Discussion of: Financial Inclusion and Optimal Monetary Policy by Aaron Mehrotra and James Yetman

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Joint conference of the European Central Bank and the Central Bank of the Republic of Turkey, Frankfurt am Main, 27-28 August, 2015
Outline of the discussion

- Brief summary of the paper
- Overall evaluation
- Comments and suggestions
- Conclusions and possible extensions
Aim of the paper

- The analysis develops a theoretical model to study:
  - The consequences of limited financial inclusion on macroeconomic outcomes, defined in terms of output and inflation volatility, when monetary policy maximizes social welfare.
  - Provide empirical evidence supporting the model’s predictions, using a broad cross-country dataset on financial inclusion.
The key findings are:

- The ratio of output volatility to inflation volatility is increasing in the share of financially included consumers in the economy when monetary policy is conducted optimally.
- Empirical evidence consistent with the model’s predictions
  - Responses to productivity shocks in line with the prediction of the theoretical framework ($\uparrow \lambda \Rightarrow [\downarrow \sigma_y, \uparrow \sigma_{\pi}]$).
  - The ratio of output to inflation volatility increases in the degree of financial inclusion.
  - The volatility of consumption declines relative to the volatility of output as financial inclusion increases.
I enjoyed reading the paper, it is clearly written and it approaches the issue using theory and empirical evidence.

The theoretical framework provides an important contribution on the relevance of financial inclusion:

- The model builds elegantly on Gali et al. (2004).
- It is linked with the work on the Taylor principle outlined in Bilbie (2008), Colciago (2011) and Motta and Tirelli (2010).
- It adds a *optimal monetary policy dimension* to the issue and *confronts the theory with the empirical evidence*.
Some improvements

To my knowledge, this is a good attempt to confront the theoretical implications with the empirical findings.

The authors should exploit the theoretical model to provide further intuition on the mechanisms at work and whether these mechanisms are supported by the empirical evidence.

The empirical part:

- Should outline the model more clearly.
- Perform some robustness analysis.
- Provide specific details on the implementation.
The analysis spells out the intuition on why the degree of financial inclusion is relevant for monetary policy:

- Financially *included* households are able to smooth their consumption over time but are less able to insure away welfare losses due to volatile prices.
- Therefore their welfare is maximized when monetary policy stabilizes prices, even at the expense of somewhat more volatile output.

- Financially *excluded* households are unable to insure away the welfare costs of volatile income, which feed directly into volatile consumption, they prefer outcomes that stabilize output, even at the expense of more volatile inflation.
- Therefore their welfare is maximized when monetary policy stabilizes output, even at the expense of somewhat more volatile prices.
The analysis provides a good intuition on why output volatility differs across financially constrained and unconstrained households.

However, little intuition is provided on the different dynamics for inflation volatility.

Key question to address: what does make inflation volatility differ across constrained and unconstrained households?
Comment 2. The Transmission Mechanism (1)

Impulse response functions (IRFs)

- The analysis shows that transmission mechanism depends on the fraction of constrained/unconstrained households (especially inflation and even more the nominal interest rate).
- See IRFs to technology shock:

**Question 1**: what is the metrics of the IRFs?
Question 2: the response of the policy rate can be either negative or positive, depending on the degree of financial inclusion. In response to tech shock, the policy rate raises if unconstrained households only. If the degree of constrained household is high, the policy rate falls in response to the shock. Why?

This result hinges on a key assumption in the model (i.e. part of the household has no access to bonds and capital).

At the extreme, if $\lambda \to 1$, $W_t N_t^r = P_t C_t^r$ ⇒ However, monetary policy can still affect the economy!
Comment 2. The Transmission Mechanism (3)
Plausibility of the effectiveness of monetary policy

- Monetary policy is still effective to the extent it affects the aggregate wage.
- The labor supply for the constrained and unconstrained household are:

\[
\frac{C_t^r}{L_t^r} = \frac{1}{\nu} \frac{W_t}{P_t} \quad \text{and} \quad \frac{C_t^o}{L_t^o} = \frac{1}{\nu} \frac{W_t}{P_t}
\]

- To maximize welfare the central bank should increase consumption \((C_t = \lambda C_t^r + (1 - \lambda) C_t^o)\). But monetary policy is effective only for unconstrained households.
- Way to maximize welfare if \(\lambda \to 1\): decrease the policy rate, which stimulates aggregate consumption for unconstrained household \((C_t^o)\) and aggregate wages.
- **Question 3**: Can this mechanism be supported by evidence?
Comment 3. Empirical Evidence (1)
Nature of the exercise

- The results from the theoretical model are confronted to the empirical evidence.
- The analysis produces interesting results. However, is the comparison really informative?
- The theoretical results build on the assumption that monetary policy is optimal. In practice however, central banks (CBs) (in both developed and developing countries) do not follow optimal rules.
- Some CBs use Taylor rules some CBs other rules ⇒ The comparison between theoretical model and empirical result is not a clear cut.
On the implementation of the VAR model:

- Data series: annual data (1980-2012), but "although for many economies the samples are substantially shorter due to data availability."
- Threshold point for financial inclusion indicator 47%. Why 47%? Are results robust?
- Identification of the technology shock: Cholesky decomposition with productivity exogenous. Is the ordering important for the results?
- The implementation of the panel VAR model is not described. More detail is needed.
Conclusion

- Overall, this is a novel study that focuses on an important issue
  - It provides important theoretical results on optimal monetary policy in presence of financially constrained and unconstrained households
  - It confronts the theoretical results with the data

- Some possible extensions:
  - Challenging:
    - Develop a more comprehensive structural model to investigate whether the effect of financial inclusion remains sizeable in driving output volatility and inflation volatility.
  - Interesting:
    - Using the more comprehensive model is possible to investigate whether the enhancement of financial inclusion in many developing countries will drive a raise in the ratio of output volatility to inflation volatility (as in the conclusion of the paper)