Comments to "In the Quest of Macroprudential Policy Tools", By Daniel Sámano Peñaloza (Bank of Mexico)

Carlos Montoro
Bank for International Settlements

The views expressed here are those of the author of this presentation and do not necessarily reflect those of the Bank for International Settlements

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What the author does?

- Extends a semi-structural model with a financial block.
- Estimates the parameters of the financial block.
- Analyses the relationship between monetary (interest rate) and macroprudential (CAR) policy.
- Estimates the coefficients of the policy rule that maximise a metric of welfare.
Why it is important?

- A semi-structural model (no direct microfundations) can deliver a clearer picture of the channels (easy to explain / disentangle the channels).
- It can be straightforward to use it in policy analysis.
- It can be easy to adapt to other economies.
- However, it can have some drawbacks for welfare analysis (e.g. it is not clear which imperfections macroprudential policy try to fix).
What are the main findings? (1)

- In the presence of financial shocks, a second instrument (CAR) increases welfare → reduces the variance of output, inflation and CAR.
- A CAR rule that responds to lending spreads (2c) performs better than the other rules.
- CAR rules that respond to credit/output gap (2a, 2b) show a procyclical capital adequacy policy and an offsetting effect with MP.
What are the main findings? (2)

Table 3. Evaluation of Loss Functions and Variances under Different Rules¹

<table>
<thead>
<tr>
<th></th>
<th>Taylor rule (Case 1)</th>
<th>Taylor rule + CAR rule (Case 2a)</th>
<th>Taylor rule + CAR rule (Case 2b)</th>
<th>Taylor rule + CAR rule (Case 2c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variance of output gap</td>
<td>2.6190</td>
<td>2.6364</td>
<td>2.6328</td>
<td>2.5732</td>
</tr>
<tr>
<td>Variance of inflation gap</td>
<td>4.6184</td>
<td>4.6805</td>
<td>4.6714</td>
<td>4.6044</td>
</tr>
<tr>
<td>Variance of Real FX change</td>
<td>0.0181</td>
<td>0.0211</td>
<td>0.0203</td>
<td>0.0194</td>
</tr>
<tr>
<td>Variance of interest rate</td>
<td>10.7693</td>
<td>10.7845</td>
<td>10.9477</td>
<td>9.8302</td>
</tr>
<tr>
<td>Variance of lending spreads</td>
<td>5.3289</td>
<td>7.9718</td>
<td>7.8925</td>
<td>1.5195</td>
</tr>
<tr>
<td>Var of delinquency indexes</td>
<td>0.7141</td>
<td>0.7205</td>
<td>0.7169</td>
<td>0.6703</td>
</tr>
<tr>
<td>Variance of credit gap</td>
<td>106.0353</td>
<td>161.3593</td>
<td>157.8088</td>
<td>26.1848</td>
</tr>
<tr>
<td>Var of capital adequacy ratio</td>
<td>1.8669</td>
<td>2.8741</td>
<td>2.8201</td>
<td>0.9074</td>
</tr>
<tr>
<td>Corr(credit gap, output gap)</td>
<td>0.2187</td>
<td>0.2062</td>
<td>0.2037</td>
<td>0.2510</td>
</tr>
<tr>
<td>Corr(credit gap, delinquency index)</td>
<td>-0.8529</td>
<td>-0.8916</td>
<td>-0.8874</td>
<td>-0.6071</td>
</tr>
<tr>
<td>Corr(credit gap, CAR)</td>
<td>-0.6013</td>
<td>-0.7124</td>
<td>-0.7058</td>
<td>0.0299</td>
</tr>
<tr>
<td>Corr(interest rate, CAR)</td>
<td>-0.1988</td>
<td>-0.1921</td>
<td>-0.2263</td>
<td>0.1635</td>
</tr>
</tbody>
</table>

¹Simulations were performed by applying the same random shock scenario to all rules for a forecast of 1,000 periods. The number of repetitions was set at 3,000; reported figures are the average across repetitions.
Comments

- The objective of macroprudential policy.
- The transmission mechanism of CAR.
- The role of expectations.
- Other comments.
Objective of macroprudential policy (1)

- Objective of macroprudential policy is to limit systemic risk.
- 2 dimensions at work:
  - Cross-section dimension (identifying and addressing common exposures, risk concentrations and interdependencies)
  - Time dimension (dampening the build-up of financial imbalances).
- This paper focuses on the time dimension.
Objective of macroprudential policy (2)

- Loss function:

\[ L \equiv \sigma^2_x + \sigma^2_\pi + \sigma^2_{\Delta i} + \phi \sigma^2_{\Delta \text{CAR}} \]  

(EQ13)

- Policy objectives: inflation, output gap, interest rate smoothing and CAR smoothing.

- Interest rate component: captures smoothness in the data.

- Reasons for interest rate smoothing in the literature:
  - effects of uncertainty on policy decisions,
  - effects of short-term interest rate on long-term interest rates,
  - concerns on destabilisation effects of interest rate volatility,
  - and disagreement among policymakers.

- Similarly we can argue some similar reasons for CAR smoothing!
Objective of macroprudential policy (3)

- But CAR smoothing should not be a policy objective per se.
- Alternative macroprudential policy objectives: credit growth, credit/gdp deviations or deviations of credit its steady state.
- Why equal weights? → important robustness analysis.
- These assumptions are key for the results.
Transmission mechanism of CAR (1)

The model

- IS includes **lending spreads**.
- Financial block:
  - Lending Spreads: $f(\text{lagged value, delinquency ratios, capital requirements})$.
  - Delinquency indexes: $f(\text{lagged value, output gap})$.
  - Credit: $f(\text{lagged value, lending spreads, output gap})$.
- Shocks: demand, cost-push and financial (spreads, delinquency, credit) shocks.
Transmission mechanism of CAR (2)

Effectiveness of instruments

\[ x_t = b_2 E_t x_{t+1} + b_3 r_{t-1} + b_6 \text{spread}_{t-1} + ... + \varepsilon_{x,t} \]  

(EQ2-IS)

\[ \text{spread}_t = \overline{\gamma}_0 + \overline{\gamma}_1 \text{spread}_{t-1} + \overline{\gamma}_2 \text{delin}_t + \overline{\gamma}_3 \text{CAR}_t + \varepsilon_{\text{spread},t} \]  

(EQ3-spread)

\[ \text{cr}_t = \overline{\mu}_0 + \overline{\mu}_1 \text{cr}_{t-1} + \overline{\mu}_2 \text{spread}_t + \overline{\mu}_3 x_t + \varepsilon_{\text{cr},t} \]  

(EQ5-credit)

- Is \( b_3 \geq b_6 \times \overline{\gamma}_3 \)？ Calibration is key for relative effectiveness on output gap.
- Key mechanism: interest rate does not affect spread but CAR does.
- Also, policy rate does not affect credit!!
Transmission mechanism of CAR (3)

Trade-offs

- *Demand shocks*: can be neutralised by MP (and therefore also the effect on delinquency ratios and credit).
- *Cost push type shocks*: generate a trade-off (It is not possible to stabilise both inflation and output gap).
- *Spread shocks*: affect both credit and output gap. Can be fully neutralised by CAR policy. **NO TRADE-OFF.**
- *Credit shocks*: if credit is a policy objective, it can generate a trade-off (cannot stabilise both spreads and credit).
Transmission mechanism of CAR (4)

Alternative policy specifications

- BASEL III: suggests CREDIT/GDP ratio as reference guide for anticyclical CAR.
- What the model can say about this?

\[

\begin{align*}
    cr_t - x_t &= \mu_0 + \mu_1 cr_{t-1} + \mu_2 spread_t + (\mu_3 - 1) x_t + \varepsilon_{cr,t} \\
    \text{(EQ5-} & \text{cr}_t - \text{x}_t) 
\end{align*}
\]

- Given that \( \mu_3 < 1 \), demand shocks decrease \( CR/X \) ratio, and CAR decreases \( \rightarrow \) expansive Macroprudential policy (direction in contrast to MP).
- This is not the case for financial shocks
The role of expectations (1)

Rules are important because they affect expectations.

- IS can be written as:

\[ x_t = \sum_{s=0}^{\infty} \lambda^s (b_3 r_{t+s} + b_t \text{spread}_{t+s}) + \ldots + \epsilon_{x,t} \]

- Expected changes in CAR (rules) have an additional effect on output gap through expectations.

- Note: this channel is not present in the financial block.
The role of expectations (2)

- Lucas’ critique applies: estimation of financial block is done with a different policy regime (CAR as a banking decision, not a policy decision).
- Private sector response would be different when changing the policy regime (CAR rule).
- Estimation of financial block made by SUR.
- Alternatively: joint Bayesian estimation would take into account private sector expectations. SUR estimates / calibrated parameters: priors for the estimation
Other comments

- Why Taylor Principle does not need to be satisfied in this model? What is the nominal anchor in the model? Table 2 (p.18): coefficient $f_3 < 1$ in all the specifications.
- Which shocks drive the result? Given iid shocks (by groups), we can analyse the variance decomposition of the loss function.
- Prices vs quantities as indicators for policy. Which are more informative for EMEs?
Conclusions

- Very interesting paper.
- Motivates the analysis of the interaction between monetary and macroprudential policy. Useful for policy analysis.
- Robustness exercises can be explored.