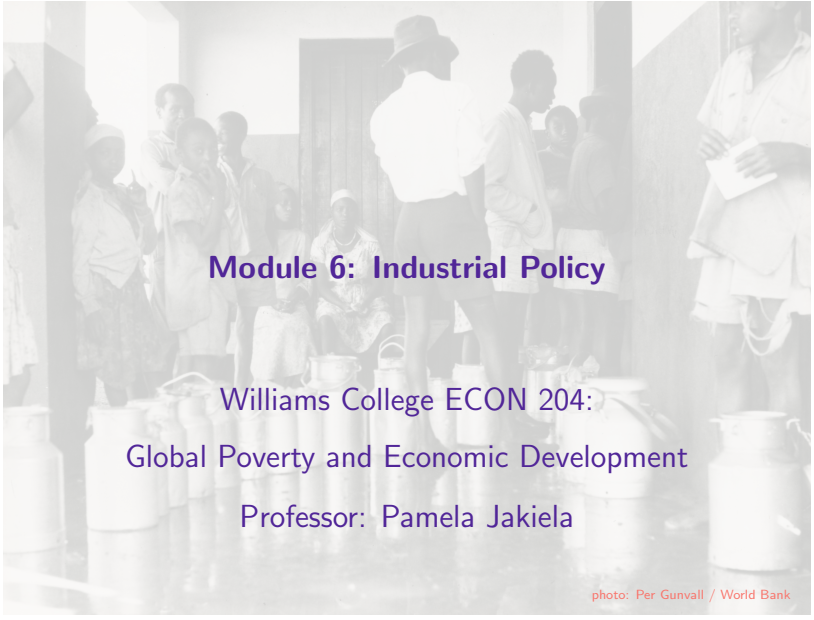


Module 6: Industrial Policy

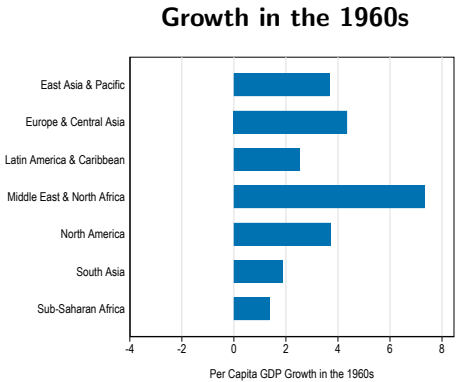
Williams College ECON 204:

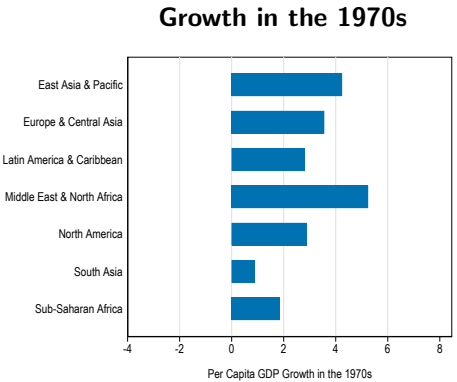
Global Poverty and Economic Development

Professor: Pamela Jakiela

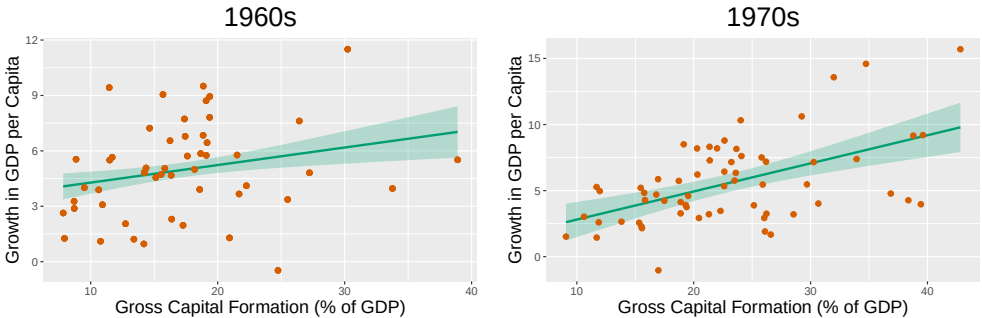
photo: Per Gunvall / World Bank

"The Growth that Wasn't"

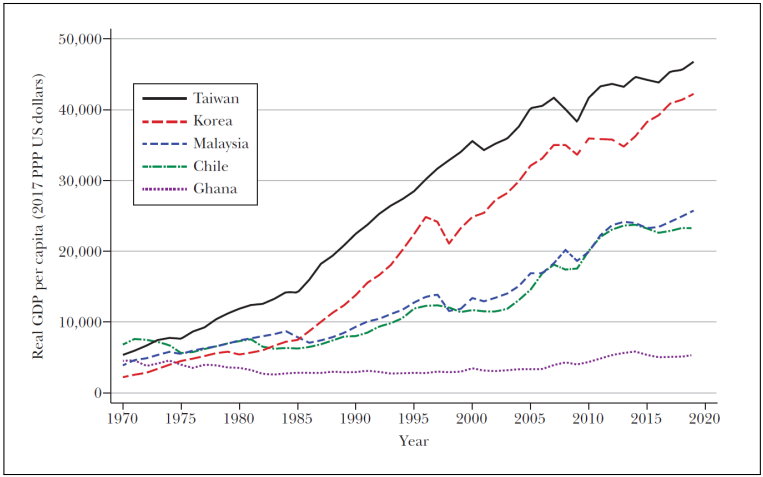




Investment in Physical Capital

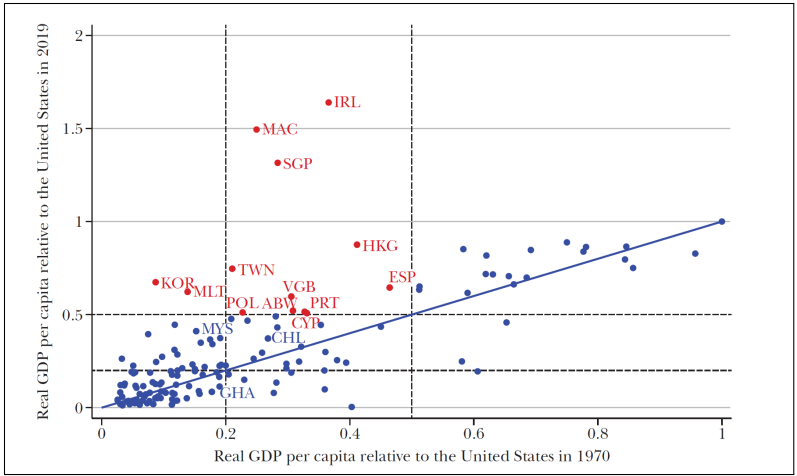


The Asian Miracle Economies



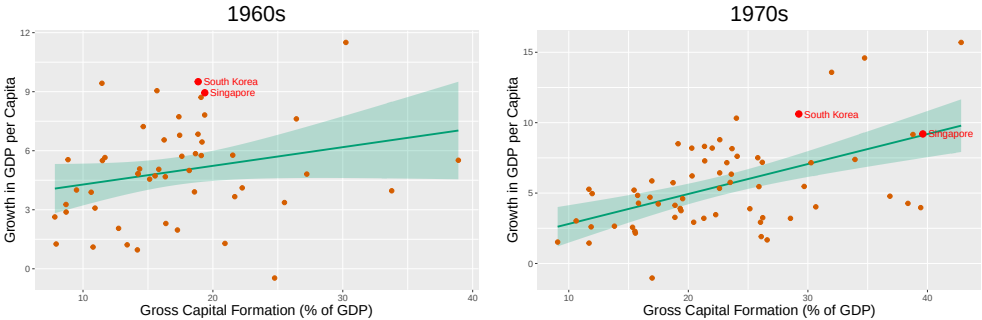
Source: Cherif and Hasanov (2024)

The Asian Miracle Economies



Source: Cherif and Hasanov (2024)

Investment in Physical Capital: Asian Miracle Economies



Why Did the Asian Miracle Economies Succeed?

What policies allowed Hong Kong, Singapore, South Korea, and Taiwan to develop so rapidly?

- Did they follow the prescriptions of the early development economists:
  investing in physical capital, pulling labor out of agriculture, coordinating industrialization across sectors, and restricting trade/imports to protect nascent modern-sector firms?
- Did they take a laissez-faire approach, letting markets do their magic?
- Did they do something else?

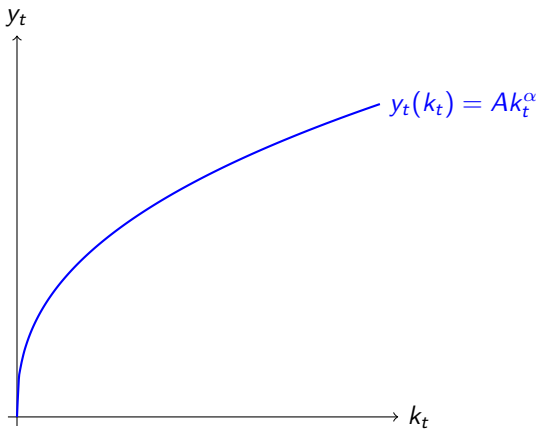
Is the key ingredient **physical capital** or **technological innovation**?

- What are the policy implications for other low- and middle-income countries?

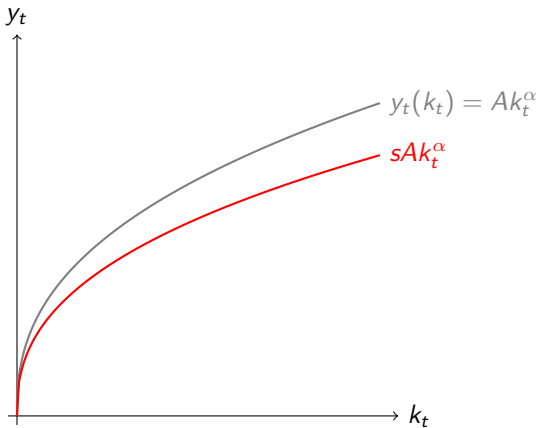
Harrod-Domar vs. Solow

- The Harrod-Domar model: $\uparrow$ capital $\Rightarrow \uparrow$ output
  - Savings rate: $s = I_t / Y_t \Leftrightarrow I_t = sY_t$
  - Capital stock evolves over time: $K_{t+1} = (1 - \delta) K_t + I_t = (1 - \delta) K_t + sY_t$
  - Production function: $Y_t = \theta K_t$
- The Solow model: declining marginal return to more capital
  - Savings rate: $s = I_t / Y_t \Leftrightarrow I_t = sY_t$
  - Capital stock evolves over time: $K_{t+1} = (1 - \delta) K_t + I_t = (1 - \delta) K_t + sY_t$
  - Production function: $Y_t = AK_t^{\alpha} L_t^{1-\alpha}$

Output per Worker in the Solow Model



Change in Capital per Worker: $k_{t+1} - k_t = sAk_t^{\alpha} - \delta k_t$



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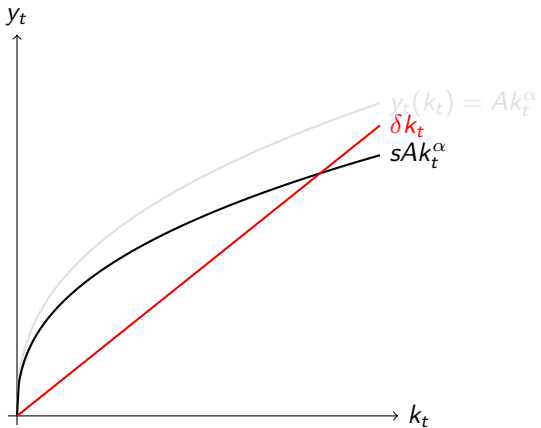
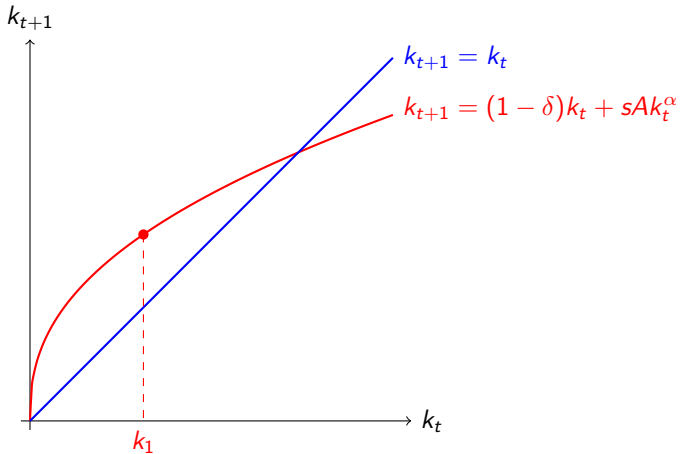


The Evolution of Capital per Worker



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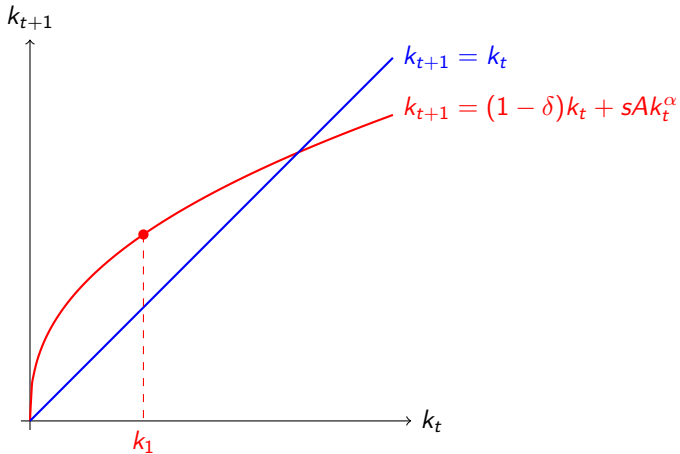

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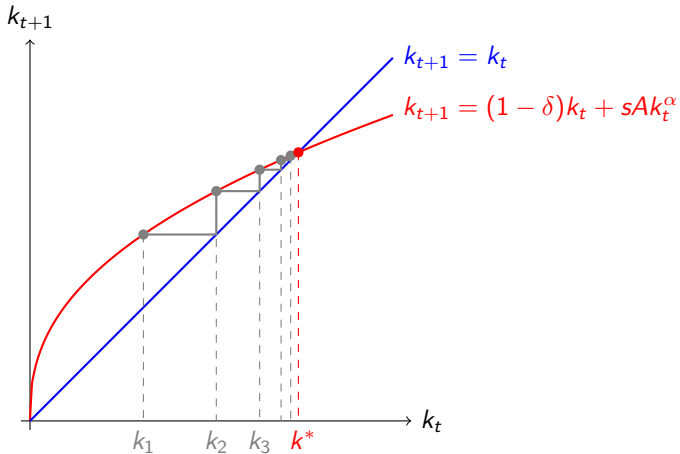
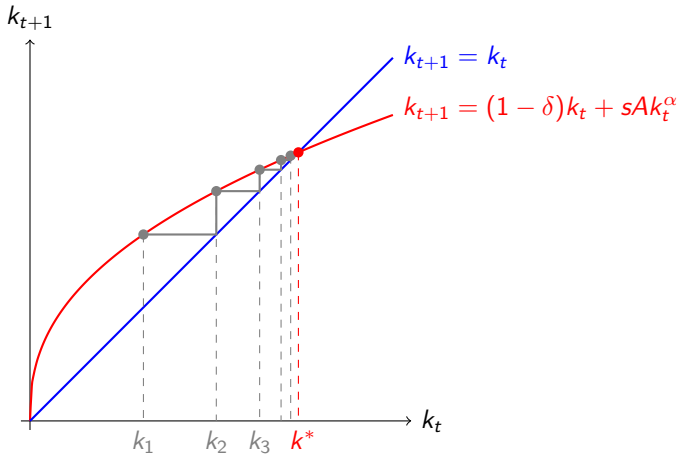
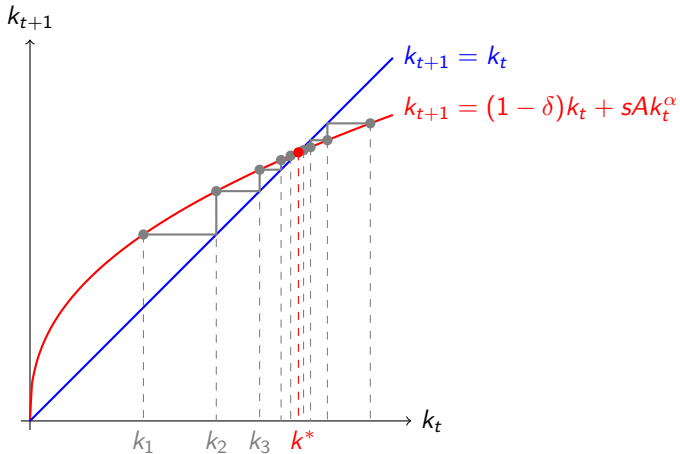


The Evolution of Capital per Worker: Convergence



The Evolution of Capital per Worker: Convergence



The Solow Model: Takeaways

Two alternative assumptions about labor in developing countries:

- The Harrod-Domar model (implicitly) assumes an unlimited supply of workers

  $\Rightarrow$ More investment in capital leads to more growth

- The Solow model predicts convergence, diminishing marginal returns to capital investments when the supply and/or number of workers (employed in the modern sector) is fixed

  $\Rightarrow$ Over the long-term, growth rates are determined by technical progress (A)

We can decompose output, and hence growth, into explained and "unexplained" components:

$$\ln Y_t = \underbrace{\ln A}_{\text{TFP}} + \underbrace{\alpha \ln K_t + (1-\alpha) \ln L_t}_{\text{inputs into production}}$$

Asian Miracle Controversies

Did growth result from increases in use of inputs (K and L) or increases in productivity?

- Alwyn Young, Paul Krugman, and others have argued that East Asian industrialization was similar to the Soviet Union: fully explained by increases in capital, labor, and education (human capital)
  - Alwyn Young uses data from Singapore to argue that TFP has not increased (much)
- Others (e.g. Cherif and Hanasov, Nathan Lane) point out that East Asian industrialization was characterized by changes in comparative advantage toward high-tech, modern sectors

Did the Asian miracle economies by intervening in the market or getting out of its way?

- World Bank (1993) argues that Asian successes reflected preconditions for growth (education, macro policies, limited trade restrictions) that enabled market sector to flourish
- Others (Robert Wade, Peter Evans, Alice Amsden) note active government intervention

Preconditions: Political Commitment to Growth

- **Hong Kong:** British colony in the post-WWII period (until 1998)
- **Singapore:** former British colony, fully independent since 1965, same political party (initially led by Lee Kuan Yew) has been in power since 1959
- **South Korea:** Korean War 1950–1953, Park Chung Hee comes to power in 1961, oversees period of export-led growth, rules until his assassination in 1979
- **Taiwan:** Chiang Kai-shek's government declares martial law in 1949, which remained in effect until 1987 (with support from the United States)

Preconditions: Human Capital

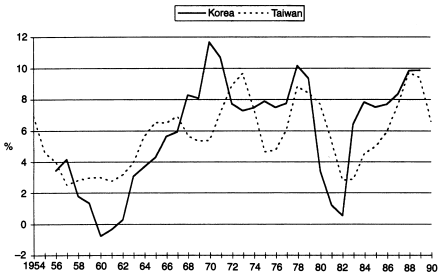
	Primary enrolment ratio		Secondary enrolment ratio		Literacy rate	
	Predicted	Actual	Predicted	Actual	Predicted	Actual
Korea	0.57	0.94	0.10	0.27	0.31	0.71
Taiwan	0.62	0.96	0.12	0.28	0.36	0.54

Source: Rodrik (1995)

Growth Miracles: South Korea and Taiwan

Country	Per-capita GDP, 1960 (1985 dollars)	Per-capita GDP, 1989 (1985 dollars)	Per-capita GDP, growth, 1960–89 (%)
South Korea	883	6206	6.82
Taiwan	1359	8207	6.17
Ghana	873	815	−0.54
Senegal	1017	1082	0.16
Mozambique	1128	756	−2.29
Brazil	1745	4138	3.58
Mexico	2798	5163	2.36
Argentina	3294	3608	0.63

Source: Rodrik (1995)



Source: Rodrik (1995)

Fact 1: Both Exports and Investment Increased

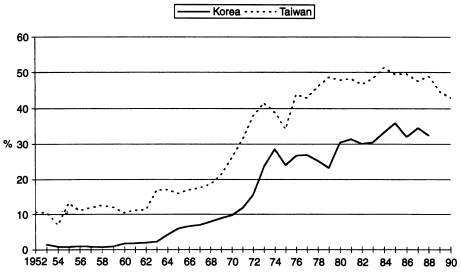


Figure 2. Export/GDP ratios, 1952–90

Source: Rodrik (1995)

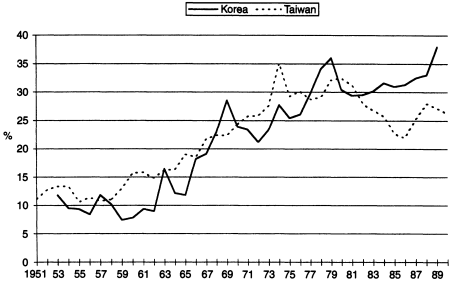


Figure 3. Investment/GDP ratios, 1951–90

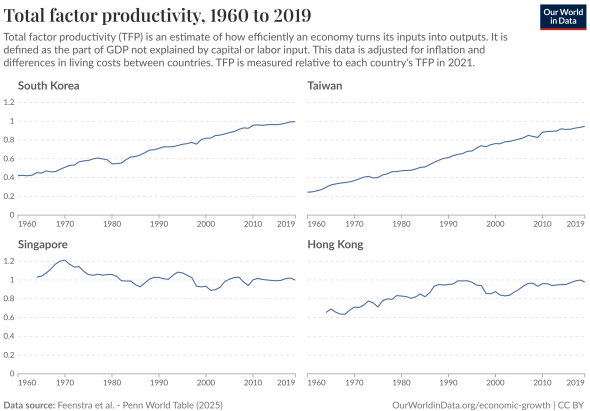
Source: Rodrik (1995)

Fact 2: Total Factor Productivity Did Not Improve (Much)

Country	Period	Total factor productivity growth (% per year)	
		Economy	Manufacturing
South Korea	1966–90	1.2*	2.7
Taiwan	1966–90	1.8	1.4
Argentina	1940–80	1.0	n.a.
Brazil	1950–80	2.0	n.a.
	1960–80	n.a.	1.0
Chile	1940–80	1.2	n.a.
Colombia	1940–80	0.9	n.a.
Mexico	1940–80	1.7	n.a.
	1940–70	n.a.	1.3
Venezuela	1950–70	n.a.	2.6

Source: Rodrik (1995)

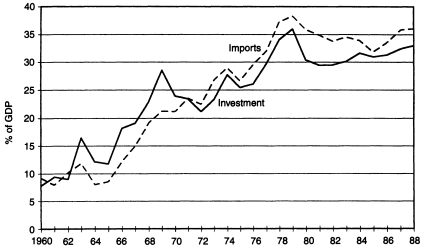
TFP Improvements Over the Longer-Run



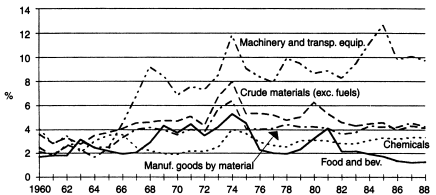
Fact 3: Exports Did Not Drive the Increase in Investment

- **Timing:** South Korea and Taiwan eliminated most particularly distortionary ISI policies and introduced export subsidies by the late 1950s, but exports took off 5+ years later
- **Magnitude:** Exports accounted for less than 5% of GDP in South Korea in 1960, so they can only account for a small share of overall GDP (and investment) growth
- **Absence of causes:** There were no external shocks (in world prices or exchange rates) that would explain a sudden, exogenous increase in exports beginning in the mid-1960s

Claim: South Korea Achieved Growth Because of Investment

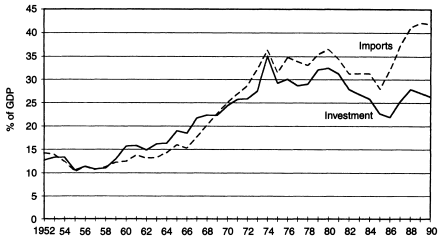


Source: Rodrik (1995)

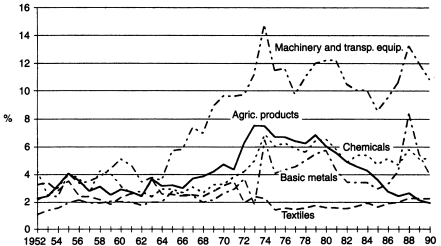


Source: Rodrik (1995)

Claim: Taiwan Achieved Growth Because of Investment



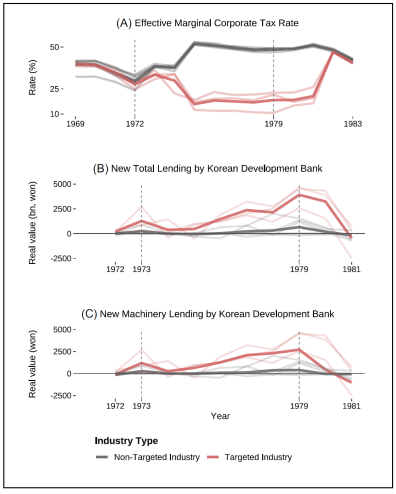
Source: Rodrik (1995)



Source: Rodrik (1995)

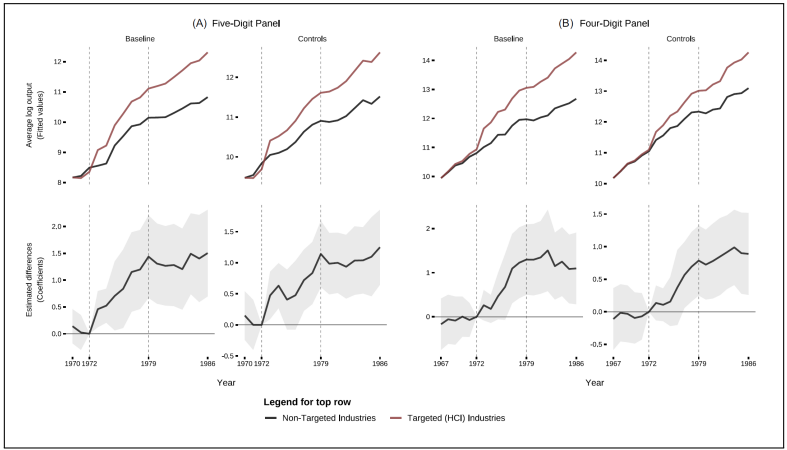
Industrial Policy in Practice: South Korea's Heavy Industry Drive

- Nixon suggests reduced US support for Asian allies
- Heavy Chemical and Industry Drive launched in 1973
  - Steel + nonferrous metals
  - Shipbuilding
  - Machinery
  - Electronics
  - Petrochemicals
- Two main policy levers of HCI Drive
  - Credit ("policy loans")
  - Exemptions from import duties / tariffs



Source: Lane (2005)

Industrial Policy in Practice: South Korea's Heavy Industry Drive



Source: Lane (2025)