

Inequality and Central Banks: Monetary and Macroprudential Policies

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Session on

NEW CHALLENGES AND RISKS FOR FINANCIAL STABILITY IN THE AFTERMATH OF THE CRISIS

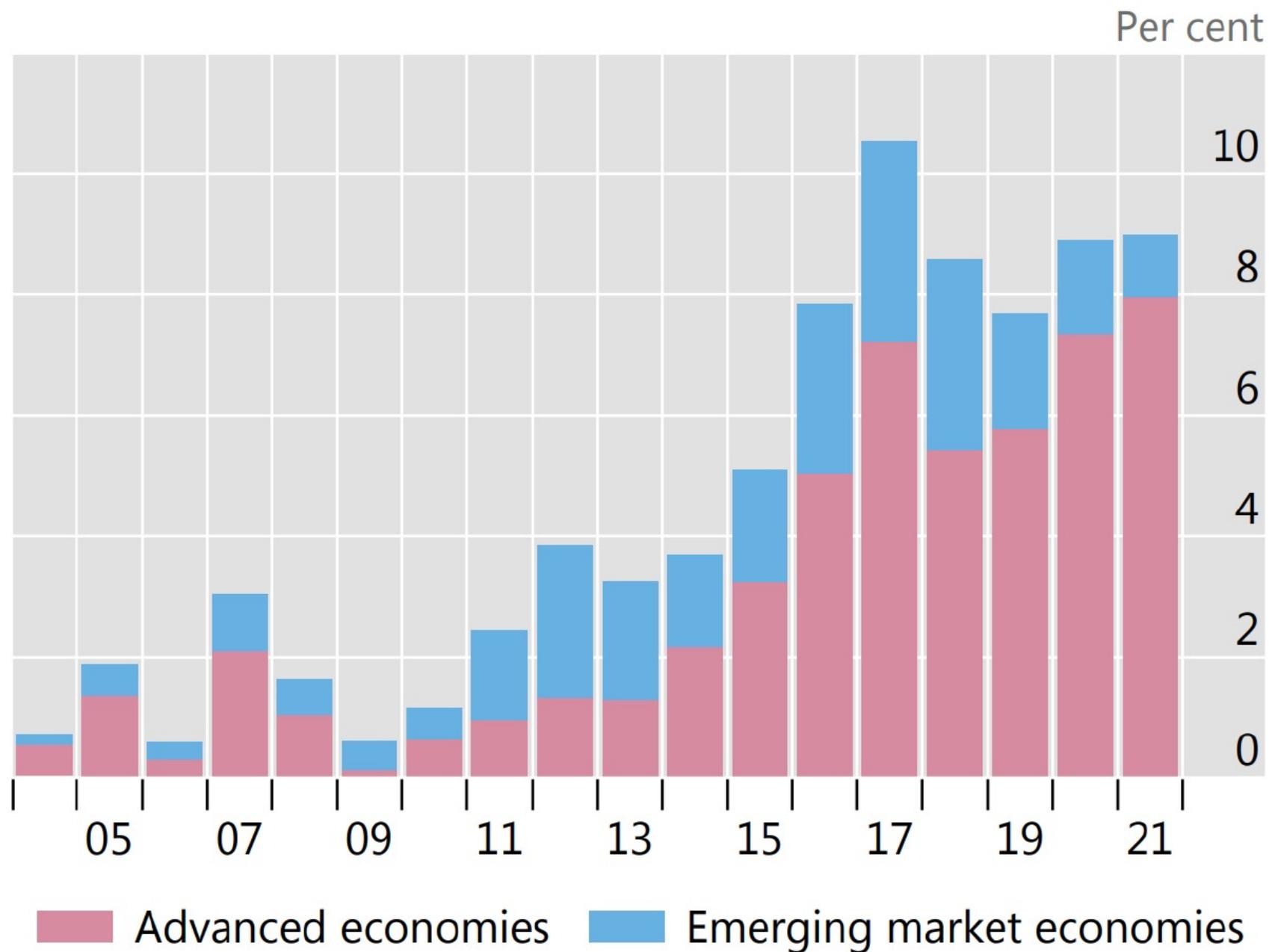
New challenges and risks

Three crucial challenges after the COVID crisis are:

- **Inequality**: it has increased during the COVID crisis and also over recent decades
- **Debt and asset prices**: higher debt and asset prices, also during the COVID crisis and over recent decades
- Very **low monetary policy rates** and unconventional monetary policy

The relationship among these phenomena are complex and multifaced

Share of speeches mentioning inequality (BIS, 2021)



Inequality is important for central banks

- According to the comprehensive overview of central banks' speeches both in advanced and emerging markets in BIS (2021), about **10% of all recent central bankers' communications** mentions keywords “inequality” or “distributional consequences/impact of monetary policy”
- In recent years **inequality** has received a great deal of attention in the **monetary policy debate** (e.g., Bernanke 2015; BIS 2021; Bullard 2014; Lagarde 2020; Mersch 2014; Powell 2019; Yellen 2014)
- Inequality and the need for monetary policy to take it into account was also among the most debated topics at the **listening events of the Federal Reserve** and it was also in the **ECB monetary policy strategy review**
- Inequality is also key for **financial stability** (Rajan, 2010), as it may bring eg too much credit to low-income households, leading to excessive credit booms/financial crises. **Macroprudential policy** may affect these issues

This talk: a short summary of

Some **evidence on central banks' policies and inequality** using detailed and comprehensive **household-level supervisory/ administrative datasets**

- Without household level data → extremely difficult to analyze inequality
- **Monetary policy and inequality**
 - **Denmark**: wealth (W), income (I) and consumption (C) inequality
 - Household-level balance sheet and income components
 - **Portugal**: labor and credit markets, in normal and crisis times
 - Matched employer-employee data with credit register
- (if time allows, **briefly** talk about) **Macroprudential policy and inequality** around introduction of macropru policies and when negative (aggregate or person-level) shocks occur
 - **UK DTI** (using the mortgage register)
 - **LTV in Netherlands** (using similar data as the Danish evidence)

Inequality and monetary policy

What are the effects of **monetary policy (MP)** on **inequality**?

- *Distributional* effects of *MP* on *income, wealth* and *consumption* sorting households based on *ex ante income* (also on age)? Which *channels* matter?
- Distributional effects for **wages, hours worked, employment?** **Crisis times?**

Answers to these questions have key implications for:

- The debate on monetary policy and *inequality*:
 - Softer MP helps employment, so better for lower income HHs (Draghi, 2016)
 - Softer MP helps richer via wealth effects (Acemoglu and Johnson, 2012)
 - Effects of *MP on inequality are ex-ante ambiguous* (Bernanke, 2015)
 - Of course other policies and factors are key for inequality (BIS, 2021)
- Understanding the **transmission mechanism of monetary policy**, including *heterogeneous agents based models* in macro (monetary theory), e.g. HANK models or more finance-macro models (Auclert, 2019; Brunnermeier and Sannikov, 2012; Kaplan, Moll and Violante, 2018; Adrian et al., 2021...)

Not clear effects of MP on inequality and limits of survey data

Theory argues that there are *multiple channels* through which MP can lead to redistribution, e.g.:

- Income composition channel; debtor/creditor; an asset channel

Survey-based evidence finds that softer MP reduces income inequality

- See Coibon-Gorodnichenko-Kueng-Silvia 2017 for the US survey; Ampudia-Georgarakos-Slacalek-Tristani- Vermeulen-Violante 2019 for the euro area survey

Limitations from these survey data, e.g.:

- Not reflecting well top income households
- May also not reflect well very low income HH
- (neither) Wealth components
- Not following households or a person over her life
- Aggregate data are extremely difficult to answer heterogeneous household effects
- 2/ 3 of labor inequality is between firms, so key to link each worker to each firm

Many different channels of transmission, so *need of granular, hard HH data*

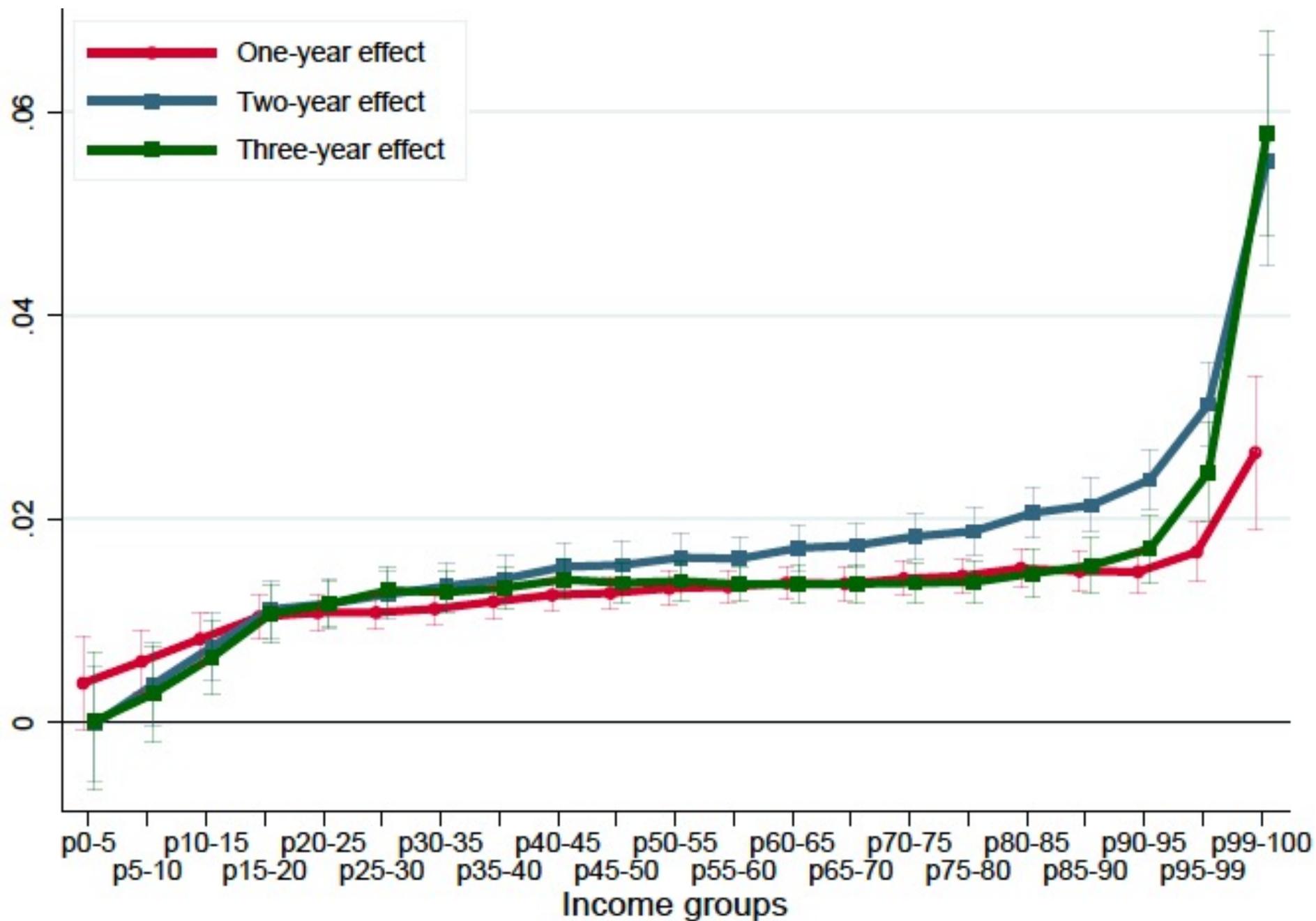
Danish paper on Monetary Policy and I, W and C inequality

- Estimate how **changes in MP rates** affect **disposable income** and **wealth** (and **components**) and **C** at different ex-ante positions in the **income distribution**
- Use administrative **tax matched data** from Denmark with detailed info about income & wealth components, & imputed consumption or car purchases
 - Income/expense & balance sheet (asset & liability) items: e.g. # weeks employed, salary, firm id, bank, deposits, stocks, real estate, debt...
 - Person/**household-level for the entire population**
 - Annual, **1987-2014**
- **Much simpler MP rule** (than other countries as e.g. USA, UK, Japan or other Scandinavian countries): **pegged** (stable) **exchange rate** since 1987
 - We use it to get some exogeneous variation in monetary policy rates
 - Control for ex-ante (& even ex-post) cycle EA/GE, trade/capital flows DK...

Summary of main results

- Softer monetary policy (MP) increases **disposable income** at all income levels. But **gains are monotonically increasing** (non-linearly) **in the income level**
 - A 1 p.p. cut in MP rate raises income by 0.5% at the bottom of the income distribution, by 1.5% at the median level, and by more than 5% for the top-1%. Employment (also total labor income) effects are larger for lower income HH
- Effects on *asset values* via increases in house and stock prices exhibit a similar monotonic gradient, but with much higher effects than income
- Distributional effects reflect systematic differences in exposure to the direct and indirect channels of MP, highlighting the quantitative importance of *non-labor channels* (e.g. dividends, leverage, risky assets)
- Consistent effects on *net wealth accumulation & consumption* (car purchases), increasing both monotonically over the ex-ante income distribution
- *Age heterogeneity sorting* after softer MP: strongest effects for income for 45-55 years old HHs; while for wealth, the strongest effects are for 65-75 y.o.; 25-35 years old households benefit the least in terms of income and wealth
- Our estimates imply that softer MP increases inequality

Results: disposable income

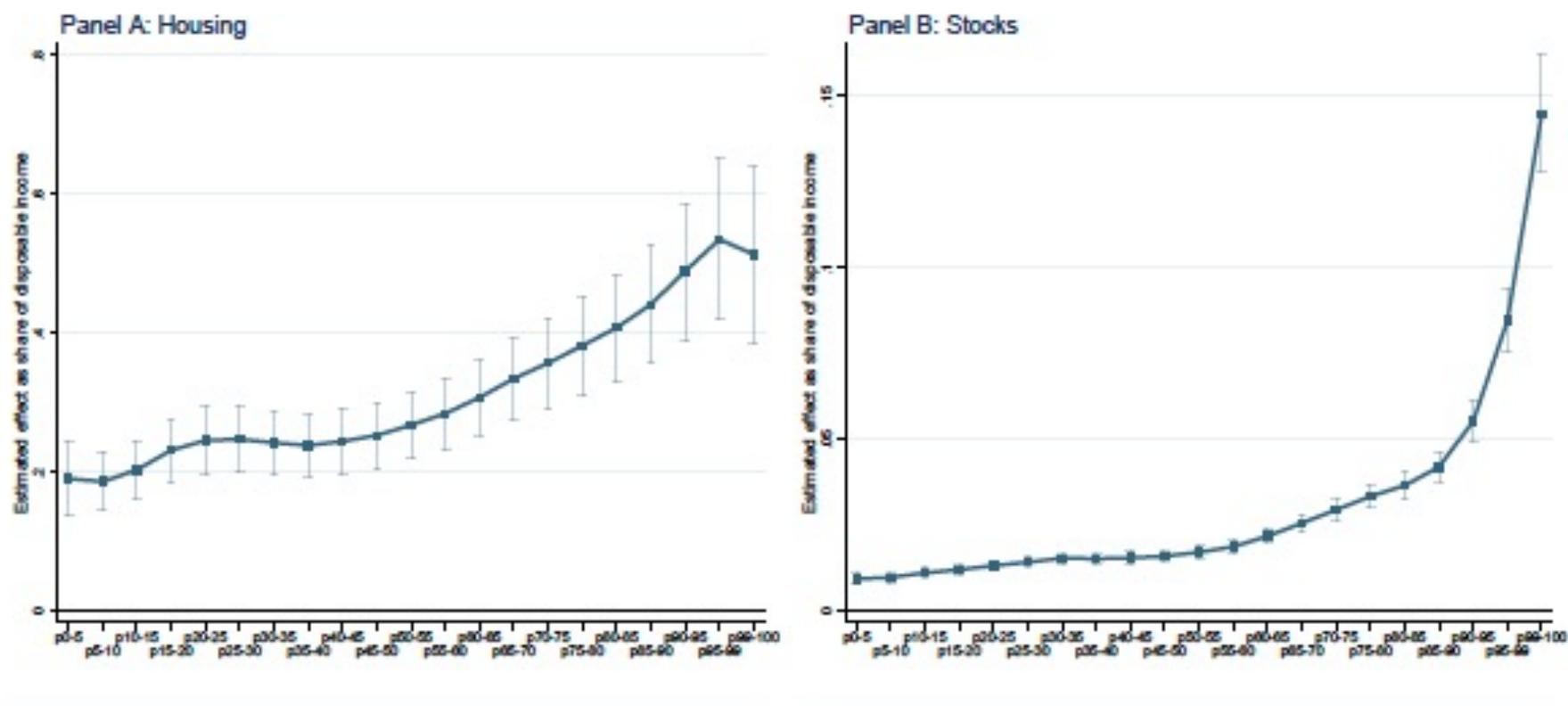


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Real estate and stocks

Figure 8: Heterogeneous effects of monetary policy on asset values by type. The figure shows the estimated two-year "price effect" of a one percentage point decrease in the monetary policy rate on the value of housing assets and stock portfolios at different positions in the income distribution. The estimates for shorter time horizons are reported in Figure A6 in the Online Appendix.



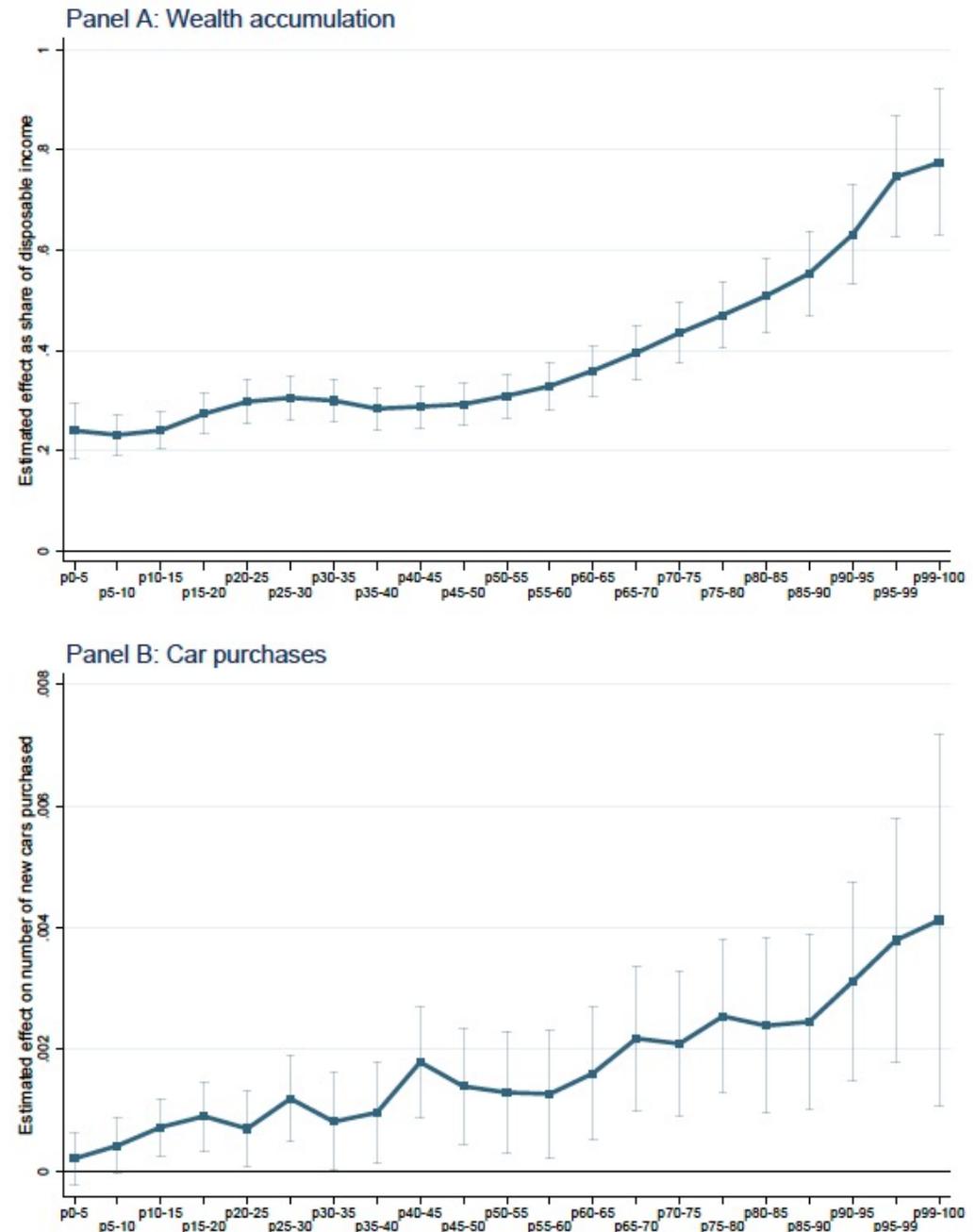
Implications for:

(i) Net wealth accumulation & consumption

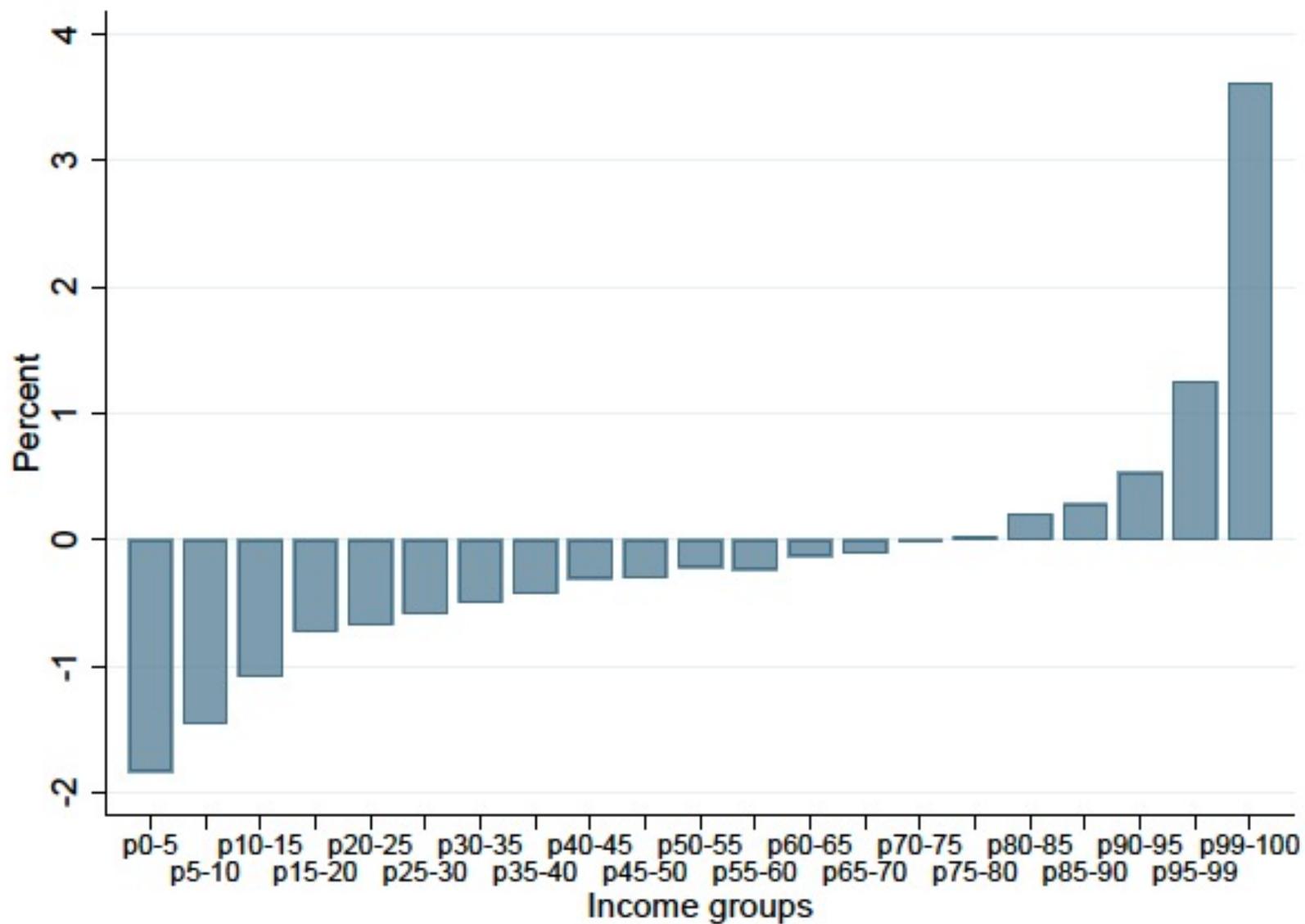
(ii) Inequality

Net wealth & consumption

Figure 11: Implications for wealth accumulation and consumption. The figure shows the estimated two-year effect of a one percentage point decrease in the policy rate on the change in net wealth (Panel A) and the number of newly registered cars (Panel B) at different positions in the income distribution.



Implications for inequality (change in income shares)



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Portuguese evidence on the labor and credit markets

Questions:

1. How does **monetary policy** affect **labor income inequality**?
2. What is the **role of the credit** in the transmission mechanism? Normal vs. **crisis times**

Identification:

- **Granular employee-employer data** of all private firms matched with the universal **credit registry** in Portugal
- Investigate the impact of monetary policy on labor income redistribution **since the Eurozone creation in 1999**
- Focus on **Portugal** allows us to overcome the identification and data challenges

Summary of the results (1)

Softer monetary policy reduces labor inequality, especially across firms

- Low wage workers (e.g. **females**) benefit most, but largest effects across firms

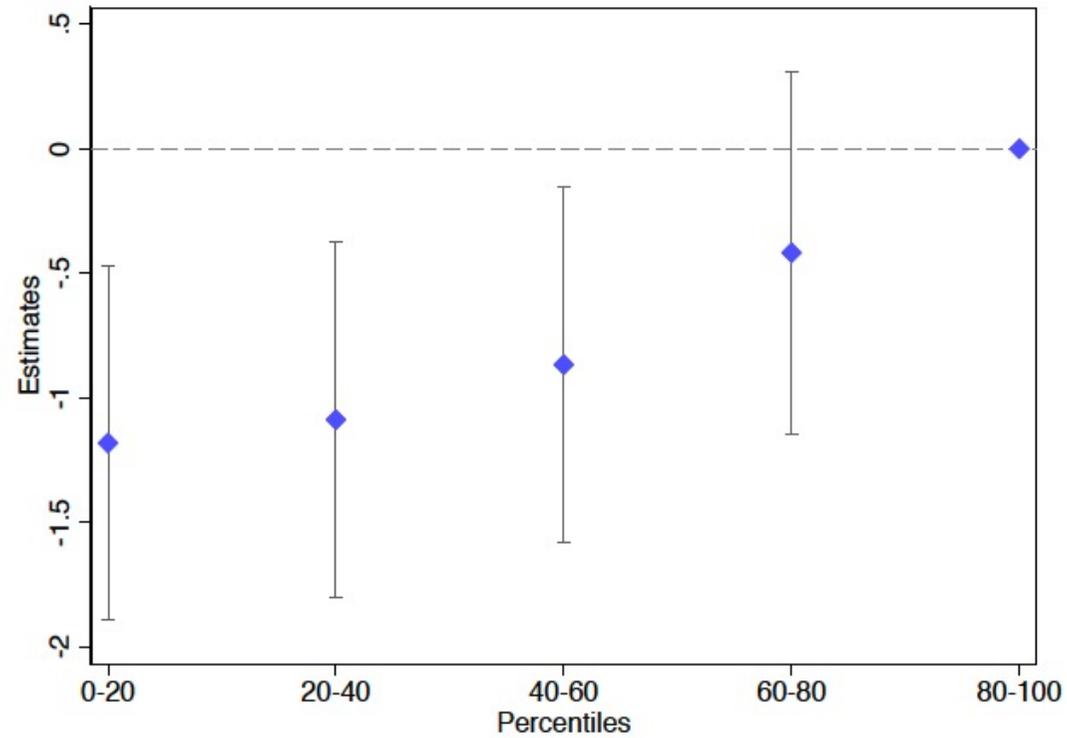
1. Firm heterogeneity

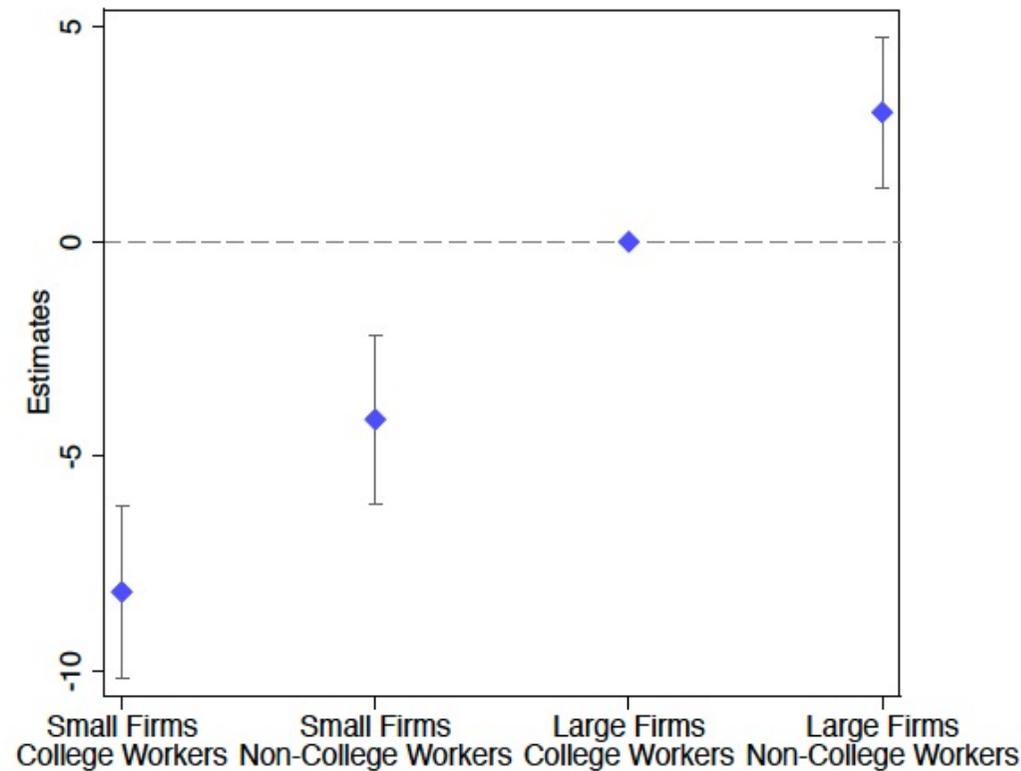
- Softer MP increases **wages** more in **small and young firms**, especially if **highly levered**
 - Consistent with the **back-loaded wage mechanism**: MP relaxes financial constraints and allows firms to increase the wage profile for their workers
 - Softer MP increases **employment and hours worked** by more in small and young firms

2. Worker heterogeneity

- **High-skilled and young workers** benefit the most
 - Consistent with the **capital-skill complementarity mechanism**: Softer MP allows financially constrained firms to increase capital investment and employment of skilled workers

Following a softer monetary policy, **small firms** increase wages by more than large firms. The effect is markedly linear in firm size.





Following softer monetary policy conditions, small (young) firms increase employment of skilled workers consistent with theories of capital-skill complementarity

Credit plays a crucial role for inequality in the MP transmission channel

- Develop firm-level exposure to credit channel of MP
- By alleviating firm and (main) bank financial constraints, softer MP eases access to credit, thereby reducing labor inequality
 - No labor redistribution effects for firms without bank credit

State-dependent results

- Substantially stronger effects in crisis times (when financial constraints are more severe)

UK Macropuru DTI: triple crunch for low-income borrowers but benefits

Question:

- We analyze the **distributional effects of macroprudential policy** on mortgage and house-price cycles

Identification:

- We exploit the **UK mortgage-register** and a 15%-**limit** imposed in 2014 **on lenders—not households**—for high loan-to-income ratio (**LTI**) mortgages. Not binding at the system level, only for some banks

Results:

- Despite some regulatory arbitrage (e.g. increasing LTV ratios), more-constrained lenders issue **fewer and more expensive high-LTI mortgages**
- Partial substitution by less-constrained lenders leads to **overall credit contraction to low-income borrowers** in local-areas more exposed to constrained lenders, lowering house-price growth
 - **Triple crunch for low-income borrowers**
- **Benefits:** exploiting the Brexit referendum (which led to house-price correction), the 2014-policy strongly implies **better house prices and lower mortgage defaults during a bust**

Netherlands *Macropru LTV: benefits and some potential costs*

Question:

- We analyze the effects of **borrower-based macroprudential policy** at the **household-level**

Identification:

- We exploit administrative Dutch **tax-return and property ownership data** linked to the **universe of housing transactions**, and the introduction of a mortgage **loan-to-value limit**

Results:

- The regulation **reduces mortgage leverage**, with bunching in its limit
- **Solvency vs. liquidity trade-off**: Ex-ante more-affected households substantially reduce overall leverage and debt servicing costs but consume greater liquidity to satisfy the regulation
- **Benefits**: Improvements in household solvency result in less financial distress and, given negative idiosyncratic person-level shocks, better liquidity management and consumption response
- **Costs?** However, fewer households **transition from renting into ownership**. All of these effects are stronger for liquidity-constrained households. We are analyzing wealth accumulation and consumption effects

Conclusions

Two crucial challenges/risks after the COVID crisis are:

- Inequality
- Debt and asset prices

At the same time, we have very **low monetary policy rates** and unconventional monetary policy

The relationship among these phenomena are complex & multifaced

Nevertheless **monetary and macroprudential policies influence inequality. Debt, asset prices (risk) and labor are important channels**

Not only important for *inequality* but to understand transmission mechanisms of monetary and macropru policies