Is the Age of Growth Miracles Over?

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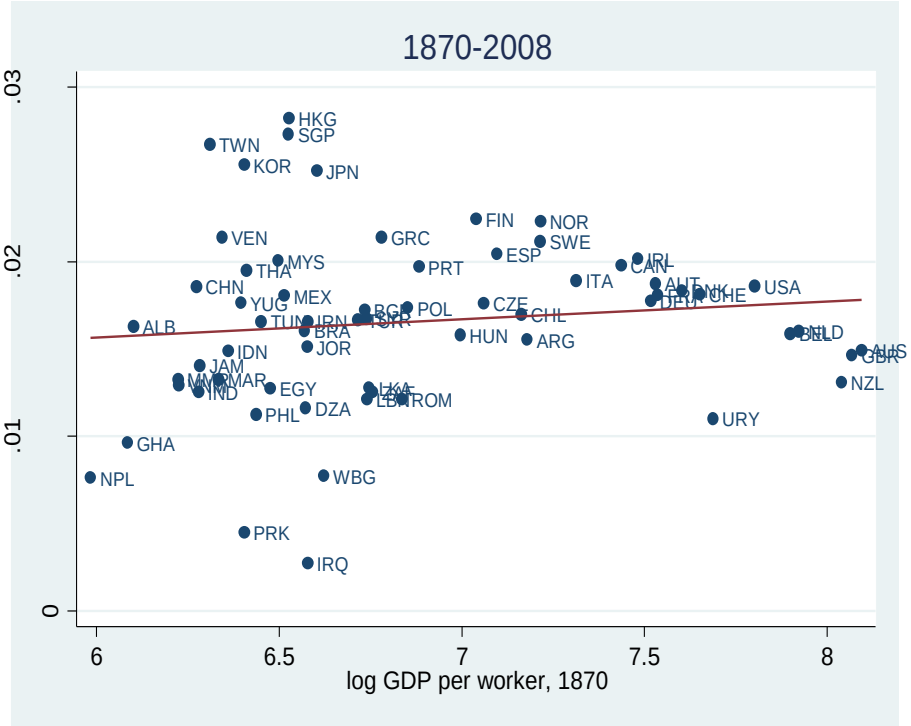
Outline

- Growth miracles: rapid, sustained convergence
- Why industrialization has been key
- Premature deindustrialization today
- Alternative models?

Convergence is historically the exception rather than the norm



Notes: For RHS chart, variable on the vertical axis is growth of GDP per worker over four separate decades (1965-1975, 1975-1985, 1985-1995, 1995-2005), controlling for decadal fixed effects.
Source: Rodrik (2013), using data from Maddison (2010) and PWT 7.0 (2011).

Unconditional versus conditional convergence

Latecomers have access to

- technology
- capital
- markets

But face other headwinds

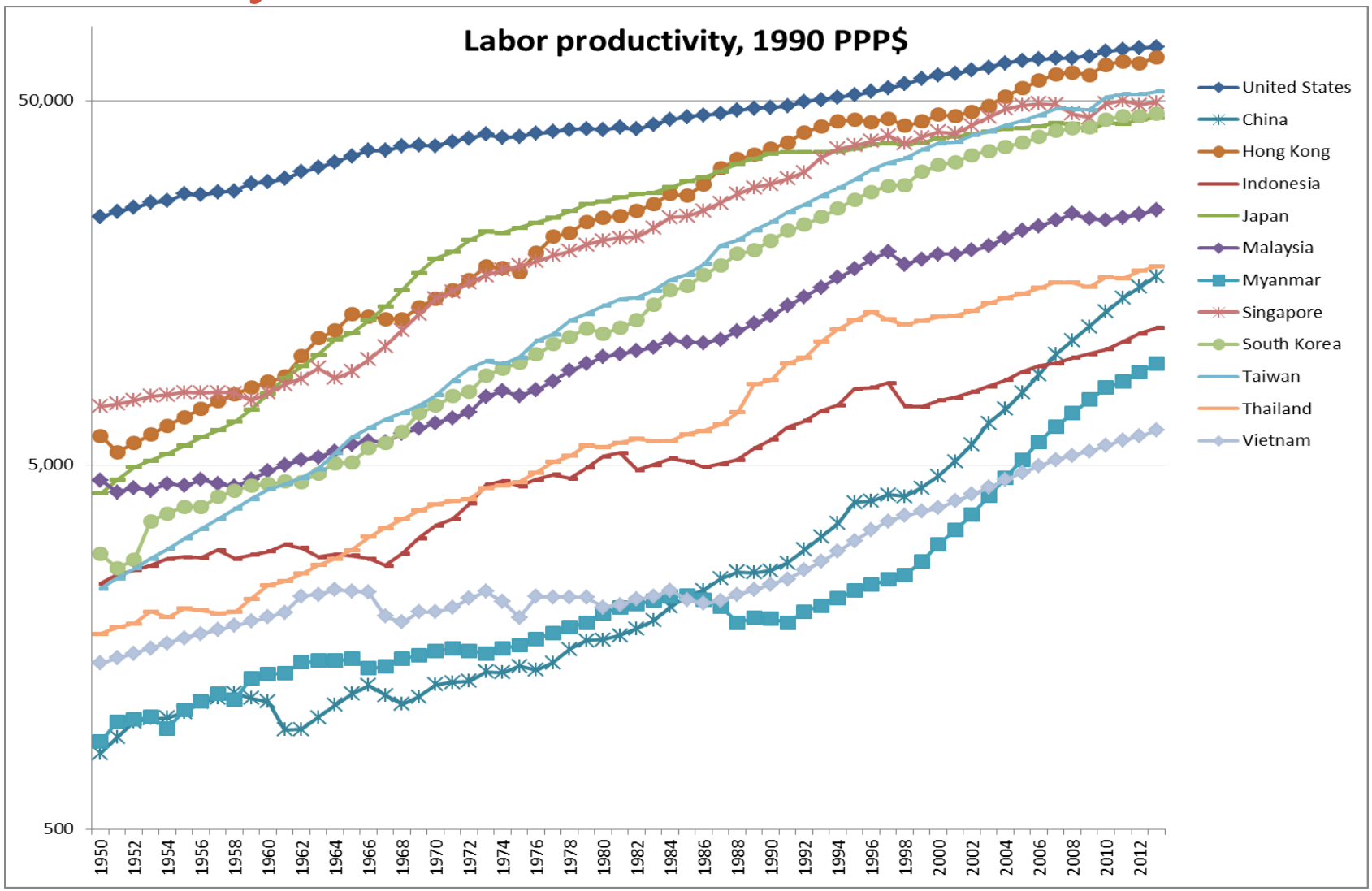
- bad policies, weak institutions
- geographical disadvantages
- poverty traps

So conventional theory: convergence is conditional:

$$\hat{y}_j = \gamma\left(\ln y^*(\Theta_j) - \ln y_j\right)$$

and slow: $\gamma \approx 2\%$

Except for a few countries … mostly in East Asia



Or in the European periphery after the Second World War

Countries that have grown at 4.5 per annum per capita (or faster) over 30 years or more

Before 1950			After 1950		
Country	fastest growth rate achieved over three decades (%)	period	Country	fastest growth rate achieved over three decades (%)	period
Before 1900			Italy	5.9	1945-1975
Australia	5.8	1823-1853	Spain	4.9	1949-1980
New Zealand	7.1	1840-1870	Portugal	4.6	1950-1980
			Greece	7.3	1945-1975
Between 1900 and 1950			Israel	4.7	1953-1983
Venezuela	5.5	1907-1939	Yugoslavia	4.9	1952-1982
			Ireland	4.6	1976-2006
			Iraq	5.3	1950-1980
			Saudi Arabia	6.1	1950-1980
			Libya	7.4	1950-1980
			Oman	7.4	1955-1985
			Botswana	7.3	1960-1991
			Cape Verde	5.5	1977-2007
			Equatorial Guinea	9.3	1974-2004
			Japan	7.4	1945-1975
			North Korea	4.7	1951-1981
			Taiwan	7.2	1946-1976
			South Korea	7.3	1965-1995
			Singapore	6.7	1964-1995
			Hong Kong	6.0	1958-1988
			Malaysia	5.1	1967-1997
			Indonesia	4.7	1967-1997
			Burma	4.9	1977-2007
			China	6.7	1976-2007

Industrializers in the European periphery

A common feature: rapid industrialization

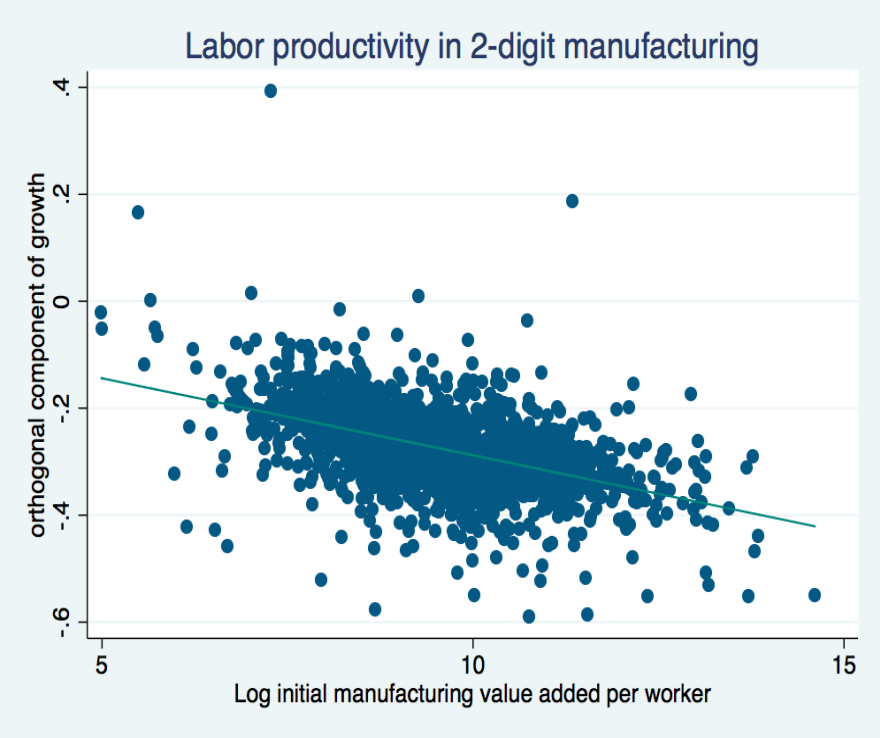
Why manufacturing industries are special:

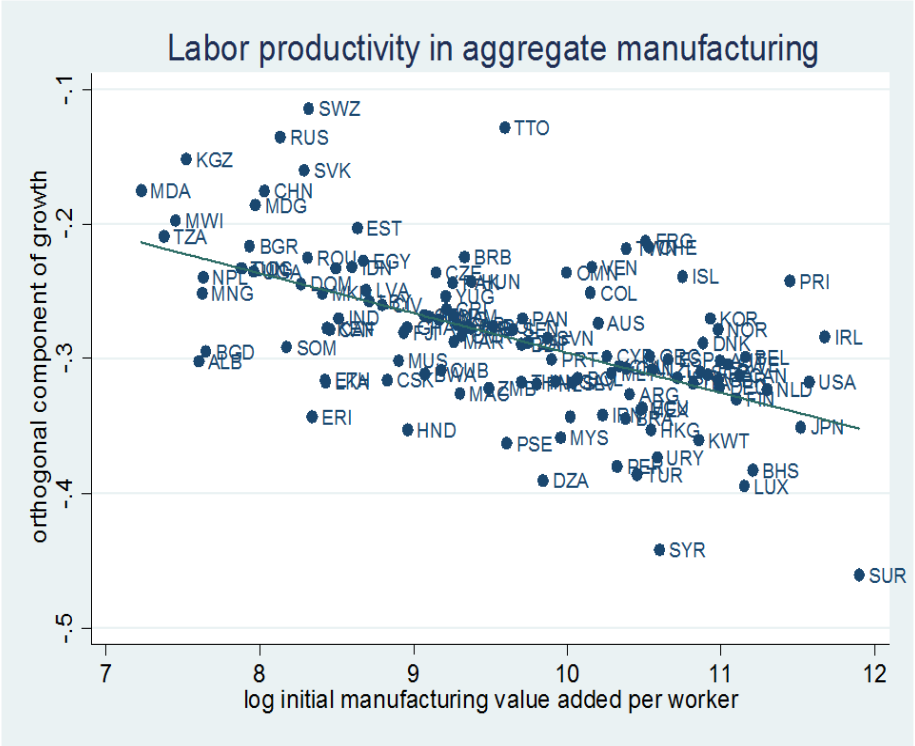
1. productivity dynamics
   - unconditional convergence
2. labor absorption capacity
   - skills
3. tradability
   - can expand without turning terms of trade against itself

Specialization in narrow range of manufactures can be potent engine for growth.

Narrower focus also eases policy challenges of economy-wide reform.

Productivity convergence in (formal) manufacturing appears to be unconditional and quite general – regardless of period, region, sector, or aggregation





$\beta \approx 3\%$ (t-stat ≈ 7), implying a half-life for full convergence of 40-50 years!

Notes: Data are for the latest 10-year period available. On LHS chart, each dot represents a 2-digit manufacturing industry in a specific country; vertical axis represents growth rate of labor productivity (controlling for period, industry, and period×industry fixed effects).
Source: Rodrik (2013)

Reconciliation: embedding convergence and dualism in growth theory

- Economic dualism is endemic
- Traditional activities
  - traditional agriculture; small, informal firms
- Modern activities
  - high productivity, exhibiting (unconditional) productivity convergence
  - too small to produce significant aggregate effects *(B)*
- Economy-wide productivity requires steady accumulation of "fundamentals," which is slow
  - human capital, institutions *(A)*
- Rapid growth possible nonetheless by expanding modern activities *(C)*

$$\hat{y} = \gamma(\ln y^*(\Theta) - \ln y) \quad (A)$$
$$+ \alpha_M \pi_M \beta(\ln y_M^* - \ln y_M) \quad (B)$$
$$+ (\pi_M - \pi_T) d\alpha_M \quad (C)$$

Standard convergence is augmented by two additional terms

- Which requires policies that overlap with, but are not same as, fundamentals

What is the role of innovation and technology in this story?

- Why do TFPs (*A*) differ across countries?
- One answer: firms in poor nations do not innovate
  - but the challenge is not innovation but imitation
  - the technology for catch-up ("blueprints") is available in rich nations
- Another answer: firms do not employ most up-to-date technologies
  - but typically in developing economies, the most productive firms do
- Another answer: resource misallocation
  - resources are not allocated to the highest productivity activities
  - low economy-wide TFP is due to in large part to allocative inefficiency
  - rapid growth requires rapid internal convergence (i.e., structural change)

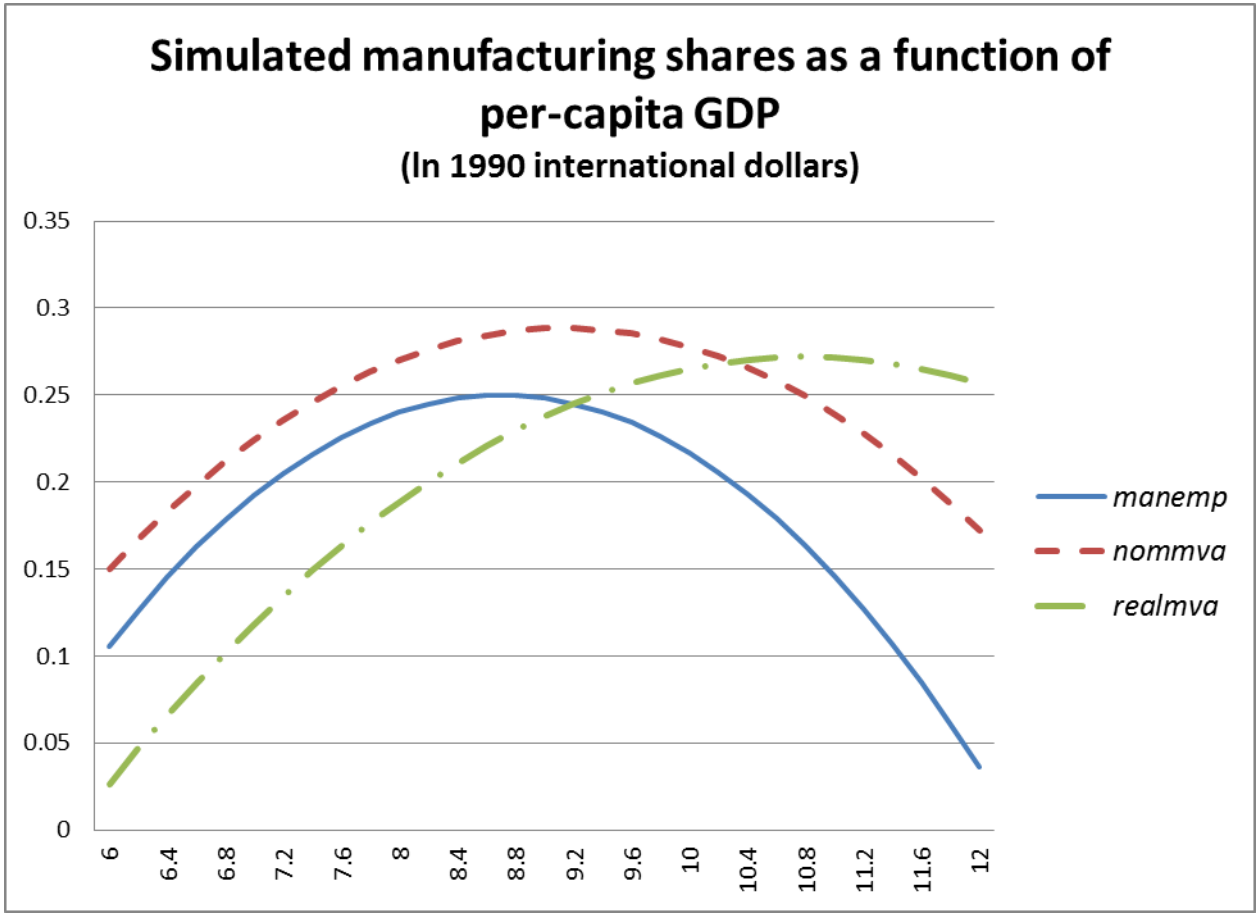
Policies: How did successful countries promote rapid industrialization?

- macro “fundamentals”
  - *reasonably* stable fiscal and monetary policies
  - *reasonably* business-friendly policy regimes
  - steady investment in human capital and institutions
    - but more important for sustaining growth past middle income than launching it
- pragmatic, opportunistic, often “unorthodox” government policies to stimulate domestic manufacturing industries
  - protection of home market, subsidization of exports, managed currencies, local-content rules, development banking, special investment zones, … with specific form varying across contexts
- a development-friendly global context
  - access to markets, capital and technologies of advanced countries
  - benign neglect towards industrial policies in developing countries

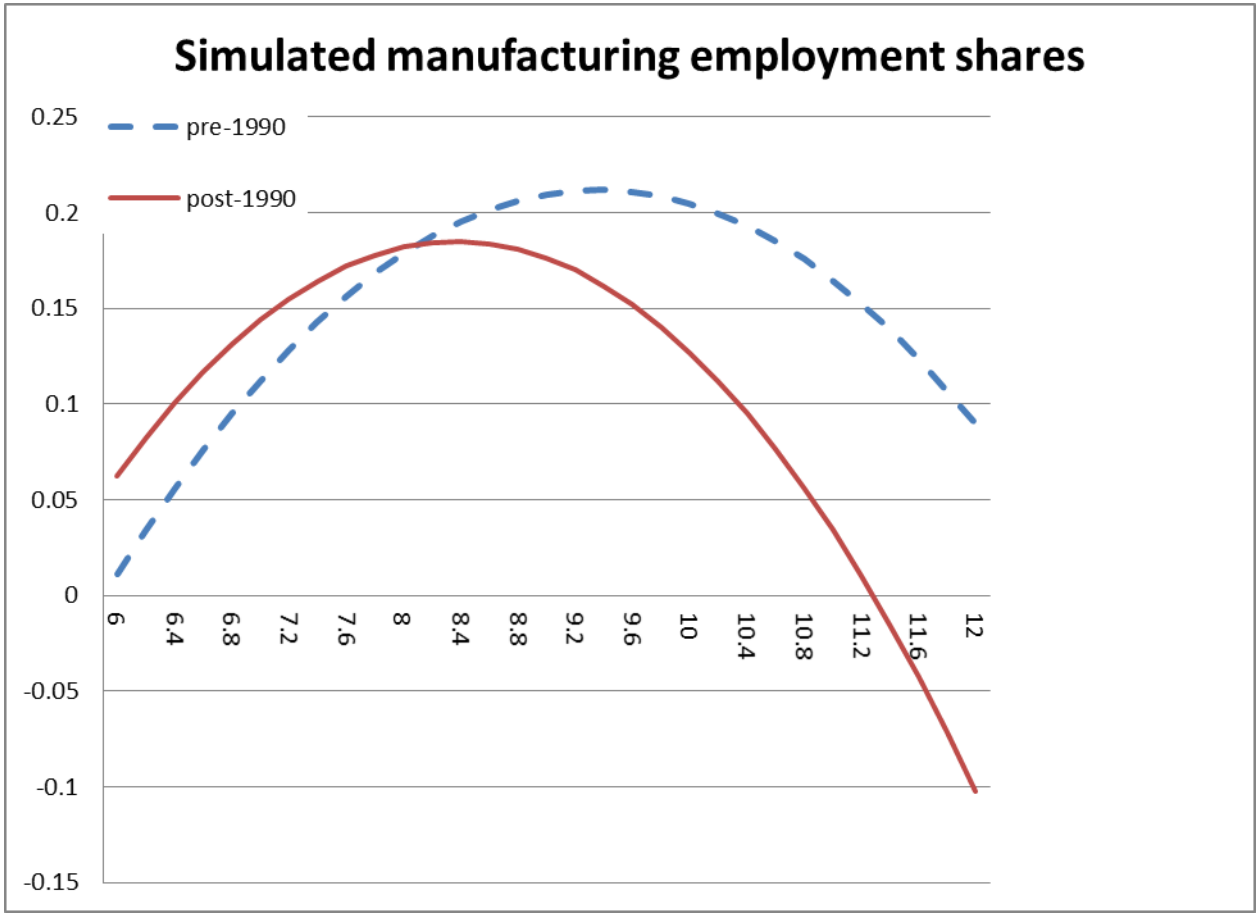
No more growth miracles?

- The uncertain prospects of industrialization
  - globalization and the division of labor
  - technology and skill-intensity
- Recent evidence

The manufacturing curve



Employment: pre- and post-1990



Real MVA: pre- and post-1990

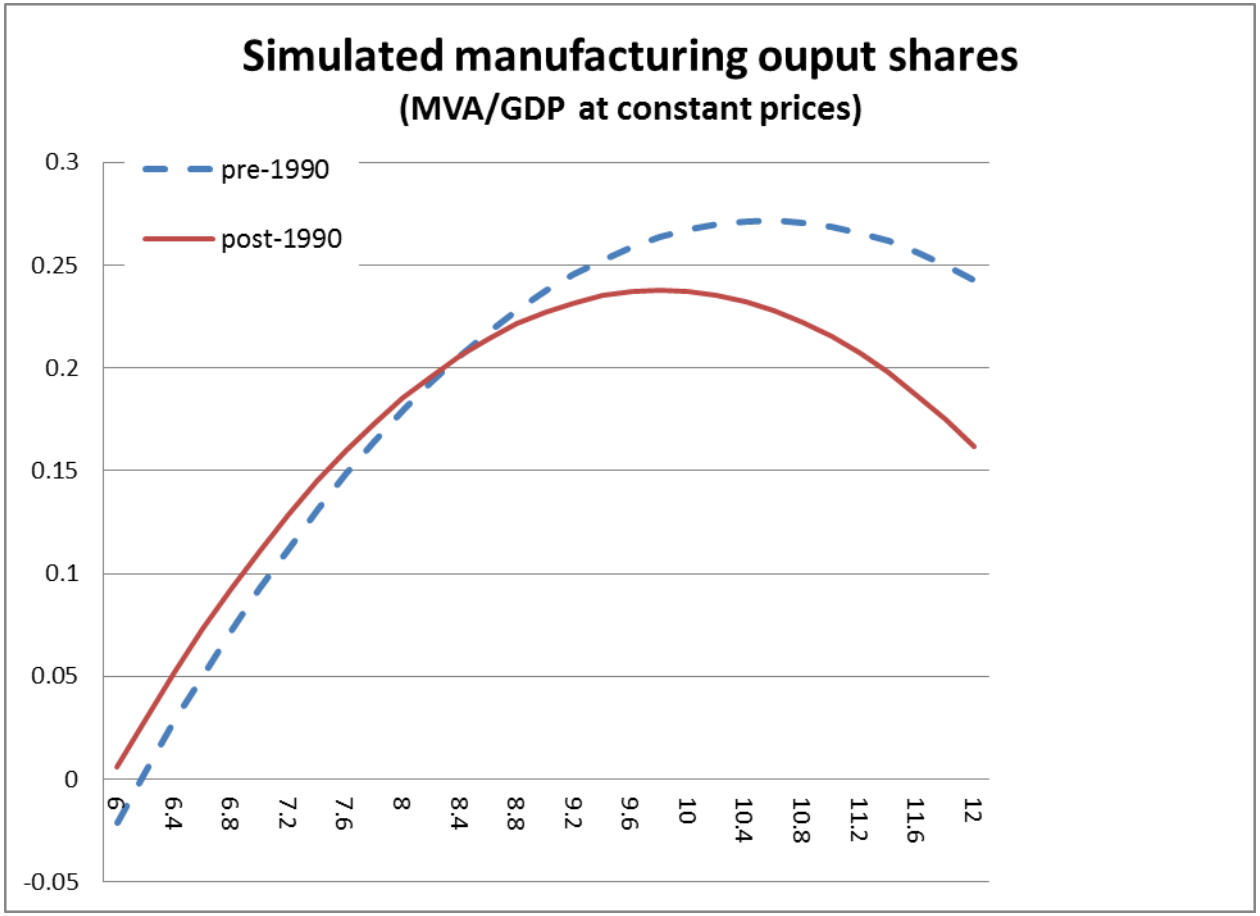


Table 3: Country groups, *manemp*

	all countries	*developed countries*	*Latin America*	*Asia*	*Sub-Saharan Africa*	*Sub-Saharan Africa (excl. Mauritius)*
ln population	**0.122***	**-0.652***	**0.191***	**0.789***	**0.199***	**0.178***
	(0.021)	**(0.122)**	**(0.032)**	**(0.102)**	**(0.019)**	**(0.014)**
ln population squared	**-0.001**	**0.017***	**-0.003***	**-0.025***	**-0.005***	**-0.004***
	(0.001)	**(0.003)**	**(0.001)**	**(0.003)**	**(0.001)**	**(0.000)**
ln GDP per capita	**0.316***	**1.070***	**0.902***	**0.912***	**0.190***	**0.148***
	(0.026)	**(0.088)**	**(0.071)**	**(0.071)**	**(0.024)**	**(0.018)**
ln GDP per capita squared	**-0.018***	**-0.057***	**-0.052***	**-0.051***	**-0.014***	**-0.011***
	(0.002)	**(0.005)**	**(0.004)**	**(0.004)**	**(0.002)**	**(0.001)**
1960s	**-0.018***	**-0.004**	**-0.027***	**-0.003**	**n.a.**	**n.a.**
	(0.004)	**(0.004)**	**(0.004)**	**(0.013)**		
1970s	**-0.033***	**-0.021***	**-0.050***	**0.016**	**0.002**	**-0.003**
	(0.005)	**(0.006)**	**(0.006)**	**(0.016)**	**(0.004)**	**(0.003)**
1980s	**-0.054***	**-0.052***	**-0.079***	**0.022**	**0.004**	**-0.021***
	(0.006)	**(0.007)**	**(0.008)**	**(0.019)**	**(0.007)**	**(0.005)**
1990s	**-0.074***	**-0.072***	**-0.096***	**0.013**	**0.007**	**-0.033***
	(0.008)	**(0.009)**	**(0.010)**	**(0.022)**	**(0.012)**	**(0.007)**
2000s+	**-0.105***	**-0.096***	**-0.131***	**0.004**	**0.007**	**-0.035***
	(0.009)	**(0.010)**	**(0.012)**	**(0.026)**	**(0.014)**	**(0.008)**
country fixed effects	yes	yes	yes	yes	yes	yes
number of countries	42	10	9	11	11	10
number of observations	2,209	575	545	519	524	481

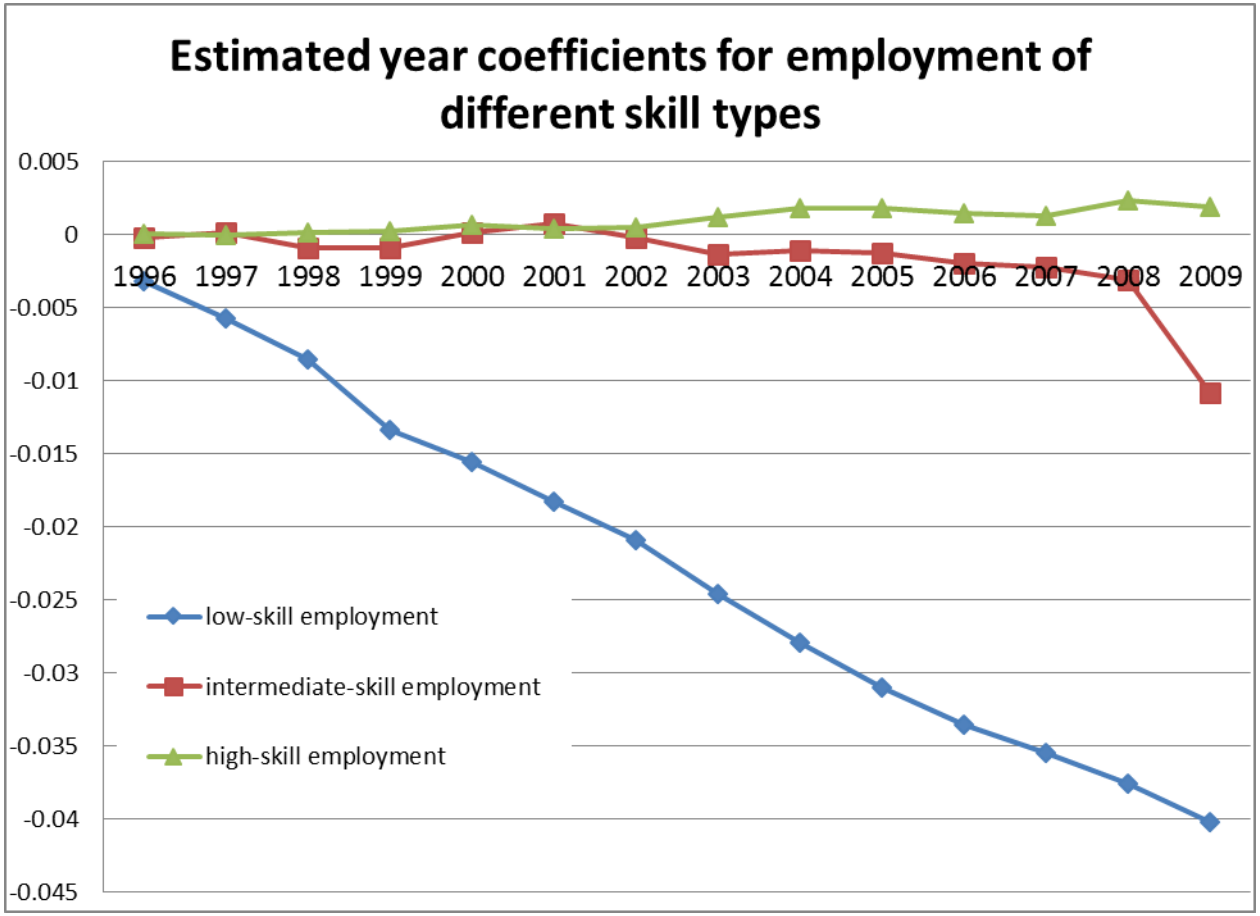
Robust standard errors are reported in parentheses.
Levels of statistitical signficance: *: 99%; **: 95%; ***: 90%.

Table 5: Country groups, *realmva*

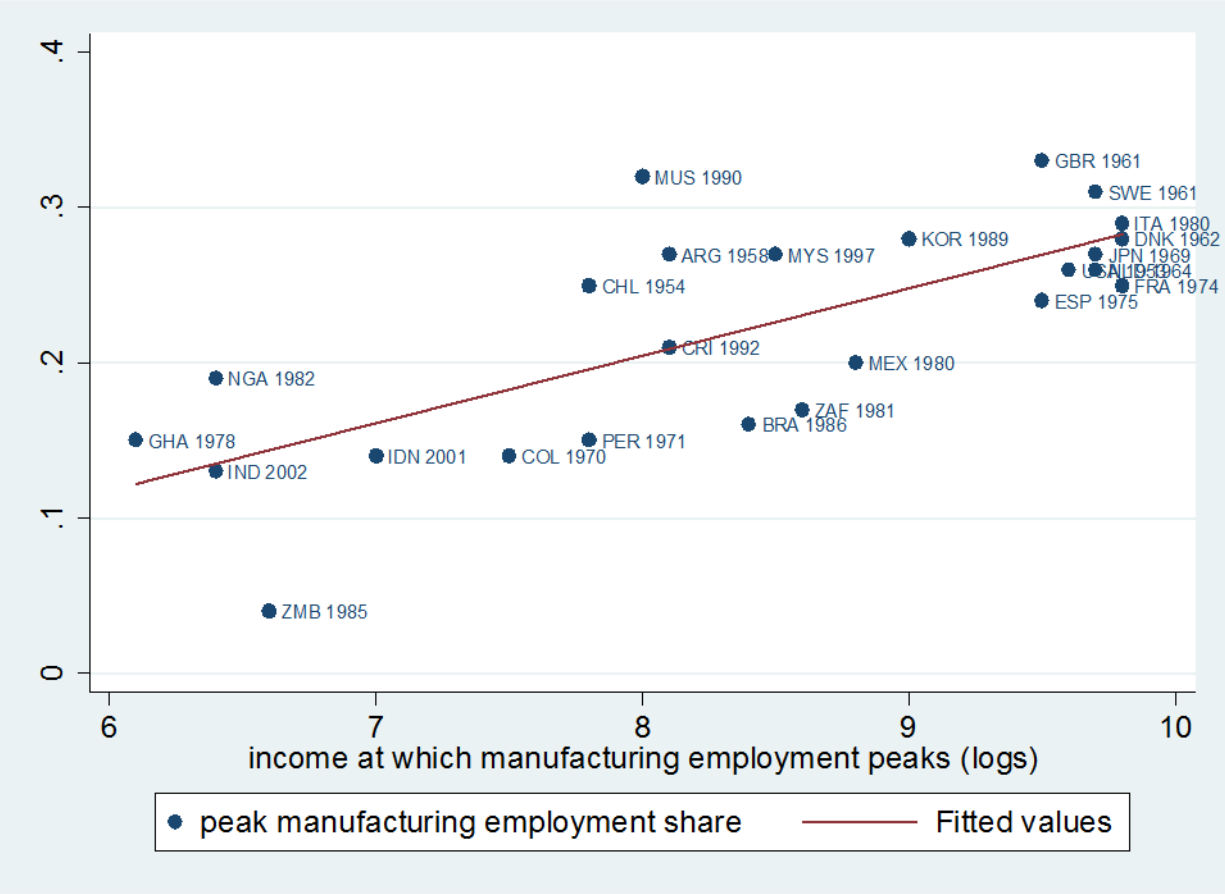
	all countries	*developed countries*	*Latin America*	*Asia*	*Sub-Saharan Afirca*	*Sub-Saharan Afirca (excl. Mauritius)*
ln population	**-0.039**	**-4.564***	**0.263***	**0.251***	**0.062****	**0.053*****
	(0.025)	**(0.776)**	**(0.027)**	**(0.084)**	**(0.029)**	**(0.031)**
ln population squared	**0.003***	**0.113***	**-0.004***	**-0.011***	**-0.001**	**-0.000**
	(0.001)	**(0.019)**	**(0.001)**	**(0.003)**	**(0.001)**	**(0.001)**
ln GDP per capita	**0.262***	**0.778***	**-0.135****	**0.737***	**0.123***	**0.106***
	(0.027)	**(0.129)**	**(0.059)**	**(0.040)**	**(0.025)**	**(0.024)**
ln GDP per capita squared	**-0.012***	**-0.036***	**0.006*****	**-0.038***	**-0.009***	**-0.008***
	(0.002)	**(0.008)**	**(0.003)**	**(0.003)**	**(0.002)**	**(0.002)**
1960s	**-0.028***	**-0.021*****	**-0.011***	**0.011*****	**n.a.**	**n.a.**
	(0.007)	**(0.011)**	**(0.004)**	**(0.006)**		
1970s	**-0.026***	**0.007**	**-0.017***	**0.027***	**0.017***	**0.012***
	(0.008)	**(0.015)**	**(0.006)**	**(0.010)**	**(0.005)**	**(0.004)**
1980s	**-0.034***	**0.006**	**-0.052***	**0.034****	**0.015****	**-0.004**
	(0.009)	**(0.018)**	**(0.007)**	**(0.013)**	**(0.006)**	**(0.006)**
1990s	**-0.040***	**0.013**	**-0.078***	**0.041****	**0.011**	**-0.022***
	(0.010)	**(0.023)**	**(0.008)**	**(0.017)**	**(0.009)**	**(0.008)**
2000s+	**-0.059***	**0.021**	**-0.101***	**0.044****	**-0.003**	**-0.042***
	(0.011)	**(0.027)**	**(0.010)**	**(0.020)**	**(0.011)**	**(0.010)**
country fixed effects	yes	yes	yes	yes	yes	yes
number of countries	42	10	9	11	11	10
number of observations	2,302	592	556	577	530	487

Robust standard errors are reported in parentheses.
Levels of statistitical signficance: *: 99%; **: 95%; ***: 90%.

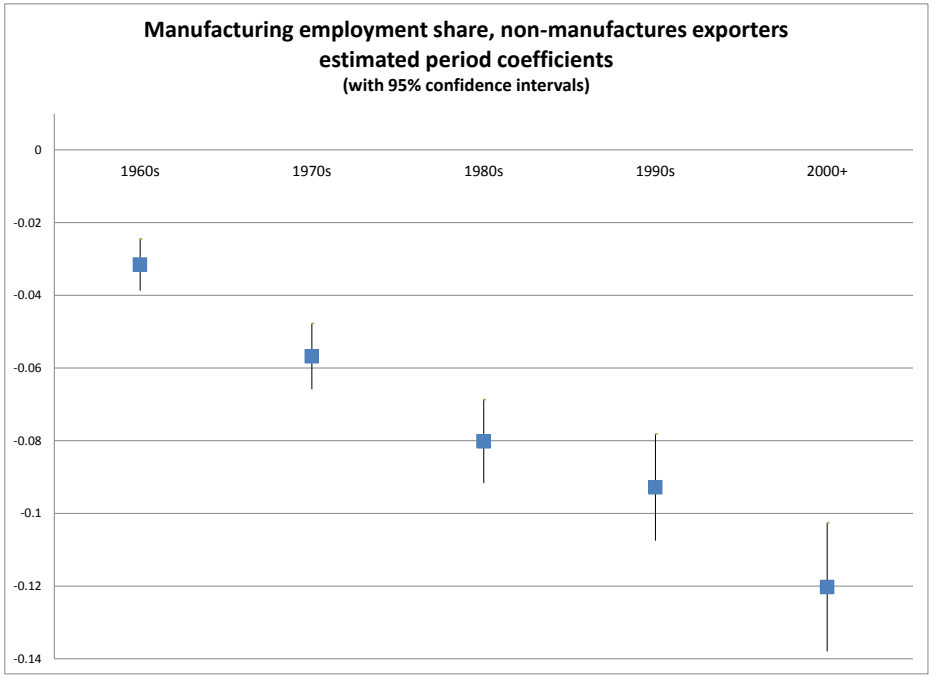
Employment de-industrialization by skill type

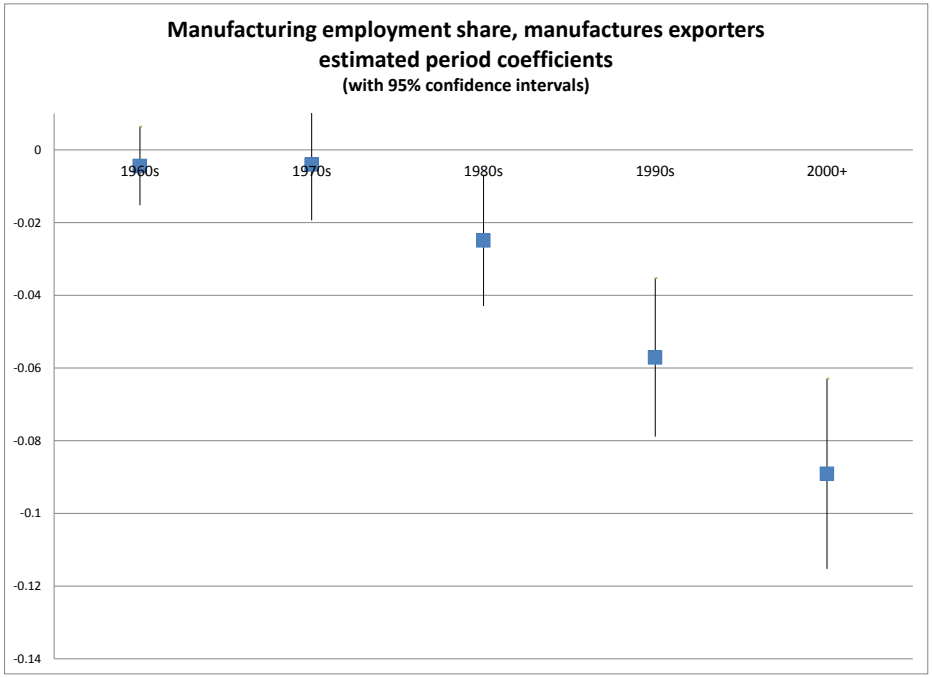


Premature de-industrialization

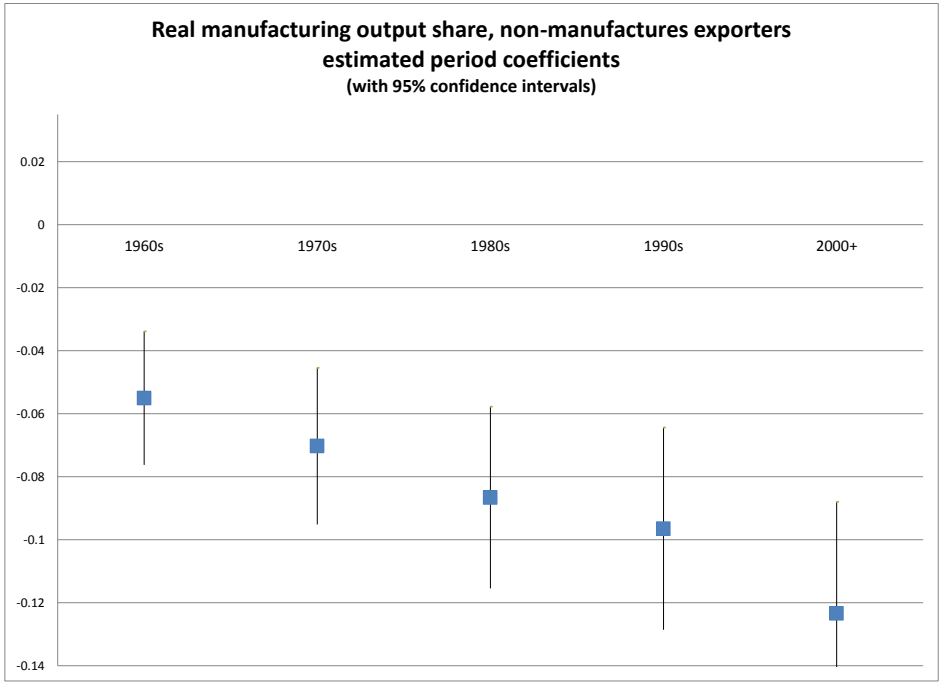


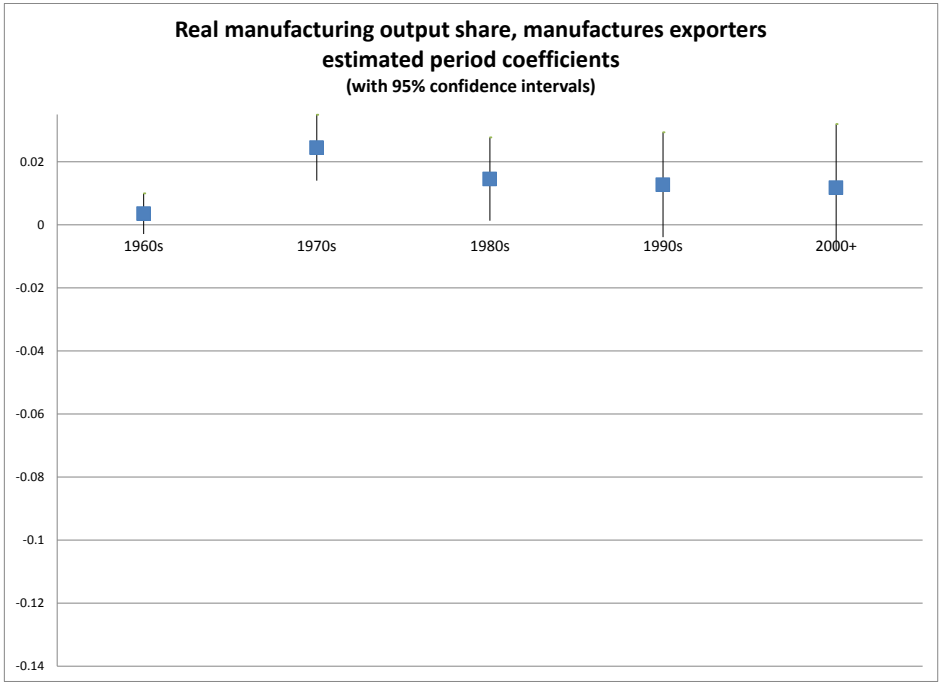
Employment: manufactures and non-manufactures exporters





Real MVA: manufactures and non-manufactures exporters





Global value chains facilitate entry to manufacturing but diminish returns from it

The Ratio of Value-Added to Gross Exports for the Top 20 Exporting Countries

	WIOD 2008	*WIOD Change 1995–2008*	*Johnson–Noguera Change 1970–2008*
Germany	0.69	−0.10	−0.16
United States	0.78	−0.05	−0.14
China	0.75	−0.09	−0.20
Japan	0.80	−0.12	−0.09
United Kingdom	0.78	−0.01	−0.04
France	0.71	−0.08	−0.13
Italy	0.73	−0.07	−0.12
Netherlands	0.62	−0.06	−0.11
Canada	0.76	0.02	−0.11
South Korea	0.58	−0.18	−0.18
Russia	0.92	0.00	
Belgium	0.53	−0.07	−0.15
Spain	0.69	−0.09	−0.17
Taiwan	0.51	−0.16	
Mexico	0.70	−0.03	−0.21
India	0.78	−0.12	−0.20
Sweden	0.66	−0.08	−0.13
Australia	0.84	−0.04	−0.06
Brazil	0.86	−0.05	−0.10
Austria	0.65	−0.10	−0.17
Minimum	0.51	−0.18	−0.21
Median	0.72	−0.08	−0.14
Maximum	0.92	0.02	−0.04

Sources: World Input-Output Database (WIOD) and author's calculations, Johnson and Noguera (2014).
Notes: The column "WIOD 2008" is the ratio of value-added exports to gross exports for each country in 2008 from the World Input-Output Database. The column "WIOD change 1995–2008" is the change in this ratio from 1995 to 2008. The column "Johnson–Noguera change 1970–2008" is the change in the ratio of value-added exports to gross exports for each country from 1970 to 2008, from Johnson and Noguera (2014). Blank entries in that column reflect missing data. Exporting countries are ordered top to bottom by total gross exports in 2008.

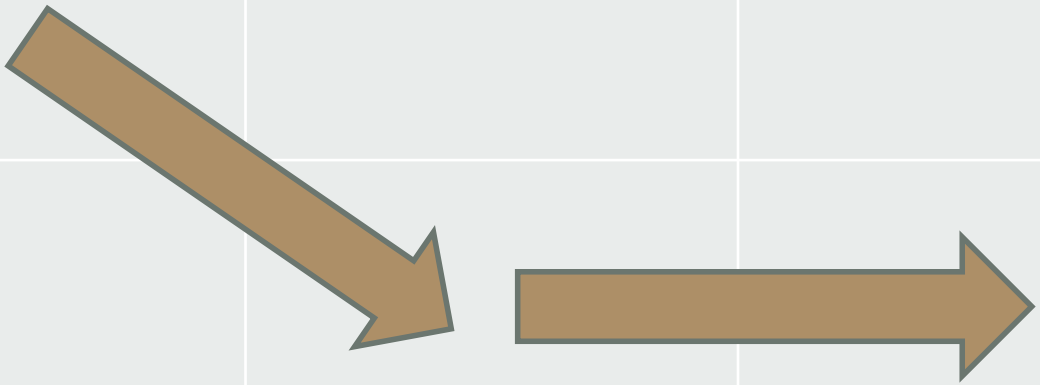
Source: Johnson (2014)

Patterns of structural change

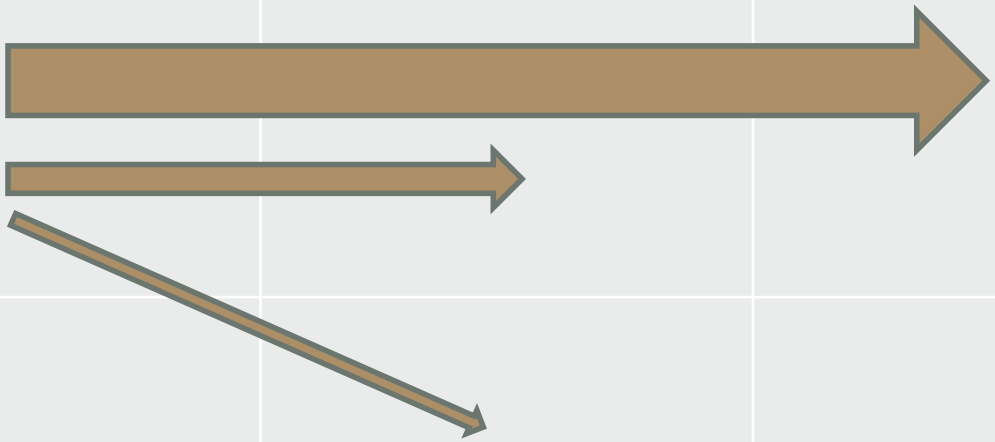
	agriculture	manufacturing	services
informal			
organized			

Patterns of structural change: East Asia and advanced countries

	agriculture	manufacturing	services
informal			
organized			



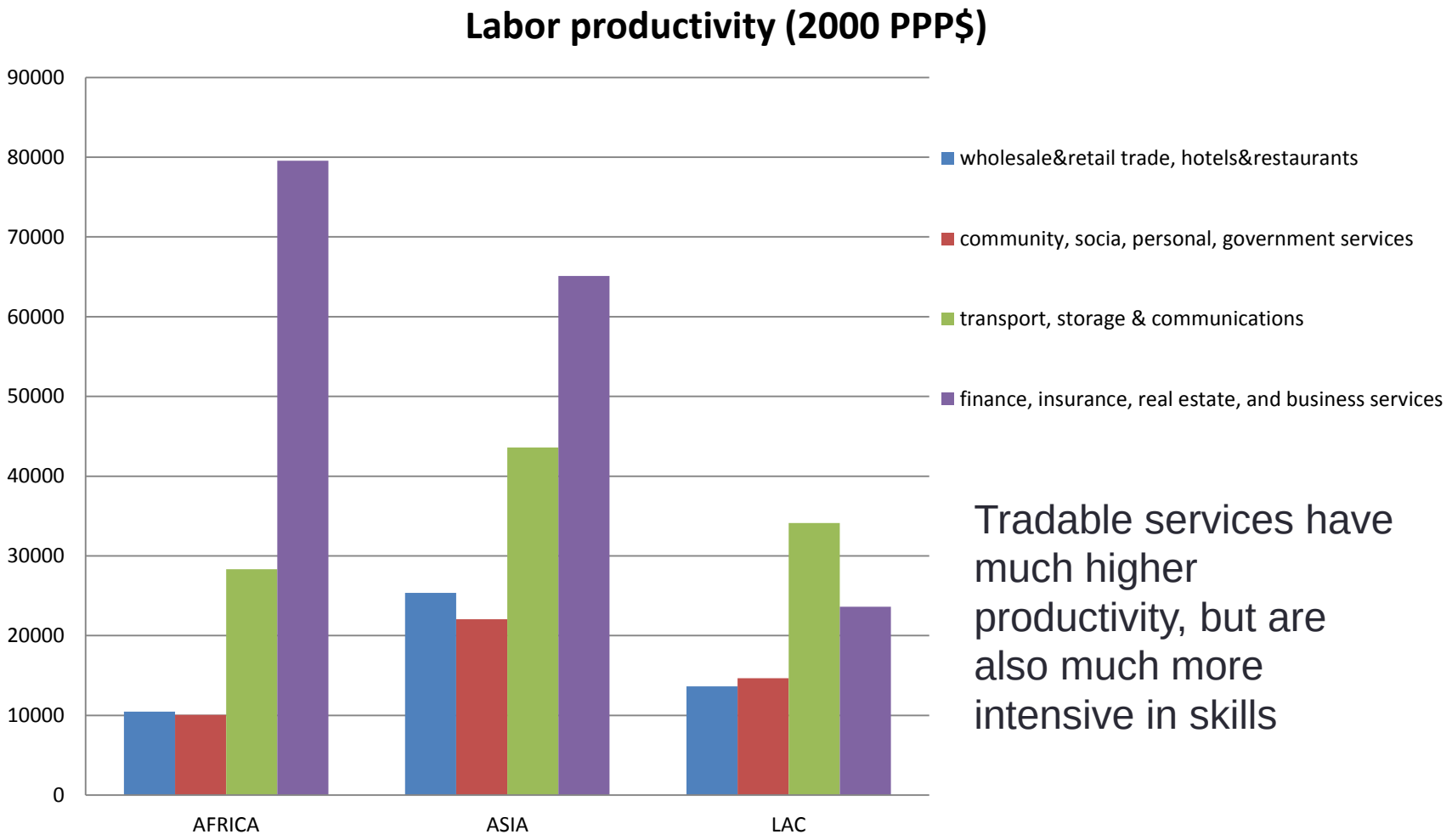
Patterns of structural change: low-income countries today

	agriculture	manufacturing	services
informal			
organized			

Why services are not like manufactures

- High-productivity (tradable) segments of services cannot absorb as much labor
  - since they are typically skill-intensive
  - FIRE, business services
- Low productivity (non-tradable) services cannot act as growth poles
  - since they cannot expand without turning their terms of trade against themselves
  - continued expansion in one segment relies on expansion on others
  - limited gains from sectoral “winners”
  - back to slow accumulating fundamentals (rather than IP)

Dualism in services: across sectors



Tradable services have much higher productivity, but are also much more intensive in skills

Dualism in services: within sectors (I)

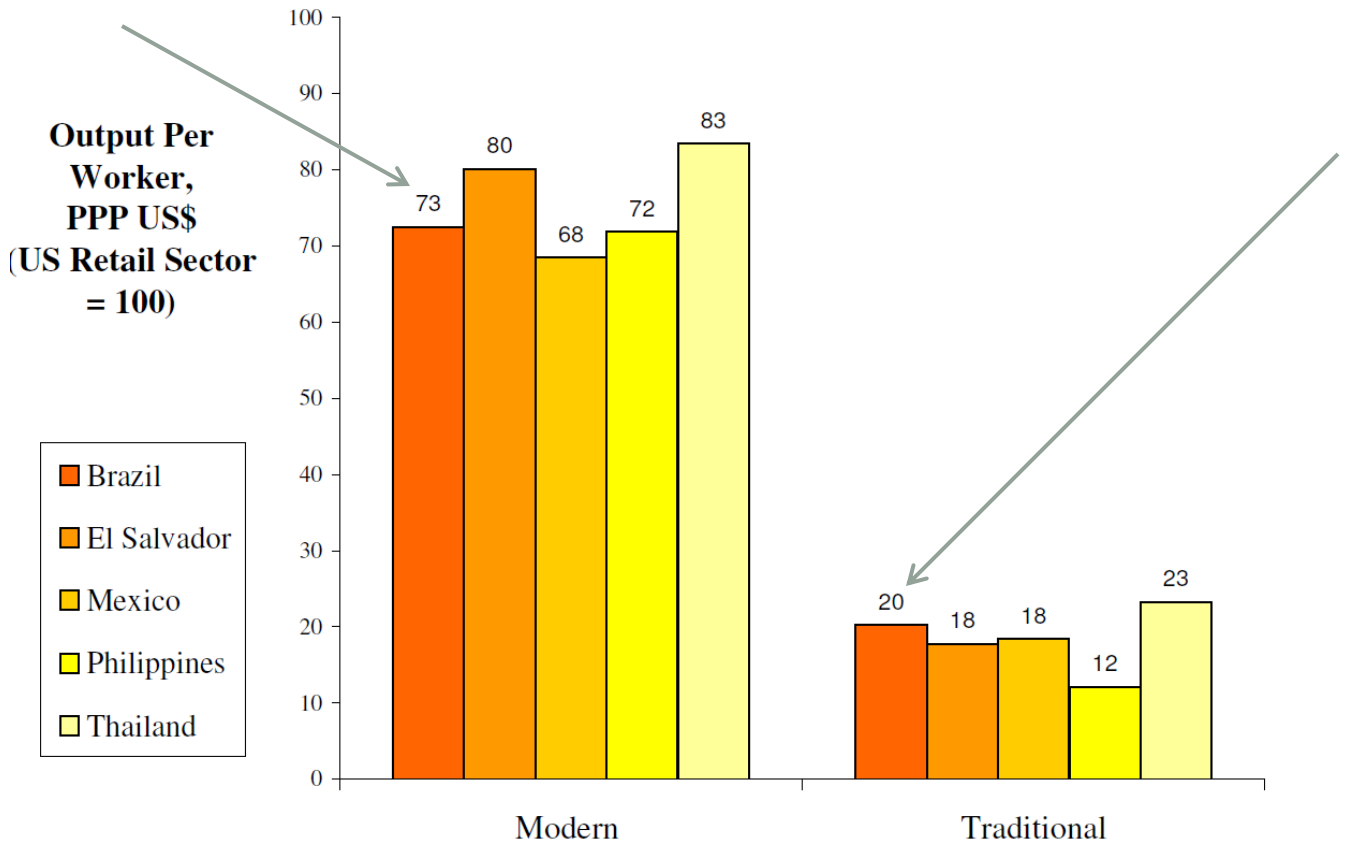
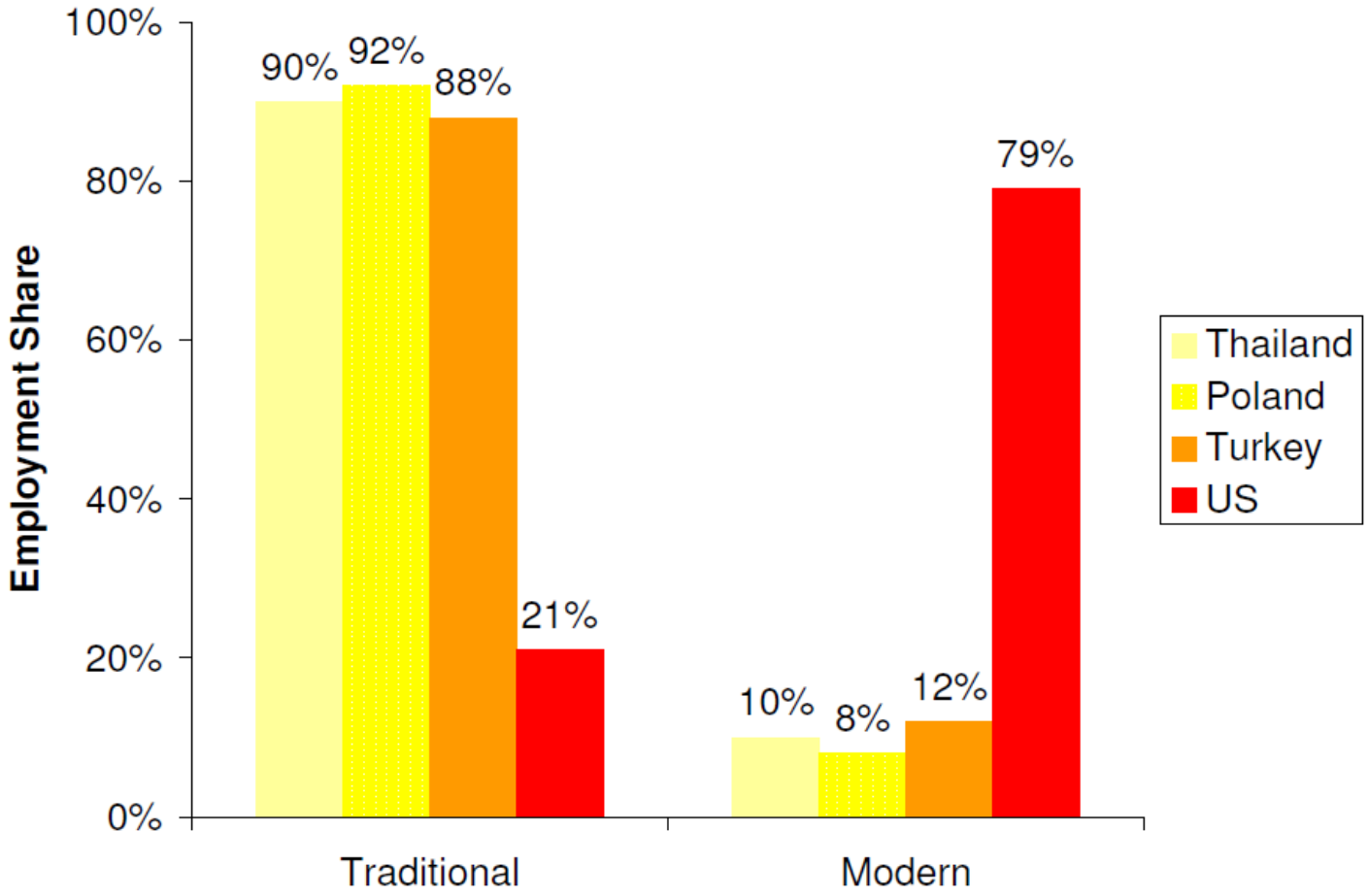


Figure 2: Labor Productivity in Modern and Traditional Stores

Source: McKinsey country studies, via Lagakos (2007)

Dualism in services: within sectors (II)

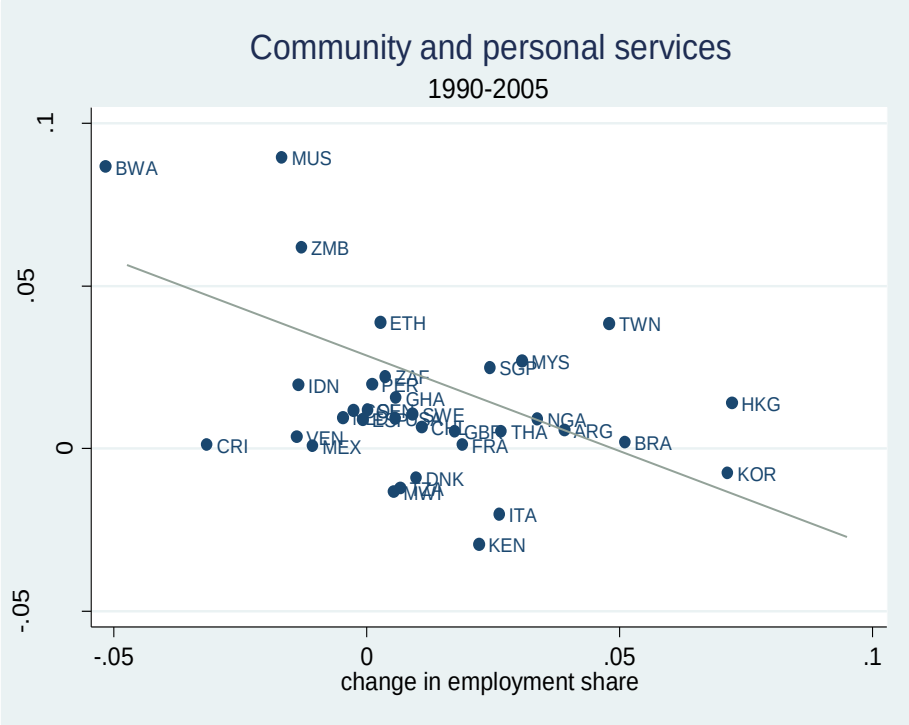


Source: McKinsey country studies, via Lagakos (2007)

A thorny problem: the employment-productivity trade-off in services

- Large part of the problem in services (e.g. retail trade) is preponderance of small, low-productivity firms that absorb excess supply of labor
- Where do people employed in small firms go?

Not many examples of productivity growth and employment expansion in services



Service sectors that have best productivity performance typically shed labor; labor absorbing sectors typically have worst productivity performance.

Source: Author's calculations from GGDC data.

How did manufacturing avoid this problem?

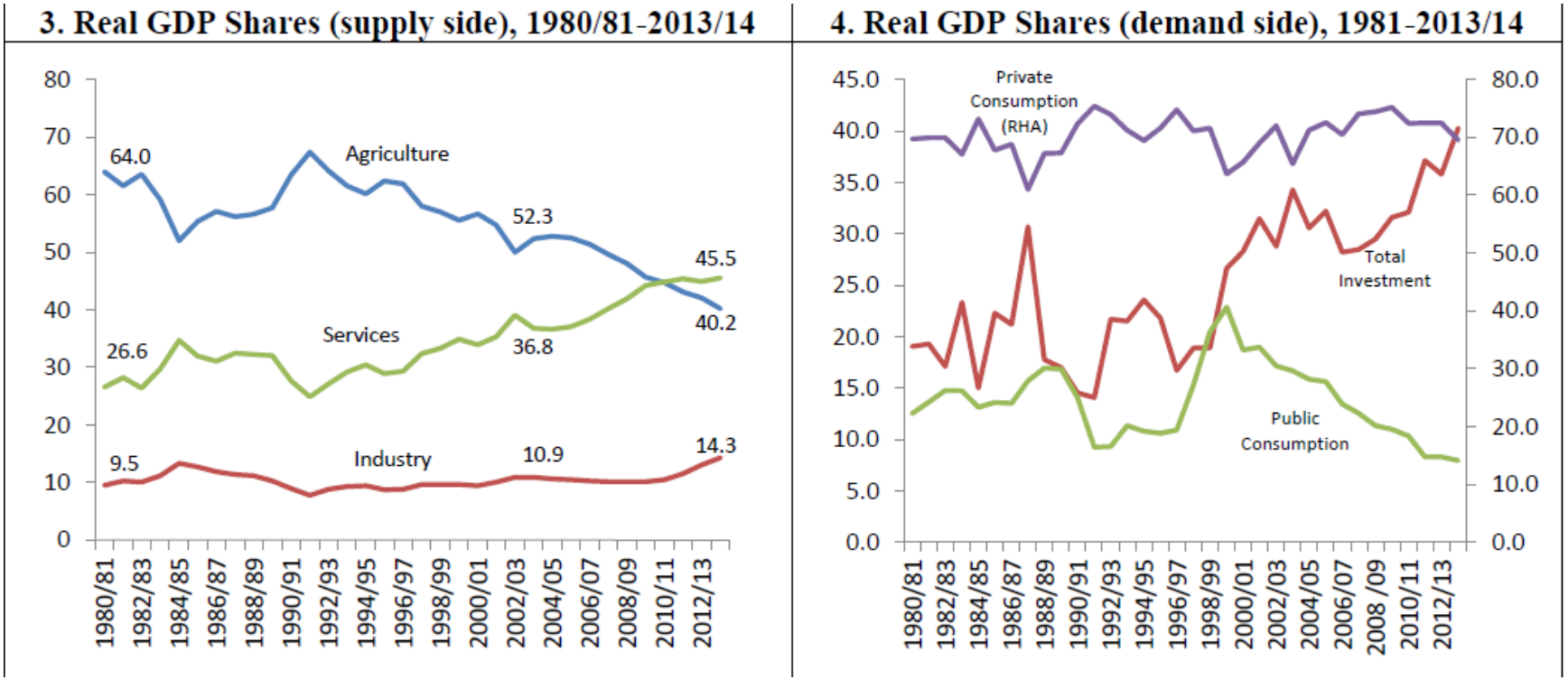
- Key is tradability
- Higher-than-average productivity growth in a tradable sector of (small) open economy translates into greater output
  - and possibly higher employment even if productivity growth is driven by labor-replacing technology
- In non-tradable sectors, the output-boosting effect is attenuated by decline in relative price (and profitability)

Alternative paths to high growth?

$$\begin{aligned} \hat{y} \quad &= \gamma(\ln y^*(\Theta) - \ln y) && (A) \\ &+ \alpha_M \pi_M \beta(\ln y_M^* - \ln y_M) && (B) \\ &+ (\pi_M - \pi_T) d\alpha_M && (C) \end{aligned}$$

1. Enhance growth payoff of investments in capabilities?
2. Expand range of industries with “escalator” properties?

Can public investment lead growth: Ethiopia (and other cases)



Source: World Bank (2015)

GDP growth of more than 10% p.a. over last decade, due in large part to increase in public investment, from 5% to 19% of GDP.

Bottom line

- East Asia style growth miracles are less likely in the future
  - and where they happen, they will not be based on manufactured exports
- Growth in emerging markets have been unsustainably high in last decade, and will come down by a couple of points
- Convergence will continue, but not as rapidly, and in large part because of low growth in advanced economies
- As domestic rather than global trends drive growth, significant heterogeneity in long-term performance across developing countries is likely