
A Liquidity Redistribution Effect in Intercorporate Lending: Evidence from Private Firms in Poland

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Abstract:

Purpose: We examine the mechanism of intercorporate lending outside the business group, and a reaction of capital expenditures (CAPEX) and capital engagement in other firms to shocks in the provision of such loans. We diagnose the causes and effects of intercorporate lending outside the business group.

Design/Methodology/Approach: We use panel data from annual reports (balance sheets and income statements) of 4,600 private Polish companies that provided loans to other firms in the period 2003-2014. We apply the vector autoregression panel model for microeconomic data and analysis of Granger causality, impulse response functions, and forecast error variation decomposition to explore the mechanism of intercorporate loan provision.

Findings: Non-financial firms provide loans outside the business group through redistribution of their cash holdings generated from operating activity (cash flow) and long-term bank loans. The provision of loans by non-financial enterprises decreases CAPEX, as a result of the absence of free cash flows that were already used for loan provision. Shareholder loans substitute for capital engagement in other firms.

Practical Implications: The findings could assist policymakers to notice that emergency borrowings from other companies are being used to defer defaults and introduce a new credit risk into the business sector.

Originality/Value: The redistribution effect of cash holdings and money borrowed from banks provided to unrelated firms outside the business group is dangerous for the stability of the financial system due to the risk that these “indirect borrowers” will default.

Keywords: Redistribution effect, cash holdings, intercorporate lending, panel VAR.

JEL Codes: M21, M48.

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1. Introduction

The core aim of this paper is to better understand the mechanism underlying “arms length” intercorporate lending practices between private firms (i.e. private non-financial enterprises providing loans to companies from outside their business group). Related to this, an important purpose is to diagnose the causes and effects of lending by non-financial companies to unrelated firms. Further, within this setting, we are keen to examine the reaction of capital expenditures (CAPEX) and capital engagement (i.e. investment in the shares of other companies) to shocks in the provision of loans.

We choose Poland as our setting and the empirical advantage gained from this choice derives from several considerations. First, in Poland, the non-financial corporate debt-to-GDP ratio is one of the lowest in Europe at 42%, while this ratio is 74% in the UK, 165% in Sweden and 189% in Ireland (Dobbs *et al.*, 2015). Second, the usage of limited liability companies as a tax avoidance mechanism for lending money by partnerships or individuals to their partnerships. This is more important, because such partnerships constitute over 90% of Poland’s business sector. Third, the unwillingness of equity holders to contribute funds to the firm in the form of equity that is irreclaimable (paid once without any possibility of reimbursement before the firm’s liquidation) is crucial in the case of Poland. Fourth, the inside-debt concept of financing firms by loans granted by their owners (individuals). Seppa (2010; 2014) analyzed the demand side of inside-debt in Estonia, while our research focuses on the supply side of intercorporate lending outside the business group. Previously, for 314 small Estonian firms, in 2007, Seppa (2014) showed positive inside-debt-bankruptcy relations. While inside-debt carries no risk elements per se, his findings indicate that the use of inside-debt has significant power to signal an increasing bankruptcy risk.

Our findings show that non-financial firms provide loans outside their business group through the redistribution of their cash holdings generated from operating activity (cash flow) and long-term bank loans. Intercorporate loans outside the business group are provided by viable companies with low equity investment in other firms inside the business group. The provisions of such loans are financed by bank debt and trade credit outside the business group.

Financing the enterprise with trade credit or borrowings from other companies is especially important in the case of firms from developing countries where legal systems are weak. Loans granted among enterprises are less vulnerable to credit rationing and, at the same time, enhance the growth of emerging countries, such as China (He, Lu and Ongena, 2016). Unfortunately, to date, the lack of direct data concerning borrowings from non-financial companies has severely constrained the literature’s ability to deliver knowledge on intercorporate lending among enterprises and the lending activity conducted by non-financial enterprises. Generally, such borrowings are reported on the liabilities-side together with bank loans. Small and

medium enterprises (SMEs) encounter considerable barriers in obtaining a bank loan, which encourages them to finance themselves with loans obtained from shareholders or other enterprises (from outside the business group), e.g. to avoid the limitations associated with thin capitalization, in terms of interest tax shield. Because a lending enterprise controls and monitors a borrower, especially if the lender is a supplier, even though the lender takes the credit risk, they have an advantage over financial institutions in terms of information asymmetry. More specifically, this advantage occurs because such a lender has higher access to information and can execute their receivables from their clients more efficiently.

The theoretical literature provides evidence that managers could use excess cash to grant loans, taking into account a corporate financial policy motive in the case of poor investment opportunities for the lender, when the lender lacks viable projects and extends loans because of their lack of alternatives. Moreover, Arnold (2014) supposes that the use of managerial cash for granting a loan is a buffer against the borrower's bankruptcy during difficult times, instead of contributing funds to their equity.

In the Polish case, the tax avoidance motive together with the use of a limited liability company as a broker (agent) in transferring money from individuals to partnerships, is also crucial and recommended by tax advisors. There are two opposing sides of this tax avoidance motive. On the one hand, according to the corporate income tax law, thin capitalization encourages related companies to find other ways to lend money to subsidiaries to avoid the higher taxation resulting from the non-tax-deductibility of interest and fees paid (when exceeding credit limits under the thin capitalization rules inside the business group). On the other hand, under the natural person income tax law, tax avoidance of the lender's (which is not a legal person but a natural person (an individual or a partnership)) income from interest gained on loans provided outside the business group is possible via the use of a limited liability company as a financial intermediary (agent). Restrictions on partnerships and partners of partnerships that lend money to partnerships are connected with double taxation under the personal income tax law. Moreover, the provision of loans by non-financial companies results in obligations relating to VAT tax or tax on civil law transactions.

Our paper contributes to existing literature on financial flexibility and cash holdings by closing the gap in the identification of the redistribution effect of cash holdings and money borrowed from banks in intercorporate lending outside the business group. This phenomenon of non-financial companies "stepping into the shoes" of banks is dangerous for the stability of the financial system due to the risk that these "indirect borrowers" will default. Our findings indicate that intercorporate lending decreases CAPEX as a result of the absence of free cash flows that were already used for the loan provision. Moreover, shareholder loans substitute for capital engagement in other firms. The results allow policymakers to notice that emergency borrowings from other companies used to defer defaults, introduce a new credit risk

into the business sector resulting not only in underinvestment, but also in liquidity problems and an increase in financial constraints.

2. Literature Review

2.1 Differences between Non-bank Borrowings and Bank Loans

In countries like Poland, which while subject to a Civil Code, have no major restrictions for non-financial companies and other entities (including individuals) on funding others in the form of non-bank borrowings. However, non-financial firms are legally restricted in their ability to, de facto, act as banks. Therefore, it is important to learn, in our chosen context of Poland, what are the differences between non-bank borrowings and bank loans?

The loan (non-bank borrowings) agreement is governed by the provisions of art. 720-724 of the Civil Code. Via a loan agreement, the lender is obliged to transfer to the ownership of a receiver a certain amount of money and the receiver undertakes to pay back the same amount of money. The necessary element of a loan agreement is not, therefore, the lender's earnings (e.g. interest) in return for providing a non-bank loan. The key feature of such a loan, in the terms of the Civil Code, is that it is free of charge. Of course, the contract between the parties is very likely to be different. It can take into account an interest fee, in accordance with the requirements of tax law. The interest which is not received from the free-of-charge borrowing is taxable revenue, under corporate income tax law in Poland. However, when the Polish income tax law is taken into account, lenders should earn interest revenue based on a market price or on the arm's length principle that assumes that the parties to a transaction are independent and on an equal footing.

The partner (shareholder) of a limited liability company can lend money to the company for various purposes. The necessary terms of the non-bank loan agreement (unlike the bank loan agreement) do not indicate how to use the funding from the loan. However, it is permitted that a provision of the contract obliges the borrower to use the loan funding in a specific way – a likely scenario, when the non-bank loan is provided by a shareholder interested in the development of the company.

2.2 Literature Review on Intercorporate Lending and Hypotheses Development

Based on literature review, even if the non-financial firms which provide loans have poor investment opportunities, it is not clear that making intra-group loans is socially efficient and justified. The main reason for this view is that there is a risk of the expropriation of minority shareholders in pyramids (this behavior is called tunneling) (Buchuk *et al.*, 2014; Johnson *et al.*, 2000). The minority shareholders of those firms can prefer an increase in dividends rather than using such lenders' cash flow to provide loans to other firms, especially outside the business group. Intra-group loans can also be socially inefficient, even if they are privately efficient

because, by retaining earnings, business groups can make it harder for standalone firms to access finance (Almeida and Wolfenzon, 2006). Moreover, there could be a fall in profits or return on equity because, in the case of lending money outside a firm or a group, good projects might be left unfunded (Buchuk *et al.*, 2014). Thus, our research intends to test the following hypothesis:

H1: The provision of loans by non-financial companies is negatively associated with the amount of capital expenditure.

In the literature and findings of the SAFE (2013; 2016) surveys, it is well documented that a considerable proportion of the funding to micro and small firms is provided by their owners (Yilmazer and Schrank, 2006; Seppa 2010; Coleman and Robb, 2009; Casey and O'Toole, 2014). This funding, known as “inside-debt”, is debt provided by principal owners or households as an alternative capital source to straight equity capital. Inside-debt often does not carry any regular amortization plan. Repayments are made when the firm has sufficient cash available or never.

Therefore, the effect of inside-debt repayments is similar to dividend payments. Indeed, bank loan providers consider inside-debt as quasi-equity, such that conventional equity is adjusted for inside-debt (adjusted equity = book equity + inside-debt). Seppa (2014) found that inside-debt is significantly and positively related to financial leverage. Therefore, we state the following hypothesis:

H2: The provision of loans by non-financial companies decreases capital engagement, i.e. there is a substitution effect in financing an enterprise through contributions to cover capital via loans from shareholders.

Moreover, the literature provides evidence for the occurrence of the “redistribution” effect through a trade credit channel. According to the redistribution view, companies accumulate cash holdings in periods of loose monetary policy and then, in times of more stringent bank credit constraints, pass on the “liquidity benefits” of their cash holdings in the form of trade credit. As a result, large companies could use trade credit as an alternative to discount policies to ensure sales growth (Meltzer, 1960). Firms with better access to bank financing offer more trade credit, which means that they may act as intermediaries between institutional lenders and firms with limited access to bank loans. Short-term bank loans are used for minimising transaction costs. In periods of restrictive monetary policy, buyers facing bank funding constraints increase their demand for trade credit much more than those who do not experience credit rationing; thereby reflecting the existence of a strong monetary policy transmission channel (Petersen and Rajan, 1997).

Trade credit is a channel through which financing is redistributed between firms and credit is relocated from sellers who enjoy access to bank financing, towards buyers whose access to bank financing is limited (Guariglia and Mateut, 2006, Taketa and Udell, 2007). Profitable firms lend some part of their bank loan via trade credit to

support their business partners, but the size of this credit decreases as the availability of bank loans grows (Cull and Morduch, 2007). Disturbances in the redistribution mechanism transmitted via trade credit are caused by the worsening financial standing (as a result of the crisis) of traditional providers of this type of credit, i.e., firms with a higher level of short-term debt (Love, Preve and Sarria-Allende, 2007). Trade credit is found to have a positive impact on the real output, the counter-cyclical pattern of the substitution effect being the spontaneous relaxation of constraints imposed by financial institutions in periods of economic stagnation and is a self-triggering mechanism smoothing liberal crediting policies during periods of rapid growth (Huang, Shi and Zhang, 2011). We extend this concept to lending money to other companies with the use of loans (the real transfer of money) instead of trade credit (simply postponing repayment). Our hypothesis becomes:

H3: There is a redistribution effect of cash holdings with the use of loans provided to other firms outside the business group.

As far as we can establish, banks are not greatly aware of the nature or extent of lending by their borrowers to their affiliates (related companies) or other entities (unrelated companies). However, banks are aware of the financing potential of borrowers by way of loans received from their shareholders. Banks respond to this inside debt occurrence by requiring the signing of a subordinate clause that prevents the repayment of such loans before the settlement of a bank loan. This allows banks to treat these loans from the shareholders as quasi-equity, thereby improving debt ratios (Seppa, 2014).

Intra-group and inter-corporate loans (within business groups and also between unrelated firms) can be used for redirecting cash from surplus to deficit situations across firms. Almeida *et al.* (2011) show that groups use internal revenues as funds to set up or acquire capital-intensive firms, which are more likely to be constrained in financial markets (Belenzon, Berkovitz and Rios, 2013). Similarly, Gopalan, Nanda and Seru (2014) find that CAPEX is partly financed by dividends received from other firms inside the business group.

3. Data

We identify 4,600 lenders among 30,000 private non-financial firms based on data of financial assets retrieved from the Bisnode database. Bisnode recognizes positive amounts of receivables from loans provided to related entities (inside a business group) separately from those provided to unrelated entities (outside the business group), at the balance sheet date. We retrieve data (with positive values) for the following items: long-term investments, including receivables of long-term loans from related and unrelated companies (separately), and short-term investments, including receivables of short-term loans from related and unrelated companies (separately). We use panel data from the annual financial statements (balance sheet and profit and loss statements) of private Polish companies (limited liability

companies and joint stock companies) for up to 12 years of data (2003-2014). The Bisnode database contains data retrieved from the National Court Register in Poland.

The amount of loans provided by non-financial companies in Poland is huge. For instance, KGHM Polska Miedź SA provided loans of 4.245 billion PLN in 2015. Intercorporate lending practices are driven, to a greater extent, by related party linkages when we consider the average receivables of loans given. However, more private lenders give short-term loans to unrelated companies. In the case of long-term loans for unrelated companies, the number of private lenders is slightly lower than lenders on the internal capital market created by business groups (data not reported in the table, available on request).

Table 1. *Distribution of lenders by industry in the research sample*

PKD code	Industry	Obs.	share (%)
10-39	Manufacturing	9,157	41%
49-53	Transportation	1,492	7%
55-56	Hotels and restaurants	757	3%
58-63	Information & communication	2,039	9%
68	Real estate	3,822	17%
69-75	Professional, scientific & technical services	3,896	17%
77-82&95	Administrative services	1,272	6%
		22,435	100%

Note: *Table 1 presents the distribution of the sample firms over industry categories. The industry categories are based on two-digit PKD codes. (Polish Standard Industrial Classification is based on the EU recommended standard).*

Table 1 displays the distribution of lenders by industry in the research sample. In the Table we notice an industry “effect” in manufacturing (41%), real estate (17%) and the professional, scientific and technical services industry (17%). These three groups constitute 75% of the total number of observations. Head offices are expected to provide loans to their affiliates inside a business group whereas other companies could use lending money as a tool similar to the issuing of trade credit. This industry effect indicates that such lending activity is more common among manufacturers (10-39 PKD code) and service industries (together 68 and 69-75 PKD codes), which, notably, differ in financial flexibility (crucial for investment activity) and their source of excess liquidity (cash flow from operations as a basis to build cash holdings). Further, the variability of cash flow from operations is lower in the service industry with long-term contracts, while debt capacity (availability of collateral; creditworthiness) is higher in manufacturing industry. Moreover, the capital intensity of operating activity and financial constraints for industry could be important incentives for providing loans to other firms. Companies that operate in more capital-intensive industries can lend more money thanks to their access to bank loans, while service industry firms can provide loans thanks to their high cash flow

from operations and cash holdings. This documented industry effect relates to hypothesis H3 that treats cash holdings and the availability of bank loans as a basis for the redistribution effect.

4. Research Design

We apply the vector-autoregression (VAR) panel model for microeconomic data. VAR models often serve as a tool for providing policy implications, forecasts of particular economic variables or, simply, as a method for analyzing interdependencies between multiple time series (Lütkepohl, 2005). In VAR, all variables are treated as endogenous. This is the main advantage over SEMs, where the difficulty of the appropriate application of exogenous variables was widely criticized (Sims, 1980; Lucas, 1976). In the case of using a pVAR (panel VAR) methodology, Vector Autoregression is used for capturing inter-dependencies among panel data, within the same timeframe. Such an approach is applicable for the analysis of some phenomenon without making strong preliminary assumptions about its characteristics, contrary to the panel approach (GMM system). Therefore, pVAR allows for the unobserved heterogeneity of individual panel units (Love and Zicchino, 2006; Ugurlu *et al.*, 2014).

The results from the VAR model are mainly interpreted based on Impulse Response Functions (IRFs) and Forecast Error Variance Decomposition (FEVD). The impulse response function is a dynamic reaction of the i th endogenous variable in the VAR model to a shock in the j th error term from the previous period, with all other variables held constant. FEVD analysis presents the share of influence of each particular variable (in %) in the variance decomposition of each variable.

Sims (1980) explains Structural Vector Autoregression Models (SVAR), where variables are structured from the most exogenous to the most endogenous. Variables are structured based on Cholesky's decomposition, in accordance with economic interpretation and the results from the Granger causality test (Granger 1969). This methodology was applied by Pardo Martínez, Cotte Poveda, and Ronderos (2019) and Thalassinos and Politis (2012).

In our model, the following order is assumed:

sources of financing → *provided loans* → *investment* → *tax avoidance*

Sources of financing include: short-term and long-term bank loans, cash flow from operations, and cash holdings. Regarding *provided loans*, those granted outside and within the business group are treated separately. *Investment* covers capex and capital engagement (investment in shares of other companies), while *tax avoidance* is defined as the approximate difference between the nominal and effective tax rates. The analyzed autoregression model has the following form:

$$\begin{pmatrix}
 \text{short – term bank loans and borrowings} \\
 \text{long – term bank loans and borrowings} \\
 \text{cash flow} \\
 \text{cash holdings} \\
 \text{loans provided outside the business group} \\
 \text{loans provided within the business group} \\
 \text{capex (capital expenditures)} \\
 \text{equity investment within the business group} \\
 \text{equity investment outside the business group} \\
 \text{tax avoidance}
 \end{pmatrix} = Y_{i,t} =$$

$$= \beta_0 + \sum_{j=1}^p \beta_j Y_{i,t-j} + \alpha Z_{i,t-1} + f_i + d_t + \varepsilon_{i,t} \quad (1)$$

where:

Y – vector of endogenous variables, α , β – matrices of coefficients to be estimated, Z – vector of control variables, f_i – panel-specific fixed effects, d_t – binary variables representing specific time periods, ε – vector of idiosyncratic, serially uncorrelated error terms, i – firm index, t – time index.

For the analysis of the redistribution effect the following variables are used:

st_bank_loans – short-term liabilities on account of bank loans and borrowings / assets;

ltbank loan – long-term liabilities on account of bank loans and borrowings / assets;

cashflow – cash flows from operations / assets;

cash holdings – cash and cash equivalents / assets;

loan_other – receivables on account of long- and short-term loans granted to other entities (outside the business group) / assets;

loan_bg – receivables on account of long- and short-term loans granted to related entities (within the business group) / assets;

capex – capital expenditures (measured by investment in fixed assets on the basis of data from balance sheet) / assets;

equity_inv – investment in shares of related entities (within the business group) / assets;

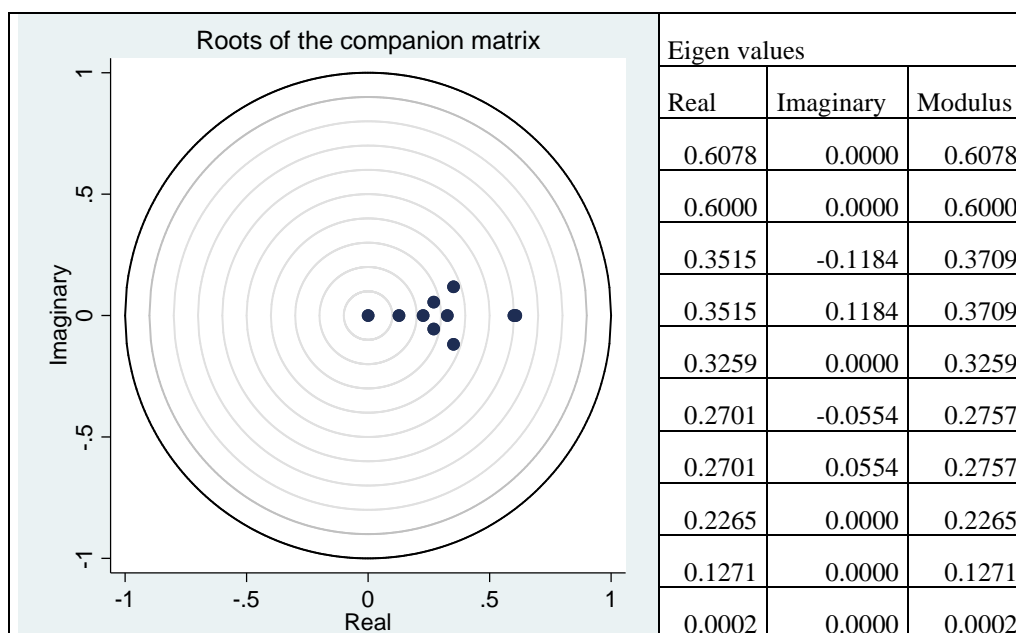
equity_other – investment in shares of other entities (outside the business group)/assets;

tax_spread – tax avoidance, i.e. the difference between the nominal and effective tax rates (which equals tax income / gross profit).

Based on the modified information criteria (MBIC, MAIC, MQIC) for the panel vector autoregression models, the model with one lag on exogenous variables is chosen. Before conducting in-depth analysis of impulse response functions (IRFs) and forecast error variance decomposition, it is necessary to check whether the VAR model is stable. IRFs and forecast error variance decomposition are only interpretable if a VAR is invertible and has an infinite-order vector moving average

representation. Figure 1 presents the results of the stability test. This indicates that the model is stable, as all eigen values of the companion matrix range between -1 and 1 lie inside the unit circle. This implies that the endogenous variables are stationary, and all shocks converge exponentially to zero.

Figure 1. Eigen values of companion matrix



Source: Authors' estimates in STATA ver. 15.

The estimates of orthogonalized and accumulated IRFs, with a 95% confidence interval, for loans provided within and outside the business group (to other firms, not related in terms of capital) are presented in Figures 2-5.

5. Results

The results of estimating the panel VAR are presented in Table 2. Specifically, Column (1) presents the outcomes of the GMM estimating the equation with intercorporate lending outside the business group; Column (2) with intercorporate lending inside the business group; Column (3) with capital expenditures; Column (4) with equity engagement inside the business group; Column (5) with equity engagement outside the business group as the dependent variable. In this table we see for model 3 (with *capex* as the dependent variable) that firms which provide loans to other companies, outside the business group, tend to have lower capital expenditures. This finding confirms the hypothesis H1, in which the provision of loans outside, as well as within, the business group impacts capital expenditures negatively. It may be assumed that it is caused by a shortage of free cash flows that

were used for the provision of loans by lenders. A similar effect is identified in the case of equity investment within and outside the business group, where the relationships with the dependent variable (*capex*) are also negative. This provides evidence of a trade-off between the different types of investments. Moreover, enterprises with lower tax avoidance (*tax_spread*) have higher capital expenditures. This results from the postponing of a period of treating the capex as tax-deductible costs in accordance with a depreciation schedule of fixed assets contrary to other non-investment expenditures.

Table 2. Coefficients estimated with pVAR model for provision of loans inside and outside the business group, and its impact on capex and equity investment in other firms

Variable	loan_other (1)	loan_bg (2)	capex (3)	equity_inv (4)	equity_other (5)	
st_bank_loans	0.1373 ***	0.0765 *	-0.0410	-0.0641 ***	-0.0093	
L1.	(0.0413)	(0.0464)	(0.0526)	(0.0207)	(0.0078)	
ltbankloan	0.0662 *	0.0347	0.2504 ***	0.0004	-0.0089	
L1.	(0.0346)	(0.0493)	(0.0702)	(0.0247)	(0.0136)	
cashflow	-0.0129 ***	0.0091	0.0502 ***	0.0055 **	-0.0026 *	
L1.	(0.0045)	(0.0081)	(0.0081)	(0.0023)	(0.0016)	
cash holdings	0.1597 *	0.1506 ***	-0.3587 ***	-0.0245 ***	-0.0101	
L1.	(0.0352)	(0.0413)	(0.0371)	(0.0161)	(0.0078)	
loan_other	0.3994 ***	0.0515	-0.3737 ***	-0.0608 ***	-0.0141 ##	
L1.	(0.0722)	(0.0603)	(0.0488)	(0.0222)	(0.0090)	
loan_bg	0.0579	0.4435 ***	-0.4241 ***	-0.0177 ***	-0.0074	
L1.	(0.0437)	(0.0647)	(0.0536)	(0.0281)	(0.0073)	
capex	0.0423 **	0.1082 ***	0.1852 ***	-0.0114 ***	-0.0031	
L1.	(0.0141)	(0.0227)	(0.0286)	(0.0079)	(0.0034)	
equity_inv	-0.1212 **	-0.1974 ***	-0.5892 ***	0.6157 ***	-0.0079	
L1.	(0.0407)	(0.0657)	(0.0775)	(0.0589)	(0.0165)	
equity_oth	-0.0645	-0.0665 ***	-0.4913 ***	0.1967 ***	0.3078 ***	
L1.	(0.0502)	(0.0778)	(0.0685)	(0.0692)	(0.0895)	
tax_spread	0.0957 **	0.2195 ***	-0.2195 ***	-0.0048 ***	0.0029	
L1.	(0.0328)	(0.0480)	(0.0667)	(0.0251)	(0.0101)	
long_debt_ related	-0.0378 (0.0649)	0.1151 (0.0983)	0.0750 (0.1713)	0.2181 (0.0597)	0.0373 (0.0152)	**
short_debt_ related	-0.0985 * (0.0523)	0.0627 (0.0892)	-0.0442 (0.1175)	0.1072 (0.0491)	0.0135 (0.0133)	
trade_z_bg	-0.2633 *** (0.0791)	-0.2883 * (0.1515)	-0.1251 (0.1150)	0.0864 (0.0417)	-0.0112 (0.0114)	
trade_n_bg	-0.3501 *** (0.0925)	-0.2624 ** (0.1323)	0.1446 (0.1165)	0.0108 (0.0571)	-0.0181 (0.0125)	
trade_n_other	-0.0017 (0.0327)	-0.1109 (0.0447)	-0.0060 (0.0477)	-0.0615 (0.0176)	-0.0117 (0.0071)	
trade_z_other	0.0619 * (0.0376)	0.0536 (0.0490)	-0.2829 (0.0598)	-0.0016 (0.0195)	-0.0128 (0.0094)	
dividends	0.0348 (0.0728)	0.0799 (0.1169)	0.3318 (0.2007)	* -0.1018 (0.0775)	-0.0096 (0.0347)	
roa	0.0377 ** (0.0153)	0.0664 (0.0222)	*** -0.1241 (0.0242)	*** -0.0171 (0.0080)	** -0.0048 (0.0029)	
size_b	0.0000 (0.0000)	*** 0.0000 (0.0000)	* 0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	**

N 7,163 GMM Criterion Q(b) 0.0539

Standard errors in parentheses.

p < 0.15, *** p < 0.01, ** p < 0.05, * p < 0.1.

The results of estimating model 4 (with *equity_inv* as the dependent variable) and model 5 (with *equity_other* as the dependent variable) confirm hypothesis H2, in which the provision of loans to other companies (outside the business group) is negatively correlated with capital engagement in the shares of other firms. In other words, our results confirm the existence of a substitution effect between financing the company with loans (e.g. from shareholders) and the injection of capital through contributions covering the share capital or as equity infusion. This may be caused by the possibility of obtaining the interest from loans regardless of the borrower's financial situation and regardless of any resolution of a shareholders' meeting concerning dividend payments. The additional incentive to provide loans instead of infusing equity is that, in the case of company insolvency and the need for redress, loans are on a higher position than equity contributions in the liabilities' hierarchy. Such a relationship was not identified for the provision of loans within a business group. The substitution effect between equity contributions (capital engagement) and loans may be caused by limitations on classifying interest on loans as tax deductible costs for lenders with at least a 25% share in the equity, as introduced with the rules on thin capitalization in the Corporate Income Tax Act.

Shareholders may prefer to consider loans as a form of capital injection into the company, due to the possibility of obtaining the interest even in the case of a borrower's deteriorating financial condition. A contrary situation occurs in the case of capital contributions, as dividend payments are dependent on resolutions on profit distribution. The significant impact of tax matters is confirmed by the results of this research, i.e. that enterprises which avoid taxes (have a higher difference between the nominal and effective tax rates (*tax_spread*)), tend to provide a higher amount of loans within and outside the business group.

Based on the results of models 1 and 2 and the analysis of IRFs, non-financial firms provide loans outside the business group through the redistribution of their cash holdings generated from operating activity (cash flow), cash holdings and long-term bank loans. This evidence confirms hypothesis H3. Loans for unrelated firms are provided by viable companies with low equity investment in other firms inside their business groups and are financed by bank debt and trade credit outside the business group. The results of the estimation of the impact of loans provided within and outside the business group on capital expenditures and capital engagement in shares of other firms, using the pVAR approach, indicates that there are grounds to believe in a redistribution effect, in accordance with hypothesis H3.

A Granger causality test for the mechanism of providing loans by non-financial enterprises is presented in Table 3. The null hypothesis that bank loans, cash holdings, cash flow from operations, and tax avoidance do not Granger cause the provision of loans to firms outside the business group is rejected. In fact, short-term bank loans and overall cash holdings Granger cause the provision of loans within the business group.

Table 3. Granger causality test

	st_bank _loans	ltbank loan	cash flow	cash holdings	loan_ other	loan_ bg	capex	equity_ inv	equity_ other	tax_ spread
st_ban k_loan	-	1.37 (0.242)	0.482 (0.488)	5.645** (0.018)	3.056 (0.080)	0.047 (0.829)	0.154 (0.695)	1.036 (0.309)	2.865 (0.091)	1.209 (0.272)
ltbank loan	9.518*** (0.002)	-	1.074 (0.300)	2.681 (0.102)	1.101 (0.294)	6.055** (0.014)	3.76* (0.052)	1.474 (0.225)	3.325* (0.068)	5.867** (0.015)
cash flow	34.352 <0.000)	4.722 (0.030)	-	21.709 <0.000)	12.729 <0.000)	10.809 (0.001)	0 (0.995)	2.178 (0.140)	7.081 (0.008)	38.927 <0.000)
cash holdin	0.046 (0.830)	0.7 (0.403)	0.07 (0.791)	-	0.006 (0.940)	4.003** (0.045)	27.22*** <0.000)	2.044 (0.153)	0.269 (0.604)	3.553* (0.059)
loan_ other	11.04*** (0.001)	3.658* (0.056)	8.16*** (0.004)	20.59*** <0.000)	-	1.758 (0.185)	8.98*** (0.003)	8.87*** (0.003)	1.649 (0.199)	8.50*** (0.004)
loan_ bg	2.715* (0.099)	0.494 (0.482)	1.265 (0.261)	13.30*** <0.000)	0.729 (0.393)	-	22.81*** <0.000)	9.04*** (0.003)	0.731 (0.392)	20.9*** <0.000)
capex	0.608 (0.435)	12.74*** <0.000)	38.15*** <0.000)	93.5*** <0.000)	58.57*** <0.000)	62.5*** <0.000)	-	57.87*** <0.000)	51.4*** <0.000)	10.8*** (0.001)
equity _inv	9.59*** (0.002)	0 (0.989)	5.58** (0.018)	2.32 (0.128)	7.531*** (0.006)	0.396 (0.529)	2.081 (0.149)	-	8.086*** (0.004)	0.037 (0.848)
equity _oth	1.423 (0.233)	0.422 (0.516)	2.767* (0.096)	1.654 (0.198)	2.461 (0.117)	1.037 (0.309)	0.813 (0.367)	0.232 (0.630)	-	0.081 (0.776)
tax_ spread	0.608 (0.435)	1.759 (0.185)	0.881 (0.348)	0.72 (0.396)	1.768 (0.184)	0.592 (0.442)	0.482 (0.487)	0.144 (0.705)	0.67 (0.413)	-

Standard errors in parentheses.

*** p < 0.01, ** p < 0.05, * p < 0.1.

The response functions of the provision of loans to the impulse in sources of financing indicate that, in the short-term, non-financial enterprises provide larger loans to firms outside the business group, as a response to taking out short- or long-term bank loans or having accumulated cash holdings. The strongest accumulated response of the provision of loans (outside the business group) can be observed in the impulse for bank loans, while loans provided within the business group tend to be more sensitive to short-term bank loans and cash holdings.

Based on the results from the Granger test, the null hypothesis that the provision of loans to firms outside and within the business group does not Granger cause lower capital expenditures is rejected; thus, we fail to reject hypothesis H1. Therefore, the provision of loans by non-financial companies decreases their capital expenditures (capex). There is not enough evidence to reject hypothesis H2, in the case of the provision of loans to enterprises outside the business group. This indicates that the provision of loans to companies outside the business group has a negative impact on capital engagement in related entities.

The orthogonalized and accumulated impulse response functions of capital expenditures and investment in the shares of companies outside and within the business group (capital engagement) confirm that the provision of loans, either external or internal, is negatively associated with both capital expenditures and the capital engagement of shareholders. The highest decrease in capex can be observed

as a reaction to shock in the provision of loans to firms within the business group by private companies, who have more limited access to finance (e.g. from banks) than transparent public companies listed on the stock exchange.

Tax avoidance Granger causes taking out bank loans thanks to leverage and interest tax shield effects. Moreover, tax avoidance Granger causes capital expenditure. This is in line with the economic interpretation, as depreciation of tangible assets enables using a non-interest tax shield. The results of the Granger tests imply that tax avoidance is causing the provision of loans outside and within the business group. Thus, it may be assumed that there exists a mechanism whereby limited liability companies act as intermediaries in the process of providing loans, to avoid restrictions in qualifying paid or capitalized interest as a tax-deductible cost.

According to the Granger causality test statistics, there is a bidirectional dependency between loans provided to companies outside the business group and both capital expenditures, as well as capital engagement, in related companies. Especially, capital engagement in related enterprises causes the provision of loans outside the business group. This leads to the conclusion that private companies (not listed on the stock exchange) are acting as intermediaries in the process of financing other companies to avoid restrictions regarding the deductibility of interest costs in the context of thin capitalization. On the other hand, the provision of loans outside the business group does not Granger cause acquiring internal sources of financing from cash flow, cash holdings or bank loans. It may indicate a distinct character of loans provided outside the business group and loans within relationships in the internal capital market of the business group. This leads to the conclusion that limited liability companies are used as intermediaries for providing loans outside the business group by their partners (suppliers of trade credit) or their owners (individuals among the shareholders).

For internal loans provision inside the business group, there is not enough evidence to reject the null hypothesis of the Granger test for short-term bank loans and cash flow from operations. However, there is evidence that the provision of internal loans Granger causes long-term bank loans and the accumulation of cash holdings. This indicates that there is a foundation for creating an internal capital market within the business group in the form of access to long-term financing from the bank and cash holdings by the business group.

Based on the stability test, all eigenvalues lie inside the unit circle; therefore, the VAR model is stable. Based on forecast error variance decomposition, the impact of shocks explaining the causes for the provision of loans to companies outside the business group can be observed. Table 4 presents a fraction of the forecast error variance decomposition for each variable in the model that can be assigned to orthogonalized shock in that variable, as well as other endogenous variables.

Table 4. Forecast Error Variance Decomposition (changes of the variable in rows explained by shocks to variables in columns)

Variable	Forecast horizon				Impulse variable					
	st_bank_loans	ltbank_loan	cash_flow	cash_holding	loan_other	loan_bg	capex	equity_inv	equity_oth	tax_spread
st_bankloans										
1	1	0	0	0	0	0	0	0	0	0
2	0.9905	0.0036	0.0004	0.0004	0.0030	0.0000	0.0001	0.0007	0.0007	0.0005
3	0.9856	0.0060	0.0005	0.0004	0.0044	0.0000	0.0002	0.0012	0.0010	0.0007
4	0.9839	0.0070	0.0005	0.0005	0.0048	0.0001	0.0002	0.0014	0.0010	0.0007
5	0.9833	0.0073	0.0006	0.0005	0.0049	0.0001	0.0002	0.0014	0.0010	0.0007
ltbankloan										
1	0.0818	0.9182	0	0	0	0	0	0	0	0
2	0.0646	0.9239	0.0005	0.0001	0.0001	0.0055	0.0010	0.0007	0.0015	0.0021
3	0.0601	0.9186	0.0009	0.0004	0.0010	0.0119	0.0010	0.0015	0.0023	0.0024
4	0.0586	0.9133	0.0010	0.0006	0.0019	0.0161	0.0010	0.0024	0.0027	0.0024
5	0.0581	0.9097	0.0011	0.0007	0.0025	0.0182	0.0010	0.0034	0.0030	0.0024
cashflow										
1	0.0698	0.0022	0.9280	0	0	0	0	0	0	0
2	0.1403	0.0084	0.8078	0.0024	0.0045	0.0117	0.0000	0.0018	0.0025	0.0206
3	0.1429	0.0117	0.7948	0.0028	0.0073	0.0151	0.0001	0.0019	0.0028	0.0207
4	0.1425	0.0126	0.7922	0.0029	0.0081	0.0161	0.0001	0.0019	0.0028	0.0207
5	0.1424	0.0128	0.7914	0.0029	0.0084	0.0164	0.0001	0.0021	0.0028	0.0207
cashholdings										
1	0.0000	0.0011	0.0131	0.9858	0	0	0	0	0	0
2	0.0002	0.0012	0.0132	0.9676	0.0008	0.0053	0.0091	0.0012	0.0000	0.0014
3	0.0002	0.0018	0.0131	0.9609	0.0009	0.0059	0.0110	0.0043	0.0004	0.0015
4	0.0003	0.0022	0.0131	0.9580	0.0009	0.0059	0.0113	0.0062	0.0006	0.0015
5	0.0003	0.0024	0.0131	0.9569	0.0010	0.0059	0.0113	0.0070	0.0007	0.0015
loan_other										
1	0.0036	0.0012	0.0033	0.2161	0.7759	0	0	0	0	0
2	0.0104	0.0035	0.0029	0.1897	0.7780	0.0049	0.0031	0.0044	0.0004	0.0027
3	0.0134	0.0063	0.0028	0.1833	0.7679	0.0067	0.0043	0.0108	0.0010	0.0035
4	0.0146	0.0082	0.0028	0.1810	0.7614	0.0071	0.0047	0.0151	0.0014	0.0037
5	0.0151	0.0091	0.0028	0.1801	0.7583	0.0073	0.0048	0.0172	0.0016	0.0037
loan_bg										
1	0.0001	0.0016	0.0034	0.0307	0.1757	0.7885	0	0	0	0
2	0.0021	0.0013	0.0049	0.0261	0.1491	0.7714	0.0182	0.0123	0.0004	0.0142
3	0.0043	0.0028	0.0048	0.0251	0.1398	0.7453	0.0246	0.0330	0.0021	0.0180
4	0.0057	0.0048	0.0047	0.0245	0.1361	0.7290	0.0262	0.0470	0.0035	0.0185
5	0.0064	0.0061	0.0047	0.0242	0.1346	0.7211	0.0265	0.0538	0.0042	0.0184
capex										
1	0.0041	0.0041	0.0195	0.0020	0.0005	0.0007	0.9691	0	0	0
2	0.0051	0.0184	0.0166	0.0044	0.0055	0.0318	0.8460	0.0529	0.0115	0.0078
3	0.0048	0.0244	0.0172	0.0053	0.0061	0.0438	0.8042	0.0681	0.0153	0.0110
4	0.0048	0.0255	0.0175	0.0054	0.0061	0.0463	0.7961	0.0703	0.0159	0.0121
5	0.0048	0.0257	0.0175	0.0055	0.0060	0.0467	0.7949	0.0705	0.0160	0.0124
equity_inv										
1	0.0026	0.0006	0.0009	0.0049	0.0218	0.0791	0.0102	0.8800	0	0
2	0.0086	0.0005	0.0012	0.0043	0.0348	0.0846	0.0123	0.8475	0.0062	0.0000
3	0.0120	0.0007	0.0012	0.0041	0.0416	0.0872	0.0136	0.8287	0.0108	0.0000

4	0.0140	0.0010	0.0012	0.0040	0.0447	0.0881	0.0142	0.8194	0.0133	0.0001
5	0.0150	0.0014	0.0012	0.0040	0.0460	0.0883	0.0146	0.8150	0.0146	0.0001
equity_oth										
1	0.0010	0.0000	0.0000	0.0006	0.0022	0.0016	0.0000	0.0523	0.9422	0
2	0.0016	0.0002	0.0004	0.0007	0.0035	0.0020	0.0002	0.0542	0.9370	0.0000
3	0.0021	0.0006	0.0005	0.0007	0.0038	0.0021	0.0002	0.0543	0.9356	0.0000
4	0.0022	0.0009	0.0005	0.0007	0.0039	0.0021	0.0002	0.0543	0.9351	0.0001
5	0.0023	0.0010	0.0005	0.0007	0.0039	0.0021	0.0003	0.0543	0.9350	0.0001
tax_spread										
1	0.0022	0.0002	0.0054	0.0001	0.0004	0.0042	0.0050	0.0000	0.0000	0.9826
2	0.0021	0.0019	0.0054	0.0001	0.0007	0.0039	0.0047	0.0003	0.0002	0.9807
3	0.0021	0.0029	0.0054	0.0001	0.0010	0.0042	0.0047	0.0004	0.0002	0.9791
4	0.0021	0.0032	0.0054	0.0001	0.0011	0.0044	0.0047	0.0004	0.0002	0.9785
5	0.0021	0.0033	0.0054	0.0001	0.0011	0.0045	0.0047	0.0004	0.0002	0.9783

Std. errors for FEVD and confidence intervals based on 200 Monte Carlo simulations.

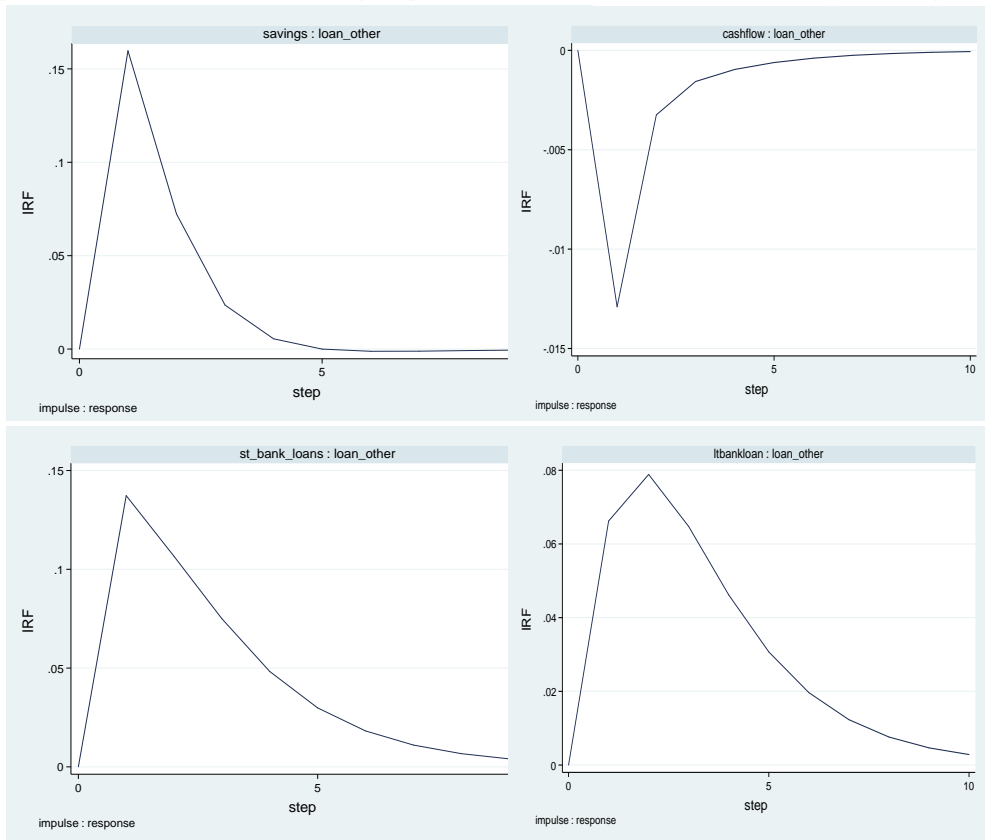
While the time horizon for the forecast is ten steps, for brevity, Table 4 presents the first five steps. The order of variables in vector autoregression models with Cholesky's decomposition, assumes that loans provided outside the business group do not directly impact sources of financing, while impacting them only in the future. It is assumed that taken out bank loans, internal funds generated from operating activities (cash flow) and cash holdings impact loans provided outside and within the business group, which then translates into an effect on capital expenditures (capex) and capital engagement in other firms (investment in shares of other companies). Based on the results presented in Table 4, it may be observed that most of the forecast error variance decomposition (FEVD) is due to own innovations in variables. Around 14% of cash flow changes may be assigned to shocks in bank loans (mainly short-term), and only 1.3% of changes in cash holdings of private enterprises which provide loans may be assigned to shocks in cash flow.

Private non-financial enterprises use their cash holdings for the provision of loans. This is confirmed by FEVD, as the provision of loans outside the business group is explained by 18-21.6% of the changes in cash holdings, and not more than 1.5% by changes in bank loans (2.4% when we consider together short-term and long-term bank loans). The FEVD of loans provided within the business group is explained by shocks in cash holdings of only 2.4-3%. No more than 5.4% of the changes in loans provided within the business group are explained by capital engagement in related entities, while 13.5-17.6% of those changes are due to loans provided outside the business group, and 1.4-1.8% by tax avoidance. The share of the FEVD of capital engagement within the business group to shocks to itself ranges between 81% and 88%. The total impact of shocks in the provision of loans to changes in internal capital engagement ranges from 10 to 13%. The response functions of the provision of loans outside the business group to shocks in sources of financing indicate a short-term effect, which eventually fades out in the mid- and long-term. As a result of cash holdings accumulation, enterprises provide higher loans outside the business group, while in the mid-term, the effect fades out and in the long-term, it disappears.

In the case of loans outside the business group financed by cash holdings, the reaction of loans increases only 2-3 periods after the shock in cash holdings occurs.

The results also indicate a trade-off between capital expenditures or investment in shares in other firms and the provision of loans to other firms, in accordance with hypotheses H1 and H2.

Figure 2. *Orthogonalized and accumulated Impulse Response Functions of loans provided outside the business group to shocks in internal and external financing*



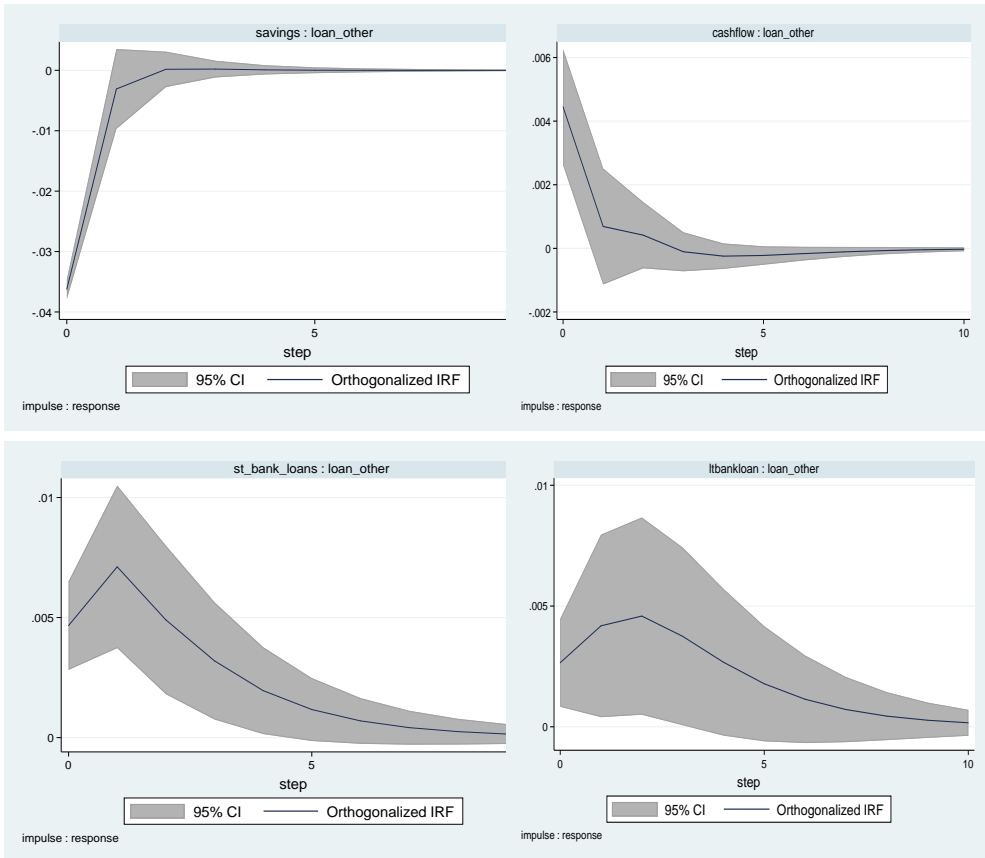
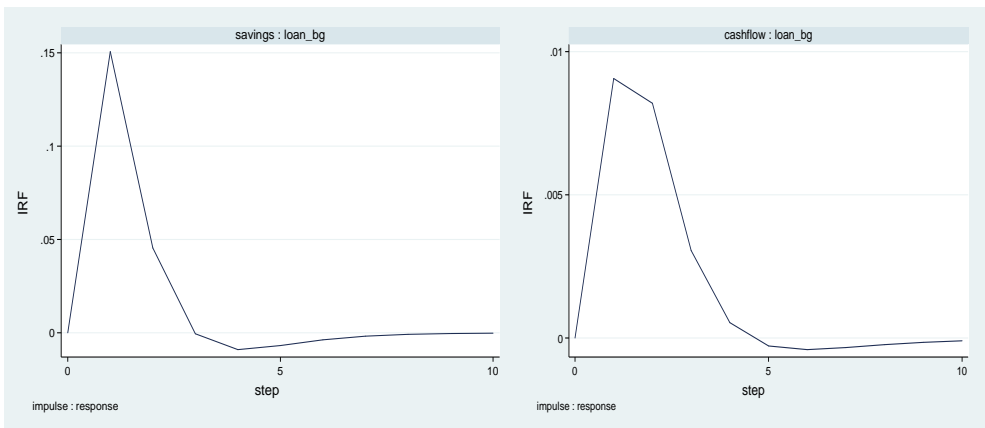


Figure 3. Orthogonalized and accumulated Impulse Response Functions of loans provided inside the business group to shock in cash holdings, cash flow and bank loans



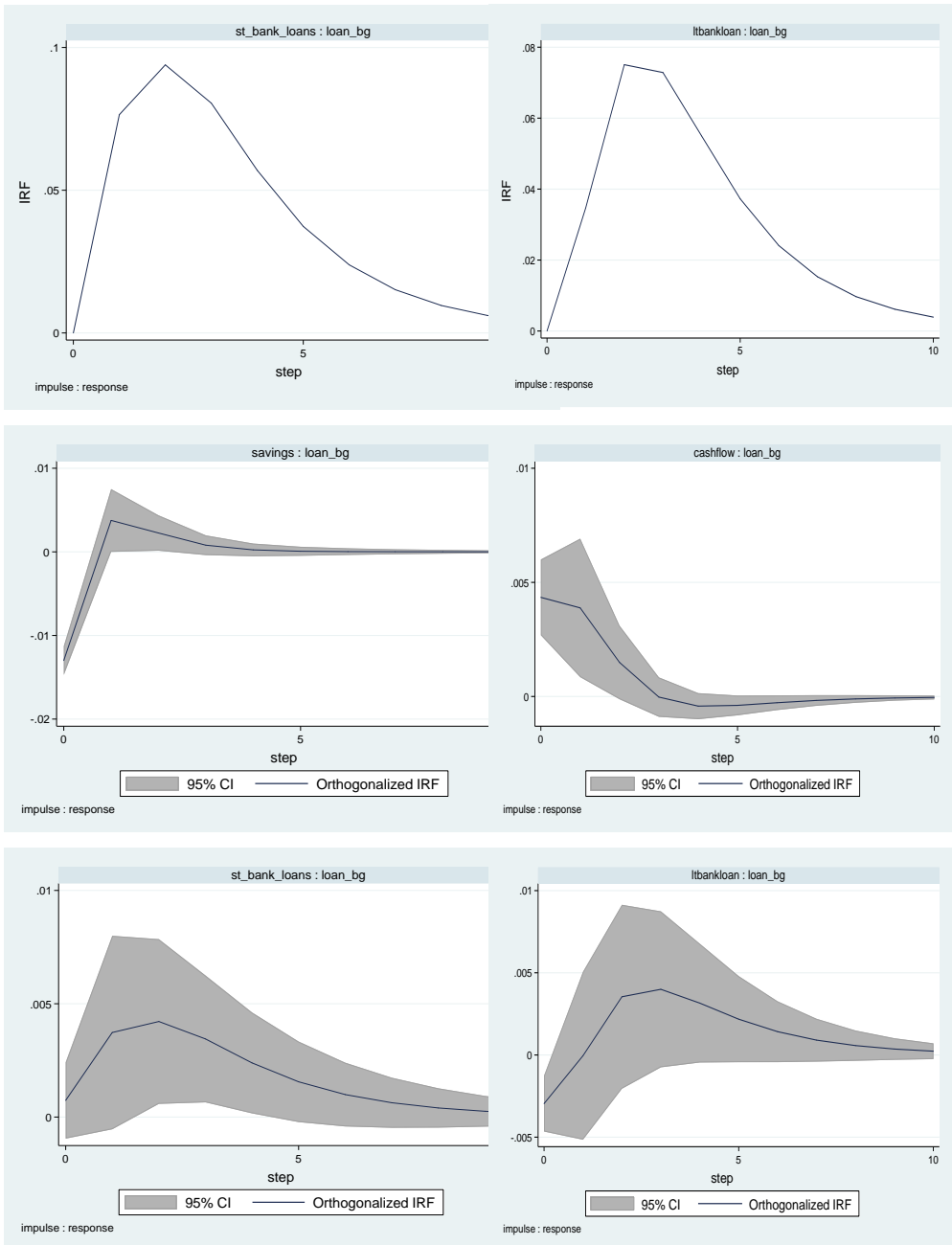


Figure 4. *Orthogonalized and accumulated Impulse Response Functions of capex and shares of other companies to shocks in loans provided outside the business group*

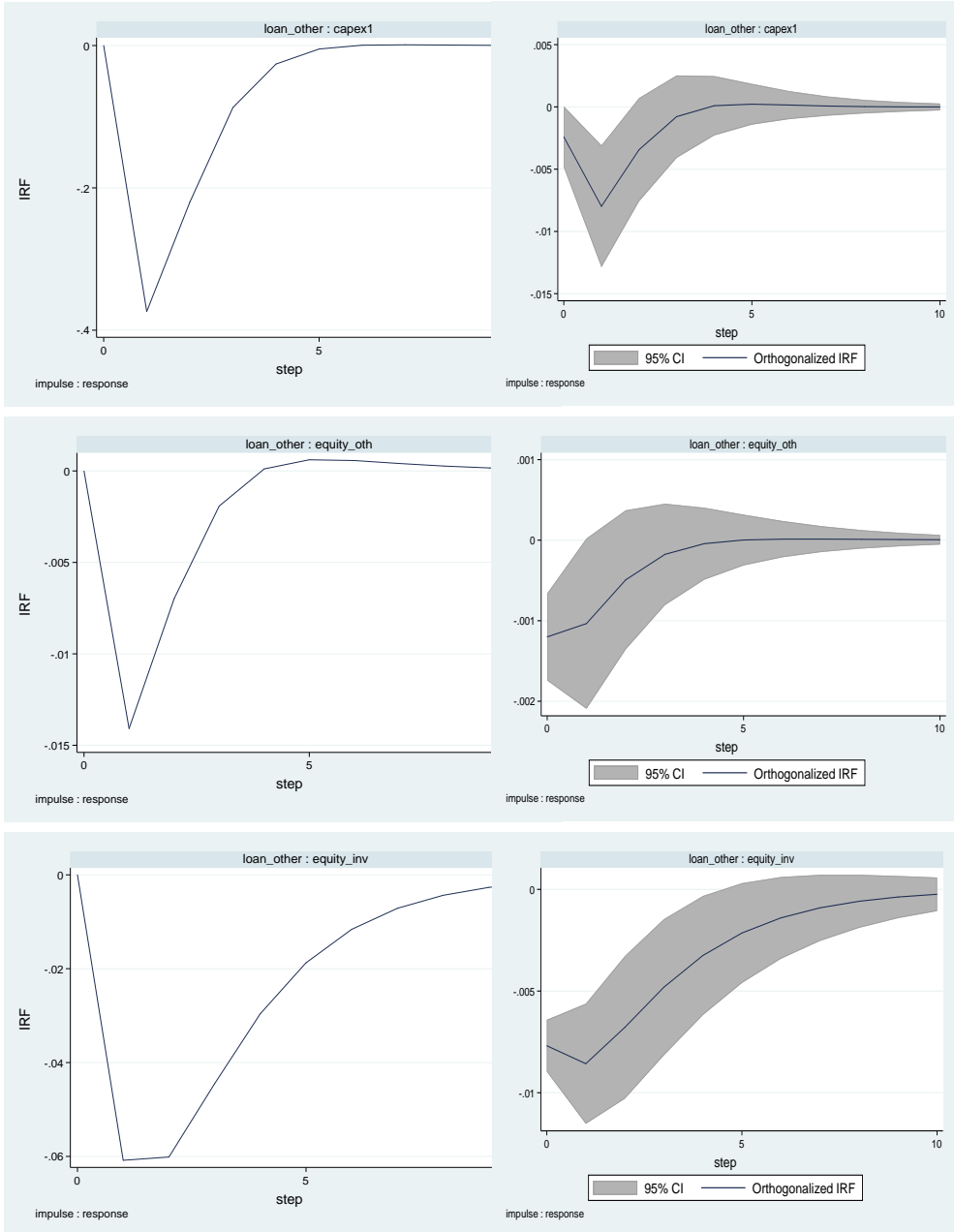
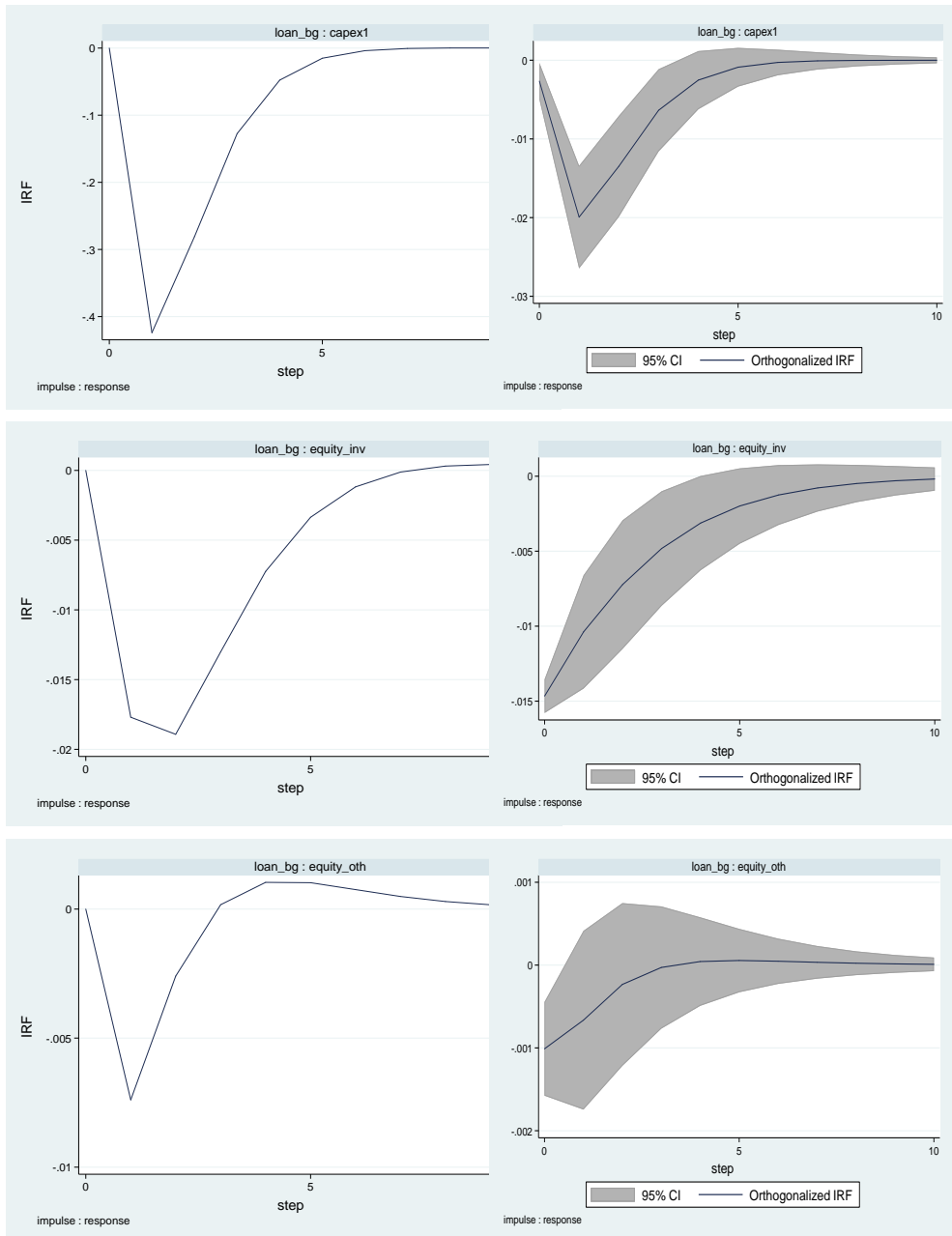


Figure 5. Orthogonalized and accumulated Impulse Response Functions of capex and shares of other companies to loans provided inside the business group



This finding again confirms the presence of a redistribution effect of accumulated cash holdings through the provision of loans to enterprises which face higher limitations in access to external finance, e.g. from the bank. There is, therefore, no

basis to reject hypothesis H3. The response of loans provided outside the business group to shocks in bank loans is positive and decreases in the mid-term and fades out in the long-term. This indicates that there is also a redistribution effect of funds obtained from bank loans for companies which face limitations in access to finance through loans provided outside the business group. However, in the case of loans provided inside the business group, the accumulated response functions imply the negative effect of the impulse in bank loans (Figure 3). This may result from the usage of a surplus in cash holdings for the purpose of paying the bank loan instead of providing loans. On the other hand, it may also reflect the effectiveness of an internal capital market which provides financing to related entities, instead of taking out bank loans, which are more expensive. It is important to note that the large scale of loans provided outside the banking system may lead to a significant increase in the risk of a firm's insolvency. Although the provision of loans may be seen as a remedy for a company's (borrower's) insolvency and loss of debt service capacity, the potential further bankruptcy of the borrower may transfer the risk of insolvency to lenders indebted to banks. This may introduce higher risk into the bank loans market.

The response of loans provided outside the business group to shocks in cash flow from operations is negative in the first period, then converges back to zero in subsequent periods (Figure 2). This may be a consequence of the provision of loans to companies with a lower capacity for current debt service. This would indicate that the provision of loans outside the business group is motivated by trade relations, especially in terms of maintaining liquidity, the realization of investment or the deferral of the announcement of the insolvency of a key supplier or recipient (customer).

According to the shape of the orthogonalized response function of loan provision in the internal capital market (of the business group) to shocks in cash flow, increase of cash flow implies an increase in loans provided within the business group (opposite to loans granted outside the business group). In the short-term, loans provided internally increase as a response to the increase of cash flow. The accumulated effect is smaller in the mid-term and fades out after five periods. In contrast, in the case of loans provided outside the business group, as cash flow increases, the orthogonalized IRF decreases strongly in the short term and then returns almost to the starting point and fades out in the mid-term, being still below zero. And finally, the accumulated response functions indicate a decrease of those loans in the short-term with the effect fading out in the mid-term.

6. Conclusions

Our research findings contribute to the existing body of knowledge of the redistribution effect that is described so far in the literature in connection with the trade credit channel (Meltzer, 1960; Petersen and Rajan, 1997; Blasio, 2005; Guariglia and Mateut, 2006; Taketa and Udell, 2007; Cull and Morduch, 2007; Love

et al., 2007; Huang *et al.*, 2011). We extend this concept of trade credit (simply postponing repayment) into providing loans to other companies with the use of the real transfer of money. Confirmation of the existence of this redistribution effect outside the business groups, also lets us contribute to the literature on the internal capital market (so far understood as created inside the business group) and to the wide literature on cash holdings and financial flexibility by highlighting the crucial role of hoarding cash in solving the problems of SMEs limited access to finance and small firms' financial constraints. Our study contributes to the literature by differentiating the mechanism of private enterprises' intercorporate lending inside and outside their business group, the finance sources of intra-group and intercorporate loans and the reaction of capex and capital engagement in other firms to shocks in the provision of loans. We diagnose the effects of intercorporate lending outside the business group.

The main limitation of our study is its focus on a single country analysis. So far there is only very limited research on this phenomenon of intercorporate lending, in China, India, Chile, Germany and Poland. Because the SAFE (2013; 2016) survey confirms the significant role of non-bank borrowings in most European countries, there is still a substantial opportunity to increase knowledge and to contribute to the literature.

Moreover, the financing advantage hypothesis analyzed by Buchuk *et al.* (2014) suggests that internal debt (including loan provisions by shareholders) gives the advantage to the lending firm. If the controlling shareholder decides to provide equity financing directly, they can only contribute with their share of dividends from the firm with excess cash income. In this regard, internal debt (due to intra-group loans) gives the advantage of indirect equity financing as interest income is not restricted to profit generated by the borrower. On the contrary, intercorporate loans granted to non-related firms (or partnerships, unincorporated businesses) play mainly an emergency financing role and defer bankruptcy. Market frictions, such as asymmetric information and agency problems, leave firms without financing which limits their investment and growth. Our results confirm that non-financial enterprises' provision of loans reduces their capital expenditures, as a result of the absence of the free cash flows that were already used for loan provision. Providing loans by shareholders substitutes for capital engagement in the financing of an enterprise.

However, it is important to note that emergency borrowings from other companies (instead of banks), used for deferring a default, could introduce a credit risk into the business sector, resulting not only in underinvestment but also in liquidity problems and an increase in financial constraints. The redistribution effect of cash holdings and money borrowed from banks by companies with creditworthiness to unrelated companies (with financial constraints and lacking creditworthiness) is dangerous for the stability of the financial system, because of the default risk of these "indirect borrowers" and their inability to repay loans.

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