Bank Risk-Taking and Monetary Policy

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Motivation

- The current crisis has shown that financial frictions are not only relevant for microeconomics but also for macroeconomics

- Commentators have argued that low levels of short-term interest rates encouraged high bank risk-taking prior to the crisis

- On the other hand, once the crisis started and bank risk appetite decreased dramatically, central banks lowered massively policy rates partly to support credit availability from banks

Question

- **Does monetary policy affect bank loan risk-taking incentives?**

- The research on the credit (and also on the classical) channel of monetary policy transmission is pretty much silent on the effect of monetary policy on the loan risk-taking of banks

- However, recent theoretical literature and some commentators argue that low monetary policy rates increase bank risk-taking incentives; in fact, some even argue that there may be a **risk-taking channel of monetary policy**

Purpose of this presentation

- to review briefly the theory behind bank risk-taking and monetary policy, and especially
- the identification challenges when testing this relationship
- to summarize very recent empirical evidence

Review of some theory

- There is little macro theory that analyzes the impact of monetary policy on risk-taking
- Rajan (2005) and some papers by Borio (notably Borio and Zhu, 2007) have argued that low levels of monetary policy rates may create excessive risk-taking by financial institutions
- The research on the classical channel of monetary policy is silent
- The research on the credit channel is pretty much silent:
  - Bank lending channel addresses changes in loan supply for a given quality of the borrower
  - The (borrower) balance-sheet channel addresses loan supply changes due to changes in borrowers' net worth, but where bank risk-appetite is unchanged

Some mechanisms (1)

- Low (risk-less) rates increase **the attractiveness of risky assets** in a mean-variance portfolio framework or in habit formation models a la Campbell and Cochrane (1999)
- Low short-term interest rates may decrease **banks' intermediation margins** (profits), thus reducing banks' charter value, in turn increasing the incentive for risk-taking (Keeley, 1990).
- Low short-term interest rates by increasing the **yield curve slope** may induce banks to increase loan supply and risk-taking (Adrian and Estrella, 2007)
- An environment in which central banks focus only on price stability may result in monetary policy rates which are *too low*, fostering in turn **bubbles in asset prices and credit** (Borio 2003; Borio and Lowe, 2002).

  → in the context of the current crisis, Acharya and Richardson (2009) argue that the *fundamental causes* of the crisis were the **credit boom** and the **housing bubble**. For Taylor (2007), these were largely spurred by *too low* monetary policy rates

Some mechanisms (2)

- Low rates increase risk through the severe **moral hazard problems** present in banking: the **abundant associated liquidity volume** increases the incentives for bank risk-taking (Allen and Gale, 2007)
- The level of **overnight rates is a key driver of bank liquidity** since banks increase their balance sheets (leverage) when financing conditions through short-term debt are more favourable (Adrian and Shin, 2009)
- Low levels of both short- and long-term interest rates may induce a **search for yield** from financial intermediaries due to moral hazard problems (Rajan, 2005; Blanchard, 2008)
- Low short-term rates also soften lending standards: by abating adverse selection problems in credit markets increasing in turn **bank competition** (Dell'Ariccia and Marques, 2006); by reducing the threat of **deposit withdrawals** (Diamond and Rajan, 2006); and by improving banks' net worth increasing in turn **leverage** (Shin, 2009a; Geanakoplos, 2009)
- Current low short-term interest rates may signal low short-term interest rates in the near future, thus further increasing loan risk-taking by banks (Diamond and Rajan, 2009b)

Identification challenges

- Question: Does monetary policy rates affect risk-taking incentives by banks?

- Main identification challenges:
  - Reverse causality
  - Changes in the pool of borrowers (loan demand)
  - The balance-sheet channel
  - Lack of exhaustive datasets on loans

Reverse causality

- The central bank lowers policy rates in the downturn where risk is typically higher, i.e. right now in this crisis

- Solutions:
  - Use an instrument for monetary policy
  - Use not only ex-post measures of risk, but also ex-ante lending standards

The pool of borrowers (loan demand)

- Connected with the previous identification challenge: in times of lower policy rates, the pool of borrowers (loan demand) could be potentially worse
- It a weaker identification problem than the loan supply/demand issue in the credit channel
- Also, e.g. with Stiglitz and Weiss (1981) models, worse pool of borrowers would be when rates are *higher*, not lower

- Solution:
  - Exhaustive lending standards & borrower conditions

The balance-sheet channel

- When rates are lower, net worth (e.g. collateral value) is generally higher, so the actual risk that the bank takes may not increase

- Solution:
  - Collateral values and other precise firm and loan measures
  - Exploit interactions of monetary policy with proxies of bank moral hazard: e.g. bank capital or banking supervision standards

Exhaustive loan information

- The effect on risk of new loans may be different from the effect on outstanding loans
- Monetary policy also affects the choice between loans to smaller and larger firms
- …

- Solution:
  - Exhaustive credit registers
  - The use of detailed dataset on lending standards

Papers: datasets and instruments

- **Credit register from Spain, 1984-2008:** Jiménez, G., Ongena S., Peydró J.-L. and J. Saurina, "Hazardous Times for Monetary Policy: What do Twenty-Three Million Bank Loans Say About the Effects of Monetary Policy on Credit Risk?," (presented @ *American Finance Association Meetings*, 2009)

- **Credit register from Bolivia, 1999-2003:** Ioannidou, V., Ongena, S. and J.-L. Peydró, "Monetary Policy, Risk-Taking and Pricing: Evidence from a Quasi Natural Experiment," (presented @ the *2009 NBER Summer Institute)*

- **Euro Area Bank Lending Survey, 2002:2009:** Maddaloni, A., J.-L. Peydró, and S. Scopel, "Does Monetary Policy Affect Credit Standards?" presented @ the *2008 CEPR Summer Institute Conference;* Maddaloni, A. and J.-L. Peydró, "Bank Risk-Taking, Securitization, Supervision, and Low Interest Rates: Evidence from Lending Standards," (presented @ *the Review of Financial Studies Conference on the Crisis*, 2009)

Basic result

- Low short-term (monetary policy) interest rates increase banks' loan risk appetite
  - Ex-ante risk: softening of standards:
    - more lending to subprime borrowers, or borrowers with worse or no credit history,
    - reduction of spreads for both average and riskier borrowers, of covenants, increase in loan volume, maturity …
  - Ex-post risk: higher (probability or time to) default
  - Results for Spain, Bolivia, Euro Area and USA
  - Both for loans for businesses and households
  - Both for level (or changes) of short-term rates (controlling for GDPG and inflation), or for policy rates minus implied-Taylor-rule rates

Robustness

- Control for macro, bank, firm, bank-firm and loan characteristics

- We rule out alternative hypotheses of
  - demand driven
  - collateral value
  - reverse causality
  - alternative channels

Dynamics (1)

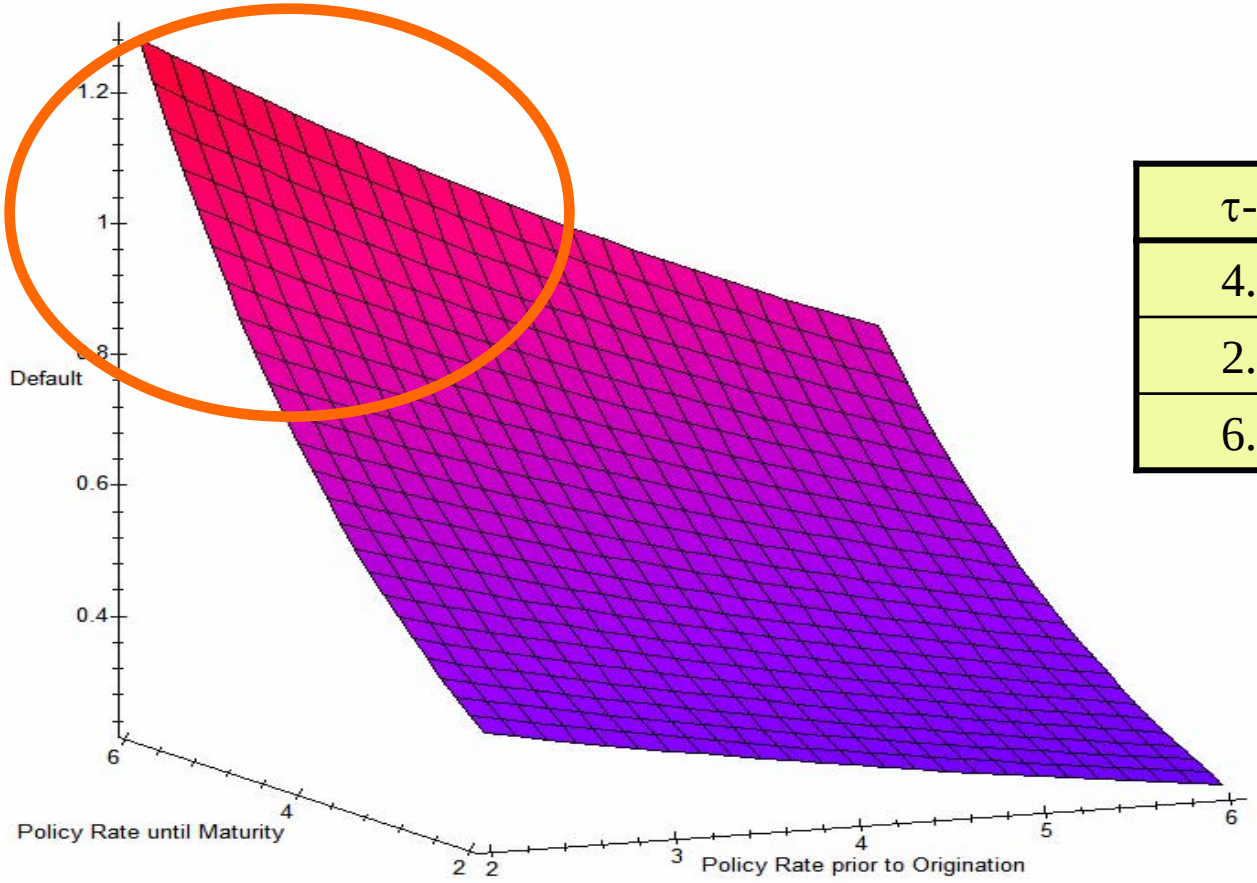
- *Too low for too long* rates increase further loan risk-taking
  - the effect is economically stronger for mortgage loans
  - too low for too long rates are defined as the number of consecutive periods in which short-term rates are lower than Taylor-rule implied rates
  - results for both Euro Area

Dynamics (2)

- Low monetary policy rates increase the risk of new loans (risk-taking) but decrease the risk of outstanding loans
  - low short-term rates by increasing the value of bank capital through the reduction of the credit risk of outstanding loans make banks more willing to take new loan risk (Adrian and Shin, 2009; Shin, 2009; Geanokoplus, 2009; Borio and Zhu, 2008)

Dynamics (2)

- Quarterly probability of default for loan with mean maturity of 5 quarters and otherwise mean characteristics



τ-1	τ+T-1	PD
4.1	4.1	0.6
2.0	6.2	1.4
6.2	2.0	0.4

Implication for financial stability

- Based on the previous two results:

  →the highest credit risk comes after a period of too low for too long monetary policy rates *followed by* a rapid and significant increase in policy rates

Banks with higher moral hazard problems

- The impact of low short-term rates on loan risk-taking is higher for banks more subject to moral hazard problems, proxied e.g. by **lower bank capital ratios**

- Not only do these banks take on higher risk (measured ex-ante or ex-post) when short-term rates are low, but they reduce loan spreads!

- These results suggest a link between low short-term rates and excessive risk-taking by banks

Securitization

- The impact of low short-term rates on loan risk-taking is amplified by **high securitization activity**
  - economic effects stronger **for loans for households**
  - the risk of collateral and borrower may matter less because banks **transfer the risk off balance sheet**, especially loans for households
  - margins on loans are **softened for riskier households but not for riskier businesses**
  - the competitive pressures arising from non-banks and market financing (the **"shadow-banking system"**) are important for inducing banks to take more risk
  - **balance-sheet position of banks** is also very important
  - These results are for Euro Area data, but the basic result also holds for **USA, 1991-2009**

Banking supervision regulation

- The impact of low short-term rates on loan risk-taking is amplified by **weaker banking supervision**
  - Stringency of supervision standards for bank capital (from Laeven and Levine, 2008)

Short vs. long-term interest rates

- **Short-term** interest rates matter more for loan risk-taking than **long-term** interest rates
  - directly (i.e. level effect)
  - in conjunction with securitization and banking supervision

Conclusions

- Alan Blinder (1998): "*Central banks generally control only* ***the overnight interest rate, an interest rate that is relevant to virtually no economically interesting transactions***. *Monetary policy has important macroeconomic effects only to the extent that it moves financial market prices that really matter - like* ***long-term interest rates***, *stock market values and exchange rates*"

- In macroeconomics, the **loan supply side and financial intermediation have been mainly considered as not very relevant**, but some papers based on financial frictions argue that short-term rates may change bank loan supply and risk-taking

- With very exhaustive datasets on loans and instrumenting monetary policy rates, we find robust evidence suggesting that short-term rates affect bank risk-taking incentives
  - The strength depends on the banking characteristics and supervision
  - Long term rates have a weaker direct and indirect effect on risk-taking