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OVERVIEW AND ESTIMATION OF THE 2008 FINANCIAL AND ECONOMIC CRISIS 'EFFECT SIZE' ON SME CAPITAL STRUCTURES: CASE OF SLOVENIA

ABSTRACT

*Myriad factors have been identified to impact a company's capital structure. However, the majority of academic interest is focused on the internal (company) determinants of capital structure, and much less on external environment determinants, such as restricted access to financial resources; especially for micro, small and medium-sized companies (SMEs). As a small country, and member of the EU and Eurozone, Slovenia provides an ideal setting for the study of the impact of the 2008 financial and economic crisis on the capital structures of SMEs; especially given the dominance of the banking sector, as the prime financing vehicle for companies. In this context we employ a novel power analysis estimation approach in the literature, employing Cohen's *d* and McGraw-Wong's common language (CL) effect size statistics. We analyzed the capital structures of Slovenian SMEs between 2006 and 2009. Our study shows that SMEs were unable to tap into "soft budget constraints" made available by the banking sector to large companies, and have been correspondingly harder hit by the crisis.*

Keywords: *SMEs, Capital structures, 2008 crisis, Power analysis, Cohen's *d* statistic, CL effect size statistic, Slovenia.*

JEL keywords: *G01, G21, G32, O16, C18.*

1. INTRODUCTION

The question of optimal company capital structure – not just a mixture of equity and debt, but also their types used to finance company assets – has been at the forefront of academic interest for over 50 years. So far, myriad factors have been identified, including (but not limited to): *company size, profitability, liquidity, asset structure and growth opportunities*. In this context, the majority of academic interest is focused on the internal (company) determinants of a company's capital structure, and much less on external environment determinants (constraints), such as restricted access to financial resources; especially for micro, small and medium-sized companies (now on denoted as SMEs) (Rouse & Jayawarna, 2006). In this regard, some describe SMEs as the "*disadvantaged real sector*" (Rouse & Jayawarna, 2006, p. 389), while others believe them to be "*financially frustrated*" (Vos et al., 2007, p. 2649). In addition, there is many anecdotal evidence that SMEs are the prime victims

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of the so called “*credit crunch*”, especially in times of financial crises (European Commission, 2009). However, despite a plethora of such anecdotal evidence, systematic and detailed empirical studies of this problem are extremely rare; especially in transition countries.

Both institutional policy makers (e.g. European Investment Fund, European Investment Bank, World Bank, International Monetary Fund, OECD etc.) and the scientific literature (e.g. Storey, 1994; Berger & Udell, 1998; Gregory et al., 2005; Beck & Demirgüç-Kunt, 2006; Vos et al., 2007; Beck, Demirgüç-Kunt & Maksimovic, 2008 etc.) recognize a mismatch between the supply of quality-at-affordable-price financing, and the need (demand) for such financing among companies in the market. This discrepancy, often referred to as the *financing gap*, is thought to be most prevalent among SMEs, which correspondingly tend to display most sub-optimal capital structures (Ang, 1992; Avery, Bostic & Samolyk, 1998; Berger & Udell, 1998; Rouse & Jayawarna, 2006; Claessens & Tzioumis, 2006). The emergence of these financing imperfections is thought to be particularly prevalent in developing and transitional countries with poor legal environment, higher levels of corruption and lower level of financial development (La Porta et al., 1997; Demirgüç-Kunt & Maksimovic, 1998; Rajan & Zingales, 1998); particularly in Central and Eastern Europe (Pissarides, 1999; Nivorozhkin, 2005).

Haas, Ferreira & Taci (2010; *cf.* Berger & Udell, 2002; Petersen & Rajan, 2002) also emphasize the issue of *bank ownership* in transition environments, where foreign ownership is frequently prevalent. Namely, according to Haas, Ferreira & Taci (2010); Berger, Klapper & Udell (2001), and Berger et al. (2008) compared to foreign banks “*domestic banks tend to have a deeper understanding of local businesses and base their decisions on the ‘soft’ qualitative information that is available on local and smaller firms with whom they develop long-term relationships*” (Haas, Ferreira & Taci, 2010, p. 389). Also importantly, foreign-owned banks, even smaller ones, usually rely on more standardized and formal client evaluation procedures, taking into account “harder”, rather than “softer” client information; particularly related to SMEs (Haas, Ferreira & Taci, 2010). Furthermore, Haas, Ferreira & Taci (2010) point to very “*heterogeneous levels of legal creditor protection*” in transition environments, which coupled with a less efficient legal environment (La Porta et al., 1998) influence the “*lending composition*” in these countries (Haas, Ferreira & Taci, 2010, p. 390). All these issues in turn aggravate the issue of SME financing in transition and developing countries, relative to other developed countries, and imply even larger policy challenges.

Interestingly enough, a study of company’s capital structures across 39 countries by Fan, Titman & Twite (2003) has shown institutional ‘endowments’ to be a significantly higher predictor of company’s capital structure, relative to other factors, even industry affiliation (Beck, Demirgüç-Kunt & Maksimovic, 2008). This link has not only been established on the micro level, in terms of capital structures (Berger & Udell, 2006), but also on the mezzo level, in terms of the development of various industries (Carlin & Mayer, 2003), and macro level, in terms of investments (Wurgler, 2000; Love, 2003) and economic growth (King & Levine, 1993; Levine & Zervos, 1998; Beck, Levine & Loayza, 2000). This makes the financial gap “*an important policy challenge*” (OECD, 2006, p. 10).

The primary goal of the paper is to analyze how micro, small, medium sized and large companies have been able to ‘cope’ and ‘adjust’ their capital structures to worsened financial conditions (credit crunch, and related impaired access to finance), and economic conditions (pressures related to inventory, liabilities and net working capital) in the period between 2006 (pre-crisis) and 2009 (during crisis). In this regard, we use a novel power analysis methodological approach, to estimate the “effect sizes” of the crisis.

This paper addresses not only a growing interest in SME financing (gaps), and SME capital structures (Parker, 2002; Cressy, 2002), but also responds to the call of the European Investment Fund (2008) and OECD (2006) to develop a ‘*practically-oriented*’ assessment approaches in these areas, despite the illusiveness of estimating such a gap (Vasilescu, 2010). The paper narrows an empirical gap in the literature related to SME financing, and SME financing in transition countries. In doing so, it introduces a novel *power analysis* methodology (Breugh, 2003; Cohen, 1992) to estimate the *effect size* of the current financial and economic crisis on (particularly) the SME financing and capital structures. To the best of our knowledge, such a methodological approach, with its origin in psychometry, and marked by a recent emergence in the management literature (Breugh, 2003), has never been employed in this area of the financial and economic literature.

2. THE SLOVENIAN FINANCIAL SYSTEM AND SME CAPITAL STRUCTURES

As a small, developed new EU member state, and member of the Eurozone and OECD, Slovenia provides an ideal setting for the study of the impact of the 2008 financial and economic crisis on the capital structures of SMEs; especially given the dominance of the banking sector, as the primary financial vehicle for SME financing. Furthermore, *access to finance* is the most problematic impediment to doing business in Slovenia (World Economic Forum, 2010). At the same time Slovenia is among the countries with one of the highest required level of collateral for a bank loan, where an average loan has to be secured with appropriate collateral of over 145 per cent (World Bank, 2007). The World Bank’s *Doing Business Survey* (2010) ranks Slovenia in 116th place out of 183 countries in terms of the “*ease of getting a business loan*”. According to the company-level data and analyses conducted by Beck, Demirgüç-Kunt & Maksimovic (2008)³ Slovenia’s share of external financing is only 38.55 per cent (compared to e.g. Estonia: 60.14 per cent; Italy: 77.71 per cent and Poland: 58.60 per cent). All these international benchmarks indicate a highly impaired access to financial resources in Slovenia, with profound implications for the competitiveness of the Slovenian economy. This is in our opinion further complemented by Slovenia’s high level of uncertainty avoidance within the Hofstede (2001) typology, providing a strong support also for the prevalence of the *pecking order theory* in SME financing.

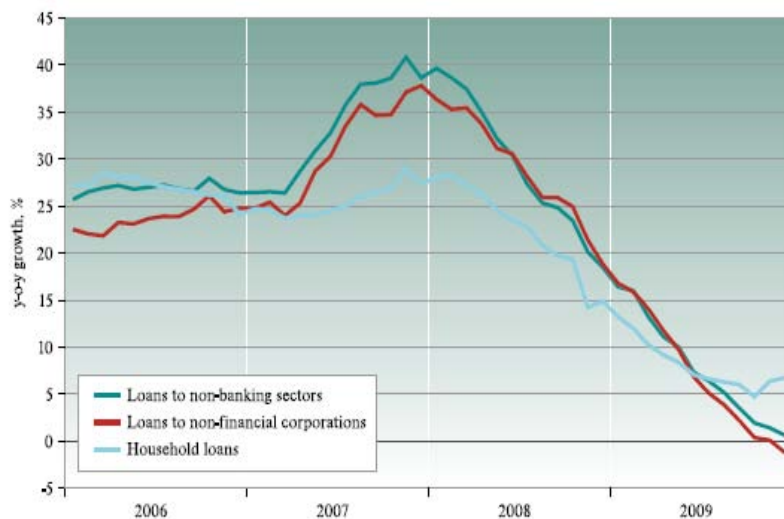
Following the German-based financial system the banking sector in Slovenia is the main financial vehicle for all companies. According to the Bank of Slovenia (2009) the

³ Data taken from the World Business Environment Survey (WBES); 80 per cent of respondent companies were SMEs. See Beck, Demirgüç-Kunt & Maksimovic (2008) for more details.

banking sector had a 99.3 per cent share in the Slovenian financial market at the end of 2008. In 2009 the total assets of the banking sector represented 147 per cent of Slovenia's GDP (Bank of Slovenia, 2010a). The market share of top five banks in 2009 was little over 60 per cent, with the main state-owned bank (NLB bank) having the biggest (30.2 per cent) market share; although steadily falling each year. Total bank loans to non-banking sector in 2009 amounted to 65.6 billion EUR (or 85.5 per cent of all loan activity). Total loans to the business sector amounted to 38.9 billion EUR or about 59.3 per cent of all loans by Slovene banks to non-banking sector (Bank of Slovenia, 2010b). In terms of the situation in the Slovene banking sector by the end of 2009 Figure 1 best displays the impact of the 2008 global financial crisis on the Slovene banking, and its lending to non-financial institutions.

As depicted in Figure 1 the credit crunch in the Slovene banking sector manifested itself in a severe downturn of loans to the private sector, as well as to households and non-financial institutions. In 2009 the growth in bank loans to non-financial corporations completely ceased. According to the Bank of Slovenia (2009) decline in lending growth was more pronounced in foreign-owned banks and large domestic banks, which controlled a good third of the market in Slovenia (Feldin et al., 2009). This provides an alternative perspective to the evidence from Yilmaz & Koyuncu's (2010) fixed effect multivariate panel logit econometric model for transitional economies in the period 1990-2006, where the authors have shown that the rate of foreign bank participation decreases the occurrence of banking crises in transition economies; which seems to hold only for "local" banking crises.

Figure 1: Yearly growth in bank loans to non-financial institutions in Slovenia



Source: Bank of Slovenia: Annual Report 2009.

Demirgüç-Kunt & Maksimovic (2002) performed an extensive 40-country study, and showed that a bank-dominated financial system is more prone towards short-term financing, while the market-based financial system is more inclined towards longer-term financing. However, the authors concluded that the empirical data in their study does not directly show the level of access to external financing significantly varying between the two systems, but rather impacts the capital structures of companies; particularly SMEs. In Slovenia, however,

both the European Investment Fund (2008), as well as the SID export and development bank (2009) generally identified a strong prevalence of the financing gap, and its widening under the current financial conditions. Also, the existence of sub-optimal financing structures of SMEs in Slovenia has been previously empirically established by Berk-Skok & Lončarski (2008).

Other studies of dyadic bank-SME financing relationships have shown that these relationships are characterized by profound rigidities and very high levels of standardization, rather than flexibility, not tailored to the specifics of individual SMEs (Silver & Vegholm, 2009). This clearly shows that the banking sector is not servicing the SME sector in the most optimal and marketing-oriented way, which may in turn impede access to finance for certain segments of SMEs. Other authors have made a clearer evaluation of the insufficiency of lending to SMEs (Bartels, 2002), which may be “*leading to sectoral competitive disadvantage*” (Carey & Flynn, 2005, p. 713).

3. HYPOTHESES DEVELOPMENT

Despite the acknowledgement and importance of the SME financing gap, many believe this gap to be “*immeasurable*” (JEREMIE, 2007; Vasilescu, 2010). While Claessens & Tzioumis (2006, p. 8) stress “*the absence of a unified conceptual framework for data collection*”, with most collected data being of “*ad hoc nature, with varying definitions over time,*” the European Investment Fund and its JEREMIE program believe “*the primary challenges are in the form of data availability and the feasibility of measuring the gap between current supply and potential demand*” (JEREMIE, 2007, p. 25). Further elaborating on this, Vasilescu (2010, p. 58-59) also points out that: “*In fact, one fundamental problem in dealing with the SME financing gap is lack of basic information about just how big such a gap may be. Often the only evidence is in the form of complaints from SMEs themselves, and this is difficult for analysis or comparison.*” Despite this issue, there is still a need to develop “*proactively-oriented*” estimation approaches (JEREMIE, 2007, p. 25). This paper contributes to the existing literature by providing a practically-oriented approach to SME financing gap effect (size) estimation, with a specific focus on the current financial and economic crisis, and its impact on SME capital structures.

3.1 COMPANY SIZE AS A KEY FACTOR AFFECTING CAPITAL STRUCTURES

Sub-optimal capital structures are thought to be most apparent among SMEs for a number of reasons. On the supply-of-funds side, the reasons for this lie first-and-foremost in information asymmetry (Vos et al., 2007), due to low (financial) transparency of SMEs, their lack of credit history and track records (Fraser, 2004; Claessens & Tzioumis, 2006). In addition, agency cost issues, harder assessment of risk and costly monitoring, parallel with higher volatility and lower survival rates of SMEs (Storey, 1994) also affect the supply of funds. As we already emphasized, the legal and institutional frameworks have an important role (Beck, Demirgüç-Kunt & Maksimovic, 2008), accompanied also by the structure of the financial system, i.e. bank and/or market-based financing (Beck, Demirgüç-Kunt & Maksimovic, 2008). These latter issues are particularly important in transition countries.

Storey (1994) also points to the (limited) level of competition among banks in a market, as a possible source for the supply side of the SME financing gap, while Berger & Udell (2006) point to the level of so called “*transaction technologies*” in banking, which influence transaction costs of lending to SMEs. Koutsomanoli-Filippaki, Margaritis & Staikouras (2009) further point to the ratio between foreign-owned and domestic banks (where foreign-owned banks tend to be more efficient), while Feldin et al. (2009) have also shown foreign-owned banks to be more flexible in terms of their banking strategies, in order to attract new clientele, including SMEs.

On the demand-for-funds side the following factors are thought to influence capital structures of SMEs: lack of economies of scale in SMEs’ operations (Tether, 1998); lack of collateral (Fraser, 2004); inseparability of the owner’s and company’s financial position (Berger & Udell, 2006); lack of experience and know-how (Berger & Udell, 1998); limited human resources (Raškovič et al., 2011); higher personal involvement and desire for control (Cosh & Hughes, 1994; Hamelin, 2011); pecking order theory (Hussain, Millman & Matlay, 2006; Beck, Demirgüç-Kunt & Maksimovic, 2008); lack of information and knowledge about existing financing sources (Fraser, 2004); lower involvement in various social networks (Vos et al., 2007); and different business objectives, compared to large profit and growth-driven companies (Vos et al., 2007; Curran, 1986; Hakim, 1989). As pointed out by Park, Lim & Koo (2008) there are conflicting views on the main reason for the existence of the SME sub-optimal capital structures, with some emphasizing more the supply-of-funds side and others more the issues on the demand-for-funds side. However, one thing is for sure: SMEs’ capital structures are different compared to capital structures of large companies.

3.2 CAPITAL STRUCTURES IN THE CONTEXT OF A FINANCIAL AND ECONOMIC CRISIS

In times of a financial crisis the supply-of-funds side conditions worsen, leading to decreased bank lending (Brunnermeier & Pedersen, 2005), emergence of a “credit crunch” (Berger & Udell, 1998; Peek & Rosengren, 1995; Berger & Udell, 2006; Blalock, Gertler & Levine, 2008), and fueled by higher levels of perceived risks and volatility of the market. As outlined by Goodhart (2005) cyclical bank loan supply goes hand-in-hand with the cyclicity of economic growth, mainly due to risk-based capital requirements (Nier & Zicchino, 2006). Furthermore, Diamond and Rajan (2005) also confirm that the level of increased borrower default impacts bank loan supply in worsened economic conditions. On the other hand the prolongation of outstanding payables and soft budget constraints (Blalock, Gertler & Levine, 2008; Koutsomanoli-Filippaki, Margaritis & Staikouras, 2009), as well as payer default actually increases the importance of working capital in times of economic downturn, further increasing the demand. Therefore, our study tests the following two hypotheses:

H1: The current financial and economic crisis has led to a greater mismatch between supply-of-funds and demand-for-funds (financing gap), affecting capital structures of all companies in Slovenia.⁴

H2: With the onset of the current financial and economic crisis the SMEs' capital structures have been notably more affected by the widening of the financing gap, since they could not adequately increase their bank financing and/or secure favorable trade credit, compared to large companies.

While Blome & Schoenherr (2011) have shown the emergence of increased supply chain pressures, and the emergence of supply chain risks in a time of economic crisis, Love, Preve & Sarrina-Allende (2007) have shown companies increasing pressures for trade credit in a credit-crunched economic crisis after math (Petersen & Rajan, 1997; Fisman & Love, 2003). However, contrary to an idealized redistribution belief how such financing externalities are passed on from “stronger” (e.g. large) companies to “weaker” (e.g. SMEs) companies (Meltzer, 1960), we believe companies to be disproportionately affected by such shifts from credit to trade financing, where large companies utilize their considerable market power over SMEs.

4. DATA SET AND RESEARCH METHODOLOGY

Each Slovenian company, regardless of its size, has to file an annual financial statement to the Agency of the Republic of Slovenia for Public Legal Records and Related Services (AJPES), in order to meet the legal requirement of a public presentation of their business performance, as well as for tax and statistical purposes. As the nature of non-profit organizations and financial companies significantly differs from the rest of the companies, we excluded them from our analysis. Our sample, obtained from the AJPES, therefore consist of all non-financial, profit oriented companies registered in Slovenia to conduct business between 2006 and 2009. In our effect size estimations insolvent companies (companies with negative equity) were additionally omitted from our analyses.

The paper employs a novel *power analysis* approach to the estimation of the so called *effect size* of the current financial and economic crisis (credit crunch) on the capital structures of Slovenian companies. While traditional significance testing from the beginning of the 20th century has been employed as the ‘gold standard’ for assessing “*weather the findings are important*” (Breugh, 2003, p. 79), Kaufman (1998) points to the overreliance of significance “*as a major methodological issue of our generation*” (DeVaney, 2001, p. 310). Namely, statistical significance testing is strongly influenced by sample size, since large sample sizes a priori produce significant effects (DeVaney, 2001). A solution to this problem is the use of the so called *effect size* statistics, since according to Ziliak & McCloskey (2008) the primary interest of scientific comparison should be in the estimation of causal effect sizes, explaining

⁴ Here we apply an indirect differential approach to the testing of this hypothesis, by comparing capital structure changes between 2006 and 2009.

both the amount and nature of the differences (Cohen, 1994). Cohen (1988, p. 9-10) describes effect size as “the degree to which the phenomenon is present in the population.” This has led to the emergence of the so called *power analysis* (Cohen, 1992), which has been gaining increasing employment in the scientific community (Rosenthal, Rosnow & Rubin, 2000; Breaugh, 2003).

A plethora of effect size statistics exist today (see Kirk, 1996), however they are most often divided into three groups: (1) based on standardized differences between group means, (2) based on measures of explained variance (Richardson, 1996), as well as (3) based on measures of association (Thompson, 1999).

In our power analyses we employed Cohen’s *d* statistic (Cohen, 1988), as one of the most widely used and useful effect size measures in power analysis (Breaugh, 2003); since it allows for comparison across samples and variables with different variance, and tackling the issue of heteroscedasticity (Cohen, 1988). Therefore, the use of Cohen’s *d* effect size statistic is superior to simple t-test significance testing, as it explains both the amount and nature of the difference, and is unbiased by sample size and differences in variance. Table 1 provides an overview of the formulas for Cohen’s *d* and McGraw & Wong’s CL effect size statistics.

Table 1: Cohen’s *d* and McGraw & Wong’s CL “effect size” statistics

Effect size statistic	Formula	Reference
Cohen’s <i>d</i>	$d = (M_1 - M_2) / \sigma_{pooled}$ $\sigma_{pooled} = \sqrt{\frac{1}{2}(\sigma_1^2 + \sigma_2^2)}$	Cohen (1988); Cohen (1992); Cohen (1994)
McGraw & Wong’s CL	Z score translated to a probability distribution: $Z_{CL} = \frac{M_1 - M_2}{\sqrt{Var_1 + Var_2}}$	McGraw & Wong (1992); Breaugh (2003)

Where noticeable ($d > 0.2$) effect sizes have been detected⁵, the paper also employs the *common language (CL) effect size statistics* by McGraw & Wong (1992), which is especially useful for interpretation of results, since it converts the effect size into a probability “that a score randomly sampled from one distribution will be larger than a score sampled from a second distribution” (McGraw & Wong, 1992, p. 361).

5. RESULTS

Table 2 shows that almost all (98.6 per cent) of Slovenian companies were SMEs at the end of 2009. Slovenian SMEs owned 42.8 per cent of total assets owned by companies in Slovenia, yet those assets are rarely financed by bank debt, particularly in micro Slovenian companies (92.5 per cent of the population), where only 29.08 per cent of them have some form of bank financing. Also, the share of bank debt financing, as percentage of total assets, for a median micro company, which was able to get some form of bank financing, is with 19.42 per cent about 1.5 times lower compared to the median for large companies (29.53 per

⁵ According to Cohen’s (1988) recommendations *d* values of 0.2 correspond to small effect sizes, 0.5 to medium effect sizes, and 0.8 to large effect sizes. Furthermore, the complexity of the observed phenomena should also be considered, when making final estimations of effect sizes.

cent). On the other hand, the majority of small, medium and large companies in Slovenia rely on bank debt financing, ranging from 72.48 per cent for small to 75.69 per cent for large companies.

Table 2: Slovenian SME demographics and financing patterns at the end of 2009

Size ⁶	Number of companies	Number of employees	Total assets (in mn EUR)	Turnover (in mn EUR)	Percentage of companies with bank debt	Percentage of total assets financed with bank debt for a median company with bank debt
Micro	49,875	130,068	20,297.4	11,709.7	29.08%	19.42%
Small	2,475	75,141	12,823.2	9,219.3	72.48%	23.10%
Medium	790	76,768	11,534.8	10,112.4	72.78%	24.85%
Large	757	197,917	59,651.6	36,790.2	75.69%	29.53%
Total	53,897	479,894	104,307.0	67,831.6	32,37%	N/A

Source: authors' calculations, based on AJPES database, 2010.

This data is comparable with secondary data from Eurobarometer (SME access to finance in the new member states, 2006), which indicates that about 80 per cent of small and medium companies rely on bank debt financing in Slovenia.

5.1. EFFECT OF THE FINANCIAL AND ECONOMIC CRISIS ON LIABILITIES TO BANKS (SUPPLY-OF-FUNDS)

Table 3 displays a summary of long-term and short-term liabilities to banks, relative to all liabilities, for the period between 2006 and 2009. As can be seen from the data in Table 3 the share of companies using bank debt financing (regardless of the amount) decreased from 2006 to 2009 for all size categories, except small companies. The share of long-term and short-term bank debt financing (relative to total liabilities) remained fairly constant for micro companies, and increased mainly in the area of short-term financing for small, medium size and large companies. However, most obvious is the increase in long-term financing for large companies: from 5.85 per cent in 2006 to 9.82 per cent in 2009. Adding to this, Table 7 further on in the paper also displays, how large and medium companies were the only ones able to tap more heavily into bank financing in the face of worsened economic (and financial) conditions, particularly in the 2008-2009 period.

⁶ Classification is based on the Slovenian Companies' Act. Micro companies meet at least two of these criteria: average number of employees does not exceed 10, revenue does not exceed 2 mn EUR, and value of assets does not exceed 2 mn EUR, followed by: small companies (employees < 50; revenues < 8.8 mn EUR; assets < 4.4 mn EUR); medium companies (employees < 250; revenues < 35 mn EUR; assets < 17.5 mn EUR); large companies (all other).

Table 3: Long-term and short-term liabilities to banks, relative to all liabilities, between 2006 and 2009 (median values)

Company size	2006			2007			2008			2009		
	n	LT	ST	n	LT	ST	n	LT	ST	n	LT	ST
All Slovenian companies												
Micro	41407	0	0	44595	0	0	47488	0	0	49875	0	0
Small	1784	0.08%	3.49%	1980	0.33%	4.03%	2396	0.70%	4.47%	2475	1.35%	4.34%
Medium	745	0.64%	4.87%	803	0.79%	5.33%	768	0.61%	6.22%	790	0.85%	5.75%
Large	755	1.77%	6.91%	786	1.67%	7.36%	779	1.99%	8.83%	757	3.88%	8.68%
Only Slovenian companies with bank debt												
Micro	12149 (29.34%)	0	6.33%	13148 (29.48%)	0.32%	6.31%	14023 (29.53%)	0.03%	6.79%	14503 (29.08%)	0	6.83%
Small	1255 (70.35%)	6.92%	7.99%	1435 (72.47%)	5.96%	8.63%	1756 (73.29%)	6.32%	9.28%	1794 (72.48%)	8.06%	9.02%
Medium	546 (73.29%)	5.40%	9.18%	576 (71.73%)	6.09%	10.69%	561 (73.05%)	5.77%	11.12%	575 (72.78%)	7.67%	10.60%
Large	583 (77.22%)	5.85%	10.77%	593 (75.45%)	6.12%	11.84%	592 (75.99%)	6.05%	14.15%	573 (75.69%)	9.82%	13.65%

Notes: n = number of companies; LT = long-term liabilities to banks; ST = short-term liabilities to banks; number in brackets = percentage of companies that are using bank debt financing out of the whole population of sample companies in a given reference year.

Source: authors' calculations, based on AJPES database, 2010.

The results from Table 4 clearly show that all apart from micro companies increased their share of liabilities to banks (relative to their total liabilities) from 2008 to 2009. However, large companies secured considerably higher increases, compared to either medium or small companies.

Table 4: Total liabilities to banks, relative to all liabilities for companies, which have bank debt financing, between 2006 and 2009 (median values)

Year	2006		2007		2008		2009	
	%	STLB	%	STLB	%	STLB	%	STLB
Micro	29.34%	17.17%	29.51%	18.64%	29.55%	19.82%	29.08%	19.42%
Small	70.35%	20.36%	72.63%	21.22%	73.29%	22.28%	72.84%	23.10%
Medium	73.29%	18.37%	72.35%	21.90%	73.70%	23.20%	72.78%	24.85%
Large	77.22%	22.19%	75.95%	24.44%	76.25%	27.97%	75.69%	29.53%

Notes: % = percentage of companies that are using bank debt financing out of the whole population of sample companies in a given reference year; STLB = share of total liabilities to banks, relative to total liabilities.

Source: authors' calculations, based on AJPES database, 2010.

Particularly important, only the increase among medium and large companies (relative to other company sizes) in terms of the share of total liabilities to banks (relative to total company liabilities) is significant enough to be "captured" by Cohen's *d* effect size statistic (*d*

> 0.2) as shown in Table 5. All other changes, including decreasing shares for micro and small companies were not sufficiently large to be either statistically significant, or “captured” by the effect size statistics.

Table 5: Cohen’s *d* and *CL* (in brackets) effect size statistics, based on median values, for share of total liabilities to banks, relative to total company liabilities of solvent companies, which have bank financing

Time period	2006-2007	2007-2008	2008-2009	2006-2009
Size				
Micro	0.057	0.046	-0.014	0.091
Small	0.041	0.047	0.042	0.129
Medium	0.223	0.076	0.110	0.397* (57.9%**)
Large	0.122	0.179	0.239* (54%**)	0.392* (57.9%**)

Notes: Only companies with positive capital in a given reference year. * Noticeable effect size, with common language effect size statistics in brackets. **Where Cohen’s *d* > 0.2 *CL* effect size statistics (in brackets) were calculated for interpretative purposes. Source: authors’ calculations, based on AJPES database, 2010.

Looking overall at the increase of liabilities to banks (either long-term or short-term), relative to total liabilities for companies with bank financing, we can see even clearer that with the emergence of the 2008 financial and economic crisis, only large companies were able to significantly increase their shares of such liabilities to banks. Furthermore, in the whole 2006-2009 period only medium sized and large companies were able to considerably increase the share of liabilities to banks in their total liabilities, while micro and small companies were not able to do so. However, only large companies were able to considerably increase both the share of long-term and short-term liabilities to banks, as confirmed by Cohen’s *d* effect size statistics in Table 6.

Table 6: Cohen’s *d* and *CL* (in brackets) effect size statistics, based on median values, for long-term and short-term liabilities to banks, relative to all liabilities, only for solvent companies, which have bank debt financing

Time period	2007-2006		2008-2007		2009-2008		2009-2006	
	LT	ST	LT	ST	LT	ST	LT	ST
Micro	0.048	-0.001	-0.018	0.029	-0.003	0.008	0.027	0.037
Small	-0.068	0.050	0.021	0.050	0.106	-0.017	0.064	0.083
Medium	0.062	0.138	-0.063	0.053	0.189	-0.047	0.194	0.131
Large	0.026	0.076	0.006	0.155	0.241* (54%**)	-0.033	0.274* (54%**)	0.209* (54%**)

Notes: Only companies with positive capital in a given reference year; n = number of companies; LT= long-term; ST= short-term. * Noticeable effect size, with common language effect size statistics in brackets. **Where Cohen’s *d* > 0.2 *CL* effect size statistics (in brackets) were calculated for interpretative purposes. Source: authors’ calculations, based on AJPES database, 2010.

Looking only at companies with bank debt, large companies were the only ones which managed to considerably increase the share of long-term liabilities to banks in their total liabilities with the outbreak of the financial crisis (period 2008-2009). Furthermore, with the outbreak of the financial crisis the share of long-term liabilities to banks relative to total

liabilities increased/decreased proportionally with company size. Thus, this share actually decreased for micro companies, slightly increased for small companies, while medium sized and large companies managed to increase their share of long-term liabilities to banks moderately (medium size) and significantly (large). This indicates that on average Slovenian SMEs did not acquire higher shares of either long-term or short-term financing from banks from 2006 to 2009. On the other hand, large companies were able to utilize bank financing in worsened financial and economic conditions.

5.2. EFFECT OF THE FINANCIAL CRISIS ON DEMAND FOR FUNDS

Table 7 displays median values of selected asset and liability components according to company size categories. The most rapid decline in the share of inventories in total assets is visible among large companies, falling from 8.75 per cent in 2006 to 6.09 per cent by 2009. This clearly indicates the impact of the worsened economic conditions, to which large companies responded by cutting down inventories. While net working capital, as a share of total assets, slowly increased among SMEs, it decreased from 8.97 per cent to 7.59 per cent among large companies. This indicates an increased pressure for financing among Slovenian SMEs compared to large companies.

Table 7: Shares of selected asset and liability components in total assets for companies, which have bank debt financing, between 2006 and 2009 (median values)

Year	2006		2007		2008		2009	
Size	INV	NWC	INV	NWC	INV	NWC	INV	NWC
Micro	2.72%	10.64%	2.32%	10.67%	1.97%	11.22%	1.90%	12.07%
Small	12.15%	14.35%	11.40%	15.49%	10.70%	15.71%	10.51%	16.47%
Medium	13.49%	14.90%	14.67%	16.73%	14.12%	17.08%	12.51%	17.11%
Large	8.75%	8.97%	8.01%	8.44%	8.53%	8.86%	6.09%	7.59%
Size	STL	LTL	STL	LTL	STL	LTL	STL	LTL
Micro	50.25%	10.59%	49.56%	12.12%	49.77%	12.46%	50.56%	11.72%
Small	47.50%	15.54%	47.68%	15.07%	46.94%	15.91%	43.84%	17.54%
Medium	43.43%	11.55%	46.21%	13.37%	45.68%	13.42%	43.42%	14.38%
Large	38.45%	11.10%	39.62%	10.83%	42.82%	11.24%	39.00%	15.39%

Notes: INV= share of inventories in total assets; NWC = share of net working capital in total assets (net working capital = accounts receivable + inventories - accounts payable); STL= share of short-term liabilities in total liabilities; LTL= share of long-term liabilities in total liabilities. Source: authors' calculations, based on AJPES database, 2010.

The share of debt financing (short-term and long-term liabilities as a share of total liabilities) remained almost comparable in the year 2009 to the share of debt financing in 2006 for micro companies. The share of short-term liabilities in the total liabilities has stayed approximately the same for large companies too, however the share of long-term liabilities increased by almost 40 per cent (not percentage points!) among large companies. This significant increase is confirmed by Cohen's d effect size statistic, shown in Table 8.

Table 8: Cohen's *d* and *CL* (in brackets) effect size statistic, based on median values, for selected asset and liability categories, for solvent companies with bank financing

Time period	2006-2007		2007-2008		2008-2009		2006-2009	
	INV	NWC	INV	NWC	INV	NWC	INV	NWC
Micro	-0.017	0.004	-0.017	0.039	0.003	0.042	-0.031	0.086
Small	-0.051	0.064	-0.024	0.030	-0.018	0.031	-0.091	0.124
Medium	0.088	0.067	0.007	0.045	-0.145	-0.024	-0.053	0.088
Large	-0.060	-0.039	0.019	0.010	-0.178	-0.075	-0.230* (54%**)	-0.105
Size	STL	LTL	STL	LTL	STL	LTL	STL	LTL
Micro	-0.018	0.053	-0.002	0.011	-0.011	-0.024	-0.031	0.041
Small	-0.016	-0.019	0.005	0.030	-0.166	0.074	-0.178	0.086
Medium	0.136	0.083	-0.000	0.022	-0.160	0.058	-0.023	0.161
Large	0.084	-0.014	0.128	0.031	-0.173	0.223* (54%**)	0.045	0.242* (54%**)

Notes: INV= share of inventories in total assets; NWC = share of net working capital in total assets (net working capital = accounts receivable + inventories - accounts payable); STL= share of short-term liabilities in total liabilities; LTL= share of long-term liabilities in total liabilities; * Noticeable effect size, with common language effect size statistics in brackets. **Where Cohen's *d* > 0.2 CL effect size statistics (in brackets) were calculated for interpretative purposes. Source: authors' calculations, based on AJPES database, 2010.

Looking at the specific asset and liability categories of companies which had bank financing we can see that in the 2006-2009 period only large companies were able to substantially decrease their inventories. On the liabilities side, only large companies were able to substantially increase their total long-term liabilities, which include long-term bank debt. Both effects combined, this led to reduced pressure, compared to SMEs, which could not cut their inventories or secure additional financing.

5. POLICY IMPLICATIONS

The results of our analysis point to a clear lack of micro loans to SMEs. It is evident, loans should be more available to SMEs, and therefore lending to SMEs should not require high collateral. The state could play an important facilitator in this area, by creating a special insurance trust, acting as a guarantor to SMEs in need of micro loans. While the issue of micro loan SME financing has been discussed back and forth for close to a decade in Slovenia, so far no in-roads have been made in this area, and status quo seems to be eminent for the near future.

In addition to short-term working capital financing, a greater need for long-term SME financing should be met as well; either by the state institutions (e.g. already established SID export and development bank) and/or by commercial banking sector. Namely, long-term financing represents a foundation for SMEs future growth. In general, the Slovenian banking sector could offer a broader array of loans, tailored to SMEs needs; as well as further differentiate this portfolio of loans according to different SME segments (e.g. high- vs. low-tech SMEs; export- vs. domestically-oriented SMEs; SMEs at various stages of their life-cycles etc.). Obviously, this requires sophisticated risk estimation by the banks, which would

enable such differentiation of their financing options. It is our assumption this is currently not the case; either to their inability, or unwillingness.

But not all problems are related to bank loan supply; demand management should also be taken into strong consideration (Raškovič and Durukan, 2010). Besides the reluctance to get a bank loan (outlined by pecking order theory), SMEs often lack extensive knowledge about all possible financing options. Some information could be obtained through different information systems, however these are highly fragmented. In this regard, the various institutions, forming SMEs' support environment, ought to collaborate more closely with banks, since they are the main sources of external financing in Slovenia. Thus, a standardized informational platform, where SMEs could get information and directly compare different financing options, offered either by the state (e.g. repayable and non-repayable grants), or through various commercial banks could greatly improve SME's ability to get an appropriate and affordable financing. Lastly, the reluctance to get a bank loan or an external investor (pecking order theory perspective) could perhaps be further reduced by various tax incentives to SMEs.

6. CONCLUSION

The goal of this paper was to analyze how micro, small, medium sized and large companies in Slovenia have been able to 'cope' and 'adjust' their capital structures to worsened financial and economic conditions, in the face of the recent financial and economic crisis. In this regard, we used a novel power analysis methodological approach. Complementing and extending the work by Vasilescu (2010) on the SME financing gap publish recently in *Ekonomska istraživanja* we have employed a differential approach, and further estimated the effect size changes in company capital structures in Slovenia.

A clear picture emerges; large companies did not only manage to secure additional financing sources from banks, but have also been able to decrease their inventories, measured as a share of total assets. On the other hand SMEs, and especially small companies, were unable to tap into 'soft budget constraints' made available by the commercial banking sector to large companies, and were virtually cut off in terms of financing. It seems that with limited access to finance by the banking sector, large companies were too big to perish, and SMEs become the "simplest" collateral damage. Furthermore, SMEs were in most cases suppliers and contractors to large and high export-oriented Slovenian companies, however they did not reap the alleged redistribution effects proposed by Meltzer (1960), which could manifest in favorable trade credit terms to SMEs, passed on from large companies.

With regards to our two hypotheses we can conclude that the existing mismatch between supply-for-funds and demand-for-funds (the proverbial SME financing gap) tested in hypothesis 1 has increased with the advent of the 2008 financial and economic crisis. While we could not in absolute evaluate either the supply of or demand for such funds, due to issues discussed by Vasilescu (2010), our analyses have shown significant 'pressures' on the demand side, which were not followed by proportional increases or adjustments on the supply side, leading to the widening of the mismatch (gap). In terms of hypothesis 2, the results of our power analyses and the corresponding effect sizes have clearly shown that large

companies were able to secure higher levels of additional financing, decreasing inventories and adjusting their net working capital.

The goal of our analyses was also to offer interpretable effect size estimations of these changes. Using the interpretive power of McGraw's and Wong's (1992) *CL* effect size statistic for noticeable effect sizes, we observed the following key changes:

- In the 2006-2009 period the probability of both a median medium sized and large company (with bank debt) obtaining additional financing (either short- or long-term financing) increased by almost 8 percentage points (see Table 5), while there was no such increase for a median small company.
- In the 2006-2009 period the probability of a median large company (with bank debt) to obtain additional short-term financing increased by 4 percentage points, as well as 4 percentage points for long-term financing (see Table 6).
- In the 2006-2009 period the probability of a median large company to significantly decrease its inventory (measured as a share of all assets) increased by 4 percentage points, while the share of increasing long-term liabilities increased by 4 percentage points (see Table 8). No such changes could be noticed for either medium sized, small or micro companies.

While these changes may at first sight not seem very big, they are quite important given the complex nature of the studied phenomena, and the fact they are based on median company estimations of the whole company populations in each size segment. Where relevant, they clearly show noticeable changes in capital structures, however underlined by myriad and complex forces. This adds to the complexity of the studied phenomena, and results in interpreting the obtained results as proxies of relative changes, further signaling both a general widening of the gap, as well as different consequences of this widening for different company size segments.

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PREGLJED I PROCJENA VELIČINE UČINKA FINANCIJSKE I EKONOMSKE KRIZE IZ 2008. NA STRUKTURU KAPITALA MALIH I SREDNJIH PODUZEĆA: SLUČAJ SLOVENIJE

SAŽETAK

Nbrojeni faktori utječu na strukturu kapitala poduzeća. Ipak, najveći dio akademskog interesa usredotočen je na unutarnje odrednice strukture kapitala poduzeća, a puno manje na vanjske odrednice kao što je ograničeni pristup izvorima financiranja; to je pogotovo tako za mikro, mala i srednja poduzeća. Kao mala zemlja i članica EU i Eurozone, Slovenija pruža idealno okruženje za proučavanje učinka financijske i ekonomske krize iz 2008. na strukturu kapitala malih i srednjih poduzeća; posebno s obzirom na dominaciju bankarskog sektora kao primarnog izvora financiranja za poduzeća. U tom kontekstu koristimo u literaturi novi pristup procjeni power analize, uz pomoć Cohenove d i McGraw-Wong common language (CL) statistike veličine učinka. Analizirali smo strukturu kapitala slovenskih malih i srednjih poduzeća od 2006 do 2009. Naše istraživanje pokazuje da mala i srednja poduzeća nisu bila u stanju u potpunosti iskoristiti „blaga budžetna ograničenja“ koja je velikim tvrtkama omogućio bankarski sektor, te su stoga utoliko jače pogođena krizom.

Ključne riječi: *SME – mala i srednja poduzeća, struktura kapitala, kriza 2008., power analiza, Cohenova d statistika, CL statistika veličine učinka, Slovenija*

JEL: *G01, G21, G32, O16, C18.*