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Ongena, S.; Peydro, J.L.

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Loose monetary policy and excessive credit and liquidity risk-taking by banks

Steven Ongena José-Luis Peydró

25 October 2011

Do low interest rates encourage excessive risk-taking by banks? This column summarises two studies analysing the impact of short-term interest rates on the risk composition of the supply of credit. They find that lower rates spur greater risk-taking by lower-capitalised banks and greater liquidity risk exposure.

A question under intense academic and policy debate since the start of the ongoing severe financial crisis is whether a low monetary-policy rate spurs excessive risk-taking by banks. From the start of the crisis in the summer of 2007, market commentators were quick to argue that, during the long period of very low interest rates from 2002 to 2005, banks had softened their lending standards and taken on excessive risk.

Indeed, nominal rates were the lowest in almost four decades and below Taylor rates in many countries, while real rates were negative (Taylor 2007, Rajan 2010, Reinhart and Rogoff 2010, among others). Expansionary monetary policy and credit risk-taking followed by restrictive monetary policy possibly led to the financial crisis during the 1990s in Japan (Allen and Gale 2004), while lower real interest rates preceded banking crises in 47 countries (von Hagen and Ho 2007). This time the regulatory arbitrage for bank capital associated with the high degree of bank leverage, the widespread use of complex and opaque financial instruments including loan securitization, and the increased interconnectedness among financial intermediaries may have intensified the resultant risk-taking associated with expansive monetary policy (Calomiris 2009, Mian and Sufi 2009, Acharya and Richardson 2010).

During the crisis, commentators also continuously raised concerns that a zero policy interest rate combined with additional and far-reaching

quantitative easing, while alleviating the immediate predicament of many financial market participants, were sowing the seeds for the next credit bubble (Giavazzi and Giovannini 2010).

Recent theoretical work has modelled how changes in short-term interest rates may affect credit and liquidity risk-taking by financial intermediaries. Banks may take more risk in their lending when monetary policy is expansive and, especially when afflicted by agency problems, banks' risk-taking can turn excessive.

Indeed, lower short-term interest rates may reduce the threat of deposit withdrawals, and improve banks' liquidity and net worth, allowing banks to relax their lending standards and to increase their credit and liquidity risk-taking. Acute agency problems in banks, when their capital is low for example, combined with a reliance on short-term funding, may therefore lead short-term interest rates – more than long-term rates – to spur risk-taking. Finally, low short-term interest rates make riskless assets less attractive and may lead to a search-for-yield by those financial institutions that have short time horizons.¹

Concurrent with these theoretical developments, recent empirical work has begun to study the impact of monetary policy on credit risk-taking by banks. Recent papers that in essence study the impact of short-term interest rates on the risk composition of the supply of credit follow a longstanding and wide literature that has analysed its impact on the aggregate volume of credit in the economy, and on the changes in the composition of credit in response to changes in the quality of the pool of borrowers.²

In Jiménez *et al* (2011), our co-authors and we use a uniquely comprehensive credit register from Spain that, matched with bank and firm relevant information, contains exhaustive loan (bank-firm) level data on *all* outstanding business loan contracts at a quarterly frequency since 1984:IV, and loan application information at the bank-firm level at a monthly frequency since 2002:02.

Our identification strategy consists out of three crucial components:

- (1) Interacting the overnight interest rate with bank capital (the main theory-based measure of bank agency problems) and a firm credit-risk measure
- (2) Accounting fully for both observed and unobserved time-varying bank and firm heterogeneity by saturating the specifications with time*bank and time*firm fixed effects (at a

quarterly or monthly frequency), and when possible, also controlling for unobserved heterogeneity in bank-firm matching with bank*firm fixed effects and time-varying bank-firm characteristics (past bank-firm credit volume for example).

(3) Including in all key specifications – and concurrent with the short-term rate – also the ten-year government-bond interest rate, in particular in a triple interaction with bank capital and a firm credit risk measure (as in (2)).

Spain offers an ideal setting to employ this identification strategy because it has an exhaustive credit register from the banking supervisor, an economic system dominated by banks and, for the last 22 years, a fairly exogenous monetary policy.

We find the following results for a decrease in the overnight interest rate (even when controlling for changes in the ten-year government-bond interest rate):

(1) On the intensive margin, a rate cut induces lowly capitalized banks to expand credit to riskier firms more than highly capitalized banks, where firm credit risk is either measured as having an *ex ante* bad credit history (*ie*, past doubtful loans) or as facing future credit defaults.

(2) On the extensive margin of ended lending, a rate cut has if anything a similar impact, *ie*, lowly capitalized banks end credit to riskier firms less often than highly capitalized banks.

(3) On the extensive margin of new lending, a rate cut leads lower-capitalized banks to more likely grant loans to applicants with a worse credit history, and to grant them larger loans or loans with a longer maturity. A decrease in the long-term rate has a much smaller or no such effects on bank risk-taking (on all margins of lending).

Our results in Jiménez *et al* (2011) suggest that, fully accounting for the credit-demand, firm, and bank balance-sheet channels, monetary policy affects the composition of credit supply. A lower monetary-policy rate spurs bank risk-taking. Suggestive of excessive risk-taking are their findings that risk-taking occurs especially at banks with less capital at stake, *ie*, those afflicted by agency problems, and that credit risk-taking is combined with vigorous liquidity risk-taking (increase in long-term lending to high credit risk borrowers) even when controlling for a long-

term interest rate.

In work with Vasso Ioannidou, we also investigate the impact of monetary policy on the risk-taking by banks (Ioannidou *et al* 2009). This study focuses on the pricing of the risk banks take in Bolivia (relying on a different and complementary identification strategy to Jiménez, et al 2011 and studying data from a developing country). Examining the credit register from Bolivia from 1999 to 2003, we find that, when the US federal-funds rate decreases, bank credit risk increases while loan spreads drop (the Bolivian economy is largely dollarised and most loans are dollar-denominated making the federal-funds rate the appropriate but exogenously determined monetary-policy rate). The latter result is again suggestive of excessive bank risk-taking following decreases in the monetary-policy rate. Hence, despite using very different methodologies, and credit registers covering different countries, time periods, and monetary policy regimes, both papers find strikingly consistent results.³

There are a number of natural extensions to these studies. Our focus on the impact of monetary policy on individual loan granting overlooks the correlations between borrower risk and the impact on each individual bank's portfolio or the correlations between all the banks' portfolios and the resulting systemic-risk impact of monetary policy. In addition, both studies focus on the effects of monetary policy on the composition of credit supply in only one dimension, *ie*, firm risk. Industry affiliation or portfolio distribution between mortgages, consumer loans and business loans for example may also change. Given the intensity of agency problems, social costs and externalities in banking, banks' risk-taking – and other compositional changes of their credit supply for that matter – can be expected to directly impact future financial stability and economic growth. We plan to broach all such extensions in future work.

Disclaimer: Any views expressed are only those of the authors and should not be attributed to the Banco de España, the European Central Bank, or the Eurosystem.

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¹ See Stiglitz and Greenwald (2003), Diamond and Rajan (2006), Rajan (2006), Allen and Gale (2007), Blanchard (2008), Borio and Zhu (2008), Acharya and Naqvi (2010), Adrian and Shin (2010), Diamond and Rajan (2011), Diamond and Rajan (forthcoming), and Gennaioli *et al* (2011).

² See Bernanke and Blinder (1992), Gertler and Gilchrist (1994), Bernanke *et al* (1996), Kashyap and Stein (2000), and Jiménez *et al* (forthcoming).

³ See also Gertler and Gilchrist (1994), Den Haan *et al* (2007), Adrian and Shin (2010), De Nicolò *et al* (2010), and Maddaloni and Peydró (2011).

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