Bank Market Structure and Firms' Leverage:
Case of Croatia

S. Pepur, M. Pervan, and M. Ćurak

Abstract—This paper analyzes the impact of bank market structure on firms' leverage in the Republic of Croatia with respect to the firms' size. Two opposite theories, the market power theory and the relationship lending theory, are tested on very large and large enterprises, and medium and small companies, separately using panel data for the period from 2002 to 2011. According to the results the bank concentration positively affects firms' leverage, regardless of the firms' size, confirming predictions of relationship lending theory.

Keywords— Bank market structure, leverage, large and small companies, market power and information-based hypothesis.

I. INTRODUCTION

ALTHOUGH the financial systems of emerging economies of Central and Eastern Europe have gone through radical transformations during the last two decades, among which is the development of non-bank financial institutions and capital markets, they are still highly dominated by banks. Bank credit is the main external source of firm financing. Thus, it is of the interest of policy makers to analyze the banking sector features as possible determinants of firm financing. Beside the importance of the size of banking sector for investment financing as the important prerequisite of economic growth, which is confirmed by numerous empirical studies [1], [2], there is a question of the impact of *banking market structure* on firm financing choice. Is the bank credit more available in the banking sector with few dominated banks or in those characterized by unconcentrated market structure?

There are two opposite views of the impact of the banking sector concentration on firm access to finance. The first one is the *market power theory* which states that lower competition implies inefficiency in resource allocation leading to higher lending rates and credit rationing that limit firm financing.

According to the alternative view, which is the *relationship lending theory* (the information-based hypothesis), a higher level of concentration could encourage financial intermediaries to reduce information asymmetry through relationships with firms, contributing to company financing. The results of the existing empirical studies are conflicting.

S. Pepur is with the Department of Finance, Faculty of Economics, University of Split, Croatia (phone: +385 21 430 630; fax: +385 21 430 701; e-mail: sandra. pepur@efst.hr).

M. Pervan is with the Department of Economics, Faculty of Economics, University of Split, Croatia (e-mail: maja. pervan@efst.hr).

M. Ćurak is with the Department of Finance, Faculty of Economics, University of Split, Croatia (e-mail: marijana.curak@efst.hr).

Consequently, the aim of this paper is to analyze the effects of banking sector concentration on firm access to finance in emerging economies on the sample of Croatian enterprises. The samples consist of 371 large and very large enterprise and 694 small and medium companies in the period from 2002 to 2011. The analysis is performed applying dynamic panel methodology.

The findings of our research show positive impact of bank concentration on firms' leverage for both very large and large, and medium and small enterprises. Thus, the results are in line with the information-based hypothesis.

The paper is organized as follows. Section 2 summarizes theoretical arguments of the research and empirical evidence, encompassing the market power theory and the relationship lending theory, and adding other important factors of firm leverage. In section 3 data and methodology are explained. Section 4 discusses the results of the empirical analysis. The conclusions are given in Section 5.

II. THEORETICAL ARGUMENTS AND EMPIRICAL EVIDENCE

Firm financing preference, namely debt-equity choice, and its effect on the firm value has always been intriguing for the researchers. Although the starting point was the assumption of perfect capital market and considerations of firm-level determinants (e.g. [3]), the theoretical and empirical analyses have been expanded by inclusion of real-world (imperfect) conditions as well as by firms' external determinants (e.g. [4]). Among the factors from firms' environment, the characteristics of financial system are considered as important in determining the companies' funding choices, one of which is its market structure.

Two conflicting theoretical views explain the effect of banking market structure on company access to finance. The first one, the market power hypothesis, emphasizes the problem of higher credit price and credit rationing as consequences of higher banking market concentration. Higher concentration implies a lower level of competition with inefficient allocation of resources. Although higher costs of financial intermediation could be the result of X-inefficiency of financial intermediaries [5], in a less competitive market, higher costs might also be the consequence of financial intermediaries' market power due to which loans are priced higher than in perfect competition setting. As a higher amount of savings is lost in the process of channelling the savings to investment and covering the costs of financial intermediation, fewer funds are available for investment. Moreover, according to the Guzman's model [6], monopoly power in banking

market could result in credit rationing more than in a competitive banking market structure. Namely, due to monopoly power higher interest rates, the possibility of firms' default also increases which raises monitoring costs for the monopolistic bank and subsequently leads to lower level of funds that could otherwise be available for lending. Thus, monopolistic banking structure through credit rationing negatively affects firm debt financing and economic growth.

The alternative, relationship theory, or information hypothesis, predicts positive effect of banking market concentration on credit availability by reducing the problem of information asymmetry. Namely, the asymmetric information between lenders and borrowers may lead to adverse selection and moral hazard with consequence in credit rationing. However, with higher level of bank concentration, banks are more willing to invest in the reduction of information asymmetry through developing relationships with companies (the relationship lending). The relationships would provide banks with soft information about the borrowers. The decision on the lending would not be based only on the past performance of the potential borrower but on its business perspectives or future earnings that bank would participate in. Lowering information asymmetry would increase availability of funds for companies as it is shown by the model of Petersen and Rajan [7]. This especially holds for bank financing of new, young firms with no evidence of past performance that can receive more credit and at better rates in a bank monopoly power market. The reasoning behind this is that monopoly power bank attracts more and better young firms by offering them lower rates at the beginning of their cooperation, with the possibility to charge higher rates in the future when establishes lending relationship with them and when firms become successful. In a competitive market, bank could not apply this strategy because of the uncertainty that it will retain successful customers in the future. According to Marquze [8], since banks in a more competitive environment have information on a smaller group of borrowers, the information are more disperse, resulting in the increasing problem of adverse selection. Cetorelli and Peretto [9] show that bank concentration negatively affects the amount of credit, but also encourages banks to gather information about borrowers and thus increase the efficiency of credit analysis. According to the authors, oligopoly is the optimal market structure rather than perfect competition or monopoly.

As has already been mentioned, most studies of firm financing were primarily focused on internal determinants [10]-[13]. The theoretical explanation of the influence of the firm specific factors originates from the two most prevalent capital structure theories – *trade-off* and *pecking order theory.*

Trade-off theory (TOT) argues that companies choose their optimal level of debt by trading off the benefits of debt financing against its costs. The benefits of debt financing include the tax deductibility of interests ([3], [14]) and the reduction of free cash flow agency costs of equity ([15], [16], [17]). Tax advantage of debt is based on the argument that the corporate profit tax treatment allows for the deduction of interest payments in computing taxable income. Consequently, using debt decreases a firm's expected tax liability and increases its after-tax cash flow, making companies use more debt to increase the value of their debt tax shield. Apart from

the above mentioned, Jensen and Meckling [15] and Jensen, [16] stress the advantage of debt as a mechanism to mitigate the agency costs of conflicts between managers and shareholders. This conflict of interests and thereby its costs significantly increase in situation when managers have excess cash under their control. Namely, when managers have more free cash flow than is needed to fund all of the firm's available profitable projects, they will have the incentive to invest this surplus in unprofitable projects ([16]). More debt financing can reduce the amount of funds available under management control and in turn diminish this agency cost problem.

The costs of debt relate to the costs of financial distress and the agency costs of debt. The existence of these costs forces companies to trade-off the costs and the above mentioned benefits of debt. Costs of financial distress arise when a firm uses too much debt in its capital structure so that it could not meet its financial obligation. Bankruptcy costs constitute a larger proportion of the firm's value as this value decreases, which implies that bankruptcy costs decline with firm size. Thus, according to trade-off theory, larger firms tend to be more diversified, which lowers the probability of their default and in turn relating costs [18], [4].

The agency costs of debt relate to the agency problem between creditors and shareholders [15]. As already mentioned, the benefit of using debt is that it commits the company to pay out cash to creditors and it reduces the amount of funds available to managers to engage in misbehaviour which would not be in the in the interests of shareholders. Thus, debt disciplines managers because default on paying obligations to creditors gives creditors the option of forcing the firm into liquidation. On the other hand, debt intensifies the other type of agency problem – the conflict between creditors and shareholders because the debt contract gives shareholders an incentive to invest suboptimally i.e to use existing debt funds to invest in risky projects (overinvestment problem). Due to their limited liability, shareholders realize greater value from investing in more risky projects [15]. They profit from the likelihood of larger gains at the expense of larger potential losses. Creditors anticipate this behaviour of shareholders and demand a premium for compensation, raising the costs of debt which is known as the agency cost of assets substitution problem. Moreover, if the benefits captured by creditors reduce the returns to shareholders, an incentive to reject positive net present value projects is created (underinvestment problem). This is because shareholders are residual claimants after debt is paid and creditors benefit more from a safe positive net value project than shareholders.

In summary, the use of debt decreases managers-shareholders agency costs, but as the level of debt increases, shareholders-creditors agency costs arise. For a large amount of debt, these costs will exceed the managers-shareholders agency costs savings. According to Jensen and Meckling [15], the trade-off between these costs results in an optimal capital structure. In a traditional tax/bankruptcy trade-off model, the managers-shareholders agency costs savings and shareholders-creditors agency costs are not considered.

The alternative pecking order theory (POT) is based on the information asymmetry between the firm's insiders - either shareholders or managers, and outsiders - mainly investors,

regarding the real value of both current operations and future prospects. For that reason, external capital (debt and equity) will always be relatively costly compared to internal capital (retained earnings) and the companies will prefer internal funding sources to external. Namely, the market is unaware of the true distribution of the firm's income, which may result in the firm's shares being overvalued or undervalued by investors who act according to all available information. Because investors assume that managers will only issue equity when they believe it is overvalued, this implies that a new equity issue the market will interpret as a 'bad signal' thus causing a reduction in the share price. Myers and Majluf [19] state that managers can avoid this adverse signalling problem by using financing sources associated with the least amount of information asymmetries. They also point out that underinvestment can be avoided if the firm can obtain financing that is not subject to the information asymmetry problem. If internal funds are sufficient, the information problem is solved and all projects with positive net present value will be undertaken. Once internal funds are exhausted, debt will be preferred to equity as it is less subject to undervaluation due to information asymmetry. This is the "pecking order" or the hierarchy of preference with respect to financing resources that companies follow – first retained earnings as the cheapest source of finance, followed by debt finance (bank loan and public debt), and finally, outside equity financing as the last option. Myers [20] extends this theory and states that firm's debt ratio reflects its past history through its cumulative requirement for external capital, its ability to generate cash flow, its dividend policy, and finally, its investment opportunities. Thus, under the theory the ideal capital structure would fluctuate over time.

Firm size can be regarded as a proxy for information asymmetry between managers and outside investors. The pecking order theory [20] supposes that larger firms are less subject to information asymmetry and better able to overcome information asymmetry than smaller firms, thus they can obtain external financing more easily and at lower costs. Furthermore, they should be more capable of issuing equity which is more sensitive to information asymmetry and have lower debt [4]. This suggests a negative association between leverage and the size of firm. Moreover, Bevan and Danbolt [21] argue that due to credit rating, large companies are more likely to have access to non-bank debt financing. In turn, this would also suggest a positive relationship between size and debt. However, in Croatian environment, it might be expected that lower information asymmetry results in larger firms getting more bank loans rather than substituting new equity issues for debt.

Despite the important contributions of both these theories in the understanding of capital structure decisions, neither of them gives a definite answer to the question of how companies should be financed. Consequently, the researchers have been looking for other determinants of corporate financing although, in some cases, resulting in similar equivocal views. As it is explained earlier, among other factors, this refers to banking sector concentration, too.

As the impact of the banking market structure on firm access to finance is ambiguous in theory, it is also indefinite from an empirical perspective. The existing empirical tests on the relationship between bank concentration and corporate financing have been mainly based on the data from developed countries or on the samples consisting of countries with different level of economic development. Petersen and Rajan [22] confirm the importance of relationship lending for credit availability. Cetorelli and Gambera [9] find that a higher level of banking sector concentration results in a lower amount of credit. However, in accordance with their findings, industries with a higher level of external finance dependence grow faster in more concentrated banking sectors. Beck et al. [23] show that bank concentration negatively affects firms' access to finance, especially for small and medium size firms. In the further stage of the analysis including the level of economic development, the result indicates that the negative impact holds for developing countries, but not for developed ones. Carbó-Valverde et al. [24] find conflicting results, depending on applied measure of bank concentration. Hake [25] provides evidence of positive impact of bank concentration on firm indebtedness supporting the relationship lending hypothesis.

III.   DATA AND METHODOLOGY

In order to evaluate the impact of bank concentration on firm leverage, in this research a firm leverage was used as a dependent variable. Different authors used different modification of this variable (for the discussion on leverage definitions, see [4]) but one of the most common is total liabilities over total assets. Its advantage is in its availability for all firms in the datasets. However, this broader measure is likely to overstate the true level of leverage. Namely, having in mind that theory of capital structure refers to the part of the total liabilities used for financing (i.e. not for transaction purposes), the usage of broader leverage measure may screen the important differences between long-term and short-term debt. Thus, in our study, we consider narrower leverage measure, calculated as long-term debt over total assets, which is in accordance with other relevant studies. Data from Orbis database (produced by Bureau van Dijk) are used for the calculation of this measure.

Figures 1 and 2 show average corporate leverage for very large and large as well as for medium and small manufacturing enterprises in the Republic of Croatia over the period 2002-2011. During the first years, the leverage was slowly increasing after which there was a period of stabile firm borrowing with progressively decline of leverage, especially for very large and large companies between 2006 and 2009. Although there was decline of the leverage in the sector of medium and small enterprises as well, it was slower compared to those of very large and large companies. As a tradable sector, the ratio in the manufacturing industry in 2010 increased at above-average debt growth for all industries and enterprises of all size. The slowdown of leverage, especially in the sector of large companies in the 2011 was the result of worse economic perspectives and impeded access to foreign sources of finance [26], [27].

In the existing empirical researches, banking market structure is usually measured by concentration ratios expressed by the share of the n leading banks in the total assets of the banking sector or by Herfindahl Hirschman Index (HHI). There is an exception in the study of Carbó-Valverde et

al. [24] where the Lerner index is applied. In our research, as a proxy of bank concentration variable, we use the share of four largest banks in total assets of the banking system. As it is explained earlier, according to the market structure hypothesis, higher concentration leads to lower leverage. Taking into consideration the information-based hypothesis, the opposite is true. The data for this variable were collected from the Croatian National Bank.
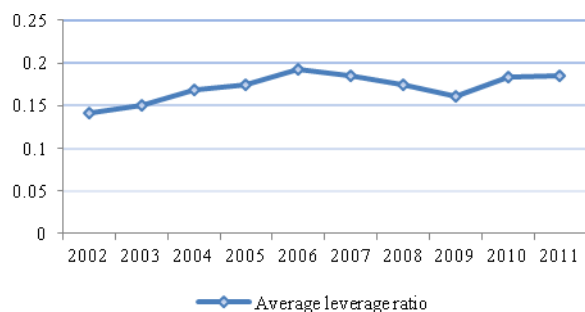

Fig. 1 Average leverage ratio of very large and large companies

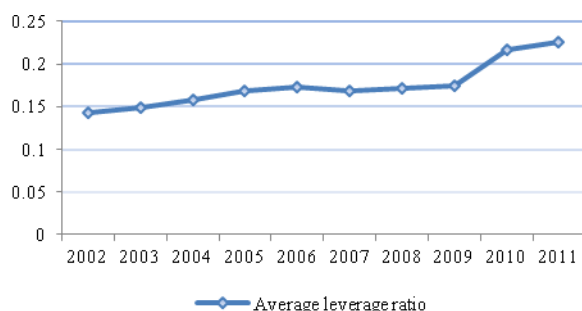Source: Authors' calculations based on data from Orbis of Bureau van Dijk database

Fig. 2 Average leverage ratio of very medium and small companies

Source: Authors' calculations based on data from Orbis of Bureau van Dijk database

Figure 3 shows bank concentration ratio measured by the share of four largest banks in total assets of the banking sector in the period from 2002 to 2011. The number of banks in the period decreased from 46 to 32. During the analyzed period, the ratio shows medium level of concentration thus indicating the presence of oligopolistic market structure. The concentration has been progressively increasing from 2007 as a consequence of crisis and greater trust in larger rather than in small banks.

In accordance with the models of capital structure determinants, among independent variables we use *firm-specific variables*, including size, profitability and tangibility. The effect on firm size is ambiguous. The trade-off theory predicts that bankruptcy costs decline with firm size. Accordingly, an inverse relationship between size and the probability of bankruptcy is expected and hence, a positive relationship between size and leverage too. In line with the arguments of Titman and Wessels [17], larger firms tend to be

more diversified, which lowers the probability of default implying positive size-leverage relationship. According to the viewpoint of pecking order theory [19], company size can be regarded as proxy for information asymmetry between company insiders and capital markets. As a result, larger firms are more transparent to outside investors and are better able to overcome information asymmetry than smaller ones, thus, they can obtain external financing, both debt and equity, more easily.
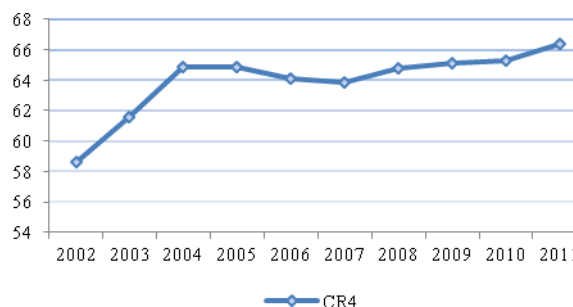

Fig. 3 Bank concentration ratio (CR4)

Source: Authors' calculations based on data from Croatian National Bank

Profitability is usually taken as firm-specific attribute that clearly distinct between two main capital structure theories. The trade-off theory predicts a positive influence of profitability on leverage as a result of bankruptcy costs, taxes and agency costs. Firstly, expected costs of financial distress decline with profitability increase because more profitable firms can support more debt. Secondly, it pays off to profitable firms to have more leverage since interest payments are tax deductible and firms can realize tax savings through the use of additional debt. Finally, higher leverage helps to control agency problem of free cash flow by forcing managers to pay out more of the excess cash instead of spending it inefficiently [15], [16]. The use of higher leverage can serve as a signal of optimistic future of the company [28].

In contrast, the pecking order model [20] predicts negative relationship between profitability and leverage as a consequence of hierarchy of financing due to the adverse selection costs associated with new equity issues in the presence of information asymmetry. Firms that have higher operating profitability have more earnings that they can potentially retain to finance their investments. Thus, profitable firms need less external financing and have lower leverage.

To sum up, based on the elaborated arguments, TOT predicts that larger firms, firms with higher profitability and more tangible assets could enjoy larger tax benefits of debt and hence should have higher leverage. On the contrary, POT predicts inverse (negative) relationship between the selected internal determinants and the firm leverage.

Tangible asset can be used as collateral or can be sold in case a firm has problems meeting its debt obligations. According to the TOT, a higher share of tangible assets means lower bankruptcy costs and lower agency costs as debt holders can more easily secure their claims [15]. Thus, a firm holding more tangible assets faces lower agency costs and finds it

optimal to hold more debt. The POT [20] assumes that firms prefer debt over equity due to the fact that debt is considered more secured and has less agency costs. Thus, positive relation between tangibility of assets and leverage is predicted.

Table 1 Descriptive statistics for sample of very large and large enterprises

Variable	Obs	Mean	Std. Dev.	Min	Max
Leverage	3462	0.173	0.184	0	1.429
CR4	3462	64.1222	2.003	58.594	66.427
ROE	3297	5.924	84.369	-1690.46	1821.02
Tangibility	3462	0.474	0.213	0	1
Average bank size	3462	9.091	2.831	3.786	12.717
Lending rate	3462	10.763	1.023	9.33	12.8
Inflation	3462	2.727	1.333	1.1	6.1

Source: Authors' calculations

The measures of firm-specific variables follow. As a proxy of firm size, natural logarithm of total turnover is used. Profitability is measured by return on equity (ROE) while as a proxy of tangibility we used ratio of fixed assets to total assets. All mentioned data are collected from Orbis of Bureau van Dijk database.

Table 2 Descriptive statistics for sample of very medium and small enterprises

Variable	Obs	Mean	Std. Dev.	Min	Max
Leverage	6346	0.176	0.285	0	12.069
CR4	6346	64.13	2.003	58.594	66.427
ROE	5917	12.479	96.139	-785.372	1778.261
Tangibility	6346	0.426	0.253	0	1
Average bank size	6346	9.091	2.831	3.786	12.717
Lending rate	6346	10.763	1.023	9.33	12.8
Inflation	6346	2.727	1.333	1.1	6.1

Source: Authors' calculations

As banking industry-specific variable, average bank size is added. Larger bank makes credit financing for enterprises more available. The variable is measured dividing the sum of total assets of the banks by the number of banks. The source of the data is Croatian National Bank.

Further control variables as external determinants of firms' leverage are lending interest rate and inflation. The lending interest rate, as a proxy for the cost of debt, should be negatively related to leverage as a higher interest rate implies a higher financing cost and thus less amount of borrowed funds. The data are extracted from World Development Indicators of the World Bank.

Frank and Goyal [29] experimented with several country-specific variables but all others, besides inflation, were less robust determinants of leverage. Saying differently, macroeconomic variable of inflation was the single one that

performed the best in explaining the leverage of analyzed (US) firms.

The effect of inflation is not unambiguous. The inflation is predicted to be positively related to leverage due to higher real value of tax deductions on debt (real value of tax shield is positively related to inflation) [29]. However, inflation affects firm choice of external financing. In most cases, firms will resort to internal sources in a period of high inflationary pressures as this will increase the cost of obtaining external sources, namely debt [30]. Thus, according to this argument, the negative relationship with the level of leverage is expected. As a measure of inflation, GDP deflator is used. The data are collected from World Development Indicators of the World Bank.

The empirical analysis of banking concentration and firm leverage is based on an unbalanced panel on the samples of Croatian enterprises. The samples consist of 371 large and very large enterprise and 694 small and medium manufacturing companies operating in the Republic of Croatia in the period from 2002 to 2011. However, due to the fact that the panel is unbalanced, the total number of observations is 2,524 for the model of very large and large enterprises and 4,378 for medium and small enterprises' model.

The descriptive statistics of the variables included in the empirical analysis are presented in the tables 1 and 2. The average leverage is similar for very large and large, and medium and small companies, while the standard deviation is higher for the group of smaller enterprises. The average value of concentration ratio is 64.13 percent.

The dynamic model of the following form is applied:

$$Leverage_{it} = \alpha + \delta Leverage_{i,t-1} + \beta_1 CR_{it} + \sum \beta_j X_j + \varepsilon_{it} \quad (1)$$

$$\varepsilon_{it} = v_i + u_{it}$$

It is a modified model of capital structure that, beside firm-specific variables, includes external determinants (banking sector factors and macroeconomic factors). $Leverage_{it}$ presents firm i's access to bank credit at time t, with $i=1, \ldots, N$, $t=1, \ldots, T$; α is a constant term, $Leverage_{i,t-1}$ is the one-period lagged leverage, δ is the speed of adjustment to equilibrium, CR represents bank concentration, vector of X_j control variables accounts for firm-specific, banking-industry specific and macroeconomics variables, ε_{it} is the disturbance, with v_i the unobserved firm-specific effect and u_{it} the idiosyncratic error.

As an estimator, two-step General Method of Moments (GMM) estimator developed by Arellano-Bond [31] is used. The estimator produces consistent results under the assumptions that there is no second order correlation in the first-differenced residuals and the instrumental variables are uncorrelated with the residuals. Thus, we apply Arellano-Bond test for the first and second serial correlation in the first-differenced residuals. The Sargan test of over-identifying restrictions is used to check for validity of the instruments.

IV. EMPIRICAL RESULTS

The pair-wise correlation coefficients for all variables used in the analyses are shown in Table 3 and 4. According to Gujaraty [32] here is no problem of multicollinearity in our models.

Table 3 Pair wise correlations matrix for sample of very large and large companies

	Leverage	CR4	Size	ROE	Tangibility
Leverage	1.000				
CR4	0.059	1.000			
Size	0.005	0.162	1.000		
ROE	-0.039	-0.051	-0.069	1.000	
Tangibility	0.260	0.004	0.162	0.099	1.000
Average bank size	0.059	0.797	0.196	-0.045	0.001
Lending rate	-0.073	-0.5953	-0.1508	0.036	0.001
Inflation	0.020	0.215	0.068	0.006	-0.029

	Average bank size	Lending rate	Inflation
Average bank size	1.000		
Lending rate	-0.764	1.000	
Inflation	0.227	-0.367	1.000

Source: Authors' calculations

Table 4 Pair wise correlations matrix for sample of medium and small companies

	Leverage	CR4	Size	ROE	Tangibility
Leverage	1.000				
CR4	0.062	1.000			
Size	0.1384	0.079	1.000		
ROE	-0.010	-0.029	-0.095	1.000	
Tangibility	0.260	0.004	0.162	0.099	1.000
Average bank size	0.073	0.799	0.098	-0.024	-0.002
Lending rate	-0.052	-0.5953	-0.081	0.009	0.001
Inflation	0.020	0.215	0.068	0.006	0.013

	Average bank size	Lending rate	Inflation
Average bank size	1.000		
Lending rate	-0.759	1.000	
Inflation	0.221	-0.366	1.000

Source: Authors' calculations

Tables 5 and 6 present the results of the empirical analysis, separately for very large and large, and medium and small companies. The both models are characterized by the p-values of Sargan which confirm the validity of instruments. The second test related to autocorrelation shows that there is no second order serial correlation in the both models.

Since the coefficients of the lagged leverage variable are statistically significant for the both samples, the dynamic natures of the models are confirmed.

Market structure variable enters significantly in the both equations, although in case of the medium and small enterprises on the verge of accepting (10.4 percent). Its positive sign shows that the firms' leverage is increasing as the bank market structure is becoming more concentrated. This result confirms validity of the relationship lending theory, indicating that at higher level of market concentration banks reduce information asymmetry through relationships with companies, making credit financing more available for firms. Our results are in line with Hake [25] despite of using different measures of concentration.

Table 5 Estimation results (GMM system estimator) for very large and large companies

Explanatory variables	Dependent variable: Leverage	
	Coefficients	Standard errors
Constant	-0.00821	0,00407
Leverage $_{t-1}$	0.64364***	0.04500
CR4	0.00449***	0.01189
Firm size	0.03591***	0.01185
ROE	-0.00005	0,00004
Tangibility	0.26927***	0.34666
Average bank size	-0.00621	0.00479
Lending rate	-0.00568**	0.00294
Inflation	-0.00229**	0.00105
Sargan test (p-value)	0.8132	
First-order correlation (m_1) (p-value)	0.0000	
Second-order correlation (m_2) (p-value)	0.9908	

***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.
Source: Authors' calculations

Two of three parameters of company-level variables are statistically significant. They encompass size and tangibility. The size positively affects firm financing, meaning that as a firm is getting larger, the costs of bankruptcy are declining, and hence the firm debt is increasing. Additionally, positive contribution of size could result from higher level of diversification and lower probability of default in case of larger companies. These results coincide with the results of e.g. Rajan and Zingales [4] and Byoun [33]. Positive sign of the tangibility variable confirms the importance of collateral for firm debt financing in case of both, very large and large, and medium and small enterprises. Firms with more tangible assets tend to have higher debt level since they can borrow at lower interest rates if the debt is secured with these assets. In case of small and medium companies, collateral value of their tangible asset could help reduce moral hazard and adverse selection problems common for SMEs. The observed positive relationship is consistent with theoretical predictions and empirical findings from developed countries, e.g. Rajan and Zingales [4], but contradicts the results some of previous

studies on transition countries (e.g. [34]). Contrary to the predictions of pecking order theory, profitability does not affect the firms' leverage.

Table 6 Estimation results (GMM system estimator) for medium and small companies

Explanatory variables	Dependent variable: Leverage	
	Coefficients	Standard errors
Constant	0.00430	0.00367
Leverage $_{t-1}$	0.61100***	0.03619
CR4	0.00276*	0.00169
Firm size	0.02128***	0.00722
ROE	-0.00003	0.00003
Tangibility	0.18979***	0.03276
Average bank size	-0.00686*	0.00417
Lending rate	-0.00297	0.00272
Inflation	-0.0100	0.00117
Sargan test (p-value)	0.1386	
First-order correlation (m_1) (p-value)	0.0000	
Second-order correlation (m_2) (p-value)	0.8029	

***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.
Source: Authors' calculations

Considering the external determinants of firms' leverage there are differences in the results among two samples. Precisely, although with the same sign, the statistical significances of the coefficients are different. While average bank size affects leverage of medium and small enterprises, it does not show effect on debt financing of very large and large firms. The opposite is true for lending rate and inflation. Negative sign of average bank size variable indicates that the as the banks get larger they are less oriented to medium and small enterprises. Considering the price of the borrowing, as it increases large companies lower their debt financing and use alternative sources of financing. Negative impact of inflation on the leverage of very large and large companies indicates that there is effect of increased costs of borrowing in the inflationary conditions. Similar results regarding the effect of interest rate and inflation are obtained in study of Bopkin [30]. Contrary to the larger companies, leverage of smaller ones is not affected by the lending interest rate and inflation, indicating that smaller firms have less choice of financing compared to larger firms and that rely mainly on bank credit regardless on the credit conditions.

V. CONCLUSION

This paper contributes to the literature on the importance of banking market characteristics on firms' financing based on company-level data. We provide additional insights on the impact of banking market structure and firm leverage, with regard to the firms' size, in emerging markets economies.

Both analyses, based on samples formed of very large and large, and medium and small enterprises, confirm that more concentrated banking sector is associated with more available credit sources for firms' financing. Thus, concentration in the banking market in Croatia is not an obstacle for companies' financing, at least at this level.

However, since there is question if the same result would be achieved for the higher degree of concentration, the policy makers should take actions for keeping the current bank market structure. This is especially important in the context of mergers and acquisitions policy.

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