Household Heterogeneity across Countries and Optimal Monetary Policy in a Monetary Union

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Main message

In this paper, we study how differences in the financial situation of households *across* countries forming a monetary union affect optimal monetary policy and find that the more heterogeneous households are, both within and across countries, the less important inflation stabilization in favor of consumption stabilization becomes.

Abstract

The financial situation of households differs substantially across countries, but the implications of this heterogeneity is still vastly understudied. We examine the implications of this asymmetry for optimal monetary policy in a currency union. We build a two-country monetary union model with heterogeneous households leading to inequality due to imperfect insurance. We introduce money through central bank digital currency (CBDC) as a liquid asset for self-insurance against idiosyncratic risk. CBDC is a new instrument which allows the central bank to target heterogeneity within a monetary union. **We derive a welfare function with two additional objectives, consumption inequality within and across countries. The more heterogeneous households are, the less important inflation stabilization becomes in favor of stabilizing consumption inequality** through providing money. We provide important policy implications as we show that **it is beneficial for a monetary union to have a country-specific instrument to compensate for country differentials.**

Motivation

Monetary Policy (MP) and Household Inequality:

- **What we already know:** Hand-to-mouth households (with near zero liquid wealth) are important for the transmission of MP on aggregate demand (e.g., Kaplan et al. 2018).
- **What we also know:** The number of these liquidity-constrained households varies substantially *across* countries forming a monetary union (see Figure 1).

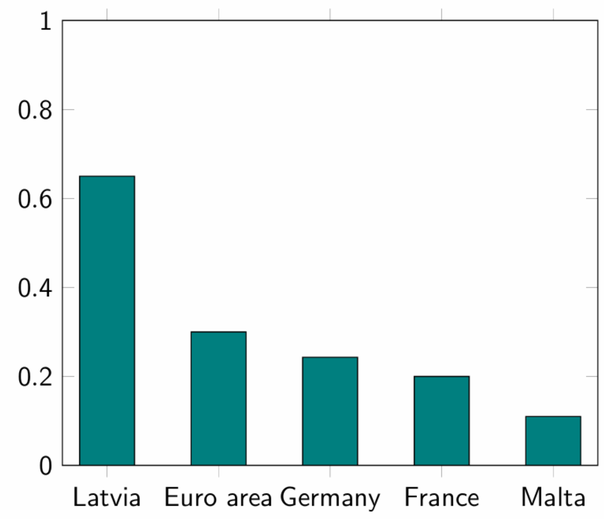

Figure 1. Share of hand-to-mouth households across euro area countries (Source: own illustration, data taken from Almgren et al. (2022))

- **What we want to know:** What are the implications of this heterogeneity across countries for optimal monetary policy?

Model framework

Two-country monetary union model with heterogeneous households (based on the one-country model from Bilbiie & Ragot (2021))

- Two countries (Home and Foreign) forming a currency union
- Heterogeneous shares of financially-constrained households across countries
- Imperfect insurance: steady state consumption inequality between saver and hand-to-mouth households
- Central bank (CB):
  - Union-wide instrument: nominal interest rate
  - country-specific instrument: money
    - ➢ Households demand the liquid asset money to self-insure against idiosyncratic risk
    - ➢ A tool to provide liquidity to the households (technically feasible through, e.g., CBDC)

Main results

Welfare function

CB maximizes the following welfare objective (2nd order approximation around zero-inflation steady state):

$$-\frac{1}{2}E_0\sum_{t=0}^{\infty}\beta^t\Bigg[\underbrace{(\sigma+\varphi)(\tilde{C}_t^U)^2+\gamma\nu(\pi_{H,t})^2+(1-\gamma)\nu(\pi_{F,t})^2+\gamma(1-\gamma)(1+\varphi)(\tilde{ToT}_t)^2}_{\text{standard for 2-country monetary union}}\underbrace{+\gamma(1-\gamma)\sigma\frac{CC^*}{(C^U)^2}(\hat{C}_t-\hat{C}_t^*)^2}_{\text{lack of full insurance across countries}}$$

$$\underbrace{+\sigma\left(\gamma\lambda(1-\lambda)\frac{C^SC^N}{CC^U}(\hat{q}_t)^2+(1-\gamma)\lambda^*(1-\lambda^*)\frac{C^{S*}C^{N*}}{C^*C^U}(\hat{q}_t^*)^2\right)}_{\text{common in TANK models}}$$

$$\underbrace{-2\gamma\lambda(q^\sigma-1)\left(\frac{C^N}{C^U}(\hat{C}_t^N+\frac{1-\sigma}{2}(\hat{C}_t^N)^2)-\hat{L}_t-\frac{1+\varphi}{2}(\hat{L}_t)^2\right)}_{\text{liquidity-insurance motive due to inequality distortion in steady state in Home } (q>1)}$$

$$\underbrace{-2(1-\gamma)\lambda^*((q^*)^\sigma-1)\left(\frac{C^{N*}}{C^U}(\hat{C}_t^{N*}+\frac{1-\sigma}{2}(\hat{C}_t^{N*})^2)-\hat{L}_t^*-\frac{1+\varphi}{2}(\hat{L}_t^*)^2\right)}_{\text{liquidity-insurance motive due to inequality distortion in steady state in Foreign } (q^*>1)}\Bigg]$$

Optimal response to a supply shock (positive productivity shock) in face of an asymmetric union (with union-wide share of hand-to-mouth households of 0.3, share in Home 0.35, share in Foreign 0.25)

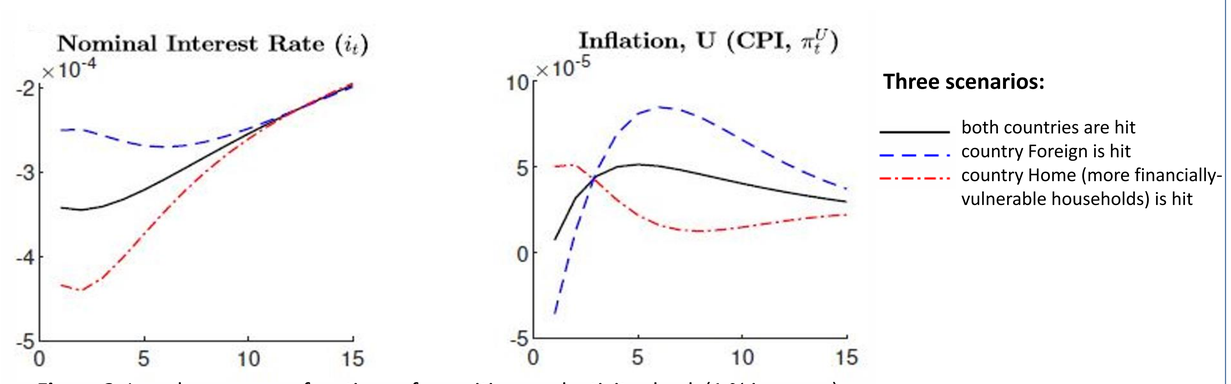

Figure 2. Impulse response functions of a positive productivity shock (1 % increase) depicting absolute deviations from steady state

If the more vulnerable country (Home) is hit (red scenario):

→ the **CB reacts more expansionary** and provides more liquidity to this country
→ **CB tolerates more inflation volatility**

Key take-aways and implications

Household heterogeneity *across* countries changes the design of optimal monetary policy in a monetary union:

- Trade-off between price and consumption stabilization: heterogeneity (within and across countries) ↑: consumption-insurance motive ↑, price stabilization ↓
- New objectives: balancing out asymmetry within the currency union and provide consumption-insurance
- CB provides more liquidity to the more vulnerable country since the households demand more money to self-insure
- Welfare-enhancing potential of a country-specific tool (money) to address asymmetry: the central bank can overcome the main disadvantage of a monetary union

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Full paper

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