Macroprudential policy measures: 
real economy impact and 
interaction with monetary policy*

*The views expressed here are of the authors, not necessarily those of the European Central Bank
Technical paper on the interaction of monetary and macroprudential policy under the Research Task Force (RTF)

Main tasks:
- showcase existing macroeconomic models that can be used to analyse the macroeconomic impact of macroprudential measures
- examine how macropru interacts with monetary policy

Main questions of the Paper

1. The transmission mechanism of a capital requirement increase: comparing the medium-scale macro models at the ECB

2. How is the transmission mechanism of a capital requirement increase affected by the conduct of monetary policy?

3. How is the transmission mechanism of monetary policy affected by bank leverage and the conduct of macroprudential policy?
Main findings Q1

- Long run impact depends on the health of the banking system (benefits of higher capital requirements)

- Short run impact is negative in all models: output falls by 0.15-0.35% (bank capital channel)

- Short run bank lending impact moderated by:
  - voluntary buffer adjustment
  - sticky loan rates
  - lower bank debt funding costs
  - dividend cuts

- Output impact of lending decline moderated by ability of corporate sector to obtain non-bank financing

- 2 country model: capital requirements create spillovers and have a heterogeneous impact across countries
Main findings Q2

- A strong Taylor rule inflation response reduces the macroeconomic impact of higher capital requirements in all the models
  - maintains aggregate demand as lending and investment fall

- In an EMU setting, larger countries see a smaller fall in activity
  - larger share in EMU-wide inflation so a stronger monetary reaction
Main findings Q3

- Monetary policy stronger under high financial system leverage
  - bank capital channel is stronger

- Demand shock impact is the same in normal times
  - bigger direct shock effect but more powerful monetary offset

- ... but larger impact at the ZLB with a levered financial system

- Asset purchases more effective with undercapitalized banks
  - bank risk-taking strongest when default risk is high

- Optimal macroprudential policy increases r* when banks are undercapitalized and reduces it when banks are highly capitalized.
The transmission mechanism of a capital requirement increase: comparing the medium-scale macroprudential models at the ECB
**Model characteristics**

<table>
<thead>
<tr>
<th>Model characteristics</th>
<th>NAWM II</th>
<th>DKR</th>
<th>DJP</th>
<th>3D</th>
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<tbody>
<tr>
<td><strong>Key features of the banking framework</strong></td>
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<tr>
<td>Bank failures</td>
<td>no</td>
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<td>yes</td>
<td>yes</td>
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<tr>
<td>Issue new equity/cut dividends</td>
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<td>yes</td>
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<tr>
<td>Change voluntary capital buffers</td>
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<tr>
<td>Non-bank funding sources for firms</td>
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<tr>
<td><strong>Nominal rigidities</strong></td>
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<tr>
<td>Rigid prices</td>
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<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Rigid wages</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Rigid nominal interest rates</td>
<td>yes</td>
<td>yes</td>
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</tr>
</tbody>
</table>
Banks’ capital ratios and total lending

Capital ratio

Total loans

Macroprudential policy measures
Investment and consumption

Business investment

Total consumption

Macroeconomic policy measures
Output and inflation

GDP

Inflation

Macroprudential policy measures
Sensitivity 1: higher equity issuance costs

Macroprudential policy measures
Sensitivity 2: higher bank risk

**GDP**

**Inflation**

Macroprudential policy measures
2 country DKR model: 1pp increase in CR

- Domestic real GDP
- Foreign real GDP
- Domestic credit
- Foreign credit
- Policy rate
- Domestic inflation

Macroprudential policy measures
How is the transmission mechanism of a capital requirement increase affected by the conduct of monetary policy?
The conduct of monetary policy
How is the transmission mechanism of monetary policy affected by bank leverage and the conduct of macroprudential policy?
Three key transmission channels

1. The bank capital channel, bank leverage and monetary policy
   - Variants of the GK model

2. The bank risk taking channel and the impact of asset purchases
   - Variant of the DJP model extended for unconventional monetary policy

3. Macroprudential policy, endogenous risk, precautionary savings and the natural real interest rate
   - Continuous time GK model with endogenous risk
How does financial system leverage affect the response of the economy to shocks?

   - monetary shock more amplified when banks are levered
   - greater ability to offset demand shocks in normal times
   - larger impact of demand shocks at the ZLB

   - a version of the GK model with a shadow banking sector
   - a levered shadow banking system amplifies shocks at the ZLB
Monetary policy has a larger impact at higher bank leverage

**Figure:** Response to a monetary policy shock
No change in the impact of a demand shock

Figure: Response to a demand shock
... unless we hit the ZLB

Figure: Response to a demand shock at the zero lower bound
Levered shadow banks amplify demand shocks at the ZLB

**Introduction**

- Model Setup
- Model Dynamics
- ZLB Analysis
- Robustness
- Conclusion

**ZLB Episodes for different Credit Economies**

- Zero Lower Bound Unconstrained

**Output**

- Zero Lower Bound

**Aggregate lending**

- Zero Lower Bound

**Commercial bank lending**

- Zero Lower Bound

**Investment fund lending**

- Zero Lower Bound

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Figure: Horizontal axes show periods in quarters, vertical axes are percentage deviations from steady state.

Interest rates

Falk Mazelis (ECB)

Shadow Banking Regulation and the ZLB

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Macroprudential policy measures

23 / 29
How does macroprudential policy affect the transmission of central bank asset purchases?

- Bank risk taking channel amplifies the impact of asset purchases
- Stronger when banks have a high failure risk
Non-standard monetary policy: comparing weakly capitalised and well-capitalised banking sector

- GDP
- Inflation rate
- Loans

More

Macroprudential policy measures
Implications of macro-prudential policy for the frequency, duration, and intensity of liquidity traps

- Macroprudential policy affects endogenous risk and hence $r^*$
- Bad times: less endogenous risk hence higher $r^*$
- Good times: binding capital requirements hence lower $r^*$
- Liquidity trap episodes less severe but more frequent
Figure: Socially Optimal Macro-prudential Policy.
Macroprudential policy and the neutral interest rate

**Figure:** Neutral Rate under Socially Optimal and Laissez-faire Macro-prudential Policy.
Modest ST and LT impact from higher capital requirements.

LT impact depends on bank riskiness
- could be positive if banks are under-capitalized

ST impact depends on:
- the ability of banks to adjust in ways other than cutting loans
- the ability of firms to substitute away from bank loans
- the reaction of monetary policy

In an EMU setting, larger countries:
- experience smaller ST GDP declines
- generate greater spillovers to other countries

Risky/levered banks amplify the impact of monetary policy

Optimal macroprudential policy changes endogenous risk and affects the natural real interest rate
Backup slides
Non-standard monetary policy: comparing weakly capitalised and well-capitalised banking sector