

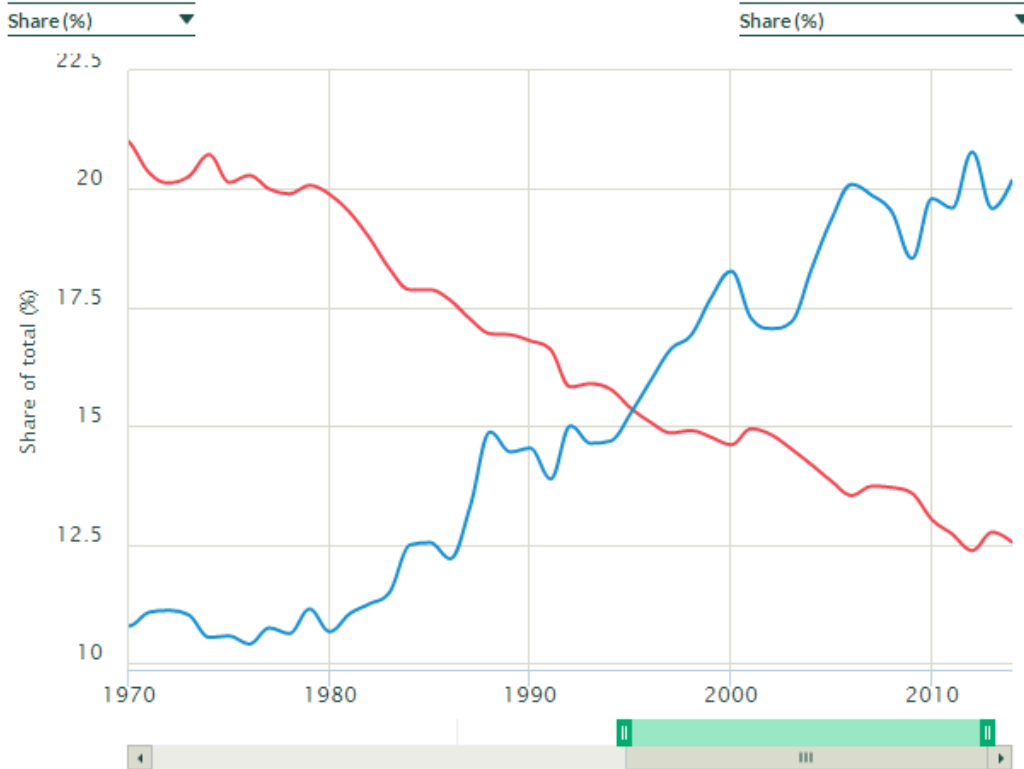
Financial Globalization vs. Income Inequality: The Surprising Role of Foreign Portfolio Flows in Taming the Top 1%

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Income Inequality Is an Important Issue

Income inequality, USA, 1970-2014



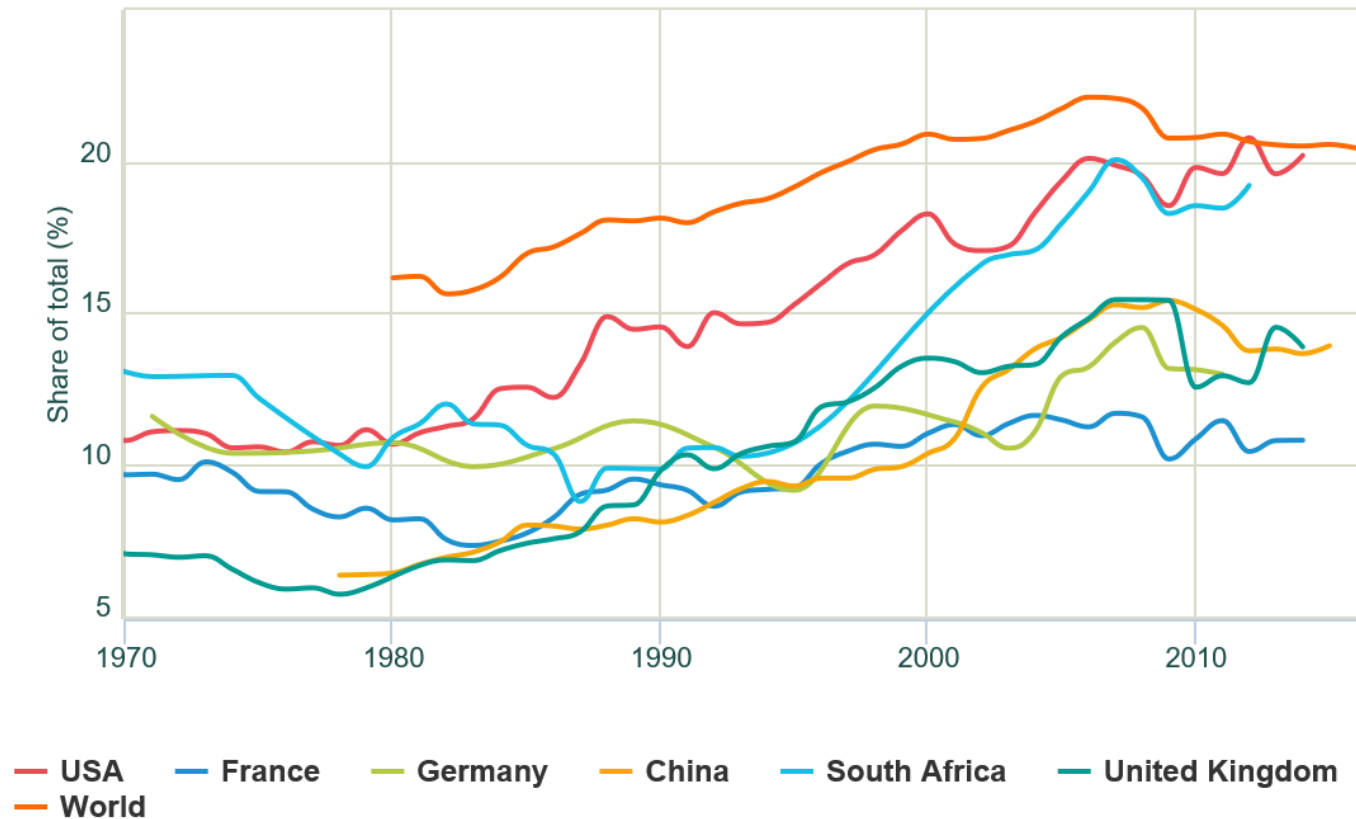
- Top 1%: **10.8%** in 1970 to **20.2%** in 2014
- Bottom 50%: **21%** in 1970 to **12.6%** in 2014
- “Private wealth dwarfed national income and was concentrated in the hands of the *rich families* who sat atop a relatively rigid class structure.”

—The *Economist*, 2014

- Income from firms' cash flows vs. salaries

■ Pre-tax national income | Bottom 50% | share | ADULTS | EQUAL SPLIT ✕
■ Pre-tax national income | Top 1% | share | ADULTS | EQUAL SPLIT ✕

Top 1% National Income Share: World



- US: Piketty and Saez (2003), Guvenen, Karahan, Ozkan, and Song (2016), De Nardi, Fella, and Pardo (2016)
- International: Piketty (2003), Alvaredo, Atkinson, Piketty, and Saez (2013)

Economic Grounds of Income Inequality

- Properties of capitalism: return to capital $>$ growth rate of output, Piketty (2014), Acemoglu and Robinson (2015), Blume and Durlauf (2015), Krusell and Smith (2015)
- Tax and transfer system: Alvaredo, Atkinson, Piketty, and Saez (2013), Kaymak and Poschke (2016)
- Technology development: Kuznets (1955)
- Labor market polarization: Autor and Dorn (2013)
- Education: Jaumotte, Lall, and Papageorgiou (2013)
- Trade and *financial globalization*: Jaumotte, Lall, and Papageorgiou (2013)

Financial Globalization and Income Inequality

- Existing evidence: Lane and Milesi-Ferretti (2007)
 - Foreign *direct* investment (FDI) seems to boost income inequality.
 - Portfolio investment (foreign *indirect* investment, FII) plays an insignificant role.
 - FII measures lack information to analyze this question.
- Does FII affect income inequality?
 - FII: delegated portfolio investment from the entire global mutual fund industry
 - Identify the exogenous component of FII from fire sales

Why FII Affects Income Inequality?

- **Asset reallocation** channel: FII incentivizes rich families to rebalance their portfolio (e.g., diversification) → impact on inequality depends on the optimality of asset rebalance.
- **Governance** channel: FII improves corporate governance of local firms (Aggarwal, Erel, Ferreira, and Matos (2011)) → large shareholders are less likely to transfer wealth from small investors.
- Alternative channels through **known country characteristics**: tax, labor market, technology, education, financial development

Construction of Control Relations

- Income inequality has a *micro* foundation: heterogeneity in cash flow rights in sharing companies' sales revenue
- Firm-level cash flow rights
 - ORBIS database of Bureau van Dijk
 - Financial and ownership information of 48,461 publicly listed firms from 134 countries, and 101,882 private firms from 190 countries.
 - Identify control relations and *ultimate owner* using firm-specific ownership map and corporate network

Income Inequality Measures

- Traditional income inequality: *Top 1% Income* from World Wealth and Income Database
- Cash flow inequality: *Top Income from Sales* reaped by ultimate owners (UOs)

- $TopIncome_Sales_{i,c,t} = \frac{\sum_u Sale_{u,i,c,t} \times I\{Sale_{u,i,c,t}/IndSale_{i,c,t} > 0.2\}}{IndSale_{i,c,t}}$

- Benefits: clearer economic ground (source of income at the firm level) + better identification (country-industry level as opposed to country level)

Data and Variable

- Global mutual fund database
 - Factset/Lionshares + Morningstar
 - Compute delegated portfolio investment flows and fire sale flows (*Flow_Shock*)
- Global stock database
 - Datastream/Worldscope + CRSP/Compustat
 - Stock price, firm characteristics, and industry classifications
- Country characteristics
 - World Bank
- Sample: 34 countries, 561 country-industry, 2,602 ultimate owners from 2001–2013

Baseline Results (Country Level)

- $\Delta TopIncome_WWID_{c,t} = \alpha + \beta Flow_Shock_{c,t-1} + \gamma N_{c,t-1} + e_{c,t}$

Change in income inequality, based on *Top 1% Income from WWID*

Delegated portfolio flows due to fire sales

- Controls: Stock Market Turnover, Stock Market/GDP, Private Bond Market/GDP, Common Law, Judicial, Good Government Index, Anti-Self-Dealing Index, Disclosure, Property Rights Index, Control Premium and Ownership Concentration
- Year fixed effects, standard errors clustered at both the country and year level

FII on Top Income from WWID (Country Level)

$$\bullet \Delta TopIncome_WWID_{c,t} = \alpha + \beta Flow_Shock_{c,t-1} + \gamma N_{c,t-1} + e_{c,t}$$

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Flow_Shock	-2.834*** (-4.23)						-2.834*** (-4.14)		-2.840*** (-4.06)	
Flow_Shock_For		-2.006*** (-4.98)		-1.966*** (-4.98)				-1.965*** (-4.88)		-1.960*** (-4.88)
Flow_Shock_Dom			-1.827 (-0.79)	-1.425 (-0.61)				-1.432 (-0.62)		-1.662 (-0.73)
Flow_Top_For					-0.017** (-2.53)	-0.017* (-2.17)				
Flow_Top_Dom					-0.000 (-0.07)	-0.000 (-0.08)				
Flow_Other					0.074 (0.76)	0.073 (0.75)				
Flow							0.026 (0.60)	0.026 (0.56)	0.025 (0.56)	0.025 (0.53)
Δ Inward FDI/GDP						-0.005 (-0.84)			-0.005 (-0.81)	-0.006 (-0.96)
Controls					Country					
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

1 std.dev. higher foreign mutual fund flow shocks
 → 16% lower income inequality.

Expand to Cash Flow Inequality Measure

- Country level:

- $\Delta TopIncome_Sales_{c,t} = \alpha + \beta Flow_Shock_{c,t-1} + \gamma N_{c,t-1} + e_{c,t}$

- Country-industry level:

- $\Delta TopIncome_Sales_{i,c,t} = \alpha + \beta Flow_Shock_{i,c,t-1} + \gamma_1 M_{i,c,t-1} + \gamma_2 N_{c,t-1}$

- Country-industry controls: Industry Size/GDP and Industry Return
- Year, industry, and country fixed effects, standard errors clustered at both the country and year level

FII on Top Income from Sales (Country Level)

$$\bullet \Delta TopIncome_Sales_{c,t} = \alpha + \beta Flow_Shock_{c,t-1} + \gamma N_{c,t-1} + e_{c,t}$$

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Flow_Shock	-1.432*** (-9.63)		-1.914*** (-3.07)		-1.914** (-2.97)	
Flow_Shock_For		-1.427*** (-9.78)		-1.830*** (-3.64)		-1.827*** (-3.57)
Flow_Shock_Dom				2.317 (0.33)		1.775 (0.25)
Flow			0.017 (0.68)	0.015 (0.67)	0.017 (0.66)	0.014 (0.64)
Δ Inward FDI/GDP					-0.075 (-0.76)	-0.074 (-0.72)
Controls				Country		
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	N	N	N	N	N	N
Country FE	N	N	N	N	N	N

FII on Top Income from Sales (Country-Industry Level)

- $$\Delta TopIncome_Sales_{i,c,t} = \alpha + \beta Flow_Shock_{i,c,t-1} + \gamma_1 M_{i,c,t-1} + \gamma_2 N_{c,t-1}$$

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14
Flow_Shock	-2.091*** (-4.72)		-2.052*** (-3.79)		-1.983** (-2.95)		-2.070** (-2.93)	
Flow_Shock_For		-2.040*** (-4.17)		-1.996*** (-3.44)		-2.004*** (-3.10)		-2.107*** (-3.24)
Flow_Shock_Dom				29.617* (1.93)				31.261* (2.07)
Flow			-0.001 (-0.23)	-0.001 (-0.27)			0.002 (0.81)	0.002 (0.88)
Controls	Industry + Country							
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	N	N	N	N

- 1 std.dev. increase in foreign flow shocks → 6% lower inequality.

Two-Stage Test on Asset Reallocation Channel

- Allocation Efficiency: $AE_{u,i,c,t} = \sum_{s \in i,c} (w_{s,u,t} - w_{s,u,t-1}) \times ROA_{s,t}$
- 1st: $AE_{i,c,t} = a + \beta Flow_Shock_{i,c,t-1} + \gamma_1 M_{i,c,t-1} + \gamma_2 N_{c,t-1} + e_{i,c,t}$
- 2nd: $\Delta TopIncome_Sales_{i,c,t} = \alpha + \theta \widehat{AE}_{i,c,t} + \gamma'_1 M_{i,c,t-1} + \gamma'_2 N_{c,t-1} + e_{i,c,t}$

	1st Stage Model 1	2nd Stage Model 2	1st Stage Model 3	2nd Stage Model 4	1st Stage Model 5	2nd Stage Model 6	1st Stage Model 7	2nd Stage Model 8
AE		39.143*** (4.52)		34.541*** (6.03)		38.674*** (4.06)		33.539*** (5.20)
Flow_Shock	-0.104*** (-3.99)		-0.110*** (-4.48)					
Flow_Shock_For					-0.104*** (-3.84)		-0.112*** (-4.10)	
Controls	Industry + Country							
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y	Y	Y
Country FE	Y	Y	N	N	Y	Y	N	N

- 1 std.dev. increase in foreign flow shocks → 11% lower inequality.

Exit of Ultimate Owners

- $$Exit_{u,i,c,t} = \alpha + \beta_1 Flow_Shock_{i,c,t-1} + \beta_2 Flow_Shock_{i,c,t-1} \times Char_{u,i,c,t-1} + \beta_3 Char_{u,i,c,t-1} + \gamma_1 M_{i,c,t-1} + \gamma_2 N_{c,t-1} + e_{u,i,c,t}$$

	Model 6	Model 7	Model 8	Model 9	Model 10
Flow_Shock_For	2.086*** (6.81)	1.590*** (3.03)	1.168* (2.14)	1.098* (2.05)	1.346*** (3.91)
Flow_Shock_For × UOROA		-0.061 (-0.88)			
Flow_Shock_For × UORET			-0.021 (-0.18)		
Flow_Shock_For × Manufacturing				0.331 (0.46)	
Flow_Shock_For × Core					1.287** (2.43)
Controls					
		Industry + Country			
Year FE	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y

- Ultimate owners exit their core assets to diversify.

Impact on Firm Profits

- $$ROA_{i,c,t} = \alpha + \beta_1 Exit_{i,c,t-1} + \beta_2 Flow_Shock_{i,c,t-1} + \beta_3 Exit_{i,c,t-1} \times Flow_Shock_{i,c,t-1} + \gamma_1 M_{i,c,t-1} + \gamma_2 N_{c,t-1} + e_{i,c,t}$$

	Country-Industry			Ultimate Owner-Country-Industry		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Exit	-0.546 (-1.10)	-0.547 (-1.10)	-0.560 (-1.13)	-0.487 (-1.34)	-0.488 (-1.34)	-0.499 (-1.38)
Flow_Shock	-0.510*** (-3.78)			-0.502*** (-8.49)		
Flow_Shock_For		-0.506*** (-3.67)	-0.506*** (-3.51)		-0.495*** (-7.97)	-0.495*** (-7.98)
Flow_Shock_Dom			-1.004 (-0.28)			-0.093 (-0.02)
Exit × Flow_Shock	0.666*** (4.37)			0.635*** (8.09)		
Exit × Flow_Shock_For		0.665*** (4.49)	0.663*** (3.56)		0.635*** (7.81)	0.633*** (7.69)
Exit × Flow_Shock_Dom			6.069 (0.80)			4.908 (0.66)
Controls			Industry + Country			
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y

Two-Stage Test on Alternative Channels

	Country-Industry		Country									
	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
CorpGov		0.311 (0.05)										
Tax				-31.615 (-0.15)								
Unemployment						15.339 (0.86)						
Computer Adoption								-3.077 (-1.75)				
Post-Secondary										-2.338* (-1.83)		
MktDev												-6.322 (-0.11)
Flow_Shock_For	1.286 (0.56)		0.043 (0.15)		-0.093 (-0.83)		0.494 (1.64)		1.430* (1.99)		0.225 (0.11)	
Controls	Industry + Country		Country									
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	N	N	N	N	N	N	N	N	N	N

- Other channels do not explain the influence of FII on income inequality.

FII on Top Income from Sales by Ultimate Owners

	Country				Country-Industry			
	Domestic UO		Foreign UO		Domestic UO		Foreign UO	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Flow_Shock	-1.489*** (-17.14)		0.057 (1.11)		-1.875*** (-3.60)		-0.108 (-0.45)	
Flow_Shock_For		-1.484*** (-19.67)		0.057 (1.13)		-1.882*** (-3.84)		-0.123 (-0.49)
Controls			Country				Industry + Country	
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	N	N	N	N	Y	Y	Y	Y

- Foreign portfolio flows mostly affect domestic rich families.

Conclusion

- Large waves in foreign indirect investment help reduce income inequality because of a *asset misallocation* mechanism.
- Rich families exit their core assets to diversify → unintended consequences as the selling industries subsequently outperform holding ones.
- Our results suggest a beneficial effect of financial globalization by taming the income of the top.