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Monetary policy transmission below zero: In search of the reversal rate*

By Zuzana Fungáčová, Eeva Kerola, and Olli-Matti Laine
Bank of Finland

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We consider the pass-through of different ECB monetary policy measures to bank corporate lending rates of different maturities during 2010–2020. We find changes in the pass-through as policy rates first dip below zero in 2014 and again when negative interest rates become more persistent during the "low-for-long" period beginning in 2016. Overall, the transmission of monetary policy to bank lending rates appears to have become less efficient below zero, particularly in the case of corporate loans with short maturities. We are the first to empirically identify reversal in the pass-through during the low-for-long period with banks raising their lending rates as monetary policy is eased. Unconventional monetary policy measures such as targeted longer-term refinancing operations appear to have mitigated these contractionary effects.

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Negative policy rates and transmission of the monetary policy

Central banks shifted to accommodative monetary policies in the years following the global financial crisis of 2008. A few ventured beyond keeping policy rates close to zero, transitioning into negative territory. On June 5, 2014, the European Central Bank (ECB) became the first major central bank to set policy rates below zero, launching an era of negative rates that eventually lasted over eight years. This is very unique situation in the history of monetary policy and therefore negative rates have become a subject of extensive study in recent years (Heider, Saidi, and Schepens, 2021; Balloch et al., 2022).

The era of negative policy rates diversified the policy toolboxes of central banks. The ECB turned to large-scale asset purchases under the mantle of quantitative easing (QE), as well as targeted and non-targeted longer-term refinancing operations (TLTROs and LTROs). These unconventional monetary policy tools were used to further ease financial conditions as the policy rate fell to its effective lower bound.

The introduction of negative policy rates also means that the pass-through to bank lending rates becomes less straightforward. Banks cannot reduce their interest expense by as much because they lose interest income on lending (Borio et al., 2017; Claessens et al., 2018), as they are reluctant to lower deposit rates below zero on fears of triggering a wave of withdrawals. As retail deposits are an important aspect of euro-area bank funding, this could potentially have large implications for the transmission of monetary policy to bank lending rates.

Despite identifying numerous possible channels and trends, the large body of theoretical and empirical literature on the impact of negative policy rates on banks has yet to clarify the overall impact of negative rates (Balloch et al., 2022). Some argue that prolonged negative interest rates prompt banks to change their practices, so any observed immediate impact of negative rates may differ from the medium-to-long-term impacts. Indeed, banks can benefit in the short run from capital gains when negative rates are implemented, helping them to withstand negative rates on the reserves they hold in the central bank. These capital gains are insufficient for the long haul, however, making it hard for banks to maintain profitability.

Ulate (2021) proposes a dual mechanism whereby policy rate cuts exert downward pressure on loan rates (bank lending channel) and reduce bank profitability and equity (net worth channel). Whether lending rates actually fall after a policy rate cut is dictated by the relative importance of these two channels. Abadi, Brunnermeier, and Koby (2023) model two channels that following a policy rate cut affect bank net worth. Banks make capital gains on their long-term assets (capital gains channel). As interest rates head lower, the pass-through from policy rates to deposit rates decline, compressing the profit margins of banks (net interest income channel). The reversal rate is the rate below which the net interest income effect of further interest rate cuts outweighs the capital gains effect. The level of the reversal rate decreases with the maturity of fixed-income assets held by banks. When banks have greater maturity mismatch, the capital gains channel is stronger relative to the net interest income channel, and the reversal rate is lower. Further, if central bank promises to keep interest rates at low levels for a prolonged period with forward guidance, it is bound to become counterproductive over time even if its initial response is to boost lending (Abadi, Brunnermeier, and Koby, 2023).

Low for long

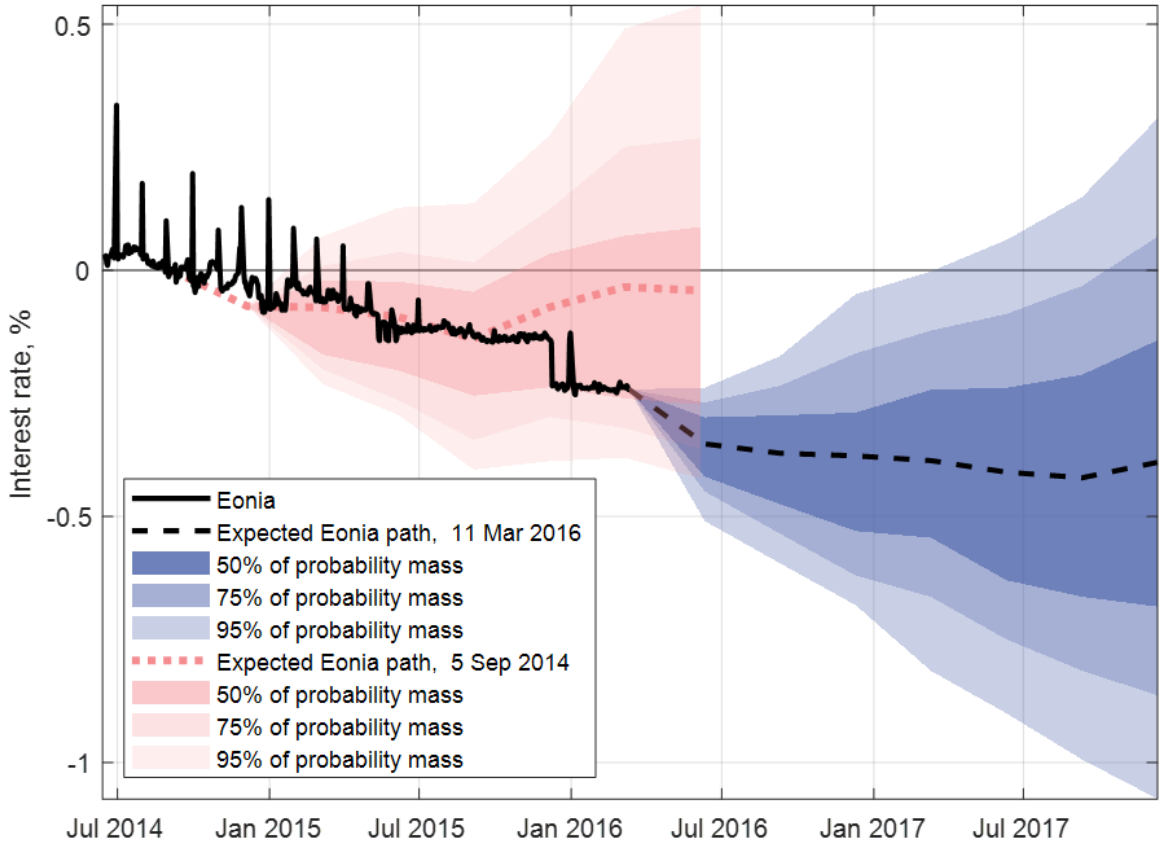
Following the ECB's initial cut of its deposit facility rate to -0.10 % in June 2014, key interest rates were lowered a total of five times. The final cut in September 2019 brought the deposit facility rate to -0.50 %. At the beginning of this negative rates period it was not clear how long it will persist. We focus on the low-for-long period that begins in 2016 when ECB forward guidance signaled that policy rates would remain in negative territory "for a prolonged time". This policy commitment coincides with a share of banks shedding their reluctance to offer negative interest rates on retail deposits.

Figure 1 shows the expected path and probability distribution of the Euro Overnight Index Average (Eonia) rate after the January 2016 change in forward guidance and subsequent rate cut in March. Looking at Figure 1 below, we see that, unlike after the first rate cut into negative territory in 2014, market participants in 2016 priced in a prolonged period of negative interest rates.

We study the transmission of ECB monetary policy implemented using different tools to bank corporate lending rates at different maturities. Our bank-level dataset at monthly frequency on 137 individual banks from 13 euro area countries covers the period January 2010 to December 2020 and thus unlike most empirical papers that rely on the shorter data samples,[1] our data enable us to properly study the low-for-long period.

It is crucial to understand monetary policy transmission in the low-for-long period as the theoretical literature suggests that the effectiveness of negative rates can wane – or even reverse – the longer the negative-rate regime continues (Balloch et al., 2022).

Figure 1: Expected Eonia paths (forward rates) and their probability distributions derived from interest rate options.



The reversal rate is real

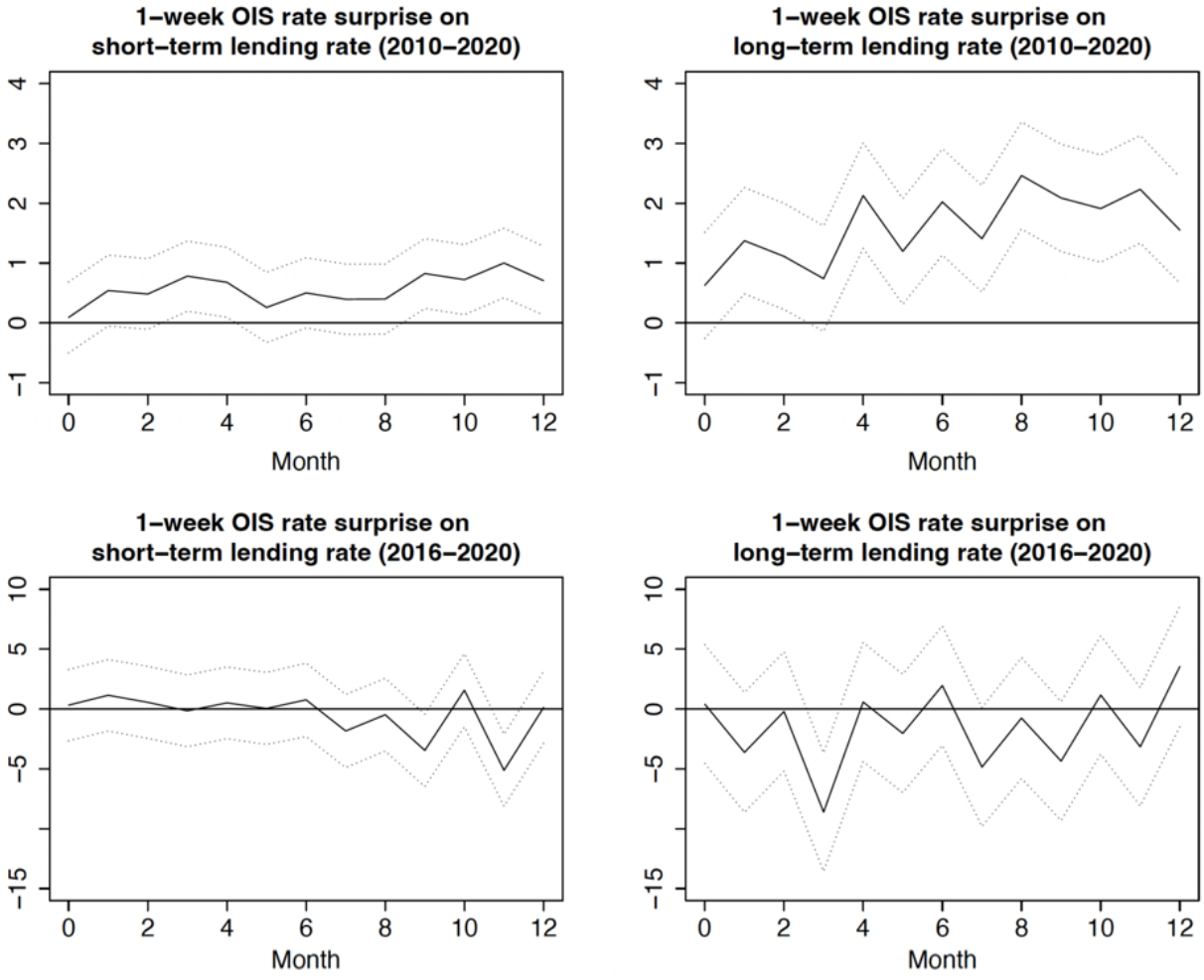
To study the transmission of the overall monetary policy stance to bank corporate lending rates we first rely on the panel estimations following the bank lending channel methodology employing the shadow rate of Krippner (2015) as a measure of the ECB's overall policy stance. Our results show that during the low-for-long period, the ECB's overall monetary policy stance became contractionary for short-term lending rates but remained expansionary for long-term lending rates.

[1] See Table 4 in Balloch et al. (2022) for details concerning the data used in existing empirical studies.

Further, to account for different monetary policy shocks, we turn to local projections. This approach enables us to estimate separately the effects of conventional monetary policy, QE and (T)LTROs. In addition, local projection approach allows us to study the effects at different horizons and thereby tease out the timing and dynamics of these effects. These estimations provide evidence that it was the conventional monetary policy that became contractionary for bank lending during the low-for-long period. Figure 2 shows the policy impact on bank lending rates at different maturities after a one unit policy rate surprise during the full-decade 2010–2020 observation period (upper panel) and during the low-for-long period beginning in 2016 (lower panel). For the full observation period, the impact of policy rate surprise is positive. Thus, a rate increase (decrease) raises (lowers) bank lending rates for both short- and long-maturity loans. In line with Abadi et al. (2023), however, lending rates in low-for-long period respond by moving in the "wrong" direction. In other words, we find evidence of the reversal rate in the euro area after the fourth rate cut to -0.40 % in 2016. At this point, market participants apparently became convinced by ECB forward guidance that negative rates were a persistent phenomenon.

Even if the transmission of short-term policy rate to bank lending rates is hampered below zero, TLTROs help mitigate the pass-through by lowering bank lending rates. The effect of unconventional monetary policy is the strongest for long-term loans. This result explains our earlier result that the effect of overall monetary policy stance reversed only when it comes to short-term loans.

Figure 2: Effect of short-term rate shock proxied by the 1-week rate surprise on short- and long-term lending rates during the full January 2010–December 2020 observation period (upper panel) and the January 2016–December 2020 low-for-long period (lower panel). Local projection estimations. Lighter lines represent 90 % confidence intervals.



Our analysis helps in understanding why previous empirical studies have struggled to find common ground on the existence of the reversal rate. We show that different loan maturities play an important role. Furthermore, by employing long enough data sample with negative rates we confirm that negative rates must first become persistent before seeking to uncover evidence of the reversal rate.

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About the authors

Zuzana Fungáčová *is a senior adviser at the Bank of Finland Institute for Economies in Transition (BOFIT) in Helsinki. She coordinates the research activities at BOFIT and is the editor of the BOFIT Discussion Paper Series. Zuzana earned a PhD in economics from Center for Economic Research and Graduate Education (CERGE-EI) in Prague. Her research interests are in banking, emerging markets and their financial sectors as well as political economy of banking. Her research has been published in academic journals including Journal of Comparative Economics, Journal of Banking and Finance, Journal of Financial Services Research, Journal of Economic Behavior & Organization, Journal of Financial Stability, World Development, Economics of Transition, Regional Studies and China Economic Review.*

Eeva Kerola *is a senior economist at the Monetary Policy and Research Department at the Bank of Finland. She has a PhD in Economics from Aalto University, Helsinki. Her main research interests are empirical banking, the transmission of monetary policy and emerging markets.*

Olli-Matti Laine *is an economist at the Bank of Finland's Monetary Policy and Research department. His research focuses on monetary policy, banking and financial markets. He earned a PhD in economics from the University of Tampere.*

SUERF Secretariat
c/o OeNB
Otto-Wagner-Platz 3
A-1090 Vienna, Austria
Phone: +43-1-40420-7206
www.suerf.org • suerf@oenb.at