FONDATION POUR LES ÉTUDES
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INTERNATIONAL

Pathways to Structural Transformation in Africa: Conundrums and Challenges Ahead

Invited Address

Jaime de Melo

FERDI, GBS, CEPR, EUDN

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Outline

Part I: Conundrums

Reforms, Growth and Poverty: Green lights…

- Internal and external reflected in positive outcomes
- Early de-industrialization
- Some causes of early de-industrialization
- Can Services be the escalator to industrialization?
- References for part I (RED symposium issue) (here)

Part II: Challenges ahead

- South-North migration is rising
- Now: A Marshall Plan for the Sahel (G-5)
- Looking Ahead: Facing up to the Climate Challenge
- References for part II (here)

Part I Conundrums

Reforms, Growth and poverty

- End of lost generation (70-95), reforms picked up and macroeconomic distortions fell (here)
- … growth picked up; poverty down sharply (here)
- … but the poverty gap with other regions persists (here)
- Poverty reduction is highest in initially poor countries (here)
- ... and the elasticity of poverty reduction to growth is low and varied (here)

Trade, trade costs and industrialization patterns

- Trade costs have fallen less rapidly for LICs (here)
- SSA export basket diversified «as expected» (here)
- Export surges associated with real exchange rate depreciation have a ratchet effect (here)
- Are we witnessing another resource-driven boom-bust cycle? (here)
- Manufacturing growth reduces poverty (here)

De-industrialization and its causes

- Premature de-industrialization confirmed (here)
- Poor prospects for labor-intensive industrialization (here)
- …as in Ethiopia and Mauritius (here)
- Labor has not shifted to high productivity growth sectors (here)
- As latecomers, SSA have lower levels of mfg. VA and employment at mfg. peak (here)
- Poor but not cheap (here) and (here)
- Balassa-Samuelson effect (gap in PPA GDP of SSA to comparators: 35%) (here) and residuals (here)
- Chipping away at price level enigma [SSA outlier] (here)

Services as Escalator to Industrialization

- Lack of of overall conditional convergence GDP (here)
- …but convergence in labor productivity in services (here)
- …is more rapid than in manufacturing (here)
- Sectoral contributions to Growth (here)
- Other considerations: Rapid growth of trade in services; Strong complementarity of goods with services; rapid technological growth in some service sectors (IT)

Part II Challenges Ahead

South-North Migration is accelerating

- S-N and N-N Migration decadal migration rates (here)
- Migration from Sahel and Maghreb (here)
- G5- inflow to Europe by country of origin (here)
- G5- inflow by destination country (here)

Sahel (G-5) heading towards 'failed state' status?

- G-5 (BF, Chad, Mali, Mauritania, Niger): Background indicators (here)

Sahel on the edge of….

- Conflict traps (here)
- Poverty traps[fragile lands] (I) (here)
- Poverty traps [net savings] (II) (here)

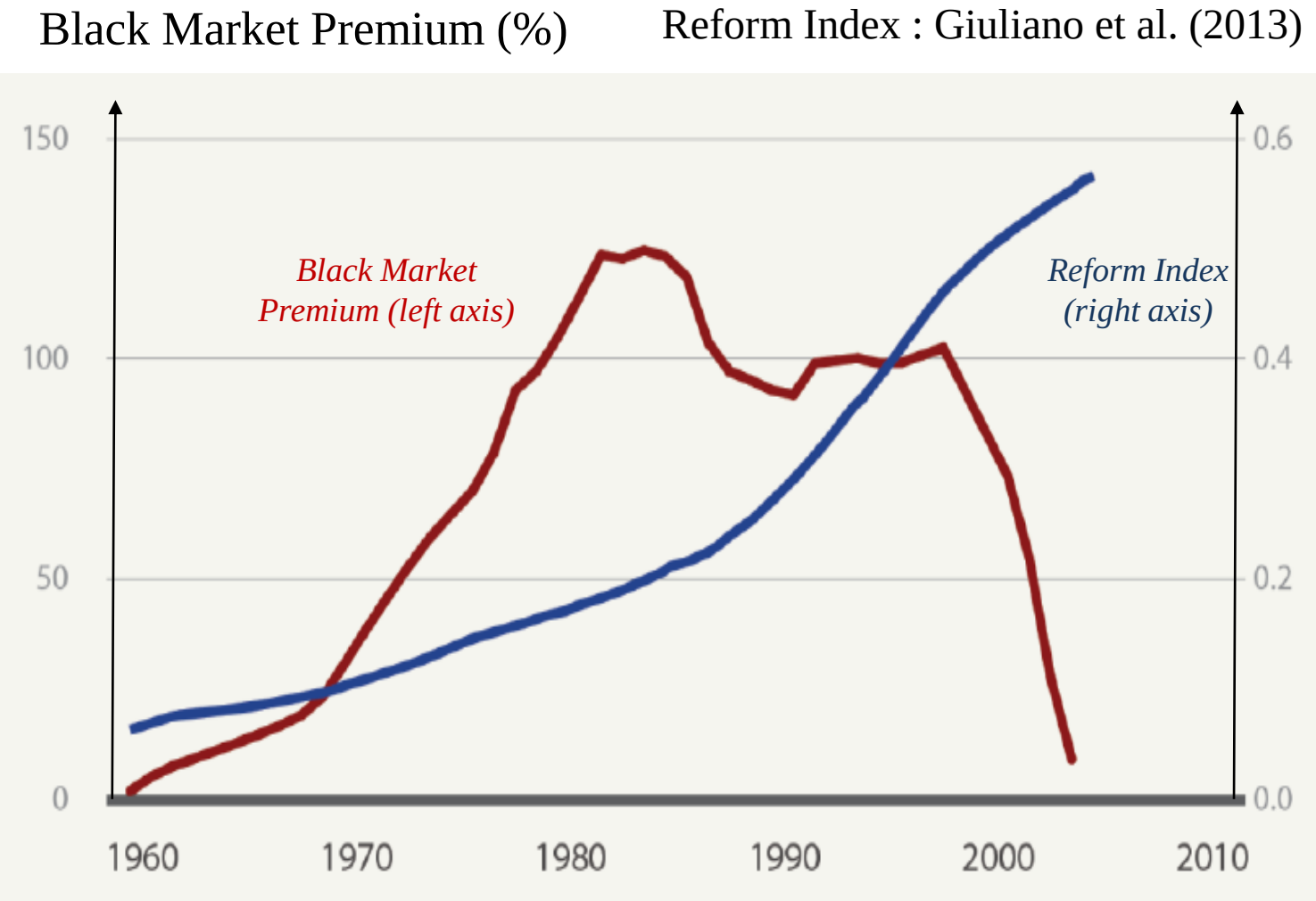
- A Marshall Plan for the Sahel (here)

The Climate challenge

- CO2 emissions vs. population shares (here)
- Projected damages per region in 2050(here)
- Deforestation rates: decadal averages (here)
- Urbanisation projections: SSA vs. China (here)
- CO2 intensity of urbanisation (here)
- Funding for Common But Differentiated Responsabilities (CBDR) (here)

Figures part I

Macroeconomic Distorsions and Reforms in SSA 1960-2010



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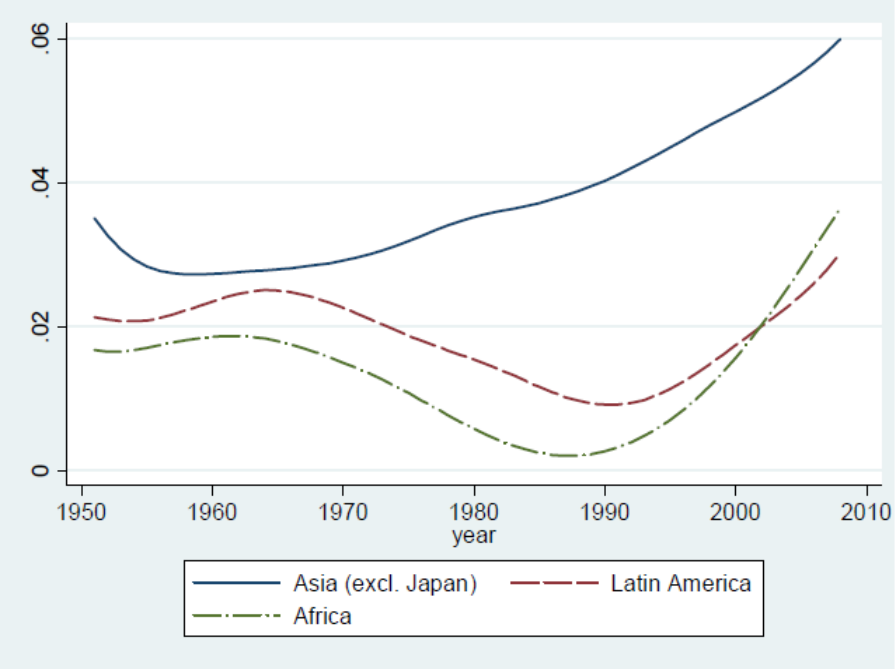
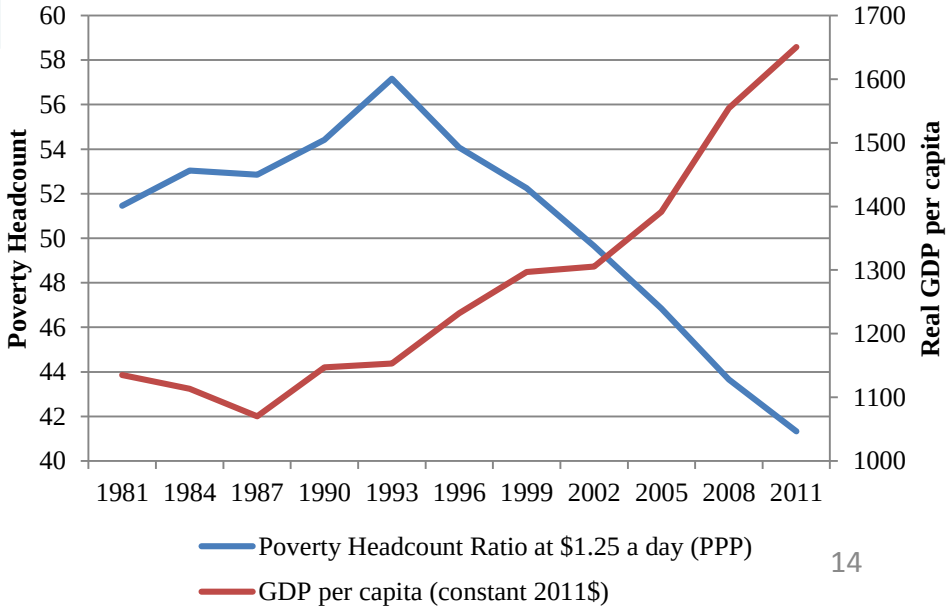
Source: UNECA (2014) based on Giuliano, Mishra and Spilimbergo (2013)

GDP Growth and Poverty



GDP per capita growth by region (1950-2010)

GDP per capita and poverty headcount ratio in SSA



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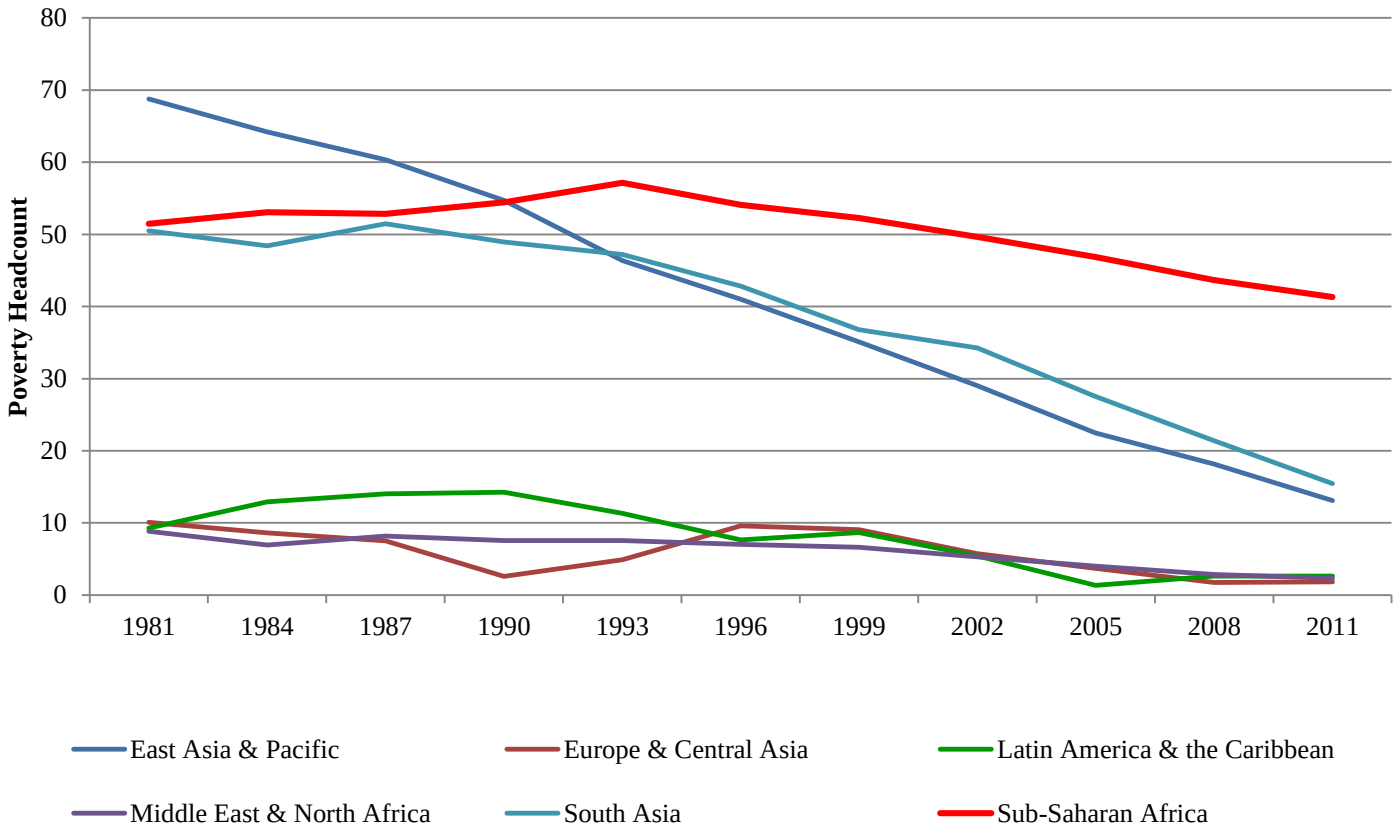
Poverty Headcount Ratio by Region, 1981-2011



Note: Poverty headcount ratio at 1.25$ per day (2005 PPP)

Source: Cadot et al. (2016)

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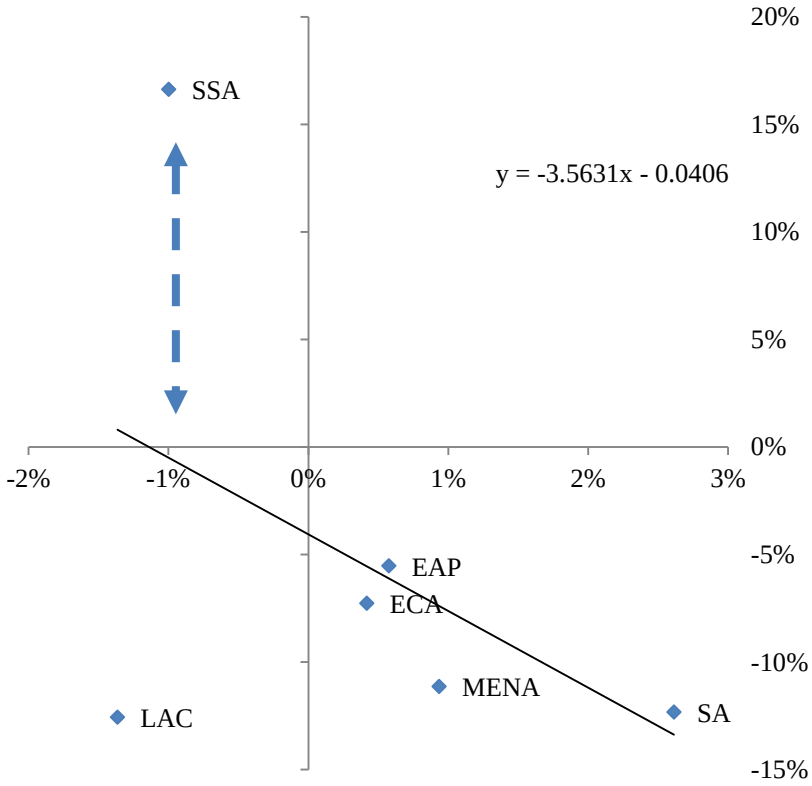
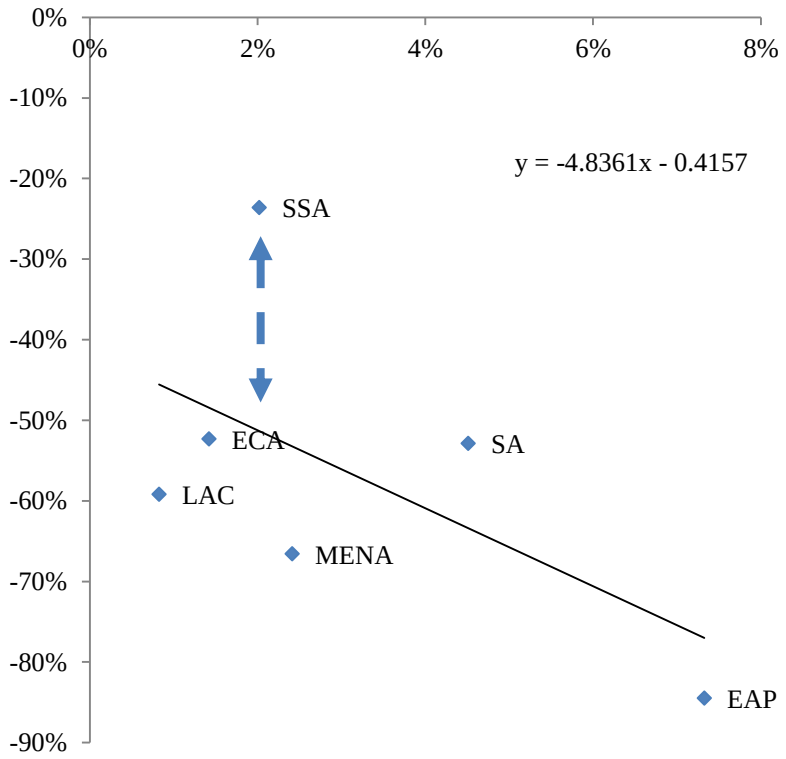
Poverty Reduction (ΔHC) and GDP per capita Growth



GDP per capita growth: (1980-1991)



GDP per capita growth: (1991-2011)

Note: Source: Cadot et al. (2016) Poverty line at 1.25$ per day (PPP). Sample of 101 countries (43 SSA). HC= head count

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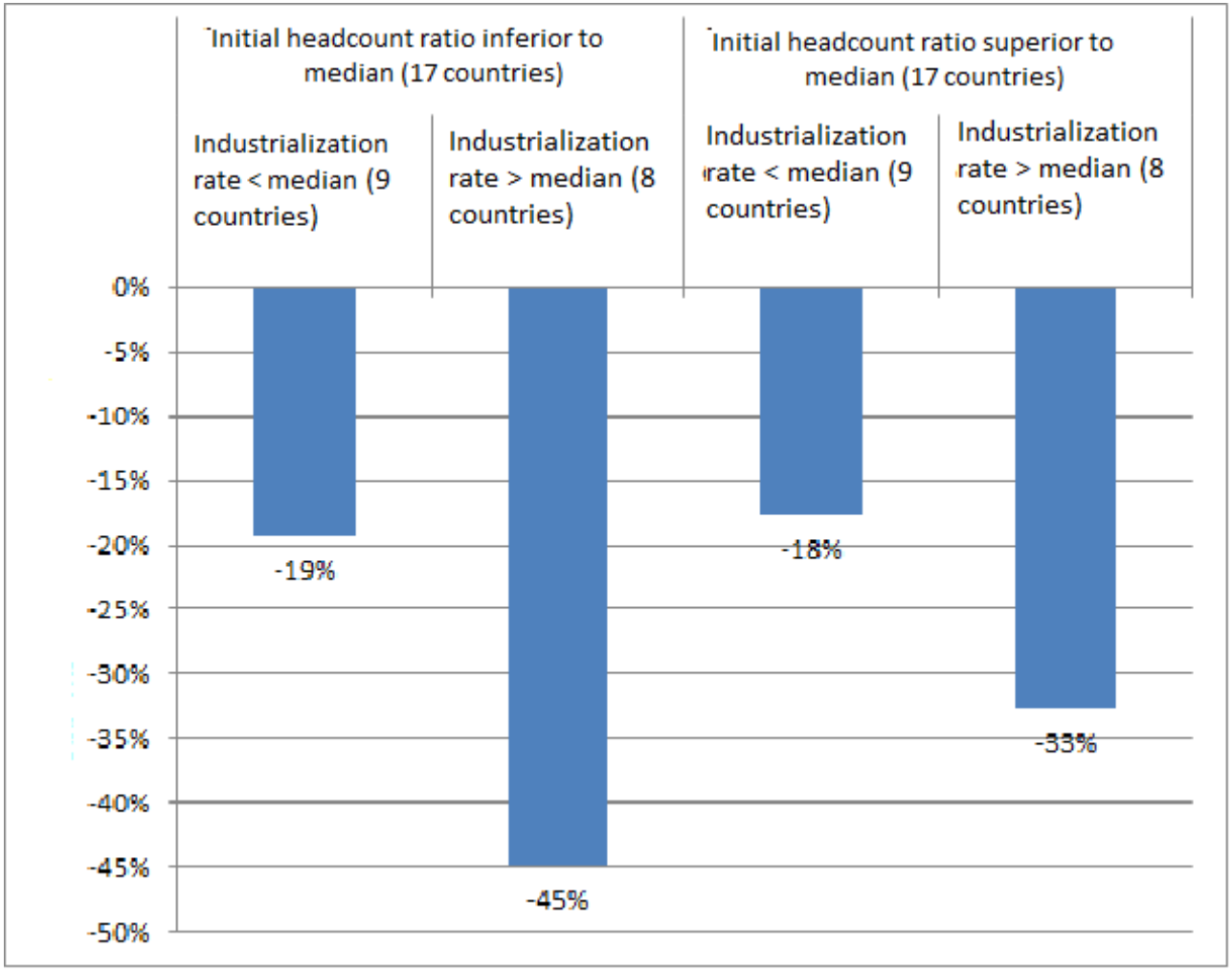
Industrialization is most poverty-reducing in countries with high initial poverty rates



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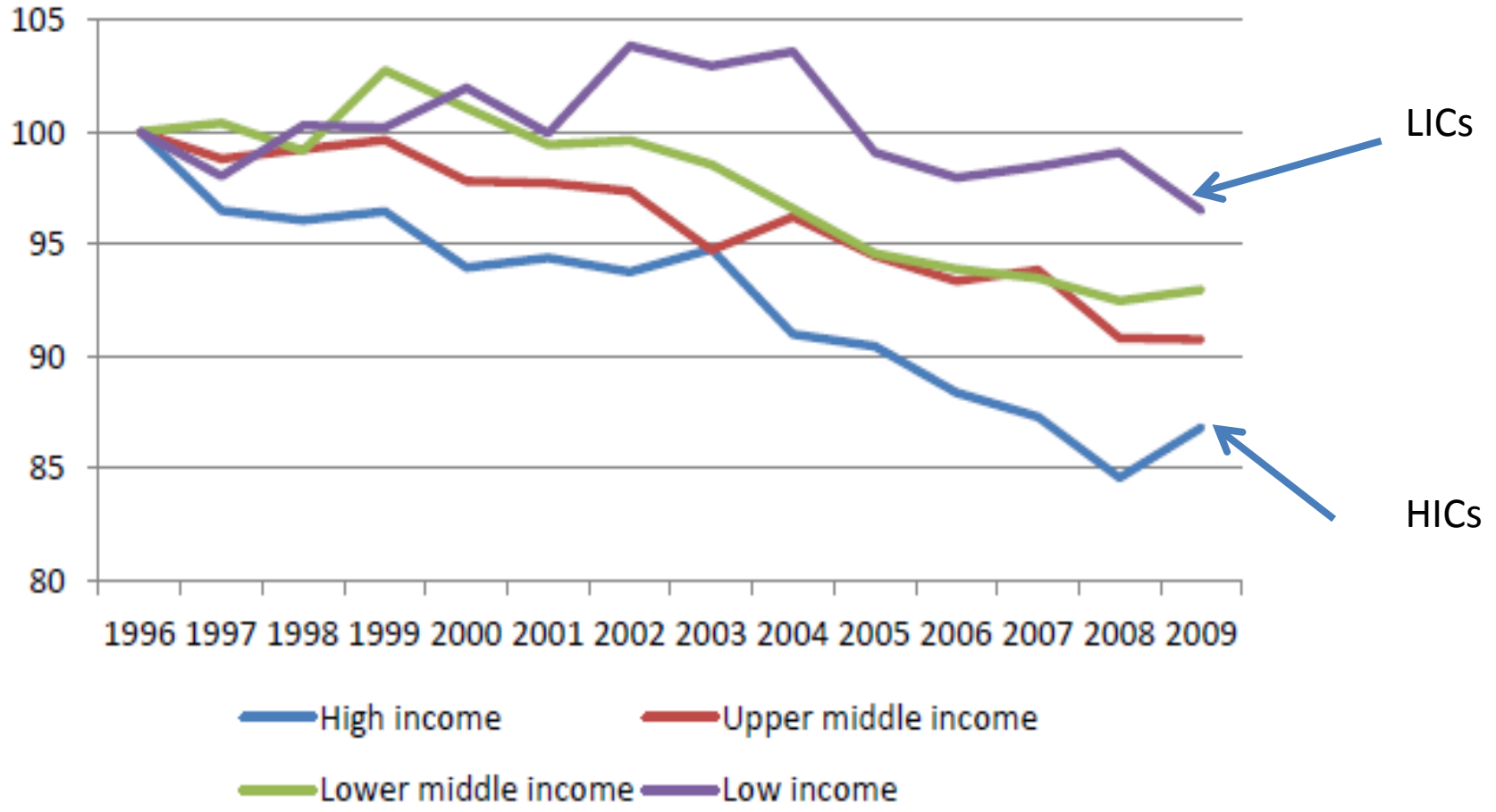
Calibrated Trade costs (gravity model)

lowering of trade costs accounts for 1/3 growth in trade (sample: 118 countries)



LICs are losing ground ("distance puzzle").

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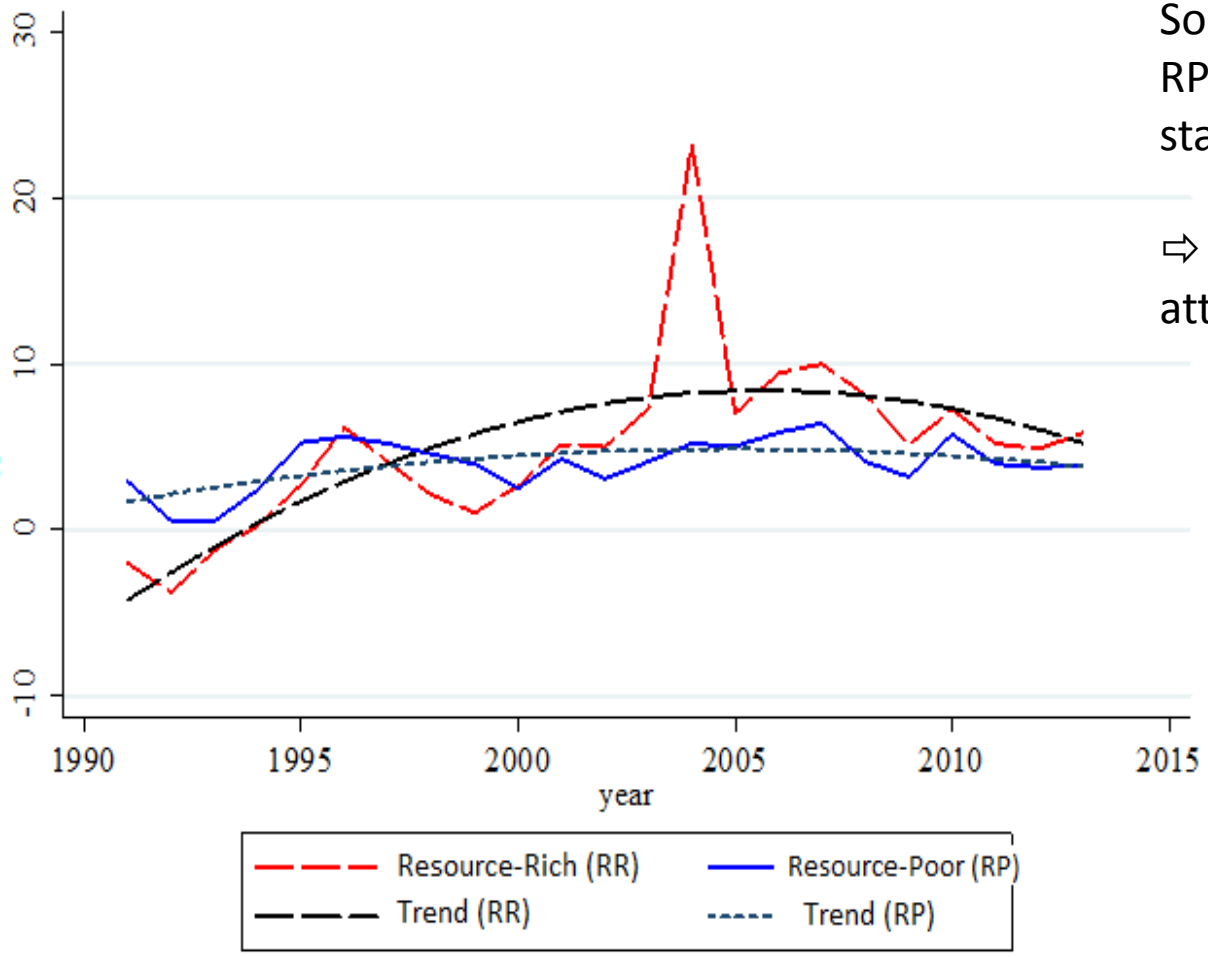
- Technical progress in transport cost reductions biased towards countries exporting high-value/low-weight bundles?
- Governance: Capture of trade-cost-reducing reforms (e.g. freight forwarders Mozambique)?

Resource Abundance and Growth



South is Africa excluded. RP have had a relatively stable growth ≈ 5% p.a.

⇨ Running out of steam attributable to RR group

Note: Resource-rich = Resource rents > 15% of GDP

Source: Cadot et al.

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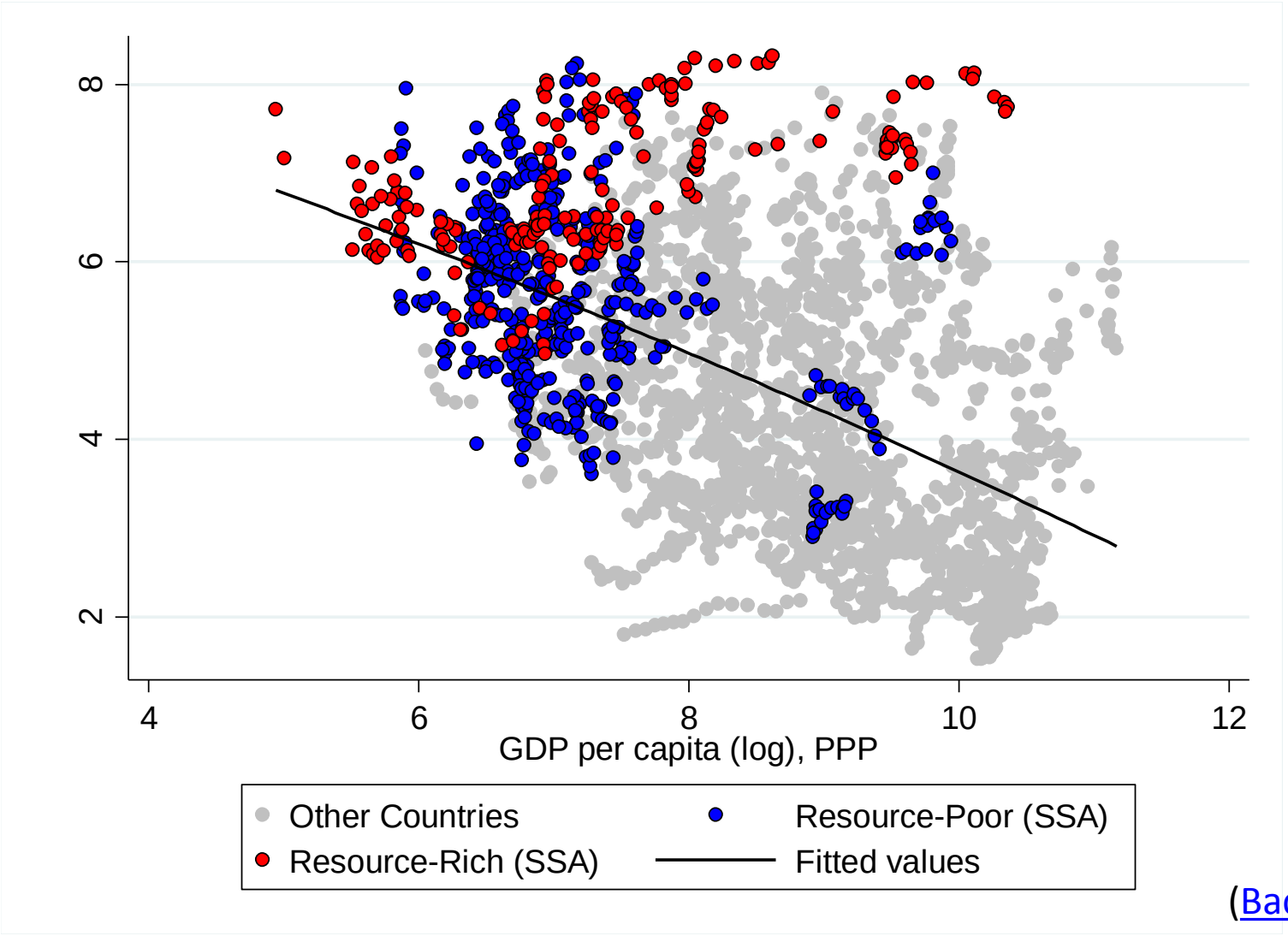
Export Concentration in SSSA is driven by RR Countries



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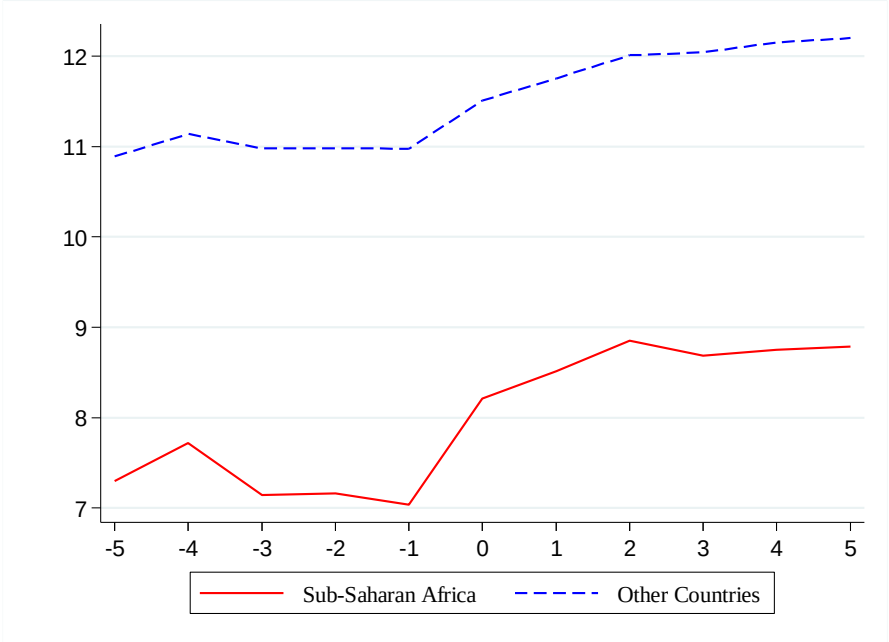
Source: Cadot et al

Export Surges in SSA

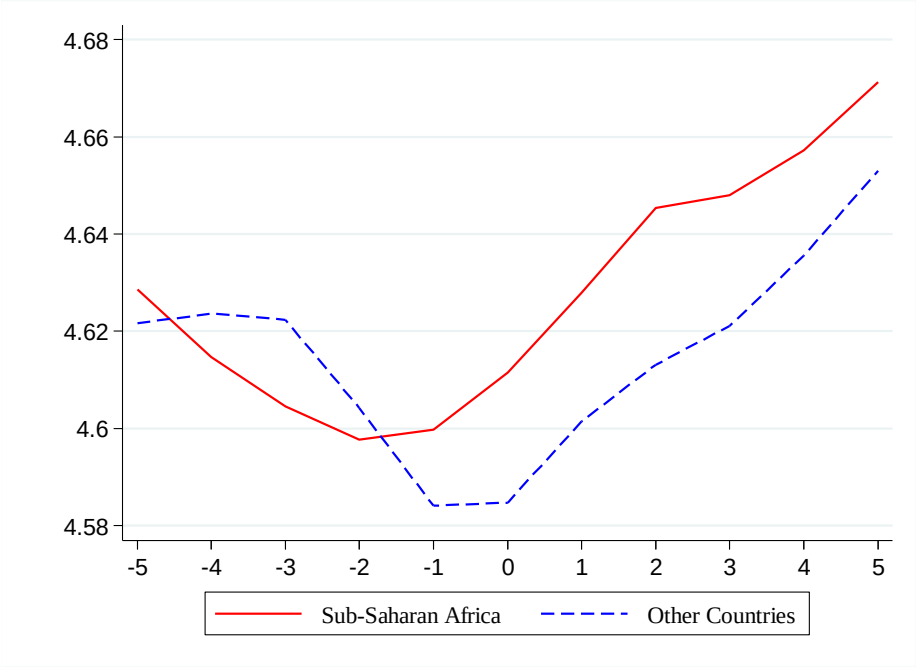
(event analysis results)



Source: Cadot et al.

… and seem to be associated with a temporary REER depreciation

Export surges have a ratchet effect on the level of exports…



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Manufacturing growth reduces poverty (HC elasticity to growth)

	(1) Poverty rate	(2) Poverty gap	(3) Poverty gap^2	(4) Poverty rate	(5) Poverty gap	(6) Poverty gap^2
Elasticity of poverty reduction to:						
Δ Agriculture VA (% GDP)	-0.406***	-0.735***	-0.946***	-0.432***	-0.763***	-0.975***
	(0.078)	(0.159)	(0.224)	(0.085)	(0.161)	(0.228)
Δ Services VA (% GDP)	-0.711***	-1.021***	-1.231***	-0.780***	-1.047***	-1.204***
	(0.220)	(0.285)	(0.336)	(0.258)	(0.334)	(0.391)
Δ Industry VA (% GDP)	-1.112***	-1.509***	-1.775***			
	(0.356)	(0.372)	(0.355)			
Δ Manufacturing VA (% GDP)				-0.942*	-1.551**	-2.099***
				(0.495)	(0.590)	(0.727)
Δ Mining VA (% GDP)				-1.259**	-1.604***	-1.800***
				(0.501)	(0.527)	(0.483)
Observations	305	305	305	284	284	284
Countries	35	35	35	35	35	35
Adjusted R^2	0.285	0.325	0.328	0.296	0.324	0.323

Notes: OLS estimates with country and year fixed effects. The dependent variable is the change in poverty alternatively captured with (i) the poverty headcount index which measures the share of the population living with less than $1.25 per day, in 2005 PPP; (ii) the poverty gap index which measures the depth of poverty by giving the mean distance below the poverty line as a proportion of that line (counting the non-poor as having a zero gap), and (iii) the squared poverty gap index, which reflects changes in inequality among the poor by attributing more weight to poorest among the poor. The regressors refer to the growth rate of the GDP share of sectoral value-added, weighted by the size of the sector in the previous year, following Ferreira et al. (2010). Mining includes construction, electricity, water and gas. Each specification includes a constant. Robust standard errors are given in parenthesis. *, ** and *** denote statistical significance at the 10%, 5% and 1% respectively.

Source: Cadot et al.

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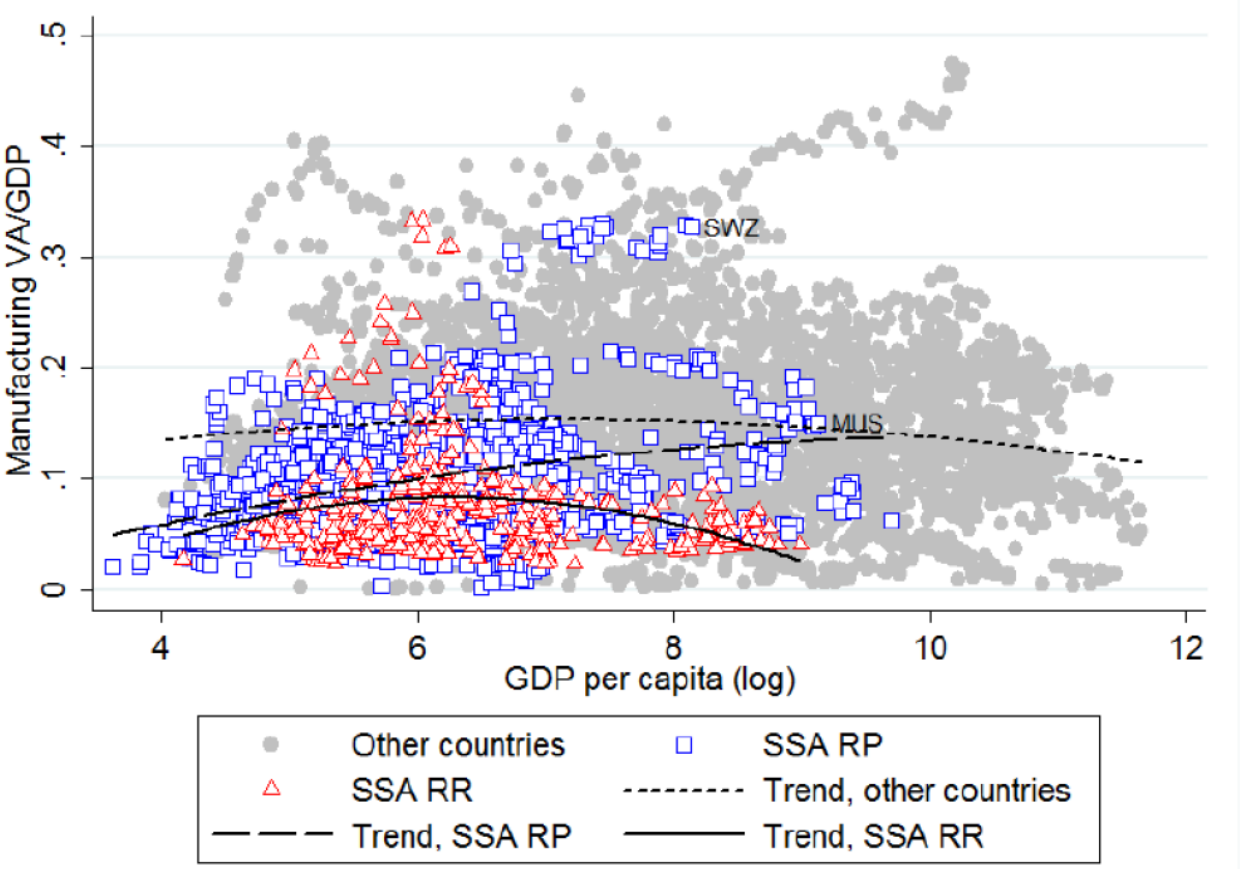
Premature de-industrialization

The share of manufacturing in GDP is small and declining prematurely in SSA



es: Resource-rich (RR) countries have a GDP share of total natural resources rents larger than 15.05%.

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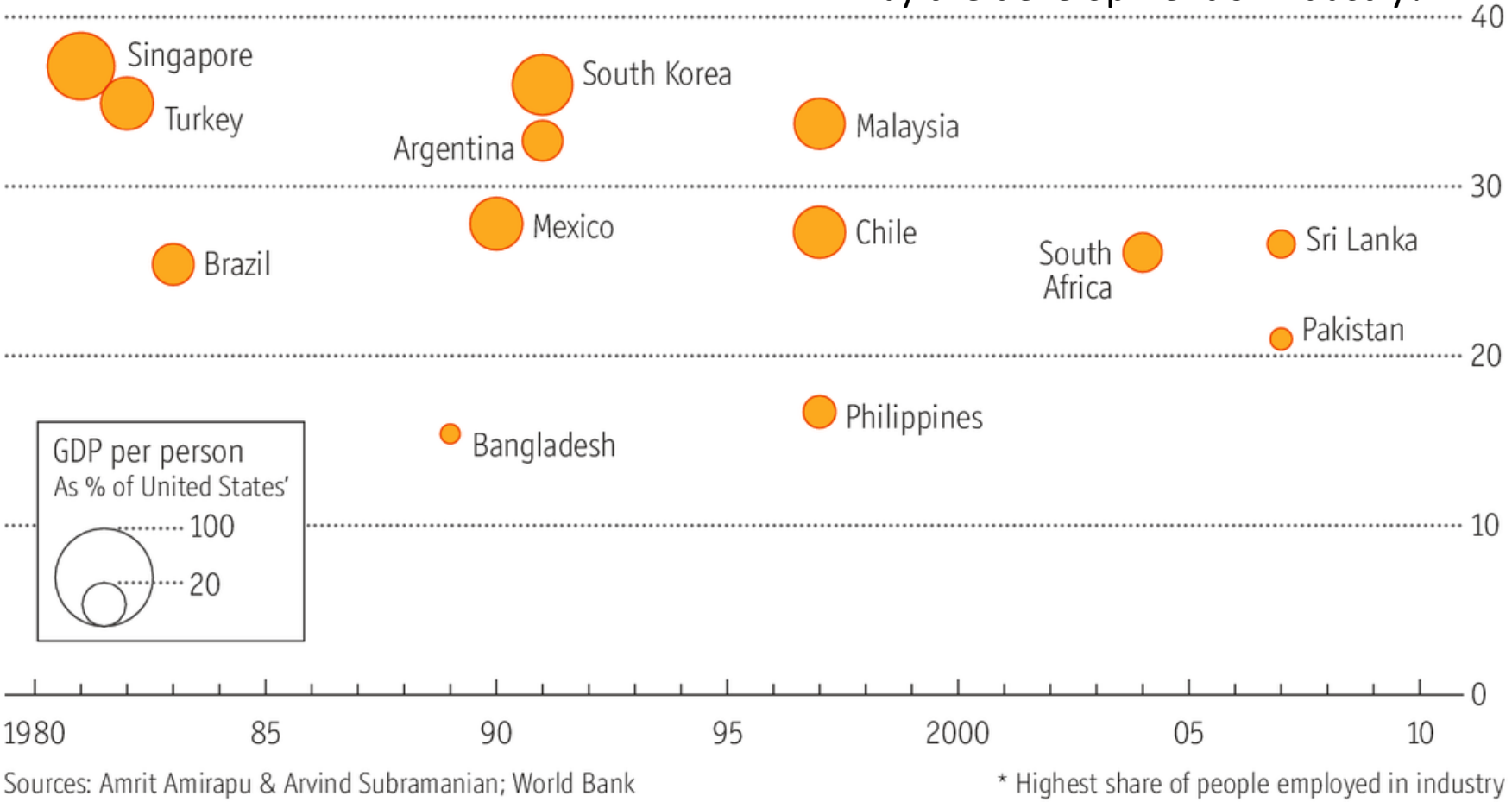
Prospects for labor-intensive industrialization appear bleak

« From stuff to fluff »
Can Africa reach middle class status by the development of industry?



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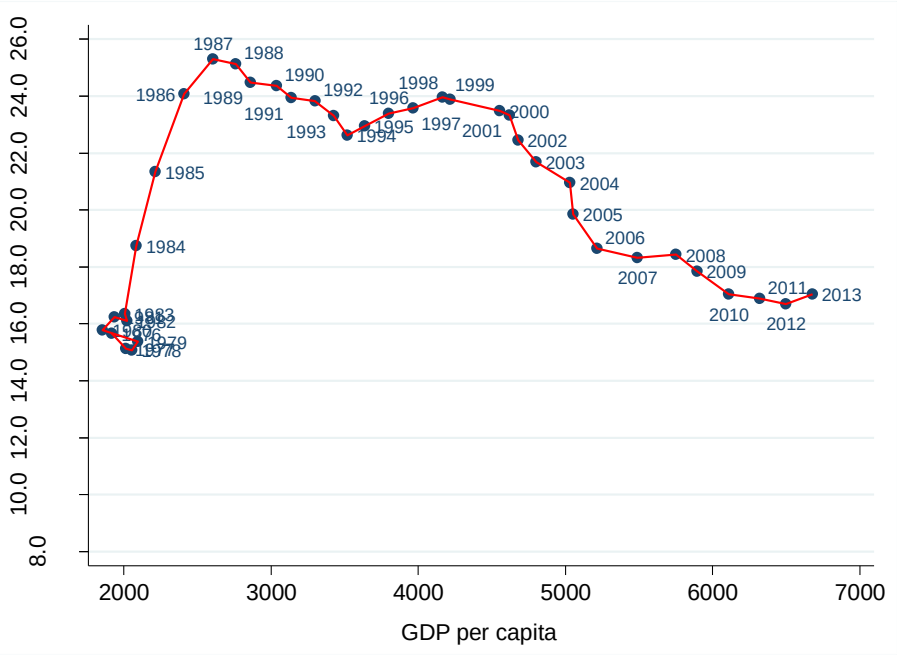
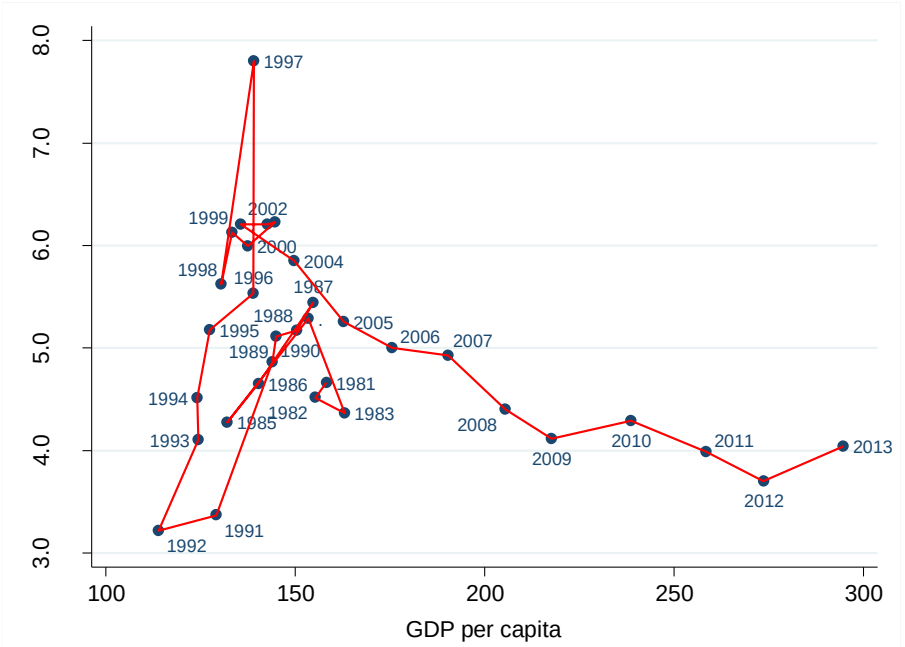
Country-specific trajectories confirm premature de-industrialization in Sub-Saharan Africa

(a) Mauritius



(b) Ethiopia



Source: Cadot et al.

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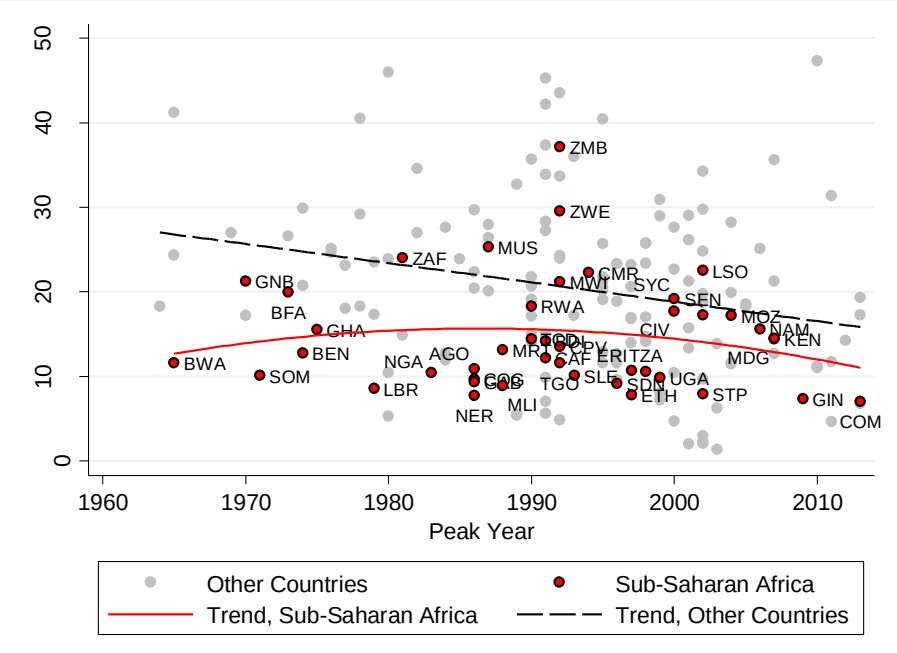
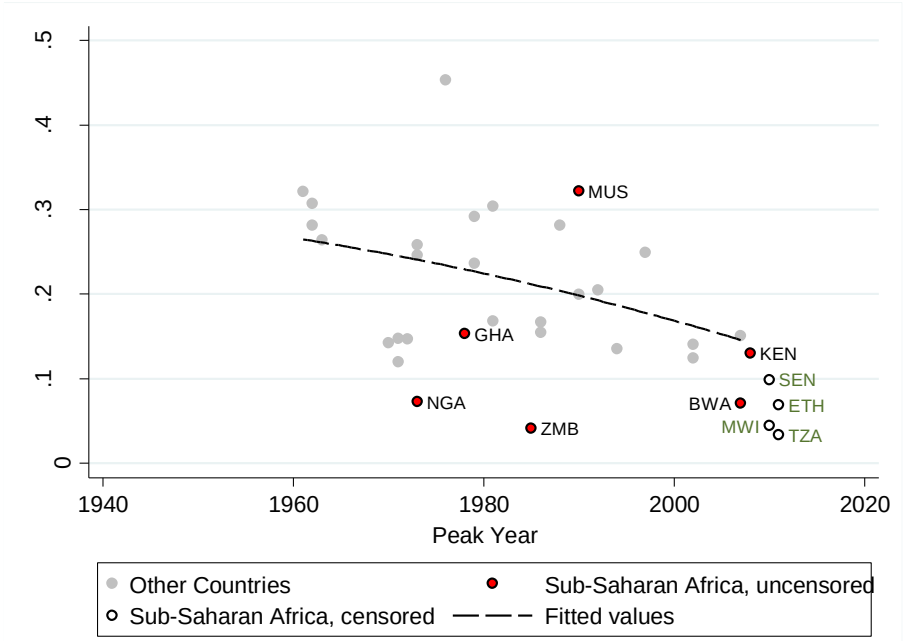
Countries in Sub-Saharan Africa are latecomers in the industrialization arena and exhibit lower levels of manufacturing VA and employment

(a) Manufacturing VA (% GDP)



(b) Employment in manufacturing



VA and employment shares of GDP at manufacturing peak

Source: Cadot et al.

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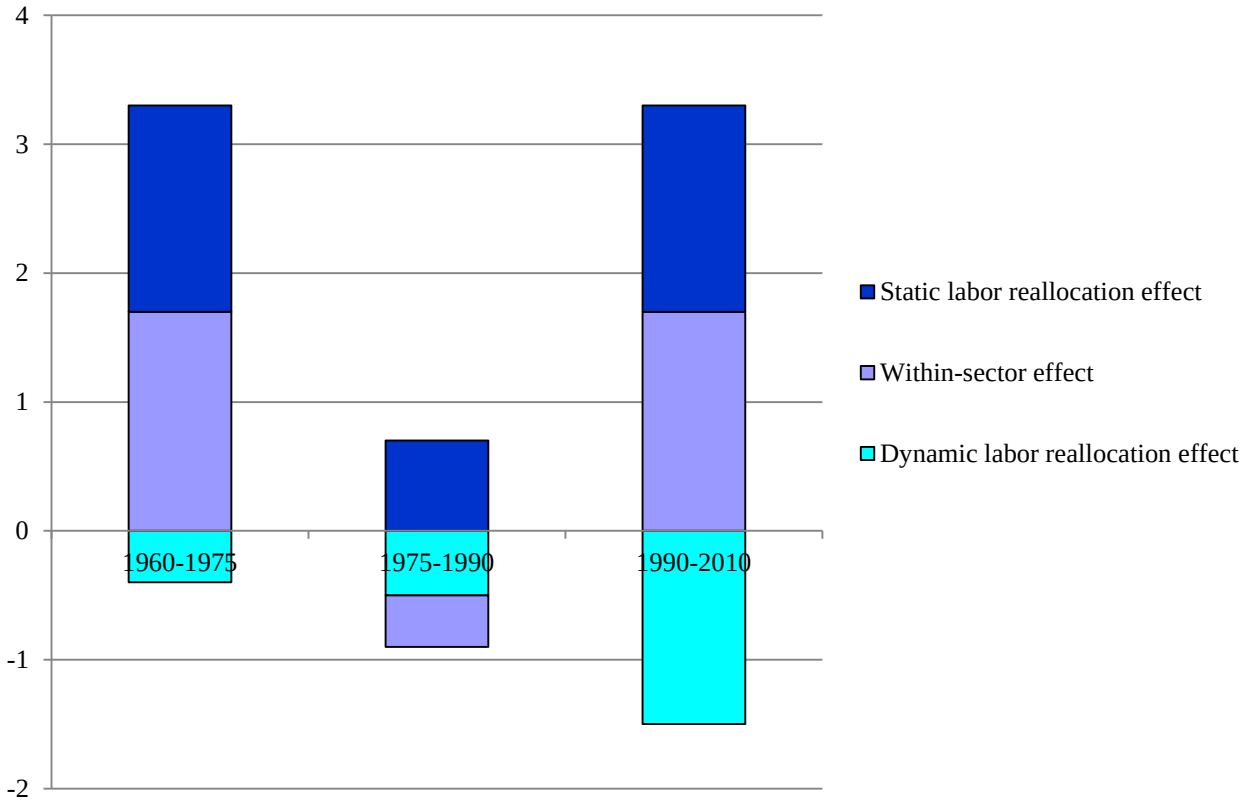
Shift-share analysis of productivity growth in SSA:1960-2010



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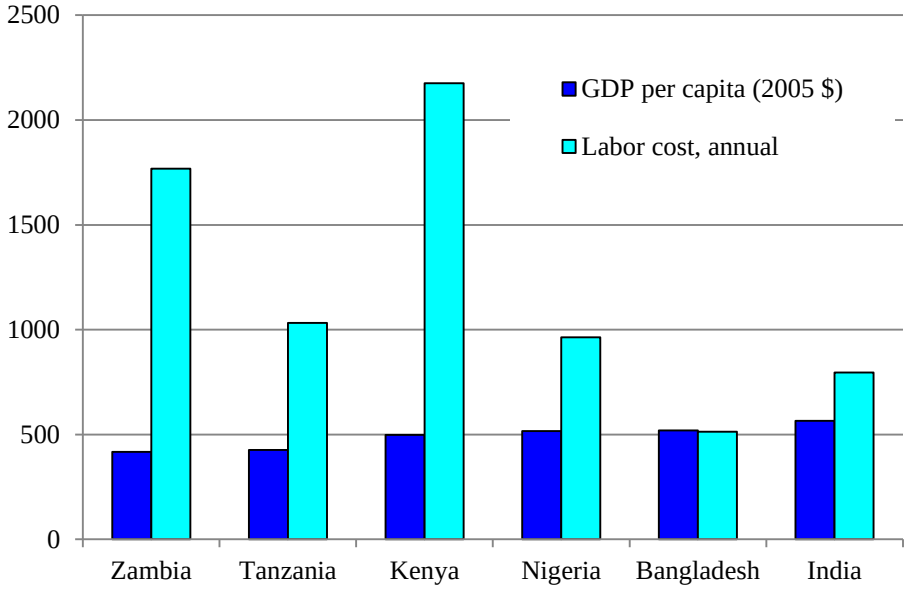
Source: Cadot et al. adapted from Timmer et al (2014)

- Labor productivity growth (weighted by sector share in VA)
- Within sector effect ("structural adjustment") is positive if reallocation is from low to high labor productivity sectors.
- Dynamic effect positive if labor reallocation is from low-to high productivity growth sectors.

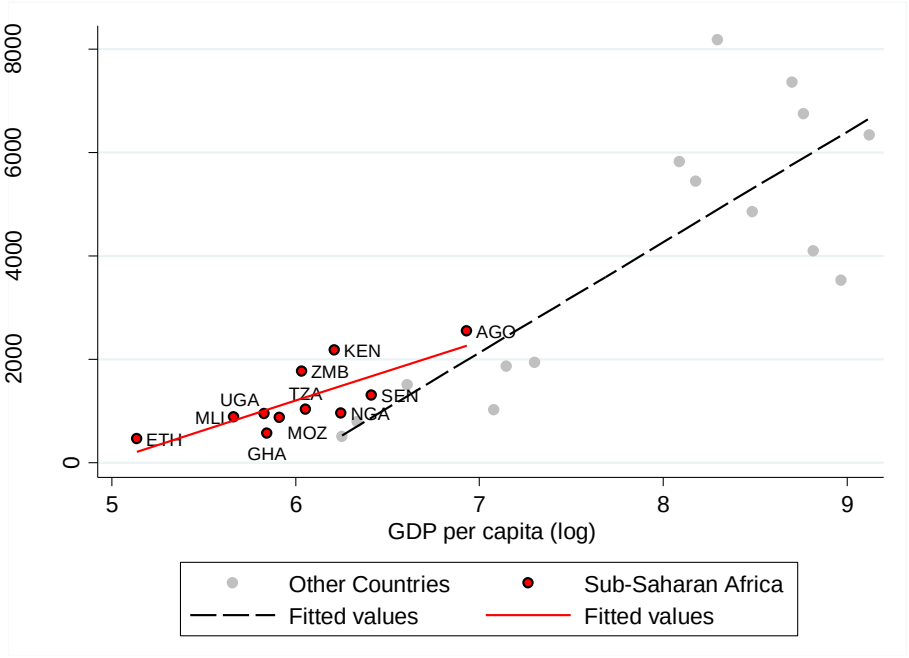
High labor costs in Sub-Saharan Africa seem to explain the lack of employment creation by the manufacturing sector



Source: Gelb et al. (2016)

(a) Country comparisons show high manufacturing labor costs in selected SSA countries …

(b) … a pattern confirmed by « regression analysis »



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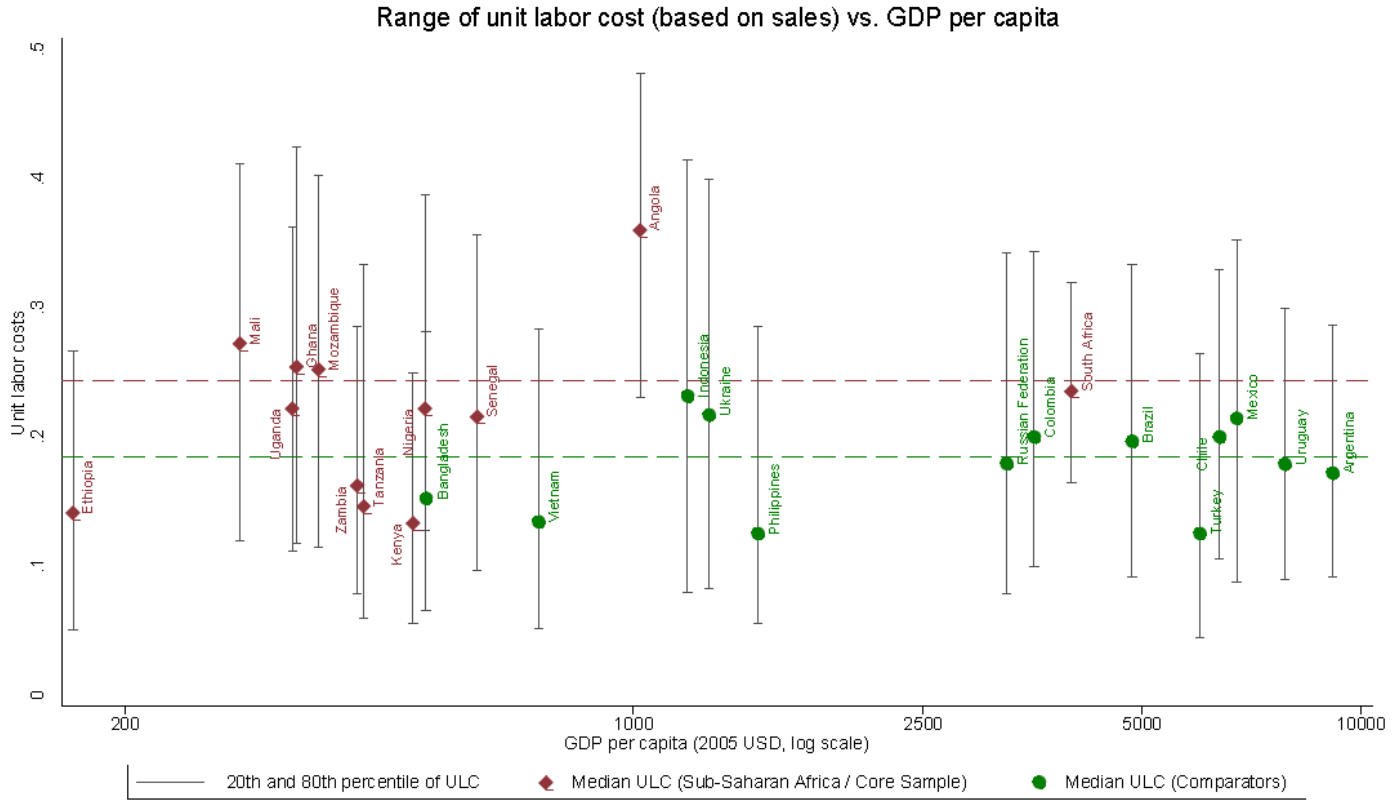
Unit labor cost are high in SSA

(Gelb et al. (2016)



Unit labor costs is defined as labor cost per worker / sales per worker. GDP per capita is in constant 2005 USD.
Note: Unitolaborcostis defineduasrlaborgcostoperoworker divideduboyesales) percworker.rs (green).
Source: Authors' calculations, based on World Bank Enterprise Surveys data, World Bank World Development Indicators.

ULC (12 SSA countries and 13 comparator): SSA dummy significant after controls. Why?

- Self-selection : Only high productivity firms in SSA (enclave effect)
- Interaction of Size of firm * SSA dummy positive : skilled-Labor bottleneck
- Even after correcting for PPA, SSA still outlier (measurement error of GDP, low productivity in ag pushes prices and wages…)

Source: Gelb et al. (2016)

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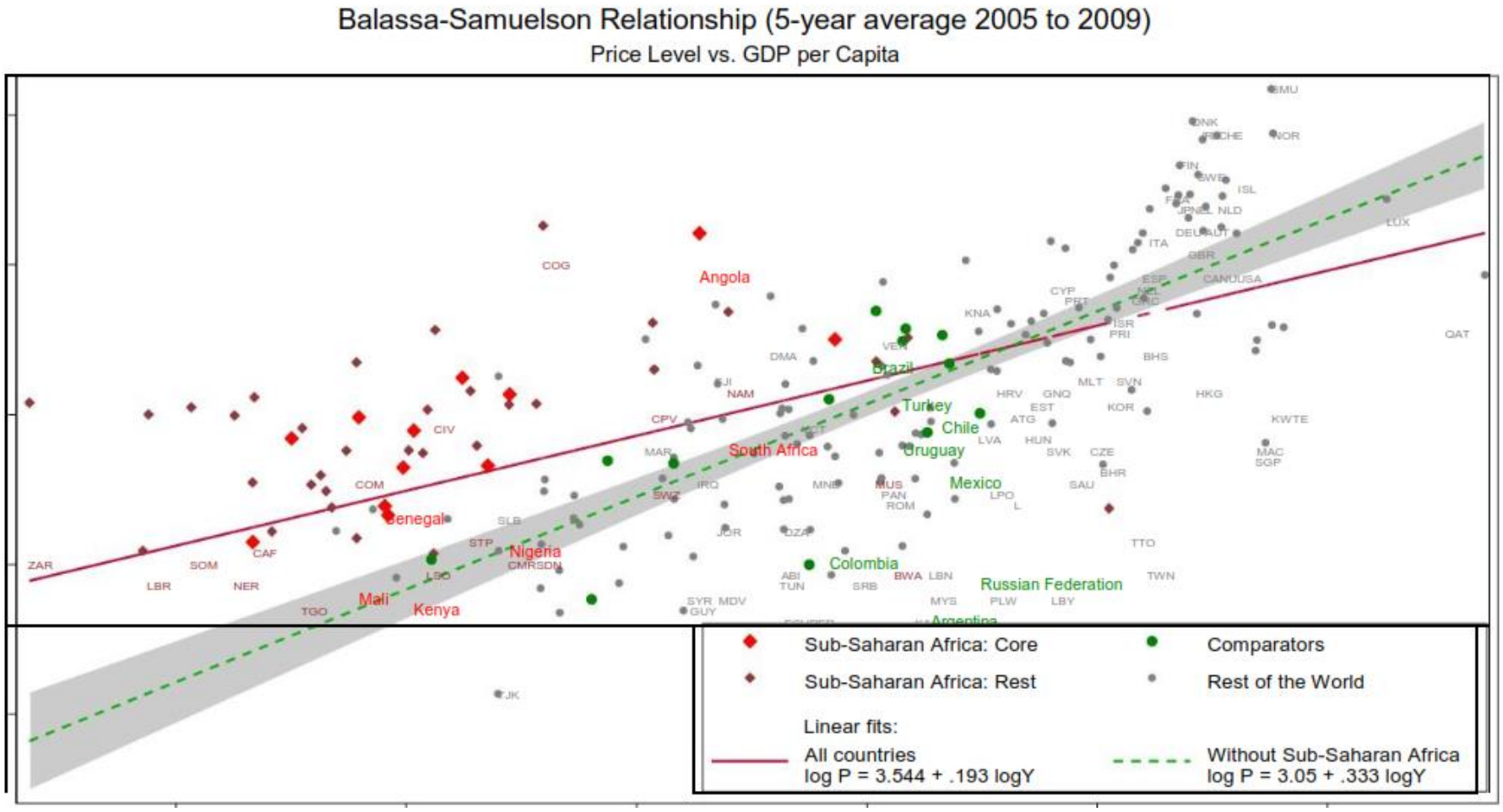
Price Comparisons (1): Balassa-Samuelson



■ Price level PPA relationship much flatter for SSA. For sample of 12 SSA in Gelb et al. average PPA is 20% higher for SSA than for 4 comparators (Bangladesh, Indonesia, Philippines, Vietnam)

Source: Gelb, Meyer, Ramachadran (2016 fig. 9). 188 observations (Zimbabwe excluded). Grey area shows 95 percent confidence interval. Calculations, based on Penn World Tables 7.0.

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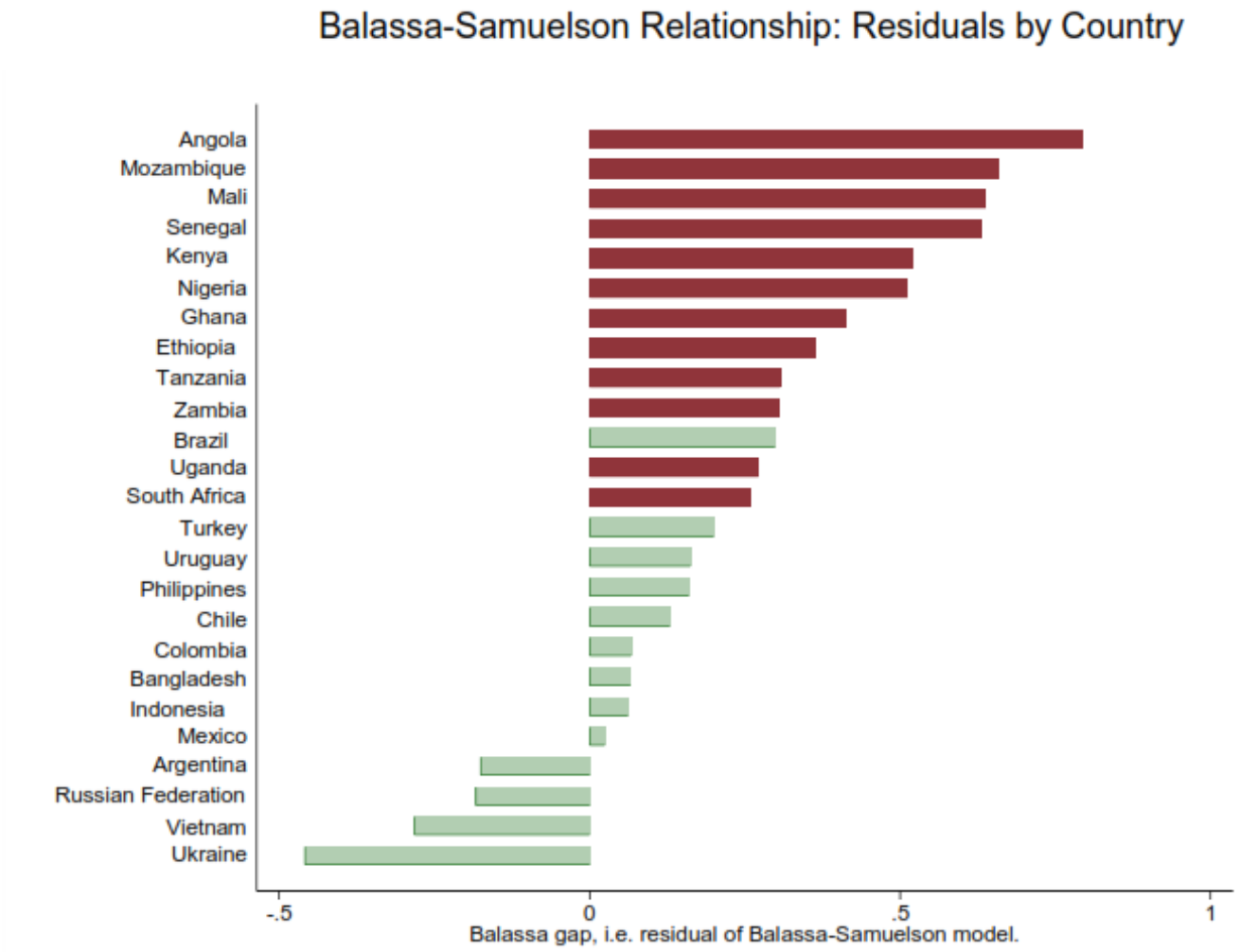
Price comparisons (2): Balassa-Samuelson Residuals



Note: Deviation from linear fit in previous

Source: Gelb et al. figure 17

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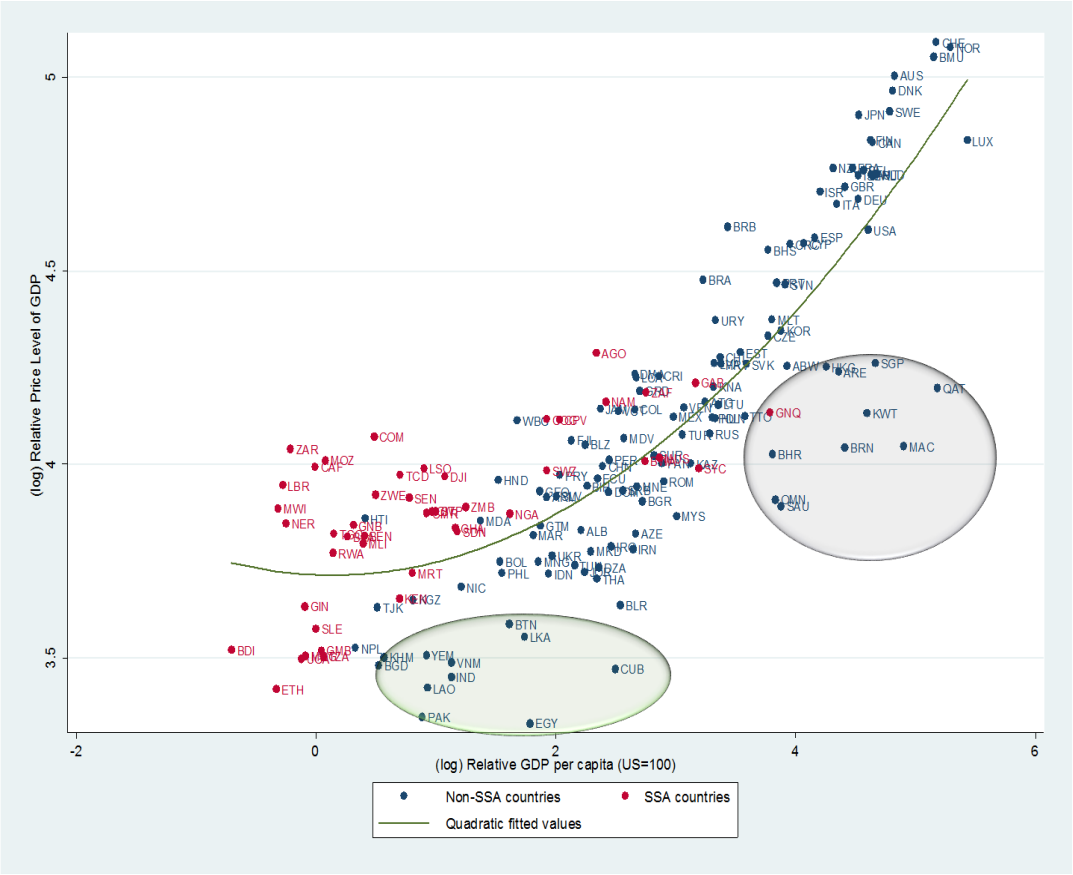
SSA Price level enigma

Price Levels and GDP/head (economies with full data)
Quadratic log-log estimate



Effect of Controls

⇒ Together, below controls reduce gap by half to 15%.

- Geographic characteristics (Isolation, population density, size)
- Quality of institutions
- Subsidies to energy
- Oversampling of consumption basket of HICs (proxies by income inequality) reduces gap from 30% to 25%
- 10% increase in AID/GDP increases price level by 8%.
- Mismeasurement of GDP (60% Ghana and 89% for Nigeria)
- Low agricultural productivity raises price of food (25% of consumption basket—twice LA and Asia- Pacific).

Note: Income differences account for (2/3) [30%] of deviations (full sample) [SSA sample]…. SSA is outlier
Other controls reduce gap by half to 15%…

Source: Gelb and Diofasi (2016) fig. 1b. Sample of 168 countries

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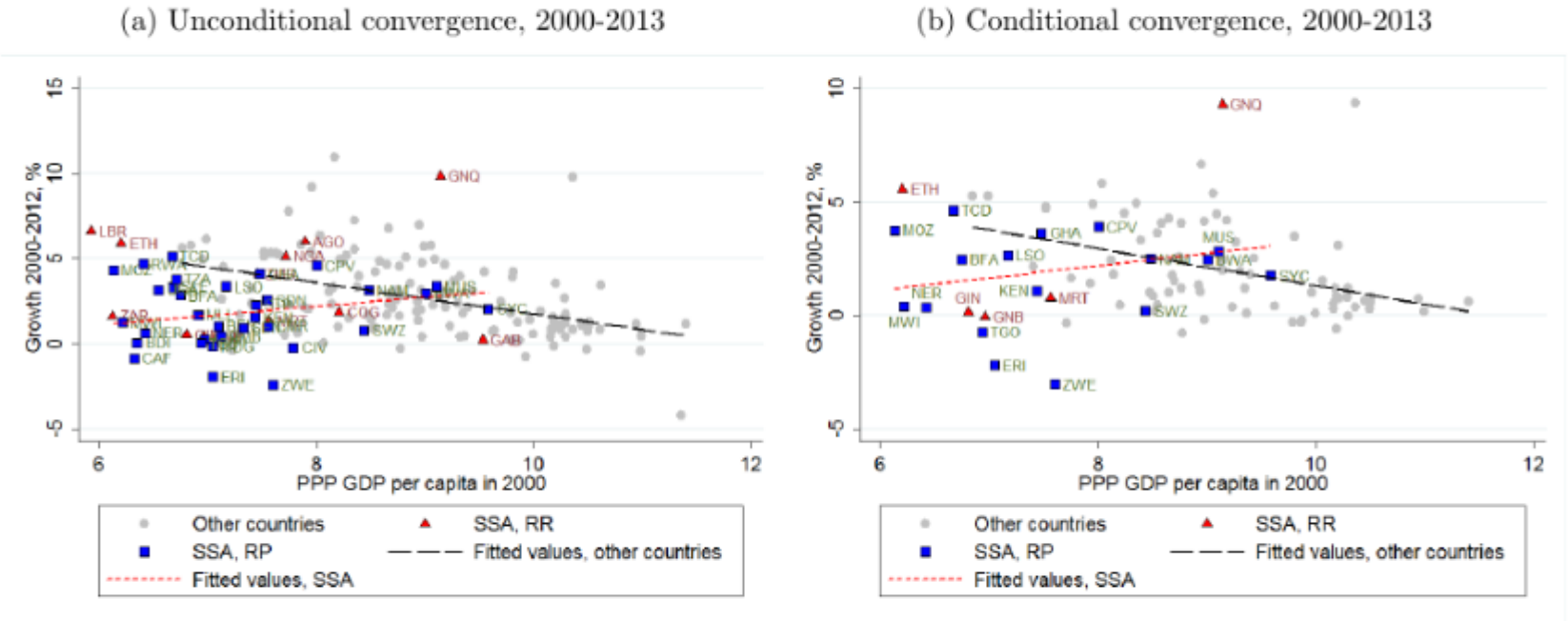
Conditional and unconditional convergence

Figure 10: Unconditional and conditional convergence of income, 2000-2013



Notes: Resource-rich (RR) countries have a GDP share of total natural resources rents larger than 15.05%. The inverse holds for resource-poor (RP) countries. (b) Conditional growth is growth after controlling for the effect of initial human capital endowment (net primary and secondary school enrollment rates, 2000). For countries with no available data for 2000, initial enrollment is replaced by the 2001 rate, and so on until 2005.

Note: The slope of the curve is the marginal effect of the initial level of GDP per capita on subsequent growth after controlling for initial human capital

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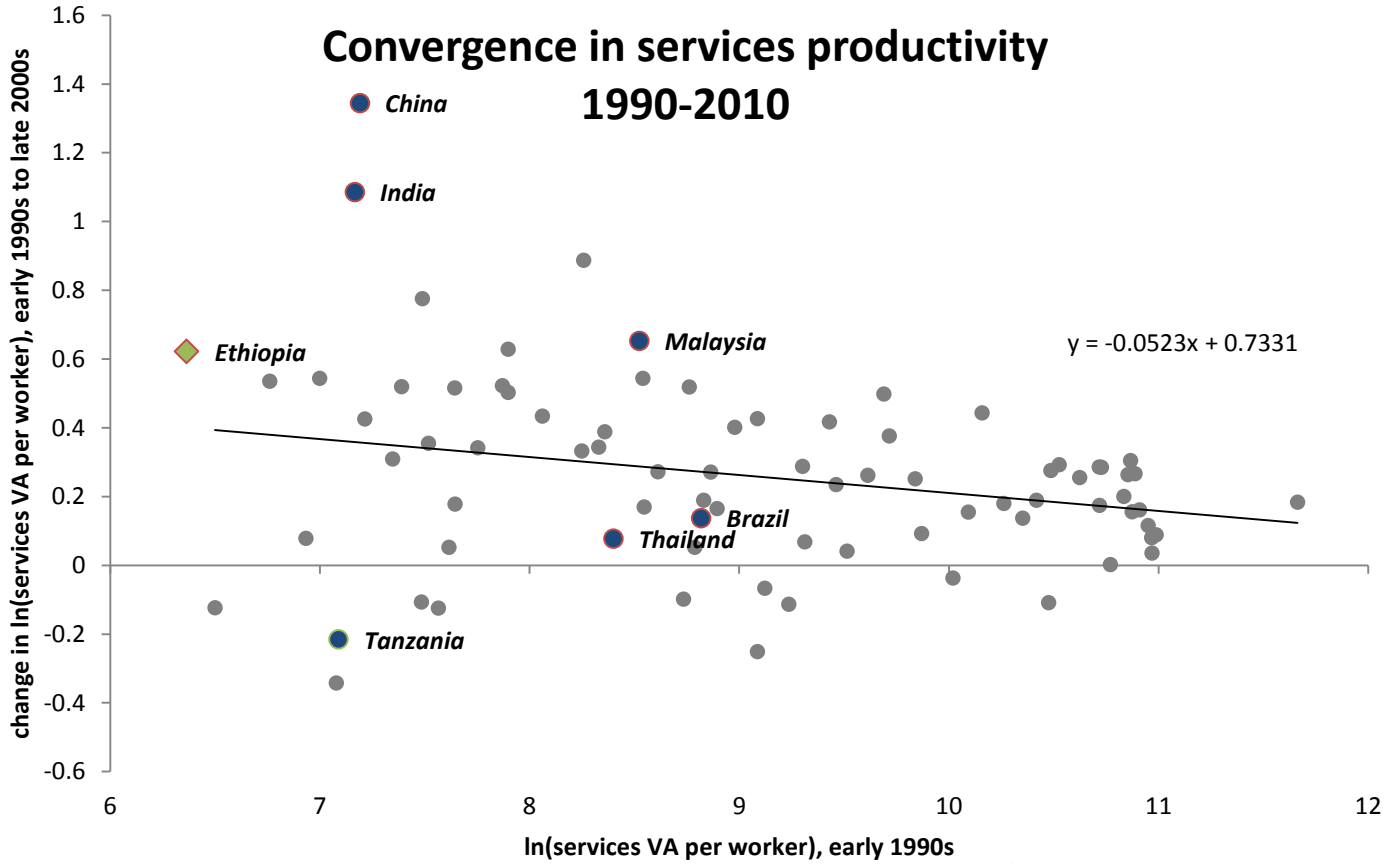
Convergence in labor productivity in services



Source: World Development Indicators. Ethiopia data from Martins (2014). Labor productivity calculated by the ratio of total sector value-added to total employment in sector. Underlying accounts are in 2005 constant international USD. Values taken from earliest year available from 1990-1993 and latest year available from 2005-9. Overall conclusions do not change if line is quadratic or cubic in ln(initial VA per worker).

Source: Ghani and O'Connell (2016)

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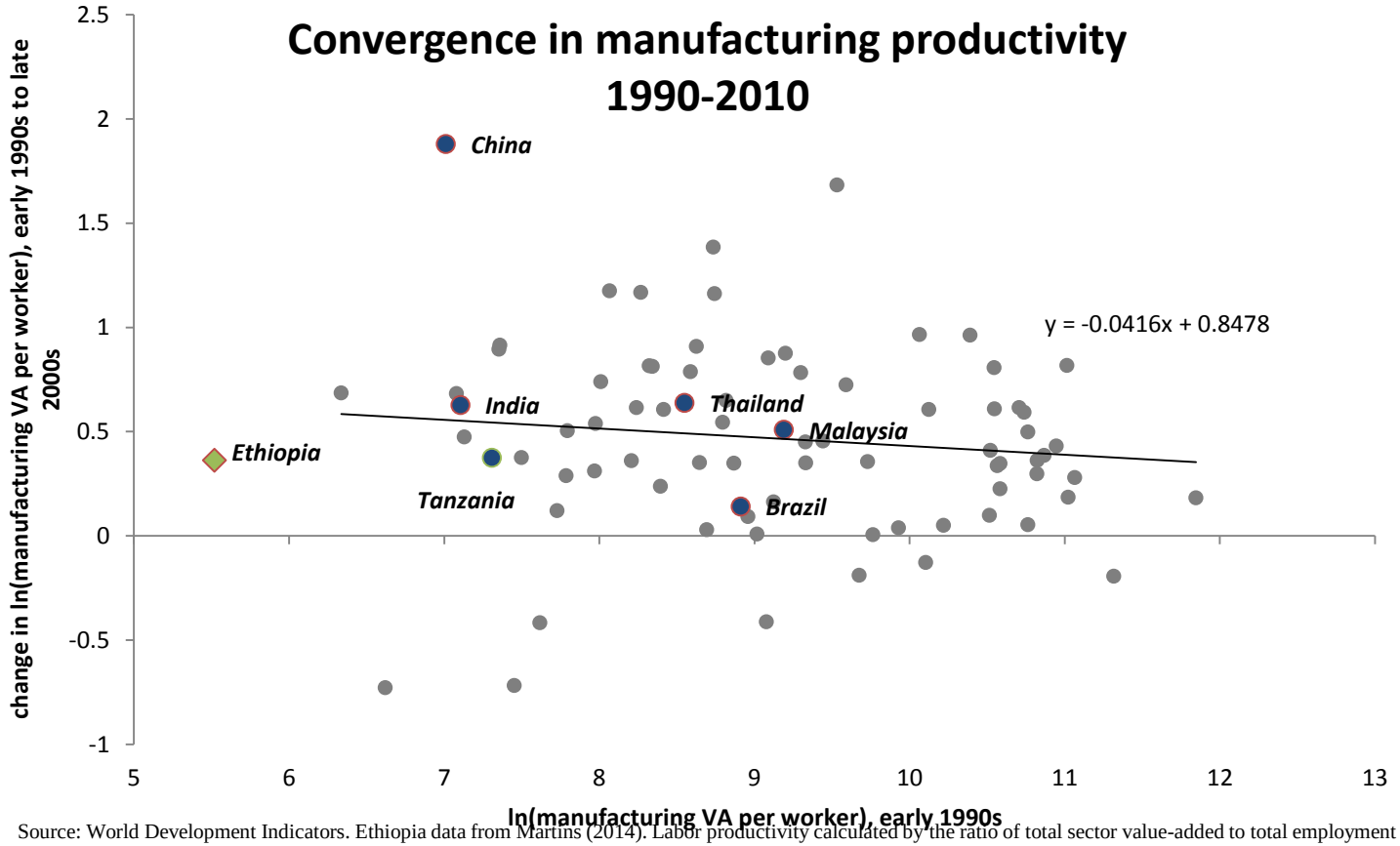
Convergence in labor productivity in manufacturing



Source: World Development Indicators. Ethiopia data from Martins (2014). Labor productivity calculated by the ratio of total sector value-added to total employment in sector. Underlying accounts are in 2005 constant international USD. Values taken from earliest year available from 1990-1993 and latest year available from 2005-9. Overall conclusions do not change if line is quadratic or cubic in ln(initial VA per worker).

Source: Ghani and O'Connell (2016)

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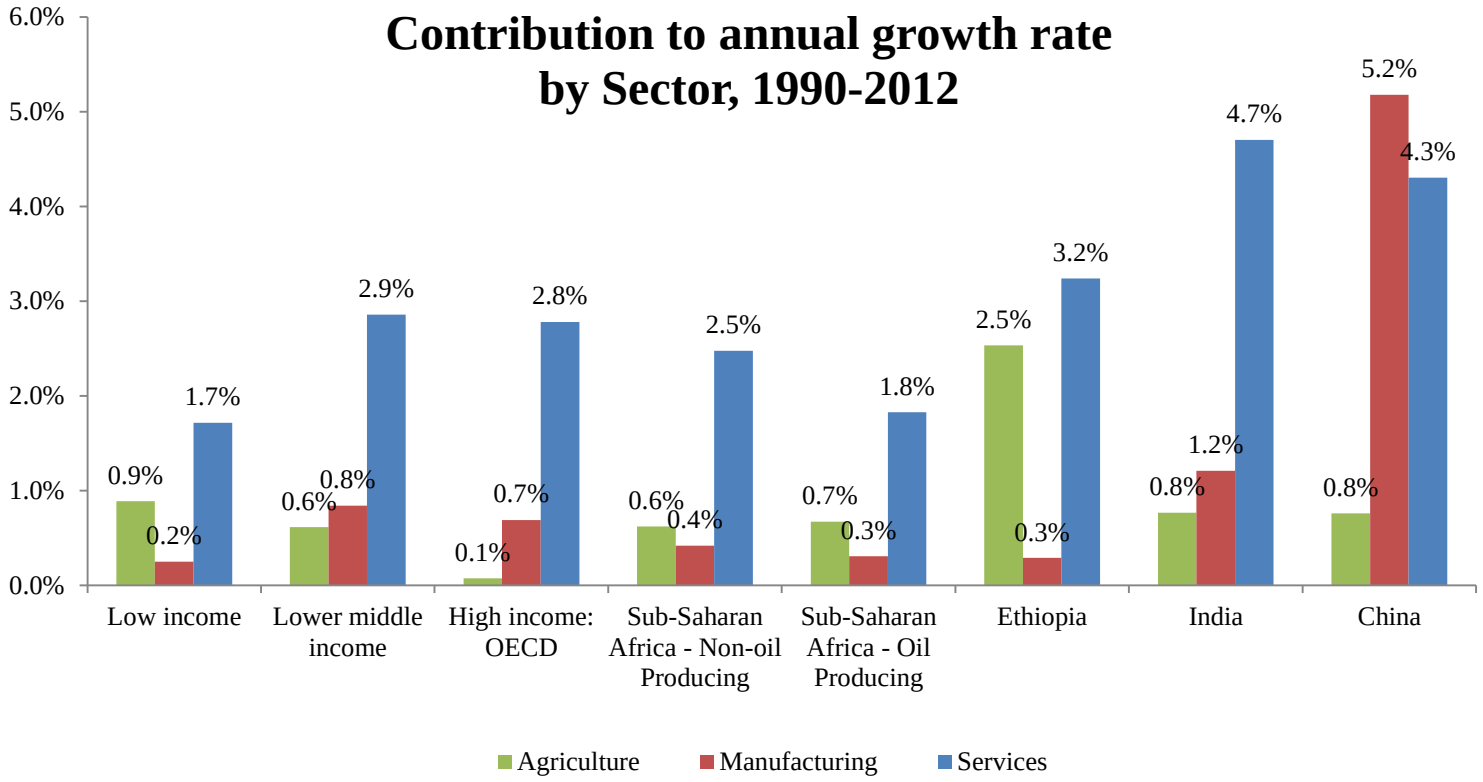
Contributions to Growth



Source: Authors' calculations using World Development Indicators. Ethiopia figures from national accounts. Countries grouped based on World Bank definitions. "Contribution to growth" calculated as compound annual growth rate based on constant GDP at PPP multiplied by period average sectoral GDP share.

Source: Ghani and O'Connell (2016)

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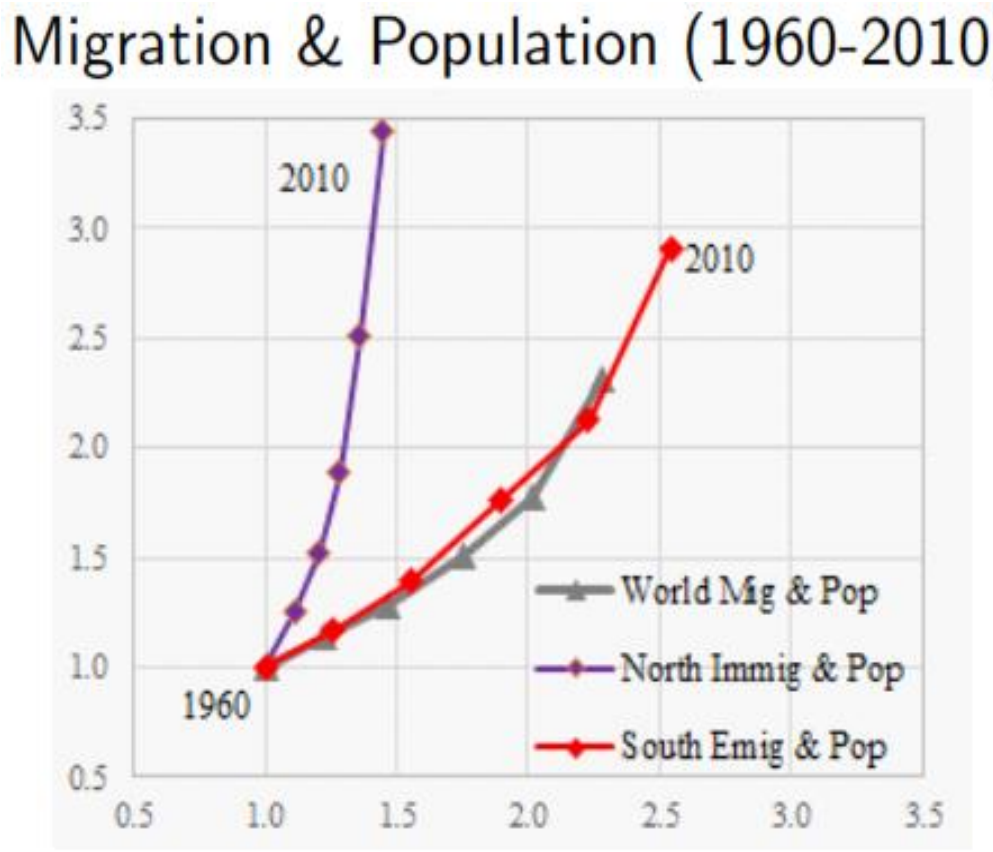
Figures part II

S-S and N-N migration rates

(decadal averages)



Migration rates on vertical axis, population growth on horizontal axis.
Stocks normalized to 1 in 1960

Source: Melo, J. de (2015)

Global Trends

- Flow of migrants relative to population (not shown) has been constant at 3%
- …but over 1960-2010, S-N migration was 3 times higher than N-N migration

Change in decadal rates

- S-N (1.5% →8.0%)
- N-N (4.6% →10.9%)

Implications for G7 (and others)

- For now: conflict and poverty driven pressures from Sahel G5 to Europe
- To come: climate driven challenge from low-latitude countries, mostly from SSA for all high latitude countries

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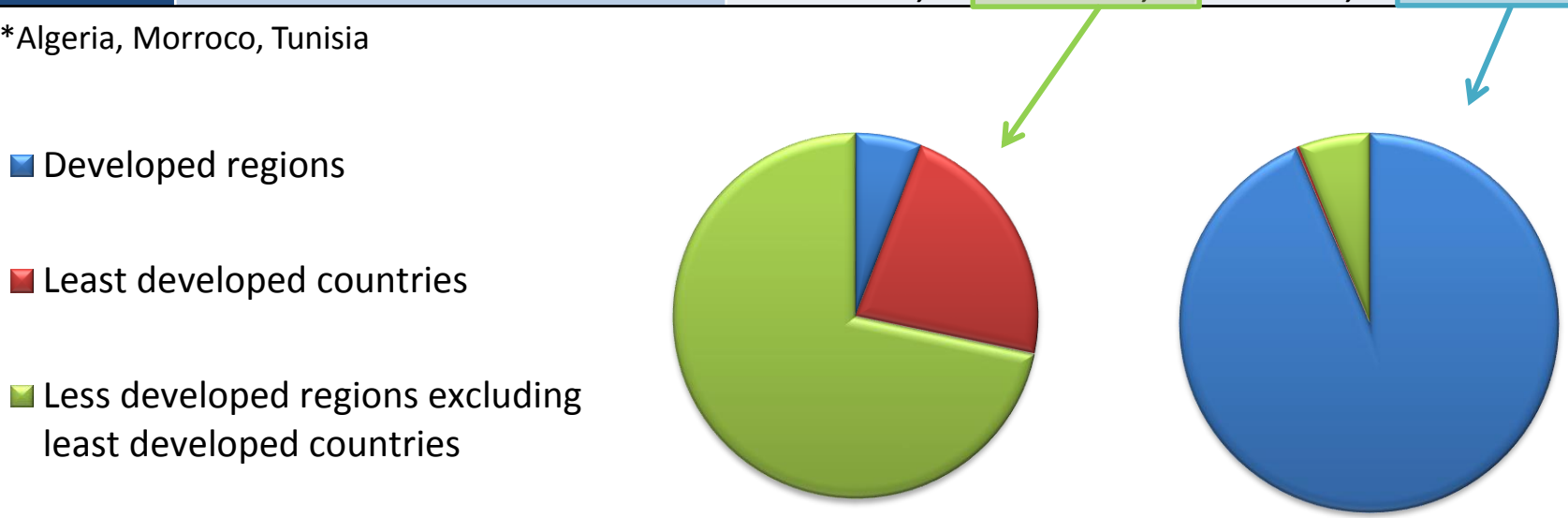
Migrants from Sahel and Maghreb by destination

		Region of origin			
		Sahel		Maghreb*	
		2000	2015	2000	2015
Region of destination	WORLD	2 461 942	3 143 249	3 452 405	5 249 456
	Africa	95,7%	93,9%	1,4%	1,2%
	Asia	0,4%	0,2%	7,2%	4,9%
	Europe	3,8%	5,7%	88,1%	89,3%
	Latin America and the Caribbean	0,0%	0,0%	0,1%	0,1%
	Northern America	0,1%	0,2%	3,0%	4,3%
	Oceania	0,0%	0,0%	0,2%	0,1%

*Algeria, Morroco, Tunisia



Source: Migration Policy Institute tabulation of data from the United Nations, Department of Economic and Social Affairs (2015), "Trends in International Migrant Stock: Migrants by Destination and Origin," United Nations database, POP/DB/MIG/Stock/Rev.2015. Available

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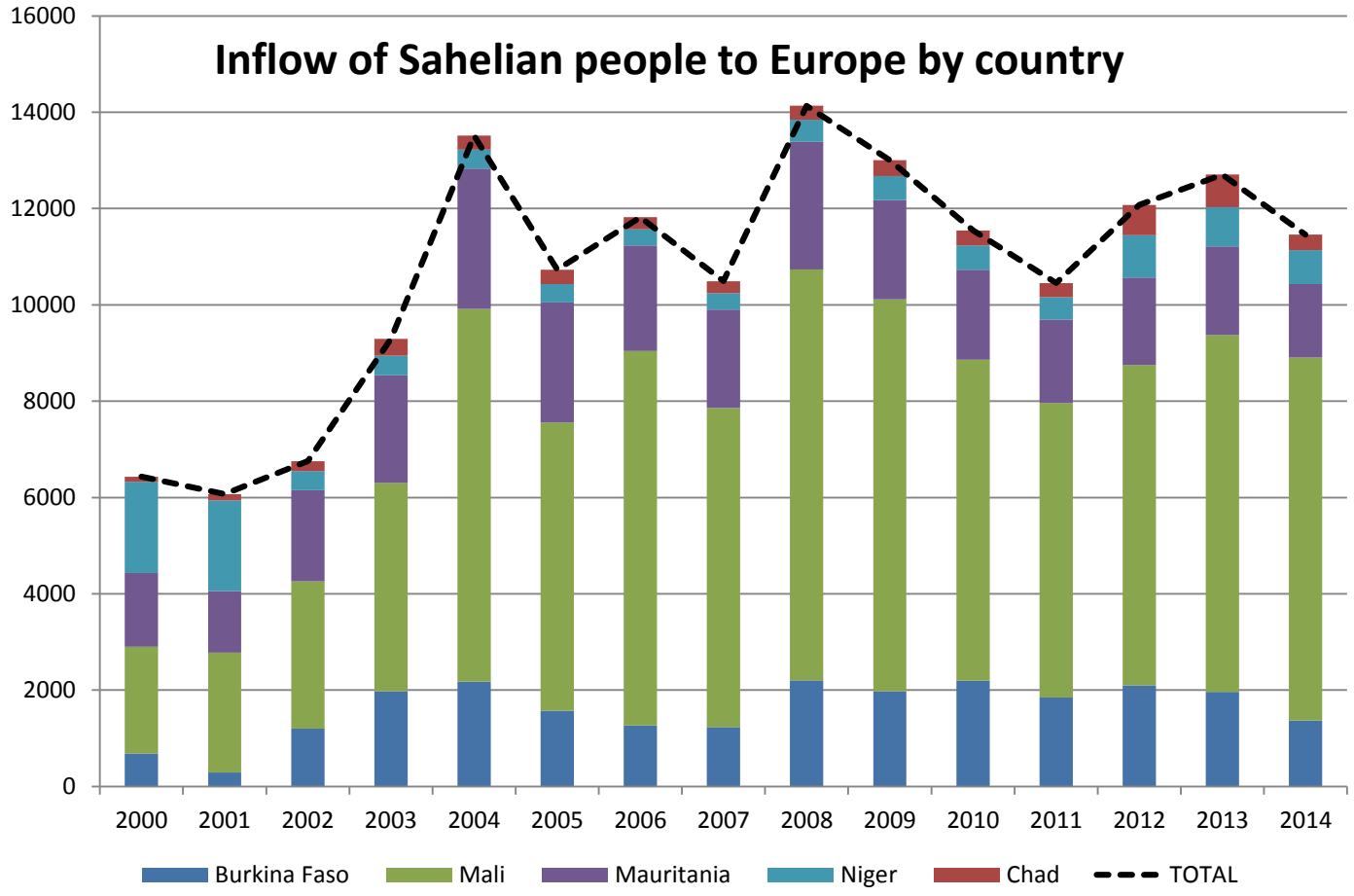
G5- Inflow to Europe by origin



Source : International Migration Database, OECD

- Sustained inflow increase from Mali starting around 2002
- Relatively constant flow from other countries

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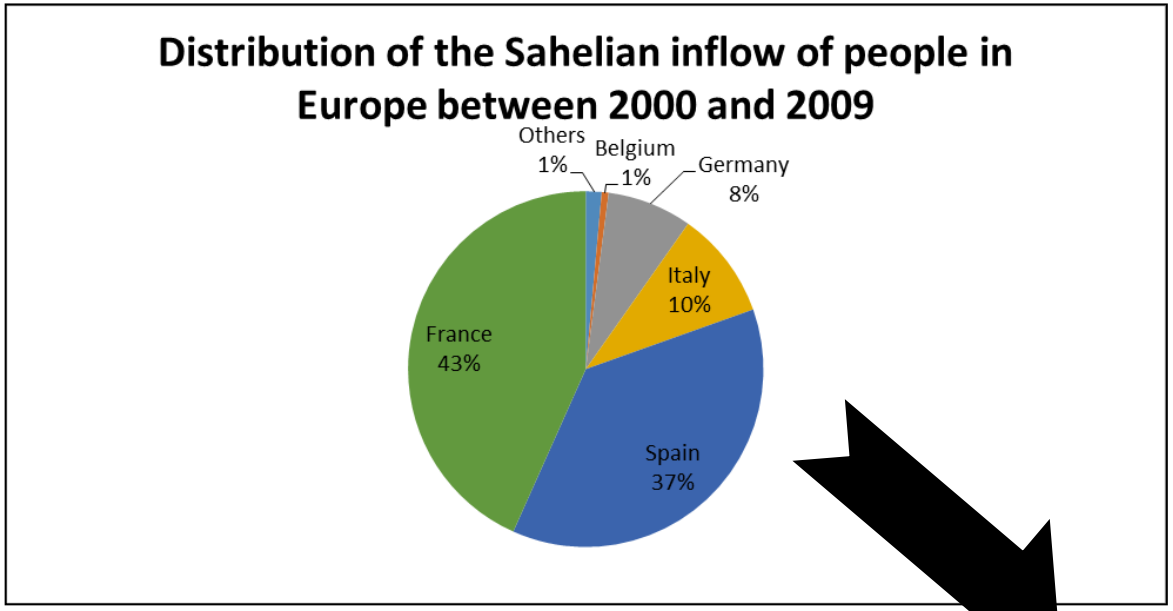
G5- Inflow by destination (period averages)



Shift of G5 migrants from Spain towards Italy and France

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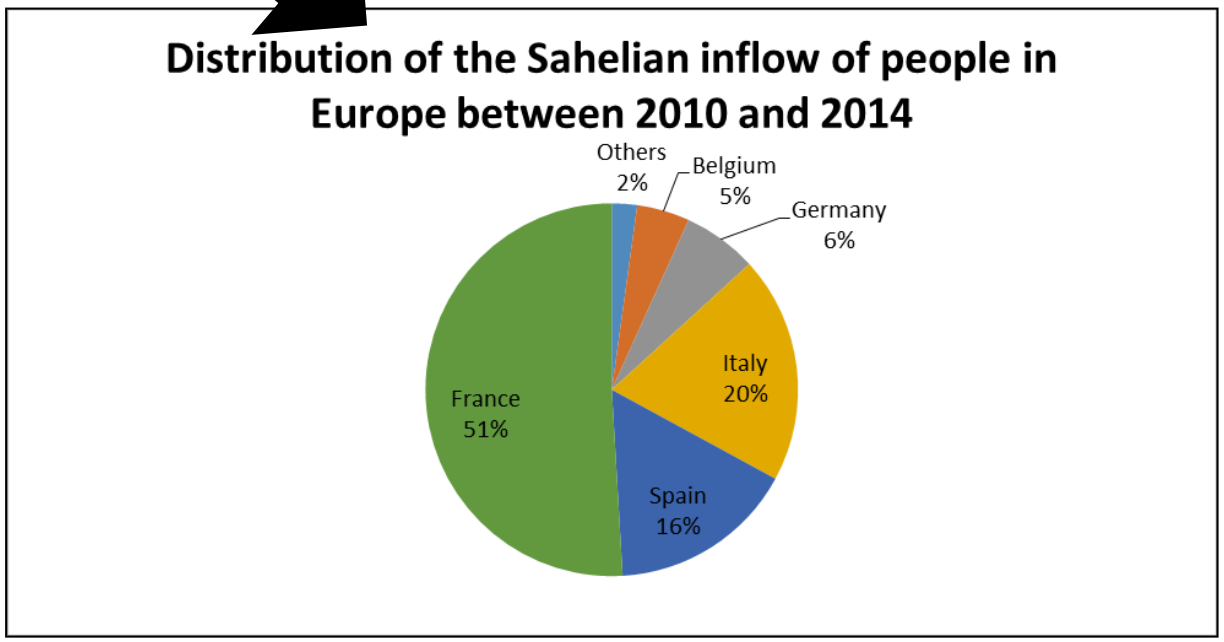
Source : International Migration Database, OECD



Others = Switzerland, Slovenia, Iceland, Slovak Republic, Hungary, Poland, Finland, Czech Republic, Denmark, Luxembourg, Norway, Sweden, Austria and Netherlands.

FEW index, growth and CPA per capita

	(1) 2015 per capita GDP[b] (US$)	(2) FEW index rank [c]	(3) GDP (10-15)[d]	(4) Population growth (15-30)[e]	(5) CPA (05-09)[f] $ per capita [educ / agri][g]	(6) CPA (10-14)[f] $per capita [educ / agri][g]
Burkina Faso (18.1)[a]	613	139	5.5	2.6	59.2 [2.0 / 4.8]	58.9 [1.0 / 5.0]
Chad (14.4)[a]	776	145	6.4	2.8	22.6 [0.3 / 1.3]	20.0 [0.2 / 1.3]
Mali (17.6)[a]	744	133	6.1	2.8	59.5 [4.8 / 7.3]	62.1 [3.4 / 8.4]
Mauritania (4.1)[a]	1,371	118	8.7	2.1	83 [0.9 / 9.5]	82.3 [0.6 / 8.5]
Niger (19.9)[a]	359	146	4.2	3.8	29.5 [0.3 / 2.9]	30.1 [0.2 / 2.9]
LDCs[h]	943	-	4.1	2.3	41.3 [3.4 / 1.8]	49.5 [3.4 / 2.0]

Melo (2016) adtapted from Guillaumont-Jeanneney et al. (2016)

Notes:

[a] 2015 population (in millions), UN World population prospect

[b] WDI 2015 GDP per capita in current US$ (2014 data for Mauritania)

[c] Food-Energy-Water (FEW) composite index (148 countries: 1 is highest rank). http://www.prgs.edu/pardee-initiative/food-energy-water/interactive-index/guide.html

[d] Average yearly GDP growth rate (%)

[e] UN World population prospect (medium fertility variant)

[f] CPA: Country Programmable Aid

[g] ODA Source: Creditor Reporting System (CRS) Aid Activities database, OECD. Expenditures in donor countries excluded

[h] Least Developed Countries (LDCs)UN classification. Excludes Ethiopia and Bangladesh (694 million people)

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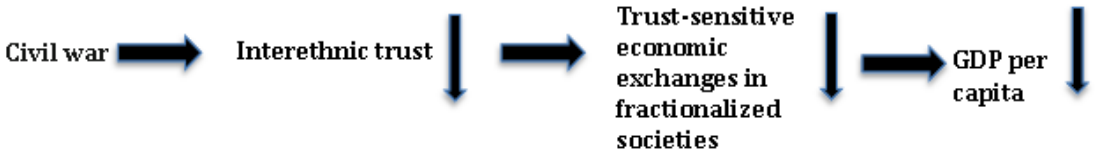
Sahel on the edge of conflict traps

- Disengagement of the State during donor-led SAPs in 1990s.
- State: Balance [generating surplus/protecting income] broken (Dal Bo et al.)
- Extensive interviews among actors in G5 (Ferdi report):

No security↔No development

- Conflict-related Factors: Internal (Tuaregs out of political process, high population growth) External (Cocaine hub from 2005; AQIM out of Algeria; Return of armed men from Libya in 2013) →"conflict systems" & day-to-day insecurity. At edge of conflict trap/civil war, "failed state status"?
- Delayed and imbalanced international response after 2013 has contained battle against terrorism but not day-to-day insecurity.
- Military + health spending but neglect of aid for education agriculture



- Estimates of costs of civil war from synthetic counterfactuals (average 10 years in a sample of 20 Civil wars across the world)
- **17% average annual loss in per capita income largely attributable to fall in inter-ethnic trust above that backs the "war renewal" school, not the "neoclassical" school**
- **Loss estimates from Costalli et al. (2016)**

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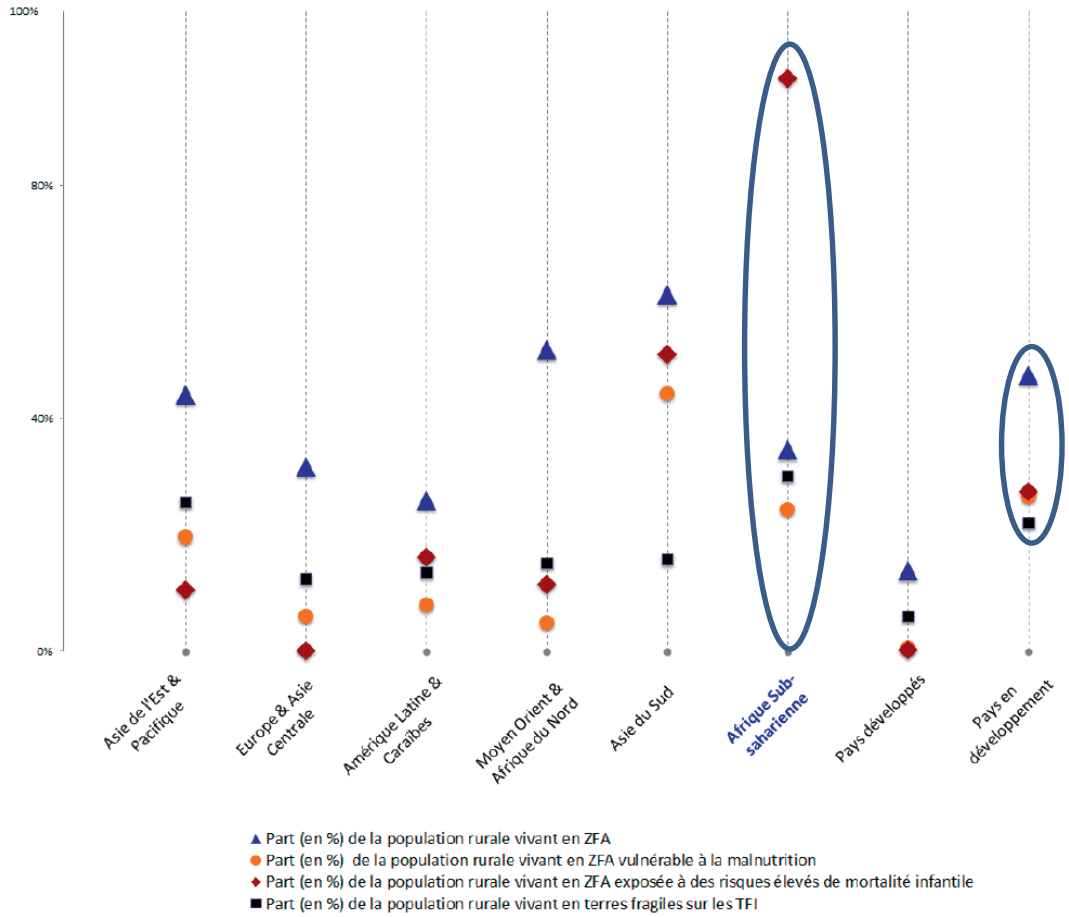
On the edge of poverty traps (1)

Share of rural population on fragile isolated lands (▪), Low-level coastal lands (▲), high infant mortality risk (●) high malnutrition (♦) (*regional averages*)



Source: Corneille, A. and J. de Melo (2016)

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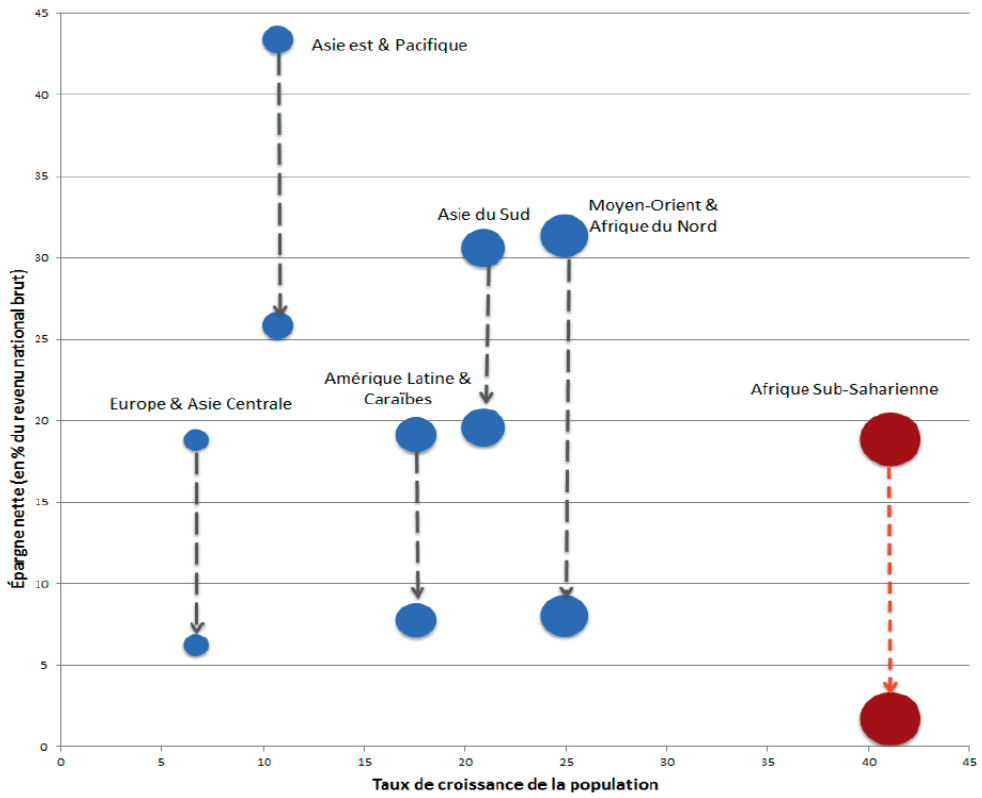
On the edge of poverty traps (2)

Size of bubbles proportional to population growth

Gross and Net Savings (adjusted for depreciation of natural capital) versus population growth
(Regional averages 2000-13)



Source: Corneille, A. and J. de Melo (2016)

Over 2000-13, SSA savings barely sufficient to maintain current generation level of income !

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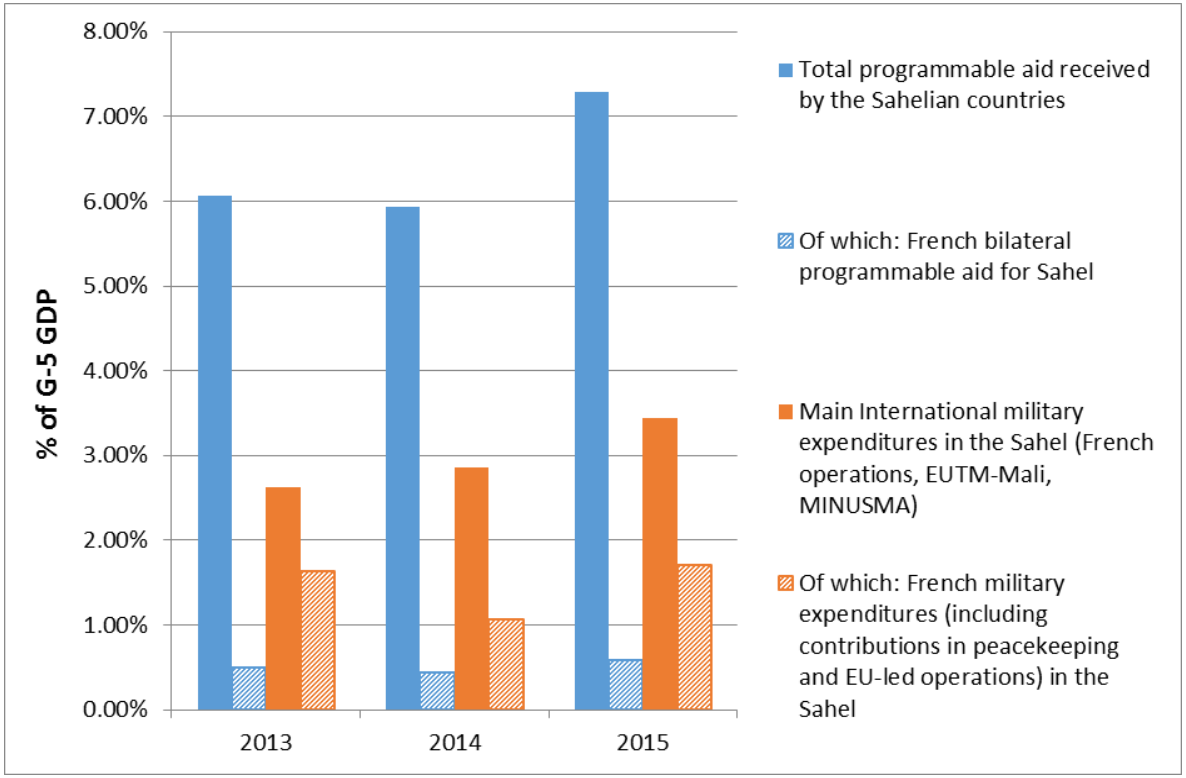
A Marshall plan to invest in security/development
(less costly than managing failed state status ex-post)

- Military spending has not addressed day-to-day insecurity
- ODA shares on health acceptable (communicable diseases are GPG)
- Low shares of ODA to education/agriculture

- Abandon “Do no harm” doctrine + non-recognition of military/security spending in ODA

Country programmable aid and military expenses in G5 by donor (2013-2015)
(*% of G-5 GDP*)



Source: Guillaumont-Jeanneney et al. (2016)

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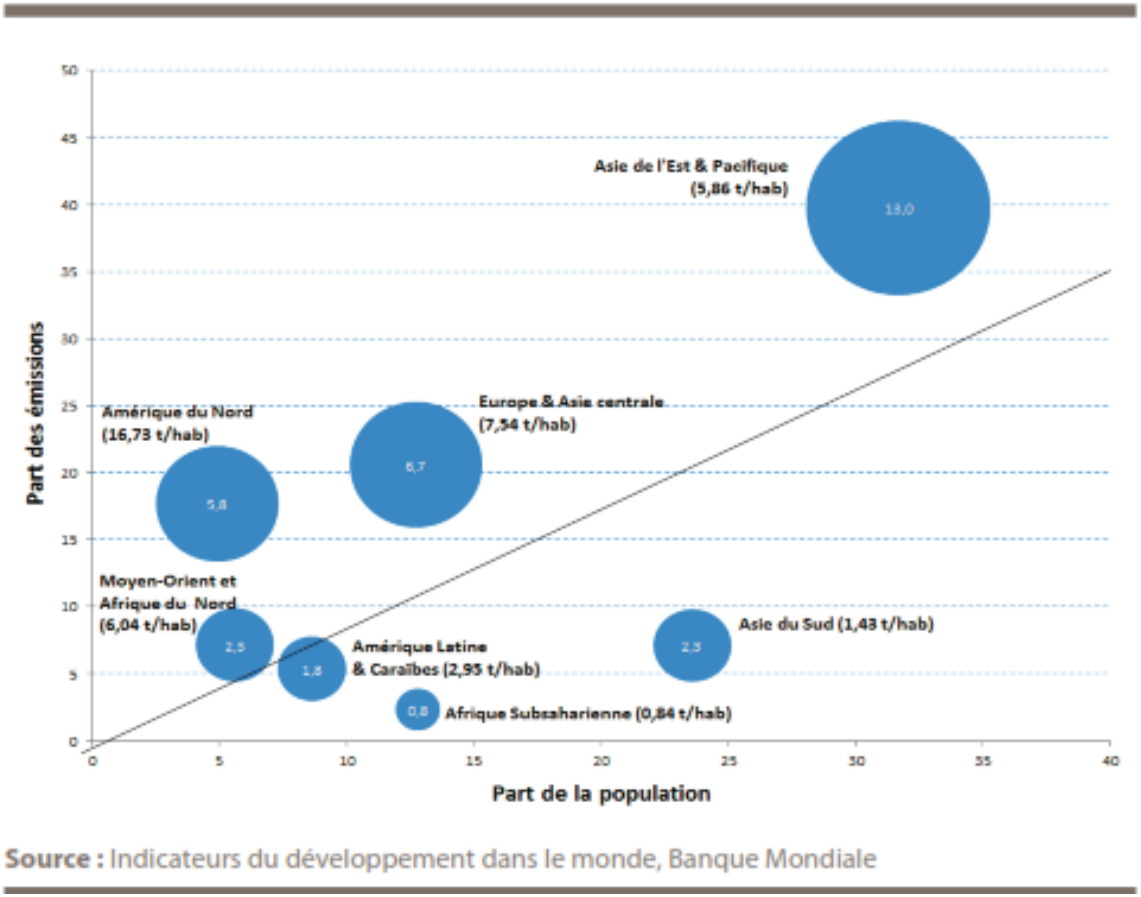
CO2 emissions vs. Population shares

(regional averages)



Corneille, A. and J. de Melo (2016)

- **Bubbles proportional to total CO2 emissions (cement and fossil fuels).**
- **Regions below the 45 line have below-average per capita emissions.**
- **If converging CO2 emissions per capita, effort from North America, Europe and East Asia**

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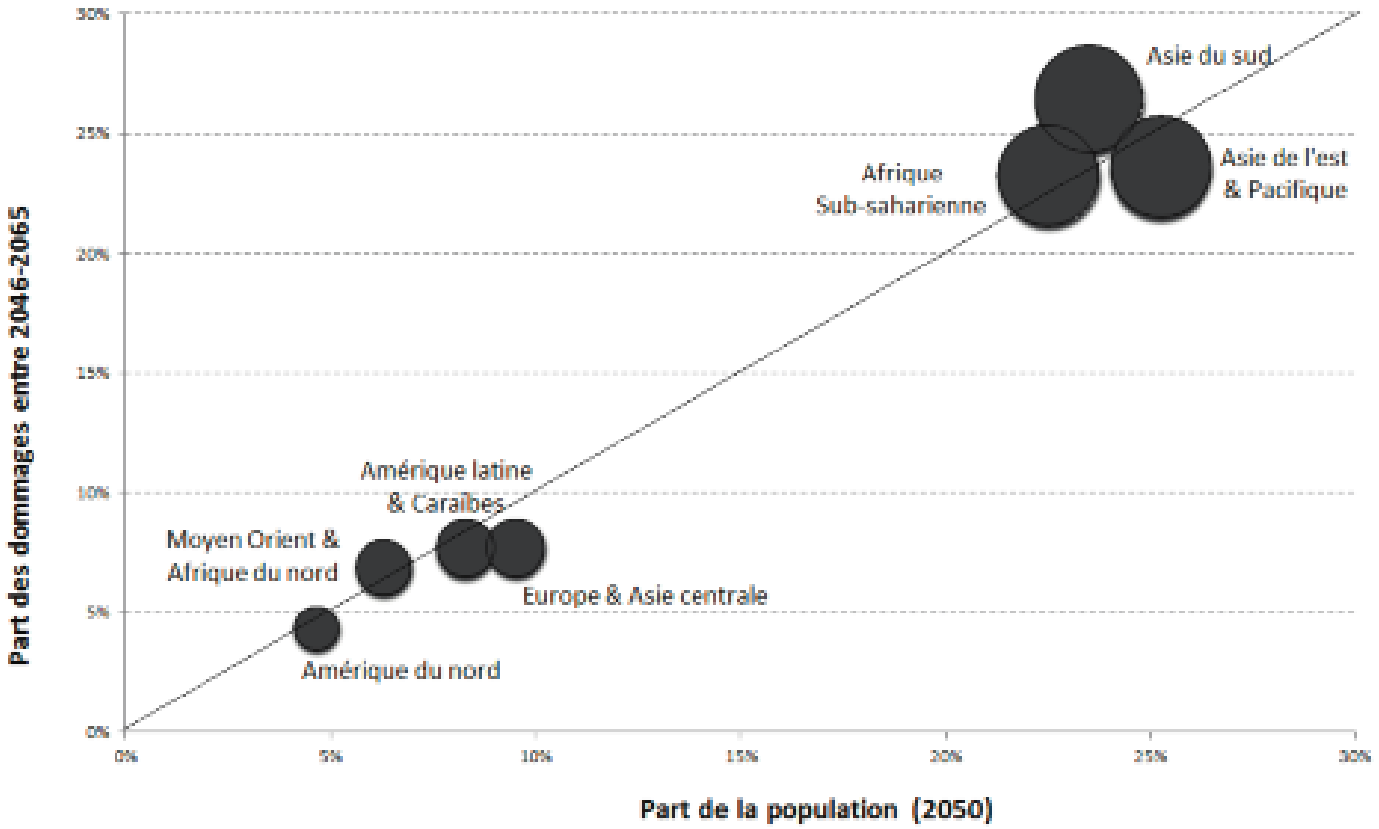
Projected damages by region (in 2050)



Source: Corneille, A. and J. de Melo (2016)

- **Strongest damages in SSA and SA (above population shares)**
- **In absence of migration large redistribution of population across regions**
- **Strong migratory pressures is SA, SSA, EA if adaptation fails**

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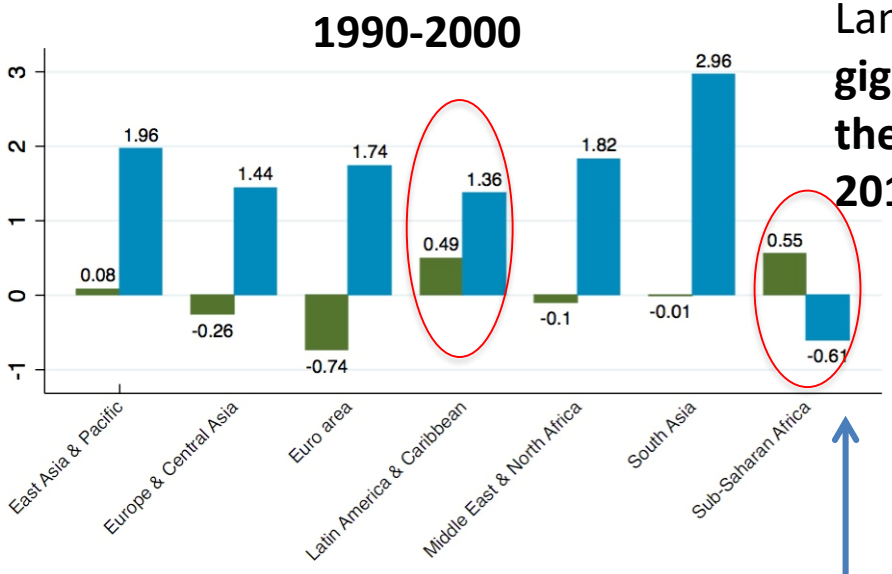
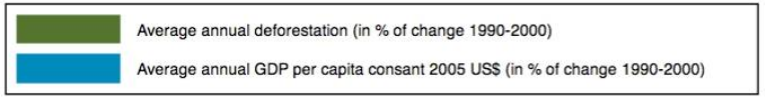
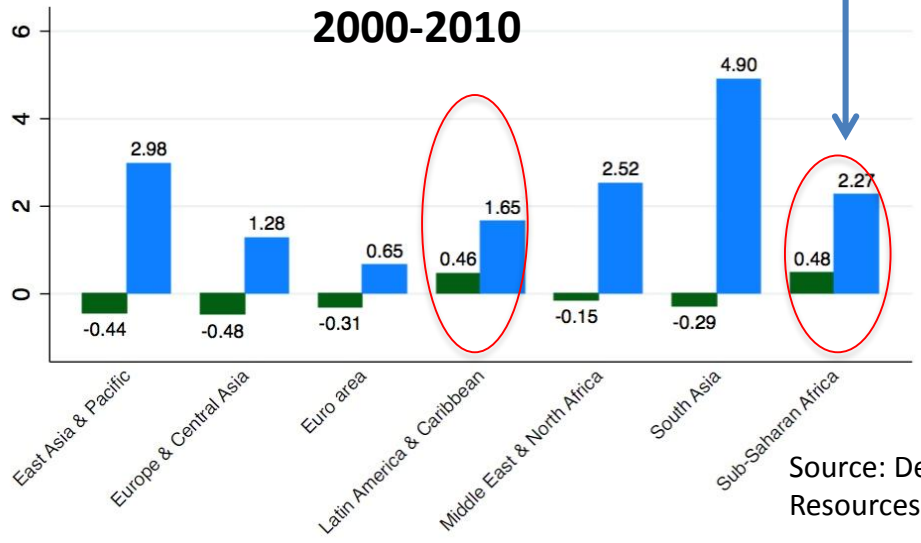
Deforestation Rates: Decadal averages

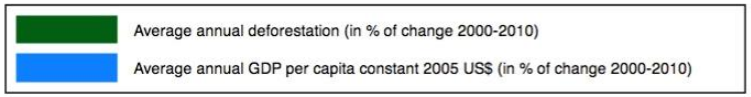


Land conversion in forrested countries **emitted 5.4 gigatons CO2** a year from 2008 to 2012 (**larger than the emissions from the entire European Union in 2011)**.





⇨ Engelman (2015): for less than $2 billion a year, via reforestation, global CO2 emissions could be cut **by more than the amount emitted by the United Kingdom each year** ….



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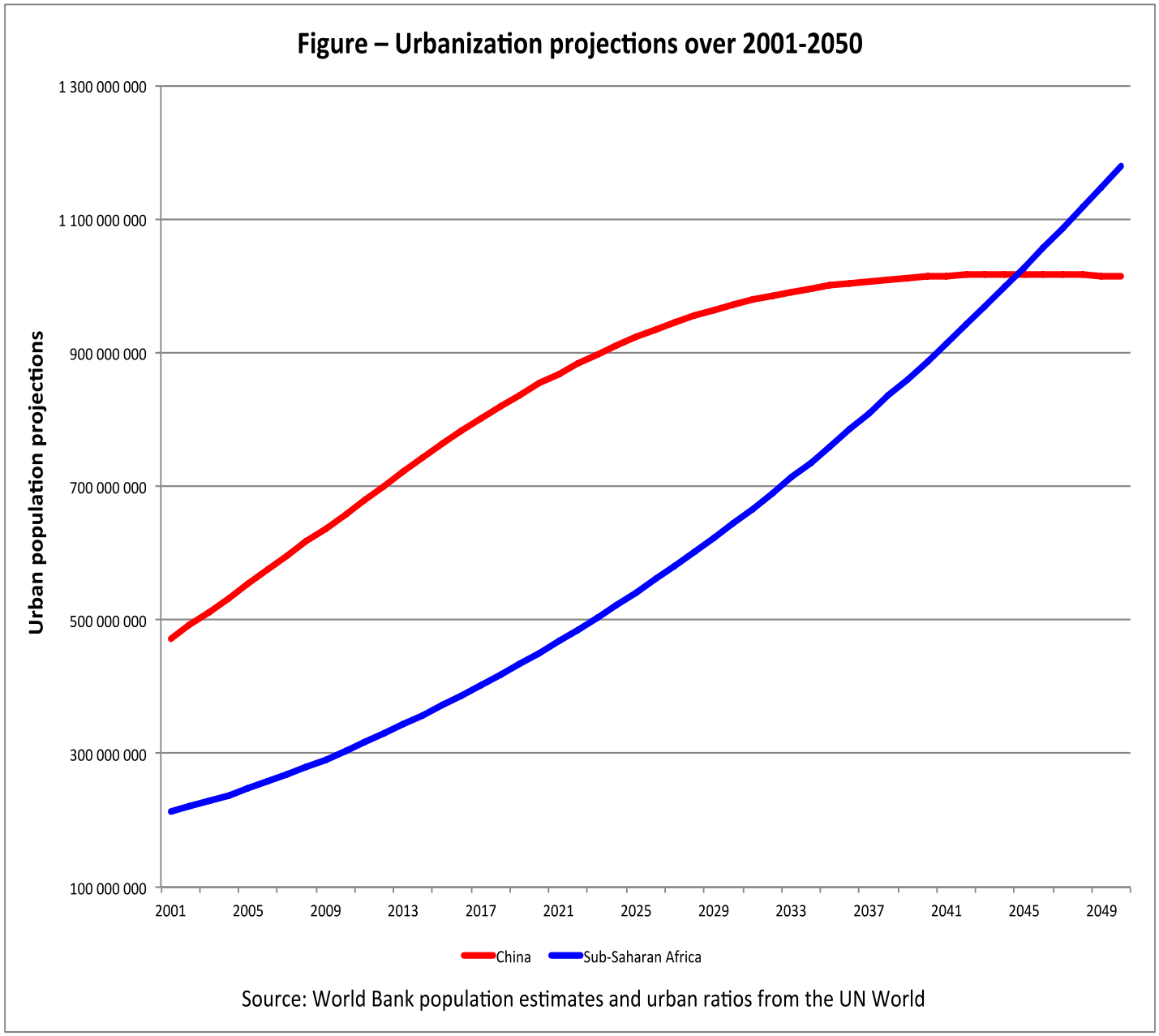
Source: Deforestation from Food and Agriculture Organization, Global Forest Resources Assessment and GDP per capita (constant 2005 US$) from World Bank.

Urbanization: ASS vs. Chine



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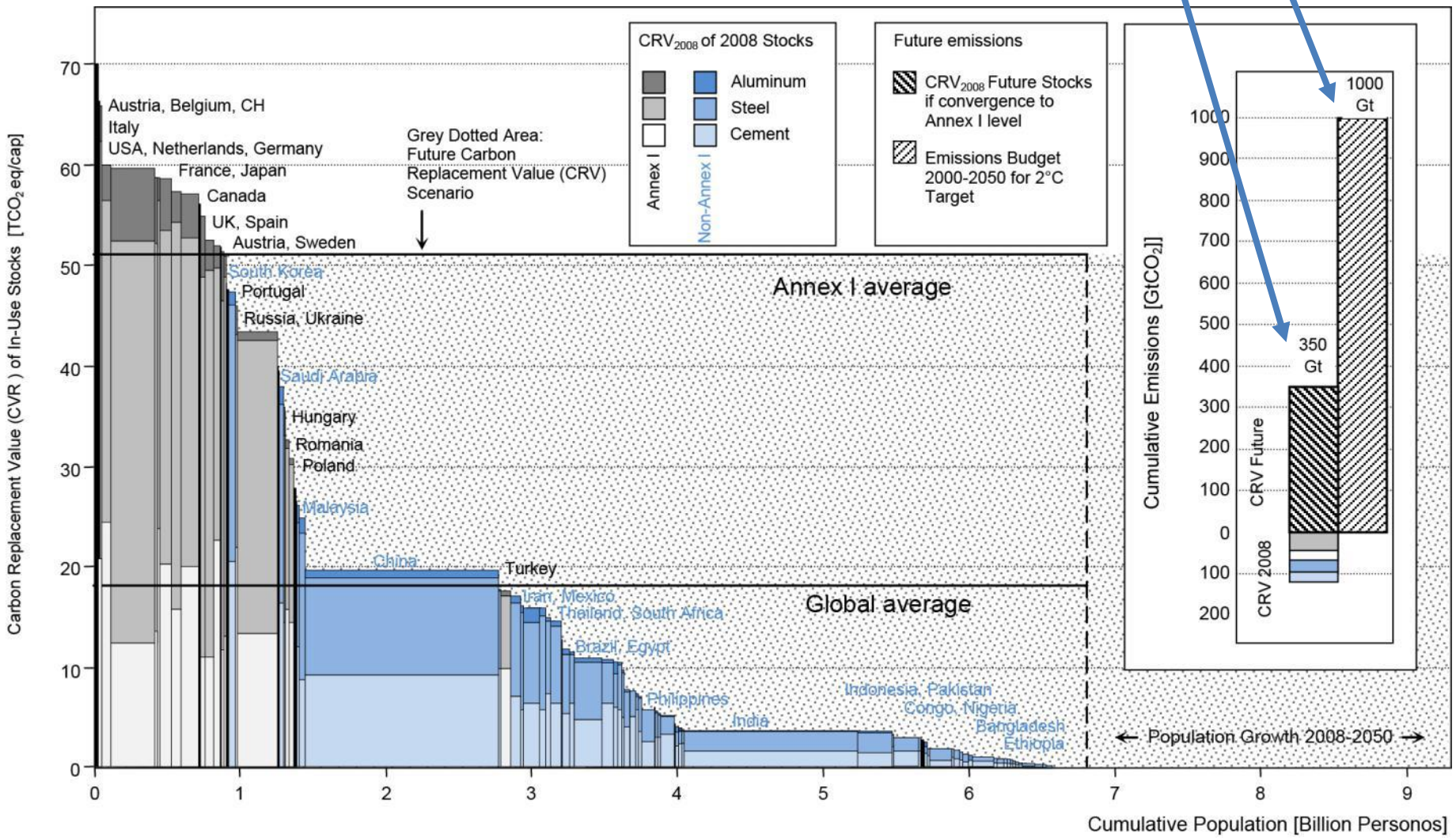
CO2 intensity of urbanisation

CO2 budget til 2100

CO2 projections with average CRV for Annex I countries in 2008



NB: cities account for 70% of CO2 emissions but only house 54% of world population …and CO2 per capita emissions about 3 times higher in urban than in rural areas….

Source: Barrett et al. 2015, chp. 30

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Funding for adaptation (CBDR)
Funding for mitigation (cities and forest conservation)

Other factors leading to increased migratory pressures

- If SSA fails to converge in productivity towards US while EU does, then share of highly qualifies migrants from SSA is estimated to increase from 16% of population to 20% by 205 and 23% by 2050
- Add IPPC climate change projections: with +3 deg.→ agricultural lands displaced by 1000 km. from equator + sea level rise of 1.20m.
- Strong causal evidence that human conflict is positively correlated with sustained increases in temperature.

In coming decades, out-migration is the solution to the climate change challenge

- With 72% of population and 90% of GDP on 10% of land across the world, plenty of room to face up to climate change via migration (low-latitude to high-latitude countries).
- But if no migration is allowed polar regions would become twice as well of as equatorial regions.

…with increased funding from G-7/G-20…

- Funding to finance carbon-sober cities in Africa (so the building and running cities does exceed one-third of carbon budget for +2 deg.
- REDD+ funding for SSA (SSA is only region that has continued deforestation in past decade in spite of higher per capita growth)

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