Inequality hysteresis

Enisse Kharroubi, Emanuel Kohlscheen, Marco Jacopo Lombardi,
Benoit Mojon and Luiz Awazu Pereira da Silva

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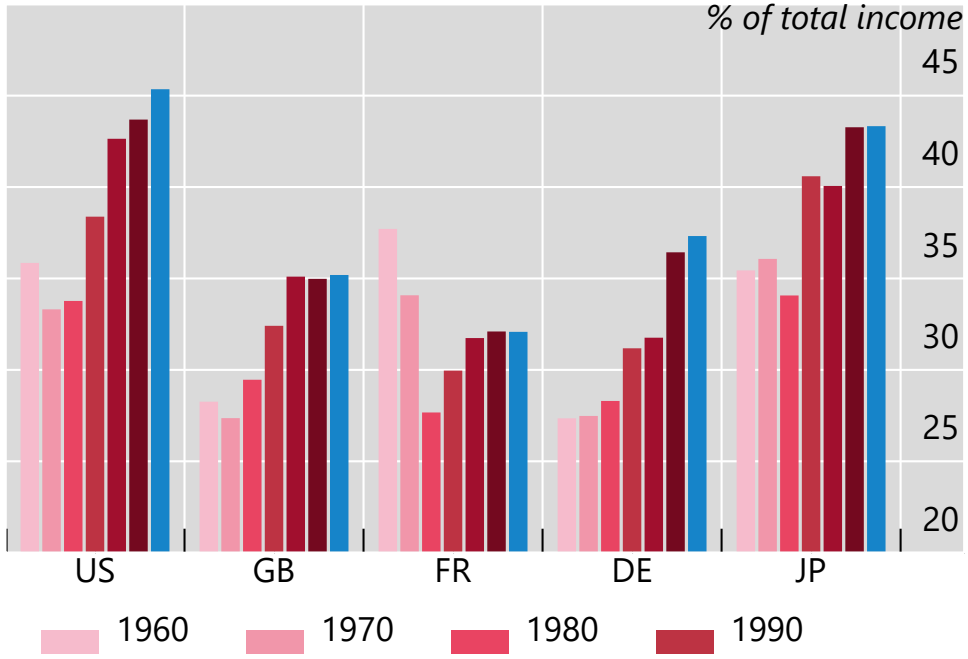
Overview

- Inequality has been on a rising trend since the mid-1980s
- Most see the rise as a result of important slow moving factors (eg technological progress and globalisation)
  - Policies to address the problem have thus tended to be of long-term structural nature (eg education, training programmes to upgrade skills, infrastructure, trade openness,…)
- Yet cyclical factors' contribution to rise in inequality has been overlooked

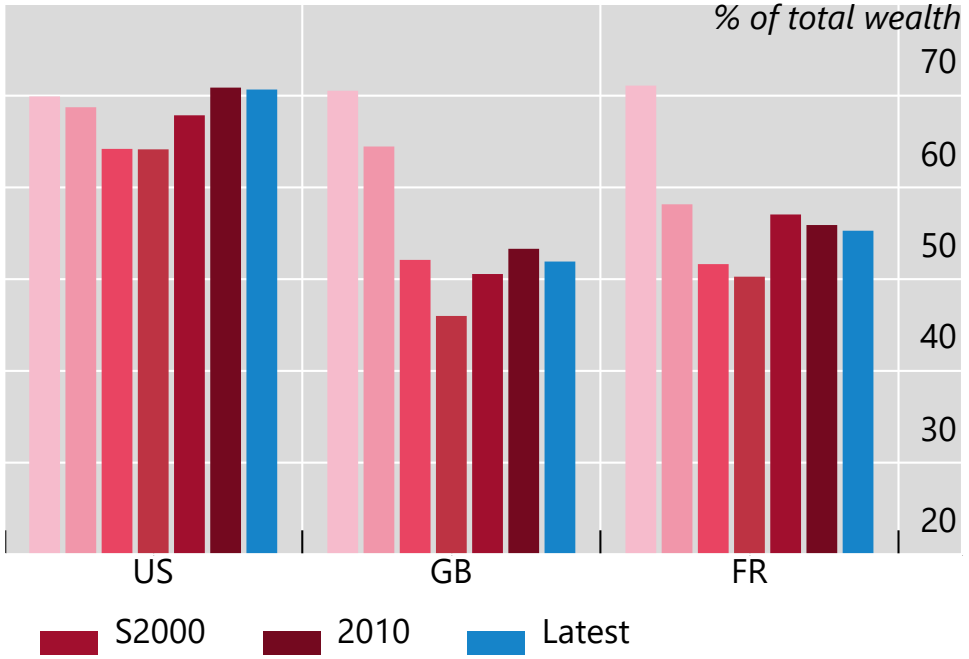
- We show that
  1. **Inequality rises in downturns and fails to subside during the recovery**
  2. **Inequality makes recessions deeper**
  3. **Inequality dampens the stabilisation effectiveness of fiscal and monetary policy**

Inequality has been on a rising trend over the past decades…

Pre-tax income, share of top 10%



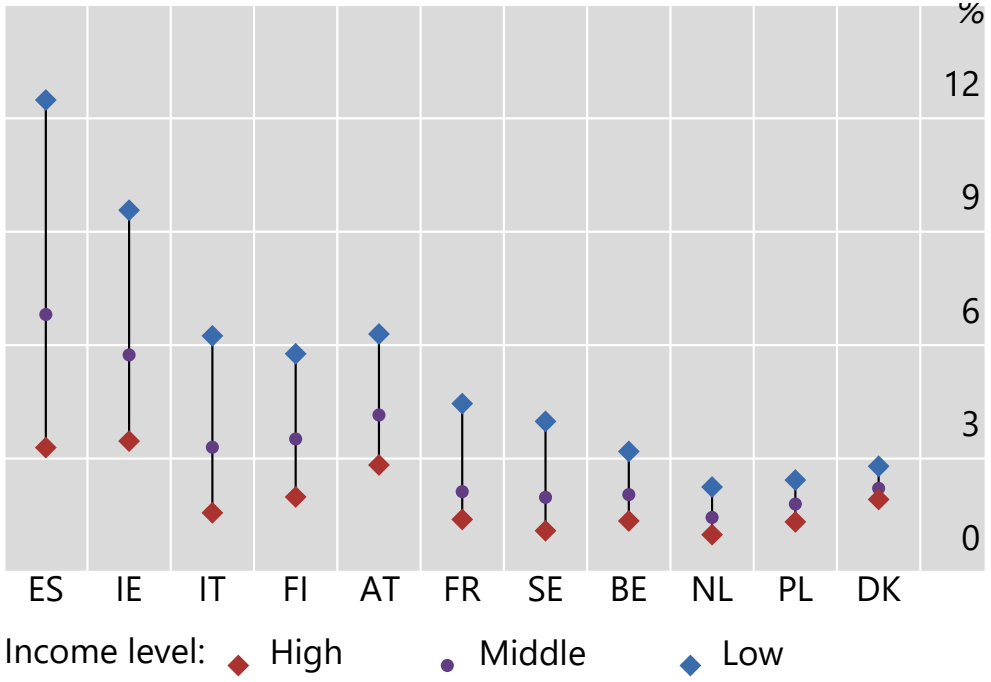
Wealth, share of top 10%



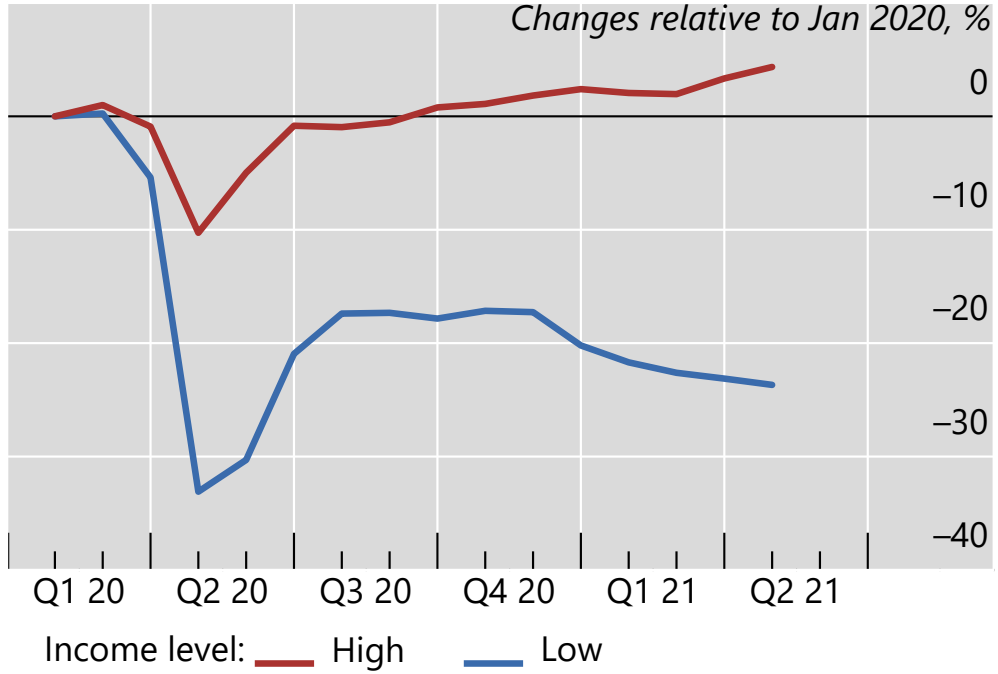
- The top 10% earners (ie high skill labour force) are the clear winners
  - Technological change & globalisation have increased demand for high skill tasks
  - When supply of skilled labour fails to keep pace, skill premium rises (Tinbergen's race)

…but cyclical factors also matter! As shown (again) by the Covid-19 recessions:

EU: risk of job loss by income during the pandemic

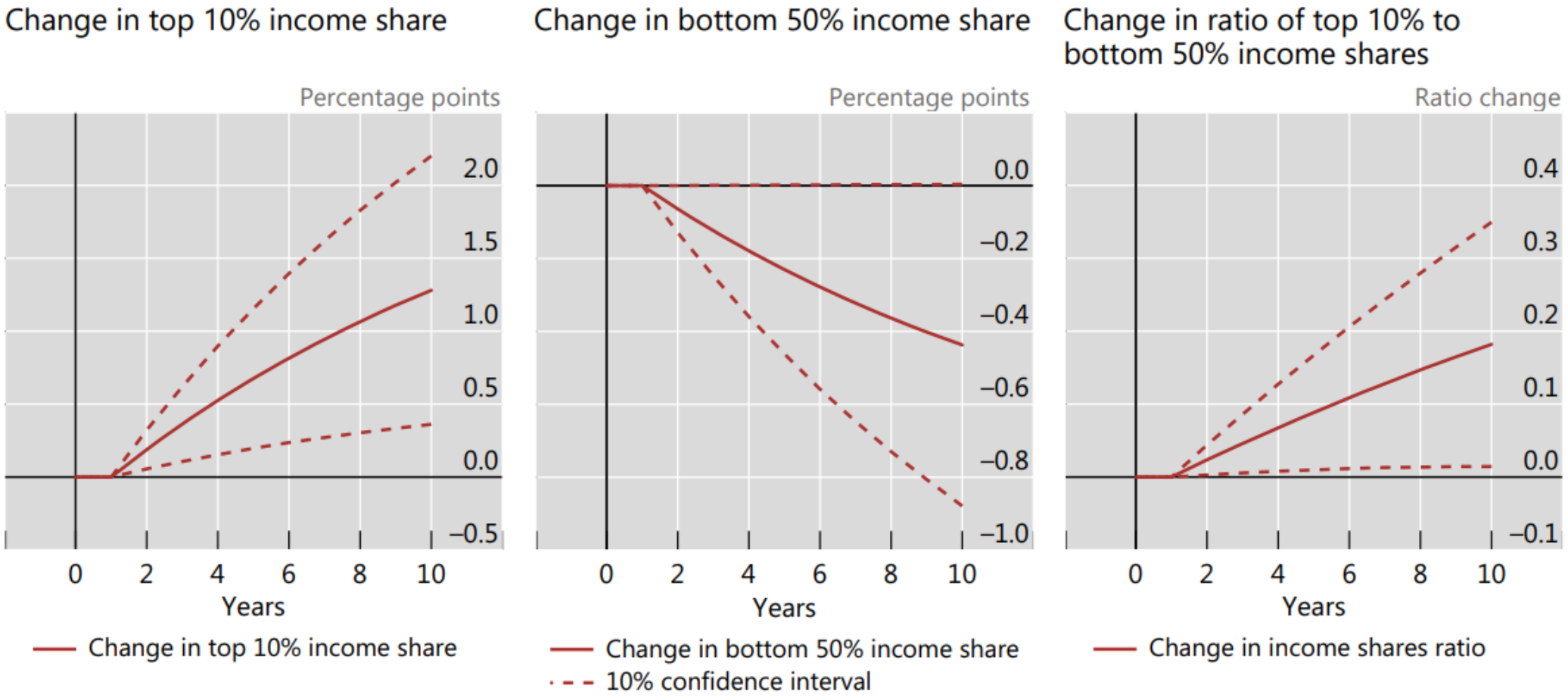


US: employment by income



- Likelihood of job loss more than 3 times larger for low income workers
- Employment recovered quickly only for the high-skilled

This pattern is systematic after recessions



[1] The graph report the impulse response based on a panel regression of income shares (or their ratio) on dummies that identify a recession, ie, a reduction in the level of GDP from the year before. Panel of 70 countries over 1983-2020, with 182 recessions identified among 1700 country-year observations.

Inequality hysteresis

We label the distributional scars that recessions leave behind **inequality hysteresis**

- Recessions leave persistent scars on inequality measures
- Hence, avoiding and mitigating recessions is crucial
- Stabilisation policies are key to reducing depth of scars
  - That also preserves their effectiveness

Inequality and recessions

Inequality deepens recessions

- Our key finding:
  - Higher income inequality means steeper falls in consumption during recessions
  - We find economically significant effect at the international level and across US states
  - Results due to variation across, but also within countries

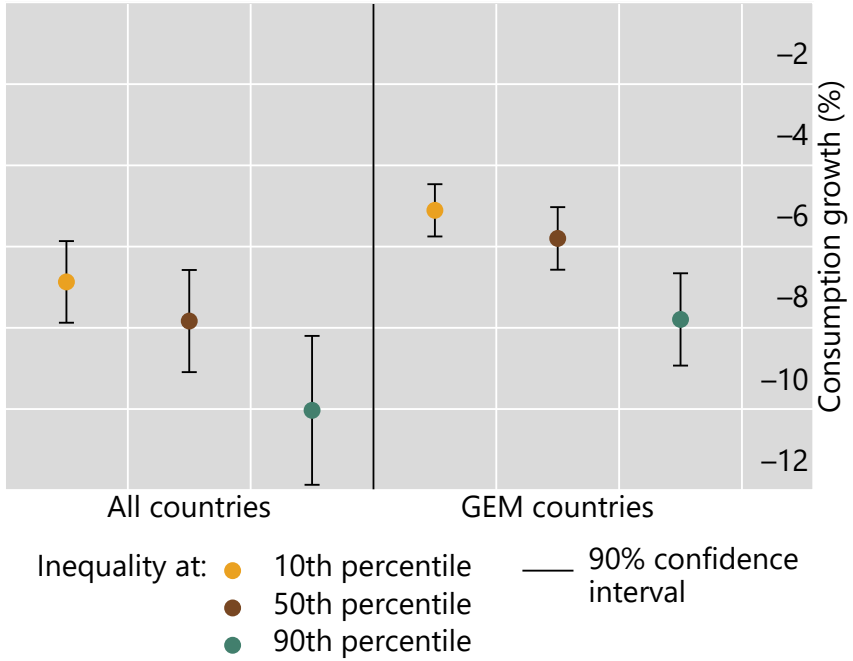
- Empirical test:

$$\Delta_h c_{i,t} = \rho^h \Delta c_{i,t-1} + \alpha^h \, rec_{i,t} + \gamma^h I_{i,t-1} + \beta^h rec_{i,t} \times I_{i,t-1} + \lambda_i^h + \epsilon_{i,t+h-1}$$

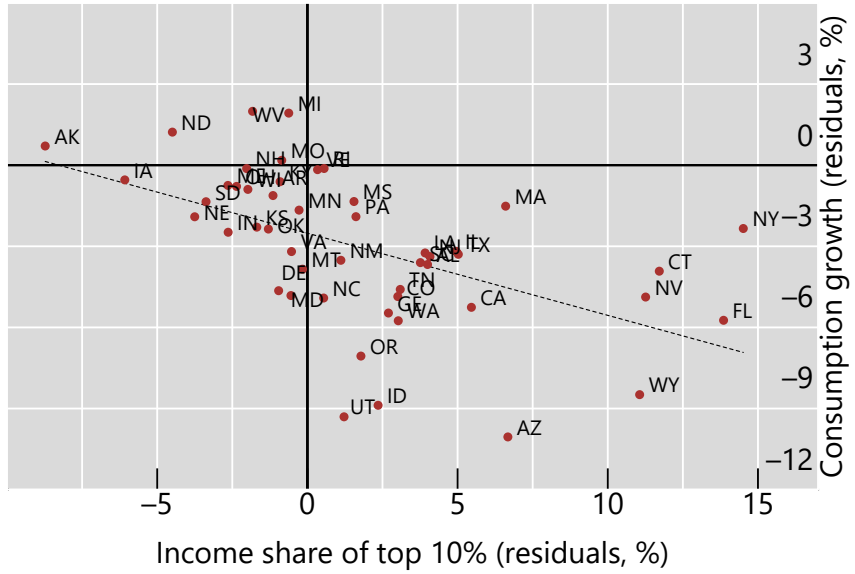
  Fixed effect panel data model of 84 countries with population>1m, GDP pc>$ 3000 (in 2010 v)

The cost of income inequality: steeper declines in private consumption

Recessions in more unequal countries lead to steeper declines in consumption



More unequal US states had steeper declines in consumption during the GFC



- recessions are significantly deeper in more unequal countries. Effect is economically significant (10th to 90th percentile, 3 p.p. negative effect on consumption growth)
- more unequal US states had deeper recessions post-GFC (inequality explains 25% of variation)

Inequality and the transmission of monetary policy

Why would it matter?

- In standard models, monetary policy transmits through intertemporal substitution
  - In reality, households have uncertain income and can only partially insure
- Under some assumptions, this seems not to matter (Krusell and Smith 1998)
  - Counter-cyclical income risk changes the picture (Werning 2015)
- Models with heterogeneous agents (Kaplan et al 2018)
  - Consumption inequality arises because of incomplete markets
  - Agents with little liquid wealth less sensitive to interest rates
- We present empirical evidence consistent with these models:
  - High inequality is associated with weaker MP transmission

Cross-country evidence

Data for AU, CA, CH, EU, GB, JP, SE and US (1999Q1 to 2019Q4)

Two-step procedure:

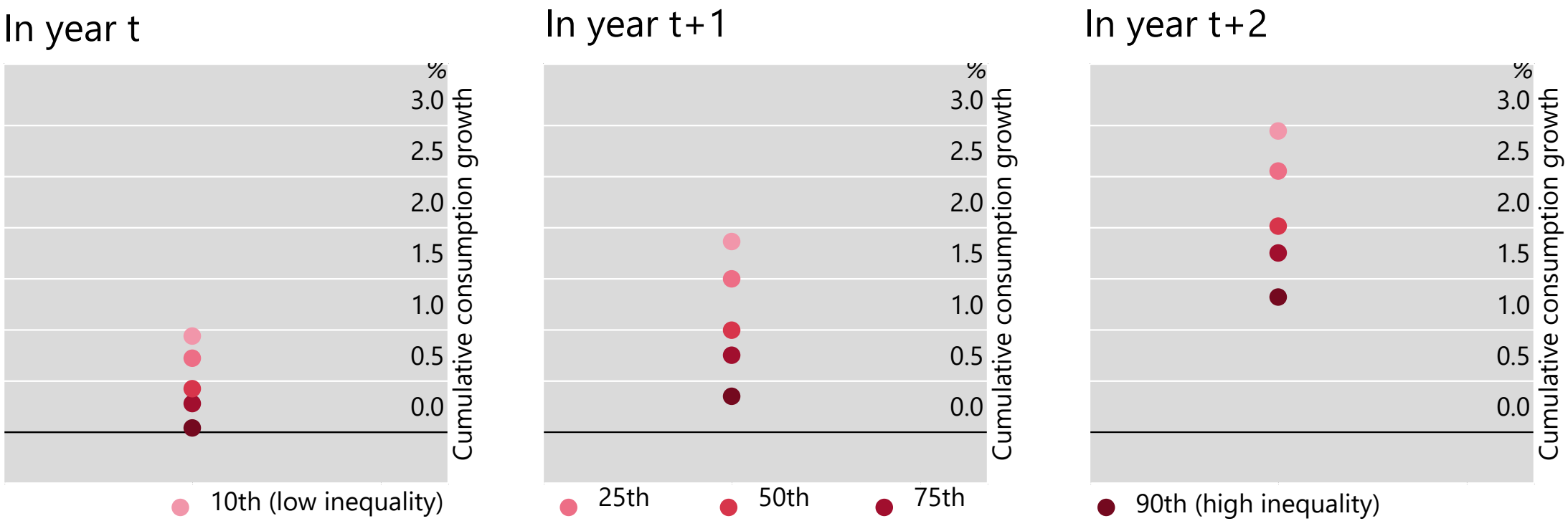
- Identification of monetary policy shocks:
  - Three-equation panel VAR, with data at quarterly frequency
  - [GDP (log diff) CPI (log diff) policy rate]
- Estimation of effects of monetary shocks on consumption growth through a local projection regression:

$$\Delta_h c_{i,t+h-1} = \rho^h \Delta c_{i,t-1} + \alpha^h m_{i,t} + \beta^h m_{i,t} \times I_{i,t-1} + \gamma^h I_{i,t-1} + \lambda_i^h + \epsilon_{i,t+h-1},$$

  - $I_{i,t}$ is the share of income accruing to the top 10% of earners

Inequality dampens the effects of monetary stimulus

Panel reaction function, converted to annual frequency



- Cumulative consumption growth following a monetary stimulus is weaker in high-inequality countries

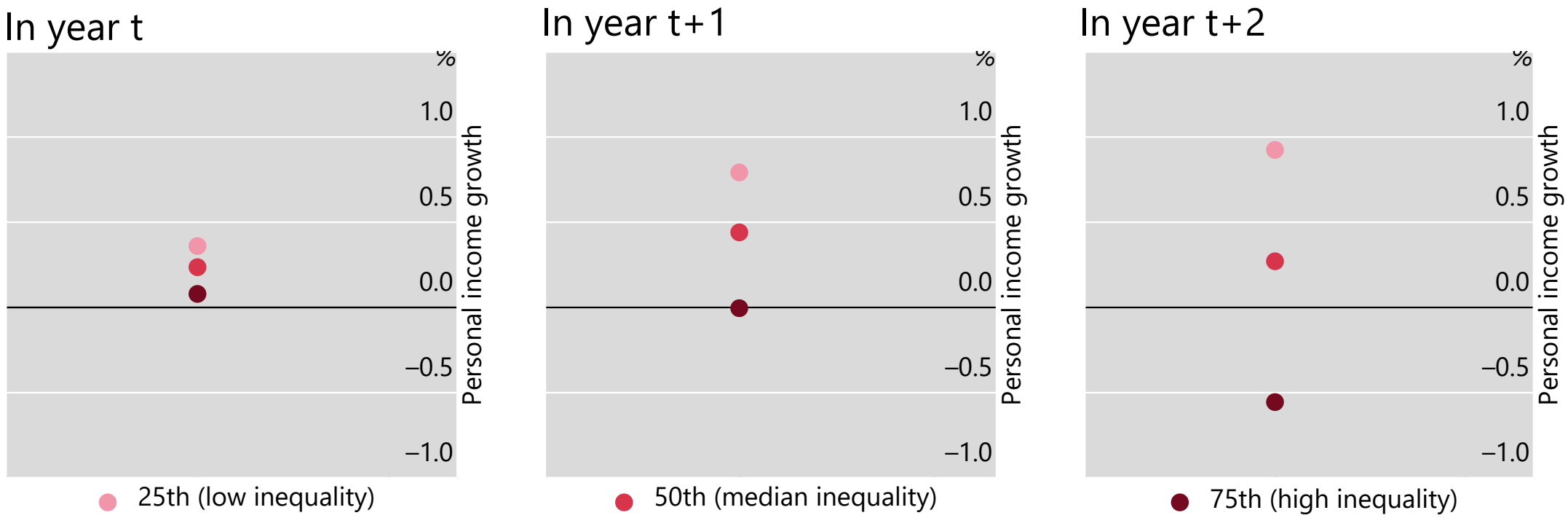
US-specific evidence

- State-level data on inequality and income (1969 to 2008)
  - From 1990 also data on unemployment and social spending
- Romer and Romer (2004) monetary policy shocks
- Controls at the national level: unemployment, inflation, SP500 returns, change in the BA-treasury 10-year spread

- Estimation of effects of monetary shocks on income growth through a local projection regression:

$$\Delta_h y_{s,t+h-1} = \lambda_s^h + \rho^h \Delta y_{s,t-1} + \alpha^h m_t + \beta^h m_t \times I_{s,t-1} + \gamma^h I_{s,t-1} + \delta^h X_t + \epsilon_{s,t+h-1},$$

The effect is also visible on personal income across US states



Conclusion

- **Inequality hysteresis**: recessions lead to step increases in income inequality
- And inequality influences the business cycle
  - Countries with higher inequality have deeper recessions
  - In countries with higher inequality:
    - Fiscal policy is less counter cyclical
    - Monetary policy easing is less effective

- Policies that **reduce the incidence of recessions** a first line of defense against inequality

- **Keeping inequality in check also key to assure that stabilisation policies (fiscal and monetary) are ultimately effective**

Reserve slides

Inequality → steeper declines in consumption during recessions

Recessions, consumption and income inequality

Dependent variable: per capita consumption growth

	all countries	*developing*
lagged dependent variable	0.547***	0.526***
	0.030	0.033
income share of top 10%	0.014	0.003
	0.076	0.092
recession	-2.188***	-3.199***
	0.570	0.781
income share of top 10% * recession	-0.169***	-0.177***
	0.020	0.026
observations	1495	953
number of countries	84	63
R2	0.633	0.617
R2 between	0.796	0.786
R2 within	0.548	0.549

Note: Estimated on yearly data since 1990. Cluster-robust standard errors are shown below coefficients. ***/**/* denote statistical significance at 1/5/10% confidence level.

From Micro to Macro:
Heterogeneity and the depth of recessions

Literature

- Consumption smoothing over the cycle is far from perfect
  - Large changes in consumption occur after actual changes in income, not only when changes become known (Jappelli and Pistaferri 2010)
  - Liquidity constraints are important, particularly for lower income households
  - Significant share of "hand-to-mouth" consumers
    - Also preferences play a prominent role in differences in MPCs across consumers (Aguiar et al 2020)

- Key fact: very large cross-sectional heterogeneity in MPCs (Landais 2021)

→ Suggests that inequality could matter, particularly during downturns

Cross-country estimation results

	Consumption growth over		
	t–1 to t	t–1 to t+1	t–1 to t+2
monetary policy shock$_t$	–3.862***	–6.195**	–7.248**
	(1.309)	(2.512)	(3.409)
mp shock$_t$ * income share of top 10%	0.136***	0.204**	0.204
	(0.046)	(0.092)	(0.127)
estimated differential effect for a one std deviation mp shock (75th–25th percentile)	0.167*** (0.053)	0.252** (0.113)	0.252 (0.156)
R^2	0.723	0.560	0.449

Entries in the table show the estimated response of the growth in real (per capita) consumption over the specified horizon to a monetary policy shock of 100 basis points in year t (see the annex text for details). Standard errors clustered at the country level are reported in parentheses below coefficients. */**/*** denotes statistical significance at 10/5/1% level, respectively.

Source: authors' calculations

US estimation results
Full sample (1969 to 2008)

Real personal income growth from	t-1 to t	t-1 to t+1	t-1 to t+2
m.p. $shock_t$	-15.920**	-42.865***	-74.126***
	(4.741)	(6.681)	(8.390)
m.p. $shock_t$ * income share of top 10%	0.373**	1.058***	1.964***
	(0.117)	(0.166)	(0.211)
estimated differential effect for a one std deviation mp shock (75th–25th percentile)	0.281*** (0.088)	0.797*** (0.125)	1.480*** (0.159)
R^2	0.175	0.348	0.303

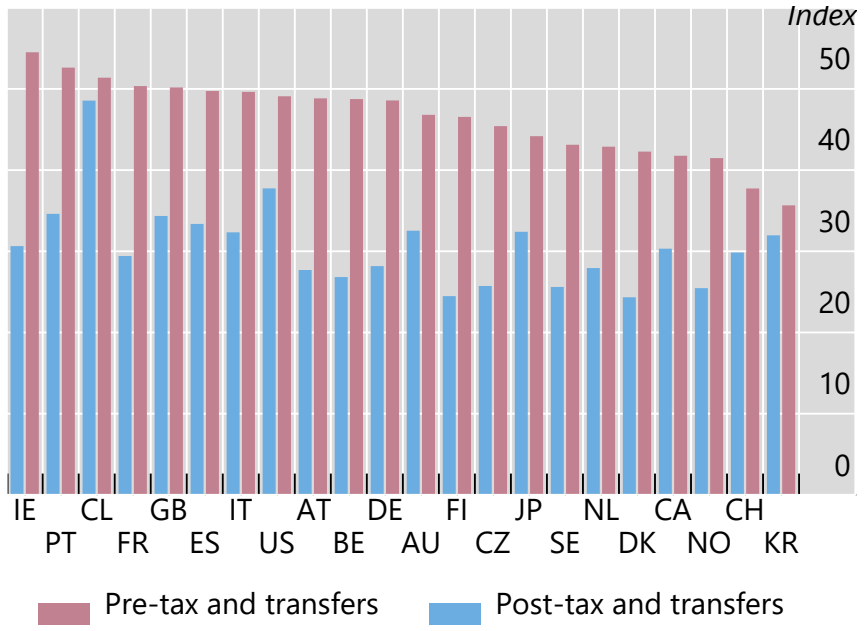
US estimation results

Controlling for unemployment and social spending (1990 to 2008)

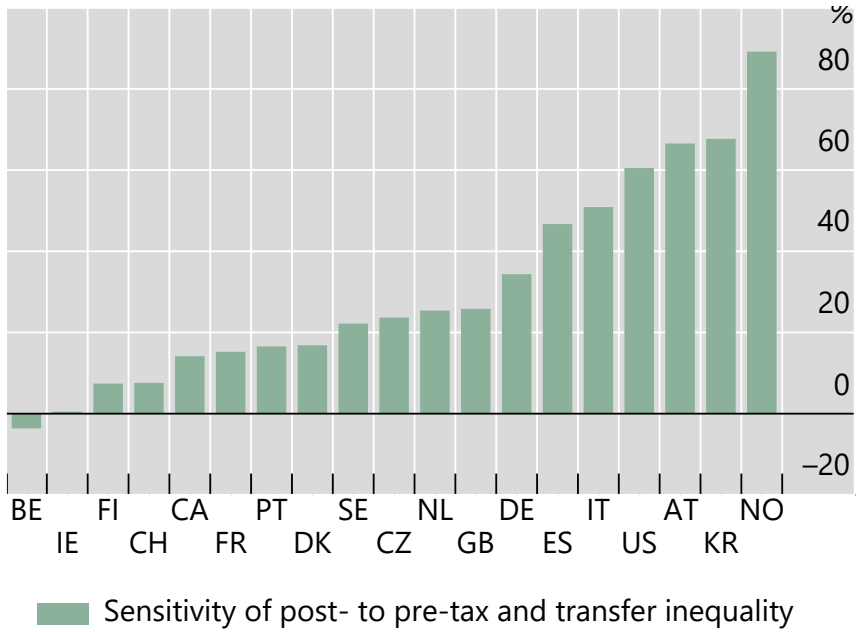
Real personal income growth from	t-1 to t	t-1 to t+1	t-1 to t+2
m.p. shock$_t$	-23.757***	-41.850***	-39.825***
	(6.133)	(8.232)	(10.721)
m.p. shock$_t$ * income share of top 10%	0.516**	1.023***	1.131***
	(0.155)	(0.206)	(0.266)
estimated differential effect for a one std deviation mp shock (75th–25th percentile)	0.388***	0.770***	0.852***
	(0.117)	(0.155)	(0.200)
R^2	0.351	0.548	0.504

Fiscal policy, redistribution, and stabilisation

Taxes and transfers reduce Gini inequality levels



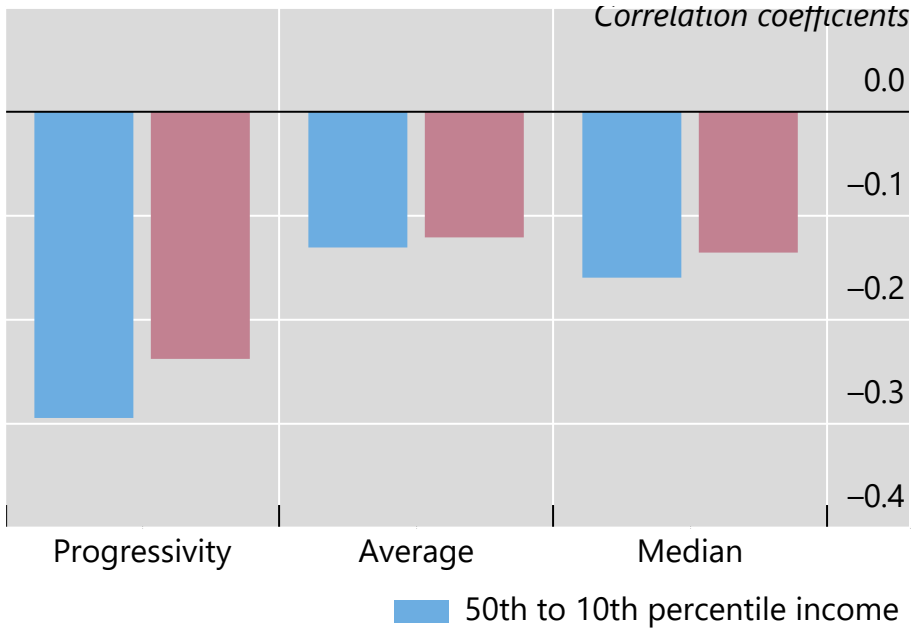
In many countries, taxes and transfers significantly dampen fluctuations in Gini inequality



- Fiscal policy has a large impact on inequality. This can be observed by comparing before and after-tax & transfers income inequality:

Fiscal policy, redistribution, and stabilisation

Tax progressivity matters for inequality, overall tax burden does not

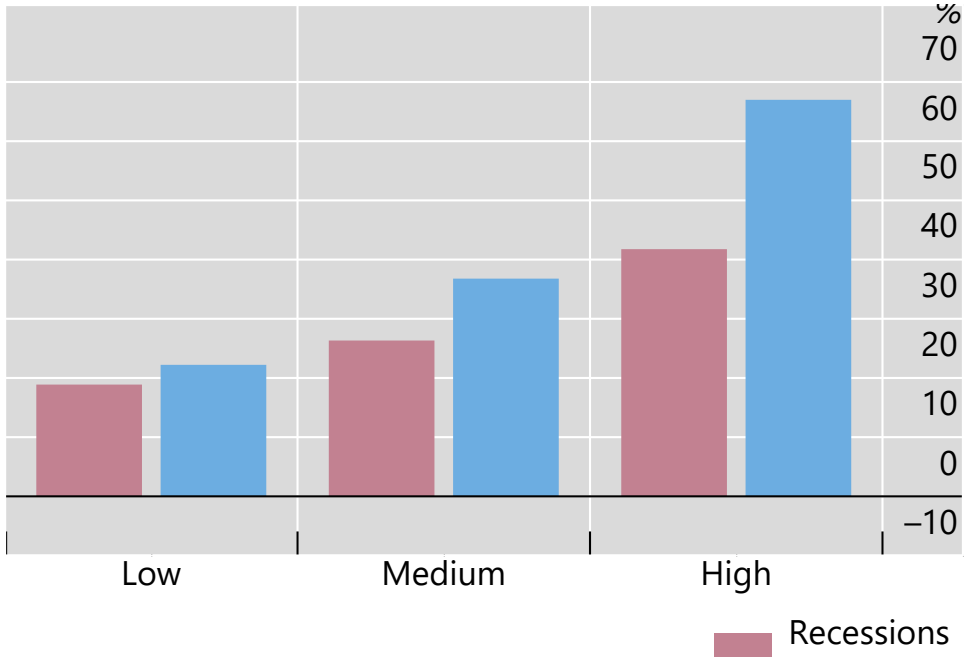


Higher UI replacement rate comes with lower Gini index

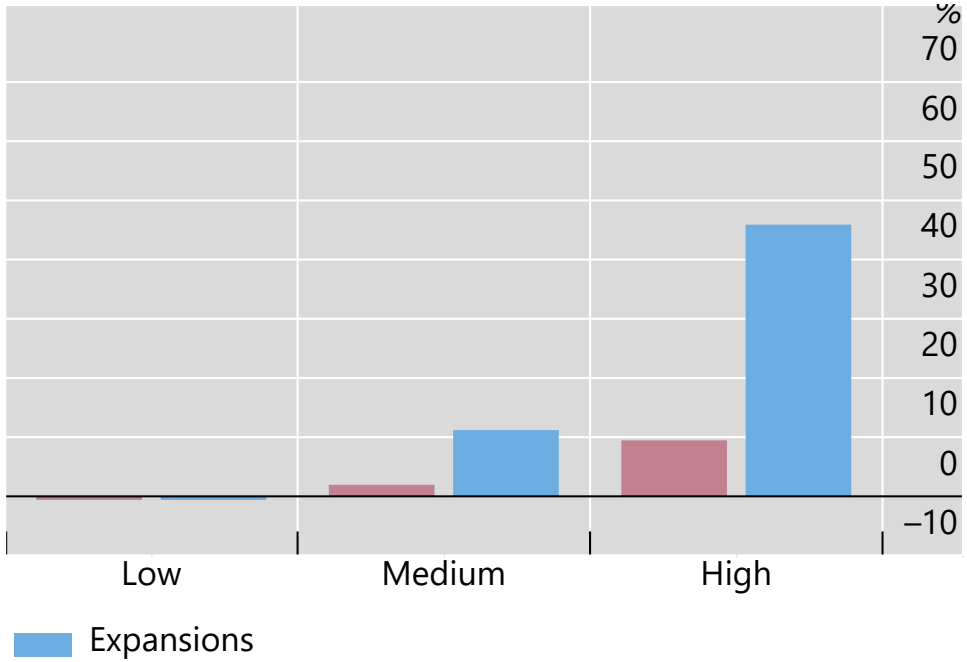
- Part of this impact relates to differences in income tax progressivity and unemployment insurance generosity. low tax progressivity and/or low unemployment replacement ratio are systematically associated with high inequality pass-through

Fiscal policy, redistribution, and stabilisation

Progressive taxes raise fiscal balance sensitivity to the business cycle, particularly in expansions

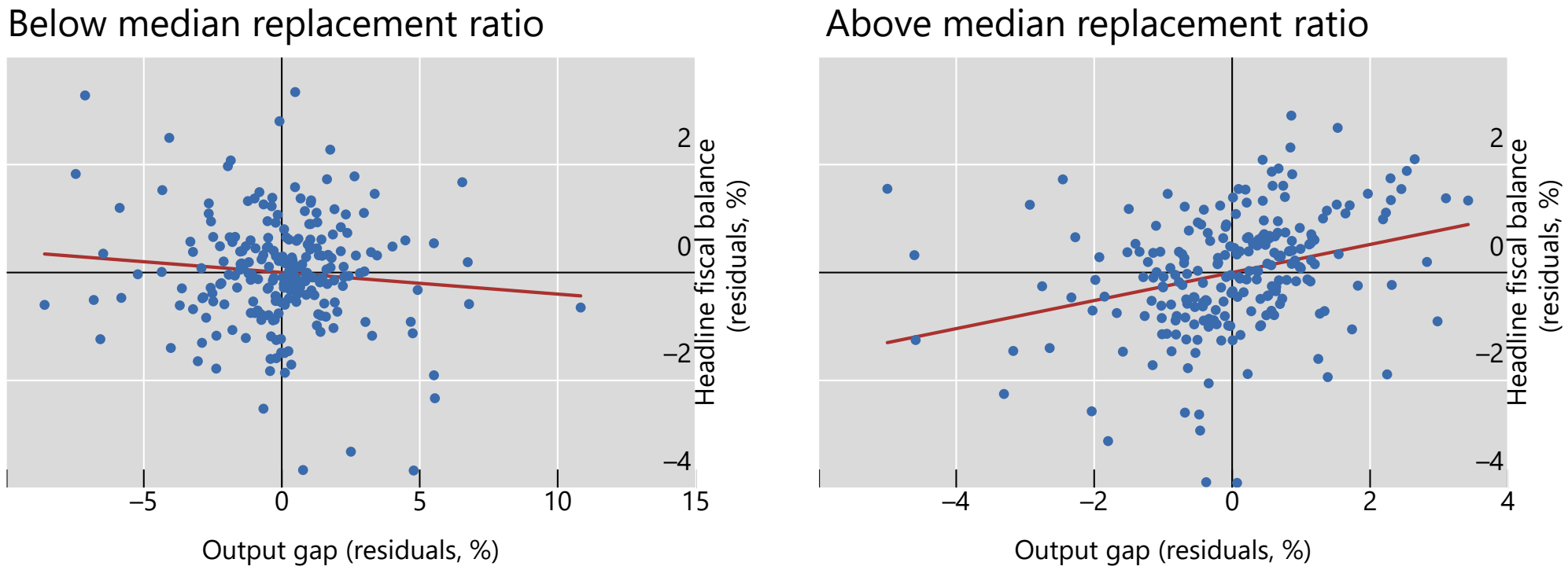


High replacement ratio also raises fiscal balance sensitivity to the output gap, driven by expansions



- High progressivity and/or high unemployment replacement ratios make fiscal policy react more strongly to the business cycle, particularly in expansions

Fiscal policy, redistribution, and stabilisation



- Yet, tax progressivity and unemployment insurance generosity also affect fiscal policy capacity to stabilize the business cycle

Fiscal Policy, redistribution, and stabilisation

- Conclusions: Redistributive policies deliver three goodies
  - They help reduce inequality
  - They make fiscal policy more anti-cyclical, which promotes long-run growth
  - They help rebuild fiscal space more quickly in expansions, which reduces the pace of public debt accumulation and improves fiscal sustainability

- Policy implications/stakes
  - Evidence that redistribution negative supply-side effects outweigh the positive impacts described above has yet to be developed
  - However, in practise, strong redistribution is difficult in the presence of location arbitrage and/or tax optimisation