

$$Cash\ Holdings_i = \beta_0 + \beta_1 MTB_i + \beta_2 SIZE_i + \beta_3 CFTA_i + \beta_4 LEV_i + \beta_5 NWCTA_i + \beta_6 CAPEXTA_i + \beta_7 RD_i + \beta_8 DIV_i + \varepsilon_i \quad (2)$$

where i stands for i -firm, MTB is the market-to-book ratio, SIZE is the logarithm of total assets, CFTA is the net income before depreciation and amortization over book value of assets, NWCTA is net working capital over book value of assets, CAPEXTA is capital expenditure over book value of assets, LEV is total debt over book value of total assets, RD is the value of R&D expenses over the total assets and DIV is a dummy variable set to one if a firm pays dividends in that year and zero otherwise, ε_i – residuals. The residuals ε_i of the model are used as a proxy for the excess cash measure. Further, this measure is grouped according to the median value: flexible – higher than median, and inflexible – lower than median.

ZL choice under different effects

Leverage definition. Following the major research approaches we are going to determine the method of leverage calculation. We define the book leverage ratio of firm as:

$$BL_{it} = (LTD_{it} + STD_{it}) / TA_{it}, \quad (1)$$

where LTD – the amount of long-term debt exceeding maturity of one year, STD – debt in current liabilities or short-term borrowings, TA – total assets of the firm.

ZL and AZL firms' definition. We define firm as ZL firm in particular year if the outstanding amounts of both short-term debt (STD) and long-term debt (LTD) are equal zero or less than 1%.

Exploring firms with low leverage rather than ZL firms may have a confounding effect for our inference. These firms possess a marginal debt presence in their capital structure and are classified as AZL if book leverage ratio is less than 5%.

Firm-level effect.

We have defined the next list of hypothesis to test the impact of firm-level characteristics on the financing policy choice:

H1: the firms with high tax payments are more likely to be ZL firms and these payments cause positive influence on firm's ZL choice.

¹ Due to specific nature of emerging markets, we consider that estimation of firm's age through its IPO date can be unreliable due to the presence of firms with long history, but with comparably recent IPO. The date when these firms were founded can be better proxy to estimate the constraint measure. That is why we check this assumption in the test section during the robustness check.

² Users of the KZ and SA indexes apply the coefficients of initial models to their sample. Despite the warnings, the practice continues.

³ The model also includes the mean cash-flow standard deviation of firms in the same industry over previous 5 year (INDSIGM) as an additional explanatory variable (Opler et al., 1999). However, we could not obtain necessary information for firms in our sample and remove this variable from our model. Also, the model is estimated for each year and industry separately, which means that there is no need to control for year and industry dummies in the model.

H2: the high payouts are positively related to probability of maintaining a ZL policy.

H3: ZL firms show high cash holdings, and reliance on new equity financing – both measures cause positive impact on ZL choice in the firms' CS policy.

H4: the high level of assets risk is inherited by ZL firms making the impact positively related to ZL choice.

Country-level effect.

We have defined the next list of hypothesis to test the impact of country-level characteristics on the financing policy choice:

H5: the difference between common law countries and civil law countries among emerging capital markets is influential.

H6: the countries with high LRPI to have more ZL firms than countries with low creditor protection, thus high LRPI positively affects the ZL choice.

H7: the variables which define the development of the country's financial system⁴ cause negative effect on firms to follow the ZL policy.

Managerial characteristics

We have defined the next list of hypothesis to test the impact of managerial (corporate governance) characteristics on the financing policy choice:

H8: the small board of directors and the absence of outside directors are associated with ZL policy.

H9: the impact of insider ownership is influential for the debt policy choice.

H10: the presence of institutional investors and state ownership negatively affects the probability to follow ZL policy.

4. SAMPLE, DATA AND PRELIMINARY ANALYSIS

Sample description

We collect annual balance sheet, income and cash flow statements, market and corporate data of exchange-listed firms from the Capital IQ database over the period from 2010 to 2016. Based on the country classification our sample comprises all active traded industrial firms from 11 countries that are classified as emerging markets. Considering the specific nature of financial and utility firms (Capital IQ classification), we omit them in our sample. Staying in the line with the majority of research, we omit firm-year observations with missing information of main financial indicators and we winsorize all variables at the 1% and the 99% tails to deal with potential outliers. After concluding data cleaning steps, our final panel data set includes 4,130 industrial firms with 20,692 firm-year observations denominated in US dollars. The analysis of managerial characteristics impact over the debt policy choice is going to be cross-sectional. The number of observations used for corporate governance influence analysis totaled to 3,606 observations.

Data description

Most importantly, the median book leverage ratio is 15.1% for the full sample, whilst this indicator for the groups is between 10.8% (constrained) to 14.2% (flexible). Being constrained flexible, firms choose around 9.5% of leverage on average while being unconstrained flexible the

⁴ These variables include GDP per capita growth rate, inflation rate, market value and the level of credits issued by the financial sector.

level of leverage on average rise to 21.7%; constrained inflexible, 11.7% and unconstrained inflexible, 19.7%.

Other variables are in the line with our expectations and logic.

Industry effect

To analyze the effect of changes in the overall industry structure, we allocate all firms to industries according to the S&P Capital IQ database industry classification⁵.

Although ZL firms are not limited to certain industries, they are concentrated in the information technology, consumer discretionary and industrials sectors. The second industries are healthcare and materials. As the ZL firms, the total dynamic of AZL is positive and the number of AZL firms has almost doubled between 2010-2016 years overall.

The proportion of distribution of AZL firms among the defined industries is the similar to ZL firms.

Univariate analysis

The univariate analysis has helped us to conduct the preliminary analysis of impact caused by firm-level variables among groups of firms: constrained vs unconstrained and flexible vs inflexible. In addition, the univariate analysis has revealed that the cross-multiplication (constrained-flexible etc.) of the motives measures is influential for analysis of leverage puzzle.

5. RESULTS OF THE ECONOMETRIC MODELS

Multivariate firm-level analysis

We have found that:

- Financial constraints caused positive effect on ZL choice, while financial flexibility – negative;
- Both constraints and inflexibility increase the probability to follow ZL policy;
- Age, market-to-book, payout ratio, tax payments, cash holdings and business risk affect positively ZL choice, whereas equity issuance, size, growth opportunities and tangibility – negatively.
- Financial flexibility is the main driver for firms not to follow AZL policy;
- The other firm-level variables coincide with ZL pattern.

Multivariate country-level analysis

Estimating the impact of country-level variables and having combined them with firm-level ones, we have determined that:

- Level of financial system development and inflation in the countries positively affect the ZL and AZL choices;
- Higher market capitalization in the country, less probable is the pattern to follow ZL and AZL policies;
- Creditors protection level positively affect firms to choose zero or almost zero capital structure.

⁵ The industries' classification has been taken from the S&P Capital IQ database, where Consumer Discretionary – goods and services that are considered non-essential by consumers, but desirable if their available income is sufficient to purchase them – durable goods, apparel, entertainment and leisure, and automobiles; Consumer Staples – essential products, like food, beverages, tobacco and household items, goods that people are unable or unwilling to cut out of their budgets regardless of their financial situation.

Multivariate corporate governance analysis

The analysis of corporate governance (CG) pattern resulted in ambiguous results. All the coefficients either show the statistically insignificant result or change the sign (direction of impact) depending on the set of firm- or country-level variables. Whereas, in the model solely with CG characteristics, the level of individual ownership (concentration level) causes the positive impact on ZL/AZL policy choice.

6. ROBUSTNESS TESTS

This Section describes our consideration regarding the possible robustness in the determining of the AZL firms (1) and age variable misspecification (2).

We summarize the first test conducted to evaluate the robustness of the empirical findings. In order to check the robustness of our firm- and country-level results for the AZL firms we check whether the 10% threshold can be used for the description of AZL firms⁶.

In the second test, we choose the age in relation to the founded year.

Generally, the robustness test shows that our findings are not driven by the mistakable determination of the AZL firms. Moreover, we support our ideas that the IPO year is the better proxy for firm's age.

⁶ Due to arguments in academic literature regarding the optimal or necessary leverage level for indicating the almost zero-debt pattern.