Analysis

Variable rate corporate loans strengthen transmission of monetary policy

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There are considerable differences between countries of the euro area in the prevalence of variable rate bank loans. According to recent research by the authors, the extent to which bank loans are variable rate loans influences how the key ECB interest rates affect the demand for corporate loans. Following the rise in interest rates in 2022, companies favouring variable rate loans reduced their borrowing relative to other companies. The effect was particularly strong in small companies.



Prevalence of variable rate bank loans affects transmission of monetary policy

Bank loans can be variable rate loans (also known as floating rate loans) or fixed rate loans. In the case of fixed rate loans, interest expenses do not change even if market interest rates rise or fall. Typically, borrowers pay slightly more for fixed rate loans than for variable rate loans. Banks require compensation for the risk they take when granting a fixed rate loan, and in return, borrowers gain predictability in their loan servicing costs. Interest payments on variable rate loans, on the other hand, vary according to reference rates. Since borrowers bear the interest rate risk themselves, variable rates are, on average, less expensive.

The extent to which lending rates are variable or fixed is important in terms of the effects of monetary policy. Previous research shows that variable rate residential mortgages amplify the transmission of monetary policy to household behaviour (Calza et al., 2013; Di Maggio et al., 2017). However, there is considerably less research evidence available on corporate loans than on household loans. Ippolito et al. (2018) hypothesize that there is a mechanism by which monetary policy has a stronger impact on companies that finance their operations with variable rate loans. They call this mechanism the floating rate channel.

If there were no limit to how much a company can borrow without the loan terms and conditions changing, then the extent to which loans are variable or fixed rate should have no impact on investment decisions. If an investment is worth making, it will always be made and the company's current cash flow will not influence the decision. But if the company has constraints on borrowing, its cash flow situation will also affect its investment decision. Concerns about rising interest rates and increasing interest expenditure may prevent investments that would otherwise be financially viable. In this situation, the prevalence of variable rate loans also plays a role in the transmission of monetary policy.

Ippolito et al. (2018) and Gürkaynak et al. (2022) provide preliminary evidence for the existence of this mechanism based on data from the United States.[1] However, empirical evidence of its impact on corporate investment remains limited.

Monetary policy has stronger impact on investment loan demand of companies that favour variable rate loans

In the recent Bank of Finland Research Discussion Paper 'Heterogeneous responses to monetary policy: the role of floating rate loans' (Kerola, Laine and Paavola, 2025), we examine the significance of variable rates for the transmission of monetary policy with reference to the rapid

and unexpected rise in interest rates in recent years and using the unique AnaCredit dataset on corporate loans, which covers the entire euro area.

AnaCredit offers harmonised data from all euro area countries on individual bank loans exceeding EUR 25,000. The data includes a wide range of credit-related information, such as loan amounts, interest rates, loan periods and borrower characteristics.

A key variable in the study is the share of variable rate loans for each company, indicating their exposure to fluctuations in interest rates. We define a variable rate loan as a loan that is not specified as a fixed rate loan. To ensure data quality, our data comprises all euro-denominated loans with an agreed annual interest rate of 0%–50%, where the lending bank is located in the euro area and belongs to the 'other monetary financial institutions' sector (S122) and the borrower belongs to the non-financial corporations sector (S11). Banks also report the purpose of the loan. The category 'other purposes' includes loans taken out for investments other than construction investments. We rename this category 'investment loans', as they represent typical corporate investment loans and serve as a reliable indicator for assessing investments.[2]

The AnaCredit dataset allows us to identify the amount of variable rate and fixed rate loans taken out by each company, as well as the purpose of the loans. The data also includes information on company size, which enables us to examine whether the floating rate channel is stronger in companies struggling with financial constraints. Smaller companies typically face greater financial constraints due to limited collateral, higher risk profiles and a lack of market financing (Beck et al., 2005; Petersen and Rajan, 1994; Beck and Demirgüç-Kunt, 2006; Kumar et al., 1999). Company size is commonly used as a proxy for financial constraints (Ahamed et al., 2022).

Although the collection of AnaCredit data began in September 2018, our analysis focuses on the period June 2020 to September 2024, as the data quality and coverage had improved significantly by this time. Thus we also exclude observations that reflect companies' immediate reactions to the pandemic crisis in its most acute phase.

Our results indicate that a floating rate channel does exist in the euro area and that its impact on corporate behaviour is significant. In our analysis, we use the difference-in-differences (DiD) method, in which companies are divided into a test group and a control group based on a natural experiment. The test group consists of companies whose variable rate loans comprised more than 50% of all their loans before the rise in interest rates in 2021. We examine the average amount of investment loans in the test and control groups before and after the interest rate rise. The change in the difference between group averages (DiD) can be interpreted as the impact of the central bank's interest rate increases on the exposed group, provided that changes in the loan stocks of the groups would have been similar without the interest rate rise.

The method also requires that no other changes have taken place during the reference period that could have affected the test and control groups in different ways, and that the behaviour of each group does not influence the other. Since these assumptions do not fully apply to our data, we control several of the observed variables, and later also use an alternative method with slightly less stringent assumptions.

We find that companies with a high share of variable rate loans prior to the rise in interest rates reduced their investment loans by around 4.5% after the ECB's rate increases, compared to companies with less variable rate debt. This estimate was obtained after standardising the country-specific, industry-specific, bank-specific and company-size variations. It is possible that the result is misleading in spite of this, as the applicants for variable rate loans may tend to be certain types of companies. However, it is unlikely that the impact has been overestimated, as companies that have opted for variable rates are probably, on average, more willing to bear the interest rate risk (Vickery, 2008). The real impact may therefore be even greater. The results are reported in more detail in columns 1 and 2 of Table 1.

To examine the impacts over time, we analysed differences in the amount of investment loans on a quarterly basis (Chart 1). We find that the difference between companies favouring variable rates and those favouring fixed rates began to grow gradually at the end of 2021, just as market rates began to slowly rise. This was amplified over the period up to 2024, which is consistent with the fact that the transmission of monetary policy usually involves a time lag.

Dependent variable: log (investment loan)	(1)	(2)
High variable rate share x Post_2021	−0.0437***	−0.0477***
	(0.009)	(0.009)
Micro/Small x High variable rate share		
High variable rate share x Micro/Small x Post_2021		
Firm FE	YES	YES
Time FE	YES	YES
Firm country-Time FE	YES	YES

Firm size-Time FE	YES	YES	
Industry-Time FE	NO	YES	
Bank-Time FE	NO	YES	
Standard errors clustered	by firm & bank	by firm & bank	
Number of observations	33,427,473	33,427,473	
R^2	0.78488	0.80687	
Within R^2	0.00010	0.00012	

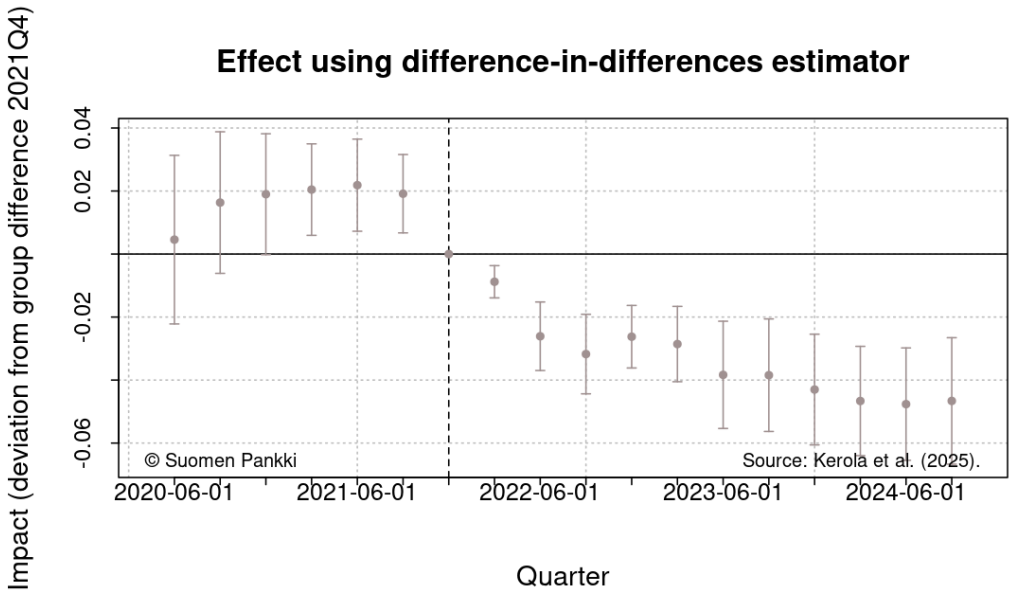
FE = fixed effects

Standard errors in parentheses

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

Estimation of equation (1) for columns 1–2 and equation (2) for columns 3–4. Estimation period: June 2021 – Septer
log of investment loans from bank *b* to firm *f* at time *t*. High variable rate share is a firm-level dummy equal to 1 if mo
in 2021 had variable interest rates. Post_2021 is a dummy equal to 1 from January 2022 onwards. Micro/Small is a d
small firms. Standard errors clustered at the firm and bank level.
Source: Kerola et al. (2025).

Chart 1.



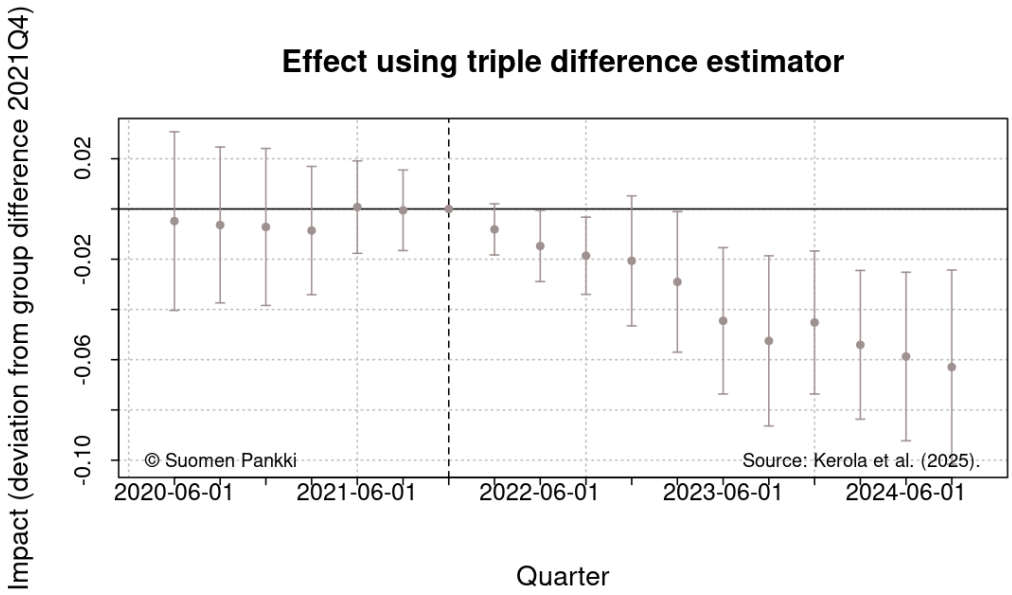
Impact of monetary policy greater on small companies than large companies

In addition to this analysis, we utilise the triple difference (TD) method, i.e. difference-in-difference-in-differences, as the data allows this. The method helps to remove any selection bias if the magnitude of this bias is the same for companies of different sizes (Olden and Møen, 2022). In other words, if two estimates based on difference-in-difference are equally biased, the difference between them still provides an unbiased estimate of the effect of the variable rate share on the amount of investment loans when interest rates rise.

Based on this analysis, the impact is stronger in relatively small companies (see columns 3 and 4 in Table 1). The results are in line with the theoretical findings of Ippolito et al. (2018), according to which the floating rate channel particularly affects financially constrained companies, a group that often includes small businesses.

The effects also grow gradually over time (Chart 2). By 2024, the reduction in investment loans in small companies with a large share of variable rate loans increases to around 11% (in relation to larger companies).

Chart 2.



More research needed

As far as we know, our study is the first empirical estimate of a floating rate channel in the euro area. Thus, we bring a new perspective to the examination of the impact of monetary policy on corporate investment decisions in cases where, due to having a high share of variable rate loans, the interest expenses on existing loans rise following an increase in key interest rates.

Our study also emphasises the significance of company size and financial constraints. The significant variation in companies' reactions to changes in interest rates, combined with the fact that in the euro area variable rates are favoured only in some countries, means that the strength of monetary policy transmission varies among countries.

However, the research literature does not provide a straightforward explanation as to what would be an optimal share of variable and fixed rates from the perspective of individual companies, households, banks or the economy as a whole (e.g. Santomero, 1983; Campbell and Cocco, 2003; Cowling and Wong, 2025; Rubio, 2011). The greater the share of variable rates in the economy, the stronger the effects of monetary policy are likely to be (Rubio, 2011; Calza et al., 2013; Di Maggio et al., 2017). Therefore, a higher proportion of variable rates could, in theory, make it easier to stabilise inflation at its target. A structural macro model estimated using Finnish data suggests that the country's high proportion of variable rate mortgages somewhat amplifies the transmission of monetary policy in Finland. No corresponding estimate has yet been made for

corporate loans, however.

From the perspective of individual companies or households, variable rate loans are on average less expensive than fixed rate loans, due to the positive term premium on interest rates. However, risk management reasons such as financial constraints may support the choice of a fixed rate (e.g. Vickery, 2008).

Future research could combine bank loan data with companies' financial statements data to assess more closely the effects on investment, price setting or labour demand. Further research is also needed to understand the effect mechanisms related to variable rates. For example, the role of financial constraints could be examined in more detail.

Future literature should also analyse the significance of the floating rate channel at the macroeconomic level. Are there significant differences in the overall effects of monetary policy between countries, depending on whether they favour variable or fixed rates? Although the prevalence of variable rate bank loans seems to have an impact on the strength of monetary policy effects, the transmission of monetary policy through the banking system is only one part of the monetary policy transmission mechanism.

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Notes

1. Additionally, Core, De Marco, Eisert and Schepens (2024) find that the impact of monetary policy tightening on inflation is smaller in markets where there is a majority of variable rate loans, which is consistent with the dominance of the cost channel of monetary policy, where companies pass on increased interest costs to their prices. ↑
2. The data and methods are described in more detail in Kerola et al. (2025). ↑

Keywords

banks, investment