Are Bank Capital Ratios Pro-Cyclical? New Evidence and Perspectives

Discussion- Nicolas Coeurdacier - SciencesPo & CEPR

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Capital ratios

Banks balance sheet

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
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</thead>
<tbody>
<tr>
<td>$A =$ Assets (Exposure)</td>
<td>$E =$ Tier I Capital</td>
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<td></td>
<td>$D =$</td>
</tr>
</tbody>
</table>

Banking regulation $\theta$ (simplified)

$\text{Capital ratio} = \left( \frac{E}{A} \right) \geq \theta$
Capital ratios

*Accounting* leverage ratio

\[
Accounting \ Leverage \ Ratio = \frac{E}{A}
\]

*Market value* leverage ratio \((m)\)

\[
Market \ Value \ Leverage \ Ratio = \frac{E^m}{A^m}
\]

*Risk-weighted* capital ratio \((rw)\)

\[
Risk - weighted \ capital \ ratio = \frac{E}{A^w}
\]
Expected cyclical properties of capital ratios

\( \text{B for boom and R for recession} \)

Accounting ratio

\[
\left( \frac{E}{A} \right)^B < \left( \frac{E}{A} \right)^R
\]

Accounting ratio expected to be countercyclical: banks expand balance sheets through debt in booms.

Market value ratio (\(m\))

\[
(E^m)^B > (E^m)^R \text{ and } (A^m)^B > (A^m)^R
\]

Banks expand balance sheets during booms and asset prices increase \(A^m \uparrow\) but equity value also increases \(E^m \uparrow\).
Expected cyclical properties of capital ratios

Risk-weighted capital ratio \((rw)\)

\[
\left( \frac{E}{Aw} \right)^B \geq \left( \frac{E}{Aw} \right)^R
\]

Beyond expanding balance sheets, banks shift portfolios towards more risky assets during booms \((Aw \uparrow)\)

but risks/default probabilities fall \((Aw \downarrow)\).

Easier to ‘outplay’ regulators in booms (financial innovation) \((Aw \downarrow)\)
Why do we care?

- micro-prudential regulation: individually, banks might take ‘too much’ risk (risk-shifting, moral hazard...). Incentivize banks to take less risk.

⇒ Risk-weighted capital ratio (\(rw\))

If procyclical, banks will be less constrained in booms than in recession.

- macro-prudential regulation: ‘systemic’ banks defaults are very costly (negative externality on the whole economy). Incentivize banks to build buffers in expansion and use those in recession = tighter constraints in expansion (counter-cyclical constraints)

Theory? Efficiency costs versus socially inefficiently low capital buffers built in booms
What does the paper do?

Assess empirically the cyclicality of capital ratios using individual bank data across 14 countries over 1995-2012.

Estimate their cyclical properties in ‘normal times’ and in ‘crisis times’

Give insights on whether banking regulation achieves its goals

= micro and macro prudential regulation.
Main Findings

Accounting leverage ratio is significantly countercyclical (mostly for commercial banks).

Risk-weighted capital ratio more acyclical.

Market value leverage ratio is significantly procyclical.

After the financial crisis (2008-2012), capital ratios are more procyclical, slightly more so for the risk-weighted capital ratio.
Comments

1/ Robustness

2/ Specification

3/ Overall policy message
Robustness

Data issue: essentially, cyclicality identified over 12 years of data (1995-2007). Aggregate Ratios (but the market value one) very flat over the period.

Very little (statistical) difference in terms of cyclicality between ‘Accounting leverage ratio’ & ‘Risk-weighted capital ratio’ in most tables — particularly once taking into account that the second one is more volatile.

Might want to tone down this difference across the two measures.

Focus on what is robust (e.g, measures of capital ratios but the market value are not procyclical) and on differences across banks/type of exposure.

Robustness issue across specifications. Needs to target better which specification is the most interesting and should be the baseline.
### Table 6: Baseline model

<table>
<thead>
<tr>
<th>Dependent variable L(t):</th>
<th>(1) TIER1/Exposure measure</th>
<th>(2) TIER1/RWA</th>
<th>(3) TIER1/Exposure measure</th>
<th>(4) TIER1/RWA</th>
<th>(5) TIER1/Exposure measure</th>
<th>(6) TIER1/RWA</th>
<th>(7) TIER1/Exposure measure</th>
<th>(8) TIER1/RWA</th>
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<tbody>
<tr>
<td>Business cycle measures:</td>
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<tr>
<td>L(t-1)</td>
<td>0.804*** 0.085 0.894*** 0.043</td>
<td>0.883*** 0.147 0.892*** 0.044</td>
<td>0.811*** 0.087 0.899*** 0.056</td>
<td>0.812*** 0.088 0.835*** 0.049</td>
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<tr>
<td>L(t-1)*C</td>
<td>-0.062 0.064 -0.046 0.048</td>
<td>-9.314* -0.178 -0.042 0.048</td>
<td>-0.064 0.063 -0.046 0.045</td>
<td>-0.075 0.067 -0.041 0.049</td>
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<tr>
<td>Y(t)</td>
<td>-0.060** 0.025 -0.069* 0.037</td>
<td>-0.065 0.033 -0.061 0.041</td>
<td>-0.006* 0.003 -0.002 0.004</td>
<td>-0.019*** 0.008 -0.045*** 0.013</td>
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<tr>
<td>Y(t)*C</td>
<td>0.030 0.034 0.013 0.049</td>
<td>0.044 0.048 0.012 0.057</td>
<td>0.016*** 0.004 0.029*** 0.011</td>
<td>0.001 0.021 -0.009 0.034</td>
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### Annex A: Using Pooled OLS estimator instead of system GMM

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<tr>
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<tr>
<td>Y(t)</td>
<td>-0.113*** 0.036 0.023 0.063</td>
<td>-0.094** 0.0415 -0.086 0.0756</td>
<td><strong>0.019</strong> 0.005 -0.024 0.010</td>
<td><strong>0.034</strong> 0.014 -0.055** 0.025</td>
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</tr>
<tr>
<td>Y(t)*C</td>
<td>0.138*** 0.040 0.104 0.073</td>
<td>0.102** 0.049 0.260*** 0.091</td>
<td><strong>0.007</strong> 0.007 -0.011 0.014</td>
<td><strong>0.010</strong> 0.028 0.106* 0.057</td>
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Specification

- *Which cycle?*

Banking regulation made to smooth financial/credit cycle more than business cycle. Less reason to tighten constraints when real investment opportunities are high. But results are slightly weaker in this case—risk-weighted capital ratio more countercyclical if credit growth is used.

Use a measure of cycle which depends of exposure of a given bank. Investigate if banks less constrained by regulation when *individually* facing a slump. Reasonable assumption? How much results depend on this assumption?

Should constraints on banks in a given country be relaxed when *the country* is facing a slump. More consistent with the idea that costs of ‘systemic’ bank defaults are paid by the country of the bank.
Specification

- Treatment of the financial crisis

Dummies for 2008-2012. Abstracting from cross-sectional dispersion in cycles, cyclical properties of capital ratios estimated on few points both before and after the crisis.

Seems to matter for the results: slightly countercyclical capital ratios before and acyclical (or slightly procyclical after 2008).

Which property should we trust? Financial crisis is an ‘extreme’ event but this is in those times where countercyclicality is the most welcome.
Overall policy message

Qualitatively,

- Concerns that capital ratios (but the market value one) are procyclical not supported by data, at least in ‘normal times’.

- Which capital ratio has the ‘good properties’? How should we define these ‘good properties’?

- Slightly countercyclical in ‘normal times’ and more so in ‘crisis time’? Should the ‘smoothing’ of credit cycles be symmetric between booms and busts?

- Or ratio that cannot be manipulated [avoiding regulators to be outplayed by financial innovations]?
Overall policy message

Quantitatively,

- Might be appropriate to smooth credit cycles but *how much?* How much should the considered ratio be countercyclical [in ‘normal times’ vs ‘crisis time’]?

- What do these estimates regarding the cyclical properties mean quantitatively [e.g., numbers of banks hitting the constraint or getting very close to it contingently on some events].

- What would a quantitative macro model with collateral constraints and pecuniary externality predict as optimal policy if using such instruments?

- Could we find measurable capital ratios that have quantitatively ‘better properties’?
Conclusion

- Very interesting topic. I learnt a lot.

- Provides nice empirical insights on the cyclicality of capital ratios across banks and over time.

- More robustness needed for baseline regressions.

- Is there a way to be slightly more quantitative?