

Advanced Topics in Trade

Lecture 9 - Trade, Growth, and Industrial Policy

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Today's Agenda

- ▶ Frankel and Romer (1999) "Does Trade Cause Growth?"

Three generations according to Lindauer and Prichett (2002):

- ▶ The first generation (1945 to 1982): governments should drive industrialization.
- ▶ The second generation (1982 to 2002): the "Washington Consensus".
- ▶ The third generation (2002 to now): join rather than build a global supply chain (the second unbundling).
- ▶ 3 papers in the transition between the second and the third generations.
 - ▶ Sachs and Warner (1995) "Economic Reform and the Process of Global Integration"
 - ▶ Rodriguez and Rodrik (1999) "Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence."
 - ▶ Rodrik (2004) "Industrial Policies in the 21st Century."

First-order Question: Does Trade Cause Growth?

- ▶ Frankel and Romer (AER 1999) (FR hereafter).
- ▶ Before that seminal paper, there has been evidence of a positive correlation between GDP per capita (or its growth) and trade openness.
- ▶ However, trade share may be endogenous (i.e., causal linkage is unclear).
- ▶ Moreover, countries that adopted trade policies usually implemented a host of other domestic policies (e.g., financial market liberalization, reducing entry barriers for private firms, etc.)
- ▶ So a paper that proposes an instrument for trade openness, even an imperfect one, would attract a lot of attention.

Idea of the instrument

- ▶ FR (99) use the geographic location of a country to predict its "natural openness".



Regression Specifications

- ▶ Goal:

$$\ln Y_i = \alpha + \beta T_i + \gamma W_i + \varepsilon_i$$

- ▶ where Y_i is GDP per capita of country i , T_i is trade flows of country i (imports plus exports).
- ▶ First Stage: Use proximity to other countries as an exogenous determinant of trade flows (T_i).

$$T_i = \psi + \phi P_i + \delta_i$$

- ▶ where P_i is the predicted trade (as a share of GDP) of country i .

How to estimate proximity?



$$\ln(\tau_{ij}/GDP_i) = a_0 + a_1 \ln D_{ij} + a_2 \ln S_i + a_3 \ln S_j + e_{ij}$$

- ▶ where τ_{ij} is the gross trade flows between countries i and j ; D_{ij} is the geographic distance between i and j ; S stands for country size.
- ▶ Predicted trade volume as a share of GDP (country i):

$$P_i = \sum \exp(\hat{a}\mathbf{X}_{ij})$$

- ▶ where \mathbf{X}_{ij} are the regressors in the gravity equation.

First Stage: Gravity and Trade Flows

TABLE 1—THE BILATERAL TRADE EQUATION

	Variable	Interaction
Constant	-6.38 (0.42)	5.10 (1.78)
Ln distance	-0.85 (0.04)	0.15 (0.30)
Ln population (country <i>i</i>)	-0.24 (0.03)	-0.29 (0.18)
Ln area (country <i>i</i>)	-0.12 (0.02)	-0.06 (0.15)
Ln population (country <i>j</i>)	0.61 (0.03)	-0.14 (0.18)
Ln area (country <i>j</i>)	-0.19 (0.02)	-0.07 (0.15)
Landlocked	-0.36 (0.08)	0.33 (0.33)
Sample size		3220
R^2		0.36
SE of regression		1.64

Notes: The dependent variable is $\ln(\tau_{ij}/GDP_i)$. The first column reports the coefficient on the variable listed, and the second column reports the coefficient on the variable's interaction with the common-border dummy. Standard errors are in parentheses.

Actual and Predicted Trade

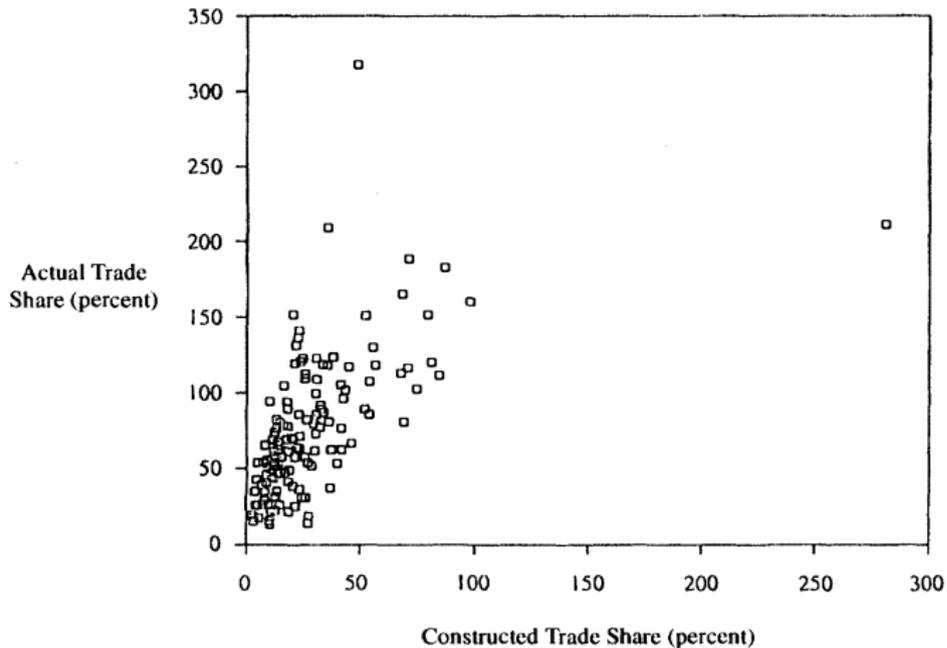


FIGURE 1. ACTUAL VERSUS CONSTRUCTED TRADE SHARE

Trade Causes GDP per Capita (OLS and 2SLS)

TABLE 3—TRADE AND INCOME

	(1)	(2)	(3)	(4)
Estimation	OLS	IV	OLS	IV
Constant	7.40 (0.66)	4.96 (2.20)	6.95 (1.12)	1.62 (3.85)
Trade share	0.85 (0.25)	1.97 (0.99)	0.82 (0.32)	2.96 (1.49)
Ln population	0.12 (0.06)	0.19 (0.09)	0.21 (0.10)	0.35 (0.15)
Ln area	-0.01 (0.06)	0.09 (0.10)	-0.05 (0.08)	0.20 (0.19)
Sample size	150	150	98	98
R^2	0.09	0.09	0.11	0.09
SE of regression	1.00	1.06	1.04	1.27
First-stage F on excluded instrument		13.13		8.45

Notes: The dependent variable is log income per person in 1985. The 150-country sample includes all countries for which the data are available; the 98-country sample includes only the countries considered by Mankiw et al. (1992). Standard errors are in parentheses.

Channels: what determines the wealth of nations?

$$Y_i = K_i^\alpha [\exp(\phi(S_i)) A_i N_i]^{1-\alpha}$$

- ▶ where K_i is a measure of capital stock, S_i is the measure of (average) schooling; A_i is a measure of technology (Solow residual); N_i is population size.

Does trade affect these channels?

TABLE 4—TRADE AND THE COMPONENTS OF INCOME

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	$\frac{\alpha}{1-\alpha} \ln(K_i/Y_i)$		$\phi(S_i)$		$\ln A_i$		$\ln(Y/N)_{1960}$		$\Delta \ln(Y/N)$	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Constant	-0.72 (0.34)	-1.29 (0.93)	0.10 (0.30)	-0.37 (0.81)	7.47 (0.74)	3.05 (2.84)	7.45 (1.03)	4.27 (3.07)	-0.50 (0.39)	-2.65 (1.66)
Trade share	0.36 (0.10)	0.59 (0.36)	0.18 (0.08)	0.37 (0.31)	0.27 (0.21)	2.04 (1.10)	0.38 (0.29)	1.66 (1.19)	0.45 (0.11)	1.31 (0.65)
Ln population	0.02 (0.03)	0.04 (0.04)	0.06 (0.03)	0.07 (0.03)	0.21 (0.06)	0.32 (0.11)	0.09 (0.09)	0.17 (0.12)	0.12 (0.03)	0.18 (0.06)
Ln area	0.04 (0.02)	0.07 (0.05)	-0.01 (0.02)	0.01 (0.04)	-0.13 (0.05)	0.08 (0.14)	-0.02 (0.07)	0.13 (0.15)	-0.03 (0.03)	0.07 (0.08)
Sample size	98	98	98	98	98	98	98	98	98	98
R ²	0.13	0.13	0.09	0.08	0.14	0.06	0.03	0.02	0.24	0.20
SE of regression	0.32	0.33	0.28	0.29	0.69	0.92	0.96	1.06	0.36	0.47
First-stage <i>F</i> on excluded instrument		8.45		8.45		8.45		8.45		8.45

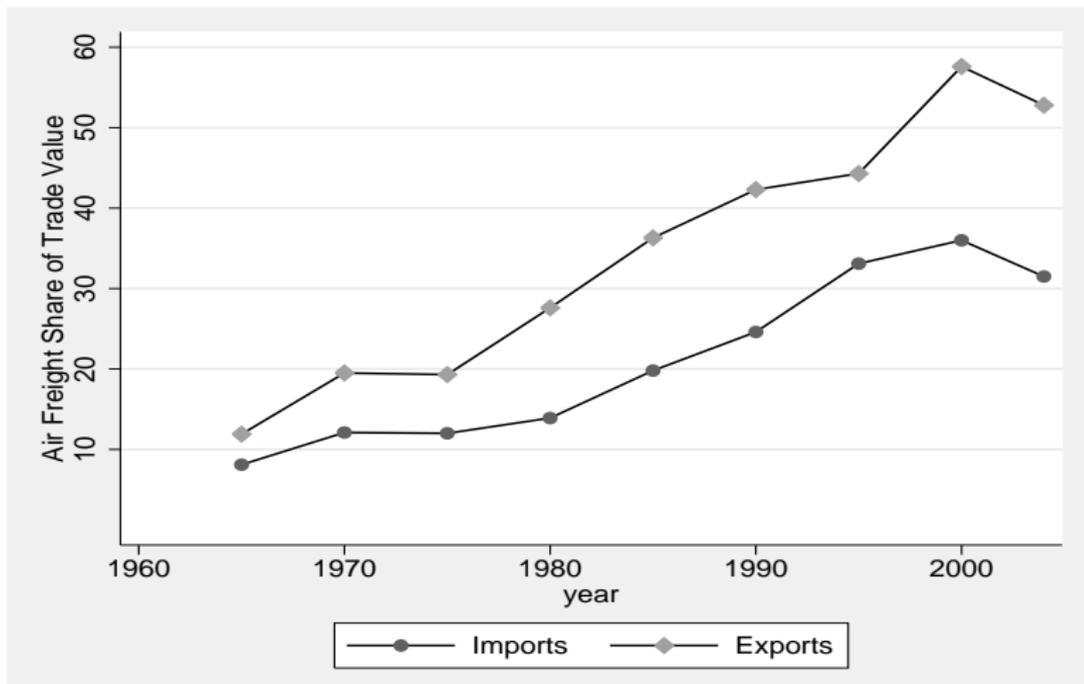
Note: Standard errors are in parentheses.

Some recent applications of Frankel and Romer (1999)

- ▶ One drawback of FR (99) is that the location of a country may determine its wealth of nations through channels other than trade.
- ▶ There is a well-known but controversial argument by Jeffrey Sachs (the director of the Earth Institute at Columbia U) that distance from the equator is a strong determinant of a country's GDP per capita (with Singapore being an exception as usual).
 - ▶ Geography affects climate, culture, history, institutions,, as Jared Diamond's (1999) "Guns, Germs, and Steel" argues.
- ▶ It would be nice to have time-varying distance and location?
- ▶ A very smart paper by James Feyrer (2009) uses the falling air transport costs to determine a country's time-varying distance from the rest of the world.
 - ▶ E.g., Japan and Germany are far away if travelled by sea, but are much closer by air.

Feyrer (2009)

Air Freight Share of US Trade Value



► Source: Hummels (2007)

Feyrer (2009)

How did proximity change over time?

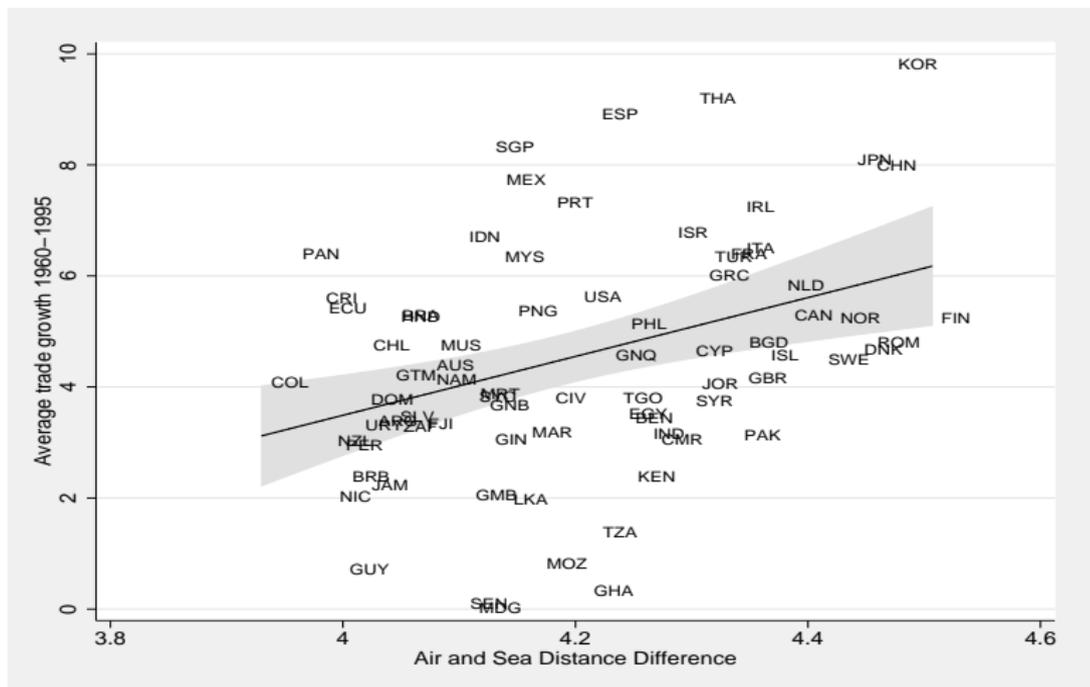


$$\text{predicted_trade}_{it} = e^{FE_t} e^{FE_i} \sum e^{FE_j} e^{\hat{\beta}_{air,t} \times \ln(\text{air_dist}_{ij}) + \hat{\beta}_{sea,t} \times \ln(\text{sea_dist}_{ij})}$$

- ▶ where FE_t , FE_i , and FE_j stand for year, exporting country, and importing country fixed effects.
- ▶ Besides FE_i , other fixed effects cannot be controlled for in FR (99).
- ▶ Notice that air and sea distance are time-invariant; only the coefficients on the distances change over time.

Feyrer (2009)

Actual Trade Growth (1960-1995) versus Instruments



Feyrer (2009)

FR (99) but with panel data and country fixed effects

	(1)	(2)	(3)	(4)	(5)	(6)
IV RESULTS						
$\Delta \ln(\text{Real GDP per Capita})$						
$\Delta \ln(\text{trade})$	0.739 (0.164)**	0.782 (0.202)**	0.470 (0.138)**	0.478 (0.134)**	0.540 (0.152)**	0.460 (0.135)**
FIRST STAGE						
$\Delta \ln(\text{trade})$						
$\Delta \ln(\text{predicted trade})$	0.548 (0.118)**	0.488 (0.115)**	1.508 (0.292)**	1.487 (0.284)**	0.640 (0.201)**	1.321 (0.274)**
R^2	0.47	0.469	0.466	0.466	0.465	0.457
F-stat on Instrument	21.6	18.0	26.7	27.4	10.1	23.2
Instrument Partial R^2	0.020	0.017	0.055	0.055	0.011	0.04

- ▶ All regressions are on data at 5 year intervals from 1950 to 1995
- ▶ All regressions include a full set of time and country dummies.
- ▶ Standard errors clustered by country

Another application of FR (99)

Do and Levchenko (07) on financial development and trade

- ▶ Question: Does trade induce countries' financial market development?
- ▶ A positive correlation between exports of financially dependent products and financial market development can be another "chicken and egg" problem.
- ▶ Idea: Use FR (99) to predict trade flows at the sector level (based on estimates of sectoral gravity equations).
- ▶ Some countries are "lucky" to be exporting the more financially dependent goods
- ▶ Main results of Do and Levchenko (07): not only that financial market development facilitates exports of finance-intensive goods, the reverse causality is equally important and has been overlooked. It is another benefit of trade globalization.

Sachs and Warner (1995)

- ▶ Sachs and Warner (SW) (1995) document the process of global integration and to assess its effects on economic growth in the reforming countries.
- ▶ More specifically, did countries converge to the frontier of economic development after major economic reforms to embrace globalization?
- ▶ 1989-91: End of communist regimes beside a few (notably China).
- ▶ In 1995 one dominant global economic system is emerging, exemplified by the World Trade Organization (WTO), which replaces the GATT.
- ▶ With more than 120 economies, the snowballing effect made others more eager to join as rapidly as possible.
- ▶ New trade agreements involve a codification of principles governing trade in both goods and services.
- ▶ China, who remained communist and did not become a WTO member until Dec 2001, has taken major initiatives to privatize its SOEs, improve its property rights protection, and reduce trade barriers.

Chronology

- ▶ 1840s - 1917 (the beginning of the WWI)
 - ▶ industrialization, steamships, railways, colonialism, opium war, forced opening of Japan (Meiji restoration), US-EU trade, etc.
- ▶ 1917-1945 (Toward end of WWII)
 - ▶ Protectionism was rising, barriers to trade and capital flows increased.
- ▶ 1945-1970
 - ▶ IMF, World Bank, Gold standard, recovery from WWII, Marshall Plan, rebuilding Germany and Japan
- ▶ 1970-
 - ▶ End of gold standard, further tariff reduction, Japan + East Asian Tigers + China.

Sachs and Warner (1995) Openness Index

A country is classified as closed if one of the following criteria is satisfied

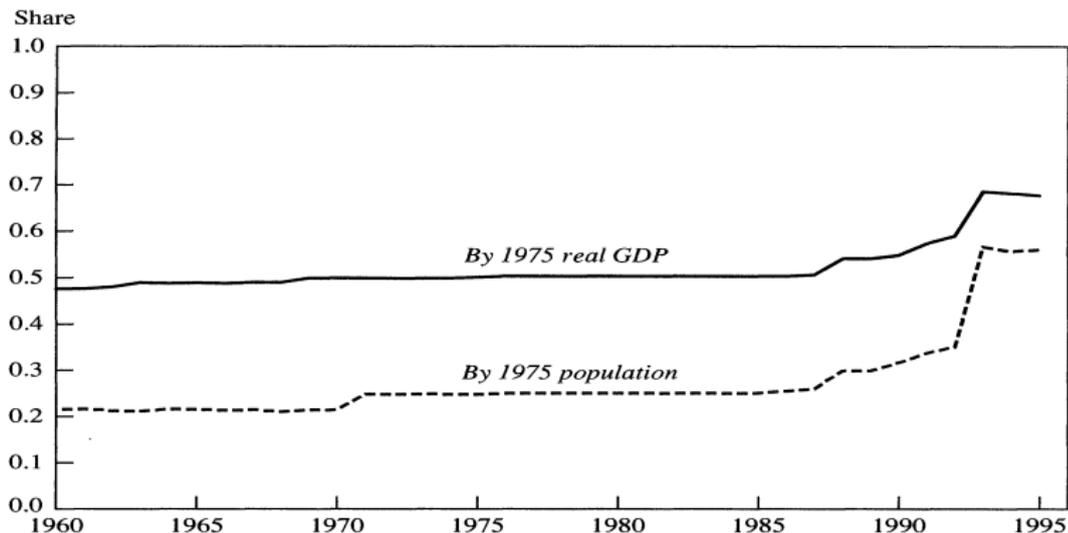
1. Average tariff rates $> 40\%$
2. Non-tariff barriers (such as quotas) covering 40% or more of trade
3. A black market exchange rate at least 20% lower than the official exchange rate
4. A state monopoly on major exports
5. A socialist economic system

▶ E.g. of countries that opened during the sample period: Greece 1959; Portugal 60; Taiwan 63; Ireland 66; Korea 68; Indonesia 70; Chile 76; Botswana 79; Bolivia 85; Mexico 86; Turkey 89; Uruguay 90; Argentina 91; Brazil 91; South Africa 91; India 84.

Sachs and Warner (1995)

Share of open economies

Figure 1. Share of Open Economies in the World, 1960–95^a



Source: Authors' calculations. The weights are constructed using 1975 population data and 1975 real GDP data from version 5.6 of the data in Summers and Heston (1991).

a. Let PO_t be the proportion of the world's economies that are open in year t . PO_t is constructed as $PO_t = \sum w_{1975} D_{it-1}$, where D_{it-1} is a dummy variable set equal to one if the country is open as of year $t-1$, and zero otherwise. w_{1975} is the weight of country i in the world in 1975.

Sachs and Warner (1995)

Always open

Table 1. Developing Economies That Have Always Been Open^a

<i>Country</i>	<i>Year of independence</i>
Barbados	1966
Cyprus	1960
Hong Kong	not applicable
Malaysia	1963
Mauritius	1968
Singapore	1965
Thailand	never colonized
Yemen Arab Republic	1918

Source: See appendix.

a. Since independence, where applicable.

Sachs and Warner (1995)

Remained closed economies until 1994

Table 3. Developing Economies That Were Closed at the End of 1994^a

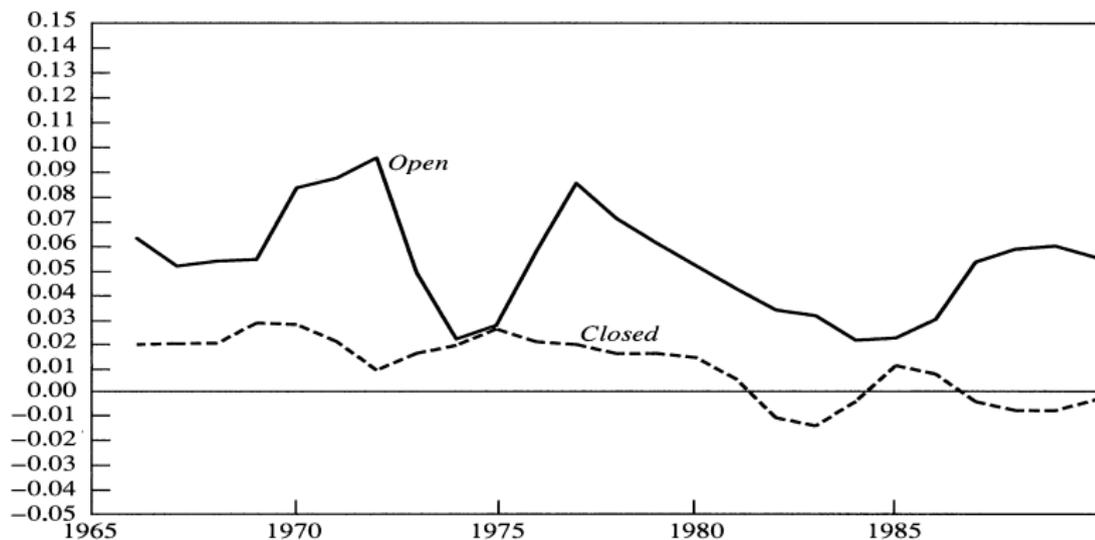
Algeria	Ethiopia	Pakistan
Angola	Gabon	Papua New Guinea
Bangladesh	Haiti	Rwanda
Burkina Faso	Iran	Senegal
Burundi	Iraq	Sierra Leone
Central African Republic	Madagascar	Somalia
Chad	Malawi	Syrian Arab Republic (1951–65)
China	Mauritania	Tanzania
Congo	Mozambique	Togo
Cote d'Ivoire	Myanmar	Zaire
Dominican Republic	Niger	Zimbabwe
Egypt	Nigeria	

Sachs and Warner (1995)

Performance between always-open and always-closed economies

Figure 2. Average Growth of Eight Always Open and Forty Always Closed Economies, 1966–90

Growth rate^a



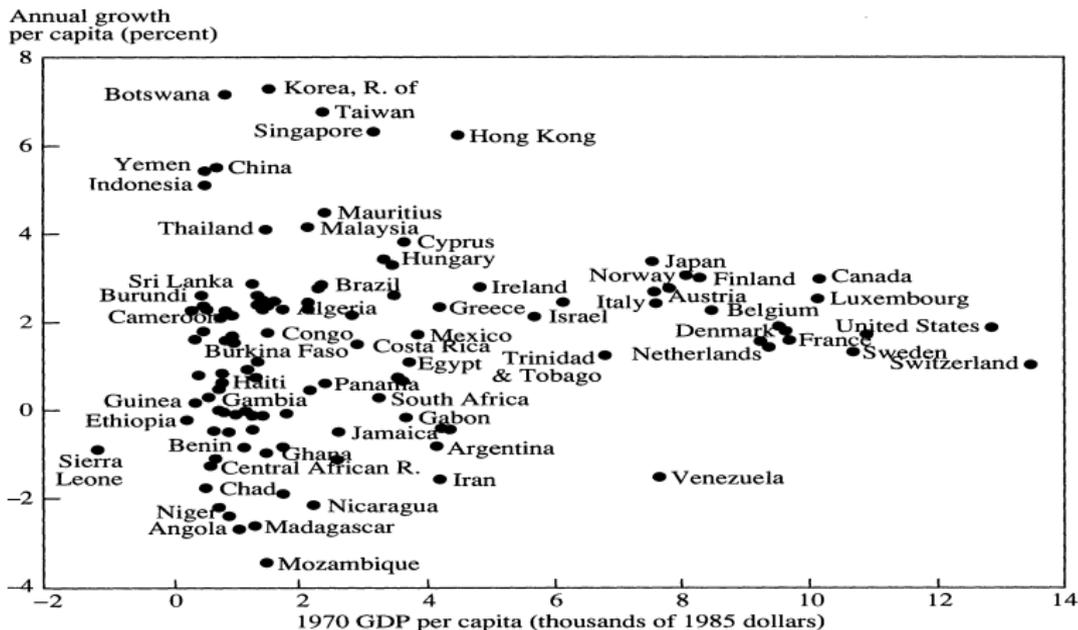
Source: Authors' calculations using version 5.6 of the data in Summers and Heston (1991).

a. Figure shows three-year moving averages.

Sachs and Warner (1995)

No clear convergence

Figure 3. Growth and Initial Income, All Economies, 1970–89

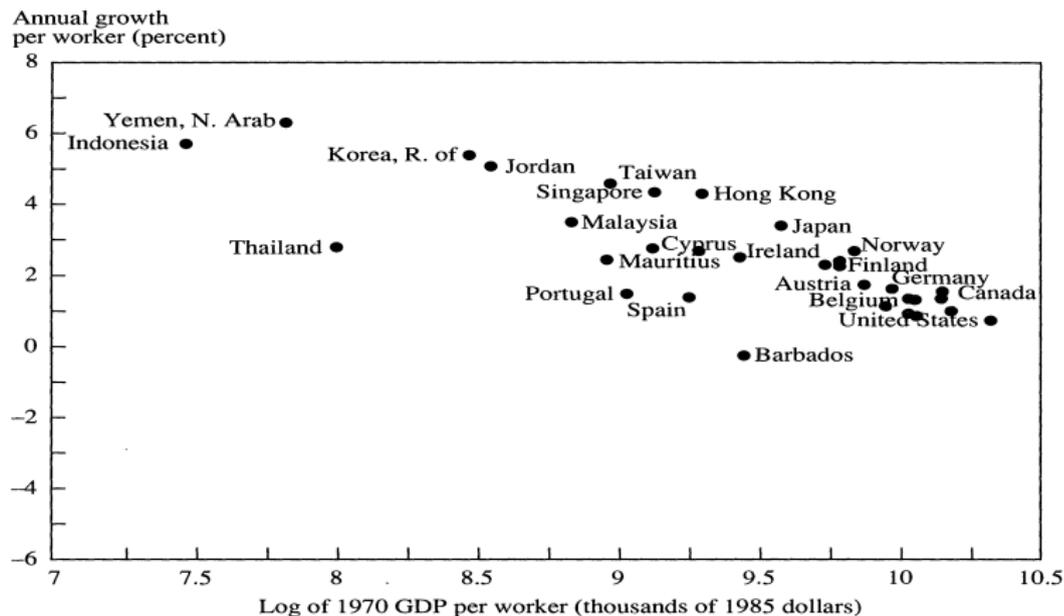


Source: Version 5.5 of the data in Summers and Heston (1991) and World Bank (1994d).

Sachs and Warner (1995)

Clear convergence for open countries

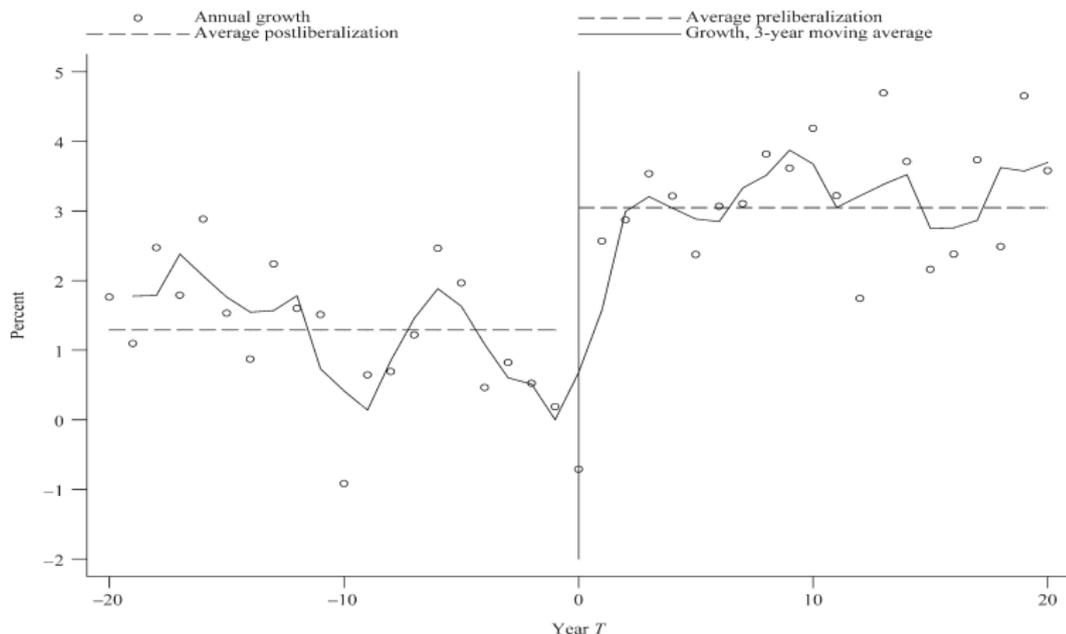
Figure 6. Growth Per Worker and Initial GDP Per Worker, Open Economies, 1970–85



Source: Authors' calculations using versions 5 and 5.5 of the data in Summers and Heston (1991).

Effects of Trade openness - 1.5 percentage-point higher annual GDP per cap growth

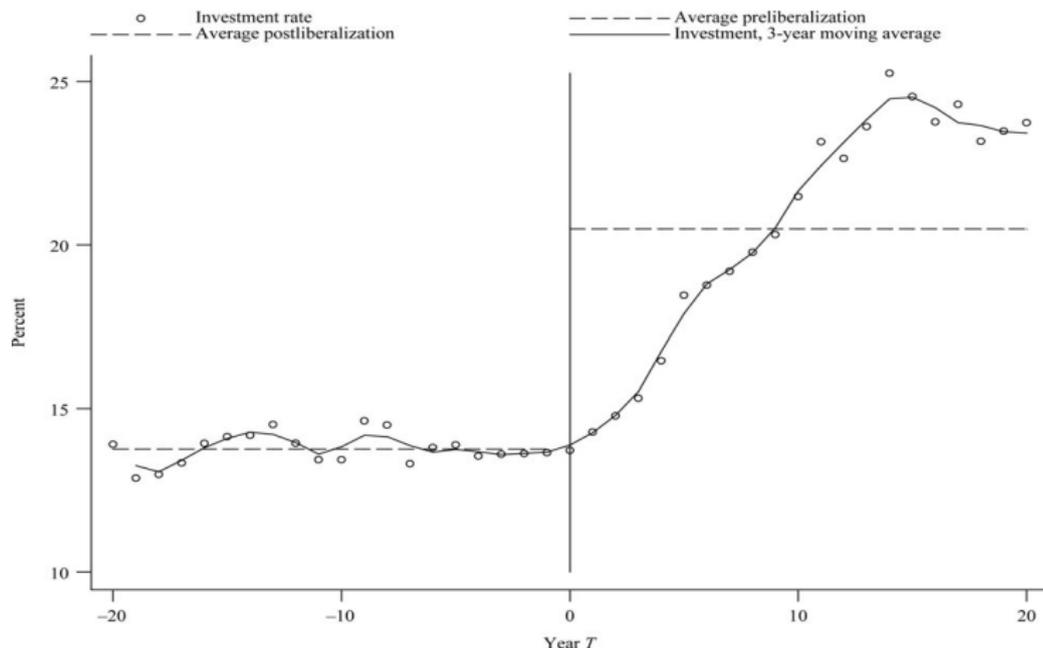
FIGURE 2. Sample Means for Growth before and after Liberalization



► Source: Wacziarg and Welch (World Bank Economic Review 2008)

Effects of Trade openness - 2 percentage-point higher annual investment rate

FIGURE 3. Sample Means for Investment before and after Liberalization



► Source: Wacziarg and Welch (World Bank Economic Review 2008)

Skeptical view: Rodriguez and Rodrik (1999)

- ▶ Review a bunch of papers that show that trade reforms or openness induced economic growth.
- ▶ Dollar (92); Ben-Dollar (93); Sachs and Warner (95); Edwards (98); Frankel and Romer (99)
- ▶ Find little evidence that open trade policies are associated with higher economic growth.

Critiques of the two papers we discussed

About Sachs and Warner (95)

- ▶ 2 of the 5 indices - black market premium (BMP) and the state monopoly of exports - explain most of the positive correlation with economic growth.

About Frankel and Romer (99)

- ▶ Geography affects public health (and hence the quality of human capital) through exposure to various diseases.
- ▶ It affects the quality of institutions through the historical experience of colonialism, migrations, and wars.
- ▶ It also affects the quantity and quality of natural endowments, including soil fertility, plant variety, and the abundance of minerals.

Regression results that rejected SW (95)

Table IV.1 Effect of Different Openness Indicators on Growth

	Dependent variable: growth of GDP per capita, 1970-89						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
OPEN	2.44*						
	(5.83)						
BMP		-1.701*					
		(-3.65)					
MON		-2.020*					
		(-2.84)					
SOC		-1.272					
		(-1.39)					
NTB		-0.453					
		(-0.81)					
TAR		-0.134					
		(-0.18)					
BM			2.086*		2.119*	2.519*	2.063*
			(4.82)		(5.09)	(5.94)	(4.64)
SQT				0.877****	0.735	0.663	
				(1.82)	(1.59)	(1.30)	
SOC							.389
							(.56)
QT							.657
							(1.28)
R ²	.593	.637	0.522	0.455	0.617	.522	.619
N	79	71	78	75	74	74	74

► Source: Rodriguez and Rodrik (1999). t stat in brackets.

Regression results that overturned FR (99)

Table VII.1 : Frankel-Romer regressions with additional geographical variables

	1	2	3	4	5	6	7	8
Trade share	0.85 (3.47)	0.57 (3.00)	0.46 (2.36)	0.61 (3.88)	1.97 (1.99)	0.34 (0.41)	0.21 (0.26)	0.25 (0.41)
Disteq		3.58 (9.26)				3.65 (7.98)		
Tropics			-1.42 (-9.84)				-1.46 (-8.03)	
East Asia				-1.21 (-7.71)				-1.21 (-7.59)
Latin America				-0.67 (-4.48)				-0.74 (-3.83)
Sub-Saharan Africa				-1.94 (-14.72)				-1.99 (-12.82)
method	OLS	OLS	OLS	OLS	IV	IV	IV	IV
n	150	150	145	150	150	150	145	150
R ²	0.0949	0.4312	0.4628	0.66	0.43	0.44	0.4563	0.65

► Source: Rodriguez and Rodrik (1999). t stat in brackets.

Rodrik (2004): Industrial Policy for the 21st Century

Story of Taiwan



Rodrik (2004): Industrial Policy for the 21st Century

Story of Taiwan

- ▶ “Taiwan has traditionally grown and exported sugar, an industry that has recently fallen into hard times due to low international prices and other reasons.”
- ▶ “What should be grown in the fields to replace the sugarcane that is the source of income for many farmers?”
- ▶ “In many countries, the result would have been a depressed rural sector, increasingly indebted farm households, and a drag on the economy.”
- ▶ “In Taiwan, the response has been a \$65 million government investment program to develop a world-class orchid industry.”
- ▶ “The government pays for a genetics laboratory, quarantine site, shipping and packing areas, new roads, water and electrical hookups for privately-owned greenhouses, and an exposition hall in fact everything except for the cost of the greenhouses.”
- ▶ “It also provides low-interest credit to farmers to help them build the greenhouses.”

Rodrik (2004) argued that the Washington Consensus prescriptions are insufficient

- ▶ WC includes macroeconomic stability, minimal market interventions and trade restrictions, effective property rights protection and contract enforcement.
- ▶ But due to information asymmetry, entrepreneurship still cannot infer which projects are more successful based on market prices.
- ▶ The standard cost-benefit analysis (in particular, the risk-return profile) cannot be easily done.
- ▶ So how to fix the problems due to information asymmetry?
- ▶ Build industrial clusters that generate information externalities.

But which sector to support?

- ▶ Letting comparative advantage to govern specialization may not work.
- ▶ Andres Rodriguez-Clare (2004): "all industries in principle have the characteristics that could produce clusters. Moreover, many industries can in principle operate at some level in the absence of clusters."
- ▶ Rodrik (2004) "This suggests that what needs support is not specific sectors per se, but the type of technologies that have scale or agglomeration economies and would fail to catch on in the absence of support."
- ▶ Target activities rather than sectors per se.
- ▶ Similar to the traditional big-push idea, but the government does not need to be actively engaged.
- ▶ In particular, the government does not know more than private firms.
- ▶ Direction: Create an creative environment for knowledge exchange and coordination.

10 guiding principles of optimal industrial policies

- ▶ 1. Incentives should be provided only to "new" activities
- ▶ 2. There should be clear benchmarks/criteria for success and failure
- ▶ 3. There must be a built-in sunset clause.
- ▶ 4. Public support must target activities, not sectors.
- ▶ 5. Activities that are subsidized must have the clear potential of providing spillovers and demonstration effects.

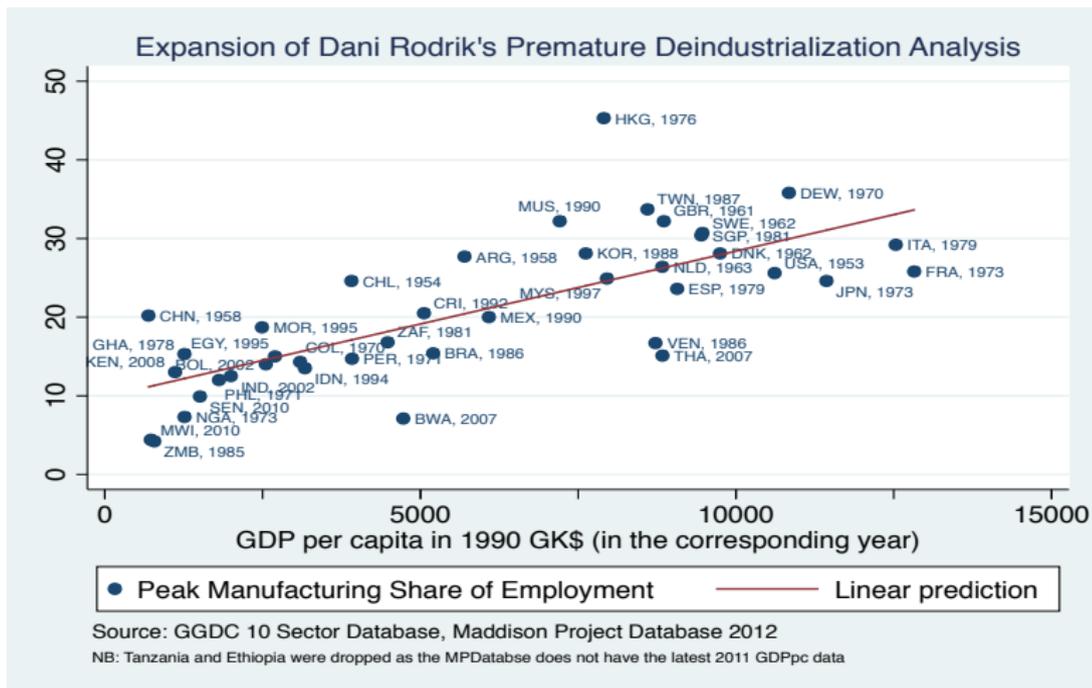
10 guiding principles of optimal industrial policies

- ▶ 6. The authority for carrying out industrial policies must be vested in agencies with demonstrated competence.
- ▶ 7. The implementing agencies must be monitored closely by a principal with a clear stake in the outcomes and who has political authority at the highest level.
- ▶ 8. The agencies carrying out promotion must maintain channels of communication with the private sector.
- ▶ 9. Optimally, mistakes that result in picking the losers will occur.
- ▶ 10. Promotion activities need to have the capacity to renew themselves, so that the cycle of discovery becomes an ongoing one.

Rodrik (2015): Premature Deindustrialization (Bottomline)

- ▶ Definition: Many developing nations turned into service economies, without having gone through a proper process of industrialization.
- ▶ Countries deindustrialized at an increasingly lower level of GDP per cap.
- ▶ Asian countries have been largely insulated from those trends.
- ▶ Latin American and sub-Saharan African countries have been especially hard hit.
- ▶ Advanced economies have lost significant employment, but they have done well in terms of manufacturing output shares at constant prices (a productivity story).
- ▶ Economic and political implications? Missing middle? Inequality? Upward mobility? Democracy?

Rodrik (2015): Premature Deindustrialization



► Source: Rodrik (2015)

Why is industrialization important?

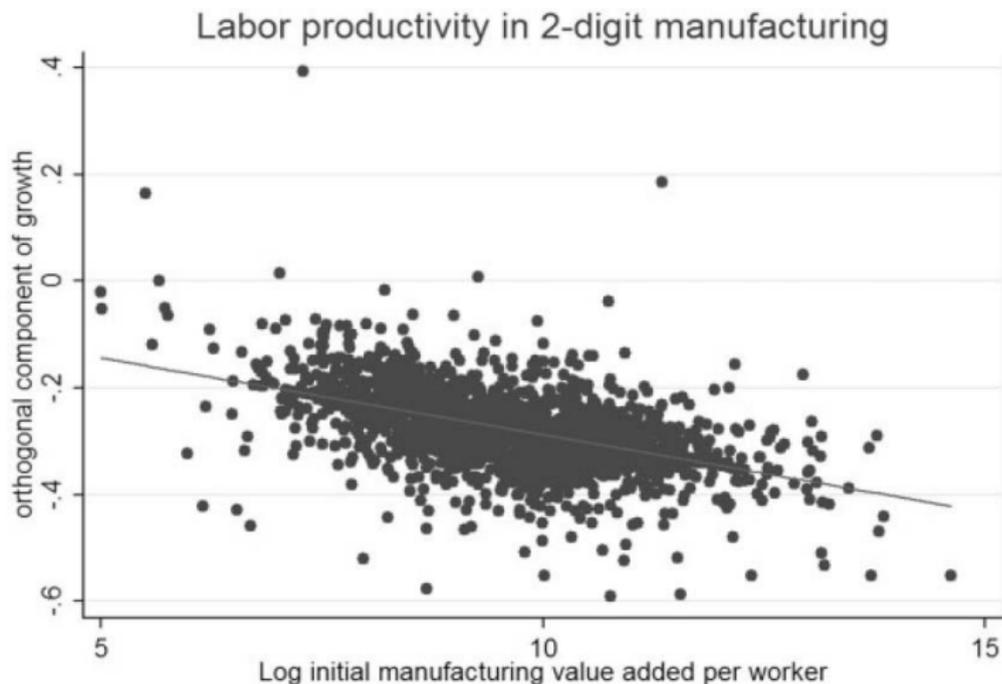
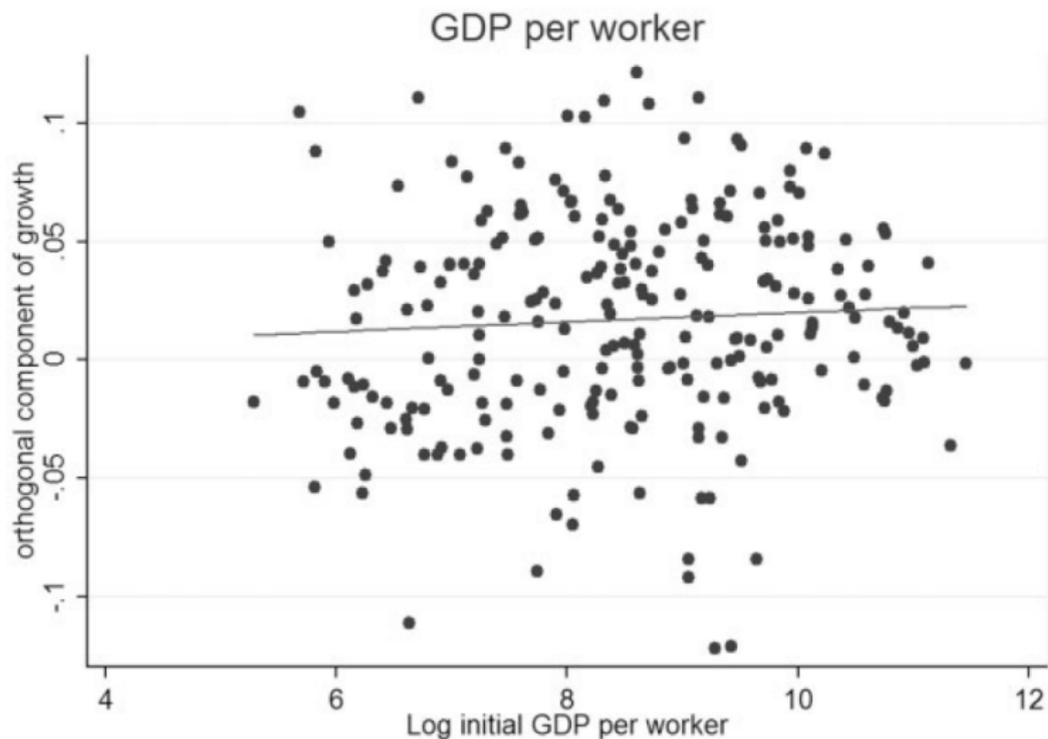


FIGURE II

Unconditional Unconditionance in 2-digit Manufacturing Sectors

Why is industrialization important?



Rodrik's simple framework

- ▶ 3 regions: advanced, developing region 1 with a comparative advantage in manufacturing, and another developing region 2 without CA in manufacturing.
- ▶ 2 shocks: labor-saving technology shocks and trade/ transport shocks
- ▶ When labor-saving technology shocks hit the advanced economy, emp share in manufacturing declines, while the real value added share increases (with nominal value added possibly declines).
- ▶ Developing region 1 with CA in manufacturing experiences increases in emp and va shares in manufacturing.
- ▶ Developing region 2 without CA in manufacturing experiences further declines in emp and va shares in manufacturing.

Rodrik (2015) - Baseline Regressions

Table 1: Baseline regressions

	<i>manemp</i>	<i>nommva</i>	<i>realmava</i>	<i>manemp</i>	<i>nommva</i>	<i>realmava</i>
	common sample			largest sample		
In population	0.115* (0.021)	0.142* (0.029)	-0.113* (0.028)	0.122* (0.021)	0.192* (0.027)	-0.039 (0.025)
In population squared	-0.000 (0.001)	-0.002* (0.001)	0.005* (0.001)	-0.001 (0.001)	-0.004* (0.001)	0.003* (0.001)
In GDP per capita	0.321* (0.027)	0.230* (0.031)	0.204* (0.025)	0.316* (0.026)	0.266* (0.031)	0.262* (0.027)
In GDP per capita squared	-0.018* (0.002)	-0.013* (0.002)	-0.009* (0.001)	-0.018* (0.002)	-0.014* (0.002)	-0.012* (0.002)
1960s	-0.029* (0.005)	-0.011*** (0.006)	-0.008 (0.005)	-0.018* (0.004)	-0.010*** (0.006)	-0.028* (0.007)
1970s	-0.044* (0.006)	-0.021* (0.007)	-0.004 (0.006)	-0.033* (0.005)	-0.014** (0.007)	-0.026* (0.008)
1980s	-0.066* (0.007)	-0.033* (0.008)	-0.011*** (0.007)	-0.054* (0.006)	-0.028* (0.008)	-0.034* (0.009)
1990s	-0.086* (0.009)	-0.052* (0.009)	-0.017** (0.008)	-0.074* (0.008)	-0.049* (0.009)	-0.040* (0.010)
2000s+	-0.117* (0.010)	-0.085* (0.010)	-0.035* (0.009)	-0.105* (0.009)	-0.085* (0.010)	-0.059* (0.011)
country fixed effects	yes	yes	yes	yes	yes	yes
number of countries	42	42	42	42	42	42
number of observations	1,995	1,995	1,995	2,209	2,128	2,302

Robust standard errors are reported in parentheses.

Levels of statistical significance: *: 99%; **: 95%; ***: 90%.

Rodrik (2015) - Manufacturing Employment Share as Dep Var.

	All countries	Developed countries	Latin America	Asia	Sub-Saharan Africa	Sub-Saharan Africa (excl. Mauritius)
ln population	0.122* (0.021)	-0.652* (0.122)	0.191* (0.032)	0.789* (0.102)	0.199* (0.019)	0.178* (0.014)
ln population squared	-0.001 (0.001)	0.017* (0.003)	-0.003* (0.001)	-0.025* (0.003)	-0.005* (0.001)	-0.004* (0.000)
ln GDP per capita	0.316* (0.026)	1.070* (0.088)	0.902* (0.071)	0.912* (0.071)	0.190* (0.024)	0.148* (0.018)
ln GDP per capita squared	-0.018* (0.002)	-0.057* (0.005)	-0.052* (0.004)	-0.051* (0.004)	-0.014* (0.002)	-0.011* (0.001)
1960s	-0.018* (0.004)	-0.004 (0.004)	-0.027* (0.004)	-0.003 (0.013)	n.a.	n.a.
1970s	-0.033* (0.005)	-0.021* (0.006)	-0.050* (0.006)	0.016 (0.016)	0.002 (0.004)	-0.003 (0.003)
1980s	-0.054* (0.006)	-0.052* (0.007)	-0.079* (0.008)	0.022 (0.019)	0.004 (0.007)	-0.021* (0.005)
1990s	-0.074* (0.008)	-0.072* (0.009)	-0.096* (0.010)	0.013 (0.022)	0.007 (0.012)	-0.033* (0.007)
2000s+	-0.105* (0.009)	-0.096* (0.010)	-0.131* (0.012)	0.004 (0.026)	0.007 (0.014)	-0.035* (0.008)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of countries	42	10	9	11	11	10
Number of observations	2209	575	545	519	524	481

Robust standard errors are reported in parentheses

Levels of statistical significance: * 99%, ** 95%, *** 90%

► Source: Rodrik (2015)

Rodrik (2015) - Manufacturing Value Added Share as Dep Var.

	All countries	Developed countries	Latin America	Asia	Sub-Saharan Africa	Sub-Saharan Africa (excl. Mauritius)
ln population	0.192* (0.027)	0.752** (0.309)	0.223* (0.046)	1.009* (0.081)	0.552* (0.049)	0.519* (0.045)
ln population squared	-0.004* (0.001)	-0.016** (0.008)	-0.007* (0.001)	-0.029* (0.002)	-0.017* (0.001)	-0.014* (0.001)
ln GDP per capita	0.266* (0.031)	1.024* (0.139)	0.308*** (0.157)	0.877* (0.054)	0.047 (0.061)	0.027 (0.056)
ln GDP per capita squared	-0.014* (0.002)	-0.059* (0.008)	-0.016*** (0.009)	-0.050* (0.003)	-0.007 (0.005)	-0.006 (0.004)
1960s	-0.010*** (0.006)	-0.003 (0.007)	-0.001 (0.008)	0.008 (0.007)	n.a.	n.a.
1970s	-0.014** (0.007)	-0.035* (0.010)	-0.006 (0.010)	0.032* (0.010)	0.030* (0.005)	0.017* (0.005)
1980s	-0.028* (0.008)	-0.054* (0.011)	-0.002 (0.014)	0.036* (0.014)	0.029* (0.008)	-0.008 (0.009)
1990s	-0.049* (0.009)	-0.062* (0.013)	-0.010 (0.018)	0.033*** (0.018)	0.010 (0.010)	-0.050* (0.013)
2000s+	-0.085* (0.010)	-0.079* (0.015)	-0.039** (0.020)	0.032 (0.022)	-0.004 (0.012)	-0.079* (0.016)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of countries	42	10	9	11	11	10
Number of observations	2128	451	498	576	565	512

Robust standard errors are reported in parentheses

Levels of statistical significance: * 99%, ** 95%, *** 90%

► Source: Rodrik (2015)

Rodrik (2015) - Manufacturing Real Value Added Share as Dep Var

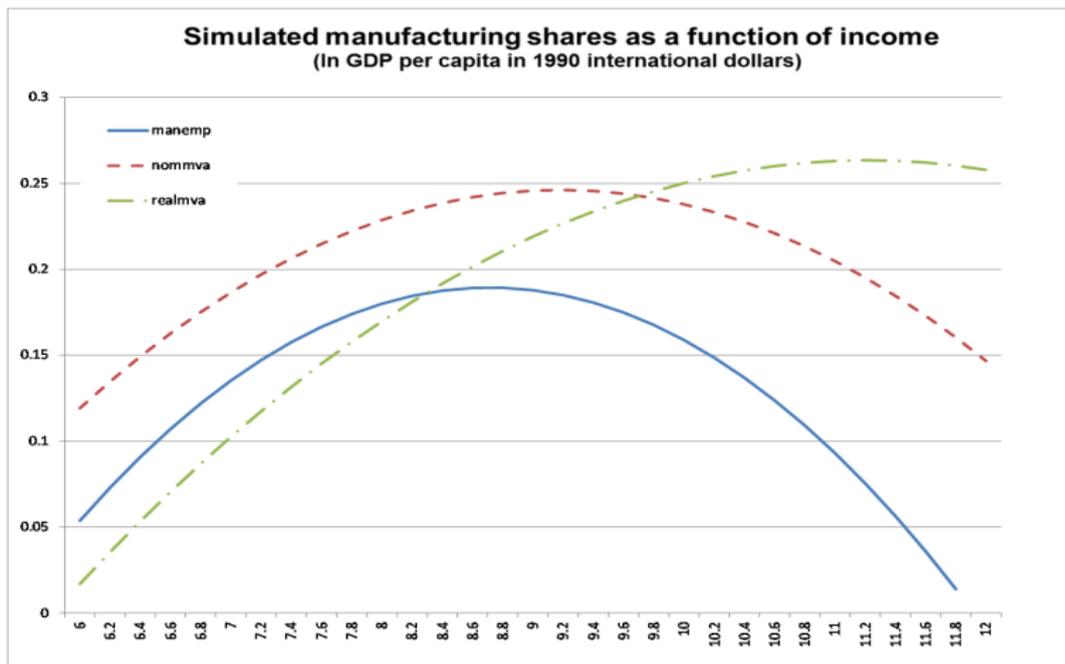
	All countries	Developed countries	Latin America	Asia	Sub-Saharan Africa	Sub-Saharan Africa (excl. Mauritius)
ln population	-0.039 (0.025)	-4.564* (0.776)	0.263* (0.027)	0.251* (0.084)	0.062** (0.029)	0.053*** (0.031)
ln population squared	0.003* (0.001)	0.113* (0.019)	-0.004* (0.001)	-0.011* (0.003)	-0.001 (0.001)	-0.000 (0.001)
ln GDP per capita	0.262* (0.027)	0.778* (0.129)	-0.135** (0.059)	0.737* (0.040)	0.123* (0.025)	0.106* (0.024)
ln GDP per capita squared	-0.012* (0.002)	-0.036* (0.008)	0.006*** (0.003)	-0.038* (0.003)	-0.009* (0.002)	-0.008* (0.002)
1960s	-0.028* (0.007)	-0.021*** (0.011)	-0.011* (0.004)	0.011*** (0.006)	n.a.	n.a.
1970s	-0.026* (0.008)	0.007 (0.015)	-0.017* (0.006)	0.027* (0.010)	0.017* (0.005)	0.012* (0.004)
1980s	-0.034* (0.009)	0.006 (0.018)	-0.052* (0.007)	0.034** (0.013)	0.015** (0.006)	-0.004 (0.006)
1990s	-0.040* (0.010)	0.013 (0.023)	-0.078* (0.008)	0.041** (0.017)	0.011 (0.009)	-0.022* (0.008)
2000s+	-0.059* (0.011)	0.021 (0.027)	-0.101* (0.010)	0.044** (0.020)	-0.003 (0.011)	-0.042* (0.010)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of countries	42	10	9	11	11	10
Number of observations	2302	592	556	577	530	487

Robust standard errors are reported in parentheses

Levels of statistical significance: * 99%; ** 95%; *** 90%

► Source: Rodrik (2015)

Rodrik (2015) - Simulated Peaks



► Source: Rodrik (2015)