Monetary Policy during Financial Crises: Is the Transmission Mechanism Impaired?

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Objective

• Study monetary policy transmission during financial crises

• Observation during and after the financial crisis:
  – Highly expansionary monetary policy
  – Unexpectedly low GDP growth rates

• Two Possible explanations:
  1. Negative impact of the crisis was underestimated
  2. Monetary policy is less effective during and after financial crisis

• Policy relevance
  – If monetary policy is less effective in increasing output:
    → need larger policy actions → danger of causing financial instability
Theoretical background: recession vs. expansions

Differences in monetary policy transmission during recessions and expansions

• Larger effect on output during recessions:
  – Credit constraints, financial accelerator: reduce external finance premium, lower credit constraints

• Smaller effect on output during recessions:
  – Loss in confidence → low rates may not stimulate borrowing, investment, and spending on consumer durables
Theoretical background: financial crises vs. normal recessions

• Financial accelerator might be even more important than in normal recessions (Bernanke and Gertler, 1995)

• Loss in confidence and increases in uncertainty might be larger than in normal recessions (Bloom, 2009)

• Period after financial crisis is characterized by deleveraging and balance sheet adjustments → low credit demand and supply (Reinhart and Rogoff, 2009; Bech et al., 2014)

• Firms adjust prices more often → effects on output smaller (Vavra, 2014)

• Open economies: an interest rate cut could even lead to a tightening of collateral constraints via a depreciation and a currency mismatch between assets and liabilities (Christiano et al., 2004)
Theory: Summary

- Monetary policy is more effective in financial crisis if it can ease malfunctioning of financial markets for example by loosening credit constraints or restoring confidence.

- Monetary policy is less effective in financial crisis if deleveraging and uncertainty dominate and make the economy less interest rate responsive.
Empirical papers

• Monetary policy more effective during recessions than expansions:
• Monetary policy less effective during recessions than expansions:
  – Tenreyro and Thwaites (2013) and Caggiano et al. (2014)

• Literature on financial crises focusses on the effects of the stance of monetary policy during the downturn on the recovery:
  – Kannan et al. (2009): Duration of recessions longer than in normal times
  – Bech et al. (2014): Recovery growth rates smaller than in normal recessions

• Other papers focus on financial stress or uncertainty and find different results
Data

• Empirical problem:
  – Financial crises are rare events
  → Use a large panel to achieve a sufficient number of observations

• Sample:
  – 1984Q1-2013Q4 (unbalanced panel)
  – 21 OECD + 24 emerging markets
  – Core data on GDP, CPI, short-term interest rates
  – Additional data:
    • Bank credit to private sector (BIS)
    • House prices (Dallas Fed)
    • Share prices (OECD)
    • Consumer confidence (national indicators)
    • Exchange rates (OECD)
    • Exchange rate regime (Corsetti et al., 2012)
    • Shadow interest rate (Atlanta Fed)
Data on financial crises

• Dummy variable from the systematic banking crises data set of Laeven and Valencia (2013)
• Data goes through 2011. We updated the data to 2013
• Definition of a financial crisis:
  1. Significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and/or bank liquidations)
  2. Significant banking policy intervention measures in response to significant losses in the banking system
• Endpoint of crisis:
  – Real GDP growth and real credit growth are positive for at least two consecutive years
  – Maximum length: 5 years
• Additional recession indicator to divide financial crises into recessions and recoveries
## Descriptive statistics

<table>
<thead>
<tr>
<th></th>
<th>OECD</th>
<th>Emerging Markets</th>
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<tbody>
<tr>
<td>Number of countries</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>Number of financial crises</td>
<td>20</td>
<td>27</td>
</tr>
<tr>
<td>thereof Great Recession</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>share of recession quarters</td>
<td>48%</td>
<td>30%</td>
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<tr>
<td>average length of financial crisis</td>
<td>18 quarters</td>
<td>11 quarters</td>
</tr>
<tr>
<td>Number of recessions</td>
<td>85</td>
<td>79</td>
</tr>
<tr>
<td>average length</td>
<td>5 quarters</td>
<td>4 quarters</td>
</tr>
</tbody>
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Methodology

- Interacted Panel VAR (IPVAR)
- Reduced form without interaction:
  \[ y_{it} = A_{0,i} + A(L)y_{i,t-1} + \varepsilon_{i,t} \]
- Define financial crisis indicator as dummy variable:
  \[ D_{it}^{FC} = \begin{cases} 1: & \text{financial crisis} \\ 0: & \text{no crisis} \end{cases} \]
- Reduced form with interaction:
  \[ y_{it} = A_{0,i} + A_{0,i}^{FC} D_{it}^{FC} + A(L)y_{i,t-1} + A(L)^{FC} y_{i,t-1} D_{it}^{FC} + \varepsilon_{i,t} \]
- Cholesky identification
- OLS estimation, fixed effects, two lags
- Additional dummies to differentiate between recessions and expansions within a financial crisis
Main results: OECD countries

Financial Crisis

No crisis

<table>
<thead>
<tr>
<th>GDP</th>
<th>Financial Crisis</th>
<th>No crisis</th>
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<tr>
<td>CPI</td>
<td>Financial Crisis</td>
<td>No crisis</td>
</tr>
<tr>
<td>Interest rate</td>
<td>Financial Crisis</td>
<td>No crisis</td>
</tr>
</tbody>
</table>
Main results: OECD countries

- FC + Rec.
- FC + Exp
- No FC + Rec
- No FC + Exp
Main results: OECD + emerging economies

- FC + Rec.
- FC + Exp
- No FC + Rec
- No FC + Exp

GDP vs. time (5, 10, 15, 20 years)
Transmission channels: Consumer confidence + share prices

Financial Crisis

No crisis

Consumer confidence

Share prices
Transmission channels: Consumer confidence + share prices

FC + Rec.    FC + Exp    No FC + Rec    No FC + Exp

Consumer Confidence

Share Prices
Transmission channels: Credit
Robustness Checks

• Methodology: Mean group estimator

• Sample: Leaving out the Great Recession

• Zero lower bound: Shadow interest rate, EONIA, leaving out countries affected by the zero lower bound

• Transmission:
  – Change in monetary policy rule
  – Housing prices
  – Exchange rates
  – Exchange rate regime
Conclusion

- Monetary policy is more effective during the recessionary period of a financial crisis
  - Monetary policy can restore consumer confidence
- Monetary policy is less effective during the (less volatile) recovery period of a financial crisis
  - Monetary policy has no effect on confidence nor on GDP; deleveraging dominates
- Credit, housing prices, exchange rates can at most partially explain differences in transmission between the different regimes
- Outlook:
  - Control for fiscal policy
  - Control for openness
  - Sign restrictions: more general monetary policy shock (zero lower bound)
Appendix