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Monetary policy effects in times of negative interest rates

Joost Bats, Massimo Giuliodori, Aerd Houben 17 November 2020

Interest rates have declined steadily over the last decades, recently turning negative in Europe and Japan. This column finds that negative interest rates have important implications for bank stock prices. When market interest rates are negative, but deposit rates are stuck at zero, monetary policy instruments that target the longer end of the yield curve are less detrimental to bank performance compared with instruments that target the shorter end. Therefore, quantitative easing and yield curve control deserve special consideration when interest rates are negative and further monetary accommodation is required.



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Over the past 40 years, interest rates have steadily declined worldwide, recently turning negative in Europe and Japan. Furthermore, interest rates are expected to remain negative and yield curves to remain flat for long in Europe and Japan. Such a prolonged period of negative interest rates has implications for the performance of banks, as retail deposit rates are sticky at zero. In a negative interest rate environment, additional rate cuts may reduce bank profits, particularly if these endure. This limits the lending capacity of capital-constrained banks and can thus reduce and even 'reverse' accommodative monetary policy (e.g. Borio and Gambacorta 2017, Brunnermeier and Koby 2018).

A measure of bank performance

Studies confirm that a low or negative interest rate environment has adverse effects on the performance of banks (e.g. Claessens et al. 2017), though some claim the implications are limited (e.g. Altavilla et al. 2019a). These studies provide solid evidence, as they are based on actual reported bank performance data. However, using reported data implies the studies are backward-looking and only respond to a drop in the interest rate with a lag due to banks' capital gains on fixed rate assets. In terms of the sustainability of bank profits, backward-looking indicators may in fact be biased, as banks may temporarily respond to negative interest rates by increasing their lending volumes (e.g. Demiralp et al. 2019, Tan 2019). Prolonged negative interest rates may eventually require banks to increase lending margins, which will reduce their lending volumes, market share, and profits.

To address these caveats, we explore the impact of negative interest rates on bank performance using a forward-looking indicator: bank stock prices (Bats et al. 2020). We investigate whether monetary policy surprises impact bank stock prices differently in times of positive and negative interest rates. As bank stock prices may anticipate changes to the yield curve in the future,



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unanticipated changes (i.e. surprises) in interest rates and bank stock prices are identified with high-frequency data around 269 ECB monetary policy announcements from January 1999 to January 2020. The data stem from the Euro Area Monetary Policy Event-Study Database by Altavilla et al. (2019b). The surprises are measured as the difference between the median quote ten to 20 minutes before the press release and ten to 20 minutes after the press conference, or alternatively, 15 to 25 minutes after the press release if no press conference took place.

Monetary policy affects bank performance in different ways

Assessing the impact of monetary policy on bank stock prices has the advantage of focusing on a forward-looking measure of bank performance. However, given the introduction of unconventional monetary policy instruments, it is also important to make a distinction between the different instruments a central bank can use. Thus, we investigate whether bank stock prices react differently to changes to the shorter-end versus the longer-end of the yield curve in times of positive and negative interest rates. This sheds light on the varying effects of monetary policy instruments when interest rates are negative. Specifically, large-scale purchases of long-term assets under quantitative easing (QE) and yield curve control (YCC) policies can be designed such that only the longer end of the curve is targeted, leaving shorter-term interest rates relatively unchanged. This may reduce the adverse impact of monetary policy on bank performance in a negative rate environment, because deposit margins are relatively unaffected by changes to longer-term interest rates and banks generally hedge interest rate exposure (e.g. Drechsler et al. 2018, Hoffmann et al. 2019).

We estimate the effects of the following monetary surprises (in basis points) to the risk-free yield curve:

1. A parallel downward shift (level surprise)
2. A flattening of the one-month to five-year slope (shorter-end slope surprise)
3. A flattening of the five-year to ten-year slope (longer-end slope surprise)

The dependent variables are monetary surprises (in percentage points) to the European bank stock index (SX7E) and daily changes in the stock prices of the individual banks represented by the SX7E.

We employ rolling regression estimations to provide insight into how the impact of monetary policy on bank stock prices accrues over time as interest rates turn more negative. To gauge the persistence of the effects, rolling local projections are used. The estimations control for broad stock market movements to identify the specific disadvantage banks face in times of negative interest rates. The broad stock market is assumed to also react to unexpected interest rate changes (e.g. affecting capital value, future discount rates and/or equity premiums, and economic activity) and their resulting macroeconomic signalling effects, while being insensitive to the specific additional negative effect of interest rate declines, which banks specifically face in times of negative interest rates. In this context, we also account for banks' relative dependence on deposit and capital funding.

Our baseline results show that a low and especially negative interest rate environment hurts bank stock prices. Controlling for the broad stock market, a negative ten basis points surprise to either the level or just the shorter-end slope of the yield curve reduces bank stock prices by more than two percentage points once the interest rate environment is negative (Figure 1, Panels A and B). We also find that these effects persist in the days after the monetary policy announcement. By contrast, a surprise to only the longer-end slope of the yield curve does not impact bank stock prices when interest rates are negative (Figure 1, Panel C). Banks thus face a disadvantage in comparison with other companies in times of negative interest rates. The data on bank stock prices indicate this is the result of the lower bound on deposit rates, because the effects are significantly larger and more persistent for banks that are relatively dependent on deposit funding.

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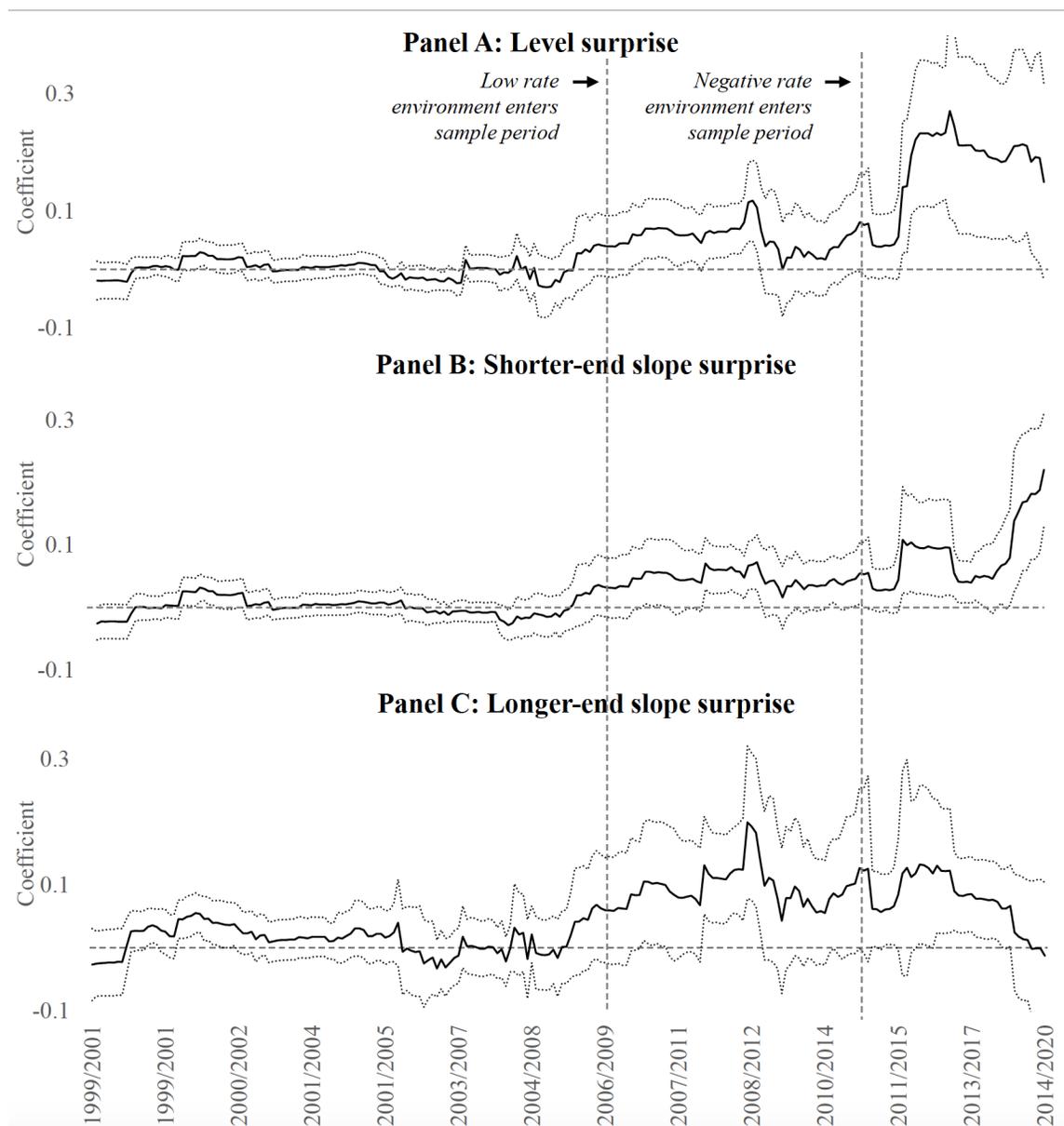
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Figure 1 Effects of yield curve surprises on bank stock prices

Source: Bats et al. (2020)

Note: This figure shows rolling effects on European bank stocks of yield curve surprises following from ECB monetary policy announcements. The estimations are run over fixed windows of 48 observations, such that the last window covers the maximum period from the introduction of the ECB's negative interest rate policy in June 2014 until the most recent available date in the sample. As monetary Eurosystem meetings occur less frequently over time, the fixed window period widens. The dependent variable measures intraday movements in the log of the bank stock index (SX7E). Panel A shows the rolling effect of a level surprise to the yield curve. Panel B shows the rolling effect of a surprise to the difference between the five-year and one-month rate. Panel C shows the rolling effect of a surprise to the difference between the ten-year and five-year rate. Intraday movements in the log of the broad stock market index (STOXX50) and targeted longer-term refinancing operations (T)LTRO announcements are controlled for. The dotted lines represent the 90% confidence interval using Newey-West standard errors robust to heteroscedasticity and autocorrelation up to the third lag.

What are the monetary policy implications?

Looking forward, a prolonged period of negative interest rates may be expected to hurt bank performance. In turn, lower bank profitability may reduce lending by banks and hamper the transmission of monetary policy stimulus. The design of monetary policy can take this into account.

The findings suggest that in a negative interest rate environment, monetary policy instruments that target the longer end of the yield curve are less detrimental to bank performance than those that target the shorter end of the curve. From this perspective, QE and YCC deserve special consideration when interest rates are negative and further monetary accommodation is called for.

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