INDUSTRIAL POLICY AND DEVELOPMENT

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Did Industrial Policy help to transform fast growing countries in Asia?

Shenzhen: 1980s

A fishing village of several thousand near Guangzhou

Shenzhen today

A city of 7 million, specializing in electronic manufacturing

Source: http://al.china-
embassy.org/eng/zggk/W02008122305575525157.jpg

Source: http://www.littleredbook.cn/wp-
content/uploads/2009/02/littleredbook_dot_cn_city-
snapshot_shenzhen.jpg

Seoul in the 1950s

Cheonggye river, and the biggest slum in Seoul

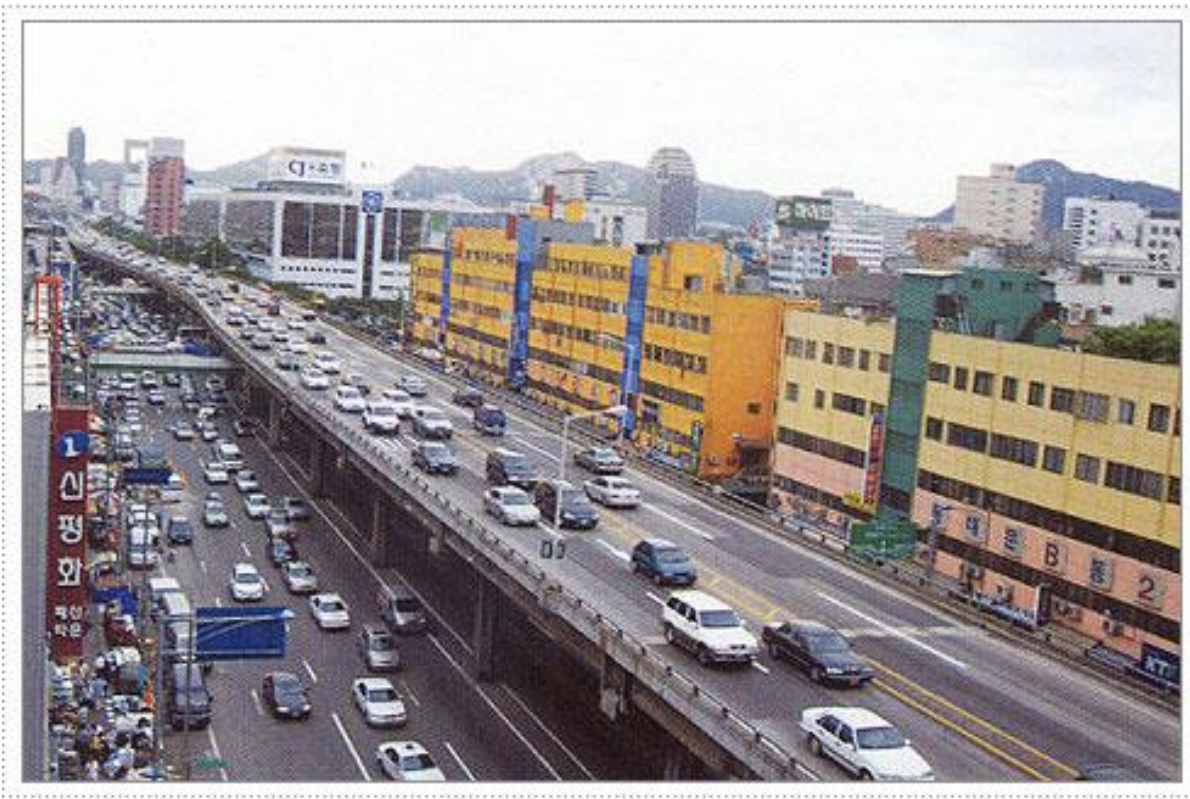Source: Aving,network

Seoul in the 1970s

A highway is built on the river, through and over the slums

Source: Aving,network

Seoul in the 1980s

More infrastructure and new businesses next to Cheonggye-cheon, the slums were moved to other parts of the city

Source: Aving,network

Seoul in 2015

Cheonggyecheon in 2015: a decade earlier, Mayor Lee Myungbak removed the highway and recovered the riverfront

Was it the state or the market or both?

Key Challenge: *how* to design policies that promote innovation and growth

Dwight D. Eisenhower initiated ARPA, the team of researches that built ARPANET, the earliest U.S. Internet.

What do we mean by Industrial Policy ? (Harrison and Rodriguez-Clare (2010))

- Working definition: any intervention which shifts incentives away from policy neutrality
- A broad conception of IP, which spans a range of policies
  - Tariffs
  - Tax breaks for new businesses or FDI
  - Trade promotion
  - Infrastructure provision
- "Doomed to choose" according to Rodrik

In practice, promoting the right sectors has proven challenging

We know externalities exist but nurturing high potential sectors ("latent comparative advantage") is not easy:

- How can we identify sectors with large externalities or coordination failures?
- If agglomeration economies are important, then IP in small domestic markets is likely to fail
- Special interests may prevail the promotion of latent comparative advantage sectors (eg rent seeking by US steel)

These challenges have led many economists to support "soft" over "hard" IP

"Soft" Industrial Policy:

- Special Economic Zones offering lower cost infrastructure
- Roads and ports designed to increase trade
- Special Credit for exporters (Trade Credit)
- Promoting clusters in order to export

"Hard" Industrial Policy:

- Tariffs
- Subsidies to specific sectors
- Tax breaks for foreign investors

Typical Suggestions for "Soft" IP
(see IDB on "Export Pioneers"; JC Hallak JDE)

- Regulations to enforce higher quality standards
- Public investment in specific infrastructure projects when there are large investment complementarities
- Attracting FDI through provision of infrastructure
- Technical assistance, prizes, grants for projects proposed by producers and performed by local research centers
- To identify coordination failures, inviting sector and cluster organizations to come forward (not relying on gov't)
- Conferences to facilitate transmission of product knowledge and export business practices (Hallak)
- If such organizations are weak, providing support to sectors that want to initiate or improve their organizations

But what about "hard" industrial policy?

(also referred to as vertical policies which tilt incentives in favor of some sectors over others versus horizontal policies which treat everyone the same way)

Aghion, Cai, Dewatripont, Du, Harrison, Legros (American Economic Journal October 2015)
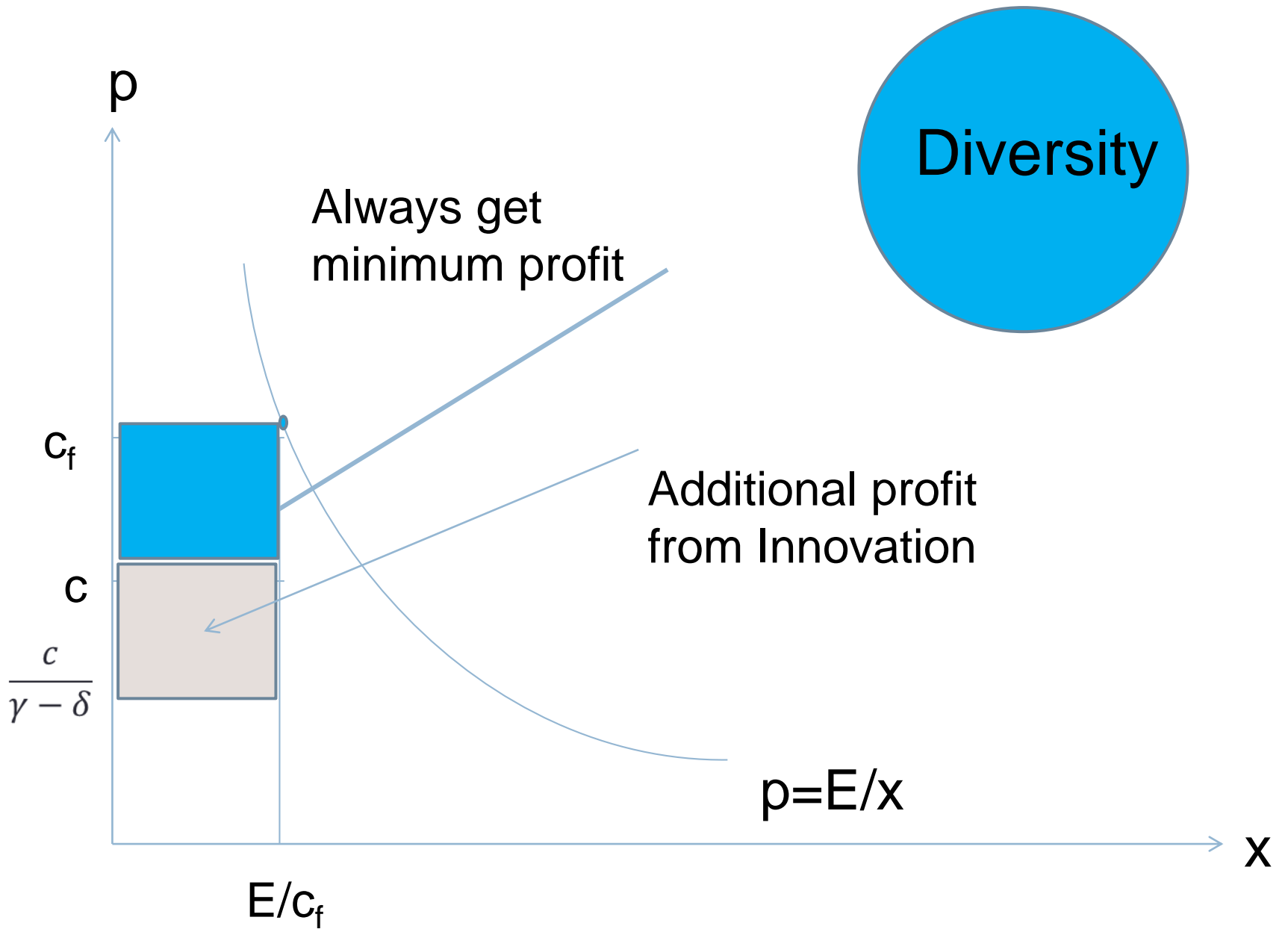
- When can "hard" industrial policy work?
- Even if we don't know what are the "right" sectors to promote?

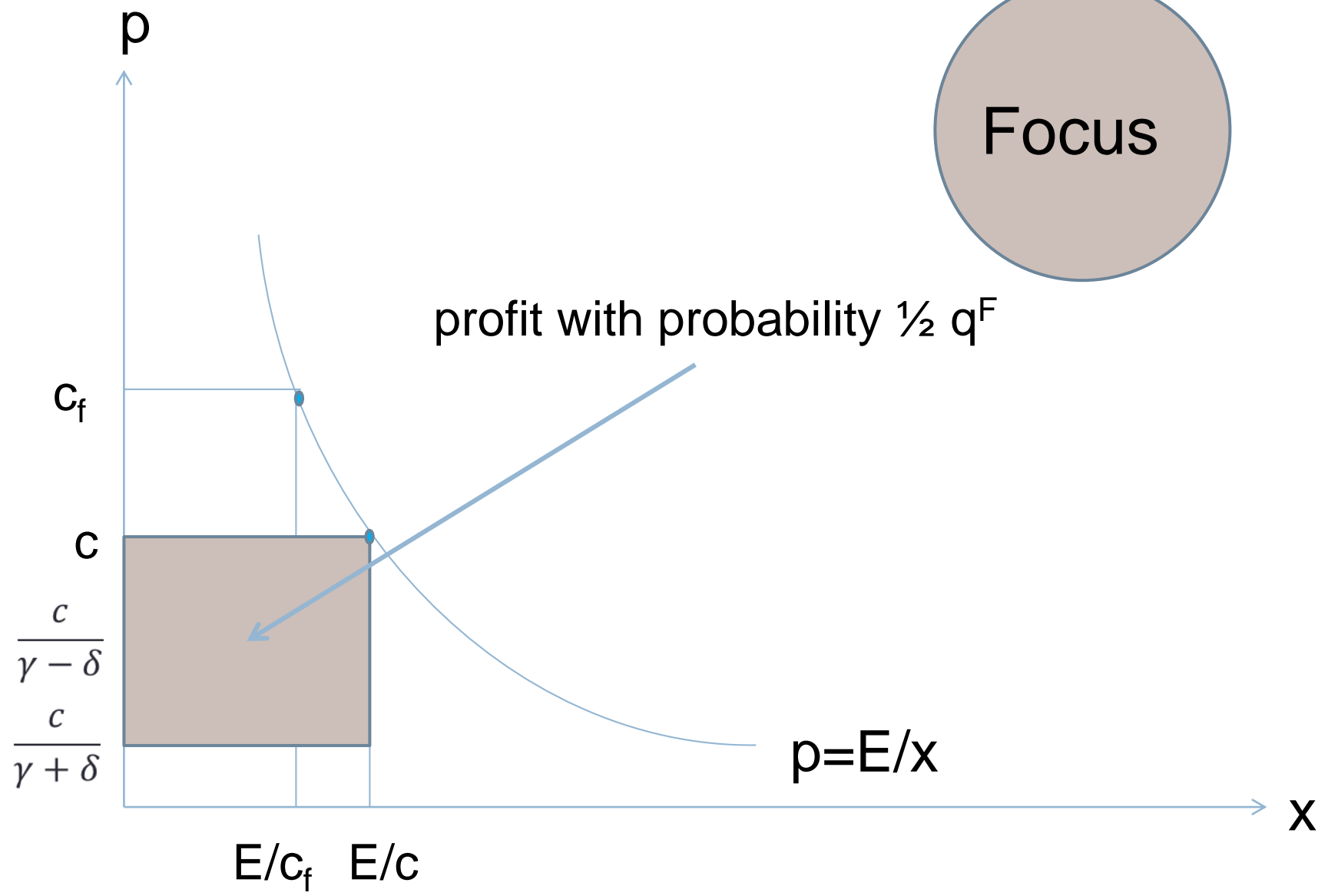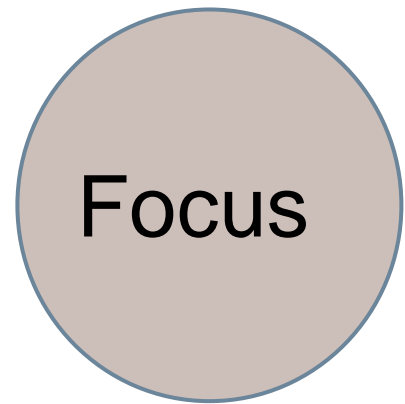- The idea: combining industrial policy and competition

Paper's Contribution

☐ Theory: shows that industrial policy combined with promoting competition leads to more innovation and growth

☐ We apply the theory's implications to China for 1998 through 2007, using firm level information on tariffs, subsidies, loans, and tax holidays.

☐ Evidence: Subsidies and tax holidays do lead to higher productivity growth when they are targeted at younger enterprises, and when they encourage competition.

The Model

- Two potential innovating firms choose which sectors A or B to locate in. There is a competitive fringe.

- When the potential innovators locate in different sectors "diversity" and don't compete with each other, they are likely to invest less in innovation. Each firm with monopoly power reaps some positive profits vis-à-vis fringe.

- When innovators must compete head to head (which happens when they locate in the same sector, called "focus") they invest more in innovation. IP that induces focus will lead to more innovation, hence more growth.

- Free market outcomes don't ensure the welfare maximizing outcome. Firms avoid competition.

p

Always get
minimum profit

Diversity

c_f

Additional profit
from Innovation

c

$\dfrac{c}{\gamma - \delta}$

$p = E/x$

x

E/c_f

EMPIRICAL APPLICATION: CHINESE ENTERPRISES

To test whether targeting generates innovation we calculate a modified Herfindahl measure

□ *Herf_subsidy*: measures sectoral dispersion of subsidies, loans, or tax holidays. We construct a Herfindahl index using firm subsidy or tax holiday shares within a sector but excluding the own firm subsidy.

$$Herf\_subsidy_{irjt} = \sum_{i \in j} \left(\frac{Subsidy_{irjt}}{Sum\_subsidy_{rjt}} \right)^2$$

□ This measure allows us to explore which allocation within a sector of industrial promotion works best.

□ To make a bigger number "better", we make competition equal to 1-Herf_subsidy

Estimation and Identification

$$(8) \quad \ln TFP_{ijrt} = \theta_1 Z_{ijt} + \theta_2 S_{jt} + \beta_m CompHerf_{imjrt} + \alpha_m \Omega_{mrt} + \ell_i + d_t + \epsilon_{ijt},$$

- Dependent Variable is a firm level measure of the log of TFP, measured using a two step Olley-Pakes methodology by sector. This is our measure for innovation ("q" in the model).

- First industrial policy measure is CompHerf which varies by industrial policy m, firm l, sector j, region r, and time t. It is calculated at the sector level but varies by firm i because it excludes that firm's benefits from IP.

- Second industrial policy measure Ω is the correlation between initial competition in the region and the industrial policy m across all sectors.

- Firm level controls Z include ownership, firm fixed effects

- Sector level controls S include FDI, tariffs, competition, exports

Core Results Reported in Table 4

Table 4. Competitiveness of Industrial Policies and Firm Productivity	
VARIABLES	(8)
	Dependent Variable: Log TFP_OP
comp_herfsubsidy	0.0319***
	(0.00918)
comp_herftax	0.0861***
	(0.0249)
comp_herfinterest	0.0669***
	(0.0190)

Summarizing Table 4 Results

☐ A more competitive allocation of low interest loans, subsidies, and tax holidays is associated with significantly higher TFP performance

☐ The point estimates for tax holidays (subsidies) indicate that increasing the herfindahl one standard deviation would lead TFP to increase by 1 to 2 percentage points.

☐ Big effects also for loans

Should some firms receive more support than others?

- Model makes a stark assumption about large potential innovators and a competitive fringe that never innovates.
- In reality, some firms are more likely to innovate than others, and these are the types of enterprises for whom industrial policy should promote (in the model).
- Big enterprises ? (Melitz models)
- Young enterprises ? (Haltiwanger et al)
- We try both

VARIABLES	(2)	(3)	(4)
Dependent Variable is TFP	TFP_OP	TFP OP	TFP_OP
	No Weight	Size Weight	Youth Weight
comp_herfsubsidy	0.0319***		
	(0.00918)		
comp_herftax	0.0861***		
	(0.0249)		
comp_herfinterest	0.0669***		
	(0.0190)		
comp_herfsubsidy_weightsize		0.0255***	
		(0.00909)	
comp_herftax_weightsize		0.0555***	
		(0.0124)	
comp_herfinterest_weightsize		0.0616***	
		(0.00983)	
comp_herfsubsidy_weightage			0.102***
			(0.0313)
comp_herftax_weightage			0.0781***
			(0.0255)
comp_herfinterest_weightage			0.0541**

Table 5. The Impact of the Competitiveness of Industrial Policies on Firm TFP: Weighted Herfindhal

Take-Aways on China

- Theory: our model shows that the free market outcome results in too little productivity growth/innovation.

- Industrial policy when implemented either in competitive sectors or in a way that promotes competition ("focus") leads to more innovation and growth.

- Firm-level innovation (as measured by TFP growth) is higher as a result of subsidies, tax holidays, and low interest loans when they are allocated more competitively.

- The positive impact of subsidies is three times higher when subsidies are systematically allocated to younger firms. In general, targeting younger firms yields much bigger productivity increases.

An example of bad IP: India and SMEs

- Like many other countries, India promotes small and medium enterprises (SMEs) as a way to foster employment growth.

- The mechanism was small scale reservation which restricted operations of some products to SMEs.

- Beginning in 1998, India eliminated this policy.

- Martin, Harrison, and Nataraj (2015) look at impact of phasing out small scale reservation.

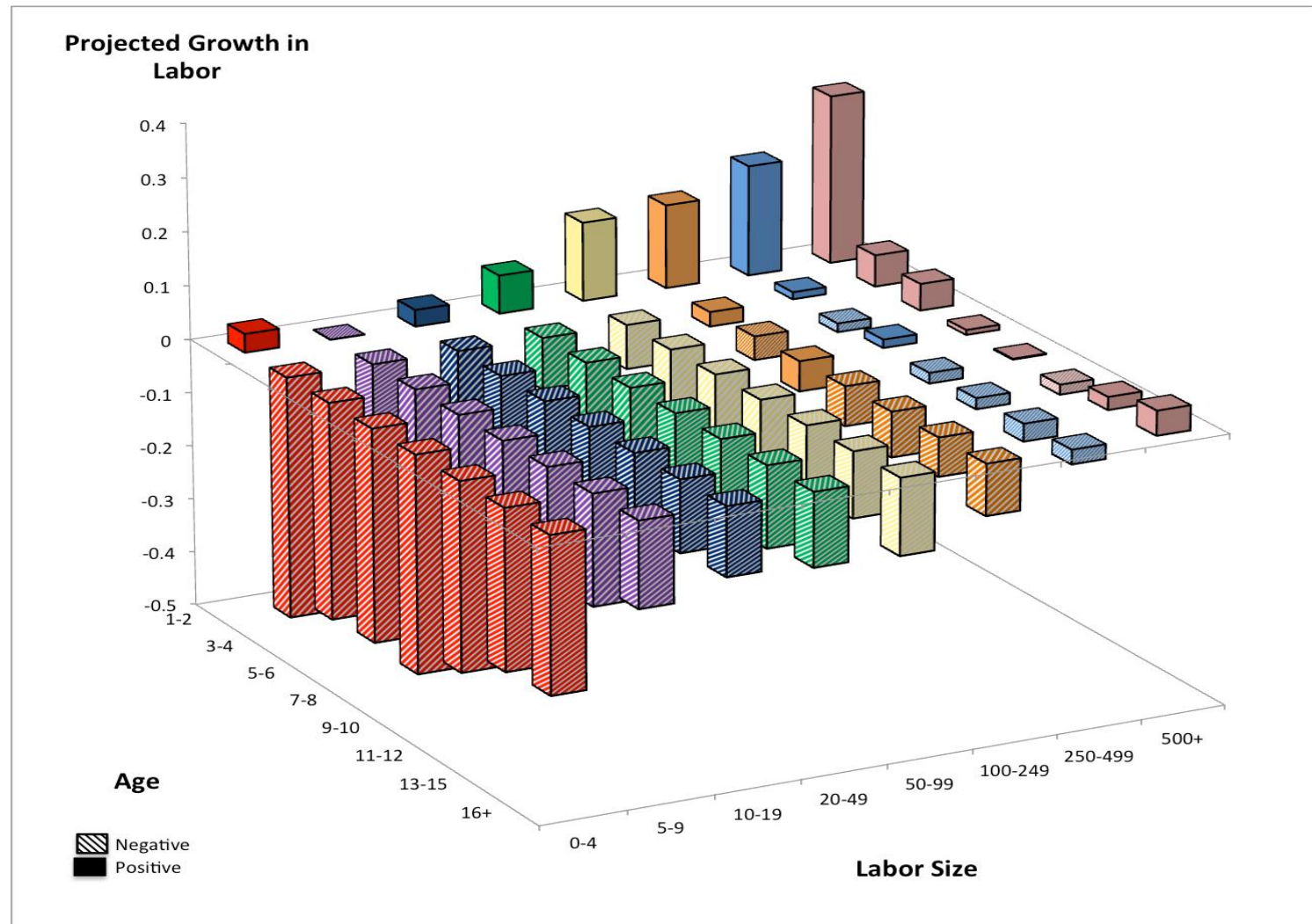- Getting rid of this bad IP promoted employment.

Beginning in 1998, India dismantled its Small Scale Reservation Policy
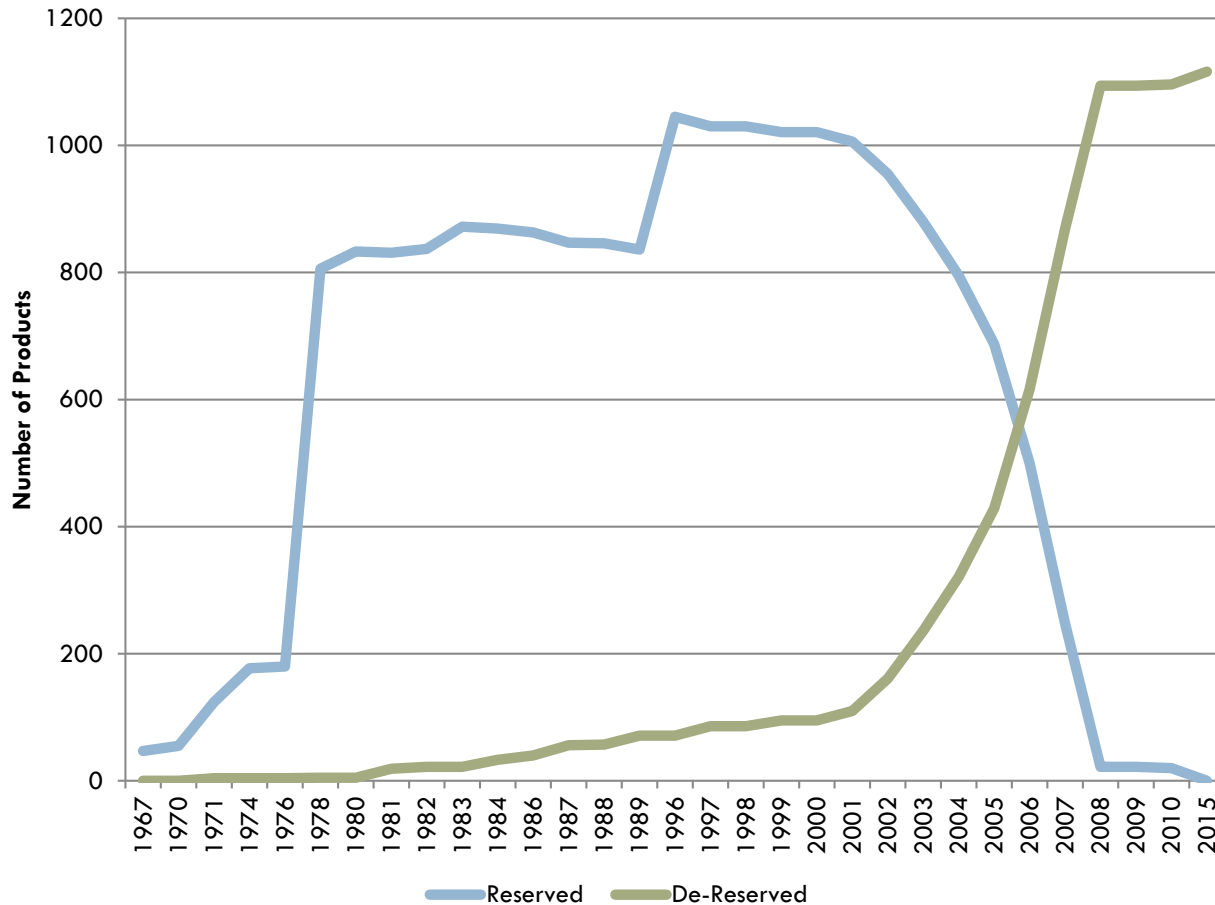
Eliminating support for SMEs generated net employment and wage gains
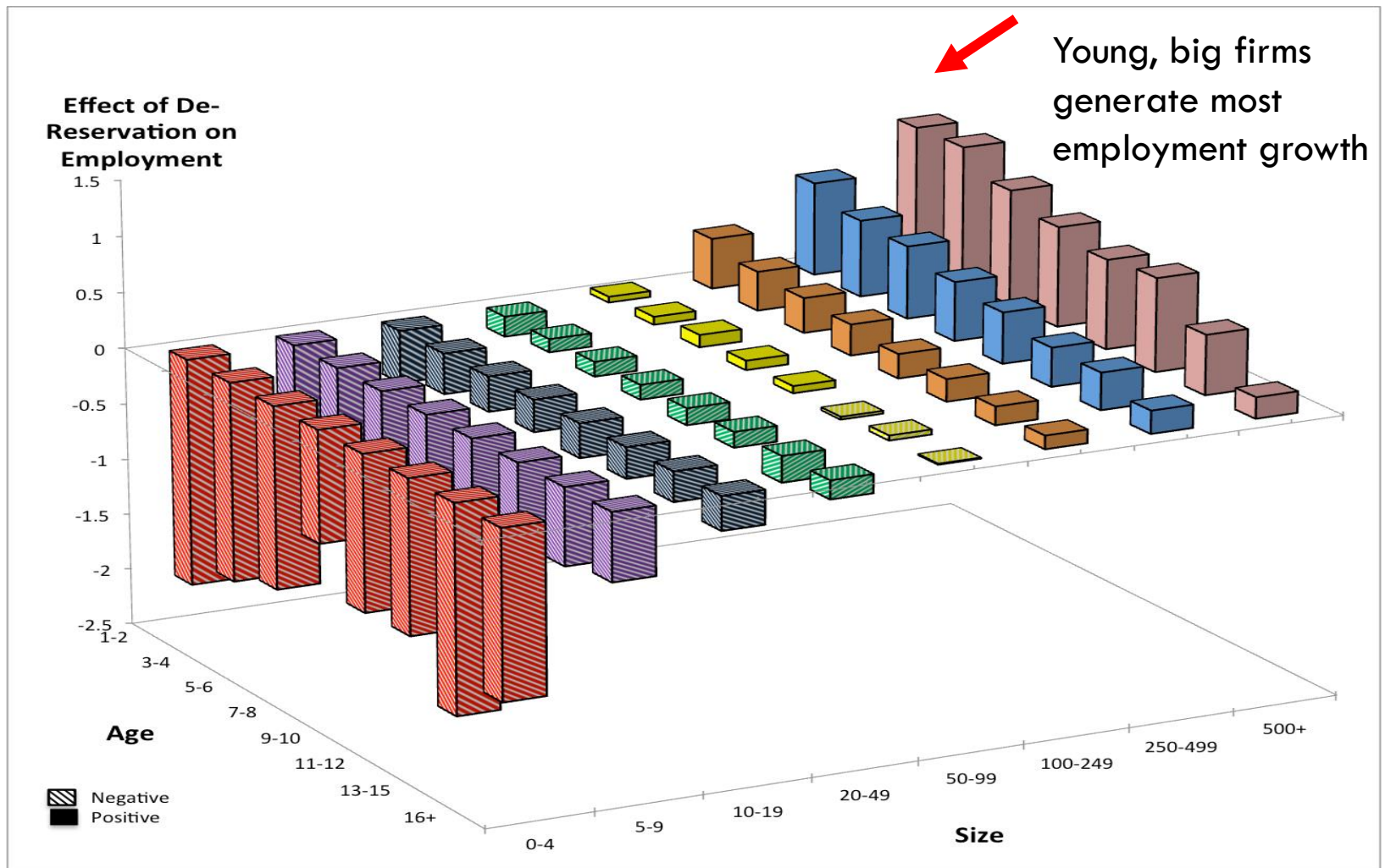
Employment Growth by Size and Age in India: youth and size dominate

Some Lessons

- Lots of evidence that "soft" industrial policy or horizontal interventions do often help.

- Much more mixed evidence on "hard" or vertical interventions.

- In China, we find that subsidies and tax holidays spurred growth when they also promoted competition

- Mistakes also possible: in China, tariffs and low interest loans associated with worse performance

- In India, SME promotion deterred employment growth

- BOTTOM LINE: IP works if combined with competition