Has Sustained Growth Decoupled from Industrialization?

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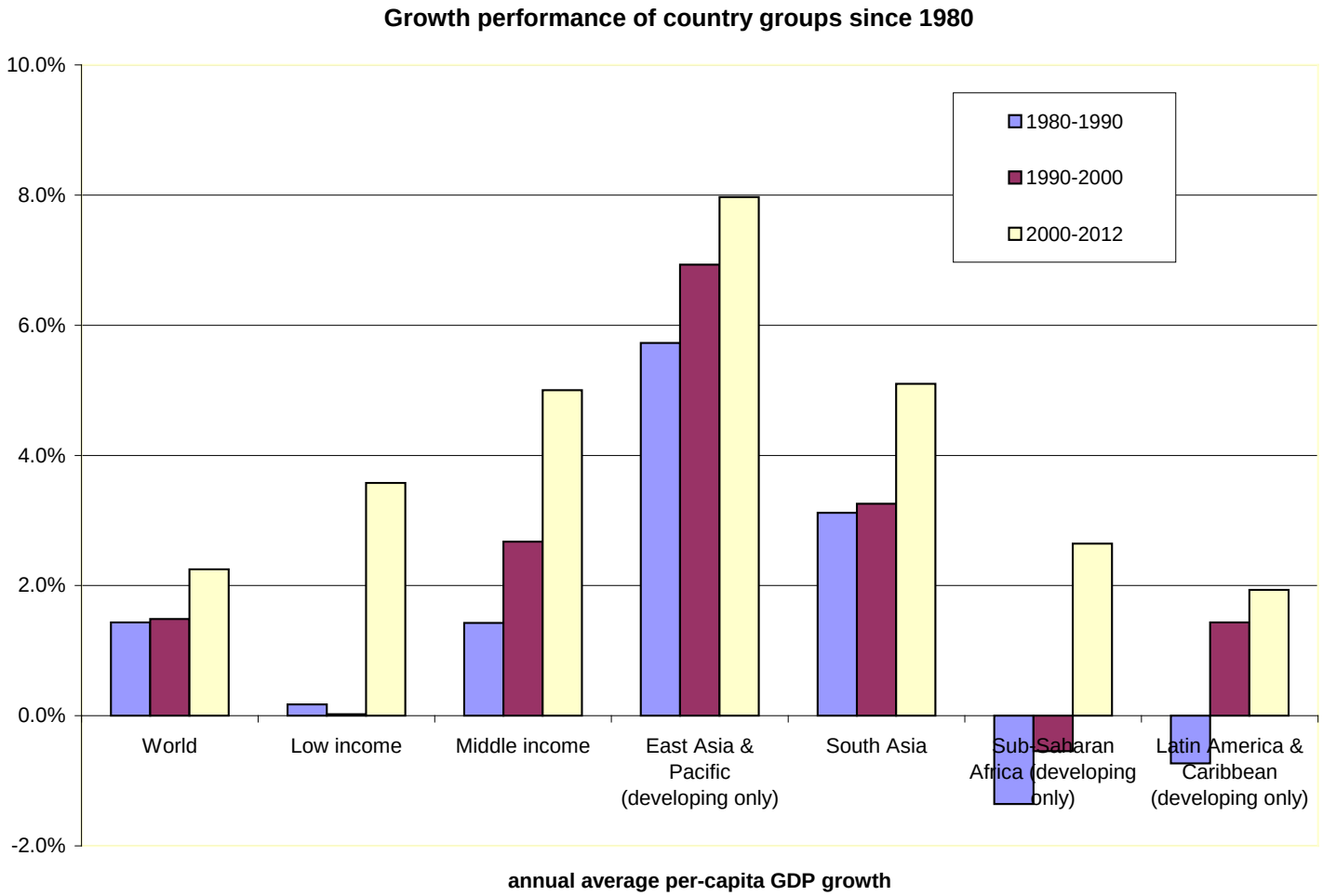
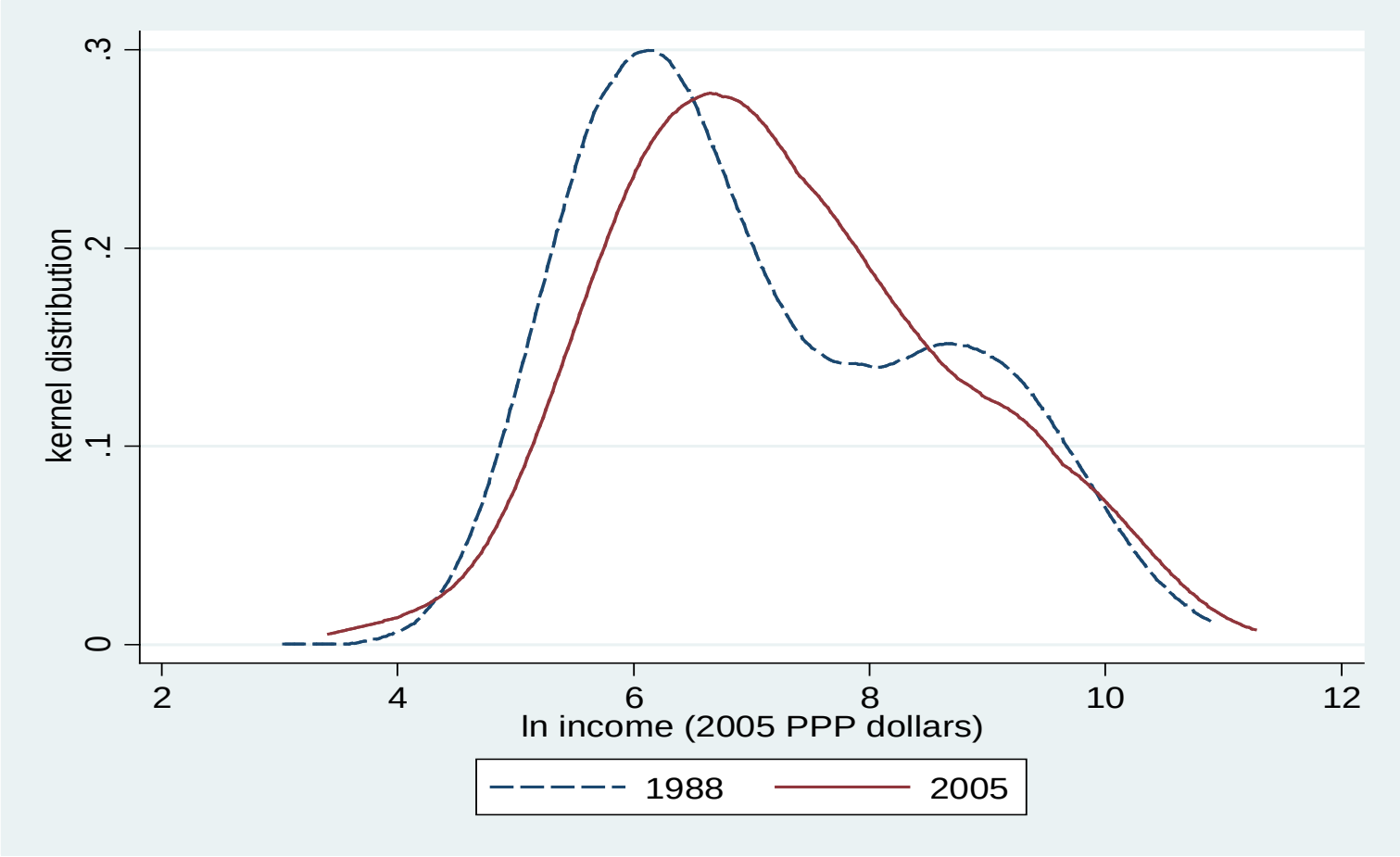
Recent growth performance in the developing world



The emergence of a global middle class?



Global income distribution, 1988 and 2005

Source: Rodrik (2012), via data from Milanovic (2011)

Is rapid convergence here to stay?

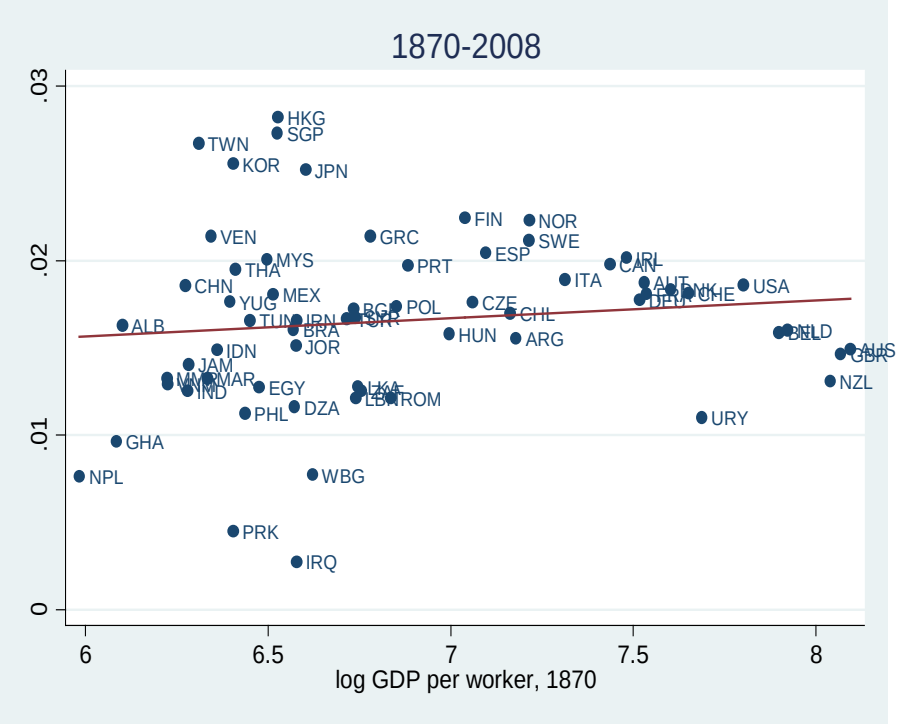
Last two decades have been particularly favorable to developing countries

- high commodity prices
- low interest rates
- plenty of foreign capital
- recovery (from civil wars and macro instability)
- the Chinese exception?

So future may not look like recent past

Need to understand drivers of economic growth

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

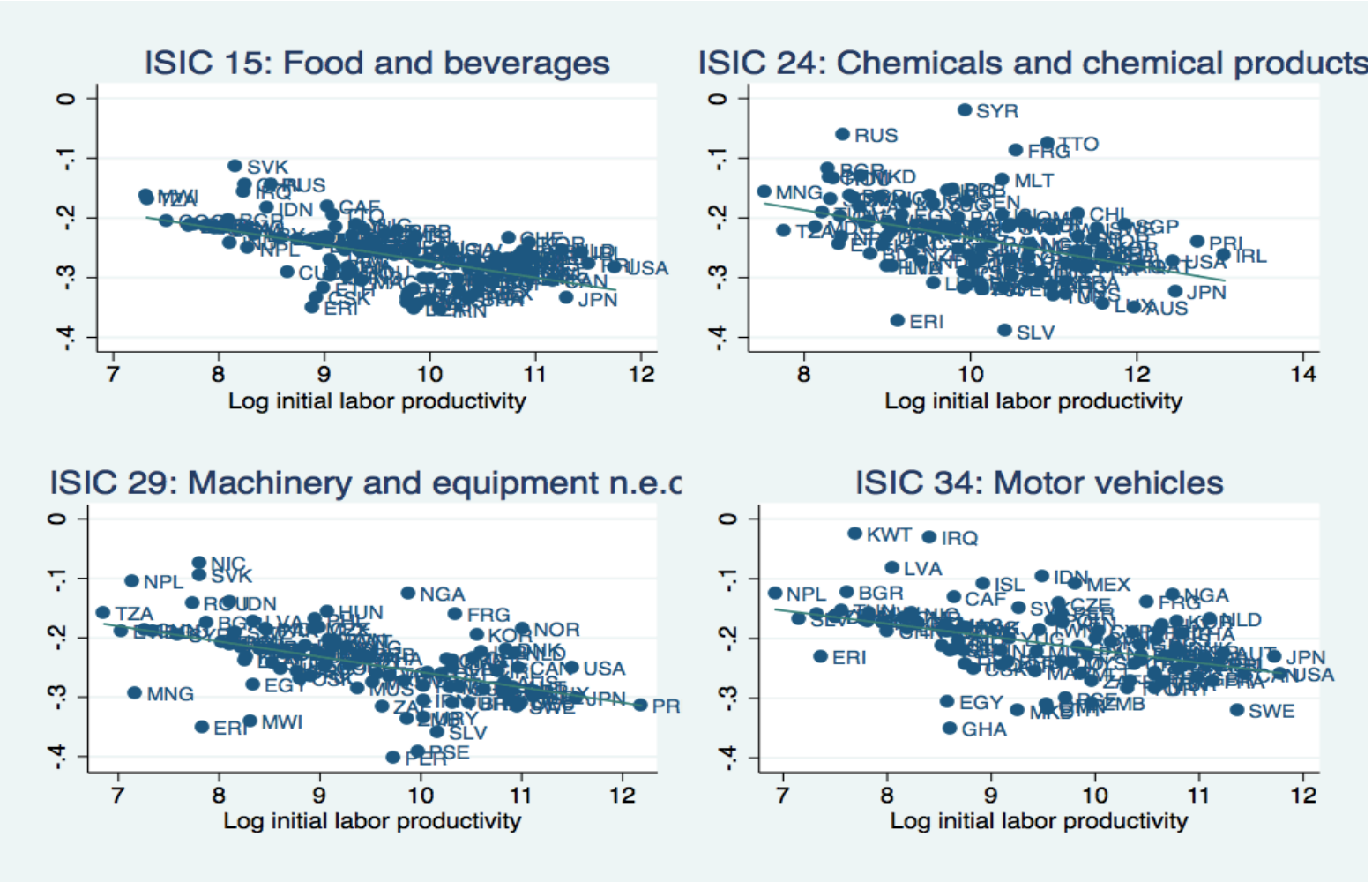
But face other headwinds

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

So conventional theory: convergence is conditional:

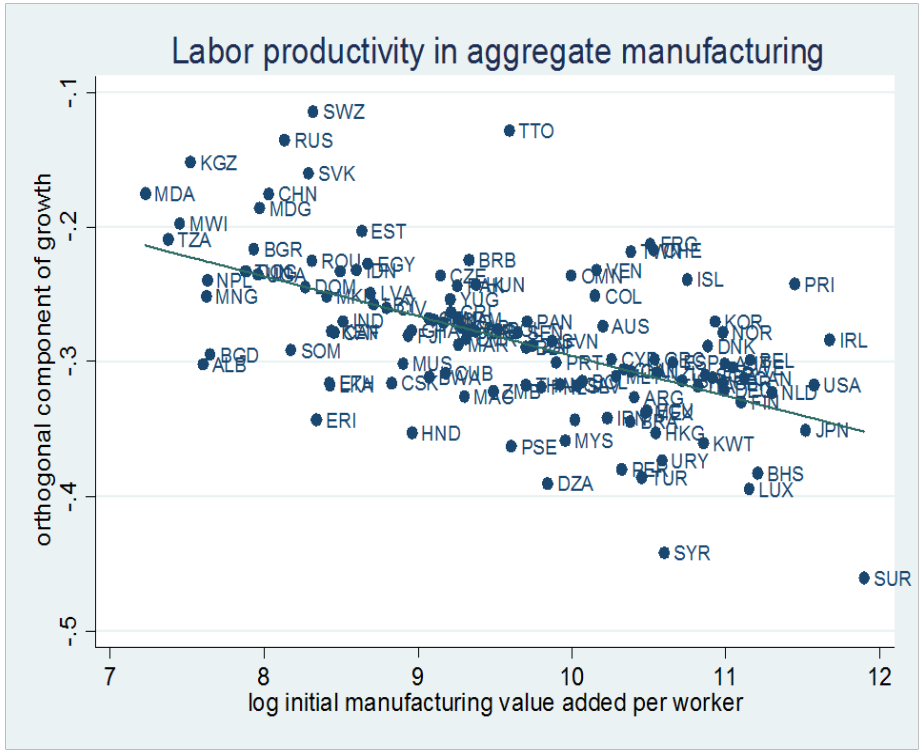
$$\hat{y}_j = \gamma\left(\ln y^*(\Theta_j) - \ln y_j\right)$$

Except, it appears, in (formal) manufacturing industries



Notes: Vertical axis represents growth in labor productivity over subsequent decade (controlling for period fixed effects). Data are for the latest 10-year period available.
Source: Rodrik (2013)

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



$\beta \approx 2.9\%$ (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)

Rapid industrialization has been the common feature of countries that sustained high growth

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

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Asian manufacturing miracles

Industrialization and de-industrialization were at the root of the "Great Divergence" as well

Table III.1: Industrialization before the First World War

Per-capita levels of industrialization (U.K = 100 in 1900)

	1750	1800	1830	1860	1880	1900	1913
Developed countries	8	8	11	16	24	35	55
U.K.	10	16	25	64	87	100	115
U.S.	4	9	14	21	38	69	126
Germany	8	8	9	15	25	52	85
Japan	7	7	7	7	9	12	20
Developing countries	7	6	6	4	3	2	2
China	8	6	6	4	4	3	3
India	7	6	6	3	2	1	2
Brazil	n.a.	n.a.	n.a.	4	4	5	7
Mexico	n.a.	n.a.	n.a.	5	4	5	7

Source: Bairoch (1982)

Putting it together

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

Putting it together

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

(A) Conditional convergence, dependent on accumulation of capabilities (human capital and institutional quality)

-- a slow process

-- evidence indicates weak growth effects from education and improvements in institutions

Putting it together

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(B) Unconditional convergence in (formal) manufacturing

-- rapid, but…

Putting it together

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

(C) Structural change

-- industrialization in particular

So why isn't everyone already rich?

- Manufacturing industry is typically a very small share of economy in poor countries ($\alpha < .10$)
  - especially formal manufacturing, where we observe unconditional convergence
- And industrialization ($d\alpha$) typically takes place very slowly, despite very large productivity gaps between manufacturing and non-manufacturing parts of the economy
  - expansion of formal manufacturing especially slow, if any

The African example: (lack of) industrialization

Table 2. GDP, employment, and relative productivity levels across countries and sectors, 1960 -2010

	Value added				Employment				Relative productivity levels			
	1960	1975	1990	2010	1960	1975	1990	2010	1960	1975	1990	2010
Agriculture	**37.6**	**29.2**	**24.9**	**22.4**	**72.7**	**66.0**	**61.6**	**49.8**	**0.5**	**0.4**	**0.4**	**0.4**
Industry	**24.3**	**30.0**	**32.6**	**27.8**	**9.3**	**13.1**	**14.3**	**13.4**	**4.4**	**3.7**	**3.5**	**2.6**
Mining	8.1	6.2	11.2	8.9	1.7	1.5	1.5	0.9	15.7	22.4	23.3	19.5
Manufacturing	9.2	14.7	14.0	10.1	4.7	7.8	8.9	8.3	2.5	2.8	2.4	1.6
Other industry	7.1	9.2	7.3	8.9	3.0	3.8	3.9	4.2	8.5	5.8	5.3	2.9
Services	**38.1**	**40.7**	**42.6**	**49.8**	**18.0**	**20.9**	**24.1**	**36.8**	**2.7**	**2.5**	**2.4**	**1.6**
Market services	24.5	25.5	28.1	34.0	8.8	10.3	12.9	23.5	4.5	3.4	3.0	1.8
Distribution services	*21.5*	*20.8*	*22.7*	*25.4*	*8.2*	*9.5*	*11.4*	*20.1*	*4.6*	*3.2*	*2.7*	*1.5*
Fin. and bus. ser.	*3.0*	*4.7*	*5.4*	*8.6*	*0.6*	*0.8*	*1.5*	*3.4*	*6.1*	*8.9*	*10.4*	*8.1*
Non-market services	13.6	15.2	14.4	15.8	9.2	10.6	11.2	13.3	1.8	1.7	1.8	1.3
Government services	*10.5*	*11.7*	*11.5*	*12.2*	*4.2*	*5.0*	*6.4*	*8.7*	*2.8*	*2.5*	*2.5*	*1.7*
Other services	*3.1*	*3.5*	*2.9*	*3.5*	*5.4*	*6.1*	*5.3*	*5.4*	*0.9*	*0.9*	*1.0*	*1.0*
Total economy	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**1.0**	**1.0**	**1.0**	**1.0**

Source: de Vries, Timmer, and de Vries (2013)

Informality dominates in African manufacturing

Manufacturing employment shares, GGDC and UNIDO datasets, 1990

(percent)

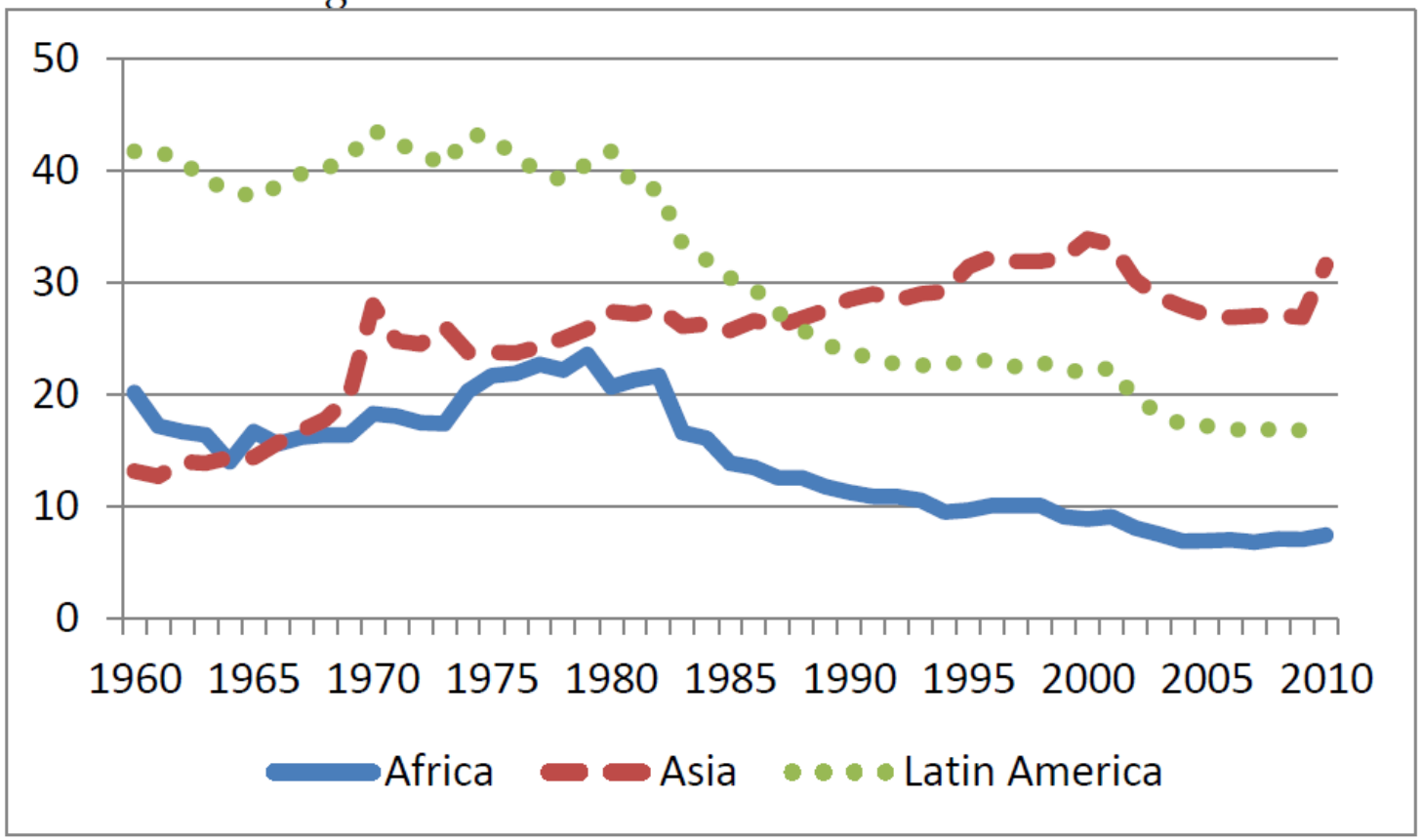
	year	UNIDO	GGDC	ratio
BWA	2008	3.6	6.4	56%
ETH	2008	0.3	5.3	6%
GHA	2003	1.0	11.2	9%
KEN	2007	1.5	12.9	12%
MUS	2008	16.3	21.5	76%
MWI	2008	0.7	4.3	16%
NGA	1996	1.4	6.6	21%
SEN	2002	0.5	8.9	6%
TZA	2007	0.5	2.3	22%
ZAF	2008	7.0	13.1	53%
ZMB	1994	1.5	2.9	52%

Difference in coverage between two data sets: GGDC (which covers informal employment) and UNIDO (which is mostly formal, registered firms)

Which may be why (aggregate) manufacturing in Africa is not converging

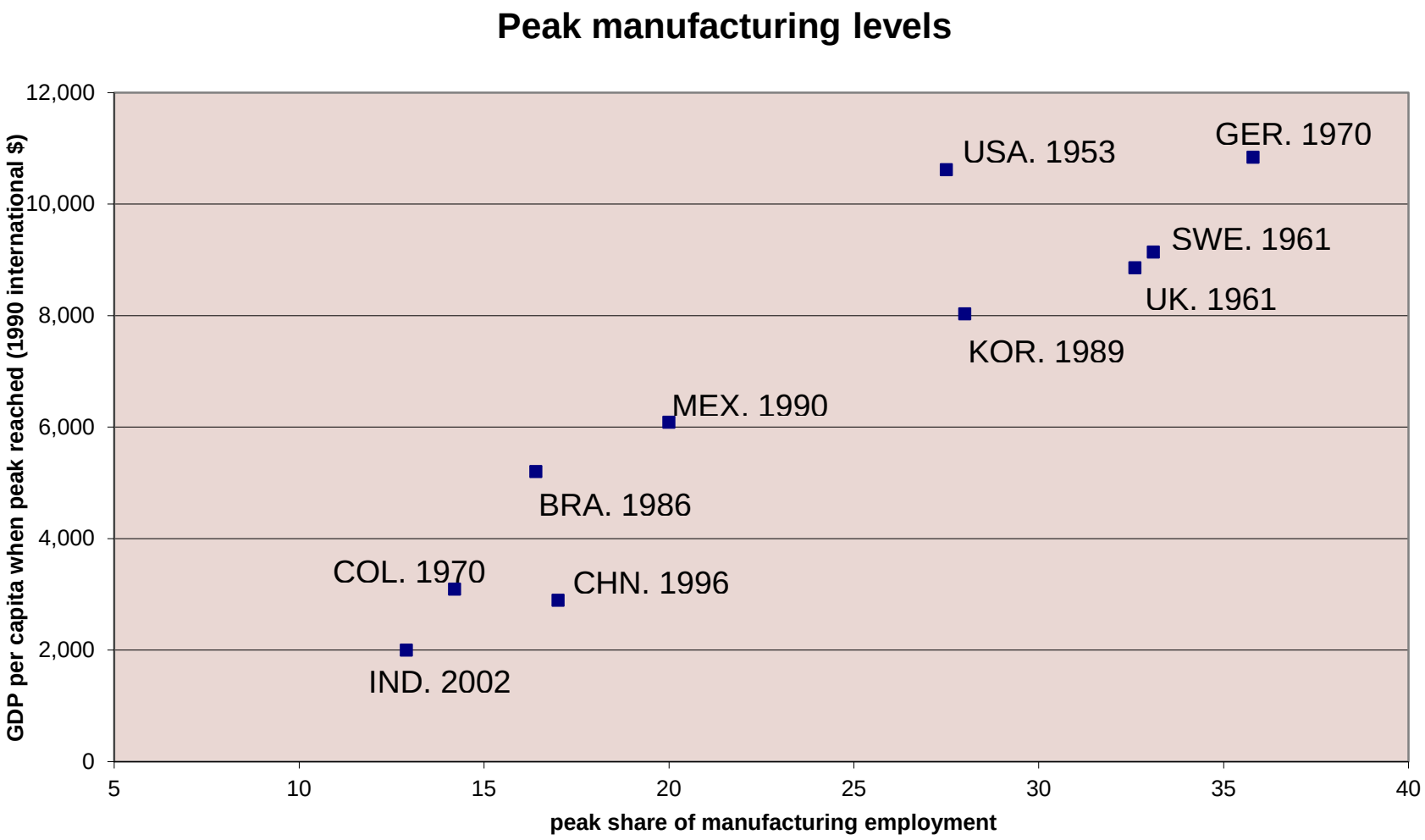
Figure 1. An international perspective on productivity (USA = 100)

A. manufacturing



Source: de Vries, Timmer, and de Vries (2013)

Premature deindustrialization is increasingly common



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?

So baseline

- 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