

FINANCE AND DISTRIBUTION: CROSS-COUNTRY EVIDENCE FROM PANEL VAR AND POLICY IMPLICATIONS

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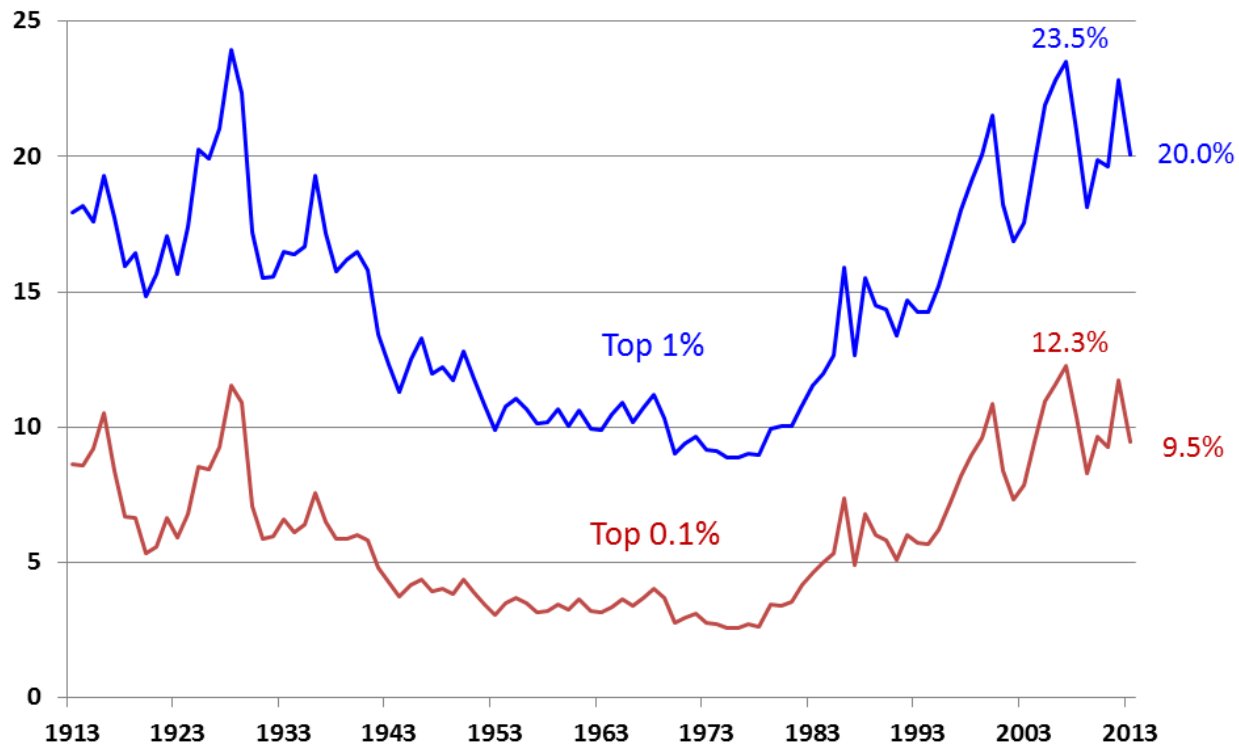
MOTIVATION



US Top 1% Income Share

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U.S. Income Shares of Top 1% and Top 0.1% Households – Incl. Capital Gains (1913-2013)



Source: Piketty & Saez – January 2015

Finance and Inequality

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Occupy Wall Street! Why?

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Questions on the Table after the Global Financial Crisis

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1. Does finance have something to do with inequality?
2. Does finance help the poor?
3. Does financial development deliver economic growth?
4. Do the recent series of financial crises suggest the failure of capitalism and market economy?
5. Should we promote or regulate finance?

Original Meaning of Finance

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1. *fin*: end (in French)
2. *finer* → *finance* : to make an end, ending something that is due, settlement of a debt, ransom, pardon
3. The essence of finance from its original meaning is to transmit the surplus from the abundant to the scarce.

Revisiting the Basic: Role of Finance

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- Surface level functions of finance (Levine, 2005)
 1. To **produce information** ex ante about possible investments and allocate capital
 2. To **monitor** investments and exert corporate governance
 3. To facilitate the **trading, diversification, and management of risks**
 4. To **mobilize and pool savings**
 5. To **ease the exchange** of goods and services
- Fundamental role of finance
 1. **Expansion of the set of available state-contingent claims**
 2. Consequence should be the improvement of the efficiency of resource allocation, particularly in terms of risk and intertemporal trade

What can be the problems, then?

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- “Finance” itself cannot be bad for enhancing growth and inequality, if it works perfect.
- However, when **the access to financial services is limited** only to a subset of agents of the economy, the consequence of financial development on growth and inequality may change.
 1. Misallocation of capital at the intensive margin
 2. Mismatch between entrepreneurial talents and capital at the extensive margin
 3. When the access to finance is determined by the initial (economic or political assets), financial development may increase inequality with stagnating the economy.
- So, the effects depends on **what kinds of financial development!**
 1. Financial deepening among the financial-sector participants
 2. Expansion of access to finance

EMPIRICAL METHOD AND FINDINGS



Existing Empirical Evidence

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- Growth and inequality
 1. Inverted-U shaped inequality change with growth: Kuznets(1955)
 2. Discordant cross-country evidence effect of inequality for growth
 - Negative: Benhabib and Spiegel (1998)
 - Positive: Forbes (2000)
 - Negative among poor but positive among rich: Barro (2000)
 - Any changes in inequality reduce growth: Banerjee and Duflo (2000)
- Growth and inequality via financial development
 1. Poverty reduction: Beck et al. (2007)
 2. Promoting growth in many cases: Levine (2005) survey
 3. Mixed results on inequality: Demirgüç-Kunt and Levine (2009)
 4. Kuznets curve via finance: Jeong and Townsend (2008)
 5. Reducing inequality for poor but increasing inequality among rich: Park and Shin (2015)

Limitations of Existing Empirical Studies

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- Reduced-form cross-country evidence
 1. Results are not robust to specification and frequency
 2. Fundamental reason of the sensitivity: Ignoring interactive and simultaneous dynamic responses among key variables
- Structural approach time-series evidence for a given economy
 1. Evidence is refutable in a systemic way, hence open to progress
 2. Specification bias issues still remain.
 3. Hard to generalize and difficult to use for the world level issues

Methods of This Paper

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- Use cross-country data:
To capture the worldwide general patterns among growth, inequality and finance
- Use Panel VAR rather than regression
 1. To capture the interactive and simultaneous dynamic responses among key variables
 2. Very first attempt as far as we know
- Reduced form but 18 different VAR models Opening avenues to further studies about specific mechanisms
- Differentiate the financial development measures:
Aggregate size of financial transaction vs. Access to finance

Benchmark VAR Models

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- Panel VAR specification

$$y_t^i = c^i + B(L)y_{t-1}^i + u_t^i$$

- Two benchmark models

1. Model 1: {Y, Gini, CR}

2. Model 2: {FA, Y, Gini, CR}

Y: Real GDP per capita, Gini: Gini coefficient

CR: Aggregate size of financial transaction

FA: Access to finance

- Other specifications

1. Two lags for all variables

2. Sample period: 1960-2012 for M1, 2001-2012 for M2

Measurement of Key Variables

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- Y: real GDP per capita in 2005 US dollar (WDI)
- GINI: Gini coefficient of disposable income (SWIID)
- CR (WB)
 1. Domestic private credit to GDP ratio
 2. Liquid liability to GDP ratio
 3. Stock market capitalization to GDP ratio
- FA (WB)
- #commercial bank branches per 1 000 km²
- #commercial bank branches per 100,000 adults
- #ATM machines per 1 000 km²
- #ATM machines per 100,000 adults

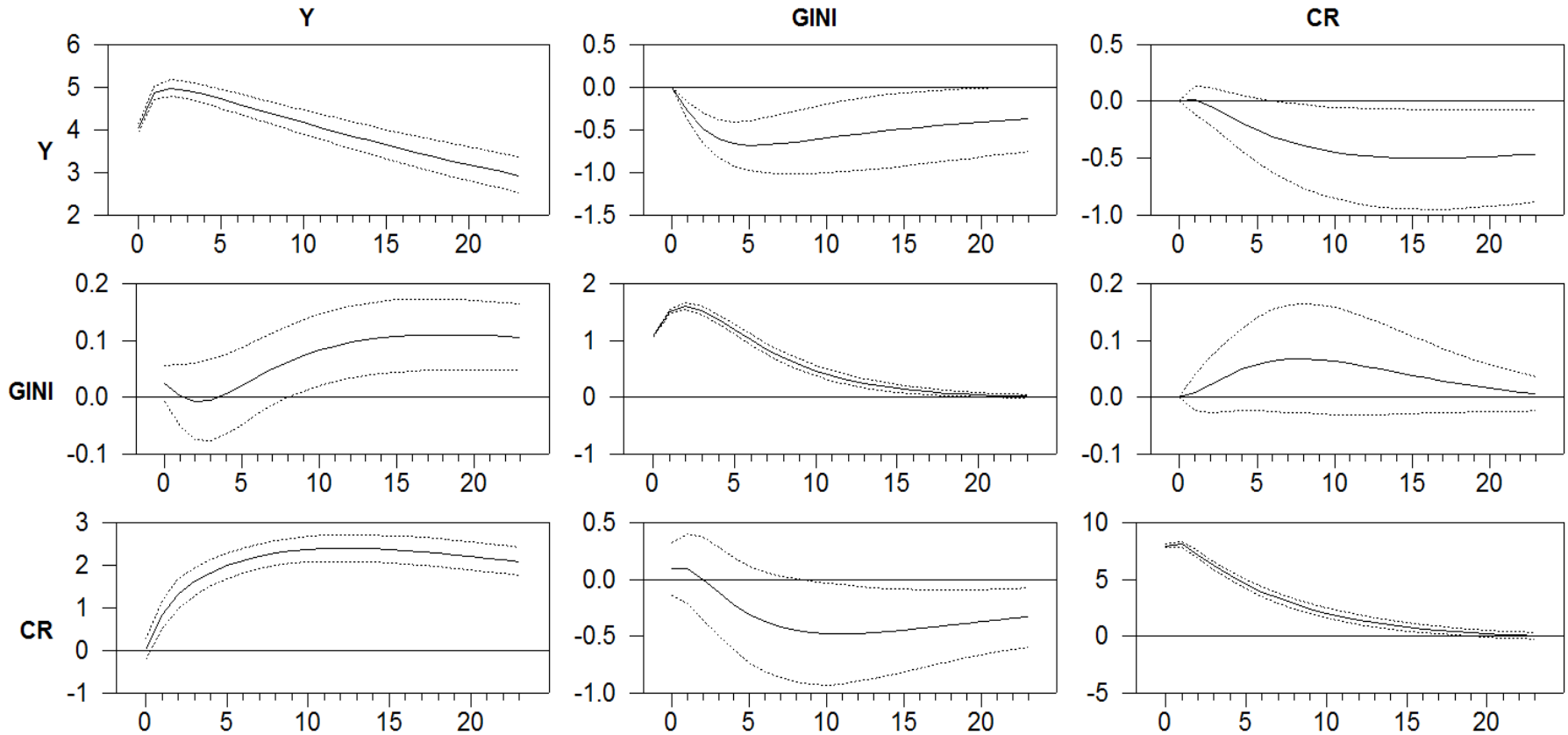
Outreach/Access and Barriers

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- Financial outreach/access variables:
 1. Number of commercial bank branches per 1000 km²
 2. Number of loans and deposits (i.e., bank use) per capita
 3. Adult population share with access to financial services
- Barriers to financial system: minimum balances for checking accounts, annual fees, document requirements associated with the accounts, the number of delivery channels for lending products, minimum amounts for consumer loans relative to GDP per capita, and days to process consumer loans etc.
- Beck, Demirgüç-Kunt, and Martinez Peria (2007): Two groups of variables are strongly correlated!

Impulse Response Function of M1 (private credit to GDP)

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Results of M1

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□ Directions of responses to shocks

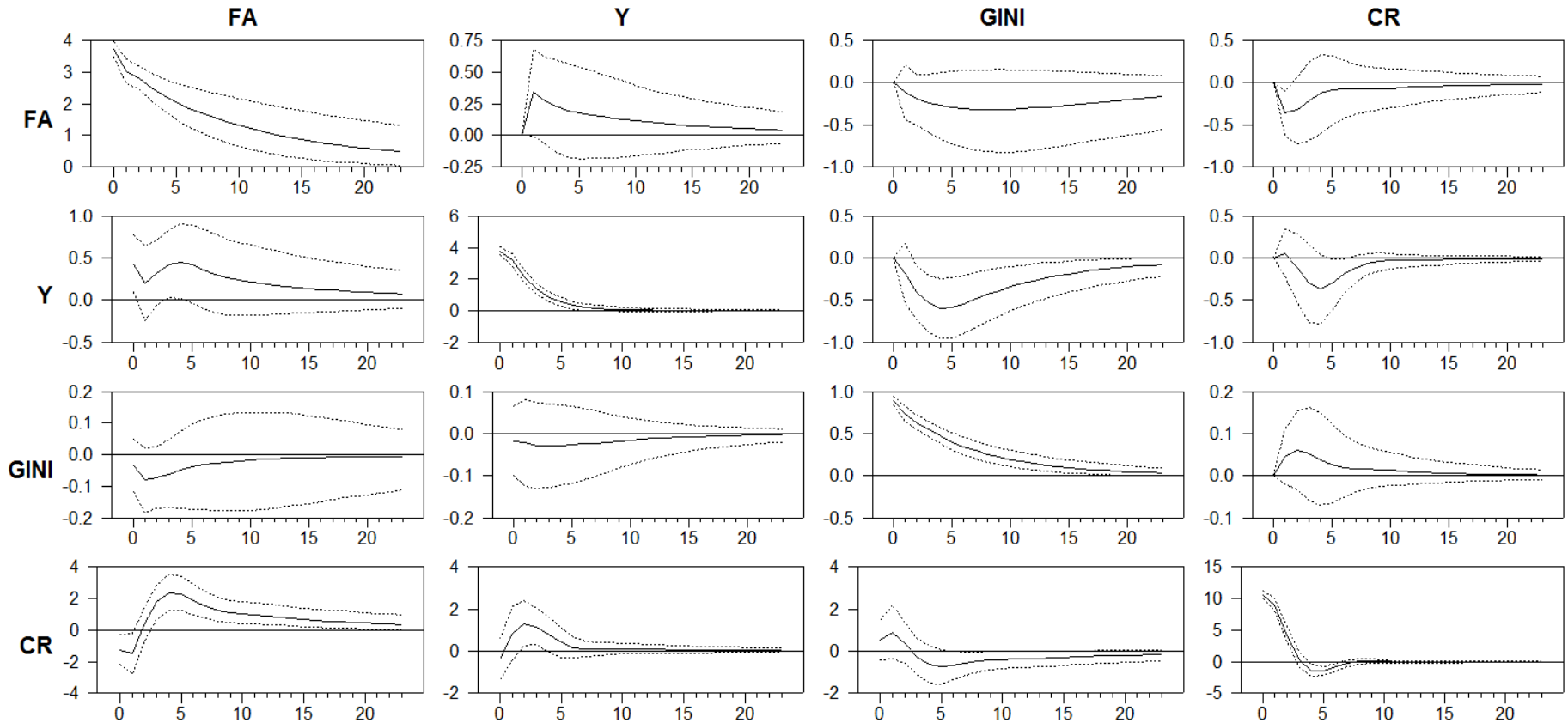
$Y \rightarrow GINI$	$GINI \rightarrow Y$	$CR \rightarrow GINI$	$GINI \rightarrow CR$	$CR \rightarrow Y$	$Y \rightarrow CR$
↑ ↑	↓ ↓	↑ ↑	↓ ↓	↓ ↓	↑ ↑

□ Remarks

1. Asymmetric responses: simultaneous equation approach is indeed important!
2. Short-term and long-term effects can differ:
 - Income growth initially reduces inequality but the direction is reversed eventually
 - Increase in inequality promotes financial deepening for short but deteriorates it in the long-run

Impulse Response Function of M2 (bank branch per km²)

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Results of M2 (1)

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□ Directions of responses to shocks

Y→GINI	GINI→Y	CR→GINI	GINI→CR	CR→Y	Y→CR
↓	↓ ↓	↑ ↑	↓ ↓	↓ ↓	↑ ↑

FA→CR	CR→FA	FA→GINI	GINI→FA	FA→Y	Y→FA
↑ ↑	↓ ↓	↓ ↓	↓ ↓	↑ ↑	↑ ↑

□ Remarks

1. Contrasting effects for growth and inequality between CR(aggregate size of financial transaction) and FA(access to finance)
2. FA promotes CR but not the other way around

Results of M2 (2)

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□ Remarks

1. Negative effect of inequality for growth remains robust.
2. Negative effects of inequality for financial development for both CR and FA.
3. Increase in inequality first promotes CR but eventually reduces CR, while it reduces FA throughout.

Sensitivity Analysis

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- Robust to changing identification ordering
 - Robust to alternative CR measures
 - Robust to alternative FA measures (with ATM measures, effects become a little weaker)
 - Robust to controlling for confounding factors in the literature
1. Trade openness: $(\text{exports} + \text{imports})/\text{GDP}$
 2. Government expenditure share of GDP
 3. High-technology exports share of manufactured exports

Main Findings

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- Inequality is bad for growth controlling for financial development either by CR or by (CR and FA)
- Income growth induces financial development for both CR and FA measures, but financial development only by FA leads to income growth.
- Financial development by CR increases inequality, while the expansion of the access to finance (FA) decreases inequality.
- The above results do not change by including the effects of trade, government size, and high technology share of exports.

경청해주셔서 감사합니다!