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Loose Monetary Policy and Corporate Investment of Manufacturing Firms in the Czech Republic

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Abstract: The aim of the paper is to evaluate the effects of loose monetary policy on corporate investment of manufacturing firms in the Czech Republic during the period between 2006 and 2015. The main focus of the paper is on the effect of low interest rates on investment activity of Czech firms; additionally, the effects of interactions between interest rate and other firm-specific variables are investigated. The results indicate that corporate investment is positively associated with firm size, investment opportunities, and long term debt. Also, a negative effect of the cash position is found. Further, the findings show that monetary policy is a significant determinant of firm investment activity: when the monetary policy is loose, investment is positively affected. Furthermore, differences in the determinants of investment between highly and low leveraged firms were revealed.

Keywords: balance sheet channel, corporate investment, loose monetary policy, low interest rates

JEL Classification: E52, E58, G31

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Introduction

Low inflation and low level of economic growth have been a recent issue for many countries of the European Union (EU). In response, central banks started to undertake steps to deal with the situation. The European Central Bank (ECB) has lowered the key interest rates to stimulate the economies and to prevent deflation. The Czech National Bank (CNB) has also begun to lower the discount rate and other key interest rates in August 2008.[3] The changes in the interest rate are consequently transmitted into the economy in several possible ways.

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[3] The development of discount rates of both the CNB and ECB is shown in Appendix 1.

In this paper, we focus on a fraction of the whole transmission mechanism to bring empirical evidence of how loose monetary policy affects investment activity, because corporate investment has the crucial role in growth and employment.

Since our dataset includes information from financial statements for a large sample of Czech manufacturing firms, the effects of the loose monetary policy are examined from the perspective of the so-called balance sheet channel. Therefore, the paper aims to investigate how loose monetary policy is reflected in the investment activity of the Czech manufacturing sector. The period between 2006 and 2015 is observed, and firm-level data from the Amadeus database are used.

Our contribution to the existing evidence is threefold. First, we intend to reveal how loose monetary policy affects investment, which can help us to gain a deeper insight into transmission mechanism in a low interest rate environment. Second, the effects of interactions between monetary policy indicator and other firm-specific variables are investigated, since monetary policy can affect corporate investment indirectly. Third, we would like to find out if the relation between monetary policy affects low leveraged and highly leveraged firms differently.

The paper is structured as follows. The theoretical background on the monetary policy transmission and balance sheet channel is presented in section 1. Part 2 presents the literature review. The dataset and its fundamental characteristics are provided in part 3. The econometric methodology is brought in section 4. The results are interpreted, and discussion follows in section 5, robustness check is provided in section 6, and the final section concludes the paper.

1 Monetary policy transmission and balance sheet channel

Since we are interested in changes in balance sheets, specifically the changes in fixed assets, the effects of monetary policy can be evaluated from the balance sheet channel perspective. Balance sheet channel can be defined as *"a theoretical concept describing the effect of monetary policy stimulus on the balance sheets of non-banks...The balance sheet channel describes an aspect of the credit channel more precisely,"* (Deutsche Bundesbank, 2017).

Its importance was stressed by Bernanke and Gertler (1995) who described the likely impact of changes in monetary policy on borrower's balance sheets and income statements. According to the previously published literature, e.g. Gertler and Gilchrist (1993), Bernanke and Gertler (1995), de Haan and Sterken (2006) and Aliyev et al. (2015) among others, the balance sheet channel is a part of money, credit channel that can also be titled called the broad credit view or broad credit channel.

The importance of the balance sheet channel arises from the existence of asymmetric information problems that are associated with the credit market. Mishkin (1996, p. 10-11) stated that the moral hazard and adverse selection problems are connected with the firms' net worth. Higher (lower) net worth is related to more (less) collateral that lenders possess and losses from information asymmetry are lower (higher). When focusing on expansionary monetary policy, balance sheet transmission can be described in three ways (Mishkin, 1996, p. 11-12):

$$\uparrow M \rightarrow \uparrow P_e \rightarrow \downarrow asymmetry \rightarrow \uparrow lending \rightarrow \uparrow I \rightarrow \uparrow Y \quad (1)$$

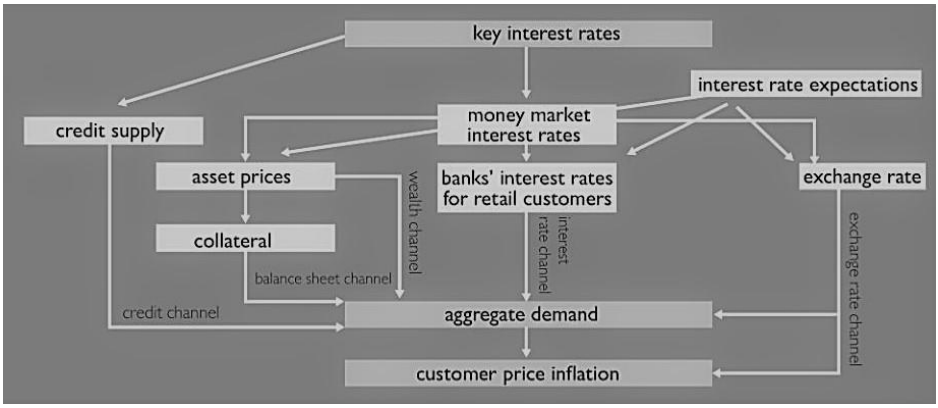
$$\uparrow M \rightarrow \downarrow i \rightarrow \uparrow CF \rightarrow \downarrow asymmetry \rightarrow \uparrow lending \rightarrow \uparrow I \rightarrow \uparrow Y \quad (2)$$

$$\uparrow M \rightarrow \uparrow unanticipated\ P \rightarrow \downarrow asymmetry \rightarrow \uparrow lending \rightarrow \uparrow I \rightarrow \uparrow Y \quad (3)$$

Where M is monetary policy, P_e equity prices, I investment spending, Y aggregate demand, i nominal interest rate, CF cash flow, and P is the price level. For simplification, we use the term "asymmetry", which includes both moral hazard and adverse selection problems, since they are associated with the existence of asymmetric information.

The way the monetary policy transmission mechanism works is demonstrated in Figure 1.

Figure 1. Monetary policy transmission mechanism



Source: Oesterreichische Nationalbank (2017).

2 Literature review

When dealing with the empirical literature on the transmission mechanism, a vast number of studies that focus on different transmission channels can be found, e.g. Gertler and Gilchrist (1994), Ogawa (2000), Mizen and Yalcin (2002), Bougheas et al. (2006), de Haan and Sterken (2006), Horváth (2006), Fidrmuc et al. (2010), Aliyev et al. (2015), Karpavičius and Yu (2017), or Kajurová and Linnertová (2018) among many others. These studies primarily focused on the effects of monetary policy on the financial position of firms and their access to finance. Another group of authors focused on the impact of monetary policy on investment. The following review includes the studies closely related to balance sheet channel and investment activity.

There is significant evidence dealing with the relationship between monetary policy and investment activity on the sample of heterogeneous countries from the entire world, e.g. Nagahata and Sekine (2005) investigated the effects of monetary policy on manufacturing and nonmanufacturing firm investment after the asset price bubble collapse in Japan using microdata. They employed an error correction model (ECM) and observed the period from 1993 to 2000. They suggested that the channel was blocked due to a deteri-

oration in balance sheet conditions. Masuda (2015) examined the impact of monetary policy shocks on fixed investments of manufacturing firms using a panel model with fixed effects. The period from 1972 to 2006 was investigated. The results of the study suggest that firms' liquidity constraints increase when monetary policy tightens, especially for smaller firms. Fu and Liu (2015) studied monetary policy effects on corporate investment adjustment on the sample of China's A-share listed firms during period between 2005 and 2015. They found that corporate investment adjustment is faster when monetary policy loosens in comparison to tightened monetary policy. Yang et al. (2017) investigated the effects of monetary policy on corporate investment and cash holdings for Chinese firms during the period from 2003 to 2013. They concluded that a tightening monetary policy decreases corporate investment and that the mitigating effect depends on financial constraints, ownership and also if the firm is located in a less developed financial market.

Focusing on the EU, the evidence has been brought especially for developed countries, e.g. Chatelain et al. (2003) provided a proof on the relation between firm investment and monetary policy transmission in the Euro Area. They evidenced that investment responds differently depending on liquidity variables and cash flow and that firms with weaker balance sheets are more liquidity sensitive. Angelopoulou and Gibson (2009) dealt with the cash flow sensitivity of investments of manufacturing firms in the United Kingdom in the period from 1970 to 1991. Their results indicate that investments positively depend on cash flow and confirmed the existence of the balance sheet channel because of the effect on the net worth of firms and their consequent decisions. Mulier et al. (2016) studied investment-cash flow sensitivity and financial constraints for European unquoted small and medium enterprises between 1996 and 2008. They constructed their own index of financial constraints, but because of shortcomings provided in the paper, they would like to conduct future research into the topic. Vithessonthi et al. (2017) conducted a study focused on monetary policy, bank lending and corporate investment. They aimed to answer the question if monetary policy affects corporate investment in countries that use inflation targeting. The research was conducted for the period from 1990 to 2013 for Germany, Switzerland, and Thailand. They found that the sensitivity of firms' investment to growth opportunities is not moderated by the lending rate or the loan-to-assets ratio.

3 Data characteristics and specification

The dataset was obtained from the Amadeus database and is based on the annual frequency. The period between 2006 and 2015 is observed. The original dataset included 46,138 firms in total. However, because of missing data and many outliers in the sample, we dropped observations in the 1% tails to remove them from the sample. The final set contains 4,238 firms.

As a dependent variable, the change in net fixed assets is employed:

$$INV\_ratio\_1 = \Delta NFA/NFA_{t-1} \tag{4}$$

where NFA represents investment in net fixed assets (after reduction of depreciation).

When conducting the robustness check, we used the following ratio for measuring the change in investment.

$$INV\_ratio\_2 = \Delta FA/FA_{t-1} \quad (5)$$

where FA is fixed assets (gross of depreciation).

The set of explanatory variables is provided in Table 1. Initially, we intended to investigate the impact of more independent variables, however, many firm-specific variables are highly correlated with each other, e.g. profit margin, sales, cash flow. Therefore, they were not taken into account.

The change in EBIT represents the growth potential of a firm and is expected to be positively associated with the change in investment. The higher earnings, the higher investments in fixed capital.

Following Mulier et al. (2016), we included the cost of employees in our explanatory variables set. It is connected to firm-level employment. The positive relation is expected as it is assumed that firms expand the workforce when they expect good investment opportunities which are linked to a higher cost of employees.

Mulier et al. (2016) are also followed when focusing on the influence of investment in the previous period. However, the impact is unclear; it can be positive or negative.

Liquidity ratio takes into account the cash and other cash equivalents that are held by firms. However, the effect on firm investment can be ambiguous. It can be assumed that more cash held by firms has a negative impact on the level of investment, but on the other hand, it can be spent on fixed assets.

Many authors include the variable leverage into their model. Instead of leverage, we decided to add the change in long-term debt and short-term debt to assess the relationship between an investment change and a change in indebtedness. It is expected that a higher level of investment is associated with a higher debt, both long-term and short-term.

When focusing on the firm size, it is expected that level of investment is positively associated with the size as is supposed by Fu and Liu (2015) or Richardson (2006).

Table 1. Explanatory variables

Variable	Definition	Calculation	Expected sign
$EBIT_t$	Growth potential, profit change	ΔEBIT / EBIT	+
EMP_t	Costs of employees change	ΔEMP / EMP	+
INV_{t-1}	Lagged dependent variable	I_{t-1}	+/-
LIQt	Liquidity ratio	ΔCash and cash equivalents / Cash and cash equivalents	+/-
LTD_t	Long-term debt change	ΔLTD / LTD	+
$SIZE_t$	Size (balance sheet total)	ΔTA/ TA	+
STD_t	Short-term debt change	ΔSTD / STD	+
MP_dummy_{t-1}	1 for interest rate decrease, 0 otherwise	Dummy	-
MP_rate_{t-1}	PRIBOR 3M or 9M	PRIBOR 3M and 9M lagged	+

Source: Authors' construction based on the literature survey.

As an indicator of monetary policy, we adopted lagged three-month interbank money market interest rate PRIBOR because the short-term interest rate can be associated with the monetary policy rate as e. g. in Angeloni et al. (2003), de Haan and Sterken (2006) and Aliyev et al. (2015). For robustness check, nine-month PRIBOR is used. We expect a positive relation between lagged PRIBOR and corporate investment. For robustness check, a dummy variable for monetary policy is created accordingly to the discount rate, 1 is used for interest rate decrease, 0 otherwise. We decided to use the discount rate since it represents the bottom bound for interest rates movement, and it is strongly correlated with prime rates (the correlation coefficient between three-month PRIBOR and discount rate is 0.96 for the examined period).

The results of descriptive statistics are provided in Table 2. We do not report the probabilities of Jarque-Bera test statistics since they are zero in all cases, and therefore the normality is rejected.

Table 2. Descriptive statistics

	Mean	Median	Max	Min	Std. Dev.	Skewness	Kurtosis
INV_{t-1}	0.1230	-0.0120	84.6595	-84.0291	1.6227	14.1423	1413.106
MP_{t-1}	1.6137	1.2200	4.1100	0.3400	1.3594	0.8840	2.2046
$SIZE_t$	0.0038	0.0020	0.6501	50.4778	8.9647	-0.3863	69.0805
$EBIT_t$	-0.1067	-0.1155	50.4778	-52.3744	5.5738	-0.3863	55.1251
EMP_t	0.0692	0.0370	8.9647	-0.9051	0.4049	12.0348	233.5952
LIQ_t	1.6750	0.0562	74.5800	-3.5740	7.4958	7.2950	63.6920
LTD_t	1.1913	-0.1960	75.1580	-1.0000	7.7323	7.5977	65.9820
STD_t	0.4564	-0.0229	37.6833	-1.0000	3.3197	8.4654	85.8282
LEV_t	0.4975	-0.1422	47.5221	-1.0000	4.2583	8.7702	89.2434

Source: Authors' calculations.

The correlations are presented in Table 3. No strong associations are found between the independent variables.

Table 3. Correlation matrix

	INV_{t-1}	MP_{t-1}	$SIZE_t$	$EBIT_t$	EMP_t	LIQ_t	LTD_t	STD_t
INV_{t-1}	1.0000							
MP_rate_{t-1}	0.0350	1.0000						
$SIZE_t$	0.2547	0.0718	1.0000					
$EBIT_t$	-0.0059	0.0011	0.0569	1.0000				
EMP_t	0.0886	0.1250	0.2187	0.0497	1.0000			
LIQ_t	0.0016	0.0151	0.0703	-0.0023	0.0311	1.0000		
LTD_t	0.0679	0.0105	0.0600	-0.0047	0.0023	-0.0074	1.0000	
STD_t	0.0591	0.0195	0.1056	-0.0037	0.0784	-0.0118	0.0051	1.0000

Source: Authors' calculations.

4 Panel regression model

Since the present study provides the first insight into the relationship between monetary policy and corporate investment in the Czech Republic, standard panel regression is employed here. Panel regression allows us to reveal the basic relations between the observed variables.

Hausman test and Wald test (results are not reported here) indicated that the fixed effect model is appropriate for further estimation. The conducted panel fixed effect model has the following form:

$$Y_{it} = \alpha_1 + \alpha_2 INV_{it-1} + \alpha_3 EMP_{it} + \alpha_4 EBIT_{it} + \alpha_5 LIQ_{it-1} + \alpha_6 LTD_{it} + \alpha_7 SIZE_{it-1} + \alpha_8 STD_{it} + \alpha_9 MP\_rate_{t-1} + e_{it} \quad (6)$$

Where α_1 is an intercept, α_2 ... α_9 are coefficients to be estimated, Y_{it} is one of investment activity indicators for firm i in year t, $INV_{it-1}$is lagged dependent variable, EMP_{it} represents employee costs, $EBIT_{it}$ symbolizes growth potential, LIQ_{it-1} is liquidity ratio, LTD_{it} is long-term debt change, $SIZE_{it-1}$ represents the size of a firm, STD_{it-1} is short-term debt change, MP_rate_{t-1} is lagged 3month PRIBOR, and e_{it} is the error term.

Consequently, the interaction terms between selected firm-specific variables and monetary policy rate are added to the regression to reflect the heterogeneity of responses to monetary policy changes as e.g. in Aliyev et al. (2015), Kapuściński (2016). The model can be expressed as follows:

$$Y_{it} = \alpha_1 + \alpha_2 INV_{it-1} + \alpha_3 EMP_{it} + \alpha_4 EBIT_{it} + \alpha_5 LIQ_{it-1} + \alpha_6 LTD_{it} + \alpha_7 SIZE_{it-1} + \alpha_8 STD_{it} + \alpha_9 MP\_dummy_{t-1} + \alpha_{10} X_{it}\, MP\_dummy_{t-1} + e_{it} \quad (7)$$

Where MP_dummy_{t-1} represents the lagged dummy variable for monetary policy (1 is for interest rate decreasing and 0 otherwise) and $X_{it} MP\_dummy_{t-1}$ is the interaction term between selected firm-specific variable (LIQ_{it-1}, LTD_{it} and STD_{it}) that is supposed to be influenced by the interest rate and the monetary policy indicator. When identifying the effects of monetary policy in interactions, we follow Wooldridge (2002).

5 Results and discussion

Before focusing on the monetary policy effects, the impact of control variables should be addressed. We find the most of the variables significant as determinants of the firms' investment level. It shows how meaningful the firm-specific factors are for corporate financing. Results in Table 4 show that the net investment is positively influenced by company size and employee costs and changes in long-term debt. The effect of lagged investment, growth potential and liquidity ratio is adverse.

We have found a negative sign for lagged investment. Mulier at al. (2016) observed that the sign of lagged investment term varies among countries. The positive sign indicates that when capital is lower than its desired level, investments increase, ensuring a return to the equilibrium level. The negative sign points to a higher than desired level. In their study the negative effect of lagged investments was confirmed for five out of six analyzed European countries, the Czech Republic was the only country with the positive sign, but their investigation covers a more significant share of firms in agriculture, whereas we focus on manufacturing firms only. The negative sign indicates the attempt

of the system to find an equilibrate level of investment in the environment of cheap money.

Table 4. Panel regression results

	INV_ratio_1	Low leveraged firms	Highly leveraged firms
Constant	0.0570***	-0.0008	0.0529**
	3.0318	0.3444	2.4619
INV_{t-1}	-0.0996***	0.0380	-0.1090***
	-15.9545	1.5597	-15.9394
MP_rate_{t-1}	0.0286***	0.0415	0.0256**
	2.7421	1.4407	2.3846
$SIZE_t$	9.7821***	3.5664***	11.1394***
	21.8361	2.7771	21.3317
$EBIT_t$	-0.0030	-0.0043	-0.0033
	-1.2036	-0.6989	-1.1874
EMP_t	0.1821***	0.1392	0.1873***
	3.6463	0.6452	3.5663
LIQ_t	-0.0076***	-0.0049	-0.0070***
	-3.9172	-0.9475	-3.1381
LTD_t	0.0056***	0.0083	0.0056***
	3.8523	0.9451	3.6380
STD_t	0.0072	-0.0024	0.0104*
	1.6388	-0.3373	1.9178
Adj. R^2	0.3436	0.6353	0.2449
D.-W. stat.	2.45	5.32	2.20
No of obs.	13705	3216	10489
No of firms	4238	1928	3369

Source: Authors' calculations.
*Values of t-statistics are provided in parentheses. ***, ** and * mean 1, 5 and 10% level of significance.*

We expect the positive sign for the size, assuming large firms invest more. The positive sign is discussed, e.g. in Fu and Liu (2015) or Richardson (2006). Our investigation indicates that new investment expenditures increase with the firm size as larger firms have easier access to external financing.

The variable employee costs is based on the assumption that firms will increase their workforce if they expect good investment opportunities (Mulier et al. 2016). Our findings indicate that firms' investment is positively related to employment growth. Therefore, higher growth opportunities are associated with a higher level of investment; these findings are in line with Mulier et al. (2016).

We assume the positive sign for the variable growth opportunity measures as the change in EBIT over a year as this measure also indicates good investment opportunity of a firm. However, we find these as insignificant in all our models.

Our model shows that the change in cash decreases the firms' investment. In other words, more liquid firms are less active in investment activities. This finding was amended by Yang et al. (2017), who found that more cash increases corporate invest-

ment and mitigates the adverse effects of tightening monetary policy on investment. Our findings uncover that a higher level of cash is irrelevant during the period of loose monetary policy and might limit the investment operation of firms. This result reflects that firms would rely on external sources of finance more heavily if they were less limited and cheaper.

We obtain mixed results for the impact of debt changes as in our analysis we investigate the debts separately for the long-term and short-term. Our findings imply that long-term obligations are positively transformed in the level of firms' investment, but the change in short-term debt is insignificant in our analysis.

If we focus on the impact of monetary policy, we find that the monetary policy positively influences the level of firms' investment as it is a statistically significant variable in our model. The positive sign indicates that economics agents take into consideration the lagged value of monetary policy indicator and increase the investment activity in the next period.

In the second part of our analysis (second and third columns of Table 4) we split the full sample in terms of firms' financial leverage as the low leveraged firms have the leverage ratio less than or equal to the mean and highly leveraged firms are higher with the leverage ratio (the mean equals 0.0923). We can confirm our previous findings for highly leveraged firms. The results are in line with those for the full sample. For the low leveraged firms, we find only the size as an important determinant of firms' level of investment. We assume that these firms mostly employ internal funds and their investment is not influenced by the monetary policy.

The effect of the interaction between monetary policy and selected control variables is measured by a dummy variable that represents the change in the official interest rate. The overall results of panel regressions with interactions are provided in Appendix 2. These results were used for the calculation of interaction effects (following Wooldridge, 2002) that can be found in Table 5. It only provides statistically significant interactions. The period of monetary loosening with the interactions of debts positively influences the total level of firms' investments. Only the interaction between the monetary policy and the measure of liquidity is insignificant. Nevertheless, this finding corresponds with previous results as the liquidity negatively influences the level of investment. The sign of other coefficients is similar to previous findings.

Table 5. Interaction effects

	INV_ratio_1
LTD*MP_dummy$_{t-1}$	0.0669
STD*MP_dummy$_{t-1}$	0.0393

Source: Authors' calculations.

6 Robustness check

The stability of the panel model, discussed in the section 5, might indicate the reliability of the results for the monetary policy indicator and the investment measure. Therefore, the conventional ways to check robustness for an estimated model are (1) to evaluate a model with an alternative measure for monetary policy, and (2) to determine the model with an alternative variable for the firms' investment. To confirm the validity of the model, we estimate the base model with the PRIBOR 9M rate as an indicator for the monetary policy and determine the change in the gross investment (fixed assets with depreciation) as an alternative measure for the level of investment. The impact of the monetary policy measured with PRIBOR 9M and control variables can be found in Table 6. The responses of all variables are similar to the baseline model, except the impact of the change in short-term debt, which is statistically significant in the second model.

Table 6. Robustness check – PRIBOR 9M

	INV_ratio_1
Constant	0.0403**
	2.2030
INV_{t-1}	-0.0996***
	-15.9477
MP_rate_{t-1}	0.0298***
	2.7548
$SIZE_t$	9.7794***
	21.8295
$EBIT_t$	-0.0030
	-1.1962
EMP_t	0.1819***
	3.6530
LIQ_t	-0.0075***
	-3.9682
LTD_t	0.0056***
	3.8134
STD_t	0.0072*
	1.6468
Adj. R^2	0.3436
D.-W. stat.	2.4530
No of observation	13705
No of firms	4238

Source: Authors' calculations.
*Values of t-statistics are provided in parentheses. ***, ** and * mean 1, 5 and 10% level of significance.*

In the next step, we re-estimate the model using gross investment as the dependent variable. The impact of monetary policy and control variables can be found in Table 7. The results of the analysis confirm the previous finding of the baseline model. We found the same impact of the monetary policy indicator and control variables in the level on the firm's investment.

Table 7. Robustness check – INV_ratio_2

	INV_ratio_2
Constant	0.0700***
	6.5023
INV_{t-1}	-0.0977***
	-17.8045
MP_rate_{t-1}	0.0213***
	3.4212
$SIZE_t$	8.4911***
	34.2806
$EBIT_t$	-0.0024
	-1.6470
EMP_t	0.1217***
	4.3986
LIQ_t	-0.0056***
	-4.7960
LTD_t	0.0081***
	8.7908
STD_t	0.0038
	1.3875
Adj. R^2	0.3453
D.-W. stat.	2.3893
No of observation	14171
No of firms	4401

Source: Authors' calculations.
*Values of t-statistics are provided in parentheses. ***, ** and * mean 1, 5 and 10% level of significance.*

Conclusions and implications

The present paper provides an examination of the relevance of the balance sheet channel for monetary policy in the Czech Republic using firm-specific determinants. The aim of the paper was to examine how loose monetary policy is reflected in the investment activity of Czech manufacturing sector focusing on the period between 2006 and 2015.

The results indicate that corporate investment positively depends on the firm size, investment opportunities and the level of long-term debt. On the other hand, the cash position has a negative impact. We have found that lagged monetary policy is a significant determinant of firm investment level and that the effect of monetary policy works only for highly leveraged firms, whereas low leveraged firms are immune to the monetary policy effect.

To investigate the real effect of monetary policy loosening on investment activities, we employed the interaction terms between the monetary policy and relevant firm-specific determinants (liquidity, long-term debt, short-term debt). These findings imply that the balance sheet channel was important in the transmission of monetary policy impact on the real sector. Our findings can be beneficial for policymakers in the process of determining the main interest rates.

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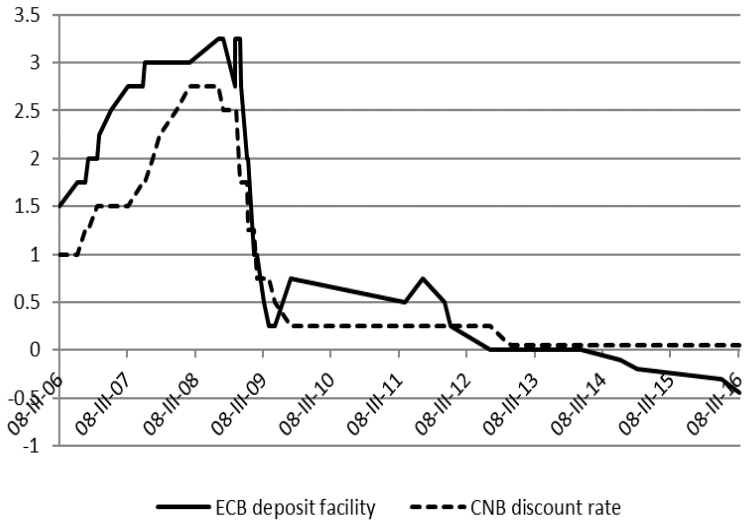
Appendices

Appendix 1. The development in the CNB's and ECB's discount rates (2005-2016)



Source: Authors' construction based on data from CNB and ECB.

Appendix 2. Panel regression results with interaction terms – INV_ratio_1

	INV_ratio_1 with interaction terms		
Constant	0.0796***	0.0728***	0.0827***
	0.6402	0.4242	0.8347
INVt-1	-0.0992***	-0.0990***	-0.0996***
	-15.8670	-15.88301	-15.8893
MP	0.0467**	0.0646**	0.0399
	1.9599	2.2178	1.7860
SIZEt	9.8000***	9.6718***	9.7643***
	21.8875	21.7911	21.9251
EBITt	-0.0030	-0.0030	-0.0031
	-1.2607	-1.2346	-1.2412
EMPt	0.1845***	0.1825***	0.1749***
	4.0215	4.0136	3.9879
LIQt	-0.009***	-0.0076***	-0.0076***
	-1.2661	-3.9265	-3.9162
LIQt*MP	0.0032		
	0.0101		
LTDt	0.0060***	0.0145***	0.0061***
	3.9613	2.1597	3.9812
LTDt*MP		-0.0117***	
		-3.1744	
STDt	0.0073*	0.0071**	-0.0017
	1.7472	1.6646	-0.6580
STDt*MP			0.0248***
			1.3248
Adjusted R square	0.3432	0.3434	0.3438
Durbin-Watson stat.	2.4544	2.4571	2.4549
Number of observation	13705	13705	13705
Number of firms	4238	4238	4238

Source: Authors' calculations.
*Values of t-statistics are provided in parentheses. ***, ** and * mean 1, 5 and 10% level of significance*