The inequality channel behind the rise of market-based finance

Domestic portfolio needs under safe assets shortages

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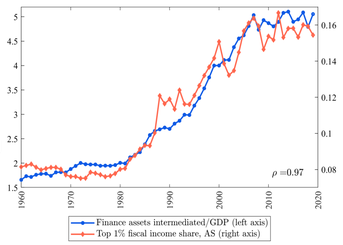
Motivation & Research Idea

Motivation

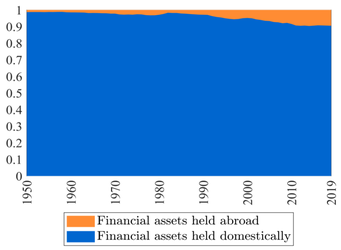
- No conclusive theory for the rise of finance since the 1980s.
- Most of the growth has been determined by the shadow banking sector.
- Inequality rising over the same period and the lack of safe assets may be key.

Research Idea

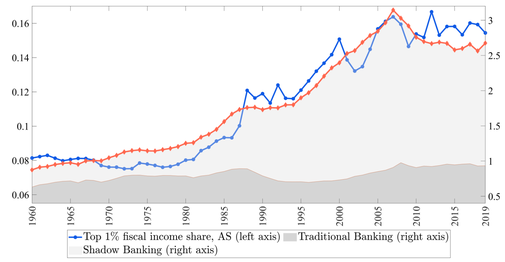
Higher inequality → More savings to intermediate for the investors.
→ Funds to allocate between safe and risky assets… under incomplete markets & limited public safe assets supply,
→ Endogenous rise of the shadow banking system to complete a market.
→ Debt of the poor transformed into synthetic quasi-safe assets for investors.
→ Bigger financial sector



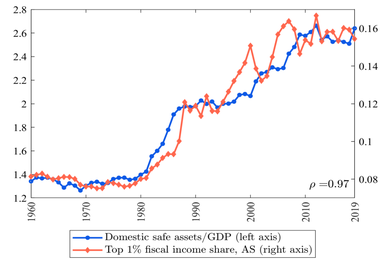
Stylized facts



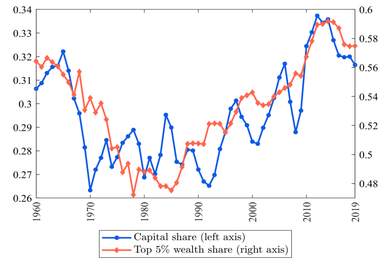
The rise of finance has been mostly domestically driven. Claims from abroad have reached ~10% at most.



Most of the rise until the Great Financial Crisis was driven by other non-bank financial institutions, (shadow banking system). The series plateaued post-2010 as for top 1%.



Consistently with a larger hedging demand by investors, safe assets (time+savings deposits, mmf, repos, CP) have co-moved with inequality



The theory allows for finance and inequality to feed back on each other → The decline of the L share is taken as exogenous variation.

Model

Economic environment

- Discrete time with infinite horizon.
- Idiosyncratic uncertainty, but no aggregate uncertainty.
- Incomplete and segmented markets (not all agents hold capital).

Preferences

- Same *homothetic,* preferences, and discount factor across agents

Agents

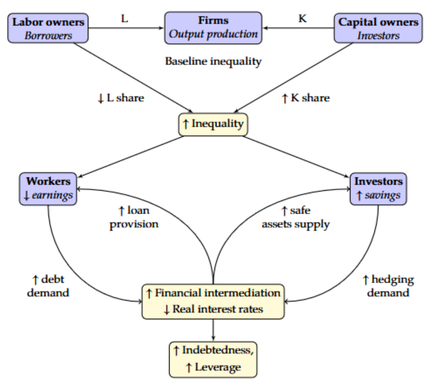
- Heterogeneous investors ("rich" households): Capital owners & lenders
  $V_{it}^{I}(m_{it}, b_{it}, k_{it}) = \max\{ln(c_{it}^{I}) + \beta\delta E[V_{it}^{I}(m_{it+1}, b_{it+1}, k_{it+1})]\}$
  $sub \quad c_{it}^{I} + p_{Kt}k_{it+1} + q_{Bt}b_{it+1} + q_{Mt}m_{it+1} = (p_{Kt}(1+\varepsilon_{it}) + d_t)k_{it} + b_{it} + (1+\zeta_{Mt})m_{it}$
- A continuum of poor households: Labor owners & borrowers
  $V_t^P(l_t) = \max \ln c_t^P + \beta\delta E[V_t^P(l_t)] \quad sub \quad c_t^P + l_t + \frac{\lambda}{2}(l_{t+1} - L/\lambda)^2 + T^P = q_{Lt}l_{t+1} + w_t N_t$
- Both types of agents exit the economy with a probability $1-\delta$.
- Gov. imposes lump-sum taxes and provides safe assets up to a value $\bar{b}$.
- Shadow banking transforms poor debt into investors quasi-safe assets.

Endowments/Technology

- Fixed capital (no investments), k, with non-storable dividends, d.
- Labor is risk-free and inelastically supplied, $N = 1$.
- Firms produce competitively a final good y by aggregating k and N.
- Shadow banking uses a linear technology.

Model mechanism

- Investors solve a portfolio problem on how to allocate their savings between safe and risky assets.
- As inequality increases, there is a larger amount of savings to invest.
- With a constrained public assets supply, interest rates compress.
- Lower interest rates mean lower debt issuance costs.
- Poorer households can issue debt more freely, and the shadow banking system grows by transforming them into private safe assets (for investors).
- The model allows for endogenous *feedback effects* (through higher asset price valuations).



Quantitative performance and Policy experiments

Baseline quantitative exercise

- In the baseline, I assess the effect of a change in the capital share of the economy to be consistent with the micro-foundations.
- The technological structural change can explain up to 20% of the change in inequality, and 73% of the associated rise in shadow banking.
- Real interest rates get compressed in line with the real world. The model can explain 40% of variation.
- It can be proved that measured technological structural change accounting for human capital as in Eisfeldt, Falato, Xiaolan (2023) produce estimates much closer to the real world.

Policy experiments

- As a subset of counterfactual exercises, I report: (1) A dividend tax of 10% used to subsidize the poor; (2) An unconstrained Government debt issuance
- The first policy is relatively ineffective except for small inequality shocks because most of the action happens across investors
- A free public debt issuance avoids "reach for yield" and has massively larger effects on inequality

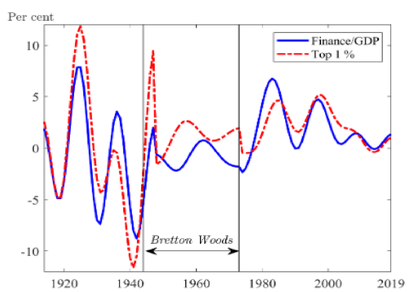
	1970-79		2010-2019	
Targeted moment	Model	Data	Model	Data
Top 5% wealth share	0.508	0.508	0.523	0.582
Shadow Banking holdings $(q_{Mt}m_{t+1}/y_t)$	0.026	0.026	0.161	0.212
Real interest rate $(R_{Mt})^{\dagger}$	0.030	0.030	0.028	0.025
Additional moments	Model	Data	Model	Data
Equity Premium†	0.088	0.055	0.093	0.081
Risky assets share $(1-\phi_1-\phi_2)$	0.914	0.652	0.878	0.654

	Baseline		Counterfactuals	
Moments	1970-79	2010-19	$\tau = 0.10$	$\tau = 0.015$, $b_t = 0.378$
Top 5% wealth share	0.508	0.523	0.521	0.519
Shadow Banking holdings $(q_{Mt}m_{t+1}/y_t)$	0.026	0.161	0.129	0.027
Real interest rate (R_{Mt})	0.030	0.028	0.029	0.030
Risky assets share $(1-\phi_1-\phi_2)$	0.914	0.878	0.876	0.870
Equity premium	0.088	0.093	0.106	0.094

Empirical results

Testing for co-variability

- I test the extent to which variables *in growth rates* co-vary as in Muller and Watson (2018) pre-and post- Bretton Woods.
- I find evidence for such claim after the 1970s and before 1940s.



Identifying the mechanism

- I test whether an increase in inequality leads to more credit across countries
- I test the mechanism of market-based vs. bank-based structure through dummy variables accounting for the IO of banking

$$\Delta y_{it} = \sum_{s=1}^{3} \beta_s \Delta x_{i,t-s} + \beta_0 + \kappa_t + \gamma' X_{it} + \varepsilon_{it}$$

$$\Delta y_{it} = \sum_{s=1}^{3} \beta_s \Delta x_{i,t-s}\, I(i \in Anglo) + \beta_0 + \kappa_t + \gamma' X_{it} + \varepsilon_{it}$$

Results are consistent with model predictions both for the direct and feedback effect of larger credit leading to more inequality in market-based banking economies

	Total loans							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Top 5 income share (*LR effect*)	0.593*** (0.167)	0.356*** (0.134)	0.309** (0.130)	0.315** (0.135)	0.663*** (0.189)	0.414*** (0.138)	0.359*** (0.136)	0.336** (0.138)
Top 5 income share × Mkt-based dummy (*LR*)					-0.348 (0.311)	-0.306 (0.285)	-0.260 (0.283)	-0.117 (0.254)
Time fixed effect	✓	✓	✓	✓	✓	✓	✓	✓
Domestic controls		✓	✓	✓		✓	✓	✓
Globalization controls			✓	✓			✓	✓
USA excluded				✓				✓
R^2	0.588	0.636	0.649	0.650	0.591	0.637	0.650	0.650
Countries/Obs.	18/674	18/674	18/670	17/621	18/674	18/674	18/670	17/621

	Top 5 income share							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total loans (*LR effect*)	-0.071* (0.040)	-0.029 (0.032)	-0.027 (0.033)	-0.032 (0.034)	-0.116*** (0.040)	-0.065* (0.055)	-0.065* (0.036)	-0.064* (0.036)
Total loans × Mkt-based dummy (*LR*)					0.200*** (0.055)	0.150*** (0.049)	0.138*** (0.051)	0.132*** (0.051)
Time fixed effect	✓	✓	✓	✓	✓	✓	✓	✓
Domestic controls		✓	✓	✓		✓	✓	✓
Globalization controls			✓	✓			✓	✓
USA excluded				✓				✓
R^2	0.185	0.263	0.272	0.274	0.215	0.290	0.299	0.302
Countries/Obs.	18/732	18/732	18/728	17/679	18/732	18/732	18/728	17/679

Conclusions

- Inequality channel proposed/tested to explain the rise of finance
- In the model, a change in factor income share can explain jointly also other macro-finance facts in the same framework such as:
  - (i) Higher inequality;
  - (ii) Compression of money yield;
  - (iii) Indebtedness of the U.S. households.
  - (iv) Endogenous rise of "shadow banking"
- Changes larger than the observed K share are needed to move variables in a quantitative strong fashion
- The empirical tests are in line with theory predictions both in terms of:
  - (i) Co-variability
  - (ii) Identifying market-based banking mechanisms

References

Angeletos, G. M. (2007). Uninsured idiosyncratic investment risk and aggregate saving. *Review of Economic Dynamics*, 10(1), 1-30.

Eisfeldt, A. L., Falato, A., & Xiaolan, M. Z. (2023). Human capitalists. *NBER Macroeconomics Annual*, *37*(1), 1-61.

Müller, U. K., & Watson, M. W. (2018). Long-run covariability. *Econometrica*, 86(3), 775-804.