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Do Polish non-financial listed companies hold cash to lend money to other firms?[1]

Anna Białek-Jaworska[2]

Abstract: This paper aims to identify factors influencing Polish non-financial corporate lending to other entities starting from the recognition motives and sources of cash holdings. The research analyzed panel data of 754 non-financial companies listed on the Warsaw Stock Exchange with use of tobit panel and generalized least squares method. Cash holding is motivated by a transaction motive, a protection against risk by the use of derivatives, investment opportunities and lending money. Non-financial companies try to step into the shoes of financial institutions by lending using money gained from their cash flow, especially when they have long-term investments.

Key words: cash holdings, lending money, loans, non-financial companies, cash flow.

JEL codes: G30, M21, M41.

Introduction

The main purpose of this article is to identify motives and factors influencing Polish non-financial corporate lending to other entities starting from the recognition of their motives and sources of their cash holdings. This paper aims to answer the (title) question: do non-financial listed companies really try to step into the shoes of financial institutions by lending money to other firms thus creating an internal capital market for the financing of business group?

The International Monetary Fund indicates that there has been a significant increase in financial assets held by enterprises from the world's most influential countries. The increase in cash holdings is closely linked with the issue of financial flexibility (the ability of a company to respond to changes in the company's

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Earlier versions of this paper were presented on the International conferences Accounting and Management Information Systems AMIS in Bucharest in 2006 and on the International Conference on Accounting, Finance and Financial Institutions. Theory Meets Practice (ICAFFI) in Poznań in 2016.

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cash flows or investment opportunity set by providing cost-effective sources of financing (Denis, 2011)), the increase in operational risk and expenses on R&D (Bates, Kahle & Stulz, 2009; Chung, 2017). In Poland corporate savings rose from 9.1% of GDP in 2007, up to 17.1% of GDP in 2012 and 15.8% of GDP in 2013 (GUS, 2015). For Poland the non-financial corporate debt-to-GDP ratio is only 42%, while this ratio equates to 67% in the USA, 74% in the UK, 165% in Sweden, 189% in Ireland and 201% in Singapore (Dobbs et al., 2015). The effect of financial development on economic growth is bell-shaped. For Poland the Financial Development Index is 0.5 and the relationship between financial development and economic growth rate is not yet as negative as in the cases of Ireland, the United States and Japan. However it does exist on the top of the bell-shaped curve (Sahay et al., 2015). The aforementioned facts raise the question: Do constraints on access to bank loans–confirmed by the very low relationship of non-financial corporate debt to GDP in Poland–encourage non-financial companies to accumulate cash and lend money to their related entities?

In this paper I intend to prove that cash holdings are not only an internal source of financing, but also a capital conservation buffer in case of shock liquidity changes not only in the company itself, but also in other related firms, not limited to affiliates of business groups. Internal capital market can be a substitute for external finance (Subramaniam et al., 2011), and mitigate financial constraints faced by members of business groups (Uğurlu, Altıok-Yılmaz & Akben-Selçuk, 2017).

My paper contributes to existing literature on financial flexibility by closing the gap in the identification of motives for their cash holdings in a form of lending money to other firms in emerging economies with constraints of access to bank loans for non-listed firms.

The paper will be structured as follows: the theoretical background, literature review and research hypotheses will be presented in the initial section, followed by the identification sources of non-financial corporate cash holdings, an empirical study with panel and tobit panel regression estimations and findings interpreted and discussed with references to the literature on the subject. The paper ends with a summary and conclusions.

1. Theoretical background

The literature in the field of economy and corporate finance provides transaction, precautionary, tax and agency motives for cash holdings (Bates et al., 2009).

The **transaction motive** means that firms would prefer holding cash as the internal source of capital to to raising external funds or liquidating assets (the conversion of non-monetary assets into cash used for payments for purchases of goods and services). Due to economies of scale related to the transaction motive, large companies hold less cash (Miller & Orr, 1966; Mulligan, 1997). In

terms of the **precautionary (or flexibility) motive**, enterprises hold cash in order to be able to finance projects or manage negative shock effects when access to capital markets is too costly. Companies with higher operating risk (higher volatility of cash flows or profits) (La Cava & Windsor, 2016) and poor access to external capital, hold more cash (Riddick & Whited, 2009). Kling (2016) proves that under uncertain cash flows, cash holding reduces insolvency risk, while Cho-Min, Min-Lee and Hui-Wen (2017) indicate the asymmetric sensitivity of cash holdings to "cash flow volatility" that depends on earnings. Acharya, Almeida and Campello (2010) state that aggregate risk is a fundamental determinant of a company's liquidity management choices (cash versus credit lines). Firms with a high aggregate risk find it costly to open credit lines and companies exposed to systematic risk decide on cash, while for firms that only need to manage their liquidity risk, bank credit lines dominate cash holdings.

Firms which are small, exposed to an increased risk of bankruptcy and which do not pay dividends accumulate more cash (Baum, Caglayan & Talavera, 2013). Cash holdings are used to smooth ordinary R&D investment after the crisis (Chung, 2017).

Bansal and Bansal (2012) indicate that both more indebted companies and listed companies that have better access to finance from capital market, hold less cash resources. While, at the same time, financially constrained companies accumulate higher amounts of cash and financial assets when cash flow volatility increases (Qurat-ul-ann & Abdullah, 2017). Białek-Jaworska and Nehrebecka (2014), in the case of Polish enterprises, point out that a higher share of liquid securities in assets reduces the use of short-term bank loans, especially in medium-sized firms. Only small firms with higher liquid reserves in a previous year increase the use of short-term bank loans since collateral in the form of liquid securities mitigates their credit risk aversion. Cash holdings tend to be higher in firms with poor access to external capital (Opler et al., 1999). But the constraints to access to financing do not impact the level of cash holdings that much because it depends not only on the creditworthiness, but also on the size of the cash flows compared to investment capability. Entities with limited access to financing hold more cash if future growth opportunities are more profitable (Almeida, Campello & Weisbach, 2004).

Foley, Hartzell, Titman and Twite (2007) indicate that American corporations keep their overseas-generated incomes abroad in order to avoid taxes upon repatriation (i.e. return from overseas). Consequently multinational corporations hold higher cash resources because of the **tax motive** that depends on benefits from a reduction in repatriation taxes (De Simone, Piotroski & Tomy, 2017) or on the issue of double taxation and difference in the timing of when these taxes are paid (La Cava & Windsor, 2016).

Moreover managers with more experience and longer seniority prefer to keep their cash holdings rather than to increase the dividend payouts to shareholders, especially when the company has poor investment opportunity (Jensen,

1986; Pinkowitz, Stulz & Williamson, 2006). Experienced managers are more willing to accumulate cash in accordance with the **agency motive** but, at the same time, tend to spend excess cash very quickly (Dittmar & Mahrt-Smith, 2007; Harford, Mansi & Maxwell, 2008). Corporate governance also has a significant impact on the level of cash holdings (Yarram, 2012). The increase in cash is concentrated in companies that do not pay dividends or have recently carried out their first issue of shares (Bates et al., 2009). And because entrepreneurs are reluctant to limit dividend payments with an increase in cash resources, a small positive correlation between dividend payments and cash holdings is observed (Drobetz & Grüninger, 2007). It seems to be important to add also the **speculative motive** because financial asset rates of return are as high as those of non-financial investments, for which financial assets became a substitute. For non-financial companies a positive direction of a precautionary motive's impact and a negative impact of speculative motive counterbalance each other (Kaplan, Özmen & Yalcin, 2006).

2. Literature review and hypothesis development

The literature of bank lending indicates the influence of the low competitiveness in the banking sector, its high concentration as measured with the Lerner index and the macroeconomic situation, including the financial development of the country (the low financial development in Poland confirmed by Sahay et al. (2015)), the access to information and the state ownership of banks (Białek-Jaworska & Nehrebecka, 2014). The impact of these determinants varies – in particular Love and Peria (2012) observe that the impact of bank competition and their concentration depends on the economic environment. In some countries the negative effect of low bank competition may be mitigated by the accessibility of loan information or the general country-level of financial development, while in other countries this impact may be moderated by the high share of state ownership in the banking sector.

The pecking order theory (Myers & Majluf, 1984; Myers, 1984) stressing the problem of information asymmetry between the management board, company owners and external investors, indicates that companies choose sources of finance with the lowest level of information gap, since publication of financial statements is costly. Therefore firms prefer internal sources of financing and are most willing to finance their business development with retained earnings, internal sources (i.e. corporate cash holdings and cash flows) (Brown & Peterson, 2011) or loans from other companies. When the internally generated cash surplus turns out to be insufficient to cover capital expenditures, companies seek external funding with a lower risk, namely: bank loans, the issue of bonds and the issue of shares. Taking into account that in Poland only 10% of active companies record operations in their account books, the significant role of infor-

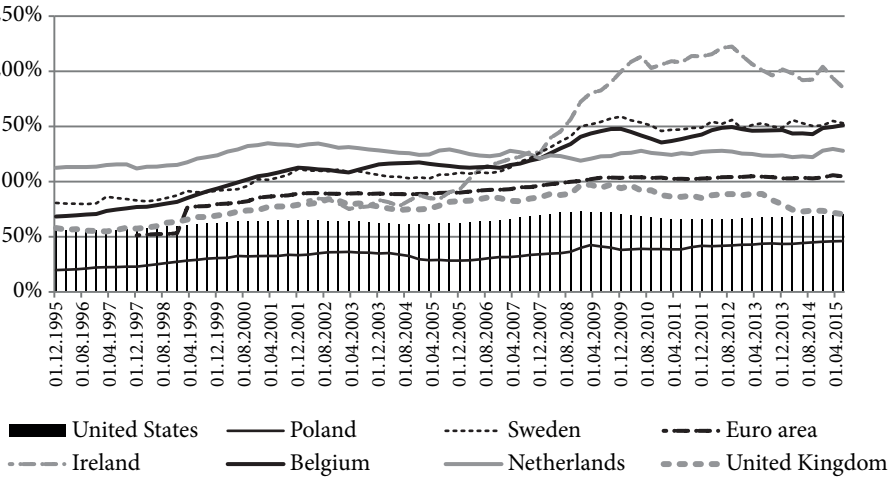

Figure 1. Non-financial corporate debt-to-GDP ratios (%)

mation asymmetry could explain the low non-financial corporate debt-to-GDP ratio. IMF research results consider Poland a country that managed to secure a safe process of financial development (Sahay et al., 2015). The financial system in Poland, as an emerging market, is well below the levels reached in advanced economies and in the Euro zone.

If we measure the financial development by non-financial corporate debt-to-GDP ratio we observe that during the last decade in Poland this ratio increased by 26 pp., from 19.9% at the end of 1995 to 45.9% of GDP in the middle of 2015, while in Ireland it was over 110% of GDP during the whole period of analysis (Fig. 1 based on the Bank for International Settlements database). The low use of bank loans in business financing may be a result of an aversion to take on debt and of self-financing preferences – as the pecking order theory (Myers & Majluf, 1984; Myers, 1984) assumes – but also due to low credit ratings assigned based on restrictive criteria and terms of lending, as well as limited access to alternative sources of finance, also internal funds (cash flow from operations), trade credits or the possibility to borrow money from other non-financial firms, usually inside the business group.

2.1. Debt financing

Brown, Ongena, Popov and Yesin (2012) suggest that small East European firms are less likely to apply for credit than Western firms even though they are more likely to need it. Businesses, although in need of a loan, do not submit loan applications, discouraged by collateral conditions, high – from their point of view – interest rates and cumbersome lending procedures. Among East European firms, the probability of being denied credit is higher for small, private, fledgling businesses. Detragiache, Tressel and Gupta (2008) indicate

that foreign banks lend to large firms with credible financial reporting rather than to numerous micro and small enterprises with problems of information asymmetry. The high rate of firms discouraged to apply for credit in Eastern Europe is driven more by the presence of foreign banks than by the macroeconomic environment or the lack of creditor protection.

Among the key factors determining the accessibility of loans to firms, Guo and Stepanyan (2011) list banking sector health, as well as economic growth and low inflation. According to Jiménez, Ongena, Peydró and Saurina (2010), bank capital plays a vital role in the accessibility of bank loans. Capital infusion into a company and a bank, as well as liquidity injections, lead to an increased supply of bank loans as a rule, but the method used to strengthen banks' balance sheets may impact credit expansion. Good relationships with banks and other financial institutions reduce agency costs and limit cash holdings kept by companies (Drobetz & Grüninger, 2007; Garcia-Teruel & Martinez-Solano, 2008; Frésard, 2012). However the alternative cost of keeping cash holdings increases along with the value of debt (Drobetz & Grüninger, 2007) and the maturity of liabilities (Garcia-Teruel & Martinez-Solano, 2008). Rationing loans and information asymmetry create company demand for liquid assets in order to hedge against an imperfect capital market (Kaplan et al., 2006), and keeping adequate working capital enables the avoidance of the high cost of loans and insolvency risk (Abbadi & Abbadi, 2013). Bruinshoofd and Kool (2004) suggest that companies aim for an individually set level of long-term balance in cash holdings with an average annual speed of approximately 24-28%. The speed of correcting (adjusting) the current level of cash holdings to the targeted level is higher for Spanish small and medium-sized enterprises than for SME's from other countries due to larger problems with information asymmetry and agency costs in addition to higher external financing costs (Garcia-Teruel & Martinez-Solano, 2008). Dewaelheyns and Van Hulle (2007) proved that a bank debt-to-assets ratio is positively correlated to liquidity, whereas Cole (2010) provided evidence that firms with greater cash holdings take out fewer new loans, relying more on internal financing. Therefore it is expected that:

Hypothesis 1: Good access to debt financing from the capital market (bank loans and corporate bonds issue in cash flow reports) reduces non-financial corporate cash holdings.

Hypothesis 1A: More indebted companies hold less money.

Hypothesis 1B: Companies with higher long-term liabilities give fewer loans to other firms.

2.2. Cash flow from operations

In the opinion of Dittmar, Mahrt-Smith and Servaes (2003), Ferreira and Vilela (2004), and, Garcia-Teruel and Martinez-Solano (2008) cash flow from operations positively correlates with cash holdings of enterprises. While, conversely,

Kim et al. (1998), and, Ozkan and Ozkan (2004) show a negative correlation. On the other hand, Lins, Servaes and Tufano (2010) observed that a low or negative financial surplus in cash from operating activities encourages companies to accumulate cash resources. Enterprises hold higher cash reserves for a decrease in cash flow (Opler et al., 1999). Almeida et al. (2004) find that the cash flow sensitivity of cash is positive for companies faced with constraints in accessing sources of finance but statistically insignificant for financially unconstrained firms. Next, Almeida, Campello and Weisbach (2011) indicate that firms tend to adjust financial policies to minimize the impact of financing frictions i.e. by saving more cash from cash flow when frictions are more important. At higher limits of access to finance from the capital market, corporate cash resources are more sensitive to changes in cash flows (Baum, Caglayan & Talavera, 2013). Companies with higher volatility of cash flows hold more cash (La Cava & Windsor, 2016) asymmetrically with earnings Cho-Min et al. (2017) (supporting the behavioral finance perspective). Therefore the following hypotheses can be advanced:
Hypothesis 2: Higher cash flow from operations increases cash holdings.
Hypothesis 2A: Cash flow from operations is the main source of cash holdings of Polish non-financial listed companies.
Hypothesis 2B: Non-financial companies use cash flow from operations to lend money to other firms, in short there is a negative relationship between cash flow from operations and loans lent.

2.3. Investment opportunities

Companies with better investment opportunities (measured by a *market-to-book ratio*) hold more cash because limited access to funding is more costly for them (Kim et al., 1998; Opler et al., 1999; Ferreira & Vilela, 2004; Ozkan & Ozkan, 2004).

High growth opportunity under conditions of information asymmetry and rising borrowing costs encourage companies to hold higher cash reserves (Drobetz & Grüninger, 2007; Garcia-Teruel & Martinez-Solano, 2008). According to the pecking order theory a company prefers to finance future investments from internal sources, including their equivalent in their own cash resources (Deloof, 2001; Garcia-Teruel & Martinez-Solano, 2008). Baum et al. (2013) explain that companies hold more cash in the case of expected expenditure on research & development than when they expect capital expenditures on fixed assets. Companies that intend to expand operations in future or have underestimated their market value, hold less cash (Lins et al., 2010). Cash holdings are determined by a manager's expectations of the prospects for future growth and future financing costs (Frésard, 2012). Contrary, Breuer, Rieger and Soypak (2016) point out that firms decrease cash holdings when their shareholders are ambiguity-averse, i.e. when their investors want to avoid uncertain investments.

Hence, the following hypothesis is advanced:
Hypothesis 3: Companies with better investment opportunities (measured by the market-to-book ratio) hold more cash.
Hypothesis 3A: Companies with better investment opportunities give more loans to other firms, including their related entities inside the business group.

Managers arrange their liquidity management policies to provide the flexibility to respond to unexpected changes in the firm's investment opportunity set (Denis, 2011). Inside business groups, conglomerates or companies with a diversified firm structure the cash flows of operating segments with poor growth opportunities that can be used to subsidize those segments with good growth opportunities, but poor cash flows. This allows to a reduction in the magnitude of financing frictions. Subramaniam et al. (2011) find that diversified firms have lower cash holdings than focused counterparts as the diversification might reduce financing frictions. Tong (2011) reports that the value of cash is significantly lower in diversified firms than in single-segment firms because of agency problems associated with the conglomerate structure. Excess cash holdings might be used for inefficient cross-subsidization of less profitable units, for example in a form of loans. So in considering long-term financial assets or real estate investments as a proxy for investment opportunities of diversified companies, it is expected that:
Hypothesis 4: Companies with long-term financial assets or real estate investments give more loans to other firms.

3. Identification of the sources of non-financial corporate cash holdings

Figure 2 presents the percentage structure of sources of non-financial corporate cash holdings based on aggregated data retrieved from cash flow statements from the Notoria data base for all $N = 784$ listed non-financial companies, including companies from the research sample. I have identified sources of cash holdings, based on the following author's decomposition of total cash flow with use of the cash flow statement:

$$\sum_{i=1}^{N} cash_i = \sum_{i=1}^{N}(cf_i - d_i - s_i) + \sum_{i=1}^{N} si_i + \sum_{i=1}^{N}(li_i - lp_i) + \sum_{i=1}^{N} id_i + \sum_{i=1}^{N}(bi_i - bp_i) + \\ + \sum_{i=1}^{N} bg_i + \sum_{i=1}^{N} capex_i + \sum_{i=1}^{N} ll_i + \sum_{i=1}^{N} fi_i - \sum_{i=1}^{N} ic_i - \sum_{i=1}^{N} cl_i - \sum_{i=1}^{N} re_i + \sum_{i=1}^{N} fcf_i,$$

where: *cash* – cash holdings equals the difference between cash and equivalents at the end of the fiscal year and cash and equivalents at the beginning of the fiscal year, *cf* – cash flow from operations, *d* – dividends paid, *s* – repurchase

of own shares, *si* – inflows from share issue, *li* – inflows from bank credits and loans , *lp* – repayment of bank credits and loans, *bi* – inflows from corporate bonds issue, *bp* – repurchase of corporate bonds, *id* – interest and dividends received presented in cash flows from financial activity, *bg* – transactions on shares in affiliates, *capex* – net investments in fixed assets and intangible assets (inflows from sales minus outflows from purchases), *ll* – net loans to other firms (outflows), *fi* – net financial investments, *ic* – interest costs, *cl* – expenditures for capital leasing, *re* – expenditures for investments in property (real estate), R&D and other, *fcf* – other financial cash flows.

Cash holdings of non-financial companies listed on the WSE resulted from: cash flow from operations; inflows from bank loans and borrowings over outflows from this in the periods of 2008-2010 and 2012-2013; in 2007 inflows from share issues (Fig. 2); in 2007 and 2012 corporate bonds issues; and in 2011 and 2013 inflows from the disposal of shares of affiliates (Figure 4). The statistical data in Figure 2 confirms the **H2A hypothesis** that states that cash flow from operations is the main source of cash holdings for Polish non-financial listed companies in the period of analysis. Interest and dividends received played a more significant role in the period of 2011-2013. Only in 2014 did the repayment of bank loans exceed inflows from new debt financing (Figure 2) and repayments of loans lent to other firms were greater than the money lent to them (for the positive difference between inflows from repayments of loans and expenses for loans lent to other firms, refer to Figure 3). This exceptional situation may be caused by the increasing risk due to uncertainty regarding the escalation of the conflict in Ukraine as well as the Russian embargo and sanctions on Polish companies in 2014 (Białek-Jaworska, 2017). Figure 3 presents the purposes for which these companies spent money: loans to other firms, investments in financial assets (including derivatives), fixed assets, R&D and other intangible

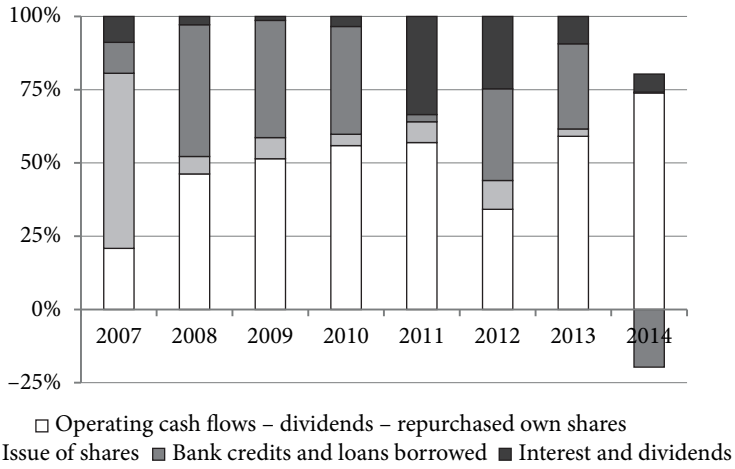

Figure 2. Structure of sources of non-financial corporate cash holdings

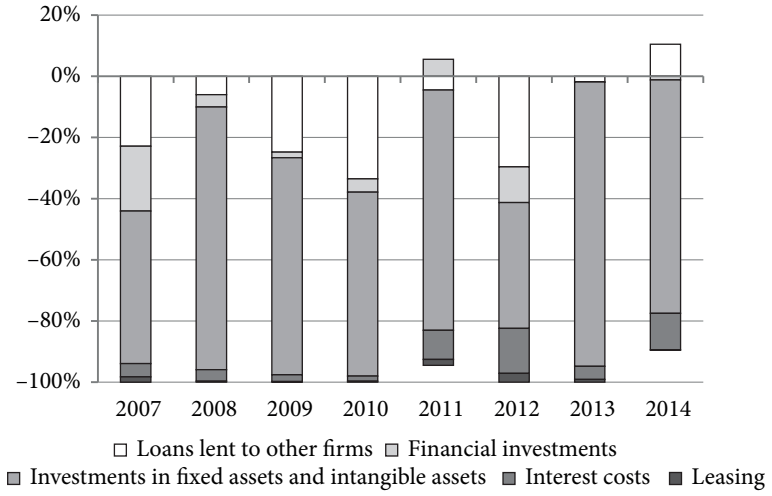

Figure 3. Structure of investment expenditures and interest costs paid

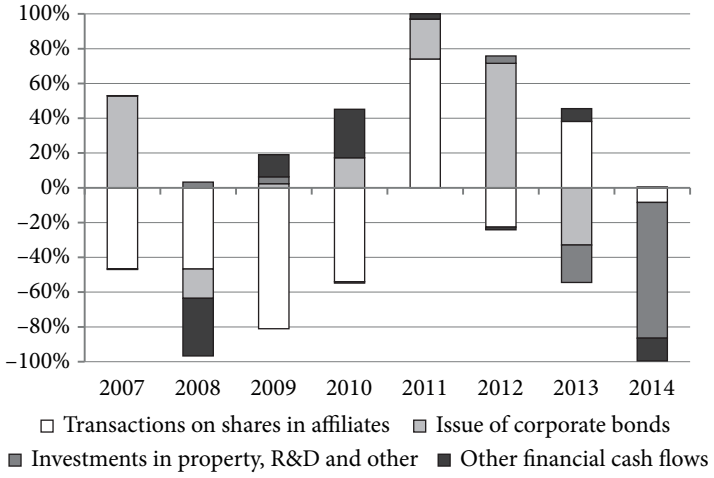

Figure 4. Structure of investment flows and nonfinancial corporate bond issuance

assets and for payments of the interest costs of debt. Analysis of the data confirms that non-financial listed companies are trying to step into the shoes of financial institutions by lending money, especially in 2007, 2009-2010 and 2012.

4. Data sources

In the data for 754 non-financial companies listed on the Warsaw Stock Exchange (WSE), the main floor of the WSE or the NewConnect alternative trading floor, is used. The research sample contains 4,860 firm-year observa-

tions with data from annual financial statements for the 2007-2014 period. The following sectors were excluded from the study: banking, insurance and financial institutions as their activities involve the collection and storage, or investing cash, debt trading and lending. The data was collected from the Notoria database containing financial statements including balance sheets, income statements and cash flow statements with additional information. Research also includes the data on share trading that were collected manually from the portal StockWatch; as closing prices at the end of each year from 2008-2014. Gathering the data on the prices of their shares enables the determination of market-to-book ratios that approximates with the investment opportunities.

5. Research design

In this paper panel analysis of the determinants of non-financial corporate cash holdings as regards loans lent to other firms was carried out with the use of the panel cross-sectional time-series generalized least squares (FGLS) method that deals with problems of heteroscedasticity, autocorrelation and unequally spaced observations in time. This method allows an estimation, even if observations are unequally spaced in time (Table 3).

Next, based on the aggregated data retrieved from cash flow statements, I identify the main sources of cash reserves, i.e. money collected (inflows over outflows) for loans lent to other firms (Table 3). In the third step there is a statistical analysis of frequencies of sources of cash reserves for non-financial corporate lending money to other companies, measured by firm-year observations with positive values of listed sources of finance (Table 4). Finally, determinants of non-financial corporate lending activity (loans lent by listed companies to

Table 1. Definitions of variables used in the panel and tobit panel analysis

Variable	Definition of variable
cash_ratio	(cash in hand and bank account + short-term financial assets (mainly securities)) / assets
loans_lent	ln(expenses on loans lent to other companies) based on the cash flow statement
Main explanatory variables related to the basic hypotheses	
net_debt_issue	(annual inflows of loans and borrowings and the issuance of corporate bonds – annual expenditure on repayment of loans, borrowings and redemption of corporate bonds)/ assets
net_fin_debt	(long-term debt + short-term debt – (cash in hand and on bank account + short-term financial assets)) / total assets
long_leverage	long-term liabilities / total assets

cash flow oper	cash flow from operating activity / total assets
market to book ratio	measured as ln((the book value of total assets – book value of equity + market value of equity (share price x number of shares)) / book value of total assets)
fin_inv_real_estate	dummy variable that takes the value of 1 if the (long-term financial assets + investment properties) > 0; and 0 otherwise (it indicates possibility of valuation in fair value)
Control variables	
operational risk	ln(the standard deviation of cash flows from operating activities over the past five years (t, $t-1$, $t-2$, $t-3$, $t-4$) or the maximum possible annual periods / cash flow from operations)
dcash	*cash ratio* in year t – *cash ratio* in year t – 1
acquisition activity	expenditure on the acquisition of shares (stocks) in related parties / total assets
business groups	ln(1+ long-term investments in related parties)
derivative1	derivatives (as part of financial assets) / total assets (it could be evaluated in fair value)
derivative2	long-term liabilities from derivative instruments (presented as financial liabilities in the balance sheet) / total assets (it could be evaluated in fair value)
dividend_ dummy	discrete variable that takes the value of 1 if the dividends and other shares in profit paid to shareholders of the parent company > 0; and 0 otherwise
capex	cash flow from operations measured by expenditure on purchase of tangible and intangible assets / total assets
net_equity_issue	(annual inflows from issue of shares – annual expenditure on the purchase of own shares) / total assets
firm size	ln(total assets)
loss	dummy variable that takes the value of 1 if the net financial result < 0; and 0 otherwise
donation_cf	dummy variable that takes the value of 1 if the other financial cash flows > 0; and 0 otherwise
donation_ppo	dummy variable that takes the value of 1 if the other operating revenues > 0; and 0 otherwise
donation_uzg	dummy variable that takes the value of 1 while other financial flows > 0 and other operating revenues > 0; and 0 otherwise
fair_value	dummy variable that takes the value of 0 if the (unrealized profit on investments + net change the values of assets) = 0; and 1 otherwise
financial income	ln(inflows from interest and dividends) based on the cash flow statement

* Variables in bold measure the possibility for valuation in fair value.

other firms) will be determined with use of the Gaussian random-effects tobit panel analysis and additionally random effects generalized least squares panel analysis. Definitions of variables used in the panel and tobit panel models are shown in Table 1. Before conducting the cross-sectional time-series generalized least squares panel estimation and tobit panel regression, descriptive statistics of the variables and the correlation between the explanatory variables were estimated and analysed. The higher correlation of 4 variables (*capex*, *cash_flow_oper*, *derivative1*, *derivative2*) resulted in a decision to estimate their influence in separate models. Table 2 shows the results of panel models estimation with four different set of variables using the panel cross-sectional time-series generalized least squares (FGLS) and the results of diagnostic tests and measures of the models' fit. Similarly Table 5 presents the results of the estimation of Gaussian random effects tobit panel models and generalized least squares panel model with use of the robust random effects estimator.

6. Results

Results of the panel estimation of determinants of non-financial listed companies' cash holdings (Table 2) confirm the hypotheses stated in section 2. Companies with a higher ability to borrow from banks or corporate bonds issue hold less cash (based on the negative coefficient at the *net_debt_issuance* variable). This confirms the **H1 hypothesis**. The *net_debt_issuance* variable measures debt finance obtained was deducted from the debt repaid in the actual year, based on data retrieved from cash flow statements, while the *net_fin_debt* variable measures the leverage (capital structure) based only on financial debt liabilities, both short-term and long-term, presented in the balance sheet. The negative coefficient at the *net_fin_debt* variable in all four models confirms the **H1A hypothesis** that more indebted companies hold less money. These results indicate also that more financially constrained companies (faced with limits in access to costly external finance) have the incentive to build financial slack by hoarding cash. They are supported by findings obtained by Kim et al. (1998), Deloof (2001), Ozkan and Ozkan (2004), and, Bansal and Bansal (2012).

Corporate cash holding is positively determined by a higher *cash flow from operations*, i.e., due to the accumulation of a cash surplus, in accordance with the **H2 hypothesis**. This supports Almeida et al. (2011) whose results show the corporate tendency to adjust liquidity management policies to minimize the impact of financing frictions by saving more cash from cash flow. There is also no basis to reject the **H3 hypothesis** that companies with better investment opportunities hold more cash as the results confirm the positive relationship between market-to-book ratio and cash holdings. Comparable results were received by Ferreira and Vilela (2004) and Ozkan and Ozkan (2004). Higher cash holdings allow managers to provide the flexibility to respond to unex-

Table 2. Determinants of non-financial corporate cash holdings

	FGLS model 1	FGLS model 2	FGLS model 3	FGLS model 4
net_debt_issue	0.0055	–0.0110**	–0.0106**	–0.0204***
	(0.0057)	(0.0053)	(0.0053)	(0.0053)
net_fin_debt	–0.0207***	–0.0234***	–0.0237***	–0.0223***
	(0.0021)	(0.0022)	(0.0022)	(0.0022)
market_to_book ratio	0.0031***	0.0030***	0.0030***	0.0031***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
cash_flow_oper	0.0560***			
	(0.0054)			
derivative1		1.5867***		
		(0.1045)		
derivative2			0.0511***	
			(0.0032)	
capex				0.0847***
				(0.0061)
operational risk	–0.0007	–0.0013***	–0.0014***	–0.0011**
	(0.0005)	(0.0005)	(0.0005)	(0.0005)
dcash	0.4454***	0.4589***	0.4582***	0.4677***
	(0.0063)	(0.0060)	(0.0059)	(0.0058)
acquisition_activity	0.0012	0.0132	0.0136	0.0217**
	(0.0097)	(0.0092)	(0.0091)	(0.0092)
business group	–0.0007***	–0.0008***	–0.0009***	–0.0007***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
loans lent	0.0005**	0.0005***	0.0005***	0.0006***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
dividend_dummy	0.0059***	0.0061***	0.0063***	0.0061***
	(0.0016)	(0.0016)	(0.0016)	(0.0016)
net_equity_issuance	0.0273***	0.0021	0.0026	–0.0041
	(0.0053)	(0.0042)	(0.0042)	(0.0043)
firm size	–0.0057***	–0.0037***	–0.0034***	–0.0038***
	(0.0008)	(0.0008)	(0.0007)	(0.0007)
loss	–0.0005	–0.0016	–0.0017	–0.0014
	(0.0014)	(0.0014)	(0.0014)	(0.0014)

donat_uzg	0.0038**	0.0032**	0.0026*	0.0021
	(0.0015)	(0.0015)	(0.0015)	(0.0015)
donat_ppo	0.0064**	0.0079***	0.0081***	0.0076***
	(0.0029)	(0.0029)	(0.0029)	(0.0029)
fair_value	–0.0018	–0.0025	–0.0031	–0.0022
	(0.0025)	(0.0026)	(0.0026)	(0.0025)
_cons	0.0995***	0.0784***	0.0762***	0.0753***
	(0.0091)	(0.0090)	(0.0089)	(0.0089)
N	4,860	4,860	4,860	4,860
R2	0.5791	0.5804	0.5781	0.5611
AR(1)	0.7211	0.7371	0.7367	0.7375
Wald test	7,061.48***	7,772.32***	7,839.66***	7,793.13***
F test all u_i = 0	8.64***	8.85***	8.87***	10.80***
Breusch&Pagan test	3,202.40***	3,317.31***	3,328.66***	3,333.58***
Sargan-Hansen test	565.054***	646.825***	649.570***	643.101***
Wooldridge test	500.479***	637.636***	635.525***	649.266***
White's test	2,337.23***	2,165.01***	2,169.09***	2,187.31***

Significant at: *** 1%, ** 5%, * 10%.

Source: Own elaboration.

pected changes in the firm's investment opportunity set. This is supported by a positive coefficient of the corporate investment in fixed assets and intangible assets (*capex*). Similar results were obtained by Dittmar et al. (2003) and Baum et al. (2013).

The use of derivatives in the form of a financial assets' (model 2), or, in the form of long-term liabilities from derivative instruments (presented in financial liabilities in the balance sheet) (model 3) increases corporate cash holdings, as one can assume, due to their activities associated with a higher risk thus encouraging companies to hedge risk exposures.

The higher *operational risk* (variability of cash flows from operations) slightly lower the cash holdings because companies use more money than they manage to collect due to payment grindlock problems. Acharya et al. (2010) suggest that for firms that only need to manage their liquidity risk, bank credit lines dominate cash holdings. Conversely, Riddick and Whited (2009) have shown that companies with a higher operational risk hold more cash. Similarly with Baum et al. (2013), the contradictory opinions could be explained by the differences in investment risk or payment grindlock problem.

Companies with a higher propensity to save (measured by the *dcash* variable) hold higher cash reserves (in relation to total assets). The positive and significant relationship between *acquisition_activity* indicate that companies creating and expanding corporate groups through the acquisition of shares (stocks) in related parties, hoard more cash, because mergers and acquisition transactions of shares (stocks) in related parties require high capital. However, companies being members of business groups, hold less cash. The negative significant relationship between long-term investments in related parties (*business group*) and cash holdings indicate the significant role of business groups in internal financing and increasing access to finance by lending money to other related participants of the business group. The positive relationship between cash holdings and *loans lent* confirms that non-financial listed companies in Poland are trying to step into the shoes of financial institutions by providing loans to other firms. This contributes to the existing literature by indicating the positive relationship between cash holdings and lending money to other firms that answers the main research question of what motivates non-financial companies to hold cash.

Companies with an active policy of paying dividends (measured by the discrete variable *dividend_dummy*) hoard slightly higher cash and short-term financial assets in order to be ready to pay dividends without borrowing from bank. Drobetz and Grüninger (2007) explain that a small positive correlation between dividend payments and cash holdings may be due to the reluctance of entrepreneurs to limit dividend payments with an increase in cash resources.

Contrary to the negative relationship between net debt issuance and cash reserves the received findings show the positive impact of *net equity issuance* on cash holding. This means that companies hold money from a share issue rather than spend it all on investments or the acquisition of other companies. Larger-sized companies (the *firm size* variable) hold lower cash reserves in relation to total assets due to economies of scale and the transaction motive (confirmed by Mulligan (1997)) and greater opportunities to obtain external financing when favourable investment opportunities appear. Similar to Bates et al. (2009) my results have not pointed to a significant relationship between cash holdings and financial losses.

The research results revealed a significant positive effect of subsidies and grants and other operational revenues (dummy variables *donation_ppo* and *donation_uzg*) on corporate cash holdings. Likewise Bilgrami and Nishat (1990) indicate that obtaining grants and subsidies explains the increase in corporate cash holdings.

There is no evidence that cash holdings are related to benefits due to a fair value valuation of financial investments, including short-term financial assets being a part of cash holding. It is likely that this is caused by the period under study that encompasses the subprime mortgage crisis and, subsequently, the Euro zone crisis, when it was less probable that the gain of unrealized profit on investments due to the valuation in fair value (contrary to loss).

Table 3. Sources of cash reserves for non-financial corporate lending to other firms (in total, aggregated, in thousands of Polish zloty)

total cash flow < 0	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
use of cash reserves	–18051943	–2555553	–2375883	–4426959	–2028775	–23839925	–3065371	–5954093
loans lent to other firms	–9411380	–2657450	–2239864	–1769535	–13933020	–23985101	–1639046	–5727848
bank loan	24810681	1977200	2808621	56128	9493843	17360404	19873210	–22775690
share issue	–53950587	144965	–14766	309990	1077909	–296595	1003205	–59596
bond issue	1822911	243608	–1712	280556	3102093	1179557	163325	–2401620
loan repayment	1159643	744352	1294937	595963	19785429	15417278	828308	14300614
cash flow from operations	51202634	3471907	4177966	5923627	43537251	51530611	6837935	66095497
total cash flow > 0	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
cash reserve increase	1945647	6147268	10348651	5972445	5500505	1568166	9510686	4419469
loans to other firms	–2453849	–5536197	–28081792	–38039663	–1789007	–4024987	–10160372	–12663621
bank loan	828988	17344609	49405503	26740932	825287	2258715	12265714	3949823
share issue	2610542	–12167131	536855	1632075	217209	634989	175831	173696
bond issue	1488763	163528	115478	2180450	1746022	2659654	–1068951	3202891
loan repayment	1000124	3716350	12635536	17556690	841359	893881	9297648	2150943
cash flow from operations	4475367	57239356	77794751	64964292	5554735	3829786	52156615	5272496

Source: Own elaboration based on data retrieved from the Notoria database.

The companies that lent money to other firms have a lower cost of capital (for 76% observations *fin_debt* > 0) and a business model that allows them to generate a financial surplus (for 67% observations *cash flow from operations* is positive (Table 4) and at an aggregate level higher than the total amount of loans in the years 2007-2011 and 2013 (Table 3)).

However, not all lenders are willing to borrow money from banks and pay interest to maintain the cash surplus in the amount exceeding the debt. For 52% of firm-year observations companies that made loans hold cash reserves lower than the balance of debt (*net_fin_debt*). For 66% of firm-year observations these firms had long-term investments in related entities (*business_groups*), and, for 49% firm-year observations, they acquired the stocks or shares of related entities (*acquisition_activity*).

Table 4. Frequency of sources of cash reserves for non-financial corporate lending to other firms (sample structure)

Transaction	*N*	%	Transaction	*N*	%
cash flow from operations > 0	782	67	net_debt_issuance > 0	473	41
fin_debt > 0	886	76	bonds_issuance > 0	205	18
net_fin_debt > 0	605	52	business_groups > 0	768	66
share issue > 0	297	26	acquisition_activity > 0	566	49

Source: Own elaboration based on data retrieved from the Notoria database, N – number of firm-year observations; in total 1,162 observations of loans lent to other firms.

The results of the models' estimation of non-financial corporate lending to other firms (Table 5) show that companies with higher cash holdings (the *cash_ratio* variable) lend more money to other firms in the form of a loan. The negative coefficient at the *long-term leverage* variable confirms the **H1B hypothesis** that companies with higher long-term liabilities give fewer loans to other firms. The negative relationship between debt (and also donations) and giving loans to other firms may result from legal restrictions to immediately engage cash from bank loans or grants in profitable investments (lending money). Non-financial companies use cash flow from operations to lend money to other firms – that confirms the **H2B hypothesis** based on the negative coefficient at the *cash flow from operations* variable (significant at 12% *p*-value in model 2 and 6% *p*-value in model 3 in Table 5). Moreover when there are higher investment opportunities (measured by the *market-to-book* ratio) companies make higher loans to other companies, including their subsidiaries that support them in investments, especially when the risk is too high or success is less probable.

This positive correlation confirms the **H3A hypothesis**. The results indicate that sources of corporate cash holdings really matter as there are negative relationships between long-term leverage and loans lent to other firms and be-

Table 5. Determinants of making loans by non-financial companies (random--effects (RE) Gaussian tobit panel and RE GLS robust)

Variable	RE tobit model 1	RE tobit model 2	RE GLS robust model 3
cash_ratio	0.2192**	0.1108*	0.7299*
	(0.1056)	(0.0431)	(0.4059)
net_equity_issuance	0.1070*	0.0393##	0.3713*
	(0.0653)	(0.0265)	(0.2019)
firm size	0.1388***	0.0699***	0.8201***
	(0.0143)	(0.0058)	(0.0475)
finan_income	0.0631***		0.0428**
	(0.0065)		(0.0176)
fin_inv_real_estate	0.1382***	0.0646***	
	(0.0416)	(0.0170)	
donat_cf	–0.1302***	–0.0560***	
	(0.0405)	(0.0165)	
business_group	0.0276***	0.0121***	
	(0.0049)	(0.0020)	
cash_flow_from operations	–0.0633##	–0.0280##	–0.5372*
	(0.0438)	(0.0179)	(0.2884)
market-to-book ratio	0.0162***	0.0055***	0.0413*
	(0.0049)	(0.0020)	(0.0228)
long-term_leverage		–0.1187***	
		(0.0454)	
_cons	–1.1538***	–0.5527***	–2.8244***
	(0.1421)	(0.0584)	(0.5629)
Number of observations N	4,860	4,860	1,162
Number of groups	754	754	337
Wald test	514.12***	399.82***	407.22***
Log likelihood	–6533.8666	–3209.4726	R2 = 0.4644

Significant at: *** 1%, ** 5%, * 10%, ## 15%.

Source: Own elaboration.

tween donations received (*donat_cf*) and lending, while the correlation between lending activity and money obtained from share issue over expenditures on the purchase of their own shares is positive. The issue of shares (over expenditure on the purchase of their own shares) by non-financial companies increased loans granted to other companies. The share of corporate investments in real estate and long-term financial assets in total assets (the *fin_inv_real_estate* variable) has a positive significant impact on the loans by non-financial companies to other firms. These results confirm the **H4 hypothesis** that companies with long-term financial assets or real estate investments, give more loans to other firms. The financial income obtained additionally due to the interest revenues gained, positively influences the amount of loans to other companies. Larger companies, as well as participants in business groups, lend more money to other companies in the form of a loan (Table 5), which may relate to tax benefits and the lower cost of internal financing inside the group. Behind the constraint of access to bank loans, capital groups play an important role in providing liquidity to members of the business group.

Conclusions

The statistical analysis, based on cash flow statement data, confirms that non-financial listed companies in Poland are, without doubt, trying to step into the shoes of financial institutions by providing loans. Significant and relatively stable (up to 2013) expenses associated with lending to other companies or financial investments indicate a shift of a non-financial business paradigm from a unit that manages rationally and invests in fixed assets to gain profits or to increase the value for the shareholders, to a unit that accumulates surplus funds. The main sources of non-financial corporate cash holdings are: cash flow from operating activities, inflows from bank loans and borrowings (above outflows), and additionally, inflows from interest and dividends, particularly in 2011-2013. These cash holdings reveal company protection against liquidity, market or credit risk and is reflected in the use of derivatives for the purpose of hedging. However good access to debt financing from the capital market reduces their cash holdings. The results allow us to conclude that constraints on access to bank loans in Poland (the low non-financial corporate debt-to-GDP ratio) encourage companies to accumulate cash. Similar results were obtained by Kim et al. (1998), Deloof (2001), Ozkan and Ozkan (2004), Almeida et al. (2004), Bansal and Bansal (2012) and Qurat-ul-ann and Abdullah (2017).

Based on the positive relationship between expenditure for the acquisition of shares in affiliated companies and corporate cash holdings, one can say that the chance to improve the financial situation or diversification of market and liquidity risk encourages companies in the creation or development of business groups. These findings also indicate the significant role of business groups

in internal financing and the increasing access to finance by loans to other related participants in the capital group. Non-financial companies use cash flow from operations to lend money to other firms. Moreover companies with better investment opportunities make more loans to other firms, including their related entities inside the business group.

Larger companies and business group members give more loans to other firms. This may be due to tax benefits and the lower cost of internal capital lent inside business groups. Under conditions of limited access to debt finance from banks, especially in Poland with low financial development measured by non-financial corporate debt-to-GDP ratio, business groups play an important role in providing liquidity to their members.

Extending research on the determinants of the cash holdings of private enterprises and the provision of loans could illustrate the impact of the asymmetry of information and the limited access to finance on the corporate propensity to cash holding. Further studies are important as Baum et al. (2013) indicate that accumulated cash resources are more sensitive to changes in cash flow when there are higher constraints on access to finance from the capital market and Opler et al. (1999) observe that companies hold higher amounts of cash in the case of declining cash flow.

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