



Financial globalization, monetary policy and inequality

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This presentation is based on joint work with P. Loungani, J.D. Ostry and A. Zdzienicka.

The views expressed in this paper are those of the authors and do not necessarily represent those of the IMF or IMF policy.



Financial globalization and inequality



Financial globalization and inequality: theory

- Financial globalization reduces the cost of capital, which may lead to a decline in the labor share if capital is highly substitutable for labor.
- It may reduce the bargaining power of labor, reducing the labor share of income.
- Liberalization may also bias financial access in favor of those who are well-off.
- The probability of financial crisis increases after liberalization—crises tend to disproportionately hurt the poor.



Measure of financial globalization

Based on Chinn-Ito (Kaopen) index

- Examining the behavior of inequality before and after the removal of restrictions on the capital account requires information about the date on which the restrictions were lifted.
- We infer the timing of major policy changes by assuming that a liberalization takes place when, for a given country at a given time, the annual change in the Kaopen indicator exceeds by two standard deviations the average annual change over all observations.



Financial globalization episodes

Methodology

	70s	80s	90s	2000s	1970-2010
All	38	25	100	61	224
High income	15	7	23	14	58
Upper middle income	11	9	28	31	79
Lower middle income	5	6	31	12	54
Lower income	7	3	18	5	33



Empirical approach—macro

Baseline

$$g_{it} = a_i + \gamma_t + \sum_{k=1}^l \beta_k g_{i,t-k} + \sum_{j=0}^l \delta_k D_{i,t-k} + \sum_{k=1}^l \vartheta_k X_{i,t-k} + \varepsilon_{it}$$

g =change in log Gini (others measures of income distribution);

D =financial globalization episodes;

X =trade, product market, domestic finance, labor market liberalizations,

Non-linearity

$$\begin{aligned} g_{it} &= a_i + \gamma_t + \sum_{j=1}^l \beta_j g_{i,t-j} + \sum_{j=1}^l \vartheta_j X_{i,t-j} \\ &+ \sum_{j=0}^l \delta_j^- D_{i,t-j} G(z_{it}) + \sum_{j=0}^l \delta_j^+ D_{i,t-j} (1 - G(z_{it})) + \varepsilon_{it} \end{aligned}$$

$G(z)$ = smooth transition function of financial depth, financial inclusion, crises.



Empirical approach—sectoral

Baseline

$$g_{jit} = a_{ij} + \gamma_{it} + \rho_{jt} + \sum_{k=1}^l \beta_k R_j g_{i,t-k} + \sum_{k=0}^l \delta_k R_j D_{i,t-k} + \varepsilon_{jit}$$

R = Rajan-Zingales measure of dependence on external finance; natural layoff rate.

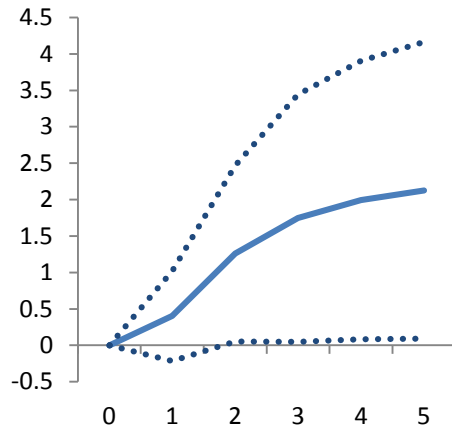
Assumptions: (i) liberalization allows financially constrained firms to demand more capital (Gupta and Yuan, 2009; Igan and others 2016; Larrain 2015); (ii) the effect of liberalizations on the labor share of income is higher in industries with a higher “natural” layoff rates.



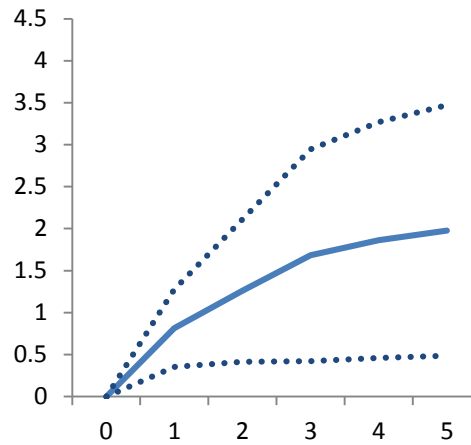
Distributional effects—macro

(Gini, percent)

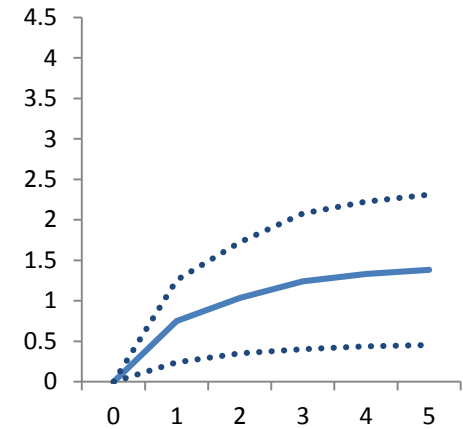
Panel A. Baseline



Panel B. Quinn and Toyoda



Panel C. IV*



Note: The solid line corresponds to the IRF; dotted lines correspond to 90 percent confidence bands. The x-axis denotes time. $t=0$ is the year of the reform.

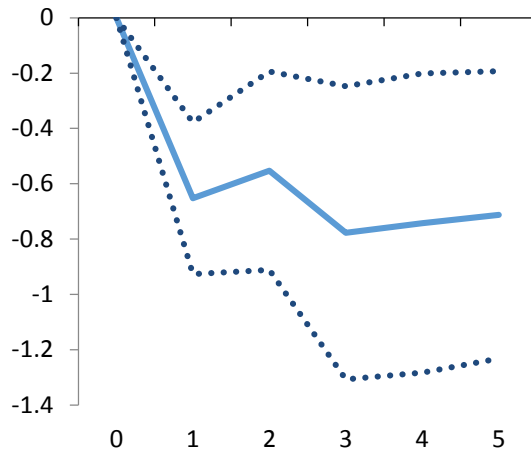
*Instruments: four-year lagged value of capital account openness (*scope to liberalize*); weighted average of current and lagged liberalization in main trading partners (*peer pressures*).



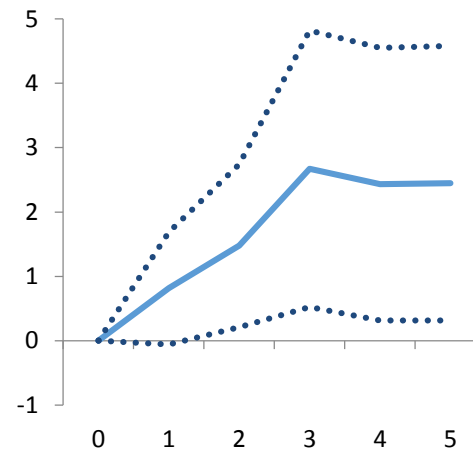
Distributional effects—macro

(Income shares, percentage points)

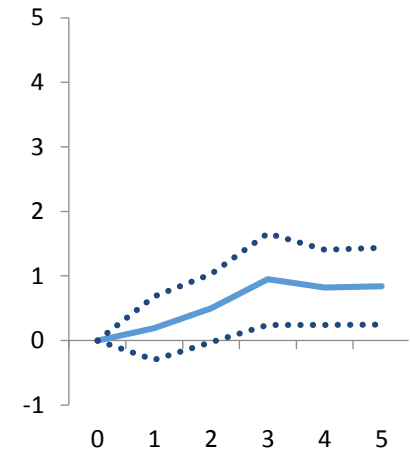
Panel A. Labor share



Panel B. Top 10 percent



Panel C. Top 1 percent

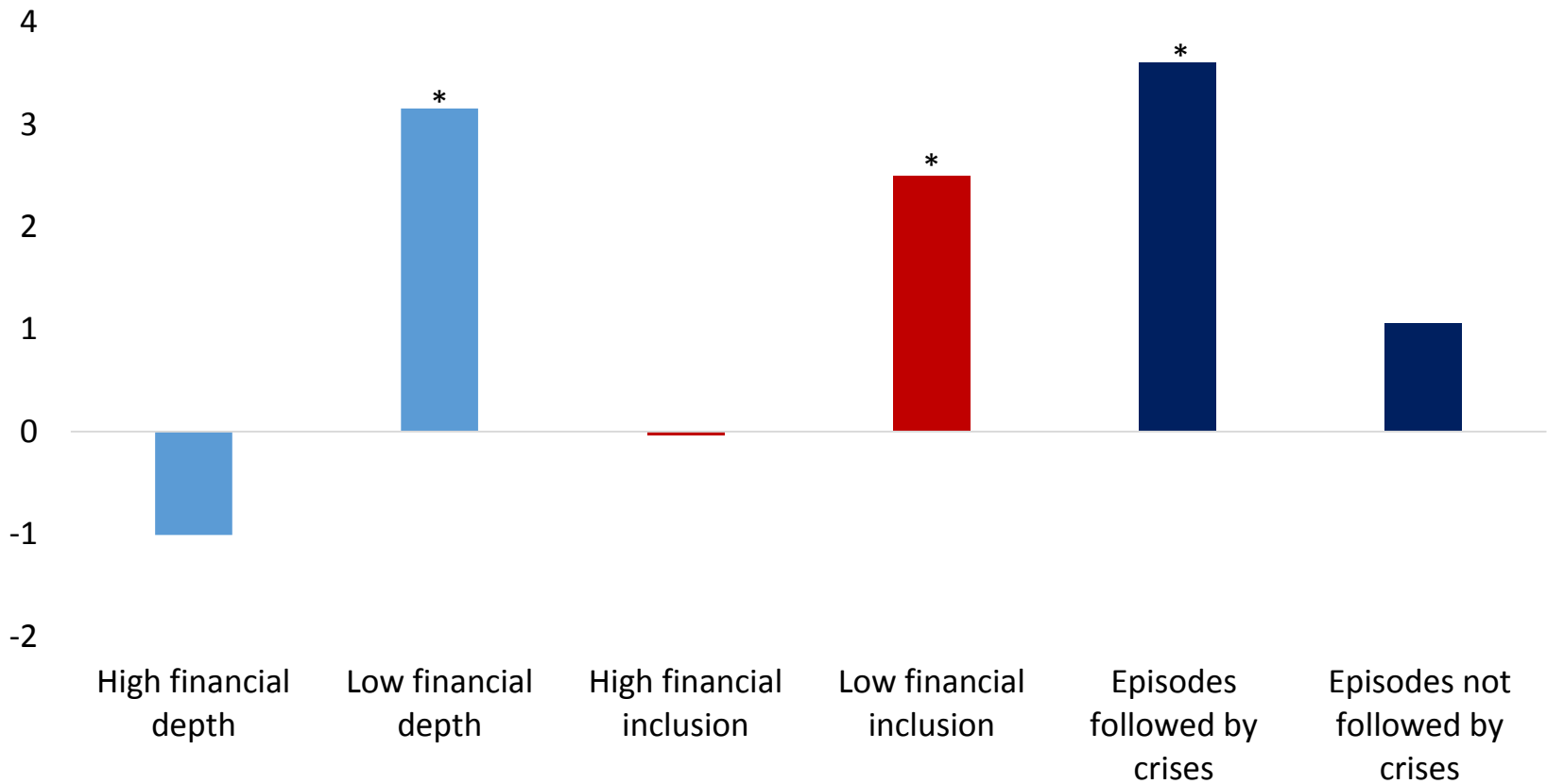


Note: The solid line corresponds to the IRF; dotted lines correspond to 90 percent confidence bands. The x-axis denotes time. $t=0$ is the year of the reform.



Effect on inequality—macro non-linear effects

(medium-term effects, percent)



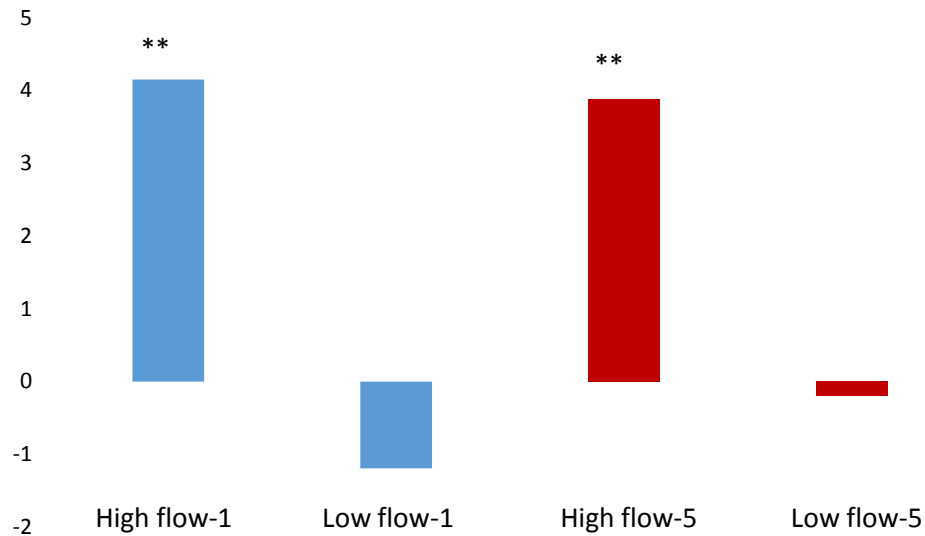
Note: . ***, **, * denote significance at 1 percent, 5 percent and 10 percent, respectively.

Results



Effect on inequality—macro, *de facto* globalization

(medium-term effects, percent)



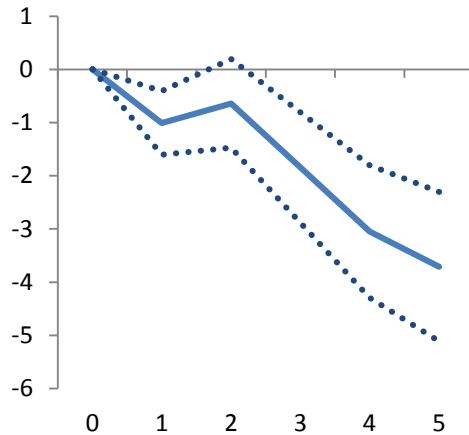
Note: 1 and 5 denote the change in flows the year after the liberalization episode, or over a five-year period; ***, **, * denote significance at 1 percent, 5 percent and 10 percent, respectively.



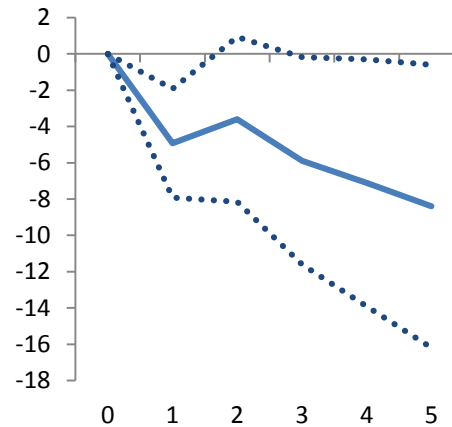
Distributional effects—sectoral

(labor income shares, percentage points)

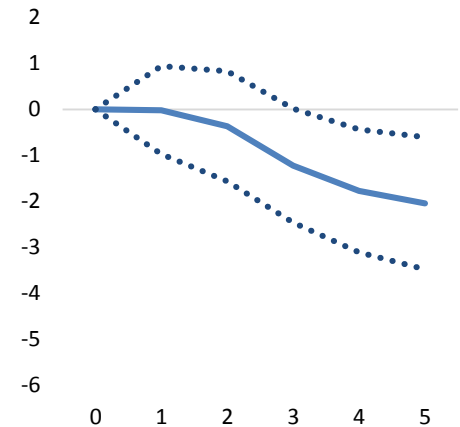
Panel A. External finance



Panel B. External finance (robust)



Panel C. Natural layoff rates



Note: Country*time, country*sector, and sector*time fixed effects included. Confidence bands computed using clustered standard errors at the country-industry level are reported. The solid line corresponds to the differential effect; dotted lines correspond to 90 percent confidence bands. The x-axis denotes time. $t=0$ is the year of the reform. Differential effects computed for an industry whose external financial dependence (layoff rate) would increase from the 25th percentile to the 75th percentile of the financial dependence (layoff rate) distribution.



Key findings and policy implications

- Positive (modest) output effects in cases where financial depth (measured by the credit-to-GDP ratio) is high and where liberalization is not followed by a crisis. Strong distributional effects.

These findings do not imply that countries should not undertake capital account liberalization, but they suggest an additional reason for caution. As noted in “The Liberalization and Management of Capital Flows: An Institutional View” (IMF 2012): *“Capital flow liberalization is generally more beneficial and less risky if countries have reached certain levels or thresholds of financial and institutional development.”*

Countries may need to design liberalization in a manner that balances this consideration against the other effects: foster financial development and inclusion; pre-distribution and redistribution policies.



Monetary policy and inequality



Ambiguous effects

In theory, expansionary monetary policy may:

- Increase inequality: Boosting asset prices—top-income households hold larger shares; Increasing inflation—low-income households hold more liquid asset.
- Reduce inequality: Benefiting borrower and hurting savers; Economic activity affects more labor earnings at the bottom of distribution.

Reflected in different views:

- Accommodative monetary policy stance is contributing to increase inequality (Acemoglu and Johnson 2012; Stiglitz 2015)
- *“it is unambiguous that monetary policy has positive distributional effects through macroeconomic channels”* (Draghi 2016)

Empirical evidence

- Coibion et al. (2012) for the US: expansionary monetary policy reduces inequality; O’Farrell et al. (2016): effect varies across 8 OECD countries; Adam and Tzamourani (2015): effect varies across EU countries/assets prices.



Contribution

1. Effect of monetary policy on inequality constructing unexpected, and orthogonal to innovations in economic activity, changes in policy rates.
2. Examining the impact of monetary policy on inequality for a large sample of advanced and emerging market economies.
3. Assessing whether the effects of monetary policy shocks:
 - vary over time,
 - depend on the type of monetary shocks (tightening vs. expansionary),
 - the state of the business cycle,
 - the share of labor income to total income
 - the size of redistribution policies.

What we don't do: assess the effects of unconventional monetary policy.



Orthogonal Monetary Policy Shocks (MP)

$$FE_{i,t}^i = \alpha + \beta FE_{i,t}^{inf} + \gamma FE_{i,t}^g + MP_{i,t}$$

- FE^i is the difference between the actual policy rates and the rate expected in October of the same year (*Consensus forecasts*);
- FE^{inf} is the forecast error of inflation;
- FE^g is the forecast error of growth.

Advantage of this approach (Auerbach and Gorodnichenko 2013):

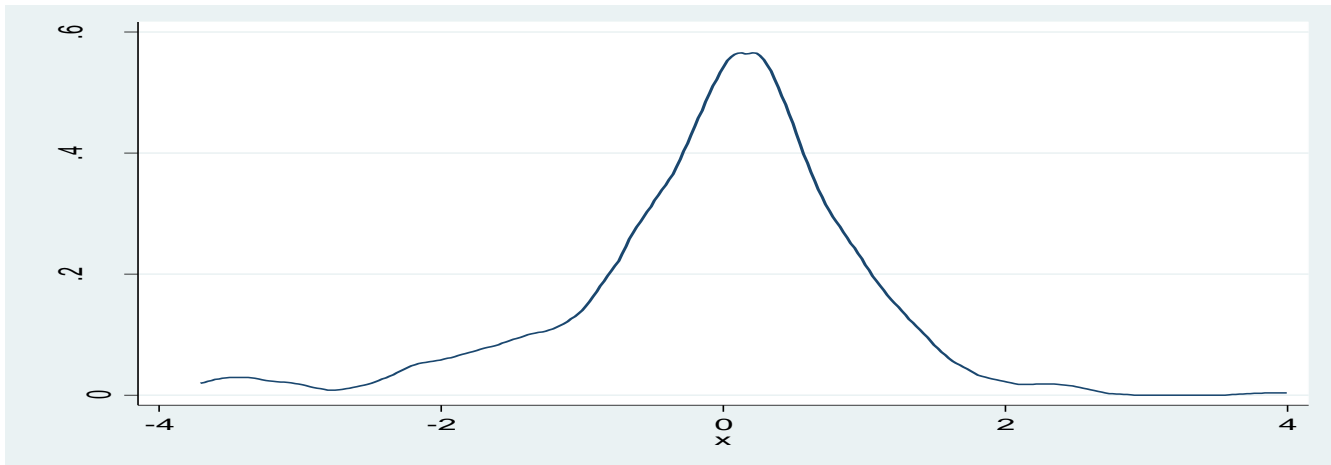
- eliminates the problem of “policy foresight” (Forni and Gambetti 2010; Leeper et al. 2012);
- reduces the likelihood of capturing the potentially endogenous response of monetary policy to the state of the economy.



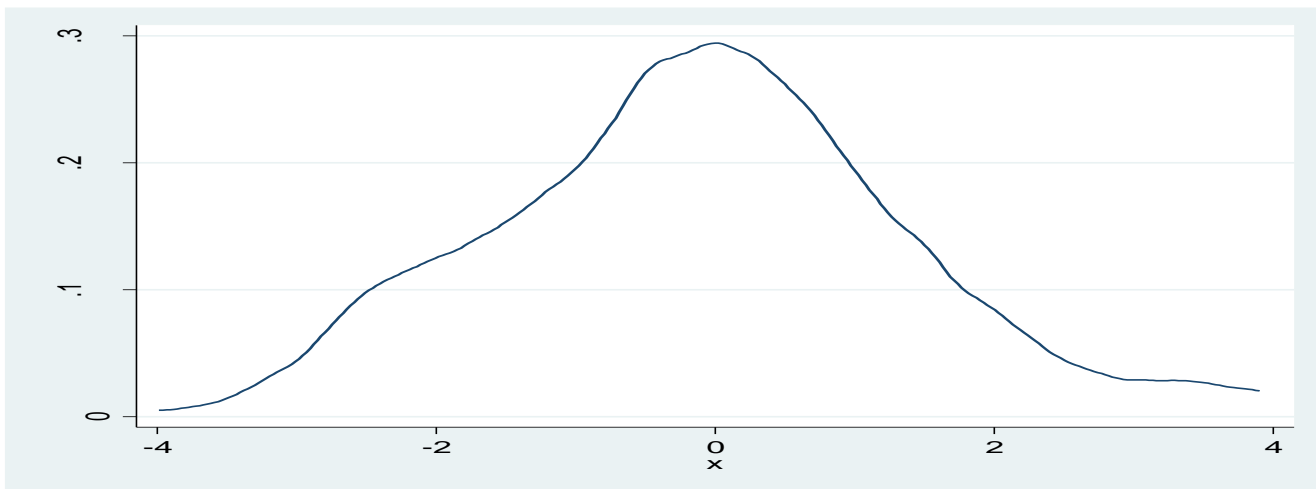
Monetary Policy Shocks (MP)

Methodology

Panel 1. Advanced Economies



Panel 2. Emerging market economies





Empirical framework

- Local projection method to assess the response of inequality to monetary policy shocks:

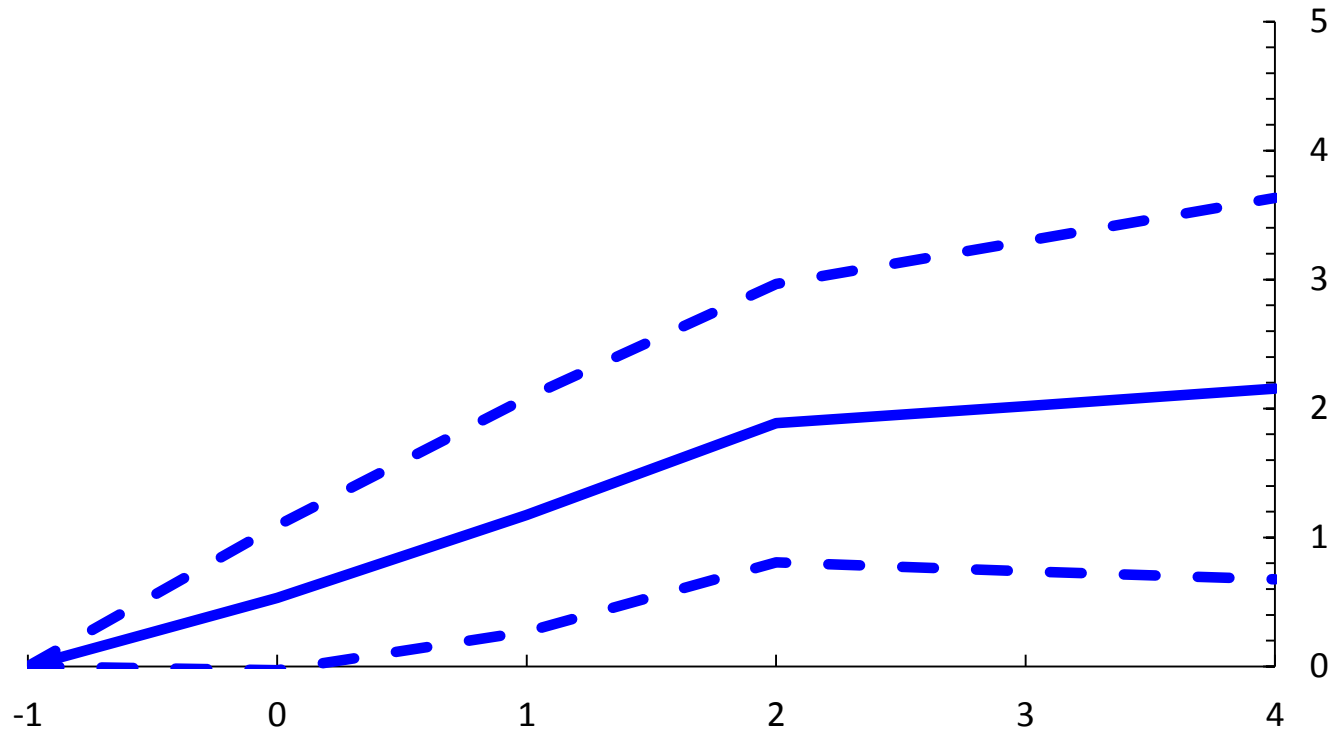
$$y_{i,t+k} - y_{i,t} = \alpha_i^k + \vartheta_t^k + \beta^k MP_{i,t} + \pi^k X_{i,t} + \varepsilon_{i,t}^k \quad (1)$$

- y is the log of inequality; X a set of control including lagged change in inequality and monetary policy shocks.
- Measures of inequality: net and market income inequality (SWIID 5.1); top income share (WTID), and share of wage income/GDP (OECD).
- Sample: unbalanced panel of 32 advanced and emerging market economies from 1990 to 2013.



Contractionary MP increases inequality

Effect of a 100 bps exogenous increase in policy rates
(percent)



Results

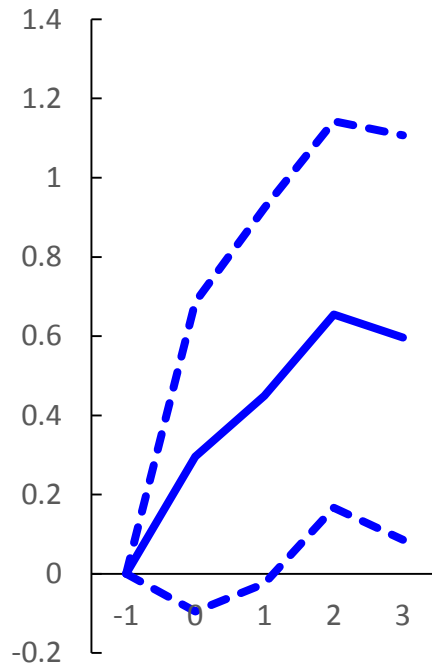
Note: $t=0$ is the year of the shock. Solid lines denote the response to an unanticipated increase in monetary policy rates of 100 basis points, and dashed lines denote 90 percent confidence bands. Estimates based on equation (1).



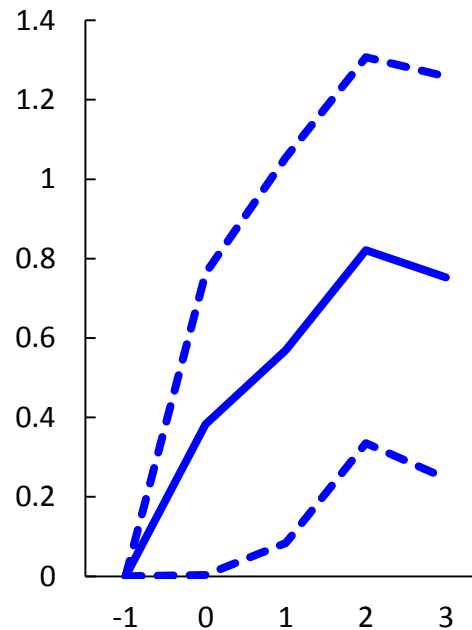
Effect on top income shares

Effect of a 100 bps exogenous increase in policy rates
(percentage points)

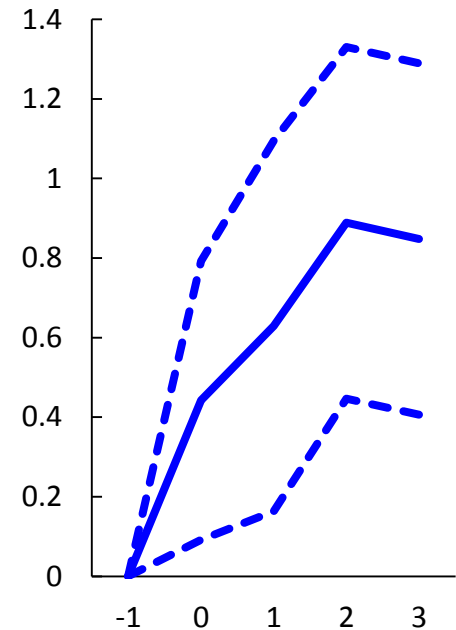
Panel A. Top 10 percent



Panel B. Top 5 percent



Panel C. Top 1 percent

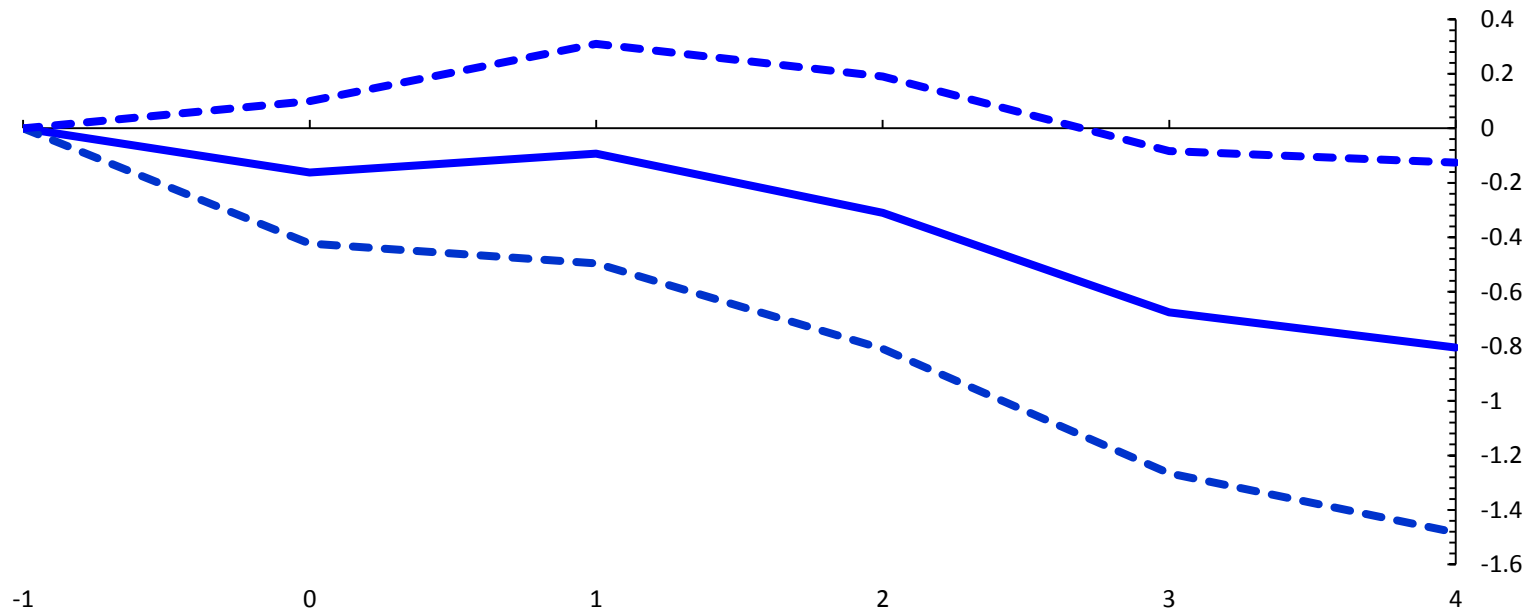


Note: $t=0$ is the year of the shock. Solid lines denote the response to an unanticipated increase in monetary policy rates of 100 basis points, and dashed lines denote 90 percent confidence bands. Estimates based on equation (1).



Effect on labor share

Effect of a 100 bps exogenous increase in policy rates
(percentage points)



Results

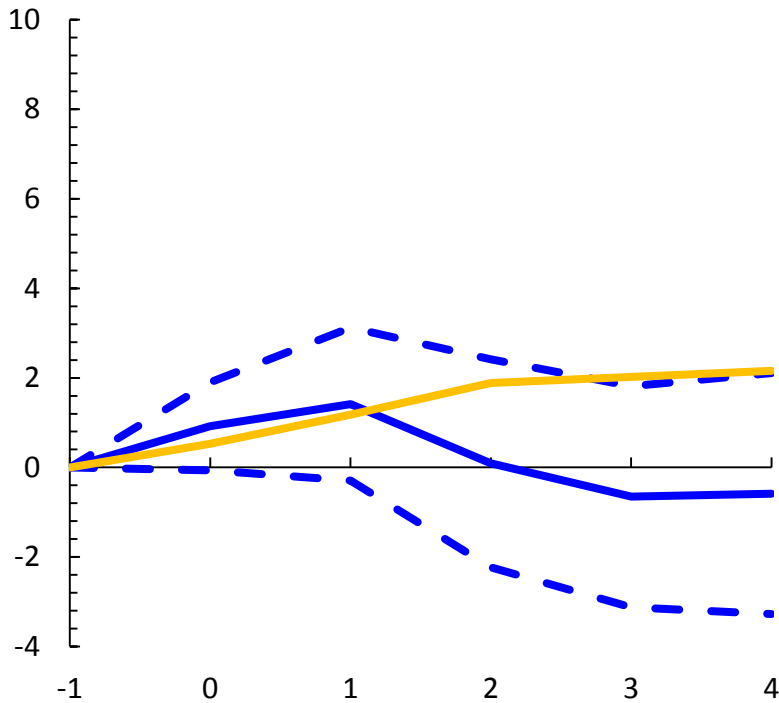
Note: $t=0$ is the year of the shock. Solid lines denote the response to an unanticipated increase in monetary policy rates of 100 basis points, and dashed lines denote 90 percent confidence bands. Estimates based on equation (1).



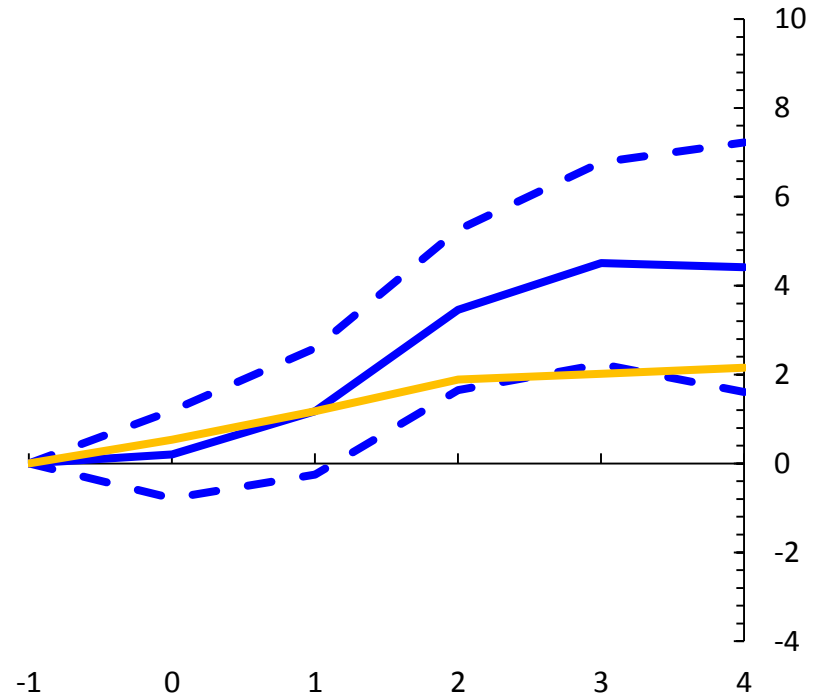
Positive vs. negative shocks

Effect of a 100 bps exogenous increase in policy rates
(percent)

Panel A. Negative shocks



Panel B. Positive shocks



Results

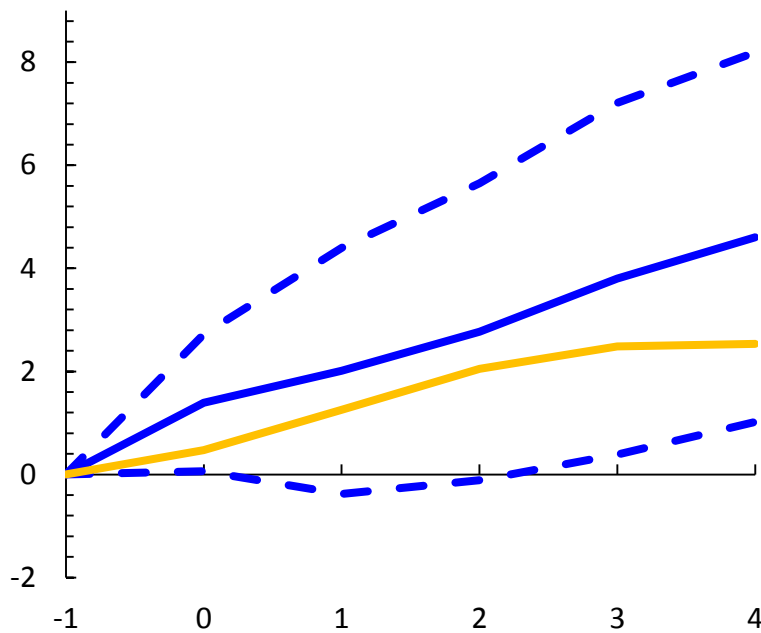
Note: $t=0$ is the year of the shock. Solid lines denote the response to an unanticipated increase in monetary policy rates of 100 basis points, and dashed lines denote 90 percent confidence bands. Estimates based on the following equation: $y_{i,t+k} - y_{i,t} = \alpha_i^k + \vartheta_t^k + \beta_+^k D_{i,t} MP_{i,t} + \beta_-^k (1 - D_{i,t}) MP_{i,t} + \pi^k X_{i,t} + \varepsilon_{i,t}^k$, where $D=1$ if the monetary policy shock is positive.



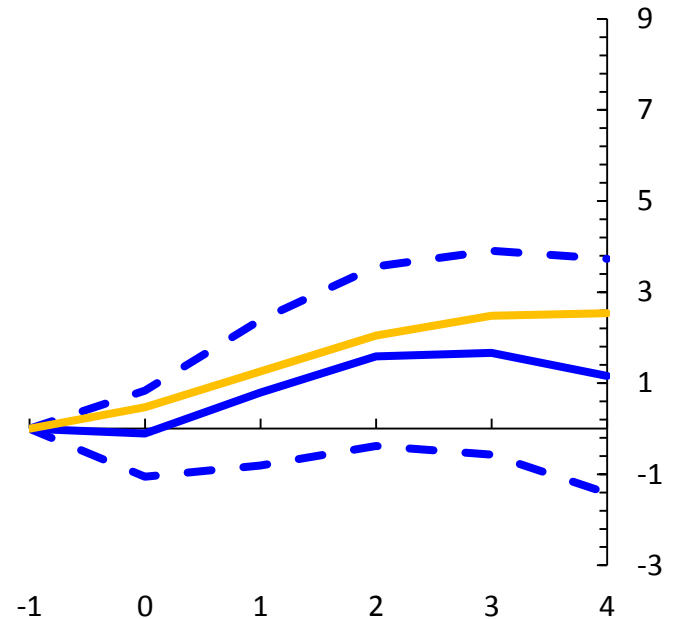
Role of redistribution

Effect of a 100 bps exogenous increase in policy rates
(percent)

Panel A. Very low redistribution



Panel B. Very high redistribution



Results

Note: $t=0$ is the year of the shock. Solid blue lines denote the response to an unexpected increase (or decrease) in monetary policy rates of 100 basis points, and dashed lines denote 90 percent confidence bands. Solid yellow lines denote the unconditional (baseline) response. Estimates based on equation: $y_{i,t+k} - y_{i,t} = \alpha_i^k + \vartheta_t^k + \beta_1^k G(z_{it}) MP_{i,t} + \beta_2^k (1 - G(z_{it})) MP_{i,t} + \varepsilon_{i,t}^k$, where $G(z)$ is the smooth transition function of redistribution. z is a (standardized) variable for redistribution.



Conclusions

- Monetary policy easing reduces inequality, but the effects vary over time, across the business cycles, and depend on the types of monetary shocks, and its impact on different assets prices.
- Effects also depend on the share of labor income and redistribution policies.
- Unexpected monetary policy shocks increases inequality but changes in policy rates driven by an increase in growth are associated with lower inequality.
- Other results: no effects for the *level* of interest rates; effect of monetary policy shocks do not depend on the level of interest rate.



Thank you!



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