EUROPEAN CENTRAL BANK

EUROSYSTEM

Discussion of Jose Berrospide & Rochelle Edge's "The effects of bank capital on lending: What do we know? And, what does it mean?"

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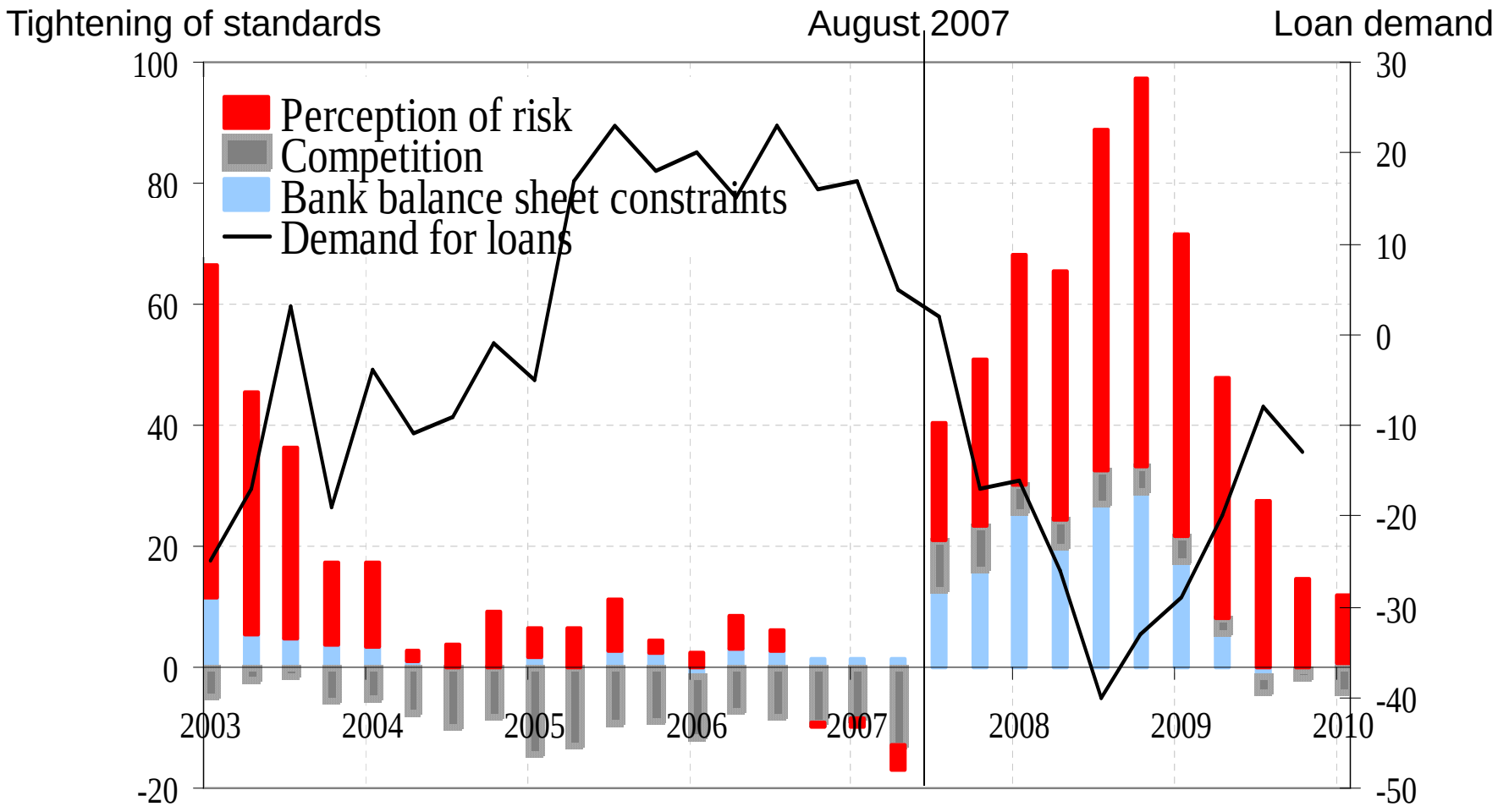
These are my views and do not necessarily reflect those of the ECB / Eurosystem

A key question

Does bank capital affect bank lending behaviour?

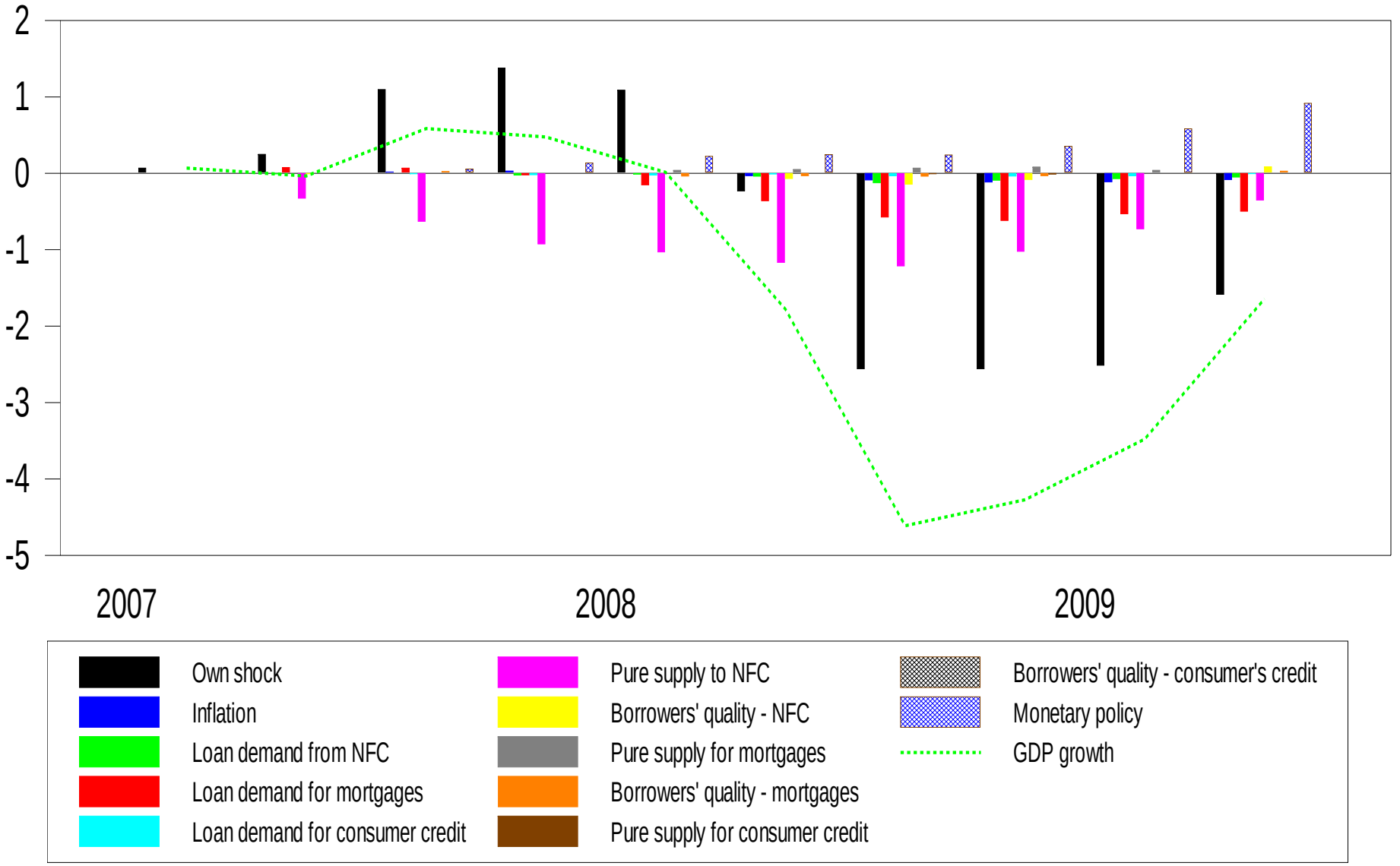
- **Academically:**
  - **In banking: a key issue is how bank capital affects lending behaviour, both credit supply volume and composition/risk-taking (see e.g. Freixas and Rochet, 2008; Tirole, 2006)**
  - **In macro: recently, bank capital is gaining importance in macro models (see e.g. in the very recent Handbook of Monetary Economics the papers by Gertler and Kiyotaki, 2010; Boivin et al., 2010; and Adrian and Shin, 2010)**
- **For policy:**
  - **The potential credit crunch and capital crunch in the current crisis, and the massive bailouts**
  - **Basel II-III: the effects of higher capital requirements on economic activity through bank lending**

Bank capital seems to matter



Euro Area Bank Lending Survey – European Central Bank / Eurosystem
Lending standards to firms – Average of the (12 initial) Euro area countries

Bank capital crunch more important than firm loan demand and risk in the current crisis



Ciccarelli, Maddaloni and Peydró, 2010

Does bank capital matter for lending?

- **Bank capital seems to matter:**
  - **Macro data:**
    - **The Bank Lending Survey and a BVAR analysis using GDP, prices, overnight rates, and loan demand, risk and supply from the BLS suggest that bank capital & liquidity are key for credit supply (Ciccarelli, Maddaloni and Peydró, 2010)**
  - **Micro data:**
    - **E.g. loan applications from Germany: shocks to capital stemming from subprime exposure from German Landesbanks implied an important credit supply reduction (see Puri, Rocholl, and Steffen, JFE, 2010).**
    - **Bailouts: Japanesse experience (Gianetti and Simonov, 2010): higher credit after bailouts and higher firm investment**
- **However**

Summary of Berrospide and Edge (2010)

The effects of bank capital on lending

- **What do we know?**
  - Using U.S. micro and macro data, Jose and Rochelle find modest effects of bank capital on lending. Basically, statistically speaking bank capital is very significant, but economically NO!
- **What does it mean?**
  - That in the current crisis, the bank "capital crunch" is not important to explain the credit decline
  - Not to expect much of bailouts (e.g. TARP in U.S., say FROB in Spain, …)
  - And for banking and macro-banking academic papers, bank capital is not an important channel

My main comment to the paper

Identification of the causal impact of bank capital on the supply of credit

- **In my opinion, the data + experimental setting of the paper is not sufficiently good to identify the *causal impact***
  - **My critique is not only to this paper, but, in general, to the papers that use "micro" data at the bank or firm level to analyze issues of supply credit, one needs to use *loan (i.e. firm-bank) level data***
- **If that was the case, one should be extremely cautious in deriving policy implications from this paper (e.g. bailouts) and for testing academic papers (one should be careful in diminishing the importance of the bank capital channel)**
- **Nonetheless, the paper is very interesting, very rich in results and very useful to understand the relationship between bank capital and lending**

What's the identification challenge?

- **The main empirically challenge is to identify the causal impact of a bank capital shock on loan supply**
  - **Credit demand affected: Capital shocks are often correlated with changes in the economic environment. If e.g. economic outlook worsens, bank capital decreases, but also firms' demand for credit drop since there is reduced need for investment**
  - **Quality of the borrower pool changes: In worse times, moreover, firms might become riskier and have lower net worth, so banks face a lower quality pool of borrowers overall**
  - **Market adjustment (General vs. partial equilibrium effects): A credit supply reduction in some banks would only translate into binding credit constraints, if firms cannot compensate with other, less affected, banks**
  - **This explanation is mainly on the time series, but one can get theories for the cross-sectional explanation: e.g. Diamond and Rajan (JPE 2001): banks should have lower capital ratios with worse borrowers to discipline them better. Hence, the net worth of the borrower (the agency cost of lending) is related to the net worth of the bank**

A way of identification

- Bernanke & Lown (BPEA 1991) define a credit crunch as "a significant leftward shift in the supply curve for loans, holding constant both the safe real interest rate and the quality of potential borrowers"
- Kwaja and Mian (AER 2008): analyze credit supply at the firm-bank level using firm fixed effect and one shock (coming from a nuclear threat; DiD): compare lending to the same firm from bank with positive vs. negative shock
- Jiménez, Ongena, Peydró and Saurina (2010): to analyze the credit channel of monetary policy we use firm*time fixed effects to control for unobserved heterogeneity in firm loan demand and risk
  - We find that bank level regressions underestimate the bank lending channel (e.g. Kashyap & Stein AER 2000), hence there is a non-random matching problem between borrowers and lenders and, hence, regressions at the firm or bank level are not well specified
  - We analyze whether firms borrowing more from affected banks can substitute credit from other, less affected, banks ("general equilibrium effects"). One cannot analyze the substitution effect with bank level data
  - For a capital & liquidity shock, see Jiménez, Mian, Peydró and Saurina (coming soon)

Summing up

- Question: the impact of bank capital on bank lending behaviour (supply)
- Problems of identification:
  1. Bank capital is endogenous, one needs a shock (unfortunately Basel I and II came in recessions and adopted at the same time within a country). So one needs a bank capital shock
  2. Bank capital may be correlated with the quality, risk and demand of borrowers, so there is a matching issue. One needs loan (firm-bank) data
  3. This conference is on macro-prudential, so we need to analyze the market adjustment, ie the general equilibrium effects, so one needs firm & firm-bank level data (see e.g. Iyer, Lopes, Peydró & Schoar, 2010)
- Papers using bank level data (e.g. this one or Kashyap and Stein AER 2000) at least miss the second and third identification problems
- Hence, these papers cannot pin down supply of credit and in general can only find correlations, not causality
- Unfortunately, the very good datasets (credit registers + firm + bank level datasets) are only in very few countries such as Spain, Portugal, Bolivia, Pakistan, … not in U.S. and this paper is about U.S.

Other suggestions (2)

- **I would introduce interactions between the business cycle (economic & monetary conditions) and bank capital to study whether the effect of bank capital on lending is stronger in bad times vis-à-vis good times**
  - **In e.g. Jiménez, Ongena, Peydró and Saurina (2010), we find that conditioning on several loan applications of a firm in a month, banks with lower capital on average grant more loans, but in bad times it happens the opposite!**
  - **Bernanke & Lown (1991) may find stronger effects than Berrospide and Edge because, I think, B&L analyze the impact of bank capital on credit supply in bad times**
  - **Adrian and Shin (Handbook of ME, 2010): effects are different depending on the business cycle**
  - **You may still find a small effect in loan volume in bad times due to loan ever-greening (evidence e.g. in Italy and Japan): because of fear of loan defaults, banks renew their loans with their weakest borrowers (it's key to analyze the extensive vs. intensive margin, and loan composition, not only volume)**

Other suggestions (3)

- **Time fixed effects at least once to truly analyze the cross-sectional implications of bank capital on lending (notice that is impossible to control for all the aggregate "demand factors" with current GDP, prices… e.g. expectations also matter etc)**
- **Bank fixed effects once to see the "within" results: how changes in capital in *a* bank affect *its* lending (important given the bank omitted variables)**
- **Why don't you control for ln(bank total assets)?**
- **It would nice to see the effect of capital if one does not put net charge-offs in since it should be correlated with capital**
- **Is it possible to control for drawing down of committed loans/ credit lines?**
- **What about securitization?**
- **Is capital to assets well measured with all the off-balance-sheet items?**
- **I would put more citations in such as e.g. Peek and Rosengren (AER 1997) for empirical and Diamond and Rajan (JPE, 2001) for theory…**

Summary

- The paper is very interesting, very rich in results and very useful to understand the relationship between bank capital and lending
- Moreover it analyzes almost 20 years of data of the most important country in the world – U.S.
- And finds a weak relationship between total lending and bank capital
- My main discussion point is to say that causality and identification of credit supply may not be perfectly achieved because of the data available