DO LOW INTEREST RATES SOW THE SEEDS OF FINANCIAL CRISES?

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A “Risk Taking Channel” of Monetary Policy?

• Thesis: Low interest rates encourage excessive risk taking.
  – Low federal funds rate in 2003-04 coincided with a housing bubble, lax lending standards, and were followed by the 2007-09 financial crisis.
  – Some empirical evidence that low rates are associated with more bank risk taking.
    • Hard to know if it is excessive.
  – Rajan: Asset managers ‘reach for yield’ when safe interest rates are low.
    • Shouldn’t financial intermediaries always maximize profits?
    • Could reflect agency problems (Allen and Gale).
A “Risk Taking Channel” of Monetary Policy?

• Do real rates or nominal rates matter?
  – Real federal funds rate in 2003-04 was not unusually low by historical standards.

• If low nominal rates are the problem, this has big implications for monetary policy.
  – Makes a low inflation target less desirable.
  – Do we want to live in that world?

• If real rates matter, there is little monetary policy can do in the long run.
A “Risk Taking Channel” of Monetary Policy?

• More theoretical analysis is very welcome.
A real DSGE model with

1. Financial Intermediation
2. Deposit Insurance $\rightarrow$ Moral hazard of excessive risk taking
3. Monetary policy
4. Capital Regulation
Financial Intermediaries

• Assets:
  – Physical capital (‘small business loans’)
    • High or low risk (random)
  – Government bonds (riskless)
    • Can be sold – or used as collateral in repo market – when banks find out their risk type to buy or sell more physical capital.

• Liabilities
  – Equity (limited liability)
  – Deposits (insured)
Monetary Policy

• Governments sets a real interest rate on government bonds and then satisfies demand at that rate.
  – Deposits proceeds in the banks net of issuance cost.
  – Pays transfers/taxes and deposit insurance payments, if any.
## Technology

### Single aggregate TFP+capital depr. shock:

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low risk financial (85%)</td>
<td>0.93</td>
<td>0.94</td>
</tr>
<tr>
<td>Nonfinancial corporate</td>
<td>0.92</td>
<td>0.96</td>
</tr>
<tr>
<td>High risk financial (15%)</td>
<td>0.68</td>
<td>1.00</td>
</tr>
</tbody>
</table>

- Labor supply is fixed for each technology.
- Capital is mobile between periods.
- Within period, only between banks using repos, *before* knowing the aggregate shock.
Monetary Policy

• Governments sets real interest rate on government bonds and then satisfies demand at that rate.
  – Deposits proceeds in the banks net of issuance cost.
  – Pays transfers/taxes and deposit insurance payments, if any.

• Government bonds have option value because they can be used in repo market.
  • Option value is nonnegative, so there is a limit to what the government can do to the real rate: \( R^B \leq R^D \)
Social Planner Solution

• Within-period reallocation with persistent technology shocks (and only then?):
  – Transfer capital to high risk projects in good state.
  – Transfer capital to low risk projects in bad state.

• Conditional means of projects are different!
Optimal Policy

• Competitive Equilibrium: Incentive to reallocate too much to the high-risk banks due to moral hazard.

• Solution: Restrict the supply of bonds to limit repo transactions.
  – I.e. **lower** the interest rate to restrict risk taking!
  – Collateral effect of government bonds outweighs portfolio composition effect on risk-taking.
  – Different from open market operations.
Further Results

• Permanently higher interest rates result in more risk taking.
  – Comment: show effect of higher interest rate in each state.

• Capital requirement (almost) eliminates excessive risk taking.
  – There is no cost of imposing a capital requirement, so seems to be the solution.
  – Would like to see welfare numbers for this.
Further Results

• With mispriced collateral, created by banks, lower interest rates can lead to excessive risk taking.
  – Separate mispricing from private issuance.
Comments

• Tight connection between conditional mean and condition variance.
  – What happens if you break that link?

• Repos are a small part of banks’ balance sheets, but very volatile.

• Most I-banks borrow. Are high-risk banks investment banks?

• Most commercial banks lend. Are low-risk bank commercial banks?
Investment Banks’ Leverage and Asset Growth
Adrian and Shin (2010)

Figure 2.5: Total Assets and Leverage of Security Brokers and Dealers
Investment Banks’ Leverage and Asset Growth
Adrian and Shin (2010)

Figure 2.4: Total Assets and Leverage of Commercial Banks
## Interest Rates and Balance Sheet Composition

<table>
<thead>
<tr>
<th>Growth Contribution</th>
<th>Level</th>
<th>Slope</th>
<th>$R^2$</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>$(\Delta LNS)/A$</td>
<td>0.973*</td>
<td>-0.836**</td>
<td>0.116</td>
<td>0.637</td>
</tr>
<tr>
<td></td>
<td>(0.514)</td>
<td>(0.384)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$(\Delta SEC)/A$</td>
<td>0.823</td>
<td>0.464</td>
<td>0.110</td>
<td>0.234</td>
</tr>
<tr>
<td></td>
<td>(1.267)</td>
<td>(0.899)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$(\Delta FFSRRP)/A$</td>
<td>-3.646***</td>
<td>-3.540***</td>
<td>0.215</td>
<td>0.033</td>
</tr>
<tr>
<td></td>
<td>(1.019)</td>
<td>(0.560)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$(\Delta BALDEP)/A$</td>
<td>-0.556***</td>
<td>-0.499***</td>
<td>0.118</td>
<td>0.012</td>
</tr>
<tr>
<td></td>
<td>(0.149)</td>
<td>(0.099)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$(\Delta COREDEP)/A$</td>
<td>-2.152**</td>
<td>-0.729</td>
<td>0.116</td>
<td>0.432</td>
</tr>
<tr>
<td></td>
<td>(1.045)</td>
<td>(0.748)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$(\Delta TIMEDEP)/A$</td>
<td>0.037</td>
<td>-0.721***</td>
<td>0.121</td>
<td>0.281</td>
</tr>
<tr>
<td></td>
<td>(0.321)</td>
<td>(0.192)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>$(\Delta MNGLIAB)/A$</td>
<td>0.465</td>
<td>0.447*</td>
<td>0.085</td>
<td>0.167</td>
</tr>
<tr>
<td></td>
<td>(0.366)</td>
<td>(1.717)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** Robust standard errors in parentheses; *, **, *** denotes statistical significance at the 10-, 5-, and 1-percent level, respectively.