Comments on Revisiting Overborrowing and its Policy Implications by Benigno, Chen, Otrok, Rebucci and Young

Fiorella De Fiore

European Central Bank

October 1st, 2010

The paper

- Evaluates scope for (ex-ante) macro-prudential policy and (ex-post) public intervention during episodes of sudden stop.
- SOE model with:
  - two-sector production
  - incomplete international financial markets
  - occasionally binding collateral constraint
  - credit externality
- Quantifies inefficient borrowing by comparing the competitive equilibrium (CE) with the constrained-efficient allocation (SP).

My discussion

- Summarize key features of the model
  - Amplification and sudden stops
  - Inefficient borrowing
- Comments
  - Productivity vs financial shocks
  - Collateral constraint
  - Policy implications

Amplification and sudden stops

- Recall that in CE:

$$\mu_t = U_{C^T}(t)$$

$$\mu_t = \lambda_t + \beta(1+i)E_t\mu_{t+1}$$

$$P_t^N = P^N\left(\underset{+}{C_t^T}, \underset{-}{H_t^N}\right)$$

- Suppose $\downarrow A_t^T \Rightarrow$ tighter constraint $\Rightarrow \uparrow \mu_t, \downarrow C_t^T, \downarrow P_t^N$. Sectoral reallocation: $\uparrow H_t^T, \downarrow H_t^N \Rightarrow \downarrow C_t^N$. If goods complements, $C_t^T \downarrow$ further, amplifying initial effect.

- Sudden stops (when constraint binds) possible.

Inefficient borrowing: credit externality

Marginal utility of savings is higher (borrowing lower) in SP than CE.

- CE:

$$
\begin{aligned}
\mu_t &= \lambda_t + \beta(1+i) E_t \mu_{t+1} \\
\mu_t &= U_{C^T}(t)
\end{aligned}
$$

SP:

$$
\begin{aligned}
\mu^{sp}_{1,t} &= \lambda^{sp}_t + \beta(1+i) E_t \mu^{sp}_{1,t+1} \\
\mu^{sp}_{1,t} &= U_{C^T}(t) + \lambda^{sp}_t \frac{1-\phi}{\phi} \left(\overset{+}{\frac{\partial P^N_t}{\partial C^T_t}} \right) \geq \mu_t
\end{aligned}
$$

- $\mu^{sp}_{1,t} > \mu_t$ generates higher C^T_t and **overborrowing** in CE.

Inefficient borrowing: labor supply

When the constraint does not bind

$$U_C(t)\, H_t^{\delta-1} = \mu_{1,t}^{sp}\ MPL_t^T \geq \mu_t\ MPL_t^T.$$

- If $\downarrow A_t^T \Rightarrow \uparrow \mu_t, \uparrow H_t, \uparrow H_t^T, \uparrow H_t^N, \uparrow C_t^N$. If goods are complements, $\uparrow C_t^T$. If $\uparrow C_t^T > \uparrow Y_t^T$, $\uparrow$ borrowing.
- Because $\mu_{1,t}^{sp} > \mu_t$, effect is higher in SP than in CE.
- **Underborrowing** in CE.

Inefficient borrowing: labor reallocation

- If $\downarrow A_t^T \Rightarrow \downarrow P_t^N$. Sectoral reallocation implies $\uparrow H_t^T, \downarrow H_t^N \Rightarrow \downarrow C_t^N$. If goods are complement, $\downarrow C_t^T$ and $\downarrow$ borrowing.
- Because $\mu_{1,t}^{sp} > \mu_t$, effects are larger in SP $\Rightarrow \downarrow\downarrow$ borrowing.
- **Overborrowing** in CE.

Main results

- In the calibrated model, there is underborrowing both in normal times and when the constraint binds.
- Differences in average borrowing are small, but the probability of a crisis is much smaller in SP (0.007%) than in CE (1.6%).
- Overall welfare gain of inducing efficient borrowing is small, but it is high during sudden stops.

Comment 1: Shocks

- Sudden stop is driven by a negative technology shock.
- Is this key to generate large movement in P_t^N and amplification of the initial shock?

$$P_t^N = \frac{(1-\omega)^{\frac{1}{\kappa}} \left(C_t^N\right)^{-\frac{1}{\kappa}}}{\omega^{\frac{1}{\kappa}} \left(C_t^T\right)^{-\frac{1}{\kappa}}}$$

First effect: $\downarrow A_t^T \Rightarrow$ for given P_t^N, $\downarrow H_t^T$, $\uparrow H_t^N$. $\Rightarrow \uparrow C_t^N \downarrow P_t^N$.
Second effect: $\downarrow A_t^T \Rightarrow \uparrow \mu_t, \downarrow C_t^T \Rightarrow \downarrow P_t^N$.

- Both effects lower P_t^N and tend to amplify the shock.

Comment 1: Shocks

- What about a financial shock (e.g. a fall in the ability to seize borrowers' income)?
  Only the second effect arises: $\downarrow \frac{1-\phi}{\phi} \Rightarrow \uparrow \mu_t, \downarrow C_t^T \Rightarrow \downarrow P_t^N$.
- Too small to produce sudden stop?
- Would be useful to show that the model can account for the recent crisis, if aim is to evaluate macro-prudential policy.

Comment 2: Collateral constraint

- Collateral constraint: debt limit that arises when lenders cannot enforce repayments and debtors can run away.
- Standard formulation with value of assets

$$(1+i)\,B_{t+1} \geq -\kappa q_{t+1} K_t, \quad \kappa \leq 1.$$

Comment 2: Collateral constraint

- Here, current income is treated as collateral

$$B_{t+1} \geq -\frac{1-\phi}{\phi}\left[\pi_t + W_t H_t\right].$$

  - How to think about it? If $\frac{1-\phi}{\phi} < 1$, consumption cannot be higher than when paying with income and making zero debt.
  - In the numerical analysis, ω, κ and ϕ are set to match data targets. Resulting value is $\phi = .46$, impliying that $\frac{1-\phi}{\phi} > 1$!

Comment 2: Collateral constraint

- Would the results survive to a collateral constraint specified in terms of future income?

$$(1+i)\, B_{t+1} \geq -\overline{\kappa} E_t \left[\pi_{t+1} + W_{t+1} H_{t+1}\right].$$

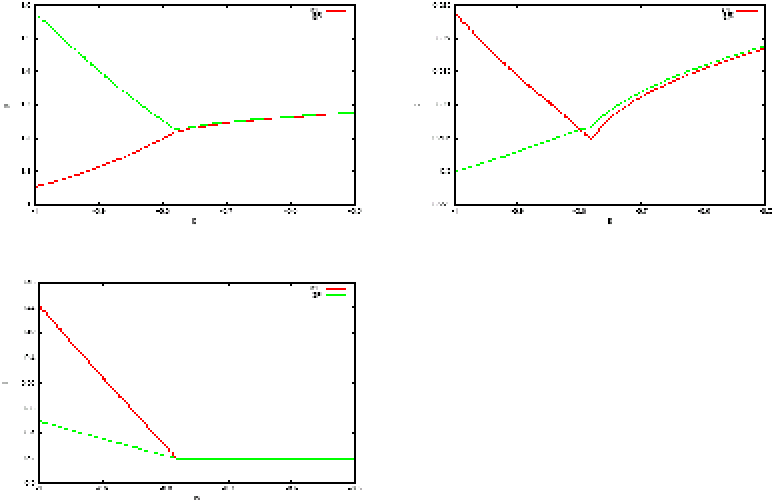
- A large but temporary shock hitting today would not tighten the constraint much. This shock could have smaller amplification, and the probability of a sudden stop be lower.

- Saving decisions would affect the discount factor through changes in C_t.

Comment 3: Policy implications

- Not fully discussed in the current draft.
- Numerical results:
  - In CE: H, Y and C increase during sudden stops and reach levels higher than in normal times!
  - In periods of crisis, SP reduces C, H and Y relative to CE!.
- Working capital in the collateral constraint might help.

Figure 2: Policy Functions for PN, H, C



Comment 3: Policy implications

- In this model, lenders always get back the funds. Scope for macro-prudential policy is to induce agents to take the constrained-efficient level of debt.
- In policy debate, scope for macro-prudential policies is to limit systemic risk and its spillovers to the macroeconomy.
- Need to evaluate macro-prudential policies in models with default risk, where interlinkages among lenders can amplify the effect of such risk.

Conclusions

- Very interesting paper. Still preliminary.
- Need to check robustness of the results to
  - specification of the collateral constraint: income vs asset, current vs future value, working capital assumption
  - source of the shock: TFP or financial
- We cannot dismiss macro-prudential policy on the basis of a model where lenders always get back their funds. Need to consider models of aggregate risk and contagion.