

# **“Optimal Policy for Macro-Financial Stability” by Benigno, Chen, Otrok, Rebucci, and Young**

**Discussion by  
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The views expressed here are solely mine and do not necessarily reflect the views of the ECB

## Summary

- This paper asks: *What policy is optimal in an economy in which a financial crisis can occur?*
  - In particular, is it optimal for policy to intervene *ex post*, *ex ante*, or both?
- The authors answer these questions using a small open economy model with a *pecuniary externality*.
- I will outline the model, describe what the authors do, and comment on some aspects of the paper.
- My overall view is that this is careful, valuable work.

## Model

- A small open economy with a tradable good and a non-tradable good. (Think of  $P^N$  as the real exchange rate.)
- Perfectly competitive firms produce both goods using labor.
- Households consume, supply labor, and hold single period bonds denominated in tradable goods.
- Households are subject to a *borrowing constraint*, an upper bound on the debt-to-income ratio.
  - Importantly, income derives from the traded *and* the non-traded sector.
- The government can impose a number of distortionary taxes, and it balances its budget in every period.
- The economy is driven by random fluctuations in  $A^T$ .

## Features of the model

- The borrowing constraint binds in *some* periods, not in *all* periods.
- A financial crisis occurs when the borrowing constraint binds.
- There is a pecuniary externality.
  - Decisions of any individual household affect the borrowing constraint all other households face. However, each individual household disregards this effect.
  - In particular, if households decide to consume less,  $P^N$  falls and the borrowing constraint tightens.

## Solution concepts

- Competitive equilibrium.
- Constrained planner's problem.
- Unconstrained planner's problem.
- Markov-perfect optimal policy equilibrium.

## Constrained planner's problem and its implementation

- Consider the problem of a planner constrained by the same borrowing constraint as households.
  - The difference between the *constrained planner's problem* and the *competitive equilibrium* is that the planner internalizes the pecuniary externality.
- There exists a tax scheme that implements the solution of the constrained planner's problem.
- This tax scheme involves *ex post* intervention *only*.
  - When the constraint binds, the planner subsidizes consumption of tradable goods and taxes production of non-tradable goods (so long as  $C^T$  and  $C^N$  are complements).
  - When the constraint does *not* bind, the planner does *nothing*.
- This result is important, because previous work finds that *ex ante* intervention is optimal in the presence of a pecuniary externality.

# Unconstrained planner's problem and its implementation

- Consider the problem of an unconstrained planner.
  - This planner can implement the first best, defined as the best this economy can do given that only the single bond can be traded.
- There exists a tax scheme that implements the solution of the unconstrained planner's problem.
- Again, this tax scheme involves *ex post* intervention *only*.
  - Furthermore, the unconstrained planner can use the *same* tax instruments as the constrained planner.
- This result is important, because previous work considers only the constrained planner's problem.
- Note: Under this policy, the constraint *never* binds in equilibrium.
  - The policy involves a commitment to act in an event that never arises in equilibrium.

## Markov-perfect optimal policy equilibria

- Studied numerically, with a *new* global solution algorithm, in the model calibrated to Mexican data.
- Policy is constrained to rely, alternatively, on two taxes or one tax.
- With two instruments, it is optimal to intervene *ex post only*. With one instrument, it is optimal to intervene *both ex post and ex ante*.
  - Prudential intervention is optimal when there are “too few” instruments.
- The equilibria have some surprising, interesting features:
  - there can be *more* borrowing than in the competitive equilibrium;
  - the probability of a crisis can be *lower* than under the constrained planner.



## Why are we interested in the Markov-perfect equilibria?

- Usually, the reason we doubt the solutions of planner's problems – and study alternative policy problems – is that planner's problems assume policy-makers capable of time-inconsistent commitment.
  - But, in *this* model, the optimal policy of each of the two planners *is* time-consistent.
- The authors motivate the Markov-perfect equilibria by writing that “*discretion* is a more realistic description than *commitment* of the incentives faced by (...) policy-makers in *this* model environment.”
  - But, in *this* model environment, policy-makers *do* have the incentives to keep their commitments.
- The authors could motivate better why they are interested in dropping the commitment assumption.
  - My preferred approach: think about what features of the real world make it difficult to keep policy commitments during a crisis *and model these features*.

## Is the paper's case for prudential policy the strongest possible?

- In this paper, prudential intervention is optimal when there are “too few” instruments.
- But in reality policy-makers control *many* instruments.
  - Policy-makers certainly *can* and *do* change multiple tax rates, exchange rate policy, monetary policy, and regulatory policy when a crisis occurs.
- The main problem appears to be *not* that policy-makers have too few instruments, but that policy-makers are uncertain about which instruments to use and how to use them.
- But if uncertainty about “how the world works”, or even just about the magnitude of the crisis, is the main problem, doesn't the case for prudential intervention become stronger?
  - Eric has done important work on decision-making under imperfect information and model uncertainty, which can be applied to the question of interest here.

## Which crisis is being modeled here?

- This is a sensible model of a typical emerging market crisis.
  - The constraint that one must borrow in a foreign currency does seem critical in emerging markets. (This may change as emerging markets borrow more in own currencies.)
- But the economy modeled here does *not* look like the U.S.
  - The U.S. borrows in own currency, and the dollar played essentially no role during the Great Recession.
  - Default – *not* modeled here – and concerns about systemic risk from default did play a major role.
- ...or like any euro area country.
  - For countries like Greece the real exchange rate is of some concern, but the real exchange rate will move only slowly so long as Greece stays in EMU.
  - Budget deficits play a major role, and here the government is assumed to balance its budget via lump sum taxes.