REDISTRIBUTION, INEQUALITY, AND GROWTH

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*The views expressed in this presentation are those of the presenter and do not necessarily represent those of the IMF or IMF policy. This presentation draws on recent joint work with Andrew Berg and Charalambos Tsangarides.

Motivation and questions to be addressed

- Increasing focus on the links between rising inequality, crisis risk, and growth (Stiglitz (2012), Berg and Ostry (2011), Rajan (2010))

- Growth literature tentative consensus that inequality tends to reduce the pace and durability of growth

- If equality seems to drive higher and more sustainable growth does this support efforts to redistribute?

  - There may be a "big tradeoff" between equality and efficiency (Okun (1975)).

  - Inequality may impede growth because of efforts to redistribute which may undermine growth

- We want to simultaneously analyze the effects of redistributive transfers and inequality on growth
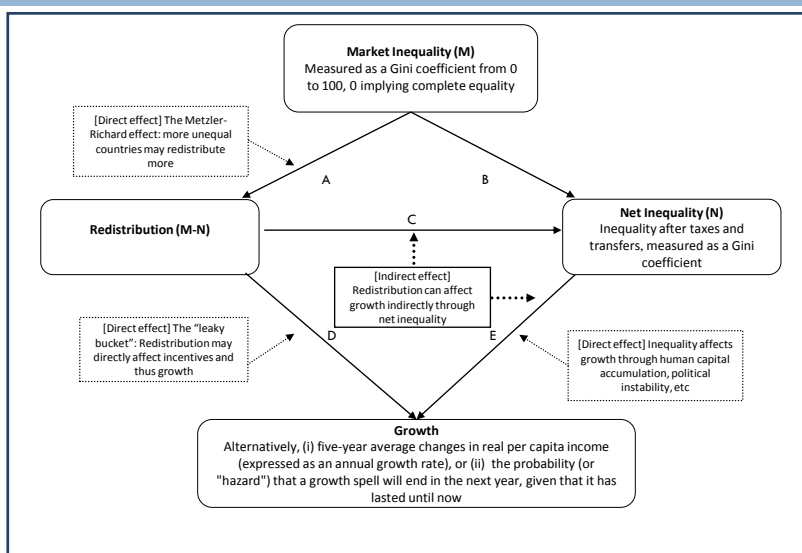
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Contribution and key findings

- We analyze both the growth rate over five-year horizons (panel growth regressions) and the duration of growth spells

- Use a recently-compiled cross-country dataset that distinguishes market and net income inequality and allows the direct calculation of redistribution (≡ gini of market income – gini of net income)

- Lower net inequality seems to drive faster and more durable growth for a given level of redistribution

- Redistribution appears generally benign in its impact on growth
  - Only in extreme cases is there some evidence that it may have direct negative effects on growth

- The combined direct and indirect effects of redistribution are, on average, pro-growth
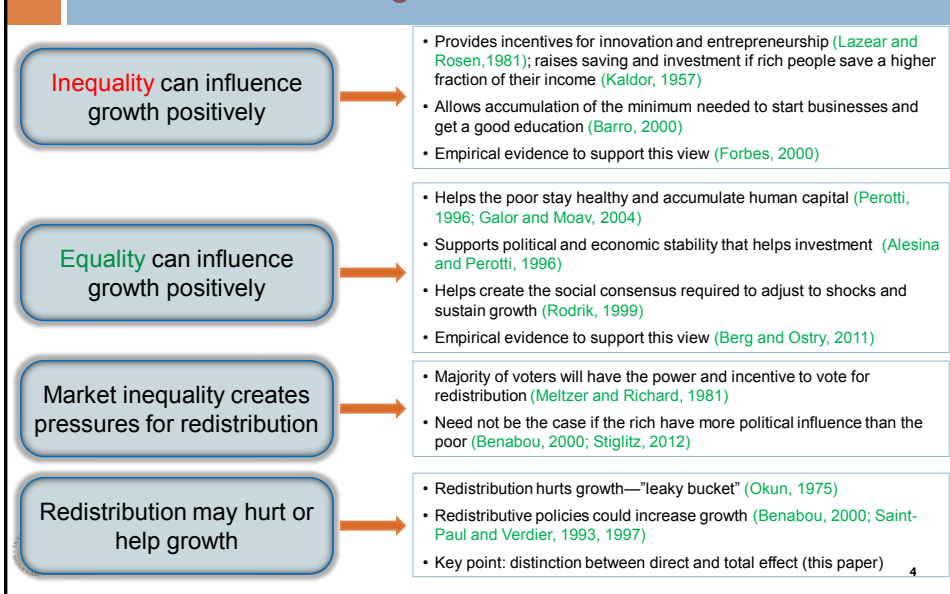
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Understanding the possible channels

Market Inequality (M)
Measured as a Gini coefficient from 0 to 100, 0 implying complete equality

[Direct effect] The Metzler-Richard effect: more unequal countries may redistribute more

A   B

Redistribution (M-N)   C   **Net Inequality (N)**
Inequality after taxes and transfers, measured as a Gini coefficient

[Indirect effect] Redistribution can affect growth indirectly through net inequality

[Direct effect] The "leaky bucket": Redistribution may directly affect incentives and thus growth

D   E

[Direct effect] Inequality affects growth through human capital accumulation, political instability, etc

Growth
Alternatively, (i) five-year average changes in real per capita income (expressed as an annual growth rate), or (ii) the probability (or "hazard") that a growth spell will end in the next year, given that it has lasted until now

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Channels and evidence: inequality, redistribution and growth

Inequality can influence growth positively →
- Provides incentives for innovation and entrepreneurship (Lazear and Rosen,1981); raises saving and investment if rich people save a higher fraction of their income (Kaldor, 1957)
- Allows accumulation of the minimum needed to start businesses and get a good education (Barro, 2000)
- Empirical evidence to support this view (Forbes, 2000)

Equality can influence growth positively →
- Helps the poor stay healthy and accumulate human capital (Perotti, 1996; Galor and Moav, 2004)
- Supports political and economic stability that helps investment (Alesina and Perotti, 1996)
- Helps create the social consensus required to adjust to shocks and sustain growth (Rodrik, 1999)
- Empirical evidence to support this view (Berg and Ostry, 2011)

Market inequality creates pressures for redistribution →
- Majority of voters will have the power and incentive to vote for redistribution (Meltzer and Richard, 1981)
- Need not be the case if the rich have more political influence than the poor (Benabou, 2000; Stiglitz, 2012)

Redistribution may hurt or help growth →
- Redistribution hurts growth—"leaky bucket" (Okun, 1975)
- Redistributive policies could increase growth (Benabou, 2000; Saint-Paul and Verdier, 1993, 1997)
- Key point: distinction between direct and total effect (this paper)

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A Preliminary Look at the Data

The Data

- Most data sets and papers mix different definitions of inequality and make at best simple attempts to address (Barro 2000, Easterly 2007)
  - Type of income: wage income, market income, disposable income, expenditure, etc.
  - Reference unit: person, household, tax unit, etc
- Difficulties for inequality/redistribution/growth literature:
  - Not clear how to interpret inequality in growth regressions; lots of measurement error
  - Impossible to directly measure redistribution ($\equiv$ market – net income). Redistribution is omitted or poorly proxied with e.g. size of government (Milanovic (2000) is an exception, but with a rich-country sample and not focusing on growth)
- Solt (2009) standardizes by type of income and reference unit, creating a comparable series on "net" and another on "market" income inequality for a large number of countries/time periods
  - Starts with standard sources of high-quality survey data: LIS, UN's WIID, PovCalNet, SEDLAC, Milanovic All Ginis dataset, etc
  - Uses regression-based method to impute standardized net and market inequality Ginis.
  - Some interpolation, but actual survey data used for 88 percent of observations in our baseline sample

➔ *Not perfect, but best available for our purposes: Only data set with redistribution measure for large number of countries/time periods*

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Global median inequality varies over time across groups

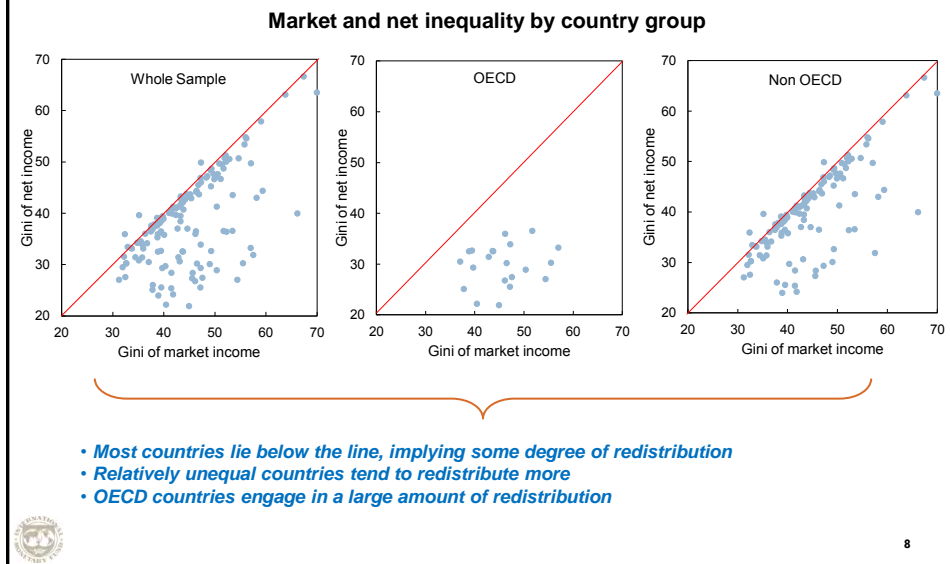**Evolution of market and net inequality, 1960-2010**
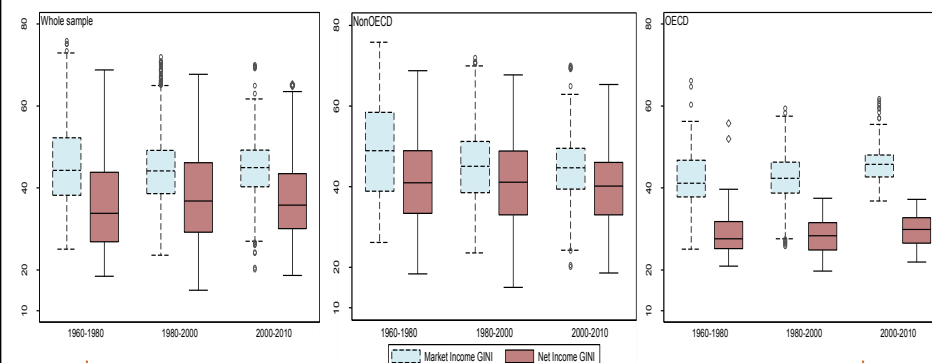
- *Global median inequality has been steady over the past half century*
- *Important differences across groups: market inequality has been rising in the OECD and falling in developing countries*
- *The gap between market and net inequality is much more pronounced in industrial countries*

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Unequal countries tend to redistribute more

Market and net inequality by country group

- *Most countries lie below the line, implying some degree of redistribution*
- *Relatively unequal countries tend to redistribute more*
- *OECD countries engage in a large amount of redistribution*

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More unequal societies redistribute more, controlling for income
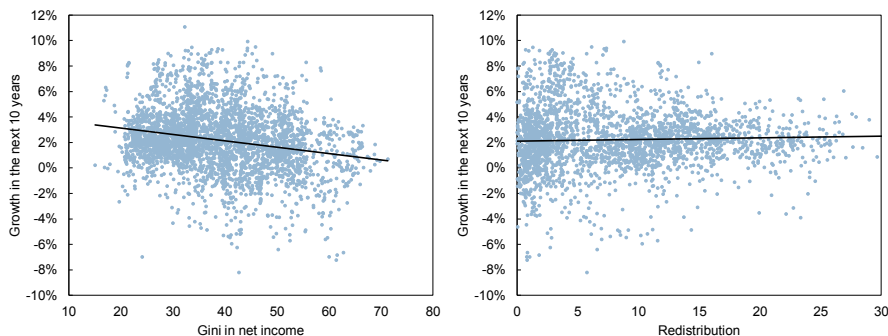
Correlation between market inequality and redistribution

Variable	Dependent Variable: Redistribution		
	Whole sample	OECD countries	Non-OECD countries
	(1)	(2)	(3)
Market inequality	0.483***	0.619***	0.405***
	(0.0523)	(0.0831)	(0.0566)
Log(initial income)	1.469	0.265	1.666*
	(0.9377)	(2.8134)	(0.9985)
Constant	-25.288***	-16.240	-22.411***
	(7.5574)	(26.1833)	(7.6469)
Number of Observations	829	220	609
R-squared	0.8797	0.9083	0.8215

- *An increase in market inequality from the 50th to the 75th percentile of the sample is associated with an increase in redistribution by 3 Gini points*

- *The relationship is weaker in the non-OECD sample than in the OECD, but still significant*

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More inequality associated with lower growth

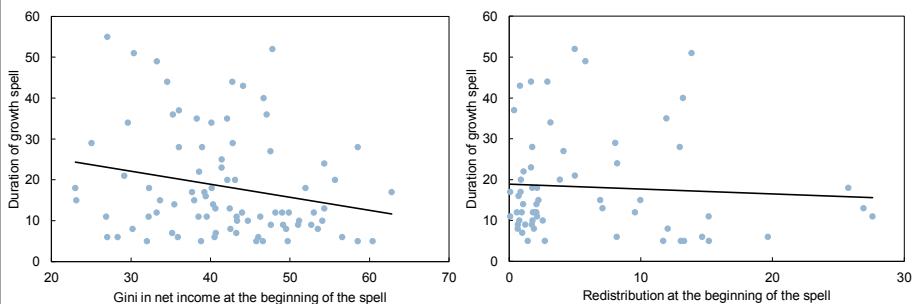**Growth, inequality, and redistribution**

- *Strong negative relation between the level of net inequality and growth in income per capita over the subsequent period*
- *Weak (positive) relationship between redistribution and subsequent growth*

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More inequality lowers growth spell length

Duration of growth spells, inequality, and redistribution

- *Strong negative relationship between the level of net inequality and the duration of growth spells*
- *Weak (negative) relationship between redistribution and the duration of growth*

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Empirical analysis

Panel approach: growth, redistribution, inequality

	Dependent Variable: growth rate of per capita GDP			
	Baseline	Baseline + controls		
	(1)	(2)	(3)	(4)
Log(initial income)	-0.0069**	-0.0081**	-0.0140***	-0.0135***
	(0.0034)	(0.0035)	(0.0037)	(0.0046)
Net inequality	**-0.1435***	**-0.0914***	**-0.0739***	**-0.1057****
	(0.0444)	**(0.0336)**	**(0.0266)**	**(0.0492)**
Redistribution	**0.0046**	**0.0258**	**0.0109**	**0.0530**
	(0.0492)	**(0.0516)**	**(0.0428)**	**(0.0494)**
Log(investment)		0.0241***	0.0250***	0.0076
		(0.0077)	(0.0084)	(0.0125)
Log(population growth)		-0.0159	-0.0215	-0.0084
		(0.0182)	(0.0174)	(0.0160)
Log(total education)			0.0206***	0.0164*
			(0.0073)	(0.0099)
Large negative terms of trade shock				-0.0424***
				(0.0158)
Political institutions				-0.0011
				(0.0008)
Openness				0.0001
				(0.0001)
Debt liabilities				-0.0002***
				(0.0001)
Constant	0.1262***	0.0718	0.0965**	0.1687***
	(0.0389)	(0.0456)	(0.0389)	(0.0573)
Number of observations	828	828	751	558

- *Basic specification: a stripped-down standard model in which growth depends on initial income, net inequality, and redistribution*

- *Additional plausible specifications: first with physical and human capital and then with a number of additional standard growth determinants*

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Findings from the growth model

□ Higher inequality associated with lower growth

□ Redistribution has a statistically insignificant (slightly positive) effect

□ Inclusion of additional determinants does not change our conclusions about inequality and redistribution.

□ No evidence for "non-linearities" in the inequality-growth relationship

□ Results are not consistent with the notion that there is a trade-off between growth and a reduction of inequality through redistribution

　　◘ If trade-off the coefficient on redistribution should be negative and more negative than that on inequality: not the case

　　◘ Rather than a trade-off, the average result is a win-win situation

➔ *Redistribution has an overall pro-growth effect, counting both potential negative direct effects and potential positive effects of the resulting lower inequality*

➔ *Reject the Okun assumption that there is in general a trade-off between redistribution and growth*

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The effect graphically

The effect of inequality and redistribution on growth
(10 percentile increase from median)
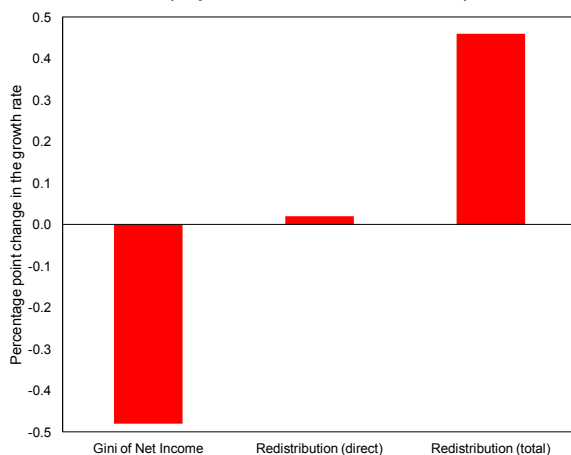
• An increase in net Gini from 37 (such as in the United States in 2005) to 40 (such as in Morocco in 2005) decreases growth on average by 0.5 percentage points, that is, from 5 percent to 4.5 percent per year (holding redistribution and initial income constant)

• An increase in redistribution from the 50th to the 60th percentile (also roughly a 3-Gini-point change) increases the growth rate slightly (controlling for inequality and initial income)

• The total effect of a 10-percentile change in redistribution is to increase the annual growth rate by 0.5 percentage points

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Robustness to the sample specification

Alternative samples: inequality, redistribution, and growth

	Dependent Variable: growth rate of per capita GDP		
	Full	Baseline	Restricted
	(1)	(2)	(3)
Log(initial income)	-0.0049	-0.0069**	-0.0091*
	(0.0036)	(0.0034)	(0.0055)
Net inequality	-0.1003**	-0.1435***	-0.2291***
	(0.0464)	(0.0444)	(0.0650)
Redistribution	0.0000	0.0046	-0.0013
	(0.0004)	(0.0492)	(0.0008)
Constant	0.0918**	0.1262***	0.2041***
	(0.0394)	(0.0389)	(0.0596)
Number of observations	979	828	462

Irrespective of the sample used, inequality remains harmful for growth, even when controlling for redistribution

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Duration of growth spells

	Dependent Variable: Risk that the growth spell will end			
	Baseline	Baseline + controls		
	(1)	(2)	(3)	(4)
Net inequality	**1.060****	**1.050***	**1.060****	**1.074****
	(0.0266)	**(0.0266)**	**(0.0291)**	**(0.0314)**
Redistribution x Top 25th percentile	**1.098****	**1.099****	**1.055**	**0.990**
	(0.0322)	**(0.0329)**	**(0.0378)**	**(0.0567)**
Redistribution x Bottom 75th percentile	**0.987**	**0.961**	**0.971**	**0.938**
	(0.0690)	**(0.0735)**	**(0.0695)**	**(0.0734)**
Log(initial income)	1.024	1.026	1.077*	1.216***
	(0.0318)	(0.0318)	(0.0413)	(0.0844)
Log(investment)		3.050**		
		(1.7293)		
Log(population growth)		1.201		
		(1.7085)		
Log(total education)			0.694	0.845
			(0.2705)	(0.4260)
Large negative global interest rate shock			1.391	1.153
			(0.6620)	(0.5945)
Large negative terms of trade shock			2.719**	3.198**
			(1.1700)	(1.4887)
Political institutions				0.924*
				(0.0398)
Openness				0.990
				(0.0066)
Debt liabilities				1.001
				(0.0027)
Number of observations	640	640	609	549
Number of total spells/number of complete spells	62/28	62/28	55/23	49/20

• *Specification relates the hazard to initial income at the start of the spell, and inequality and redistribution during the spell*

• *No evidence of a nonlinear relationship between inequality and spell duration*

• *For redistribution evidence for a nonlinear relationship*

• *Baseline divides sample into observations where the degree of redistribution is very large (the top 25th percentile) and those where it is moderate (the rest of the distribution)*

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Findings from the hazard model

- Inequality is negatively related to the duration of growth spells
  - A one-Gini-point increase in inequality is associated with a 6 percentage point higher risk that the spell will end
- When redistribution is high (above the 75th percentile), there is evidence that redistribution is directly harmful to growth
- When redistribution is below that level, no evidence that further redistribution has any effect on growth
- Results when controlling for a number of additional potential determinants are robust on inequality, more fragile for redistribution

➔ *Overall effect of redistribution appears to be protective of growth, with the possible exception of extremely large redistributions*

➔ *There is no significant negative direct effect, and the resulting lower inequality seems to be associated with longer growth spells*

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When is redistribution harmful?

The top 25 percent and the bottom 75 percent (Selected countries)
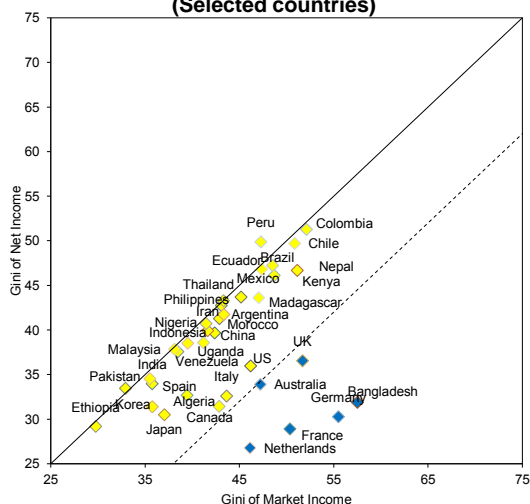
- *Sample includes top 20 percent of countries by population (most recent observation)*

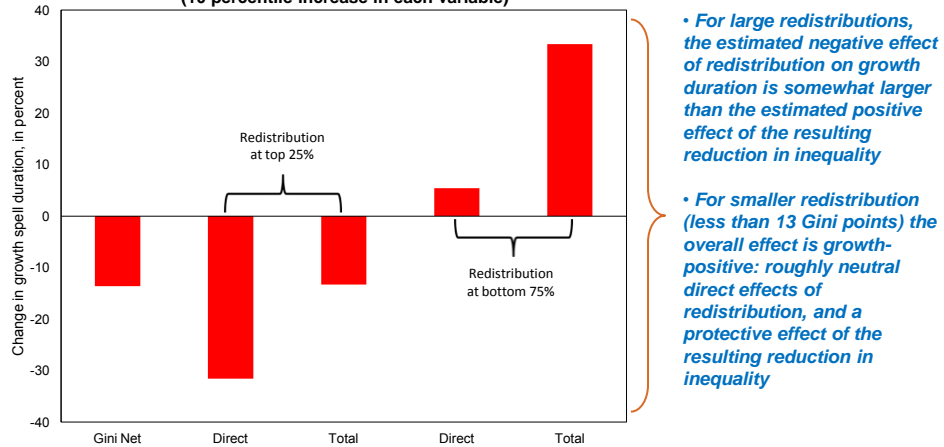- *The distance below the solid diagonal line represents the amount of redistribution*

- *Further redistribution seems to start being growth-negative after 13 Gini points*

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The effect graphically

The effect of inequality and redistribution on growth spell duration
(10 percentile increase in each variable)

• For large redistributions, the estimated negative effect of redistribution on growth duration is somewhat larger than the estimated positive effect of the resulting reduction in inequality

• For smaller redistribution (less than 13 Gini points) the overall effect is growth-positive: roughly neutral direct effects of redistribution, and a protective effect of the resulting reduction in inequality

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Robustness to the sample used

Alternative samples: inequality, redistribution, and the duration of growth spells

	Dependent Variable: Growth spell duration		
	Full	Baseline	Restricted
	(1)	(2)	(3)
Net inequality	1.052**	1.060**	1.064
	(0.0251)	(0.0266)	(0.0751)
Redistribution x Top 25th percentile	1.082***	1.098***	0.981
	(0.0302)	(0.0322)	(0.1097)
Redistribution x Bottom 75th percentile	1.009	0.987	0.999
	(0.0659)	(0.0690)	(0.1623)
Log(initial income)	1.032	1.024	1.085
	(0.0301)	(0.0318)	(0.0797)
Number of observations	801	640	364
Number of total spells / number of complete spells	77/31	62/28	31/8

• As in the growth regressions, the full sample results follow the baseline
• Unlike the growth regressions, in the more restricted sample, which differs in eliminating from consideration the data from pre-1985 developing countries, the data are uninformative

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Conclusions
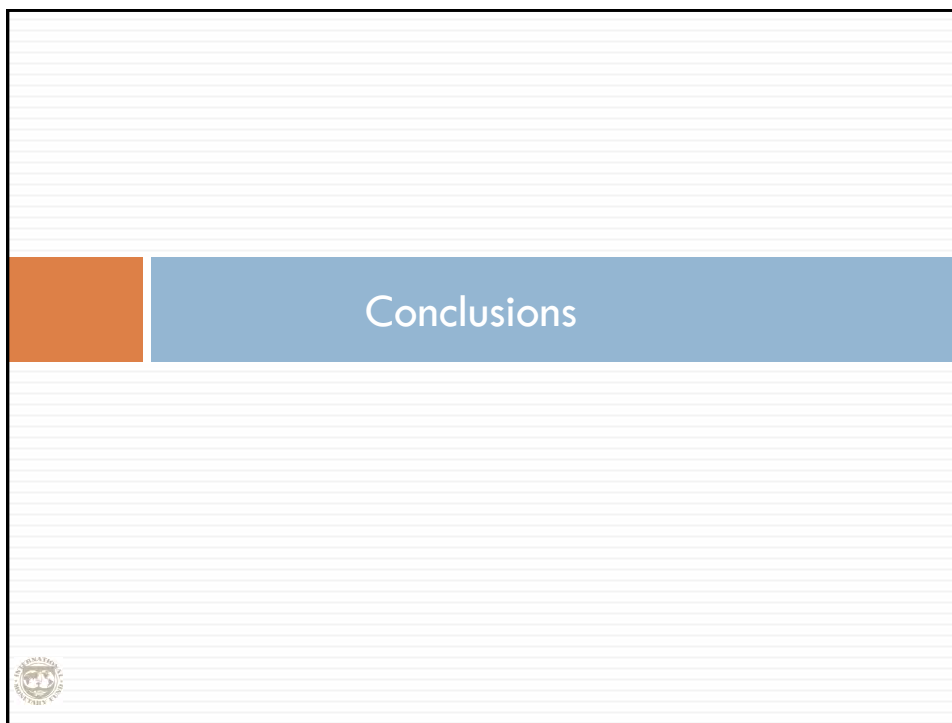
Key Takeaways

- Controlling for redistribution, inequality is still a robust determinant *both* of the pace of medium-term growth and of the duration of growth spells
- Little evidence for a harmful effect of fiscal redistribution at a macro level
- Mindful about over-interpreting these results, especially for policy purposes
- Extreme caution about redistribution—and thus inaction—is unlikely to be appropriate in many cases
- On average, across countries and over time, governments' efforts to redistribute did not lead to bad growth outcomes, unless they were extreme
- Resulting narrowing of inequality helped support faster and more durable growth

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