Firm Performance and (Foreign) Debt Financing Before and During the Global Financial Crisis: Evidence from Firm-Level Data*

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Abstract

We examine the impact of financial leverage and foreign financing on firm performance using a large panel of Slovenian firms, before and after the Global Financial Crisis. We find a significant negative effect of leverage on firm performance, even after controlling explicitly for reverse causality, with this effect persisting but becoming weaker during the crisis. Firms with foreign debt generally outperform those relying solely on domestic financing, although they experience greater declines in performance when total leverage increases. When explicitly controlling for the amount of foreign financing, we find a positive and highly significant effect on firm performance. This positive pre-crisis effect is entirely driven by privately-owned firms, while state-owned firms experience negative outcomes. During the crisis, the effect of foreign financing turns positive yet statistically insignificant for both ownership types. Finally, we observe no performance differences between domestically and foreign-owned firms.

Keywords: Leverage, Foreign leverage, Global Financial Crisis, Firm performance, Panel data

JEL Classification: C33, C36, G32

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1 Introduction

In the period leading up to the Global Financial Crisis (GFC), firms in many European countries significantly increased their leverage, driven by reduced global uncertainty and favourable financing conditions. This surge in corporate leverage was facilitated by greater financial integration and increased cross-border lending, both through the interbank market and directly to firms. However, with the onset of the crisis, these financial flows initially halted and subsequently reversed, significantly restricting firms' access to new financing and revolving loans.[1] While some firms managed to replace domestic loans with direct foreign borrowing, others experienced a sudden and complete halt in foreign funding.

In this paper, we investigate how leverage and access to foreign debt financing affect firm performance, and whether this relation changed over the business cycles.[2] Generally, empirical studies identify a negative relationship between firm leverage—measured as debt to equity or debt to total assets ratios—and firm performance (see, for instance, Titman and Wessels (1988), Rajan and Zingales (1995), and Majumdar and Chhibber (1999)). Literature suggests that causality could run in both directions. High debt relative to equity may improve firm performance by resolving managerial incentive problems and reducing taxable income. Additionally, issuing debt generally involves lower transaction costs compared to equity issuance. Conversely, debt overhang may negatively affect firm performance through underinvestment, increased costs of financial distress, and a tendency toward riskier projects.[3]

Our analysis contributes to this literature by leveraging a large panel of Slovenian firms from 2001 to 2013, covering a broad range of firm types in terms of ownership, sector, and size, allowing us to study the effects of financing choices on firm performance for a more general population of firms. Compared to previous studies focusing on listed companies or specific sectors (e.g., Clarke et al., 2012; Medina, 2012; Wu, 2012; Claessens et al., 2000), our dataset includes all non-financial corporations with complete data, excluding only sole proprietors and certain state-owned firms.

Furthermore, we explore the role of foreign debt financing, expanding on prior work that examined either the presence of foreign bank subsidiaries (Giannetti and Ongena, 2009) or international bond issuance (Ghosh, 2008; Harvey et al., 2004). Our detailed financial data enable us to precisely identify the extent of direct foreign borrowing and investigate non-linear effects arising from interactions between foreign borrowing and firm leverage. This builds on the firm-bank matched analyses of Giannetti and Ongena (2012) and Ongena et al. (2015), who studied the impact of foreign bank relationships on firm performance and the international transmission of financial shocks. Our work further contributes by examining how these relationships and their effects evolved during the GFC, complementing findings from Clarke et al. (2012) and Kalemli-Özcan et al. (2022), who primarily focused on firm investment rather than performance.

We estimate the effect of financing choices on firm performance using fixed-effects estimation,

[1] Underlying causes include weaknesses in the banking sector and firm-specific issues such as reduced demand and deteriorating creditworthiness amid the recession.

[2] Throughout the paper, foreign debt is defined as foreign financial liabilities.

[3] See Appendix A for an overview of the theoretical literature.

where firm performance is measured by earnings before interest and taxes (EBIT), and leverage by total financial liabilities, both scaled by total assets. To assess the impact of foreign debt financing, we include a dummy variable indicating the presence of foreign financing, and in an alternative specification, we use the share of foreign financial liabilities in total assets as a regressor. All specifications incorporate additional control variables and time fixed effects. To explore differences across the business cycle, we split the sample into pre-GFC and post-GFC periods. We further investigate whether the relationship varies by firm ownership structure, particularly distinguishing between domestic and (partially) foreign-owned firms, as well as those with state ownership involvement.

In addition to our baseline estimates, we address potential reverse causality between financing choices and firm performance. Capital structure, especially financial leverage, can influence a firm's performance and market valuation, which in turn may affect managerial decisions regarding financing.[4] Similarly, while firm performance may depend on the extent of foreign financing, a firm's ability to access foreign debt may itself be influenced by its performance.

To mitigate this endogeneity, we instrument leverage using interest expenses, which are expected to be strongly correlated with leverage but are, by construction, excluded from our performance measure (EBIT), which reflects operating profitability before financing costs. To instrument the share of foreign financing, we use foreign accounts payable, which in the Slovenian context are highly correlated with foreign liabilities. Importantly, foreign accounts payable are generally more influenced by the firm's sector of activity than by its performance *per se*, making them a valid instrument. This approach aligns with the instrumental variable strategies used in related studies (Berger and Bonaccorsi di Patti, 2006; Margaritis and Psillaki, 2010).

Our first main finding is that leverage harms firm performance, independently of whether we instrument the endogenous variable or not. The negative sign is consistent with the hypothesis that higher leverage potentially leads to higher agency costs stemming from the conflict between shareholders, managers and bondholders, resulting either in underinvestment (Myers, 1977; Stulz, 1990) or investment in overly risky projects (Jensen and Meckling, 1976). The negative sign is also in line with several previous empirical studies, including Mramor and Valentinčič (2001) and Berk (2006), which explored the relation between performance and capital structure on a sample of Slovenian blue chips.[5]

Second, we find a negative coefficient both in the pre-crisis and crisis period, with the effect being significantly stronger before the crisis. How can we explain this finding? On the one hand, one could expect a more negative effect of debt on firm performance during the crisis, as higher debt aggravates the firm's problems with access to financing, due to the higher risk of liquidation. High leverage also increases the burden of debt servicing, reducing available free cash flow—an issue that becomes particularly acute during crises, when cash flows typically deteriorate. On the other hand, high debt also shows that the firm could finance promising

[4] Only a few papers have explicitly addressed this endogeneity issue, notably Baker (1973), Berger and Bonaccorsi di Patti (2006), and Margaritis and Psillaki (2010). For a more detailed discussion of the theoretical literature on reverse causality, see Appendix A.

[5] Compared to our study, the latter two articles focus on a more restricted sample of Slovenian firms during the transition period. Additionally, they look at the capital structure determinants, while we look at firm performance and control for the underlying endogeneity.

projects even during the crisis and can thus perform better than its counterparts. According to Bernanke and Gertler (1995) and Gertler and Gilchrist (1994), during a cash squeeze, only the firms with good access to the credit market can smooth production and employment. Other firms will instead have to cut their production, and will thus be hurt more by the squeeze. Our finding is in line with the latter explanation.

The third key finding is a positive relation between performance and foreign debt, both before and during the crisis, with the coefficient significant only in the pre-crisis period. This means that firms with access to foreign debt financing, on average, outperformed firms with domestic debt financing only, significantly so before the crisis. Additionally, firms benefited from having a larger share of foreign funds in total liabilities. The positive effect of foreign financing on firm performance is consistent with the empirical literature on this topic (see Harvey et al., 2004; Ghosh, 2008; Giannetti and Ongena, 2009). The argument goes that due to stricter monitoring by foreign lenders, the information asymmetry and agency costs decrease more in firms that borrow on international markets, which improves their performance. To attract foreign lenders, the firms also have to meet higher financial standards.[6]

Further exploration shows this result is not uniform across the different ownership subsamples. While the results are similar for domestic and foreign-owned firms, they differ from the baseline case for state-owned firms. For this subsample, the presence of foreign loans led to a significant negative effect on performance and to a more muted negative effect of total leverage on performance in the pre-crisis period.

Our results imply that foreign debt plays a dual role in the economy; on the one hand, it reduces asymmetric information and boosts the performance of firms, while on the other hand, it can also exacerbate the negative effect of total leverage on performance. The threshold amount, i.e., where the benefit of foreign debt outweighs the negative effects, is very much idiosyncratic to firms, their business plans and how leveraged they are. For moderately leveraged firms, the positive effects seem to prevail over the negative ones. Our results are in this respect informative primarily for firm managers.

Additionally, although weaker and insignificant, the positive effect of foreign financing persists during the crisis. The reduction in the positive effect could be explained by the higher volatility of foreign loans in the crisis times due to withdrawals of banks from foreign markets and related uncertainty and cash squeeze. This suggests that policies that mitigate the fragmentation of financial markets during times of crisis could be beneficial.

The rest of the paper is structured as follows. Section 2 presents empirical literature studying the relation between leverage and performance. In Section 3, we describe the database used and descriptive statistics of our sample, along with a qualitative assessment of developments in Slovenia. Section 4 presents the models and estimation approach. We present our results in Section 5 and robustness checks in Section 6. Section 7 concludes.

[6] Harvey et al. (2004) also show the importance of international debt markets, especially when domestic banks cannot provide sufficient debt capital.

2 Empirical literature

Empirically, the early papers have unveiled a negative relationship between leverage and profitability. Arditti (1967), for instance, finds a negative effect of debt-to-equity ratio on the expected future profitability, and Hall and Weiss (1967) find that equity-to-assets affects the profits-to-equity ratio positively, when market structure conditions are held constant. Other empirical literature studying the effect of leverage on firm performance includes McConnell and Servaes (1995), Pushner (1995), Majumdar and Chhibber (1999) and Stierwald (2010) among others.[7]

A larger body of empirical literature focused on how performance, assessed by several different measures, influences the capital structure of the firm. Harris and Raviv (1991) show that financial leverage is lower in more profitable firms. Rajan and Zingales (1995) find for the G7 countries that leverage is affected positively by the tangibility of the assets, the investment opportunities (proxied by the market-to-book ratio), the size of the firm and negatively by profitability. Fama and French (2002) confirm that more profitable firms and firms with more investment usually have lower financial leverage due to a higher return on investment. Grossman and Hart (1982) and Aivazian et al. (2005) confirmed a negative relation between financial leverage and investment, which is in line with the agency cost theory of underinvestment. Moreover, Mramor and Valentinčič (2001) and Berk (2006), which explored the relation between performance and capital structure on a sample of Slovenian blue chips in the transition period, also find a negative relation. They link their results to the pecking order theory, which states that better-performing firms use more internal financial resources and less debt financing. Some studies also emphasise the role of operating leverage in shaping the observed negative relation between profitability and financial leverage (Chen et al., 2019).

Only a few papers have explicitly pointed out and controlled for the reverse causality between leverage and performance. Baker (1973) estimates a simultaneous equation model of the relation between performance and leverage at the industry level, using a two-stage least squares procedure to solve the endogeneity problem. He finds a negative effect of equity-to-debt ratio on firm profitability, while a simple ordinary least squares (OLS) estimation, conversely, yields a coefficient of the opposite sign.[8]

Berger and Bonaccorsi di Patti (2006) and Margaritis and Psillaki (2010) both study the effect of leverage on firm efficiency, while taking into account the reverse causality between efficiency and a firm's capital structure. The two studies differ in their empirical approach. Berger and Bonaccorsi di Patti (2006) run a two-stage least squares regression, whereas Margaritis and Psillaki (2010) estimate the two parts of the circular relation separately by OLS and use lagged values of the endogenous regressors to achieve exogeneity. Both studies find a positive relationship between leverage and efficiency.

A few papers looked into non-linearities in the relationship between financial leverage and

[7] See Weill (2008) for an overview.

[8] The first-stage equation models leverage as a function of profitability, cost fixity and output predictability. The second-stage equation models the industry profitability as a function of leverage, cost fixity and several market variables (capital requirements, firm concentration, economies of scale relative to the market size and growth in industry output).

firms' productivity growth. In particular, on the sample of CEE countries Coricelli et al. (2011) estimate a threshold for leverage, above which leverage adversely affects firm productivity. The estimated threshold is then used explicitly in the analysis of the effects of leverage on firm productivity. Other studies that take into account non-linearity do so by including squared terms of leverage in their empirical models (for example, see, Margaritis and Psillaki, 2010). This non-monotonic relationship between leverage and productivity growth is also documented in the context of the global financial crisis, highlighting the risks of excessive leverage (Coricelli et al., 2012).

Furthermore, quasi-natural experiments reveal complex dynamics in the profitability-leverage nexus, showing that firms may transiently reduce leverage in response to shocks that increase profitability but gradually revert to prior leverage targets, in line with dynamic trade-off models (Heath and Sertsios, 2022).

2.1 Empirical literature on foreign debt financing

Although empirical research on the relationship between foreign debt financing and firm performance has gained prominence, it remains somewhat limited. Generally, the effects of foreign lending on firm performance are estimated to be positive. Harvey et al. (2004) show on a sample of firms from emerging economies that the information asymmetry and agency costs decrease more in firms that issue bonds on international markets, as they are subject to stricter monitoring by foreign lenders. These firms also have to meet higher financial standards to attract foreign lenders, which improves their performance. For a sample of Indian firms, Ghosh (2008) finds a weaker negative effect of leverage on firm profitability for firms participating in international debt markets.

The effect of foreign bank lending on firm performance was also explored by Giannetti and Ongena (2009) on a panel of listed and unlisted companies from Eastern European economies. They find that lending by foreign bank subsidiaries stimulates growth in firm sales, assets, and use of financial debt, and decreases the firms' cost of debt.[9] In another paper (Giannetti and Ongena, 2012), where they can identify firms' primary bank relationships, they find a positive effect on firms that borrow directly from foreign banks and also an indirect positive effect of foreign bank presence in the country.

2.2 Effects of (foreign) leverage during crisis

In addition to research on determinants of corporate performance during the 1990s Asian crisis (see, e.g., Claessens et al., 2000), a handful of papers examine how financial leverage and access to foreign financing affected firm performance, survival and recovery during the GFC. For example, Medina (2012) find that firms with higher pre-crisis leverage performed worse during the crisis, using data on listed companies during the GFC, respectively. Specifically, they find a non-linear negative effect of leverage, with the negative effects particularly strong in firms with

[9]Note that in this study, Giannetti and Ongena (2009) do not observe bank-firm relationships and are thus not able to evaluate whether firms benefit directly from having borrowed from foreign banks or indirectly due to foreign bank presence in the economy that changes the lending policies of domestic lenders.

high pre-crisis leverage. Similarly, Wu (2012) find that Chilean firms dependent on external financing——i.e. those unable to fund operations from retained earnings——experienced steeper downturns during the GFC.[10]

Turning to emerging markets, Clarke et al. (2012) examine how financial constraints and access to financing affected firm survival in the first year of the GFC. They find that firms with access to financing have weathered the crisis better. They also found that financial constraints were lower for older and larger firms, although they became more pronounced for the latter during the crisis. The constraints were also less severe during the crisis in countries with foreign bank presence. Note that despite using a firm-level dataset, they could not observe whether a particular firm was borrowing from a foreign-owned bank, to look at the direct effect of foreign lending.

Herman and Krahnke (2022) analyses how the composition of foreign liabilities-—specifically, debt versus equity-—affects a country's vulnerability to external crises. Using firm-level data, the authors find that firms with a higher share of foreign equity in their foreign liabilities were significantly less affected by the Global Financial Crisis (GFC). This resilience can be attributed to intra-firm loans and intra-firm trade credit, which provided crucial liquidity support during the crisis

Kalemli-Özcan et al. (2022) use a cross-country matched firm-bank dataset to show that firms entering the crisis with higher leverage reduced investment more sharply, especially those with short-term debt in countries experiencing sovereign stress. This "debt overhang" effect is persistent and explains a substantial portion of the aggregate investment decline in Europe after the crisis.

The closest to our analysis is a study by Ongena et al. (2015), which analyses firm performance during the GFC using matched bank-firm level data with information on direct foreign borrowing. Analysing the propagation of financial shocks, it finds that firms that had a borrowing relationship with an internationally borrowing domestic or a foreign bank before the crisis suffered more in their financing and real performance during the crisis, compared to firms that relied only on a locally funded domestic bank. Adverse shock to credit had a much stronger impact on firms with a single bank relationship, as well as smaller firms, or those with less tangible assets they could pledge as collateral.[11] In contrast, our dataset also allows us to analyse the role of the *amount* of foreign borrowing. Additionally, we can also capture non-linear effects stemming from the interaction of foreign financing and firm leverage. Finally, we perform these analyses while explicitly controlling for reverse causality between financing choice and firm performance.

[10]They also find that firms with more foreign currency debt also had larger declines in sales, although their investment or profits did not differ significantly from other firms.

[11]They use data from Eastern Europe and Central Asia, which includes many SMEs.

3 Data

3.1 Data and sample construction

For the empirical analysis, we use annual data from a newly constructed firm-level database, which contains detailed qualitative and financial information on all Slovenian firms from 1995 onwards.[12] The database includes data from a variety of sources: (i) Business Register of Slovenia from the Agency of the Republic of Slovenia for Public Legal Records and Related Services (AJPES), (ii) the Annual Reports of Corporate Entities also collected by AJPES, (iii) the Statistics of Financial Accounts and (iv) the Foreign Direct Investments Register, the latter two both coming from the Bank of Slovenia's internal database. Since foreign loan data has been available since 2001, we adjust our sample accordingly. The sample size is also adjusted based on the data availability necessary for our analysis, thus including the firms that have reported values for all the variables we use in our specifications.[13] Our sample is unbalanced, since the coverage of firms' financial information alters constantly throughout the sample period. Most of it is due to normal firm dynamics (i.e. firm creation vs. destruction) and some due to reporting. The coverage in terms of value added is relatively stable across the years, with firms in the sample contributing about 41% of the total value added in the economy. Table 10 in the Appendix D reports the sample size for each year for the full sample and the subsample of firms with foreign financing.

The advantage of our database is its wide coverage, which allows us to study the effects of financing choices on performance for a more general population of firms than some previous studies. Our sample includes firms of all sizes, except for the sole proprietors, while, for instance, McConnell and Servaes (1995) and Rajan and Zingales (1995) limit their sample to listed companies, and Berk (2006), Stierwald (2010) focus on a sample of large firms. Further, comparable studies that examine the relationship between firm performance and financial leverage mostly focus on the manufacturing sector (e.g. Pushner, 1995; Weill, 2008; Coricelli et al., 2011). We broadly follow the approach by Driffield and Pal (2008) and Rajan and Zingales (1995), which exclude the financial sector and the government sector, respectively. Our sample thus includes all public, private, domestic and foreign-controlled non-financial corporations[14], but excludes the government and financial sectors. In addition, some publicly owned firms with specific sectoral financing characteristics (e.g. DARS d.d., the state motorway company) are also excluded.

There might be substantial differences in the effect of (foreign) leverage on firms' performance before the crisis and after the crisis, so we split our analysis into the pre-crisis period (2001-2008) and the crisis period (2009-2013). We set 2009 as the first year of the crisis, since this is the year the global financial crisis hit the Slovenian economy. Thus, this is also the first year of the crisis reflected in the balance sheets and income statements of firms. In 2010 and

[12] Sole proprietors were excluded from the database due to the poor quality of their reporting, resulting in a lot of missing data.

[13] An exception to this is firms with no data on foreign financing. If there is data on other variables included in our analysis, we include the firms in our full sample, and their respective amount of foreign financing is set equal to zero. Additionally, observations with zero sales are dropped from the sample.

[14] Sector S.11 in ESA 95 classification.

2011, there was some modest recovery on the real side of the economy, but due to financial distress in the corporate sector, balance sheets deteriorated further.[15]

Furthermore, to consider potentially more favourable (foreign) financing conditions for foreign firms, we divide our sample into two subsamples based on ownership status. In the first subsample, we include firms with no foreign equity capital, which we will refer to as "domestic firms", while firms with some share of foreign ownership, called "foreign firms", constitute the second subsample. In the latter category, we include all the firms with some foreign ownership, either FDI or portfolio investment. We also verify how the state's involvement in firm ownership changes the effects of financing choices on firm performance. For this, we divide our sample into two subsamples: (i) private firms, defined as those with corporate, private, or cooperative ownership; and (ii) state-owned firms, comprising all firms identified as having mixed or state ownership.[16]

3.2 Qualitative assessment - Choice of financing and firm performance in Slovenia

Bank loans are the most prevalent source of financing in small countries with less developed capital markets, and in Slovenia, most firm investments are financed via bank loans. Between 2001 and 2008, the average annual growth rate of bank loans to domestic firms, on average, exceeded 20%, peaking just before the crisis (end of 2008) with a growth rate of over 30%. This exuberant loan growth can be attributed to Slovenia's entry into the ERM II in 2004 and, in particular, EMU in 2007, which eliminated exchange rate risk and facilitated access of firms, and especially banks, to foreign and often cheaper sources of financing. Firms accessed this foreign financing both directly and indirectly. The latter was through the domestic banking sector, where domestic banks obtained foreign financing and transmitted it to firms. As we cannot identify the amount of these "indirect" sources of foreign financing at the firm level, and since we are mostly interested in the effect of direct foreign borrowing on performance, we take into account only the information on direct foreign financing. High loan growth resulted in higher firm indebtedness, as shown in Figures 1-2 in the Appendix C. First, we observe that firms with some foreign financial liabilities were, on average, more leveraged than their counterparts, which were not borrowing from abroad. Not surprisingly, this difference in leverage increased significantly after Slovenia joined EMU, meaning that firms with access to foreign sources used them extensively once the exchange rate risk was eliminated.

With the onset of the crisis, firms found themselves in an adverse economic environment with more limited access to financing. Due to their high indebtedness, which had increased in the years before the crisis, firms were confronted with difficulties in obtaining and revolving

[15] Note that our sample also covers a period in which there was a change in the accounting standards. In particular, since 2006, firms' assets have no longer been valued at their book value. The firms could alternatively use the mark-to-market approach for the valuation of some types of assets. Since we do not have data on the size of the resulting revaluation of firms' assets and how it affected different firm types, we can at best control for this change by estimating a fixed effects model and by including year dummies to pick up the structural break.

[16] We were not able to determine the ownership status for a few firms, leading to a loss of 7 observations when building domestic-foreign owned subsamples and of 37 observations when looking at the private-state owned subsamples.

loans. As a result, the growth rate of financial liabilities slowed. Figures 3-4 depict average and median performance, as measured by net operating profit and by a proxy for cash flow, for firms with some foreign debt and firms without foreign debt for the period 2001 - 2013. Irrespective of whether looking at the mean or the median performance, one can observe that firms without foreign debt, on average, outperformed firms with some foreign financing. Before the crisis, differences were relatively small, while in the years 2009 and 2010, the gap in performance between the two samples of firms widened because of a relatively larger collapse in performance of firms with some foreign financing. Just by looking at these figures, however, it is impossible to assess the potential effect of (foreign) leverage on performance. For that reason, we introduce a formal analysis in Section 4.

3.3 Descriptive statistics

To substantiate the qualitative analysis, we report some basic descriptive statistics for the variables employed in our empirical analysis.[17] The statistics are presented in Table 1 for the full sample and in Table 2 for the subsample of firms with some foreign debt. The tables are further split into panels that report descriptive statistics for the pre- and crisis periods, respectively. More detailed summary statistics, including sample characteristics for firms without foreign loans, are provided in Table 9 in the Appendix D.

We use two measures of firm performance. The first measure, which we refer to as *net operating profit*, is calculated as the ratio of earnings before interest and taxes over total assets (EBIT/TA) and is also our "core" measure. The second measure, which we call *cash flow*, is calculated as the ratio of earnings before interest, taxes, depreciation and amortisation over total assets (EBITDA/TA). Not surprisingly, both measures of firm performance show that firms on average performed better in the pre-crisis period.[18] This holds in the full sample and in the subsample of firms with some foreign financing, whereby in the latter sample, average net operating profits even became negative during the crisis.

Various measures of leverage exist, used depending on the subject of interest. For our analysis, we employ *leverage* calculated as the percentage of financial liabilities in total assets. On average, financial liabilities constituted 29% of the total assets of firms before the crisis. This share increased by about 9 percentage points during the crisis. Both in the pre-crisis and the crisis period, firms with foreign financing were on average leveraged more. For these firms, the average ratio rose by almost 10 percentage points to 46.9% during the crisis.

Further, we measure *foreign leverage* as a ratio between foreign financial liabilities and total assets. Mean foreign leverage stood at 19.5% of total assets before the crisis and increased to an average of 26.4% in the crisis years.

Turning to other firm characteristics, we see that the average *firm size* increased during the crisis.[19] Not surprisingly, firms with foreign financing are on average larger. If we measure the firm size in terms of the number of employees, a different picture emerges, as the average

[17] See Table 8 in Appendix B for exact variable definitions.

[18] Note that average firm performance has deteriorated due to a minor increase in EBIT and EBITDA coupled with a relatively large increase in total assets.

[19] In the model, we use a logarithm of total assets to allow for potential non-linearities.

TABLE 1. Descriptive Statistics: Full Sample

	A. Before Crisis				B. Crisis			
Variable	Mean	P25	P50	P75	Mean	P25	P50	P75
EBIT / TA	3.48	0.95	4.17	8.62	1.54	0.49	2.72	5.79
EBITDA / TA	8.61	4.28	8.74	14.50	6.42	3.24	6.77	11.54
Financial liabilities / TA	28.99	11.33	23.89	41.11	37.52	17.80	33.13	51.14
Foreign financial liabilities / TA	19.46	3.23	10.09	26.41	26.43	3.89	15.00	37.42
Size (assets)	5224.60	191.00	548.00	1881.00	6393.74	299.00	797.00	2461.00
Size (employment)	41.96	3.00	7.00	18.00	33.04	3.00	7.00	17.00
Firm age	11.42	8.00	12.00	14.00	14.36	8.00	17.00	20.00
Tangibility	37.51	15.63	35.63	56.37	36.56	13.03	34.00	56.25
Firm openness	13.32	0.00	0.08	11.92	14.79	0.00	0.54	15.20
Productivity	34.53	17.12	24.98	37.59	37.21	19.98	28.28	41.14
Sales growth	10.96	-6.28	7.93	23.45	-2.70	-19.02	-2.27	12.55
Liquidity ratio	93.60	46.67	75.16	109.26	100.53	42.97	76.30	118.04
Interest expenses / TA	2.15	0.71	1.59	2.83	1.68	0.67	1.32	2.22
Observations	42,336				23,652			

TABLE 2. Descriptive Statistics: Firms with Some Foreign Debt

	A. Before Crisis				B. Crisis			
Variable	Mean	P25	P50	P75	Mean	P25	P50	P75
EBIT / TA	2.41	0.64	3.70	7.40	-0.72	-1.80	2.08	5.28
EBITDA / TA	7.26	3.69	7.82	12.91	3.41	1.17	5.45	10.04
Financial liabilities / TA	37.72	20.08	33.98	50.89	46.89	25.93	41.59	57.51
Foreign financial liabilities / TA	19.46	3.23	10.09	26.41	26.43	3.89	15.00	37.42
Size (assets)	37249.93	880.00	3359.00	13521.00	47988.75	1518.00	4836.00	17988.00
Size (employment)	223.53	7.00	23.00	129.00	166.17	7.00	20.00	88.00
Firm age	11.67	8.00	12.00	14.00	15.13	7.00	17.00	20.00
Tangibility	39.50	19.39	40.30	56.91	30.49	8.79	25.89	49.17
Firm openness	30.46	0.12	10.68	64.23	34.14	0.96	16.73	69.50
Productivity	54.11	20.22	30.07	47.69	57.87	25.55	37.00	58.91
Sales growth	14.47	-2.13	9.65	24.05	0.27	-17.09	0.00	14.34
Liquidity ratio	83.38	44.06	68.55	99.97	98.74	43.62	76.02	115.97
Interest expenses / TA	2.66	1.09	2.00	3.24	1.86	0.71	1.43	2.41
Observations	2,381				1,165			

number of employees decreased during the crisis. Also, the share of tangible assets in total assets (*tangibility*) declined during the crisis, more so for firms with foreign financing. Further, in the period before the crisis, the share of international net sales (*openness*) represented on average about 13% of total net sales in the full sample and about 30% in the sample of firms with foreign loans. During the crisis, the mean value of the ratio increased slightly in the full sample and increased substantially in the sample of firms with foreign financing. *Productivity*, calculated as real value added over employment, rose on average during the crisis for both subsamples. *Sales growth* was higher on average for firms with some share of foreign financing in the pre-crisis times. During the crisis, it became negative in the full sample, while remaining positive in the sample of firms with foreign financing. Finally, *interest expenses* increased in both samples during the crisis, but by less than the total assets. As a result, the percentage of assets being spent to pay interest declined for both samples in the crisis period.

To summarise, comparing the full sample of firms with those with some foreign financing, the latter are on average bigger, more productive, more open, have a higher leverage, grew faster during the crisis and have a lower liquidity ratio.

4 Empirical model

For a formal analysis of the relationship between corporate performance and financing options in Slovenia, we estimate several variants of the following fixed effects model (Model 1):

$$\begin{aligned}\text{Performance}_{i,t} = c_i + \alpha_1 \cdot \text{Leverage}_{i,t} \\ + \text{Controls}_{i,t} + \nu_t + \varepsilon_{i,t} \ ,\end{aligned}$$

where we regress firm performance on different financing options, a set of control variables, an intercept and year dummies. With the latter, we control for general macroeconomic developments in the economy.

As described previously, our *core* performance measure is net operating profit over total assets. In the robustness section, we cross-check the results using cash flow as an alternative performance measure. The dependent variable, firm performance, can be defined in various ways. One of the options commonly used in the literature is financial ratios derived from balance sheet and income statement data. Rajan and Zingales (1995), for instance, measure firm performance with profitability, defined as cash-flow over the book value of assets. Similarly, Baker (1973) uses the after-tax profit rate and Giannetti and Ongena (2009) the censored sales and assets growth rates as measures of firm performance. Corporate performance can also be measured with stock market returns and Tobin's q, which represents a mix between market and accounting values (e.g. McConnell and Servaes, 1995), or with total factor productivity (e.g. Pushner, 1995). Finally, some papers have introduced a firm's efficiency as a performance measure. A firm's efficiency is measured as the distance from the performance of a best-practice firm or the efficiency frontier. Several versions of this measure were used in the literature, for instance, the cost efficiency score (Weill, 2008), profit efficiency (Berger and Bonaccorsi di Patti, 2006) and productive or technical efficiency (Margaritis and Psillaki, 2010).

The key explanatory variables in the model are variables related to the amount of leverage and foreign financing of the firm. In all our models, we include leverage measured as the share of financial liabilities in total assets. In Models 2 to 4, we then add variables related to the presence of foreign financial liabilities. First, we include a dummy variable which takes the value 1 if the firm has some foreign debt financing and 0 otherwise (Model 2):

$$\begin{aligned}\text{Performance}_{i,t} = c_i &+ \alpha_1 \cdot \text{Leverage}_{i,t} \\ &+ \alpha_2 \cdot \text{Foreign Dummy}_{i,t} \\ &+ \text{Controls}_{i,t} + \nu_t + \varepsilon_{i,t} \ .\end{aligned}$$

From this specification, one can conclude whether the presence of foreign loans affects firms' performance. Next, by including a cross term between leverage and foreign financing dummy, we check whether the effect of leverage on firm performance differs depending on the presence of foreign debt (Model 3):

$$\begin{aligned}\text{Performance}_{i,t} = c_i &+ \alpha_1 \cdot \text{Leverage}_{i,t} + \alpha_2 \cdot \text{Foreign Dummy}_{i,t} \\ &+ \alpha_3 \cdot (\text{Leverage} \times \text{Foreign Dummy})_{i,t} \\ &+ \text{Controls}_{i,t} + \nu_t + \varepsilon_{i,t} \ .\end{aligned}$$

Finally, in a subsample consisting of firms with some foreign financing, we also explicitly control for the share of foreign debt financing in total assets (foreign leverage), where foreign debt financing is represented by the value of foreign financial liabilities extended to firms by foreign banks (foreign loans). Our Model 4 is thus:

$$\begin{aligned}\text{Performance}_{i,t} = c_i &+ \alpha_1 \cdot \text{Leverage}_{i,t} \\ &+ \alpha_2 \cdot \text{ForeignLeverage}_{i,t} \\ &+ \text{Controls}_{i,t} + \nu_t + \varepsilon_{i,t} \ .\end{aligned}$$

All specifications also include a set of control variables. We base our choice of these on the factors found relevant for firm performance in the existing literature. First, we control for the size of the firm, which is expected to affect performance, as larger firms tend to be more diversified and consequently fail less often. We use log total assets as a proxy for it in our baseline estimation and log employment to check the robustness of our results.

We also control for the share of tangible assets and firm productivity. Further, we add squared values of log productivity, tangibility of assets and a size variable to allow for potential nonlinearities. Next, we also include log firm age expressed to grasp the decreasing informational content of this variable as the firm ages, as in Giannetti and Ongena (2009). Net sales growth, firm openness, and liquidity ratio are also included as control variables. The latter is defined as current assets net of inventories divided by current liabilities and indicates creditworthiness and the ability to pay off short-term debt. Finally, we include year dummies to account for aggregate factors that may vary over time, in particular macroeconomic developments and institutional factors. As a robustness exercise, we also include the world GDP growth and stock market

volatility index (VIX) to control for the international macroeconomic environment.[20]

4.1 Estimation strategy and endogeneity

The models are estimated by the standard fixed effects approach. However, as suggested in the previous section, there exists evidence of a two-way causal relationship between firm performance and its leverage. Higher leverage can have a positive or negative effect on the performance. Yet, there is also a possible reverse causality (i.e., leverage might be affected by performance) either due to the manager's signalling efforts or because of retained earnings, and consequently, the amount of leverage depends on firm performance. Simple OLS fixed effects estimation of the relation between financial leverage, the presence and the amount of foreign debt financing and firm performance would thus lead to biased and inconsistent estimates.

To correct for endogeneity, we estimate an instrumental variable (IV) version of the above-specified fixed-effects models, where we instrument leverage by the share of interest expenses in total assets. Interest expenses are expected to be a good instrument, since they are related to leverage and unrelated to earnings before interest and taxes (EBIT) by construction.[21] Another possible endogeneity problem might arise when analysing the relationship between foreign leverage and performance. While a firm's performance could also depend on the share of foreign leverage, one can expect that foreign borrowing itself depends on firm performance. Therefore, the instrumental variable approach is also warranted when focusing on the share of foreign leverage. We use foreign accounts payable, representing the trade credit given to Slovenian firms from abroad. We use this instrumental variable, firstly, because it is highly correlated with foreign loans for firms in Slovenia and secondly, because the amount of foreign accounts payable is more related to the sector of activity and long-term relations between companies, than to the performance itself.

We verify the validity and strength of the instruments by conducting several tests. We look at the significance of the first stage regression coefficients and at the tests for underidentification and weak identification, using the Kleibergen–Paap rk LM and Wald F statistic (Kleibergen and Paap, 2006). Additionally, we use the Anderson-Rubin Wald test (based on Anderson and Rubin, 1949), which provides a weak-instrument-robust inference. With this test, we can reject or accept the null hypothesis of the coefficients of our endogenous variables being zero without the test size distortions coming from the potential weakness of instruments.

[20] VIX is the CBOE Volatility Index, a measure of market expectations of near-term volatility based on S&P 500 stock index option prices. GDP growth rates as reported by the World Economic Outlook Database, October 2015.

[21] Other approaches have been used in the previous literature to control for reverse causality between leverage and profitability. Pushner (1995), for instance, uses productivity instead of profitability as the dependent variable in his study of the effect of leverage on firm efficiency, since leverage is not affected by productivity, thereby avoiding the problem of reverse causality. At the same time, profitability and productivity are positively correlated.

5 Results

In this section, we show our main estimation results for the first three models described in Section 4 and estimated on the full sample, split into pre-crisis (Table 3) and crisis period (Table 4). In both tables, the OLS results are presented in Panel A, and the IV results are presented in Panel B.

Effect of leverage on performance (Models 1 - 3). We find a negative and statistically significant (at a 1% significance level) effect of leverage on performance in both periods and for all three models. Our results strongly indicate that higher leverage is associated with lower performance, which is consistent with many previous empirical studies (e.g., Titman and Wessels, 1988; Rajan and Zingales, 1995; Majumdar and Chhibber, 1999; Pandey, 2002; Ghosh, 2008).

From a theoretical point of view, these results are in line with the agency costs of conflict between shareholders and managers that can manifest as "underinvestment" (Myers, 1977; Stulz, 1990), and the cost of conflict between shareholders and debt holders that can lower the value of bonds (Jensen and Meckling, 1976). In both cases, the agency costs increase with leverage. However, the latter case is less relevant for Slovenia, as few firms have issued debt securities. Our result could also be explained by high financial distress costs and/or the higher transaction costs of external financing (Donaldson, 1961).

However, this negative relation could also be driven by the causality running in the opposite direction; better performance and more retained earnings are expected to lead firms to accumulate less debt (see, e.g., Weill, 2008; Rajan and Zingales, 1995).[22] To overcome this endogeneity problem, we instrument for leverage by the share of interest expenses in total assets. Results (in Panel B) remain robust across all three models in both periods. This finding is in contrast with Baker (1973), who finds that the sign of the leverage coefficient changes when the problem of endogeneity is taken into account.

Looking at the instrument's validity and strength, one should note that the null hypothesis of under-identification is rejected for all three models in both periods at a 5% significance level. The weak identification tests signal some difficulties in the pre-crisis period, where the size of the Wald test of the coefficient of the instrumented variable turns out to be larger than 20 or 25%. This means that we might be rejecting too often the null hypothesis of coefficient being zero. However, the Anderson-Rubin test that corrects for the test size distortion shows that the coefficients on the endogenous regressors are indeed significantly different from zero.

In terms of magnitudes, in our sample, the negative effect of leverage on performance is stronger in the pre-crisis period.[23] The finding that during the crisis leverage has less adverse effect on firm performance than in the pre-crisis times is consistent with the explanation provided by Bernanke and Gertler (1995) and Gertler and Gilchrist (1994) on how a cash squeeze can

[22] On the other hand, Margaritis and Psillaki (2010) found that more efficient firms choose higher leverage because their bankruptcy and financial distress costs are lower. In this case, we would expect a positive relation between leverage and performance.

[23] The Chow test showed that the difference between the coefficients for the two periods is significant in the case of IV estimation at 1% significance level. See the Appendix E for details.

affect firms' performance. According to these studies, during a cash squeeze, which is one of the characteristics of the GFC, only firms with access to the credit market will be able to smooth production and employment. The remaining firms will instead have to cut their production, and will thus be hurt more by the squeeze. In other words, firms with access to the credit market are likely to experience a weaker negative effect of leveraging up during the crisis.

Access to foreign financing and performance (Model 2). Next, we investigate how the presence of foreign loans affects firms' performance. The coefficient on the foreign loans dummy is insignificant when we consider a standard OLS estimation, with a positive sign before the crisis and a negative sign during the crisis. When we control for the endogeneity, we get a positive effect of foreign financing in both periods, with a larger and significant coefficient in the pre-crisis period. The explanation could follow the same lines as in Harvey et al. (2004) or Giannetti and Ongena (2009), i.e., that stricter monitoring by foreigners reduces agency costs, which has a positive effect on performance. The positive effect could be smaller in crisis times due to higher volatility of foreign loans, as banks withdraw from foreign markets, and related higher uncertainty.

TABLE 3. Firm performance and (foreign) financing: Pre-crisis period

Dependent v.: EBIT/TA	**A. OLS**			**B. IV**		
Model	1	2	3	1	2	3
Leverage	-0.3092***	-0.3092***	-0.3095***	-0.7320***	-0.7325***	-0.6487***
	(0.057)	(0.057)	(0.058)	(0.179)	(0.180)	(0.153)
Foreign dummy		0.2742	-0.0321		1.7434**	33.3595***
		(0.603)	(3.574)		(0.855)	(11.311)
Leverage*Foreign dummy			0.0089			-0.9276***
			(0.106)			(0.334)
Control variables:						
Size (ln Assets)	25.219***	25.218***	25.220***	18.656***	18.642***	19.242***
	(3.549)	(3.549)	(3.554)	(3.104)	(3.105)	(2.917)
Size^2 (ln Assets)	-1.3918***	-1.3919***	-1.3919***	-0.8097***	-0.8105***	-0.8870***
	(0.236)	(0.236)	(0.236)	(0.229)	(0.229)	(0.208)
Tangibility	0.0134	0.0133	0.0133	0.0747*	0.0744*	0.0658*
	(0.032)	(0.032)	(0.032)	(0.039)	(0.039)	(0.037)
Tangibility^2	-0.0003	-0.0003	-0.0003	0.0002	0.0002	0.0002
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.9606	-0.9642	-0.9625	-0.3778	-0.4000	-0.6439
	(0.799)	(0.799)	(0.801)	(0.918)	(0.919)	(0.910)
Sales growth	0.0277***	0.0277***	0.0277***	0.0205***	0.0205***	0.0216***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
Liquidity ratio	0.0038***	0.0038***	0.0038***	0.0037***	0.0037***	0.0042***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Openness	-0.0025	-0.0026	-0.0026	-0.0090	-0.0091	-0.0018
	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)	(0.012)
Productivity	0.0699***	0.0699***	0.0699***	0.0644***	0.0644***	0.0643***
	(0.013)	(0.013)	(0.013)	(0.010)	(0.010)	(0.010)
Productivity^2	-0.0000***	-0.0000***	-0.0000***	-0.0000***	-0.0000***	-0.0000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Intercept	-89.968***	-89.946***	-89.959***			
	(11.97)	(11.97)	(11.99)			
Kleibergen-Paap rk LM stat				5.20	5.19	4.47
(P-value)				0.023	0.023	0.034
Kleibergen-Paap rk Wald F stat				5.60	5.59	2.42
Size of distortion				$< 25\%$	$< 25\%$	$> 25\%$
Anderson-Rubin Wald test				14.63	14.63	32.69
(P-value)				0.000	0.000	0.000
R^2	0.261	0.261	0.261	-0.068	-0.069	-0.057
Observations	42,336	42,336	42,336	42,336	42,336	42,336

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are in brackets. All specifications are estimated with firm fixed effects and include year dummies and an intercept. For the IV estimation, we report the Kleibergen-Paap rk LM statistic as an under-identification test and the Kleibergen-Paap rk Wald F statistic as a test for weak identification. We also report the Anderson-Rubin-Wald test, which is a significance test for coefficients on endogenous variables, robust to the presence of weak instruments.

TABLE 4. Firm performance and (foreign) financing: Crisis period

Dependent v.: EBIT/TA	**A. OLS**			**B. IV**		
Model	1	2	3	1	2	3
Leverage	-0.2606***	-0.2604***	-0.2508***	-0.4206***	-0.4207***	-0.4059***
	(0.058)	(0.058)	(0.061)	(0.106)	(0.106)	(0.112)
Foreign dummy		-0.7021	3.7098*		0.2620	7.7445
		(1.250)	(2.226)		(1.289)	(5.676)
Leverage*Foreign dummy			-0.1116			-0.1890
			(0.070)			(0.164)
Control variables:						
Size (ln Assets)	36.208***	36.192***	36.386***	33.031***	33.037***	33.3353***
	(6.676)	(6.676)	(6.645)	(6.474)	(6.471)	(6.451)
Size^2 (ln Assets)	-2.0797***	-2.0781***	-2.0949***	-1.9598***	-1.9604***	-1.9879***
	(0.438)	(0.439)	(0.435)	(0.435)	(0.435)	(0.432)
Tangibility	-0.0832	-0.0831	-0.0839	-0.0568	-0.0568	-0.0580
	(0.054)	(0.054)	(0.054)	(0.050)	(0.050)	(0.050)
Tangibility^2	-0.0001	-0.0001	-0.0001	0.0001	0.0001	0.0001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age	-0.6428	-0.6393	-0.6601	-0.0213	-0.0226	-0.0522
	(1.217)	(1.215)	(1.216)	(1.139)	(1.138)	(1.142)
Sales growth	0.0249***	0.0249***	0.0250***	0.0217***	0.0217***	0.0219***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Liquidity ratio	0.0032***	0.0032***	0.0033***	0.0029***	0.0029***	0.0031***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Openness	-0.0052	-0.0050	-0.0062	-0.0037	-0.0037	-0.0058
	(0.027)	(0.027)	(0.027)	(0.023)	(0.023)	(0.023)
Productivity	0.0834**	0.0834**	0.0834**	0.0788**	0.0788**	0.0788**
	(0.035)	(0.035)	(0.035)	(0.031)	(0.031)	(0.031)
Productivity^2	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Intercept	-132.98***	-132.94***	-133.66***			
	(23.34)	(23.34)	(23.28)			
Kleibergen-Paap rk LM stat				28.86	28.74	26.59
(P-value)				0.000	0.000	0.000
Kleibergen-Paap rk Wald F stat				35.09	34.97	16.30
Size of distortion				$< 10\%$	$< 10\%$	$< 10\%$
Anderson-Rubin Wald test				17.13	17.07	11.78
(P-value)				0.000	0.000	0.000
R^2	0.235	0.235	0.237	0.200	0.200	0.200
Observations	23,652	23,652	23,652	23,652	23,652	23,652

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are in brackets. All specifications are estimated with firm fixed effects and include year dummies and an intercept. For the IV estimation, we report the Kleibergen-Paap rk LM statistic as an under-identification test and the Kleibergen-Paap rk Wald F statistic as a test for weak identification. We also report the Anderson-Rubin-Wald test, which is a significance test for coefficients on endogenous variables, robust to the presence of weak instruments.

Access to foreign financing, leverage and performance (Model 3). Furthermore, we also include a cross term between leverage and the foreign loans dummy. Recall that the presence of foreign financing had a positive and highly significant effect on performance for the IV estimation in the pre-crisis period (Model 2). However, increasing leverage while using some foreign financing results in an even more negative effect of leverage on firms' performance (Model 3). Yet this does not necessarily imply that the increase in foreign loans *per se* hinders performance. This only suggests that firms with some foreign financing pay a higher price, in terms of performance, when they increase overall leverage relative to firms without this source of financing. Results are also very similar in the crisis period. The only difference is that the negative effect of leverage is now less pronounced, and the coefficients on the foreign dummy and cross term are insignificant.

Next, we look at how the positive effect of foreign financing and the enhanced negative effect of leverage due to foreign financing interact, depending on the firm's leverage. In Table 5, we calculate the difference between the impact of the dummy, coefficient on leverage and cross term for various leverage levels. The values are taken from the leverage distribution for the full sample of firms. For values of leverage equal to sample mean or lower, the effect of having foreign financing is positive, which is in line with positive coefficient on dummy for foreign financing. The threshold level of leverage beyond which the negative effects prevail is calculated to be at 36.6% of total assets for the pre-crisis period, and higher, at 40.6% for the crisis times. Note that this calculation looks at average effects.

TABLE 5. Difference in firm performance depending on presence of foreign financing for various values of leverage

Leverage		**No foreign fin.**		**Foreign fin.**		**Difference***	
Distribution		P-C	C	P-C	C	P-C	C
p10	5.42	-3.51	-2.20	24.82	4.52	28.33	6.72
p25	13.23	-8.58	-5.37	12.51	-0.12	21.09	5.24
p50	27.03	-17.53	-10.97	-9.24	-8.33	8.29	2.64
mean	32.05	-20.79	-13.01	-17.15	-11.32	3.63	1.69
p75	44.98	-29.18	-18.26	-37.55	-19.02	-8.37	-0.76
p90	63.40	-41.13	-25.74	-66.58	-29.97	-25.45	-4.24

* Difference in firm performance due to having foreign financing, for different values of firm leverage. Calculated based on coefficients on foreign financing dummy variable, coefficient on Leverage and a cross term between the two. Coefficients used are IV coefficients from Model 3 from Tables 3-4. P-C denotes the pre-crisis period, and C the crisis period.

Finally, to identify whether *an increase* in foreign loans is, in fact, dampening firms' performance, one has to explicitly control for the amount of foreign loans. We do this in the next subsection, where we estimate Model 4 on a subsample of firms with some foreign financing.

Other determinants of firm performance. Next, we turn to the relation between control variables and firm performance. The size of the firm (proxied by the logarithm of total assets) is positively and significantly related to firm performance in both periods. A positive size effect was found in numerous empirical works that used net sales or firm assets as a measure of firm size, for instance Rajan and Zingales (1995) and Harvey et al. (2004). This is in line with Margaritis

and Psillaki (2010), who argue that larger firms are expected to perform better as they usually possess more advanced technology, are more diversified and better managed. Additionally, Stierwald (2010) argues that firm size has a positive impact on profitability, stemming from economies of scale and scope or larger firms' access to capital at lower costs than their smaller counterparts. In addition, we also allow for non-linearities in the relation between size and firm-level performance. We find statistically significant negative coefficients, suggesting that larger firms perform better but at a decreasing rate.

Further, our results point to a positive relationship between tangibility and performance in the pre-crisis sample, which is, however, significant only in the IV estimation. In the crisis, the effect of tangibility is insignificant, but of a negative sign. Firm age, which could be seen as an approximation for intangible capital and experience, has an insignificant effect in both periods.

Regarding sales growth, we find a positive and significant effect in the pre-crisis and crisis period. This result can be interpreted along the lines of McConnell and Servaes (1995), who use a five-year past sales growth as a proxy for the future growth opportunities. As expected, firms with a higher liquidity ratio performed better on average according to our estimates. From an economic perspective, the higher the short-term assets, the more able the firm is to pay off its short-term liabilities, thus exhibiting higher financial strength. Interestingly, openness does not affect performance significantly in either period.

Productivity is positively and significantly related to performance in both periods, with the positive effect decreasing in productivity; more productive firms are performing better on average, but at a decreasing rate. This finding is consistent with the superior firm hypothesis by Demsetz (1973), where in the world of heterogeneous firms, the more productive firms have a competitive advantage over less productive ones, either in lower average costs of production, higher quantity produced with fewer inputs or higher product quality, which in turn leads to higher profitability. Similarly, Stierwald (2010) finds that higher productivity leads to higher profitability due to the competitive advantage that these firms have over their rivals.

Finally, the coefficients do not change if we control explicitly for external macroeconomic factors. When included, the world GDP growth and the volatility index (VIX) have an insignificant effect on firm performance. Therefore, we estimate our models without these two external macroeconomic variables.[24]

5.1 Amount of foreign financing

In this section, we discuss the effect of the relative amount of foreign financing (foreign leverage) on firm performance by estimating Model 4 on a subsample of firms with some foreign financing. This could introduce a sample selection bias in our estimates, since firms' ability to obtain foreign financing could depend on factors related to performance. To verify if the sample selection bias is indeed present in our subsample, we first estimate Model 4 with a two-stage Heckman approach using OLS, before going on with the analysis.

We perform the Heckman procedure as follows. In the first stage, we estimate a selection equation that relates the probability of a firm being in the foreign-financing subsample to

[24]The results with VIX and world GDP growth are available upon request.

a number of explanatory variables. In addition to the explanatory variables of the original model, we add the share of foreign accounts receivable in total assets as an over-identifying variable. Foreign accounts receivable represent trade credit given by Slovenian firms to their partners abroad, which is a good proxy for the firm being an exporter and thus present in the international markets. This, in turn, increases the probability of getting financing from foreign sources. From the first stage estimates, we calculate the inverse Mills ratio, which is then included as an explanatory variable in the second stage of the estimation to correct for the sample selection bias. If the coefficient on the inverse Mills ratio turns out to be significant, this indicates that the sample selection bias is indeed present in the smaller sample. We report the second step results in Table 6, with pre-crisis results in the first column of Panel A and crisis period results in the first column of Panel B. Since the inverse Mills ratio turns out to be insignificant in both periods, we proceed with regular OLS and IV estimation on the smaller subsample. The results are reported in the remaining columns in Table 6.

The effect of leverage on firm performance remains negative and significant when constraining the sample to firms that could obtain foreign financing. This result holds for both periods, except in the crisis period when estimating with IV, where the effect is negative but insignificant. Our variable of interest, the share of foreign debt financing in total assets, has a positive effect on performance in most cases. An exception is the OLS estimation before the crisis, where this effect is negative but statistically insignificant. When we explicitly control for endogeneity in the pre-crisis period, the coefficient on foreign leverage turns positive and becomes significant at a 1% significance level. Turning to the crisis period, our estimates show a positive and significant effect of foreign leverage on performance for the OLS estimation and a positive but insignificant coefficient on foreign leverage in the IV estimation. The size of the leverage and foreign leverage coefficients is smaller in the crisis period, aligned with the results from the full sample. We can also notice some differences in the effects of control variables when estimating our models on the smaller sample. The effect of sales growth on firm performance becomes insignificant in both periods, and the effect of size also becomes insignificant when using the IV approach. The loss of significance could be due to a relatively small sample size.

TABLE 6. Firm performance and amount of foreign financing

Dependent v.: EBIT/TA	**A. Pre-crisis**			**B. Crisis**		
Model	4 (OLS)	4 (OLS)	4 (IV)	4 (OLS)	4 (OLS)	4 (IV)
Leverage	-0.3695**	-0.370**	-5.1178***	-0.6003***	-0.6001***	-0.6323
	(0.152)	(0.149)	(1.357)	(0.117)	(0.092)	(0.400)
Foreign fin. liabilities/TA	-0.0830	-0.0834	4.8144***	0.2991**	0.2991**	0.0852
	(0.162)	(0.156)	(1.529)	(0.130)	(0.118)	(0.524)
Control variables:						
Size (ln Assets)	19.145**	18.850***	17.361	76.513	76.723*	43.957
	(7.777)	(7.289)	(41.88)	(48.98)	(45.28)	(52.73)
Size^2 (ln Assets)	-0.4840	-0.4664	0.6468	-3.9918	-4.0026*	-2.2993
	(0.440)	(0.415)	(2.219)	(2.588)	(2.344)	(2.931)
Tangibility	-0.1595	-0.1696	0.4409	-0.6281	-0.6243	-0.5342
	(0.188)	(0.176)	(0.630)	(0.605)	(0.601)	(0.510)
Tangibility^2	0.0019	0.0020	0.0022	0.0042	0.0042	0.0038
	(0.002)	(0.002)	(0.007)	(0.005)	(0.005)	(0.005)
Age	-0.2991	-0.1579	-0.4266	-4.4053	-4.2731	-1.7521
	(5.451)	(5.372)	(14.40)	(7.057)	(6.927)	(5.906)
Sales growth	-0.0144	-0.0125	-0.0483	0.0052	0.0053	0.0001
	(0.016)	(0.014)	(0.039)	(0.012)	(0.010)	(0.009)
Liquidity ratio	0.0299**	0.0300***	0.0446	-0.0005	-0.0006	0.0017
	(0.012)	(0.011)	(0.039)	(0.010)	(0.007)	(0.007)
Openness	-0.0146	-0.0170	-0.0870	-0.0273	-0.0267	-0.0352
	(0.039)	(0.034)	(0.246)	(0.083)	(0.072)	(0.081)
Productivity	0.1057	0.0997***	-0.0130	0.0324	0.0324***	0.0302***
	(0.064)	(0.030)	(0.081)	(0.061)	(0.009)	(0.009)
Productivity^2	-0.0000	-0.0000***	0.0000	0.0000***	0.0000*	0.0000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inverse Mills ratio	1182.83			-104.06		
	(3267.1)			(1800.8)		
Intercept	-117.01***	-105.37***		-308.46	-309.88*	
	(34.34)	(29.84)		(200.0)	(186.7)	
Kleibergen-Paap rk LM stat			3.58			3.62
(P-value)			0.059			0.057
Kleibergen-Paap rk Wald F stat			5.35			3.05
Size of distortion			<15%			<25%
Anderson-Rubin Wald test			100.12			206.94
(P-value)			0.000			0.000
R^2	0.302	0.306	-9.724	0.440	0.440	0.353
Observations	1,840	1,840	1,840	956	956	956

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are in brackets. All specifications are estimated with firm fixed effects and include year dummies and an intercept. The first columns in Panel A and Panel B present the results of a FE-OLS estimation including the inverse Mills ratio. For the IV estimation, we report the Kleibergen-Paap rk LM statistic as an under-identification test and the Kleibergen-Paap rk Wald F statistic as a test for weak identification. We also report the Anderson-Rubin-Wald test, which is a significance test for coefficients on endogenous variables that is robust to the presence of weak instruments.

5.2 Does the ownership matter?

In the previous section, we have documented the effect of (foreign) leverage and other explanatory variables on performance for the full sample. We now look at whether the effect of (foreign) leverage on the performance of firms varies with the ownership type. In other words, does ownership matter? We explore the effect of ownership along two dimensions: 1) domestic and foreign ownership, and 2) state and private ownership. Results are presented in Table 7. For brevity, we focus on comparing the results of the IV estimations before and during the crisis for Model 3.[25]

Domestic and foreign ownership. For domestic and foreign ownership, we observe that differences in the signs and size of coefficients are not substantial in the pre-crisis period. The significant negative impact of leverage is larger for domestic firms, while the cross-term between leverage and foreign loans dummy is larger for foreign firms. The positive effect of foreign borrowing on performance remains similar for both ownership types, with slightly higher values for foreign firms. Like in the full sample, the presence of foreign financing increases firm performance, while amplifying the negative effect of leverage, regardless of the ownership status. The strength of these effects, however, is different depending on the ownership. Comparing the size of the coefficients on leverage and on the interaction term between leverage and the foreign loans dummy, we observe that the "cost" of higher leverage in terms of poorer performance is higher for domestic firms in general. Additionally, it is also higher for those accessing some foreign financing compared to foreign-owned firms, who have done the same. In other words, firms which took foreign loans were more adversely affected by total leverage if they were domestically owned. This is despite the fact that the amplification of the negative effect of leverage is more pronounced for foreign firms. Turning to the crisis period, the coefficient on leverage remains robust only for domestic firms. For both ownership types, the positive effect of foreign borrowing becomes insignificant.[26]

Turning to control variables, there are at least four further differences between the results in the foreign firms subsample and the domestic one. First, the asset size has a significant positive effect on performance for both ownership types before the crisis, and only for the domestic type during the crisis. For foreign firms, the effect of firm size turns negative and insignificant, suggesting that for foreign-owned firms, being a large firm did not help their performance in the crisis times. Second, tangibility is positive before the crisis, significant for domestic firms, while it becomes negative and insignificant during the crisis for both subsamples. Third, in contrast to the domestic subsample, where we find that younger firms perform better on average, age has a positive effect on performance in the case of firms with some foreign ownership. In both cases, results are significant in the pre-crisis period and insignificant during the crisis. Finally, sales growth and liquidity ratio had a positive and significant effect on performance in both periods for the domestic subsample, while in the foreign subsample, the respective coefficients became insignificant.

[25] Results on remaining models and OLS estimation are available upon request.

[26] We are working with a relatively small subsample, only 630 observations, so this might partly explain these insignificant results.

TABLE 7. Firm performance and (foreign) financing: Ownership

Dependent v.: EBIT/TA	**Domestic ownership**		**Foreign ownership**		**State ownership**		**Private ownership**	
Period†	**P-C**	**C**	**P-C**	**C**	**P-C**	**C**	**P-C**	**C**
Model	3	3	3	3	3	3	3	3
Leverage	-0.94***	-0.39***	-0.44***	-0.41	-0.695***	-0.21**	-0.65***	-0.41***
	(0.28)	(0.10)	(0.04)	(0.36)	(0.26)	(0.10)	(0.15)	(0.11)
Foreign dummy	33.38*	9.00	35.26***	2.24	-16.61***	5.78	35.40***	7.97
	(17.94)	(7.24)	(11.77)	(9.77)	(6.08)	(7.83)	(11.41)	(5.88)
Leverage*Foreign dummy	-0.92*	-0.26	-1.01***	-0.00	0.49**	-0.27	-0.96***	0.20
	(0.52)	(0.21)	(0.36)	(0.31)	(0.20)	(0.35)	(0.33)	(0.17)
Control variables:								
Size (ln Assets)	18.81***	37.89***	14.50**	-8.57	22.97	42.46***	19.68***	33.92***
	(3.36)	(6.71)	(6.51)	(20.22)	(14.06)	(10.83)	(2.96)	(6.86)
Size^2 (ln Assets)	-0.72***	-2.26***	-0.90**	0.49	-0.63	-1.95***	-0.94***	-2.05***
	(0.27)	(0.46)	(0.41)	(1.20)	(0.88)	(0.63)	(0.21)	(0.47)
Tangibility	0.09*	-0.05	0.071	-0.07	-0.23	0.13	0.08**	-0.06
	(0.05)	(0.05)	(0.10)	(0.28)	(0.24)	(0.17)	(0.04)	(0.05)
Tangibility^2	0.00	-0.00	-0.00	-0.00	0.00	-0.00*	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Age	-2.11**	-0.91	5.53*	3.71	-1.43	-8.77	-0.78	0.10
	(1.07)	(1.18)	(3.06)	(3.15)	(4.55)	(5.55)	(0.93)	(1.15)
Sales growth	0.02***	0.03***	0.01	0.01	0.01	0.01	0.02***	0.02***
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.02)	(0.00)	(0.00)
Liquidity ratio	0.01***	0.00***	0.00	0.00	0.00	0.01	0.01***	0.00***
	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Openness	-0.01	-0.01	0.05	-0.01	0.05	0.03	-0.00	-0.01
	(0.01)	(0.03)	(0.04)	(0.05)	(0.05)	(0.05)	(0.01)	(0.02)
Productivity	0.08***	0.06**	0.04***	0.31***	0.09***	0.09***	0.08***	0.08**
	(0.02)	(0.03)	(0.02)	(0.08)	(0.02)	(0.02)	(0.02)	(0.03)
Productivity^2	-0.00**	-0.00	-0.00*	-0.00	-0.00***	-0.00	-0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Kleibergen-Paap rk LM stat	28.71	21.39	4.49	7.89	20.77	11.39	4.35	25.91
(P-value)	0.000	0.000	0.034	0.005	0.000	0.001	0.037	0.000
Kleibergen-Paap rk Wald F stat	9.70	16.06	11.36	4.35	2.09	4.35	2.35	15.89
Size of distortion	$< 10\%$	$< 10\%$	$< 10\%$	$< 20\%$	$> 25\%$	$< 20\%$	$> 25\%$	$< 10\%$
Anderson-Rubin Wald test	23.18	11.38	439.01	3.87	5.18	2.42	33.42	11.76
(P-value)	0.000	0.000	0.000	0.020	0.006	0.090	0.000	0.000
R^2	-0.57	0.21	0.53	0.37	-0.34	0.23	-0.04	0.20
Observations	38,646	21,431	3,685	2,221	1,779	656	40,529	22,987

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are in brackets. All specifications are estimated with firm fixed effects and include year dummies and an intercept. We report Kleibergen-Paap rk LM statistic as an under-identification test and Kleibergen-Paap rk Wald F statistic as a test for weak identification. We report also the Anderson Rubin Wald test, which is a significance test for coefficients on endogenous variables, robust to the presence of weak instruments.

† P-C denotes pre-crisis period and C the crisis period.

State and private ownership. The most striking difference between the results for private firms and those for state-owned firms is the effect of using foreign financing on firm performance. The significant positive effect before the crisis we saw in the full sample is entirely driven by private firms. Firms with state ownership had a significantly lower performance if they used some foreign debt financing. In the crisis period, the presence of foreign financing had a positive but insignificant effect on performance in both ownership samples.

Similarly interesting is the switch in the sign of the cross term coefficient in the two ownership types. Taking up some foreign debt financing in the pre-crisis period has improved the (significant) negative effect of overall leverage on performance in the case of state ownership, and worsened it in the case of private firms. Given that the coefficients on overall leverage are of similar magnitudes across the two subsamples, meaning that the state-owned firms were losing less in terms of performance due to high leverage if they took up some foreign financing than privately owned firms, which did the same. For the crisis period, the signs are turned, but the coefficients remain insignificant.[27]

Regarding control variables, there are two further points worth noting. First is the lack of significance of the otherwise positive effect of firm size on performance for the state-owned companies in the pre-crisis period. Second, the positive effect of tangibility on firm performance in the pre-crisis period seems to be driven by the privately owned companies only.

6 Robustness

First, we verify the robustness of our baseline results by introducing a crisis dummy and estimating the model using data on the whole panel, rather than splitting the sample into a pre-crisis and crisis period. We introduce the cross terms with a crisis dummy only for our main variables of interest and by doing so, restrict the effects of control variables to be the same across the two periods. Further, we estimate the model with two alternative measures for performance and firm size. First, we employ cash flow as a performance measure as an alternative to the net operating profit used in our baseline models. Second, we verify whether our baseline results are robust to a different measure of firm size. We follow Giannetti and Ongena (2009) and use a logarithm of employment as a proxy for firm size. As in the previous subsection, we focus only on the IV results, which we report in Tables 12 to 14 in the Appendix F.

Crisis dummy. Introducing a crisis dummy and limiting the control variables to have the same effect across the two periods confirms our baseline results and gives additional information on the differences in the effects of financing options in the two periods. In particular, the negative effect of leverage on firm performance is significantly weaker during the crisis. Similarly, the positive effect of the presence of foreign financing becomes significantly smaller in crisis times. Also, the effect of the cross term is significantly reduced in the crisis period. As expected, the coefficient on the crisis dummy is negative and significant, meaning that firms have on

[27] Note that in both periods, the weak instrument test points to a rather large distortion of test size for the pre-crisis period and in the state ownership subsample also for the crisis times. According to the Anderson-Rubin test, however, we can reject the null hypothesis of coefficients on endogenous variables being zero. The only exception is the state ownership sample in the pre-crisis period, where the null hypothesis can only be rejected at a 10% significance level.

average performed worse during the crisis.[28]

Among the control variables, the only difference lies in the negative effect of firm age on performance that becomes significant when the model is estimated using the data for the whole period. This suggests that overall, younger firms outperformed the older ones.

Cash flow as a measure of performance. Results are very similar to the baseline case and confirm that leverage affects firm performance in a negative way, with coefficients remaining highly significant in both periods.[29] Results regarding the effect of foreign financing have not changed markedly either, with positive effects of foreign financing on firm performance, and amplification of the negative coefficient on leverage. Like in the baseline version, the related coefficients are significant in the pre-crisis period and insignificant in the crisis.[30]

Some differences arise when we compare the effects of control variables. For example, the positive effect of tangibility before the crisis became stronger and even more significant (at 1%), and the effect for the crisis period turned positive from negative, while remaining insignificant. This is no surprise, since tangibility is highly associated with the depreciation, which is a part of EBITDA. In other words, firms with a lot of tangible assets will, on average, also have higher depreciation, which will - *ceteris paribus* - translate into higher EBITDA. When working with the EBIT as a measure of performance, this direct effect was not present. Additionally, the effect of firm age turns positive in both periods, with coefficients being significant in the pre-crisis period. One possible explanation for this could be that older firms accumulate, on average, more assets, which implies more depreciation, which is included in the performance measure that we use in this case, i.e., EBITDA. Again, this channel was absent in our baseline specification, where depreciation was excluded from the performance measure.

Employment as a measure of firm size. Results are mainly in line with our baseline results and confirm our previous findings, i.e. leverage negatively affects performance, more so if firms have accessed foreign financing.[31] It is interesting that the effect of firm size becomes insignificant, while it was highly significant in the baseline case. This suggests that it is rather the firm's size in terms of total assets than the number of employees that matters for firm performance. Moreover, the coefficient on firm age turns positive and highly significant in both periods. We could explain the two changes together along the following lines: since we excluded the relevant size proxy from our estimation, and the number of employees could not substitute it properly in terms of explaining the variations in firm performance, firm age became a proxy for the size of the firm in terms of total assets.[32]

Since the firm size is usually determined by looking at more than one variable, e.g. in EU legislation, the SME definition is based on turnover, total assets and the number of employees, we have checked how our results change if we take into account such a broader definition of

[28]The weak instrument test points to a relatively large distortion of test size when estimating with crisis dummy. The significance of the endogenous variables is, however, confirmed by the Anderson-Rubin Wald test.

[29]Results are presented in Table 13 in the Appendix F.

[30]There is a rather large distortion of test size in the pre-crisis period, according to the Kleibergen-Paap weak instrument test, however, the Anderson-Rubin test confirms the significance of endogenous variable(s) included in the second stage of IV estimation.

[31]Results are presented in Table 14 in the Appendix F.

[32]The Anderson-Rubin Wald test confirms that coefficients on the endogenous variable(s) included in our regression are significant despite a rather large distortion of the test size in the pre-crisis period.

SMEs.[33] We have thus estimated our baseline models for the subsamples of SMEs and large firms. The results for the SMEs are very similar to those for the full sample. For large firms, the coefficients on foreign debt financing (dummy or cross term) are insignificant. The sign, however, is in line with the results for state-owned firms, with foreign loan presence having a positive influence on performance before the crisis and a negative influence during the crisis. Given the similarity of the results for big and state-owned firms and insignificant coefficients in estimation with big firms, we deem the ownership angle as more relevant in explaining heterogeneity among firms in terms of the effects of financing choices on performance.[34]

7 Conclusion

This paper examines the impact of leverage and foreign debt financing on firm performance before and during the GFC. Specifically, we aim to answer the following questions: (i) Have the effects of financial leverage on firm performance changed in crisis times? (ii) How did access to foreign debt financing affect firm performance, in particular, were firms that obtained foreign debt financing relatively more successful in weathering the crisis? (iii) And was the effect of (foreign) debt financing on firm performance different depending on the firm's ownership?

To answer these questions, we analyse non-financial firms in Slovenia, among which many rely on foreign financing and have experienced a boom-bust cycle over the last decade. We employ a firm-level database, which is crucial for identifying the direct effects of foreign financing on firm performance, as it includes data on the amount of lending from the rest of the world. This also allows us to cover various types of firms in terms of size and ownership. We estimate several variants of our firm-level fixed-effects model between 2001 and 2013.

We use a detailed, firm-level dataset covering non-financial companies in Slovenia over the period 2001–2013——many of which depend on cross-border borrowing and have weathered a pronounced boom–bust cycle over the past decade. Crucially, our database records the volume of lending sourced from abroad, enabling us to isolate the direct impact of foreign debt on firm outcomes. Moreover, it also captures firms of varying sizes and ownership structures.

Our results support the theoretical predictions of a negative relationship between leverage and performance, even when we explicitly control for reverse causality. This does not change during the crisis. We find that firms with access to foreign financing performed better on average. When we include a cross-term between leverage and foreign loans dummy, we show that firms with some foreign financing pay a "higher price" in terms of performance when they increase total leverage relative to the firms without this source. In our last model, we explicitly control for the amount of foreign financing, and we find that relatively more foreign debt improves firm performance in a significant way. This could be explained by stricter monitoring by foreigners, which reduces agency costs and positively affects performance. A number of robustness checks support our findings.

Additionally, we investigated whether the effect of (foreign) debt varies with different ownership types. First, comparing domestic and foreign-owned firms, we find no significant coefficient

[33] We follow the definition of the SMEs in EU Recommendation 2003/361.

[34] The results with subsamples of SMEs and large firms are available upon request.

differences between domestic and foreign-owned firms, except that the leverage penalty is larger for domestic firms. Second, differentiating state-owned from private firms, the pre-crisis performance boost from foreign financing is driven entirely by private firms. During the crisis, the positive effect of foreign financing becomes insignificant for both ownership types.

Our results are informative for firm managers when deciding on the structure of financing sources. Depending on the amount of leverage, foreign debt financing could either have positive or negative effects on firm performance, since either the positive effect of borrowing abroad or the amplified negative effect of higher leverage could prevail. At the same time, our results indicate that in crisis times, foreign financing has smaller positive effects, which could be attributed to the tendency of banks to decrease their exposure to foreign markets in turbulent times. This would suggest that the government should support policies that limit the fragmentation of financial markets in crisis times.

References

Aivazian, V. A., Y. Ge, and J. Qiu (2005): "The impact of leverage on firm investment: Canadian evidence," *Journal of Corporate Finance*, 11, 277–291.

Anderson, T. W. and H. Rubin (1949): "Estimation of the parameters of a single equation in a complete system of stochastic equations," *Annals of Mathematical Statistics*, 20, 46–63.

Arditti, F. D. (1967): "Risk And The Required Return On Equity," *The Journal of Finance*, 22, 19–36.

Baker, M. and J. Wurgler (2002): "Market timing and capital structure," *The Journal of Finance*, 57, 1–32.

Baker, S. H. (1973): "Risk, Leverage and Profitability: An Industry Analysis," *Review of Economics and Statistics*, 55, 503–507.

Berger, A. N. and E. Bonaccorsi di Patti (2006): "Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry," *Journal of Banking & Finance*, 30, 1065–1102.

Berk, A. (2006): "Determinants of Leverage in Slovenian Blue-Chip Firms and Stock Performance Following Substantial Debt Increases," *Post-Communist Economies*, 18, 479–494.

Bernanke, B. S. and M. Gertler (1995): "Inside the Black Box: The Credit Channel of Monetary Policy Transmission," *Journal of Economic Perspectives*, 9, 27–48.

Chen, Z., J. Harford, and A. Kamara (2019): "Operating Leverage, Profitability, and Capital Structure," *The Journal of Financial and Quantitative Analysis*, 54, pp. 369–392.

Claessens, S., S. Djankov, and L. C. Xu (2000): "Corporate Performance in the East Asian Financial Crisis," *World Bank Research Observer*, 15, 23–46.

Clarke, G. R., R. Cull, and G. Kisunko (2012): "External finance and firm survival in the aftermath of the crisis : evidence from Eastern Europe and Central Asia," Policy Research Working Paper Series 6050, The World Bank.

Coricelli, F., N. Driffield, S. Pal, and I. Roland (2011): "Optimal Leverage and Firm Performance: An Endogenous Threshold Analysis," CEDI Discussion Paper Series 11-05, Centre for Economic Development and Institutions(CEDI), Brunel University.

——— (2012): "When does leverage hurt productivity growth? A firm-level analysis," *Journal of International Money and Finance*, 31, 850–866.

Demsetz, H. (1973): "Industry Structure, Market Rivalry, and Public Policy," *Journal of Law and Economics*, 16, 1–9.

Donaldson, G. (1961): *Corporate Debt Capacity: A Study of Corporate Debt policy and the Determinants of Corporate Debt Capacity.*, Harvard University.

Driffield, N. and S. Pal (2008): "Evolution of Capital Structure in East Asia: Corporate Inertia or Endeavours?" IZA Discussion Papers 3426, Institute for the Study of Labor (IZA).

Fama, E. F. and K. R. French (2002): "Testing Trade-Off and Pecking Order Predictions About Dividends and Debt," *Review of Financial Studies*, 15, 1–33.

Gertler, M. and S. Gilchrist (1994): "Monetary Policy, Business Cycles, and the Behavior of Small Manufacturing Firms," *The Quarterly Journal of Economics*, 109, 309–40.

Ghosh, S. (2008): "Leverage, foreign borrowing and corporate performance: firm-level evidence for India," *Applied Economics Letters*, 15, 607–616.

Giannetti, M. and S. Ongena (2009): "Financial Integration and Firm Performance: Evidence from Foreign Bank Entry in Emerging Markets," *Review of Finance*, 13, 181–223.

——— (2012): "Lending by example: Direct and indirect effects of foreign banks in emerging markets," *Journal of International Economics*, 86, 167–180.

Grossman, S. J. and O. D. Hart (1982): *Corporate Financial Structure and Managerial Incentives*, NBER Chapters, National Bureau of Economic Research, Inc.

Hall, M. and L. Weiss (1967): "Firm Size and Profitability," *The Review of Economics and Statistics*, 49, 319–331.

Harris, M. and A. Raviv (1991): "The Theory of Capital Structure," *The Journal of Finance*, 46, 297–355.

Harvey, C. R., K. V. Lins, and A. H. Roper (2004): "The effect of capital structure when expected agency costs are extreme," *Journal of Financial Economics*, 74, 3–30.

Heath, D. and G. Sertsios (2022): "Profitability and Financial Leverage: Evidence from a Quasi-Natural Experiment," *Management Science*, 68, 8386–8410.

Herman, U. and T. Krahnke (2022): "Determinants and Effects of Countries' External Capital Structure: A Firm-Level Analysis," IMF Working Papers 2022/038, International Monetary Fund.

Jensen, M. (1986): "Agency Costs of Free Cash Flow, Corporate Finance and Takeovers," *American Economic Review*, 76, 323–339.

Jensen, M. C. and W. Meckling (1976): "The Theory of the Firm: Managerial Behavior, Agency Cost and Capital Structure," *Journal of Financial Economics*, 3, 305 – 360.

Kalemli-Özcan, c., L. Laeven, and D. Moreno (2022): "Debt Overhang, Rollover Risk, and Corporate Investment: Evidence from the European Crisis," *Journal of the European Economic Association*, 20, 2353–2395.

Kleibergen, F. and R. Paap (2006): "Generalized reduced rank tests using the singular value decomposition," *Journal of Econometrics*, 133, 97–126.

Korajczyk, R., D. Lucas, and R. McDonald (1991): "The effects of information releases on the pricing and timing of equity issues," *Review of Financial Studies*, 4, 685–708.

——— (1992): "Equity issues with timevarying asymmetric information," *Journal of Financial & Quantitative Analysis*, 27, 397–417.

Leland, H. E. and D. H. Pyle (1977): "Informational Asymmetries, Financial Structure, and Financial Intermediation," *The Journal of Finance*, 32, 371–387.

Lucas, D. and R. McDonald (1990): "Equity issues and stock price dynamics," *The Journal of Finance*, 45, 1019–1043.

Majumdar, S. K. and P. Chhibber (1999): "Capital structure and performance: Evidence from a transition economy on an aspect of corporate governance," *Public Choice*, 98, 287–305.

Margaritis, D. and M. Psillaki (2010): "Capital structure, equity ownership and firm performance," *Journal of Banking & Finance*, 34, 621–632.

McConnell, J. and H. Servaes (1995): "Equity ownership and the two faces of debt," *Journal of Financial Economics*, 39, 131–157.

Medina, L. (2012): "Spring Forward or Fall Back? The Post-Crisis Recovery of Firms," IMF Working Papers 12/292, International Monetary Fund.

Modigliani, F. and M. H. Miller (1963): "Corporate Income Taxes and the Cost of Capital: A Correction." *American Economic Review*, 53, 433–443.

Mramor, D. and A. Valentinčič (2001): "When Maximizing Shareholders' Wealth Is Not the Only Choice," *Eastern European Economics*, 39, 64–93.

Myers, C. S. (1977): "Determinants of Corporate Borrowing," *Journal of Financial Economics*, 5, 147–176.

Myers, C. S. and N. S. Majluf (1984): "Corporate Financing and Investment Decisions When Firms Have Information the Investors Do Not Have," *Journal of Financial Economics*, 13, 187 – 221.

Ongena, S., J. L. Peydro, and N. van Horen (2015): "Shocks Abroad, Pain at Home? Bank-Firm Level Evidence on the International Transmission of Financial Shocks," *IMF Economic Review*, 63, 698–750.

Pandey, I. M. (2002): "Capital Structure and Market Power Interaction: Evidence from Malaysia," Tech. rep., Indian Institute of Management Ahmedabad.

Pushner, G. M. (1995): "Equity ownership structure, leverage, and productivity: Empirical evidence from Japan," *Pacific-Basin Finance Journal*, 3, 241–255.

Rajan, R. and L. Zingales (1995): "What Do We Know about Capital Structure? Some Evidence from International Data," *The Journal of Finance*, 50, 1421–1460.

Ross, S. A. (1977): "The determination of financial structure: the incentive-signalling approach," *The Bell Journal of Economics*, 8, 23–40.

Stierwald, A. (2010): "Determinants of Profitability: An Analysis of Large Australian Firms," Melbourne Institute Working Paper Series wp2010n03, Melbourne Institute of Applied Economic and Social Research, The University of Melbourne.

Stulz (1990): "Managerial discretion and optimal financing policies," *Journal of Financial Economics*, 26, 3–27.

Titman, S. and R. Wessels (1988): "The Determinants of Capital Structure Choice," *The Journal of Finance*, 43, 1–19.

Weill, L. (2008): "Leverage and Corporate Performance: Does Institutional Environment Matter?" *Small Business Economics*, 30, 251–265.

Williams, J. (1987): "Perquisites, Risk, and Capital Structure," *The Journal of Finance*, 42, 29–48.

Wu, Y. (2012): "Performance of Publicly Listed Chilean Firms During the 2008-2009 Global Financial Crisis," IMF Working Papers 12/261, International Monetary Fund.

A On the reverse causality between leverage and performance

Various theories about what determines capital structure and how the capital structure in turn affects firm value or performance have been developed and tested in the literature. The conclusion is that there is reverse causality between capital structure and performance.

One of the main capital structure theories, *static trade-off theory*, includes both directions of causality. According to this theory, the optimal capital structure is chosen by minimising the weighted average cost of capital, while considering the costs and benefits of financial leverage. Since the capital structure affects a firm's performance and market value, the management takes into account this relation when deciding about the type of financing and the amount of financial leverage. For instance, as analysed by Modigliani and Miller (1963), the tax shield derived from the interest paid on debt leads to a positive effect of leverage on firm performance. At the same time, higher financial leverage can induce worse performance due to the cost of financial distress and the cost of agency conflict.

According to Jensen and Meckling (1976), there are two types of agency conflict which can lead to diverging results in terms of how leverage affects firm performance. On the one hand, higher financial leverage reduces the moral hazard problem of the managers through the threat of liquidation (Grossman and Hart, 1982; Williams, 1987) and by limiting the amount of free cash flow that managers could invest into projects that are in their interest but are not maximising shareholders' value (Jensen, 1986; Stulz, 1990). Higher leverage thus curbs the costs of conflict between shareholders and managers and has a positive effect on firm performance. On the other hand, higher leverage might lead to underinvestment (Myers, 1977; Stulz, 1990). To limit investment in projects with a negative net present value, shareholders force managers to issue debt and are less willing to provide equity in the future. Consequently, the managers have limited financial resources and cannot invest even in some projects with a positive net present value. Hence, the debt financing, on one hand, mitigates the overinvestment problems but aggravates the underinvestment problem.[35] In addition, higher financial leverage increases the agency costs stemming from the conflict between shareholders and bondholders (Jensen and Meckling, 1976). The shareholders support investment in riskier projects as they gain from potential profits, while the bondholders bear the losses. The resulting lower value of bonds entails a cost that increases with the share of debt in the capital structure. In sum, within the static trade-off theory, diverse signs are expected for both directions of the causal relation depending on which effect prevails.

Another major theory on determinants of capital structure, the *pecking order theory* (see Donaldson, 1961; Myers, 1977; Myers and Majluf, 1984), claims that firms follow a hierarchy of financing options, where internal funding is preferred over external financing due to costs of information asymmetry between managers and external investors. Among external funding options, debt is issued first, then hybrid securities and, finally, new stock.[36] In this, the firm's

[35] McConnell and Servaes (1995) show that the negative effects prevail for the firms with high-growth opportunities, as at least in some circumstances the managers will forgo projects with a positive net present value, thus confirming the underinvestment theory. The opposite is true for firms with few growth opportunities.

[36] In addition to the information asymmetry between managers of the firm and external investors, Donaldson (1961) attributes such ordering to the transaction costs of issuing new external capital, which are highest for new

performance represents one of the decisive factors affecting the capital structure. First, as argued by Myers and Majluf (1984), the more profitable firms can finance from retained earnings to a larger extent, thus lowering the need for acquiring external debt funding and more leverage. This predicts a negative relation between performance and leverage. Second, since external investors are not able to monitor the performance or value of the firm fully, they will try to deduce it from the firm's financing decisions. A firm's choice of capital structure thus acts as a signalling device, whereby the managers issue more debt to signal the high quality of the firm. This is a credible signal because better firms can get more credit, as they are less vulnerable to the costs of default risk and debt servicing, which increase after the debt issue (Leland and Pyle, 1977; Ross, 1977; Myers and Majluf, 1984).[37] We would thus expect a positive effect of firm performance on the amount of leverage. Therefore, the pecking order theory remains inconclusive about the sign of the relation between performance and capital structure.

Another prominent capital structure theory which links leverage and performance is the *market timing theory*. The idea is that the decisions to issue equity depend on market performance. When market valuations are high, firms tend to issue more equity relative to debt, thus reducing leverage. Conversely, when market valuations are low, firms issue more debt, which increases leverage. There are two main explanations for the existence of market timing behaviour. The first assumes that economic agents are rational and therefore firms issue equity directly after a positive information release, which reduces the asymmetry problem and increases the stock price. Hence, firms create their own timing opportunities (Lucas and McDonald, 1990; Korajczyk et al., 1991, 1992). The second explanation considers economic agents to be irrational (Baker and Wurgler, 2002). Due to irrational investors or managers, there is a time-varying (perception of) mispricing of firms' shares. When managers perceive the cost of equity to be irrationally low, they will issue equity and vice versa. When equity is perceived to be irrationally expensive, they will buy back their shares. This theory, therefore, suggests that leverage is actually a cumulative outcome of past attempts to time the equity market. Both versions of the theory lead to a negative link between firm performance and leverage. Berger and Bonaccorsi di Patti (2006) and Margaritis and Psillaki (2010) consider two additional hypotheses explaining how firm efficiency, an alternative measure of firm performance, influences the choice of capital structure. The *efficiency risk hypothesis* predicts a positive relation between efficiency and leverage, as more efficient firms choose lower equity ratios due to lower expected costs of bankruptcy and financial distress (Berger and Bonaccorsi di Patti, 2006). In contrast, the *franchise-value hypothesis* predicts a negative effect of efficiency on leverage, because the economic rents coming from higher efficiency are safer from the threat of liquidation if the debt-to-equity ratio is lower (Demsetz, 1973; Berger and Bonaccorsi di Patti, 2006).

equity issues. Myers and Majluf (1984), conversely, claim that these costs are outweighed by the net benefits of debt financing, mostly due to the tax shield, and that information asymmetry is the main reason for the pecking order.

[37] In addition, since it is easier to issue equity when firms are overvalued, a new equity issue might be a negative signal followed by downward pressures on the prices of existing stocks. If the firm performs well, it is cheaper to issue debt (Myers and Majluf, 1984).

B Definition of variables

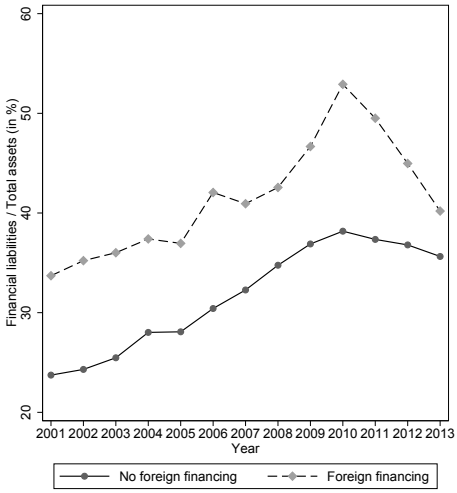
TABLE 8. Definition of variables

Variable	**Constructed as**
EBIT	Operating profit adjusted for operating loss (definition of Agency of the Republic of Slovenia for Public Legal Records and Related Services)
EBITDA	EBIT plus depreciation
Total assets	Total assets
Leverage	Short plus long-term financial liabilities divided by total assets
Foreign financial liabilities	Long and short-term loans plus financial leasing from ROW
Size	Logarithm of total assets. In the robustness section, size is measured as employment (average number of employees based on work hours in the period).
Age	Number of years since foundation
Tangibility	Tangible assets (plant, property, and equipment) divided by total assets
Value added	Gross operating returns minus the costs of merchandise, material and services, and other operating expenses
Productivity	Real value added per full-time equivalent (FTE) employee
Openness	Net sales outside domestic market divided by total net sales
Sales growth	Growth of net sales (calculated as difference in logs)
Liquidity ratio	Current assets minus inventories divided by short-term liabilities
Interest expenses	Interest expenses divided by total assets
Share of foreign accounts payable	Trade and consumption loans from ROW and short-term liabilities (trade credits) divided by total assets
Share of foreign accounts receivable	Trade and consumption loans given to foreigners and short-term trade credits claims to ROW divided by total assets

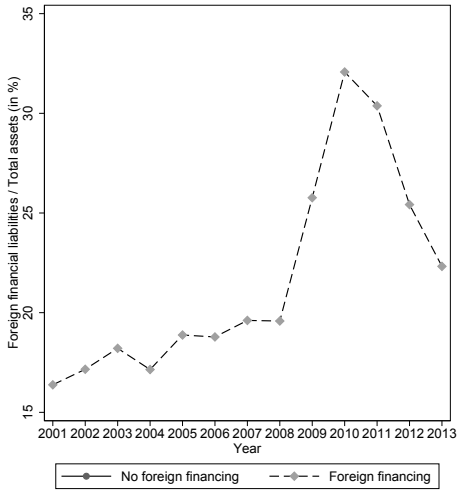
C Graphs

C.1 Leverage

FIGURE 1. Mean leverage

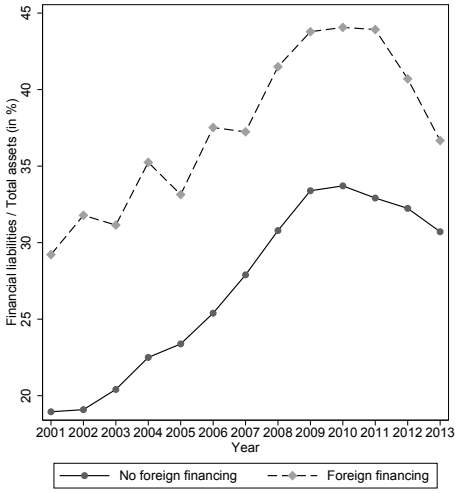


(A) Leverage

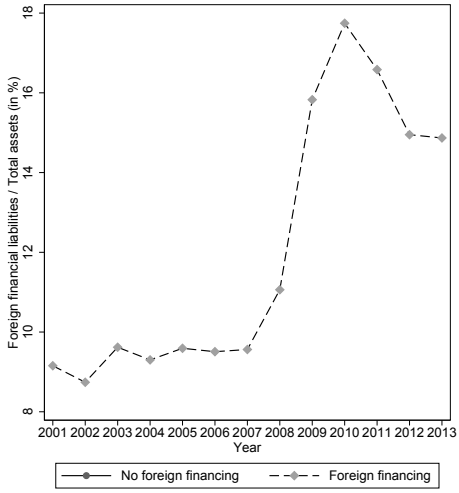


(B) Foreign leverage

FIGURE 2. Median leverage



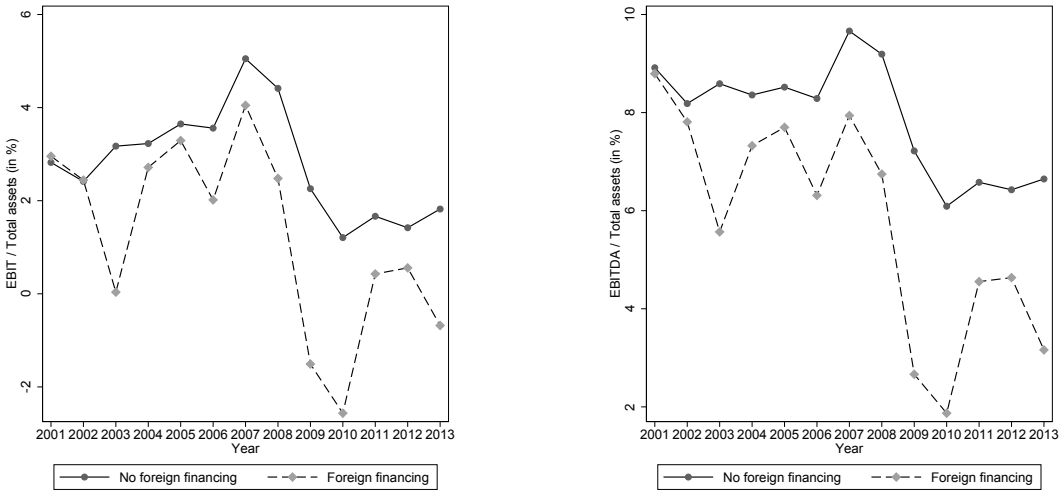
(A) Leverage



(B) Foreign leverage

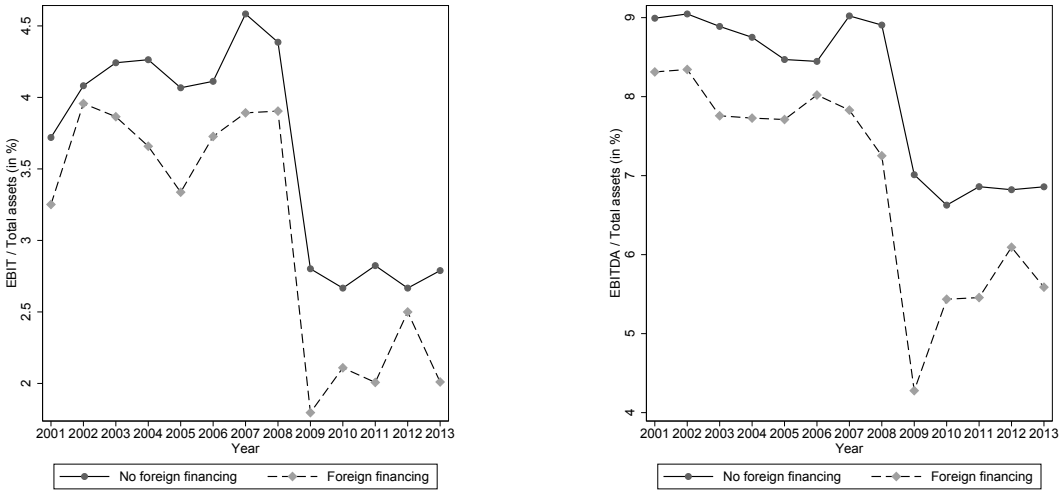
C.2 Performance

FIGURE 3. Mean performance



(A) Net operating profit (B) Cash flow

FIGURE 4. Median performance



(A) Net operating profit (B) Cash flow

D Descriptive statistic

TABLE 9. Descriptive statistics: Sample of firms without foreign debt

	A. Before crisis				**B. Crisis**			
	Mean	P25	P50	P75	Mean	P25	P50	P75
EBIT / TA	3.55	0.97	4.21	8.70	1.66	0.56	2.75	5.83
EBITDA / TA	8.69	4.32	8.79	14.61	6.58	3.33	6.83	11.62
Financial liabilities / TA	28.47	10.97	23.32	40.44	37.03	17.50	32.70	50.78
Foreign financial liabilities / TA	–	–	–	–	–	–	–	–
Size (assets)	3,316.15	182.00	508.00	1,652.00	4,238.80	287.00	741.00	2,182.00
Size (employment)	31.14	3.00	6.00	17.00	26.14	3.00	6.00	16.00
Firm age	11.41	8.00	12.00	14.00	14.32	8.00	17.00	20.00
Tangibility	37.40	15.44	35.33	56.34	36.87	13.30	34.52	56.61
Firm openness	12.30	0.00	0.00	10.17	13.78	0.00	0.39	13.09
Productivity	33.36	17.00	24.73	37.09	36.14	19.83	27.93	40.39
Sales growth	10.75	-6.51	7.81	23.42	-2.86	-19.14	-2.41	12.49
Liquidity ratio	94.21	46.85	75.63	109.73	100.62	42.93	76.32	118.13
Interest expenses / TA	2.12	0.69	1.56	2.80	1.67	0.67	1.32	2.22
Observations	**39,955**				**22,487**			

TABLE 10. Coverage of firms in the sample

	All firms (N)	**Firms with foreign debt (N)**
2001	4,150	211
2002	5,039	272
2003	5,519	267
2004	5,913	267
2005	6,118	252
2006	5,741	201
2007	5,012	195
2008	4,844	175
2009	4,620	167
2010	5,100	203
2011	5,063	199
2012	4,757	208
2013	4,112	179
Total Observations	**65,988**	**2,796**

E Chow test

We test whether the coefficient difference in the relationship between leverage and firm performance is statistically significant before and during the GFC. When estimating with OLS, we cannot reject the null hypothesis that the coefficients are equal for leverage in both periods at a 5% significance level, in models M1-M2. On the other hand, in the case of IV estimates, the hypothesis that the coefficients are equal across the two sub-periods is rejected even at the 1% significance level.

TABLE 11. Chow test for equality of coefficients on leverage pre- and during crisis

Model	**1**		**2**		**3**	
	F-test	p-value	F-test	p-value	F-test	p-value
OLS	2.91	0.088	3.16	0.075	4.16	0.041
IV	7.22	0.007	7.03	0.008	6.81	0.009

F Robustness

F.1 Crisis as dummy

TABLE 12. Firm performance and (foreign) financing: Crisis as dummy

Dependent v.: EBIT/TA	**A. IV**		**B. IV with crisis dummy**		
Model†	3(P-C)	3(C)	1	2	3
Crisis Dummy (CD)			-13.762***	-13.741***	-12.376***
			[3.690]	[3.667]	[3.214]
Leverage	-0.6487***	-0.4059***	-0.6753***	-0.6763***	-0.6019***
	[0.153]	[0.112]	[0.134]	[0.135]	[0.115]
Leverage*CD			0.2969***	0.2975***	0.2569***
			[0.110]	[0.111]	[0.097]
Foreign dummy (FD)	33.360***	7.7445		1.9153**	31.377***
	[11.311]	[5.676]		[0.871]	[11.23]
FD*CD				-0.7797	-20.565*
				[1.029]	[11.35]
Leverage*FD	-0.9276***	-0.1890			-0.8471***
	[0.334]	[0.164]			[0.323]
Leverage*FD*CD					0.5813*
					[0.308]
Controls:					
Size	19.242***	33.335***	18.559***	18.481***	18.519***
	[2.917]	[6.451]	[2.129]	[2.131]	[2.063]
$Size^2$	-0.8870***	-1.9879***	-0.8946***	-0.8906***	-0.9178***
	[0.208]	[0.432]	[0.145]	[0.146]	[0.138]
Tangibility	0.0658*	-0.0580	0.0294	0.0294	0.0256
	[0.037]	[0.050]	[0.024]	[0.024]	[0.023]
$Tangibility^2$	0.0002	0.0001	0.0002	0.0002	0.0002
	[0.000]	[0.001]	[0.000]	[0.000]	[0.000]
Age	-0.6439	-0.0522	-1.5153**	-1.5285**	-1.7726***
	[0.910]	[1.142]	[0.684]	[0.689]	[0.643]
Sales growth	0.0216***	0.0219***	0.0247***	0.0247***	0.0253***
	[0.004]	[0.004]	[0.003]	[0.003]	[0.003]
Liquidity ratio	0.0042***	0.0031***	0.0026***	0.0026***	0.0030***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Openness	-0.0018	-0.0058	-0.0040	-0.0042	-0.0007
	[0.012]	[0.023]	[0.009]	[0.009]	[0.009]
Productivity	0.0643***	0.0788**	0.0511***	0.0510***	0.0511***
	[0.010]	[0.031]	[0.012]	[0.012]	[0.012]
$Productivity^2$	-0.0001***	-0.0002	-0.0000**	-0.0000**	-0.0000**
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Kleibergen-Paap rk LM stat	4.47	26.59	7.81	7.77	6.92
(P-value)	0.0344	0.000	0.005	0.005	0.009
Kleibergen-Paap rk Wald F stat	2.42	16.30	4.26	4.24	1.90
Size of distortion	>25%	< 10%	< 20%	< 20%	–
Anderson-Rubin Wald test	32.69	11.78	19.54	19.54	24.72
(P-value)	0.000	0.000	0.000	0.000	0.000
R^2	-0.057	0.20	0.048	0.047	0.045
Observations	42,336	23,652	65,988	65,988	65,988

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are in brackets. All specifications are estimated with firm fixed effects and include year dummies and an intercept. For the IV estimation, we report the Kleibergen-Paap rk LM statistic as an underidentification test and the Kleibergen-Paap rk Wald F statistic as a test for weak identification. We also report the Anderson Rubin Wald test, which is a significance test for coefficients on endogenous variables, robust to the presence of weak instruments.
† P-C denotes the pre-crisis period and C the crisis period.

F.2 Results using EBITDA/TA measure of performance

TABLE 13. Firm performance and (foreign) financing: using EBITDA/TA

Dependent v.: EBITDA/TA	**A. Pre-crisis**			**B. Crisis**		
Model (IV)	1	2	3	1	2	3
Leverage	-0.6427***	-0.6431***	-0.5811***	-0.4037***	-0.4038***	-0.3902***
	(0.145)	(0.145)	(0.128)	(0.107)	(0.107)	(0.113)
Foreign dummy		1.7560**	25.182**		0.1859	7.0477
		(0.763)	(11.36)		(1.313)	(5.737)
Leverage*Foreign dummy			-0.6873**			-0.1734
			(0.334)			(0.166)
Control variables:						
Size (ln Assets)	13.363***	13.349***	13.794***	26.319***	26.323***	26.597***
	(2.918)	(2.919)	(2.818)	(6.465)	(6.461)	(6.452)
Size^2 (ln Assets)	-0.6124***	-0.6132***	-0.6699***	-1.6452***	-1.6456***	-1.6707***
	(0.208)	(0.208)	(0.198)	(0.431)	(0.431)	(0.429)
Tangibility	0.1494***	0.1490***	0.1427***	0.0123	0.0122	0.0111
	(0.035)	(0.035)	(0.034)	(0.051)	(0.051)	(0.051)
Tangibility^2	-0.0006*	-0.0006*	-0.0006*	-0.0005	-0.0005	-0.0005
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Age	1.8867**	1.8642**	1.6835**	1.7996	1.7987	1.7716
	(0.862)	(0.863)	(0.857)	(1.156)	(1.155)	(1.160)
Sales growth	0.0190***	0.0190***	0.0198***	0.0206***	0.0206***	0.0208***
	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)
Liquidity ratio	0.0038***	0.0038***	0.0042***	0.0030***	0.0030***	0.0031***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Openness	-0.0008	-0.0010	0.0045	-0.0011	-0.0012	-0.0030
	(0.010)	(0.010)	(0.010)	(0.023)	(0.023)	(0.024)
Productivity	0.0685***	0.0685***	0.0684***	0.0824**	0.0824**	0.0824**
	(0.011)	(0.011)	(0.011	(0.032)	(0.032)	(0.033)
Productivity^2	-0.0000***	-0.0000***	-0.0000***	-0.0000	-0.0000	-0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Kleibergen-Paap rk LM stat	5.20	5.19	4.47	28.86	28.74	26.59
(P-value)	0.023	0.023	0.034	0.000	0.000	0.000
Kleibergen-Paap rk Wald F stat	5.601	5.591	2.422	35.09	34.966	16.297
Size of distortion	<25%	< 25%	>25%	< 10%	< 10%	< 10%
Anderson-Rubin Wald test	11.26	11.26	60.95	15.17	15.11	10.68
(P-value)	0.001	0.001	0.000	0.000	0.000	0.000
R^2	0.036	0.035	0.040	0.184	0.184	0.184
Observations	42,336	42,336	42,336	23,652	23,652	23,652

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are in brackets. All specifications are estimated with firm fixed effects and include year dummies and an intercept. For the IV estimation, we report the Kleibergen-Paap rk LM statistic as an underidentification test and the Kleibergen-Paap rk Wald F statistic as a test for weak identification. We also report the Anderson-Rubin-Wald test, which is a significance test for coefficients on endogenous variables, robust to the presence of weak instruments.

F.3 Results using employment as size measure

TABLE 14. Firm performance and (foreign) financing: using employment as size measure

Dependent v.: EBIT/TA	**A. Pre-crisis**			**B. Crisis**		
Model (IV)	1	2	3	1	2	3
Leverage	-0.8015***	-0.8019***	-0.7161***	-0.4853***	-0.4855***	-0.4735***
	(0.208)	(0.208)	(0.181)	(0.109)	(0.109)	(0.115)
Foreign dummy		2.6077***	34.2409***		0.5850	6.4204
		(1.007)	(11.499)		(1.310)	(5.796)
Leverage*Foreign dummy			-0.9293***			-0.1477
			(0.342)			(0.168)
Control variables:						
Size (ln Employment)	0.1159	0.1308	0.3762	-0.1173	-0.1232	-0.0164
	(0.855)	(0.853)	(0.812)	(1.054)	(1.056)	(1.080)
Size^2 (ln Employment)	0.0414	0.0336	-0.0109	-0.1762	-0.1748	-0.2001
	(0.144)	(0.143)	(0.141)	(0.187)	(0.187)	(0.192)
Tangibility	0.1105**	0.1020**	0.1003**	-0.0463	-0.0464	-0.0472
	(0.045)	(0.044)	(0.042)	(0.052)	(0.052)	(0.052)
Tangibility^2	0.0005	0.0005	0.0005	0.0003	0.0003	0.0003
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Age	3.4646***	3.4218***	3.0655***	2.6094**	2.6053**	2.5640**
	(0.868)	(0.867)	(0.888)	(1.084)	(1.083)	(1.089)
Sales growth	0.0268***	0.0268***	0.0276***	0.0245***	0.0245***	0.0246***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Liquidity ratio	0.0040***	0.0040***	0.0045***	0.0029***	0.0029***	0.0030***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Openness	0.0069	0.0066	0.0129	0.0035	0.0033	0.0016
	(0.011)	(0.011)	(0.012)	(0.023)	(0.023)	(0.024)
Productivity	0.0704***	0.0703***	0.0701***	0.0774**	0.0774**	0.0774**
	(0.011)	(0.011)	(0.011)	(0.031)	(0.031)	(0.031)
Productivity^2	-0.0000***	-0.0000***	-0.0000***	-0.0000	-0.0000	-0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Kleibergen-Paap rk LM stat	4.90	4.89	4.25	28.65	28.55	26.50
(P-value)	0.027	0.027	0.039	0.000	0.000	0.000
Kleibergen-Paap rk Wald F stat	5.30	5.30	2.32	36.61	36.5	16.98
Size of distortion	>25%	>25%	>25%	< 10%	< 10%	< 10%
Anderson-Rubin Wald test	12.00	12.00	60.01	19.17	19.13	12.08
(P-value)	0.001	0.001	0.000	0.000	0.000	0.000
R^2	-0.219	-0.219	-0.188	0.143	0.143	0.144
Observations	42,336	42,336	42,336	23,652	23,652	23,652

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are in brackets. All specifications are estimated with firm fixed effects and include year dummies and an intercept. For the IV estimation, we report the Kleibergen-Paap rk LM statistic as an underidentification test and the Kleibergen-Paap rk Wald F statistic as a test for weak identification. We also report the Anderson-Rubin Wald test, which is a significance test for coefficients on endogenous variables, robust to the presence of weak instruments.