Global Growth Poles in a Multipolar World Economy

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Silvaplana Workshop on Political Economy
July 26, 2011

Multipolarity in a post-crisis world

- Post-financial crisis global environment marked by a sharp rise in international economic tensions
  - Heightened protectionist sentiment, stalled Doha round
  - Exchange rate manipulation accusations, tensions in G20 meetings
- What are the changes taking place in the global economic landscape that are affecting the future of international economic diplomacy?
  - Increasing multipolarity in international economic relations
  - Developing world playing an increasingly important global role

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Historical changes in polarity

1. Central argument: Current heightened tensions in global economic relations are due to shifts toward multipolarity
   - Document the rise of the so-called Global South/Emerging World
   - Adopt the perspective of economic growth and influence, and establish changing global trends over time
2. Shifts in global economic polarity are not new
   - Between the Tang and Ming dynasties (600–1600), China was a dominant force in the global economy
   - Renaissance saw the beginning of the rise in the economies of Western Europe
   - Post-WWII global growth was led not only by the United States, but also the former Soviet Union, Germany, and Japan
   - What *is* different is that these rising economies are not the contemporary developed nations

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Understanding global growth poles and multipolarity

- Develop an empirical measure of growth poles
  - Introduce an index of growth polarity, based on theoretical channels of growth spillovers
- Compute the degree of multipolarity in the world economy
  - Based on distribution of growth polarity indexes, develop a measure of multipolarity
- Use measures to better understand the phenomenon of (economic) multipolarity, and its implications

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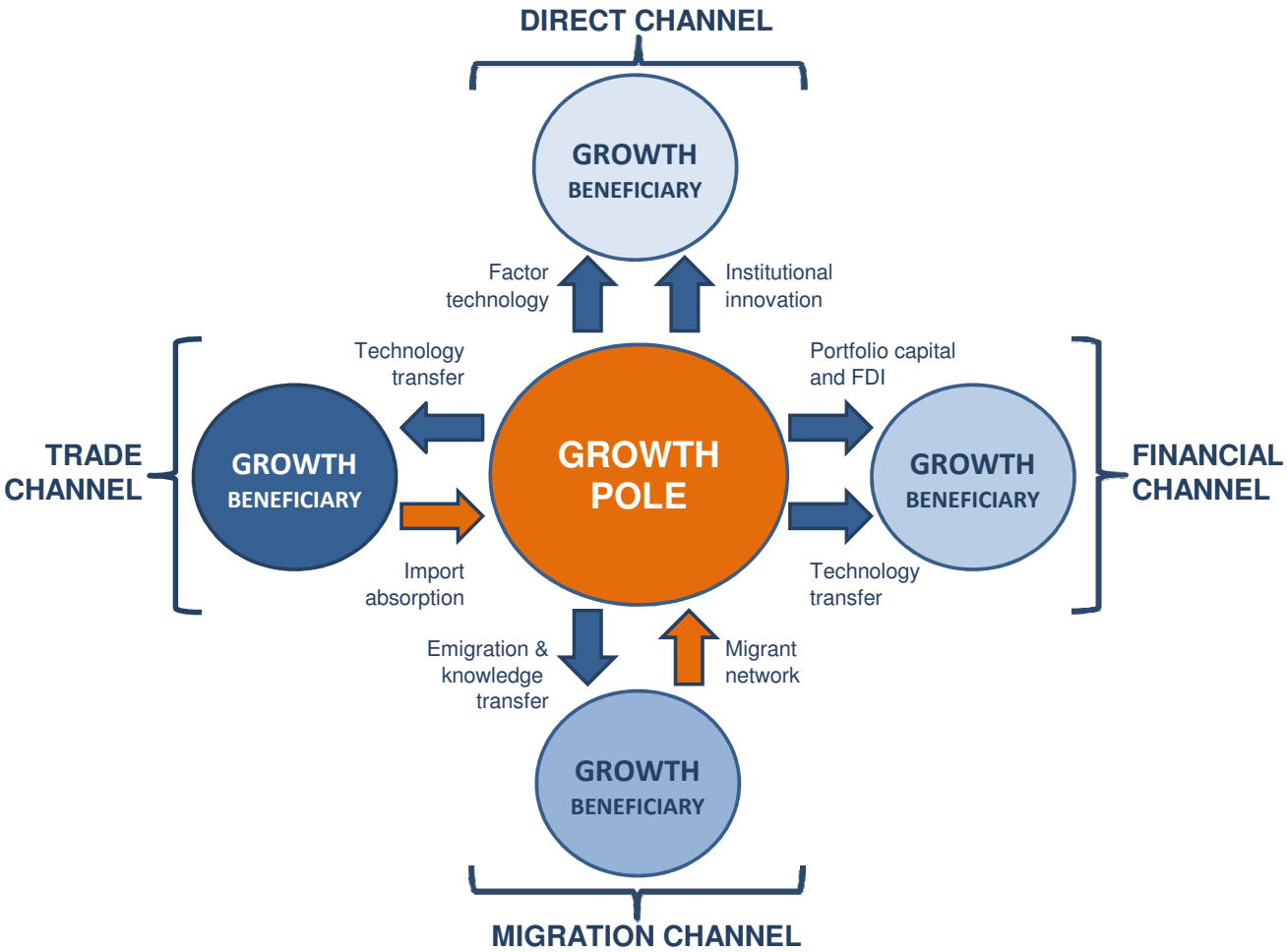
Theoretical channels for growth spillovers I

- Spillover channels for growth poles



Theoretical channels for growth spillovers II

- Multiplicity of theoretical channels
  - Technology (Solow 1956; Romer 1990; Acemoglu, Johnson & Robinson 2005)
  - Trade (Grossman & Helpman 1991; Eaton & Kortum 2002)
  - Finance (Markusen 2004; Rodríguez-Clare 1996; De Bondt & Veugelers 1991)
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Empirical measure of growth polarity

- Contribution to global growth

$$P_{it} = \frac{y_{i,t-1}}{Y_{t-1}} \cdot \frac{\Delta y_{it}}{y_{i,t-1}} \equiv s^{y}_{i,t-1} \cdot g^{y}_{i,t-1}$$

- Weight country's growth by spillover channel

$$P^{W}_{it} = \frac{w_{it}}{W_t} \cdot g^{y}_{it},$$

For example:

$$P^{T}_{it} = \frac{m_{it}}{X_t} \cdot g^{y}_{it},$$

- Aggregate channels into *growth polarity* index using PCA
  - Measure robust to alternative: (a) weights; (b) growth measures; (c) channel choices; (d) aggregation methods

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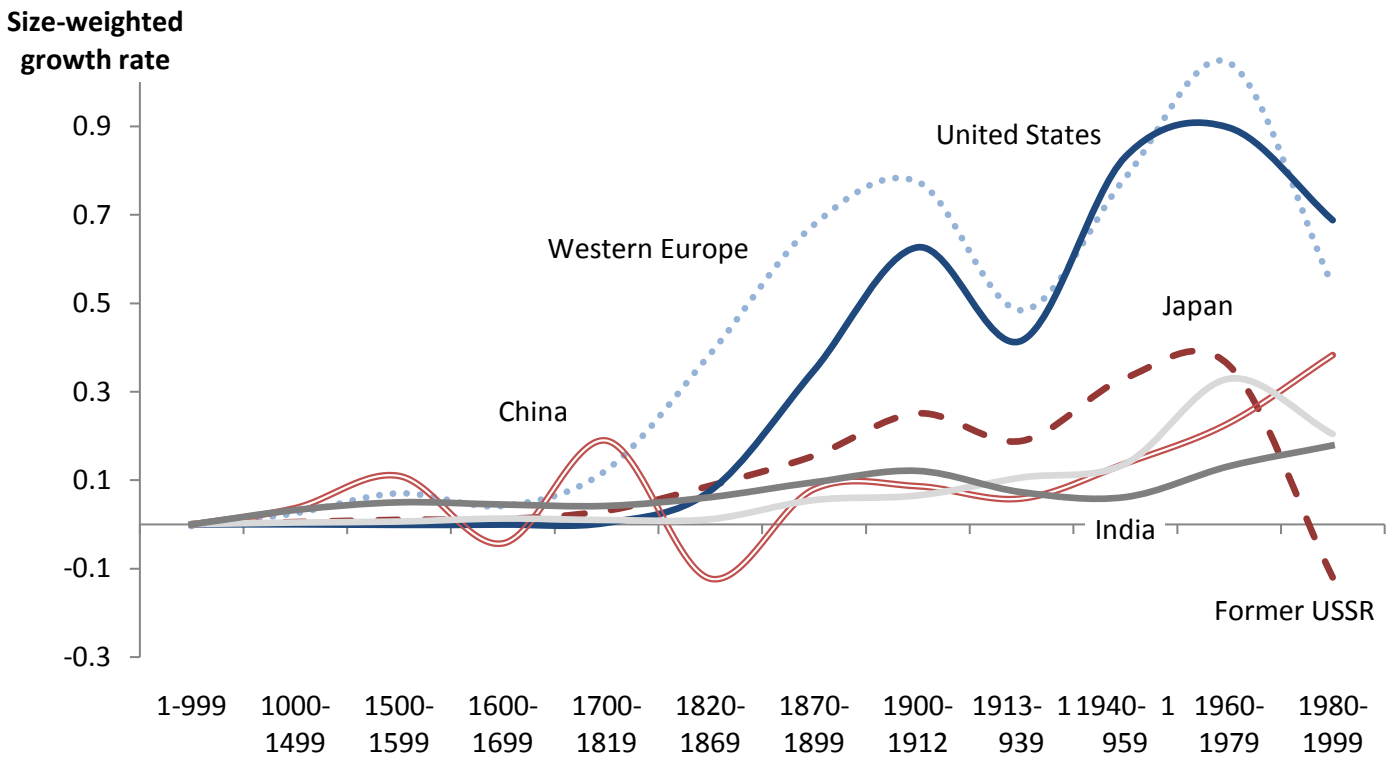
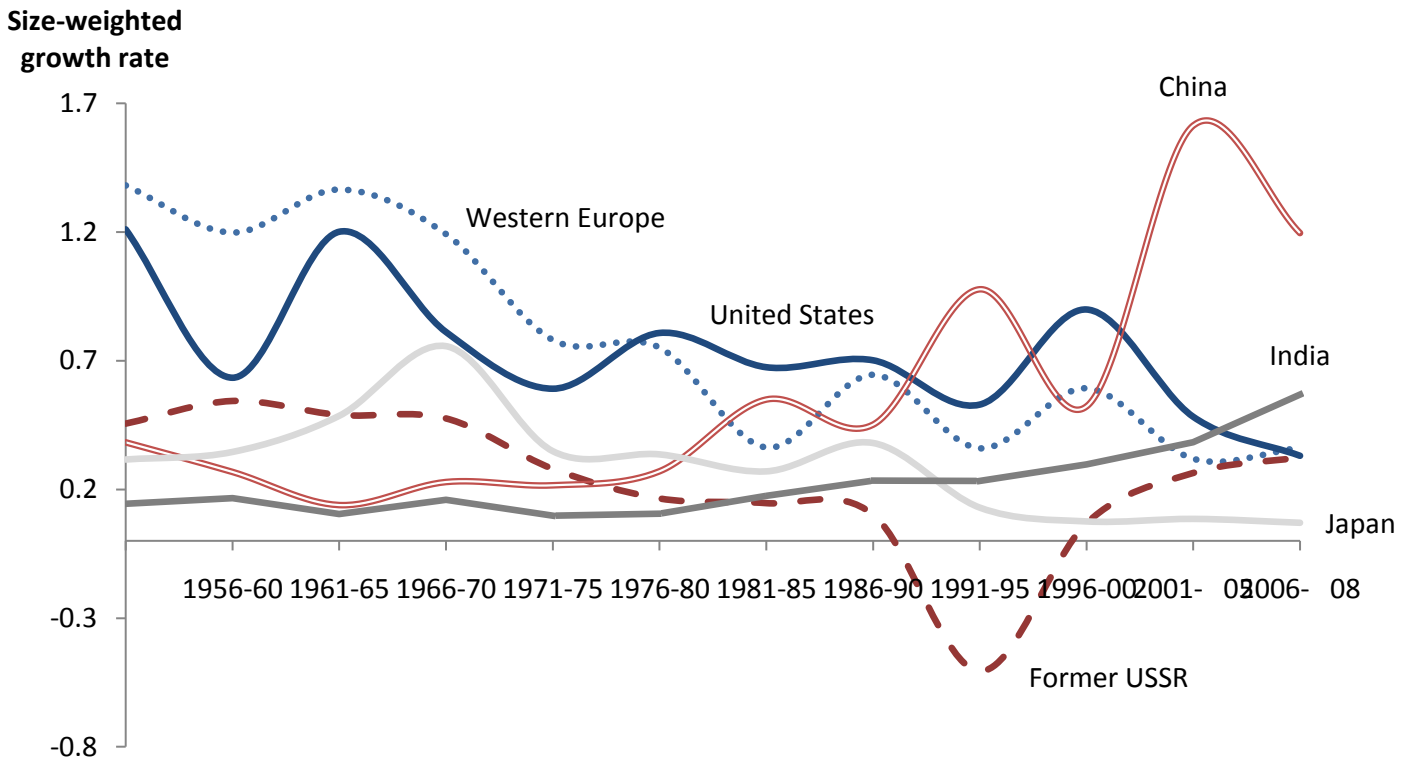


Source: Authors' calculations, from Maddison (2009)

Contribution to global growth II



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Multidimensional growth polarity

Rank	Country	Real	Rank	Country	PPP
1	China	8.174	1	China	10.853
2	United States	5.492	2	United States	7.344
3	South Korea	0.805	3	Japan	1.796
4	United Kingdom	0.752	4	Germany	1.331
5	Japan	0.746	5	Russia	1.208
6	India	0.608	6	United Kingdom	0.992
7	Germany	0.563	7	South Korea	0.945
8	Russia	0.459	8	France	0.926
9	France	0.390	9	India	0.685
10	Singapore	0.340	10	Ireland	0.674

Proximate correlates

	OLS	RE	S-GMM	OLS	RE	S-GMM
Population growth	-2.078	-0.053	-1.827	2.767	2.304	-2.794
	(1.39)	(0.18)	(1.43)	(1.64)*	(1.41)	(2.33)
Investment	0.302	0.083	0.282	0.254	0.257	0.560
	(0.22)	(0.13)	(0.36)	(0.24)	(0.14)*	(0.37)
Enrollment	0.116	-0.037	0.335	-0.055	0.009	-0.063
	(0.04)***	(0.06)	(0.13)**	(0.04)	(0.05)	(0.12)
Income per capita				0.095	0.103	0.168
				(0.02)***	(0.02)***	(0.05)***
Life expectancy				-0.237	-0.361	-0.352
				(0.11)**	(0.19)*	(0.48)
Dependency ratio				-0.494	-0.442	0.032
				(0.12)***	(0.16)***	(0.30)
Government size				-0.887	-1.085	-1.545
				(0.23)***	(0.35)***	(0.68)**

- Regress growth polarity on augmented Solow specification (Mankiw, Romer & Weil 1992) and BMA-identified specification (Sala-i-Martin, Doppelhofer & Miller 2004)
  - Estimation using OLS, FE/RE, and system/difference GMM
  - Enrollment (+ve) significant in MRW specification; income per capita (+ve), dependency ratio (-ve), government size (-ve)
  - Results robust to: (a) additional control variables; (b) alternative control measures; (c) alternative polarity measures

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Fundamental determinants

	IV-1	IV-2	S-GMM	IV-1	IV-2	S-GMM	IV-2	S-GMM	IV-2	S-GMM
Institutions	2.374	3.627	1.71	2.430	5.584	1.597	6.193	1.454	2.679	1.457
	(0.85)***	(1.67)**	(0.39)***	(0.80)***	(2.92)*	(0.47)***	(2.86)**	(0.50)***	(4.75)	(0.37)***
Integration	-0.555	-0.667	-0.144	-0.510	-0.889	-0.195	-0.739	-0.190	-0.365	-0.168
	(0.23)**	(0.27)**	(0.17)	(0.25)**	(0.41)**	(0.14)	(0.34)**	(0.14)	(0.27)	(0.13)
Geography	-0.126	-0.216	-0.050	-0.118	-0.295	-0.013	0.092	-0.032	-0.690	-0.012
	(0.09)	(0.17)	(0.04)	(0.11)	(0.23)	(0.08)	(0.27)	(0.07)	(0.96)	(0.04)
Democracy				-0.058	-0.563	-0.157	-1.387	-0.134	2.992	-0.094
				(0.32)	(0.46)	(0.26)	(1.04)	(0.23)	(2.73)	(0.16)
Fractionalization				0.701	1.037	0.099	1.598	0.045	0.729	0.126
				(0.39)*	(0.74)	(0.37)	(1.07)	(0.39)	(0.83)	(0.27)
Social capital							-2.971	0.334		
							(2.12)	(0.62)		
Human capital									0.535	0.089
									(1.28)	(0.12)

- Regress growth polarity on "deep" determinants specification (Rodrik, Subramanian & Trebbi 2004) and additional fundamentals
  - Estimation using IV and system GMM
  - Institutions (+ve) and integration (-ve) significant
  - Results reasonably robust to: (a) additional control variables; (b) alternative measures of polarity; (c) cross-sectional time period (not reported)

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Mon Pièce de Résistance (Or Why No Nutcake Slide)

- Concentration indexes using growth polarity
  - (Normalized) Herfindahl
  - (Normalized) Theil
  - Gini

For example:

$$H_t = \sum_{J(t)} \left(\frac{P^*_{jt}}{\sum_{J(t)} P^*_{jt}} \right)^2 \equiv \sum_{J(t)} r_{jt},$$

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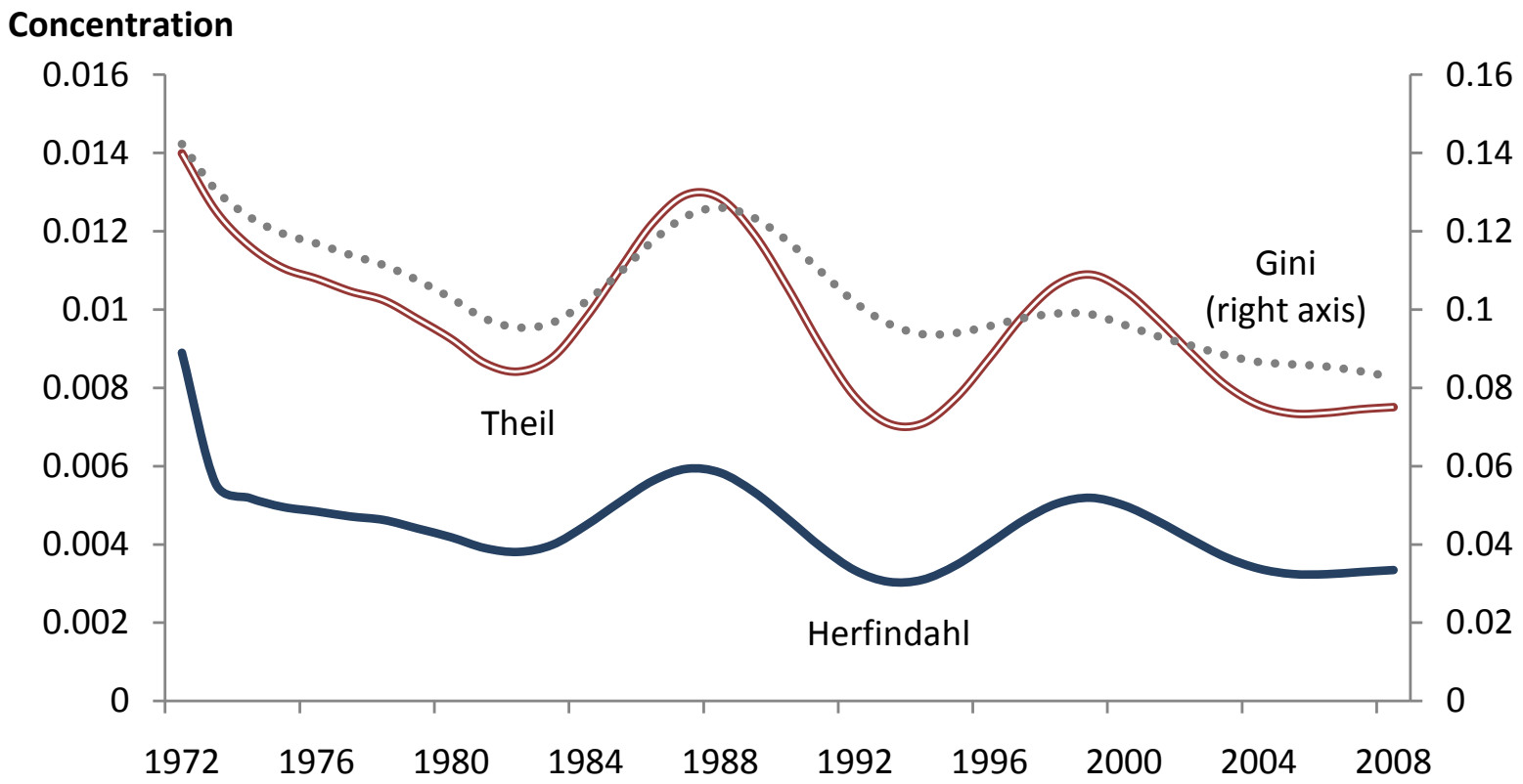

Source: Authors' calculations

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- Takeaway: The world is now more multipolar than it has ever been, with growth poles shifting away from the developed toward the developing world

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