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THE IMPACT OF THE MONETARY-FISCAL POLICY MIX AND FINANCIALISATION ON FIXED ASSET INVESTMENT IN THE EU IN 1999–2014

Abstract

This paper explores the combined impact of tight monetary policy, government debt, budgetary deficit, financialisation, and financial leverage on the fixed asset investment (FAI) of non-financial private firms in EU countries in the 1999–2014 period. I estimate eight static fixed-effects models and test for six hypotheses. While inconclusive regarding the combined impact of tight monetary policy and government debt, the results suggest that the influence of monetary policy was limited only to the euro area, suggesting that national monetary policies were inconsequential with regard to changes in FAI. Despite the detrimental effects of financialisation, the findings highlight that cash flows generated from the sector's financial assets might serve as an internal source of FAI funding that strongly correlates with monetary contractions. The findings also highlight the possibility of an active balance sheet channel. However, given the macro-level character of the data, further research on the micro-level might provide more insight into specific issues.

Keywords: monetary policy, fiscal policy, deficit, government debt, financialisation, fixed-asset investment.
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1. Introduction

Investment is one of the main determinants of economic growth. The global financial crisis and the ensuing fiscal crisis that hit the EU countries has forced academics and policymakers to rethink the impact of government

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debt and monetary policy on the dynamics of non-financial firms' fixed asset investment (FAI). The increasing dependence of non-financial corporations on earnings through financial channels, rising financial asset ratios, and unrestrained inter-country capital flows within and beyond the European Monetary Union (EMU) have made modern financial systems more prone to instability, raised the risk of systemic crises, and postponed economic recovery.

This paper investigates the combined impact of monetary policy, government finance, and financialisation on the FAI levels of non-financial corporations in thirty European economies in 1999–2014. Whereas prominent theoretical works of the 1960s, such as those of Modigliani (1961) and Diamond (1965), suggested that high government debt has a negative impact on economic growth, recent research (Corsetti et al. 2010; Checherita & Rother 2010; Kumar & Woo 2015) has been inconclusive. The impact of monetary policy on FAI has been less ambiguous: investment falls in periods of restrictive monetary policy (Bernanke & Gilchrist 1996; Peersman & Smets 2002; Angelopoulou & Gibson 2009; Masuda 2015). Recent studies of financialisation (Rossi 2007, 2013; Rossi & Dafflon 2012; Alvarez 2015) have argued that this process has increased the sensitivity of the economy and made it more prone to systemic shocks and to reduced fixed asset investment.

The influence of monetary policy on FAI in the selected timeframe was debatable. While the influence of the decisions made by the European Central Bank (ECB) was in line with the hypothesis, the policies of national banks beyond the euro area seemed of little consequence. Though financialisation can be regarded as a prospective internal source of finance for new investment, it is also capable of generating losses and slowing investment. The research is inconclusive regarding the impact of the combined influence of tight monetary policy and government debt. The empirical results suggested that this relationship exists but further research is needed.

Section 2 below reviews the relevant literature, Section 3 explains the hypotheses, and Section 4 describes the construction of the variables. Section 5 presents the empirical results and discusses their significance, while Section 6 clarifies them by means of a robustness check. The various strands of the paper are then drawn together in a conclusion.

2. Literature Review

I make the assumption that investment falls in periods of tight monetary policy but does so far more sharply in the case of companies operating under exacting financial constraints. This assumption formed a base for extensive research regarding the US economy, the majority of which focused on the relationship between credit and output (Bernanke & Gertler 1995; Gertler & Gilchrist 1994). The findings of Chatelain, Generale, Hernando, von Kalckreuth and Vermeulen (2003) implied that shifts in monetary policy impacted investment primarily through interest rates and credit channels. The sensitivity of investment to liquidity was more pronounced in periods of tight monetary policy. Peersman and Smets (2002) suggested that the greater impact of monetary policy tightening in periods of recession compared to economic booms was caused by asymmetries in monetary policy transmission. The sources of these asymmetries included differences in the financing structure of companies, in the maturity of their debts, in the level of their financial leverage and in their size. Bougheas, Mizen and Yalcin's (2006) investigations concentrated on the balance sheet channel of monetary policy transmission. They demonstrated that firm-specific characteristics determined a company's financing and debt structures and that, in accordance with the hypothesis, these changed in periods of tight monetary policy.

Stawska (2012) analysed the impact of the policy mix on economic growth approximated by investment in the period of the financial crisis in the euro area. She argued that gross investment fell significantly despite monetary expansion and high government spending. Stawska associates this observation primarily with raised stress and risk levels in the euro area financial markets and not with the failures of policy makers.

Public debt has an important impact on economic growth both in the short and long terms. There are at least five channels through which raised government debt can affect capital accumulation and production: higher interest rates, sovereign risk spillovers to the private sector causing higher borrowing costs (Baldacci & Kumar 2010), lower future infrastructure spending, rising inflation (Cochrane 2011) and diminishing investor confidence. The theoretical work of Modigliani (1961), Diamond (1965) and Saint-Paul (1992), which are based on the neoclassical growth model, suggested that government debt is likely to slow economic growth. Corsetti et al. (2010) stressed the need to eliminate fiscal imbalances and reduce government debt – particularly if the impact of monetary policy is limited

due to an inoperative interest rate channel. Writing before the fiscal crisis, Schclarek (2004) claimed that the impact of government debt depends on the maturity of the economy in question. He argued that raised levels of government debt hinder economic growth in the case of emerging markets, but found this relationship to be unclear in the case of advanced economies. Checcherita and Rother (2010) suggested that where government debt exceeds 90% of GDP its influence on economic growth turns non-linear. Baum, Checcherita and Rother (2013), meanwhile, reported that the short--term impact of government debt on economic growth was positive if it did not exceed 67% of GDP, which was the point at which the variable lost statistical significance. Furthermore, they stated, debt ratios of over 95% hinder economic activity. Kumar and Woo argued that high initial debt had inverse effects on long-run economic growth and that negative, non-linear effects could not be excluded if debt exceeded 90% of GDP (Kumar & Woo 2015, p. 731). The results returned by Spilioti and Vamvoukas (2015) implied that government debt correlated positively with economic activity as long as it did not exceed 110% of GDP. Dar and Amirkhalkhali (2002) based their study on the TFP (Total Factor Productivity) measure and capital productivity as approximations for economic growth and proved that both were lower in countries where government, measured by debt-to-GDP ratio, was larger. Alfonso and Jalles (2013) used the TFP approach to argue that raised debt lowers output. They discovered that higher government debt correlated positively with economic growth as measured by TFP, but had a negative impact on public and private sector investment.

Financialisation embraces a broad range of processes and thus eludes a single definition. Epstein (2005) equated it with the growing importance of financial markets, financial institutions and financial motives in the operation of both domestic and international economies. Modern economies have become more sensitive to disruptions in the wake of the liberalisation, deregulation and growing integration of the real and financial sectors (van Treck 2009). This could be seen in the USA in the 1980s and later in Europe, especially in France, Germany and the UK. Krippner (2005) defined financialisation as a process in which profits are made through financial channels rather than trade and commodity production. That unlimited sums of capital can be transferred risk free in the form of bank deposits from countries with low rates of return to those where the expected profits are higher, has hindered stabilisation and convergence and highlighted economic imbalances between the core of the euro area and its periphery (Rossi 2007). Market liberalisation has increased the tendency

to maximise shareholder value and shifted the focus from balanced, long--term growth to short-term profit and increasing the share price. Companies pursue more short-term investments to achieve this, but at the long-run risk of creating a price bubble and making the economy even more sensitive (Rossi 2013, p. 389).

Referring to emerging markets, F. Demir (2008) claimed that profits and the rate of return on assets had an impact on FAI in the non-financial private companies and suggested that easier access to alternative and financial markets offered investors the opportunity to redirect profits and savings from FAI to short term-financial investments. The consequence, he argued, could be the deindustrialisation of emerging economies. Writing more recently, Alvarez (2015) has stressed with reference to advanced economies that financialisation has increased the dependence of French non-financial firms on profits from financial operations as opposed to those from trade and production.

3. Hypotheses

This article investigates the combined impact of restrictive monetary policy, government finance, and the level of financialisation at non-financial private companies on the FAI of non-financial firms. Four basic and two auxiliary hypotheses have been formulated based on the literature review. Each of them tests the influence of one of the parameters on the dependent variable in the chosen timeframe.

The first hypothesis (H1) introduces variables describing the monetary policy of the ECB, or one of the national central banks if the country in question does not belong to the EMU.

H1: The tightening of monetary policy reduces the fixed asset investment of non-financial companies.

It is the view of Rossi (2007, 2013) that financialisation in its various forms has been detrimental to financial stability and economic growth, while Alvarez (2015), Krippner (2005), and Ząbkowicz (2009) have stressed the growing share of earnings obtained through financial channels by non--financial corporations. Because of limited access to comparable firm--level data for the chosen period and countries, the level of financialisation has been measured in a different way: as a ratio of financial assets to the total assets of the non-financial sector. This makes it possible to control for the financial risk of the sector, which is associated with, but not limited to, exchange rate and interest rate fluctuations, which induce changes in

financial asset prices. Potential gains through this channel are viewed in this paper as an alternative source of funding for FAI. Conversely, losses incurred will reduce available funds and have an unfavourable impact on investment decisions.

H2: The level of financialisation, as measured by the financial assets to total assets ratio of the non-financial firms, has a positive impact on FAI.

Depending on the variety of financial assets held by the non-financial sector, the tightening of monetary policy may cause the variable to either lose its positive influence and become statistically insignificant or have a negative impact on investment decisions. Growing financing costs, or losses incurred when the prices of financial assets change following shifts in monetary policy, may absorb funds which were originally meant to finance new investment but needed to be redirected to buffer immediate losses. This is reflected in the following hypothesis.

H2A: The tightening of monetary policy reverses this influence and may lower FAI.

Were H2A true, it would imply the existence of the credit channel of monetary policy transmission in the chosen timeframe.

Hypotheses H3 and H4 test the impact of government finance on FAI. Based on the relevant literature and empirical data, it is expected that where levels of either government debt or deficit are considered too high they are likely to constrain economic growth.

H3: Government debt constrains the FAI of private sector non-financial firms.

H3A: This hypothesis combines government debt and monetary policy and states that the negative impact of government debt on FAI is stronger when coupled with tight monetary policy.

It is assumed that the coefficient of the relevant cross-term will be greater than that of the government debt variable.

Hypothesis H4 tests the relationship with regard to budgetary deficit or surplus. It is assumed that the former will lower FAI while the latter could have a favourable impact and cause it to rise.

H4: Budget deficits have a negative influence on the investment decisions of non-financial private companies.

Hypotheses H2 and H2A test the influence of the collective balance sheet structure of the non-financial private sector firms. Theoretically, shifts in monetary policy influence both assets and liabilities via the balance sheet channel and change the values of these assets and liabilities accordingly.

4. Data

The data regarding country-specific indicators, such as fiscal situation, real economic activity, capitalisation of the domestic market, gross profit and fixed asset investment at non-financial private sector companies were provided by Eurostat and the OECD Complete Database of Main Economic Indicators. The databases managed by the ECB, the Federal Reserve Bank of St. Louis, the National Bank of Bulgaria, the Bank of Latvia, the Bank of Lithuania, the Central Bank of Norway, the Bank of England, the Czech Central Bank, the World Bank, the Swiss National Bank, the Romanian National Bank and the Stooq data archives provided the information needed to construct the monetary policy variable (see equations (1) and (2), which was later replaced by the three-month interbank offered rate. The panel model was estimated in four steps, so that new variables were introduced gradually. Overall, I used nine explanatory variables, three of which were cross-terms. The level of fixed asset investment (FAI) at non-financial private sector firms was expressed relative to GDP.

The monetary policy variables were constructed based on the monthly monetary-policy decisions issued by the central banks in 1999–2014 (Angeloupoulou & Gibson 2009 p. 679; Masuda 2015, p. 13). As more countries entered the euro area, the ECB assumed responsibility for making the decisions previously handled by the national central banks. The monthly binary variable shown in equation (3) was constructed:

$$MP\_MONTHLY_{i,t} = \begin{cases} 0 - \text{all other decisions} \\ 1 - \text{monetary policy tightening} \end{cases}, \tag{1}$$

where i and t denote the country i in the year t. These variables were then annualised according to equation (4) (Masuda 2015, p. 13):

$$NMP_{i,t} = \frac{\sum_1^{12} MP\_MONTHLY_{i,t}}{12}, \tag{2}$$

where $NMP_{i,t}$ takes a value between 0 and 1 for country i in the year t.

Both Krippner (2004, p. 174) and Ząbkiewicz (2009, p. 28) proposed measuring financialisation as the level of financial profits of non-financial corporations relative to their operational profits. This approach would require firm-level data from a representative number of companies in the non-financial sector in each of the thirty economies included in the sample. Even if it were possible to obtain, the comparability of this data would be limited due to differing accounting standards. Given that financialisation

is defined quite broadly in the literature discussed above, its level is approximated ($FIN_{i,t}$) for the whole sector in the i country in year t using the ratio of cash-flow-generating financial assets to the sector's total assets. There is an additional control for the total debt-to-equity ratio $(D/E)_{i,t}$.

The following variables describing a country's i fiscal situation in year t are included to verify hypotheses H3, H3A, and H4: budgetary surplus or deficit ($BUDGET_{i,t}$) relative to GDP and total government debt ($GOVDEBT_{i,t}$) relative to GDP. The former variable takes positive values for the surplus and negative for the deficit. Control for EU and EMU membership is provided by two binary variables constructed according to equations (1) and (2), respectively:

$$EU\_MEM_{i,t} = \begin{cases} 0 - \text{country does not belong to the EU} \\ 1 - \text{country belongs to the EU} \end{cases} \tag{3}$$

$$EMU_{i,t} = \begin{cases} 0 - \text{country does not belong to the euro area} \\ 1 - \text{country belongs to the euro area} \end{cases} \tag{4}$$

where i and t denote the country i in the year t.

The monetary policy variable $NMP_{i,t}$ (equation 1) served to construct three cross-terms:

– $(EMU \cdot NMP)_{i,t}$ captures the direct impact of the ECB's decisions on the euro area economies – in the case of countries not belonging to the EMU it takes a value of 0,

– $(GOVDEBT \cdot NMP)_{i,t}$ captures the impact of central bank decisions on government debt,

– $(FIN \cdot NMP)_{i,t}$ captures the impact of monetary policy on the financialisation measure and tests the existence of the balance sheet channel.

Two variables are introduced to control for the size of the capital market and fluctuations in the gross profit of non-financial corporations relative to GDP: $MARKETCAP_{i,t}$ and $GROSSPROFIT_{i,t}$.

The $NMP_{i,t}$ variable was replaced by the three-month interbank offered rate ($IBOR\ 3M_{i,t}$) in the robustness check. The three-month interbank offered rate approximates investors' and businesses' expectations regarding future monetary policy decisions: if the variable were statistically significant it would imply that the primary channel of monetary policy transmission to the real economy influenced FAI in the chosen timeframe.

5. Empirical Results

Based on the results of the Hausman test, the following equation (equation (5) below) was estimated using a fixed effects model. Lagged variables were used to control for possible lags in the impact of government debt and monetary policy transmission and to avoid endogeneity problems. Ideally, a GMM estimation would be employed. However, it was found by the Sargan test to be invalid for this paper.

$$FAI_{i, t} = MARKETCAP_{i, (t-1)} + GROSSPROFIT_{i, (t-1)} + (D/E)_{i, (t-1)} + FIN_{i, (t-1)} +$$
$$+ GOVDEBT_{i, (t-1)} + EUMEM_{i, t} + NMP_{i, (t-1)} + (EMU \cdot NMP)_{i, (t-1)} + \quad (5)$$
$$+ (FIN \cdot NMP)_{i, (t-1)} + (GOVDEBT \cdot NMP)_{i, (t-1)} + BUDGET_{i, (t-1)} + year_i + \varepsilon_{i, t}$$

The abbreviations are as explained in Section 4. The variable $year_i$ controls for other macroeconomic and political factors that were influencing a country's i economy but which were not included in equation (5). $\varepsilon_{i, t}$ is the disturbance term.

Table 1 below displays the results of the four-step estimation process.

The monetary policy stance of the national central banks, or the ECB in the case of the euro area countries, had no impact on investment decisions in the chosen timeframe. This is a slight contradiction of the generally accepted theory that tight monetary policy constrains FAI and correlates negatively with economic growth. The result might be explained by the response of the central banks of the advanced economies to the global financial crisis, which was to lower interest rates and adopt extraordinary expansionary measures in the hope of preventing an economic downturn. The problem may, though, have lain in the relative heterogeneity of the monetary policy strategies adopted by the national central banks. This was especially true of Bulgaria, which introduced a currency board to fight hyperinflation in 1997 and has maintained it ever since. These assumptions appear plausible – especially when it is borne in mind that the ECB's monetary policy (expressed as the cross-term $(EMU \cdot NMP)_{i, (t-1)}$) affected FAI according to expectations. In the first two steps (columns 1 and 2) the variable was insignificant. However, when another cross-term was introduced ($(FIN \cdot NMP)_{i, (t-1)}$, column 3), $(EMU \cdot NMP)_{i, (t-1)}$ became statistically significant with regard to FAI. Membership of the EU was also statistically significant. In this respect the coefficient's sign was in line with the direction of influence of the cross-term $(EMU \cdot NMP)_{i, (t-1)}$. This may imply that external investors perceived the EU as a homogenous business environment, which had been the dominant

viewpoint before the financial crisis hit the EU in 2008–09. There was a misperception that the EU and EMU countries were homogenous in terms of their financial situation, which was caused by interest rate convergence due to nominal compliance with the Maastricht criteria. International businesses and investors thus perceived the EMU and EU as too important and too big to fail. As a consequence, EMU interest rates did not reflect country risk and the price of sovereign default was never included in the interest on sovereign bonds in the euro area (Rossi & Dafflon 2012, p. 113).

Table 1. Results: Estimation Using LSDV

Variable	1	2	3	4
$MARKETCAP_{i,(t-1)}$	−6.02644 (−0.114)	−7.23841 (−0.132)	−1.16206 (−0.217)	−1.9059 (−0.346)
$GROSSPROFIT_{i,(t-1)}$	−0.128152 (−0.925)	−0.153038 (−1.16)	−0.157167 (−1.23)	−0.146833 (−1.15)
$(D/E)_{i,(t-1)}$	−1.01024 (−0.741)	−1.22082 (−0.961)	−1.32496 (−1.10)	−0.767695 (−0.656)
$FIN_{i,(t-1)}$	0.054134** (2.28)	0.050003** (2.36)	0.0476637** (2.32)	0.0537250 ** (2.53)
$GOVDEBT_{i,(t-1)}$	−0.0830794*** (−4.0)	−0.0572665** (−2.75)	−0.0561361** (−2.57)	−0.0460612* (−1.84)
$EUMEM_{i,t}$	−2.11194** (−1.98)	−2.235** (−1.98)	−2.30524** (−1.97)	−2.67038** (−2.36)
$NMP_{i,(t-1)}$	3.56739 (0.811)	10.1762 (1.48)	7.97462 (1.26)	7.91973 (1.31)
$(EMU \cdot NMP)_{i,(t-1)}$	−1.0838 (−0.726)	−1.36405 (−1.04)	−6.07969* (−1.74)	−6.65786 * (−1.74)
$(GOVDEBT \cdot NMP)_{i,(t-1)}$	–	−0.186830** (−2.09)	−0.182502** (−2.20)	−0.177009 ** (−2.03)
$(FIN \cdot NMP)_{i,(t-1)}$	–	–	0.0365400 (0.797)	0.0330526 (0.689)
$BUDGET_{i,(t-1)}$	–	–	–	0.264743 *** (3.10)
Constant	34.5808*** (3.71)	34.7131*** (3.69)	34.9521*** (3.76)	32.5639 *** (3.24)
R^2	0.8747181	0.8717834	0.8817758	0.8862445

Notes: 1. ***, **, and * denote 1%, 5%, and 10% significance levels, respectively; 2. I have adopted a fixed effects model; 3. Estimation using a LSDV estimator; 4. Estimation using robust standard errors; 5. *T*-statistics are in parentheses.

Source: author's own calculations based on data gathered from the sources mentioned in Section 4.

Notwithstanding these explanations, the results did not justify complete acceptance of hypothesis H1.

Government debt $GOVDEBT_{i,\,(t-1)}$ had a negative impact on FAI, which accords with mainstream empirical findings. Regardless of the specification of equation (5) (columns 1–4), this result was reported throughout the four--step estimation process. The explanations for the negative influence of government debt on investment and, more broadly, on economic activity, rest on the fact that higher government debt increases a country's credit and investment risks. The influence of the second variable describing a country's fiscal position – $BUDGET_{i,\,(t-1)}$ – was also statistically significant, and its coefficient was in line with expectations. The empirical results corroborated the suppositions formulated in hypotheses H3 and H4. The influence of these two variables on investment and economic growth may, however, be ambiguous. Future research should therefore seek to ascertain whether the debt or deficit was income-producing or income-consuming; only the former contributes to economic growth.

As expected, the monetary policy variable revealed that government debt had a negative impact on FAI. The introduction of the cross-term $(GOVDEBT \cdot NMP)_{i,\,(t-1)}$ changed the $GOVDEBT_{i,\,(t-1)}$ coefficient from −0.0830794 to −0.0572665. The cross-term parameter of −0.18683 was greater than the $GOVDEBT_{i,\,(t-1)}$ variable, which was in line with expectations. This result confirmed hypothesis H3A. The inclusion of a further cross-term, $(FIN \cdot NMP)_{i,\,(t-1)}$, modified these parameters slightly (column 3) but did not disturb the general proportion. The introduction of the $BUDGET_{i,\,(t-1)}$ variable had a clear influence on the coefficients of other variables in that the impact of the first cross-term $(GOVDEBT \cdot NMP)_{i,\,(t-1)}$ grew weaker at −0.177 and the $GOVDEBT_{i,\,(t-1)}$ coefficient reached −0.04606.

The $FIN_{i,\,(t-1)}$ ratio was statistically significant at the 5% level throughout the four steps of the estimation, which confirmed hypothesis H2. The results corroborated the growing importance of financial assets and transactions in the non-financial private sector companies. Regardless of the increasing role of short-term investment in the maximisation of shareholder value, it would appear that the (implied) cash flows generated by financial assets held by the non-financial private sector companies contribute to internal sources of FAI funding. This conjecture does not contradict the detrimental effects of financialisation. The model failed to capture the combined impact of monetary policy and financialisation on FAI. The inclusion of the cross--term variable (column 3) saw the $FIN_{i,\,(t-1)}$ coefficient fall from 0.05 to 0.047 and improved the model by bringing $EUMEM_{i,\,t}$ to statistical significance.

Hypothesis H2A was, however, rejected. The most probable reasons for the cross-term's failure to capture the balance sheet channel of monetary policy transmission are the heterogeneity of monetary policy in the chosen timeframe, a monetary policy that was only mildly restrictive and thus had no impact on the prices of financial assets and the indirect translation of the specification for the monetary policy variable in the model. The robustness check explores this final issue further.

The overall results of the estimation suggest that debt-to-equity ratio $(D/E)_{i,(t-1)}$ did not have a significant impact on FAI in the chosen timeframe. When combined with weak evidence for the impact of monetary policy and the rejection of hypothesis H1, this implies that monetary policy has a limited impact on FAI.

6. Robustness Check

In this section an extension of the baseline model is estimated to check the robustness of the initial results. The modified version (equation (6) below) uses the three-month interbank offered rate (IBOR 3M) as an alternative measure of monetary policy. Replacing the variable constructed according to equations (1) and (2) with an interest rate may capture the interest rate effects and highlight the balance sheet channel of monetary transmission. Its impact on the government debt variable is unclear. The same four-step estimation procedure using an LSDV estimator is followed:

$$
\begin{aligned}
FAI = \ &MARKETCAP_{i,(t-1)} + GROSSPROFIT_{i,(t-1)} + (D/E)_{i,(t-1)} + FIN_{i,(t-1)} + \\
&+ GOVDEBT_{i,(t-1)} + EUMEM_{i,(t-1)} + IBOR\ 3M_{i,(t-1)} + EMU_{i,(t-1)} + \\
&+ (GOVDEBT \cdot IBOR\ 3M)_{i,(t-1)} + (FIN \cdot IBOR\ 3M)_{i,(t-1)} + \\
&+ BUDGET_{i,(t-1)} + year_i + \varepsilon_{i,t}
\end{aligned} \tag{6}
$$

$IBOR\ 3M_{i,t}$ stands for the interbank offered rate in country i in year t. EURIBOR 3M was used for the euro area and the respective interbank offered rates for the other economies. The remaining notations are the same as in equation (5). The results of the estimation are set out in Table 2 below.

The three-month interbank offered rate ($IBOR\ 3M_{i,(t-1)}$), which approximated the expectations of investors and businesses regarding central bank decisions, had no impact on FAI. This meant that hypothesis H1 was rejected in all but the first step of the modelling process (column 1). This

confirmed the result obtained in the initial model, which suggested that monetary policy had no clear impact on FAI in the chosen timeframe.

Table 2. Results: Estimation using LSDV

Variable	1	2	3	4
$MARKETCAP_{i,(t-1)}$	4.47770 (0.655)	2.26405 (0.344)	5.28961 (0.807)	4.53052 (0.715)
$GROSSPROFIT_{i,(t-1)}$	−0.0724033 (−0.514)	−0.0661879 (−0.464)	−0.03352 (−0.235)	−0.0418052 (−0.313)
$(D/E)_{i,(t-1)}$	−1.84816 (−1.54)	−1.95619* (−1.82)	−1.51486 (−1.47)	−0.662125 (−0.706)
$FIN_{i,(t-1)}$	0.0612063** (2.45)	0.0528469** (2.18)	0.0675391*** (2.78)	0.0744125*** (3.06)
$GOVDEBT_{i,(t-1)}$	−0.0280287 (−0.766)	−0.0156185 (−0.391)	−0.0224623 (−0.618)	−0.00200865 (−0.0517)
$EUMEM_{i,(t-1)}$	−1.99744** (−2.17)	−1.77449** (−2.02)	−1.31442* (−1.63)	−1.91448** (−2.21)
$EMU_{i,(t-1)}$	−0.40605 (−0.29)	−0.312219 (−0.22)	−0.840915 (−0.664)	−0.596573 (−0.51)
$IBOR\ 3M_{i,(t-1)}$	−19.2385*** (−7.61)	2.40708 (0.194)	9.42772 (0.666)	12.0389 (1.01)
$(GOVDEBT \cdot IBOR\ 3M)_{i,(t-1)}$	–	−0.961213* (−1.68)	−0.359903 (−0.602)	−0.426987 (−0.866)
$(FIN \cdot IBOR\ 3M)_{i,(t-1)}$	–	–	−1.01460*** (−2.57)	−1.05123*** (−2.9)
$BUDGET_{i,(t-1)}$	–	–	–	0.393964*** (3.43)
Constant	26.1622** (2.49)	27.829*** (2.60)	27.2237*** (2.81)	24.8927*** (2.68)
R^2	0.8745235	0.8781289	0.8848629	0.8945275

Notes: 1. ***, **, and * denote 1%, 5%, and 10% significance levels, respectively; 2. I have adopted a fixed effects model; 3. Estimation using a LSDV estimator; 4. Estimation using robust standard errors; 5. *T*-statistics are in parentheses.

Source: author's own calculations based on data gathered from the sources mentioned in Section 4.

The introduction of the *IBOR 3M*$_{i,(t-1)}$ variable captured the balance sheet effects better than the baseline monetary policy variable. Hypotheses H2 and H2A were both accepted. Though the results did not confirm hypothesis H3, the partial findings (column 2) implied that hypothesis

H3A might be true. The finding that government debt had no statistically significant impact on FAI ran counter to previous results, but was no cause for alarm as it was consistent with mainstream empirical findings. There are two ways in which this might be explained: (1) The difficulty in obtaining conclusive results in this particular area may lie in the heterogeneity of EU economies and fiscal policies. (2) The influence of raised levels of government debt, which often exceeded generally-accepted thresholds, may have eluded the model by being reversed, eliminated or turning non-linear. The results of the estimation confirmed that a country's budgetary position had an influence on FAI.

The impact of the structure of liabilities' on FAI became unclear following the introduction of *IBOR* $3M_{i,\,(t-1)}$. The partial results (column 2) implied that the D/E ratio had a significant influence on FAI. The negative sign of the coefficient suggested that investment decisions were to some extent influenced by financial constraints, which is consistent with empirical research in this field and with economic logic. Firm-level data is required to determine the exact nature of these constraints. The results in the preceding steps (column 1) and in the following steps (column 3) were promising and relatively close to the 10% significance level, which suggests that the correlation could have been captured had the timeframe been extended. There was a negative correlation between EU membership and FAI, which supported the result obtained previously. Participation in the EMU, on the other hand, proved of little consequence.

7. Conclusion

The research set out in this paper has explored the combined impact of tight monetary policy, government debt, budget deficits, financialisation, and financial leverage on the FAI of non-financial private firms in the EU countries in 1999–2014.

The study has revealed that the impact of the ECB's monetary policy on the investment decisions of non-financial private sector companies remains in question. The influence of monetary policy combined with EU membership suggested the possibility that euro-area policy has come to dominate the EU financial markets. Businesses should therefore now look to the ECB before deciding on FAI. In view especially of the results obtained from the alternative model, hypothesis H1 requires further investigation.

The investigation found that the ratio of financial assets to total assets was positively correlated with the FAI levels of non-financial private firms.

Replacing the initial monetary policy variables with IBOR 3M revealed the possibility that there was an active balance sheet channel in the chosen timeframe and corroborated the supposition that, notwithstanding the detrimental effects of financialisation, the flows generated from the financial assets might serve as an internal source of FAI funding that reacts strongly to the tightening of monetary policy.

There was at least some evidence that government debt hinders FAI. The baseline findings confirmed that raised government debt has a greater impact in periods of tight monetary policy. The suggestion from the robustness check that the correlation may be open to question is supported by mainstream empirical papers, which also imply that the relationship may be unclear. On the other hand, the impact of a budget deficit or surplus correlated positively with FAI regardless of the specification of the monetary policy variable.

The debt-to-equity ratio results obtained from the robustness check suggested that the reason no statistically significant impact was discovered might have lain in the specification of the monetary policy variable. Notwithstanding this specification, neither the market capitalisation or the gross profit share of the non-financial corporations proved significant.

This paper does not cover the period when the ECB introduced its unconventional monetary policy measures. Given the fiscal situation of the EU and the further monetary easing introduced by the ECB in the spring of 2016, further research is required to investigate the channels of monetary transmission and the impact of these decisions on both the public and private sectors of European economies. The growing political uncertainty surrounding the United Kingdom's continued membership of the European Union should also be considered.

Because a macro-level analysis provides only a general overview of the relationships captured and discussed in this paper, the practical use of these results is limited. A more profound exploration of the issues raised in this paper will require a study supported by firm-level data, which would help capture agent-specific characteristics that will explain the relationships observed in more detail.

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Abstract

Oddziaływanie policy mix i finansyzacji na inwestycje przedsiębiorstw w Unii Europejskiej w latach 1999–2014

W artykule zbadano łączne oddziaływanie restrykcyjnej polityki pieniężnej, długu publicznego, deficytu finansów publicznych, finansyzacji i dźwigni finansowej na poziom inwestycji niefinansowych prywatnych przedsiębiorstw w Unii Europejskiej w okresie 1999–2014. Posługując się modelowaniem panelowym z uwzględnieniem efektów stałych, zweryfikowano sześć odpowiednich hipotez. Choć brak jednoznacznych efektów w zakresie łącznego oddziaływania polityki pieniężnej i zadłużenia publicznego, otrzymane wyniki wskazały na to, że oddziaływanie polityki pieniężnej ograniczyło się w wybranym okresie jedynie do strefy euro. Mimo udokumentowanego negatywnego wpływu finansyzacji na gospodarkę rezultaty sugerują, że przepływy pieniężne generowane przez aktywa finansowe utrzymywane przez przedsiębiorstwa mogły służyć jako wewnętrzne źródło finansowania inwestycji, podlegające silnemu wpływowi polityki monetarnej. Analiza wskazała również możliwość wystąpienia kanału bilansowego transmisji polityki pieniężnej. Biorąc pod uwagę zagregowany charakter danych, dalsze badania na poziomie mikro w tym zakresie są potrzebne do zweryfikowania tej hipotezy.

Słowa kluczowe: polityka pieniężna, polityka fiskalna, deficyt, dług publiczny, finansyzacja, inwestycje.