Inequality and Macroeconomics
Results and Open Questions

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Outline

- Inequality and Growth (→Ostry, Berg, and Tsangarides, 2013)
- Inequality, Credit and Crises
- Marginal Propensity to Save/ Consume
- Inequality and Capital Flows
  - Saving and Investment
- Inequality and Macroeconomic Stabilization: Monetary, Fiscal and Transfer Policies.
  - How inequality affects macroeconomic policies
  - How macroeconomic policies affect inequality
  - Inequality vs. Heterogeneity.

Basic Inequality Concepts

- Income Inequality
  - Gini / Variance of Earnings
  - Top Income Share
- Wealth Inequality
- Consumption Inequality
- Within Group/Between Group Inequality
- Within Countries/ Between Countries
- Inequality Shock Persistence
  - Lifetime vs. Spot Inequality

Inequality and Credit
(Kumhof et al., 2013)

Great Recession
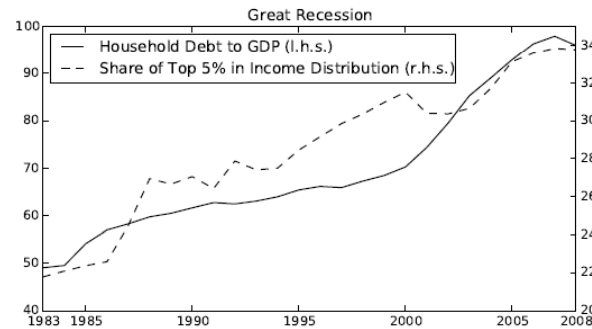
Sources: Income shares from Piketty and Saez (2003, up-
dated). Income excludes capital gains. Household debt-to-
GDP ratios from Philippon (2013), based on Flows of Funds
database and Bureau of Economic Analysis.

Great Depression
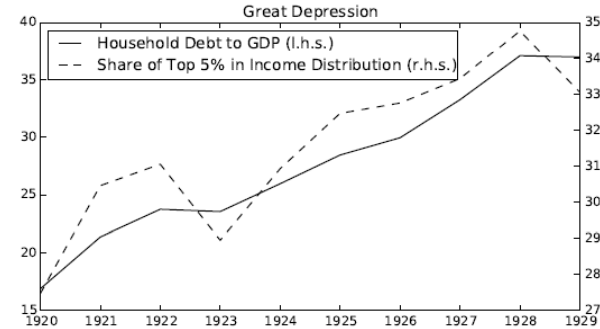
Source: Income shares from Piketty and Saez (2003, up-
dated). Income excludes capital gains. Household debt-
to-GDP ratios from Philippon (2013), based on Historical
Statistics of the United States (Millenial Edition) and Sur-
veys of Current Business.

FIGURE 1. INCOME INEQUALITY AND HOUSEHOLD LEVERAGE

Great Recession: Debt-to-Income Ratios
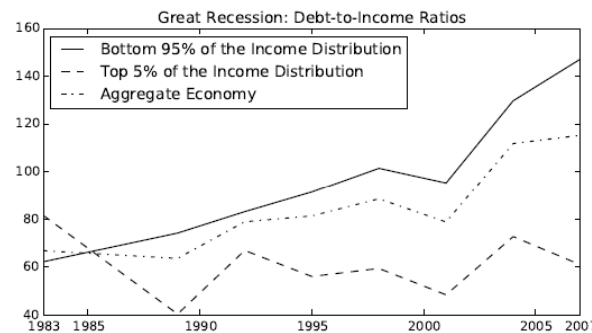
Sources: Survey of Consumer Finance (triennial), 1983–
2007. Debt corresponds to the stock of all outstanding
household debt liabilities. Income corresponds to annual in-
come before taxes, in the year preceding the survey.

Great Depression: New Loans Relative to Income
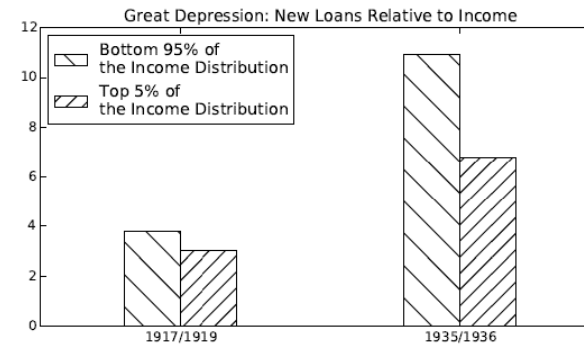
Source: Bureau of Labor Statistics, 1917/1919 Consumer
Purchase Survey (CPS) and 1935/1936 Study of Consumer
Purchases in the United States. The 1917/1919 survey cov-
ers 13,000 non-farm families. The 1935/1936 survey covers
60,000 farm and non-farm non relief families.

Inequality and Credit

- Demand Effects vs. Supply Effects.
  - Demand Effects: Keeping Up with Jones
    - Trickle Down Consumption (Bertrand-Morse, 2013) YES but NOT through Credit (Coibon et al., 2014)
  - Supply Effects: Do the Rich Save More? (yes!)
    - Domestic Saving Glut (Kumhof et al., 2013)
- Key Empirical Fact: Marginal Propensity to Save/Consume by Income Groups.

Do the Rich Save More?

Estimated Saving Rates (Dynnan, Skinner and Zeldes, 2004)				
	Median Reg		IV Median Reg	
	coeff	se	coeff	se
Quintile 1	0.0140	0.0190	0.0221	0.0250
Quintile 2	0.0899	0.0290	0.0944	0.0270
Quintile 3	0.1114	0.0320	0.1057	0.0360
Quintile 4	0.1735	0.0270	0.1665	0.0280
Quintile 5	0.2360	0.0400	0.2464	0.0350
Top 5%	0.3722	0.0980	0.3852	0.1150
Top 1%	0.5122	0.1110	0.4554	0.0880
Age 30-39	-0.0410	0.0280	-0.0570	0.0260
Age 50-59	-0.0120	0.0270	-0.0160	0.0270
Pseudo R2	0.047		0.041	
Sample size	728		728	
MPS Top Income	0.6109	0.2015	0.5049	0.1706
Data: US SCF 1983-1989				

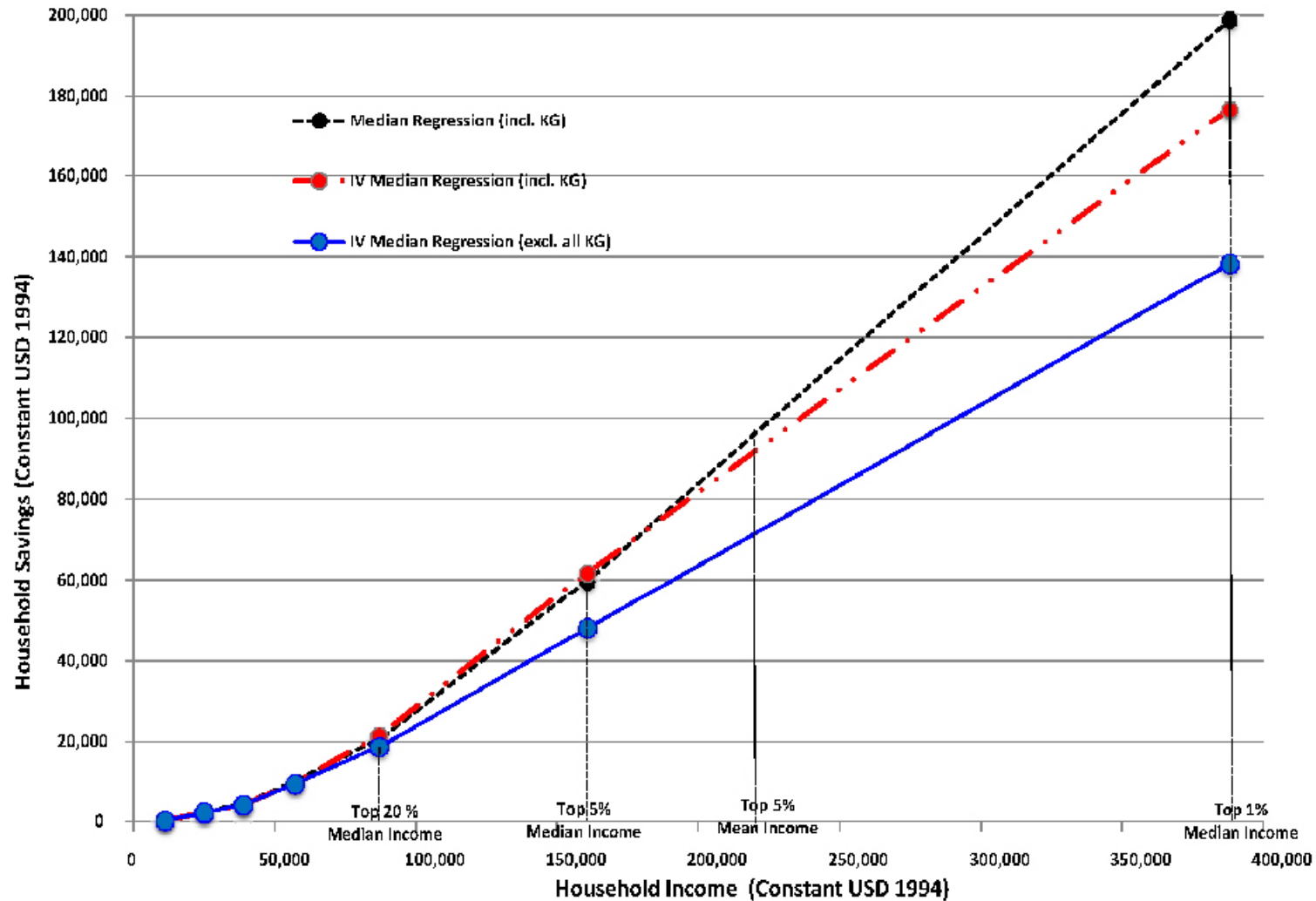# Do the Rich Save More? (Dynnan et al. 2004)

Figure 1: Estimated Relationship between Income and Savings

Inequality and Leverage: Political Economy?

- Rajan: Government Supported Demand as a "remedy" to Income Inequality.

- Acemoglu: Supply-Driven Financial Deregulation.

- Do we need really a political economy explanation?

  - Kumhof et. Al. (2013): The Credit Supply Shock associated with the permanent increase in income inequality is enough to explain the build-up of Household Credit when rich households have the MPS of the data.

- Feedback loop: Financial Sector / Income Inequality.

  – Philippon-Resheff (2012): Raising Wage Premium in Finance Industry explain 15-25% of overall inequality post 1980

Inequality and Crises: The Credit Channel

- Robust Link from Credit to Crises
- Inequality as long-run underlying force driving credit expansion.
- Bordo and Meisner (2012): no systematic evidence (12 countries – 1920-2008)
- Perugini et al. (2014): robust positive link (18 OECD countries – 1970-2007).
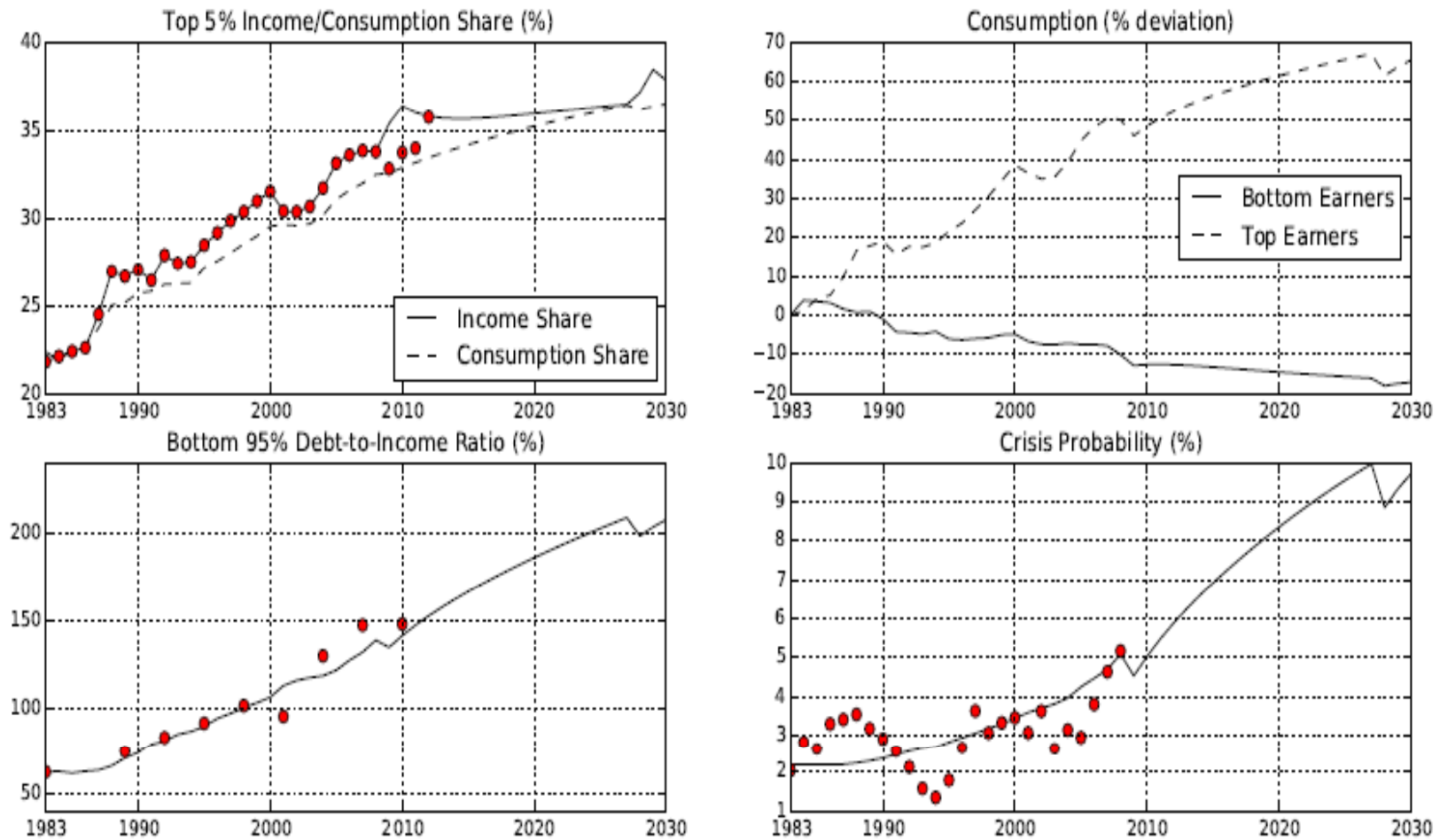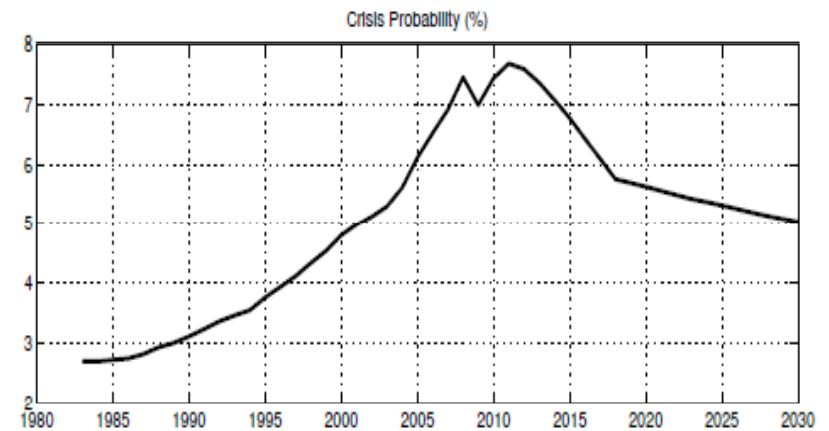
Inequality, Leverage and Crises (Kumhof et. Al)

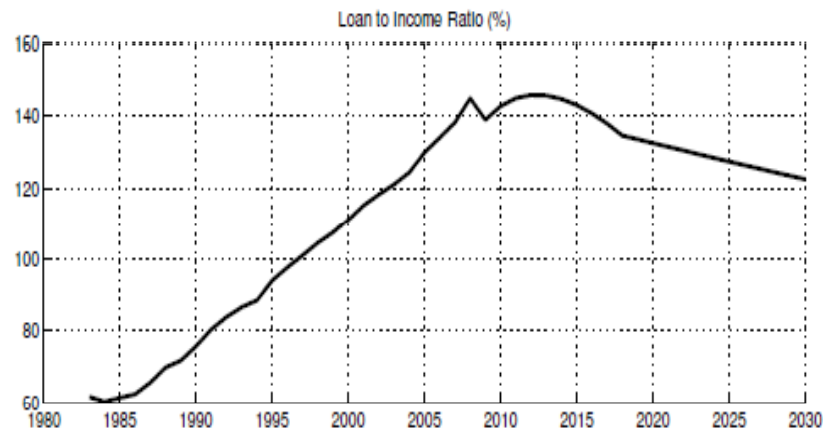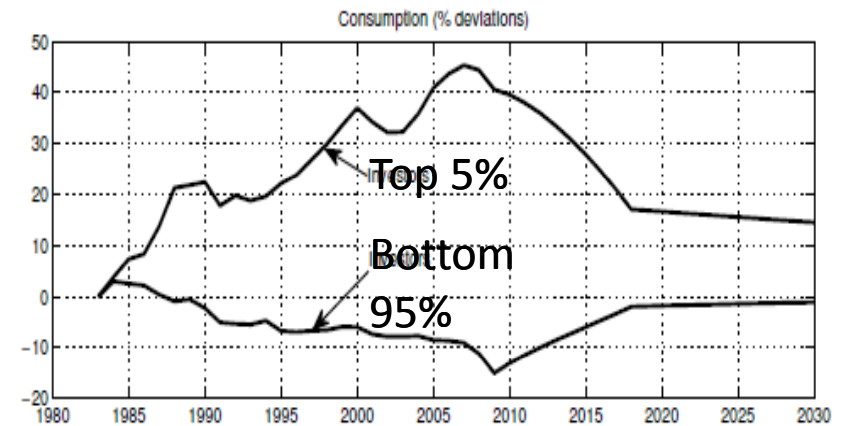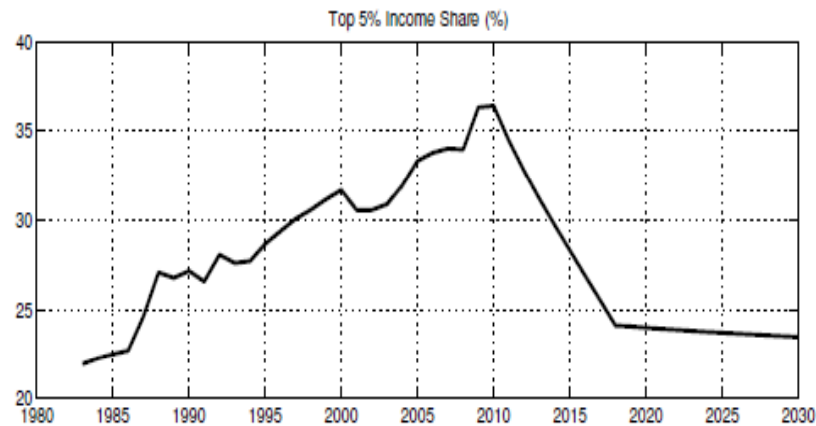FIGURE 11. BASELINE SCENARIO

Reducing Inequality to reduce Crisis Risk
(Kumhof et al., 2013)

Inequality and Current Account Imbalances
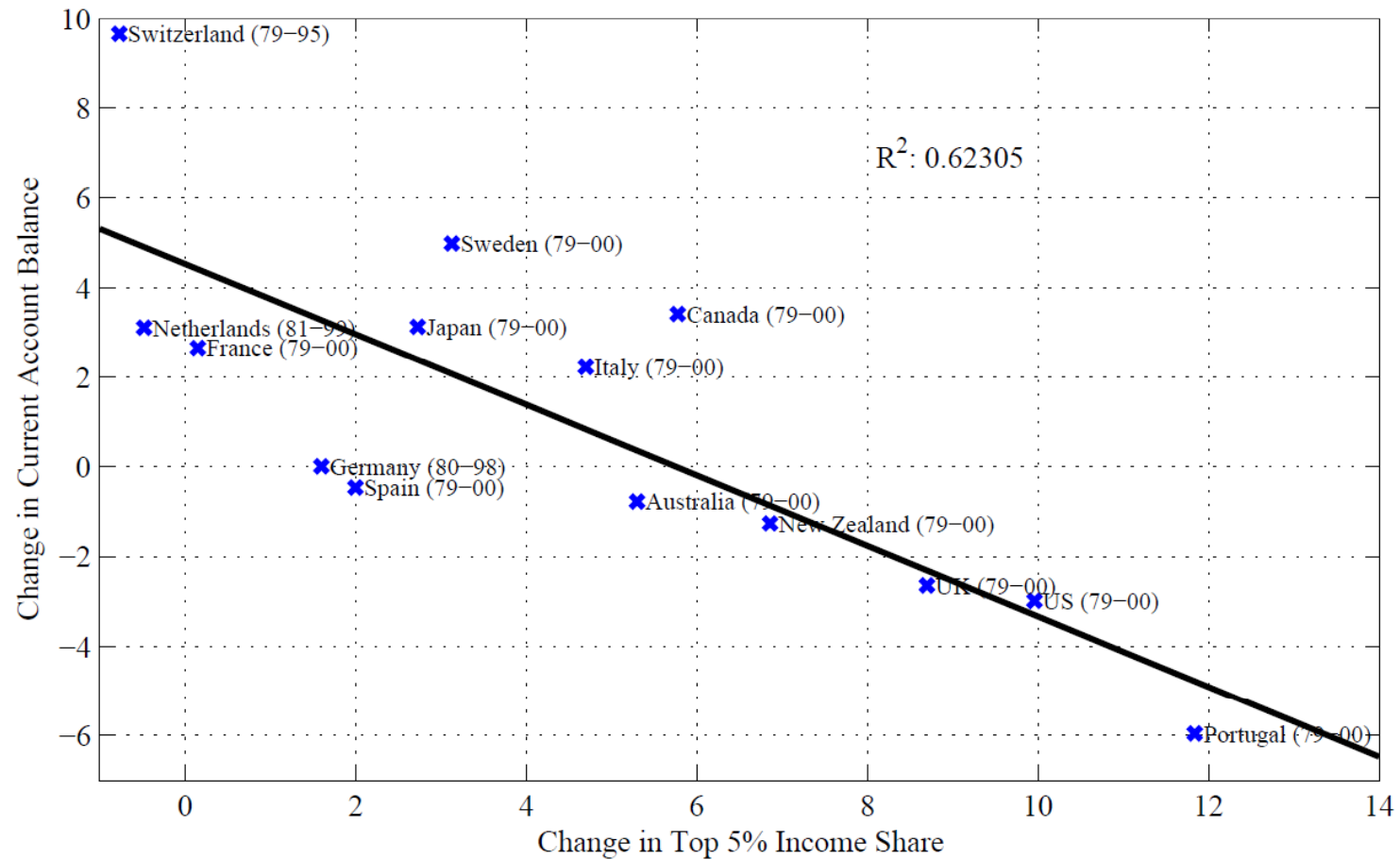## (Kumhof et al., WIP)

Figure 3: Changes in Current Accounts and Top Income Shares, 1980-2000 (percent)

Inequality in EBA Regression

NFA/GDP (lagged one period)
(NFA/GDP+0.6)*(dum=1 if NFA/GDP<-60%), (lagged one period)
Dummy=1 if country is a financial center
Sample demeaned [own PPP GDP per working population(15-64)/average of US/Japan/Germany -
Sample demeaned [own PPP GDP per working population(15-64)/average of US/Japan/Germany -
Oil & Gas trade balance (relative to World average, 5 yr MA)*(dum=1 if >0%), WITS
Dependency Ratio (relative to World average)
Population Growth (relative to World average)
Aging Speed (relative to World average)
Expected GDP growth of medium-term(5 years out) relative to World average, WEO
Public Health Spending/GDP (relative to World average) (lagged one period)
Demeaned VOX*(1- Capital Control Index) (lagged one period)
Demeaned VOX*(1- Capital Control Index)*(currency's share in world reserves stock) (lagged one p
Share of the country's currency held as FX reserve by central banks worldwide
Output Gap (relative to World average)
Commodity TOT index deviation from trend, multiplied by openness
Safer Institutional/Political Environment Index (rel to World average), ICRG
Private credit/GDP (rel to World average)
Cyclically Adjusted Fiscal Balance (relative to World average)(instrumented)
KControl*(Changes in Reserves)/GDP, (relative to World average) instrumented

Interaction Income Inequality / Financial development

LABELS	VARIABLES	ONLY OECD COUNTRIES (DETAIL BELOW)			
		(2)d mb_ca2y	(3)d mb_ca2y	(4)d mb_ca2y	(5)d mb_ca2y
Share Top 10%	top10	-0.123***			
		(0.002)			
Share Top 10% * Private Credit / GDP	top10_credit	-0.114***			
		(0.000)			
Share Top 5%	top5		-0.125**		
			(0.034)		
Share Top 5% * Private Credit / GDP	top5_credit		-0.144***		
			(0.001)		
Share Top 1%	top1			-0.132	
				(0.119)	
Share Top 1% * Private Credit / GDP	top1_credit			-0.333***	
				(0.001)	
Share Top 0.1%	top01				-0.310*
					(0.057)
Share Top 0.1% * Private Credit / GDP	top01_credit				-0.665**
					(0.043)

Inequality and Current Account Imbalances

- Underlying Theory: work in progress (Kumhov, Ranciere, Winant (2015)
- Net Savings effect
  - Saving of the Rich partly deployed abroad: CA Surplus
  - Borrowing of the Poor financed by borrowing abroad: CA Deficit.
- Foreign Investment Effect
  - Reduction in Labor Share: Foreign Investment Boom
- Difference in Financial Development
  - China: Income Inequality Increases: Current Account Surplus
  - US: Leveraged Financial Sector: amplified the domestic channel: Income Inequality→Current Account Deficit

Monetary, Fiscal Policy and Inequality

- Income Inequality as a source of heterogeneity:
  - Heterogeneity in Marginal Propensity to Consume.
  - Heterogeneity in Source of Income (Labor, Financial)
  - Heterogeneity in Labor Productivity.
- Monetary and Fiscal Policy Instruments are Redistributive
  - Interest Rate: Savers vs. Borrowers
  - Fiscal transfers; Targeted Transfers; Progressive Income Taxes
  - But does that matter at the aggregate?
- The standard NK standard model assumptions
  - Representative Agent: transfers are neutral
 - Ricardian Equivalent: transfers across time are neutral.

Model Explanation for the distrubtional effect of Monetary Policy

- Gornemann, Kuester and Nakajima (2014)
- Households differ in Wealth, Labor Productivity and Employment Status.
- Matching frictions: Equilibrium Unemployement
- Model Calibrated with Wealth Inequality as in the Data
- Taylor Rule:

$$\log\left(\frac{R(X)}{\bar{R}}\right) = \rho_\Pi \log\left(\frac{\Pi(X)}{\bar{\Pi}}\right) - \rho_u \log\left(\frac{u}{\bar{u}}\right) + D.$$

- Contractionary monetary policy **under strict inflation targeting**: increases financial return, decreases labor return.

Figure 13: Monetary Policy Shock: Individual Labor Income, Income, Consumption
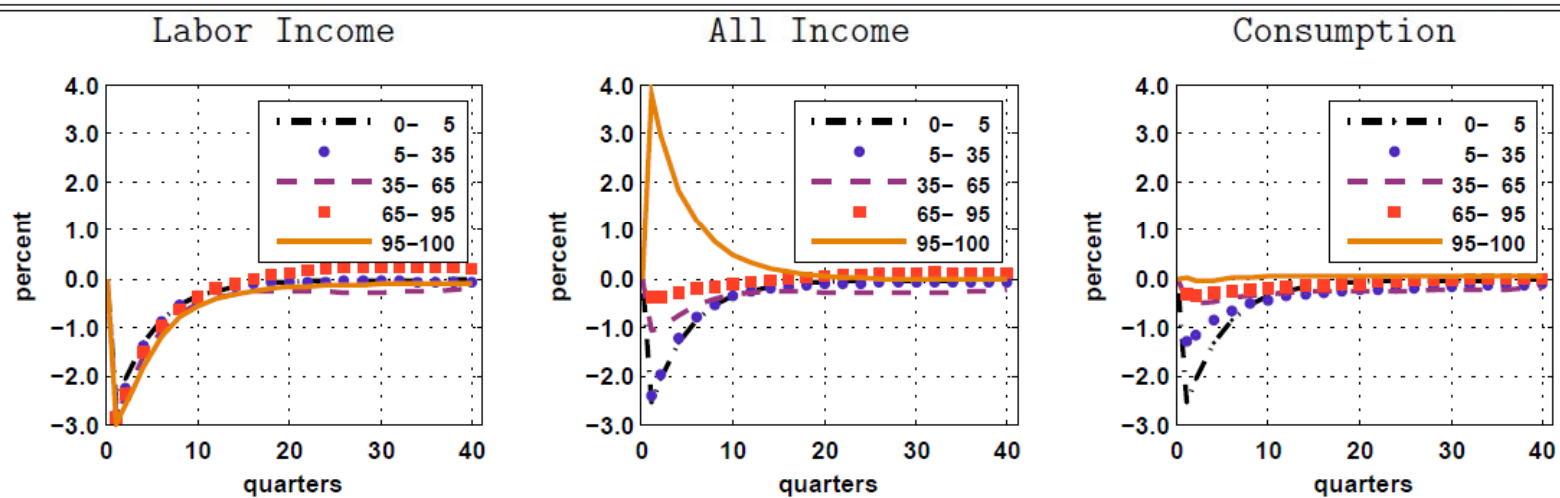
Notes: Impulse responses to a 1 percentage point (annualized) monetary policy shock of labor-related income, income, and consumption by percentile of the wealth distribution in the New Keynesian economy.

Counter-Cyclical Monetary Policy

- Gornemann, Kuester and Nakajima (2014)

$$\log\left(\frac{R(X)}{\overline{R}}\right) = \rho_\Pi \log\left(\frac{\Pi(X)}{\overline{\Pi}}\right) - \rho_u \log\left(\frac{u}{\overline{u}}\right) + D.$$

- RHO_U=0.25 / Response to Great Recession
- Large Shocks. Main Street gains. Bottom 95% gain 1.5% equivalent permanent consumption. At the expenses of the top 5% (-1%)
- Counter cyclical policy →Lower unemployement volatility--> BUT reduce precautionary savings→hurts this economy in the long run

Fiscal Policy and Inequality

- Fiscal/Transfer Multipliers in presence of heterogeneity.
- Role of Precautionary Savings
- Reis et al. (2012,2013); Bilbiie et al. (2012); Challe et al. (2014).
- Merge Literature on Aggregate Shocks and Individual Income Risk under Incomplete Markets (Krussell-Smith, 1998) with DSGE model with NK Nominal Rigidities.
- Main (but not all) Effects
  - Neoclassical channel: Labor Supply
  - Keynesian Effects: Boost Aggregate Demand
  - Long run: precautionary savings (substitution public vs. private insurance)

Fiscal Policy and Inequality

- Oh and Reis (2010) **Targeted** Transfers during the Great Recession.
- 2007-2009 + 14.4% in Government Spending (4.4% of GDP) ; 75% transfers
- Lump-sum direct transfer are expansionary
  - Negative wealth effect for some: increase labor supply (neo-classical effect) >> than positive wealth effects reducing labor supply of others.
  - The marginal worker supplies more labor.
  - Keynesian Effect: targeted transfer to agents with high Marginal Propensity to consume→ boost aggregate demand and unemployement
- Transfer Multiplier is much weaker (15 times) than the Government Consumption Multiplier

Wrapping up

- Income Inequality has large implications for borrowings and savings (MPS)
- Income Inequality and the Financial Sector
- Income Inequality and Current Account: interesting results but not well understood
- Income Inequality and Macro Policies: some twists to the standard DGSE; more is needed.
- Reducing Inequality to Stabilize Economies

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