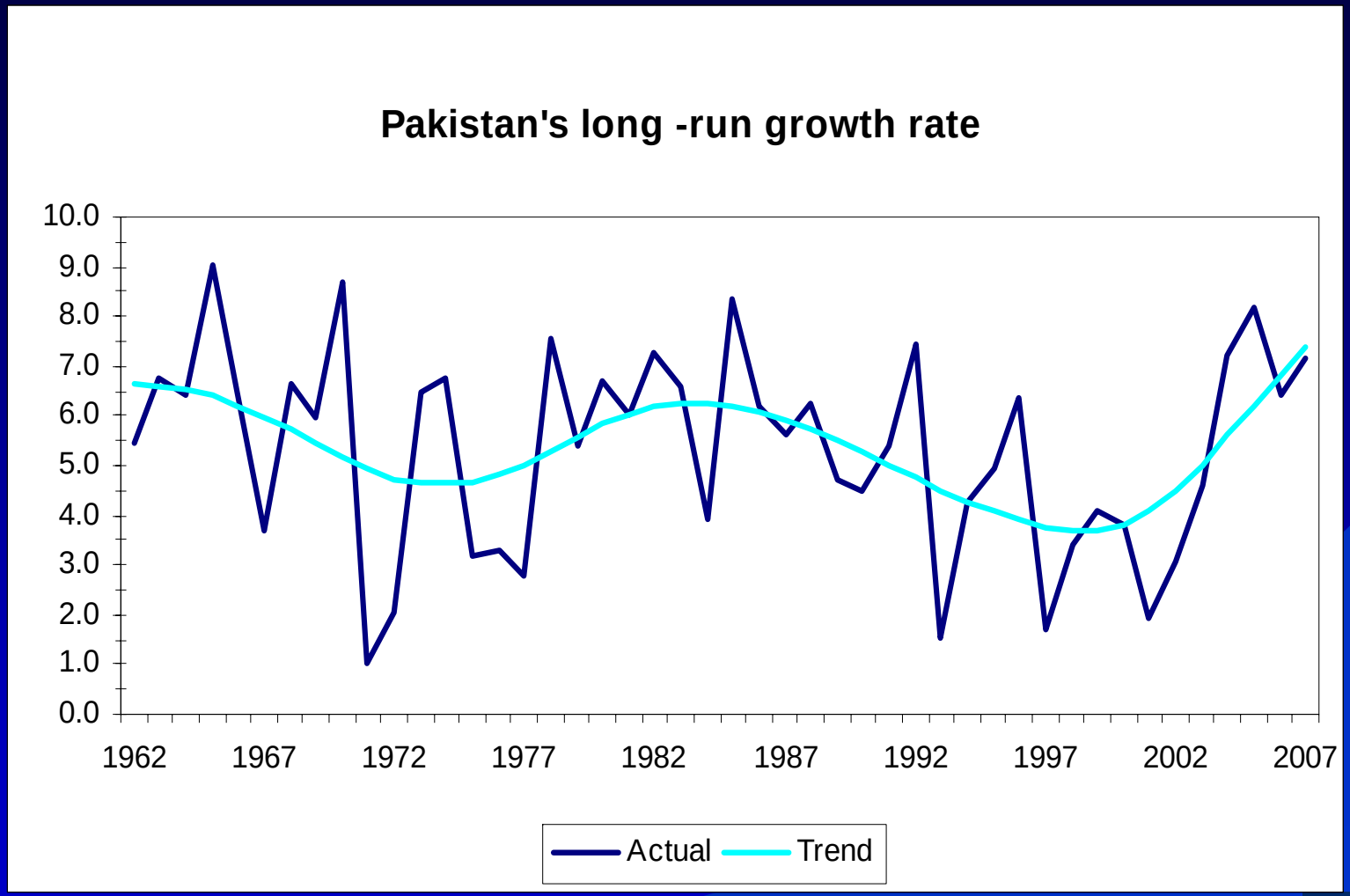
COMPETITIVENESS AND STRUCTURAL CHANGE IN PAKISTAN

Jesus Felipe

Central and West Asia Department

Asian Development Bank

ADB


Pakistan's long -run growth rate
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1962
1967
1972
1977
1982
1987
1992
1997
2002
2007
Actual
Trend

Rapid growth and accelerations

	Period covered	Number of rapid growth episodes	Average growth during rapid growth (%)	Number of growth accelerations (years)	Growth before (%)	Growth after (%)	Growth acceleration (percentage points)
China	1965 - 2004	28	8.84	2 (1981, 1991)	6.36	10.87	4.51
					8.50	10.73	2.23
India	1965 - 2004	15	5.57	1 (1982)	3.55	5.84	2.29
NIEs							
Hong Kong	1965 - 2004	21	7.52	1 (1975)	7.47	9.76	2.29
Korea	1965 - 2004	24	7.72	1 (1984)	6.44	8.75	2.31
Singapore	1965 - 2004	28	7.76	1 (1987)	6.08	9.17	3.09
Taiwan	1970 - 2004	22	9.33	1 (1984)	8.16	12.01	3.85
ASEAN 4							
Indonesia	1965 - 2004	24	7.00	1 (1988)	5.24	7.85	2.61
Malaysia	1965 - 2004	22	7.32	1 (1987)	4.50	8.95	4.45
Philippines	1965 - 2004	8	5.62	1 (1987)	0.15	3.11	2.96
Thailand	1965 - 2004	24	7.31	1 (1986)	5.30	9.68	4.38
South Asia							
Bangladesh	1965 - 2004	.	.	1 (1975)	-0.09	3.80	3.89
Bhutan	1980 - 2004	13	6.59	0			
Maldives	1995 - 2004	1	6.96				
Nepal	1965 - 2004			1 (1983)	2.34	5.29	2.95
Pakistan	**1965 - 2004**	**12**	**6.18**	**1 (1977)**	**3.53**	**6.66**	**3.13**
Sri Lanka	1965 - 2004	8	5.19	0			

ADB

Stylized facts about development

Economic development requires diversification, not specialization

Rapidly growing countries are those with large manufacturing sectors (Kaldor's laws)

Growth accelerations are associated with structural changes in the direction of manufacturing

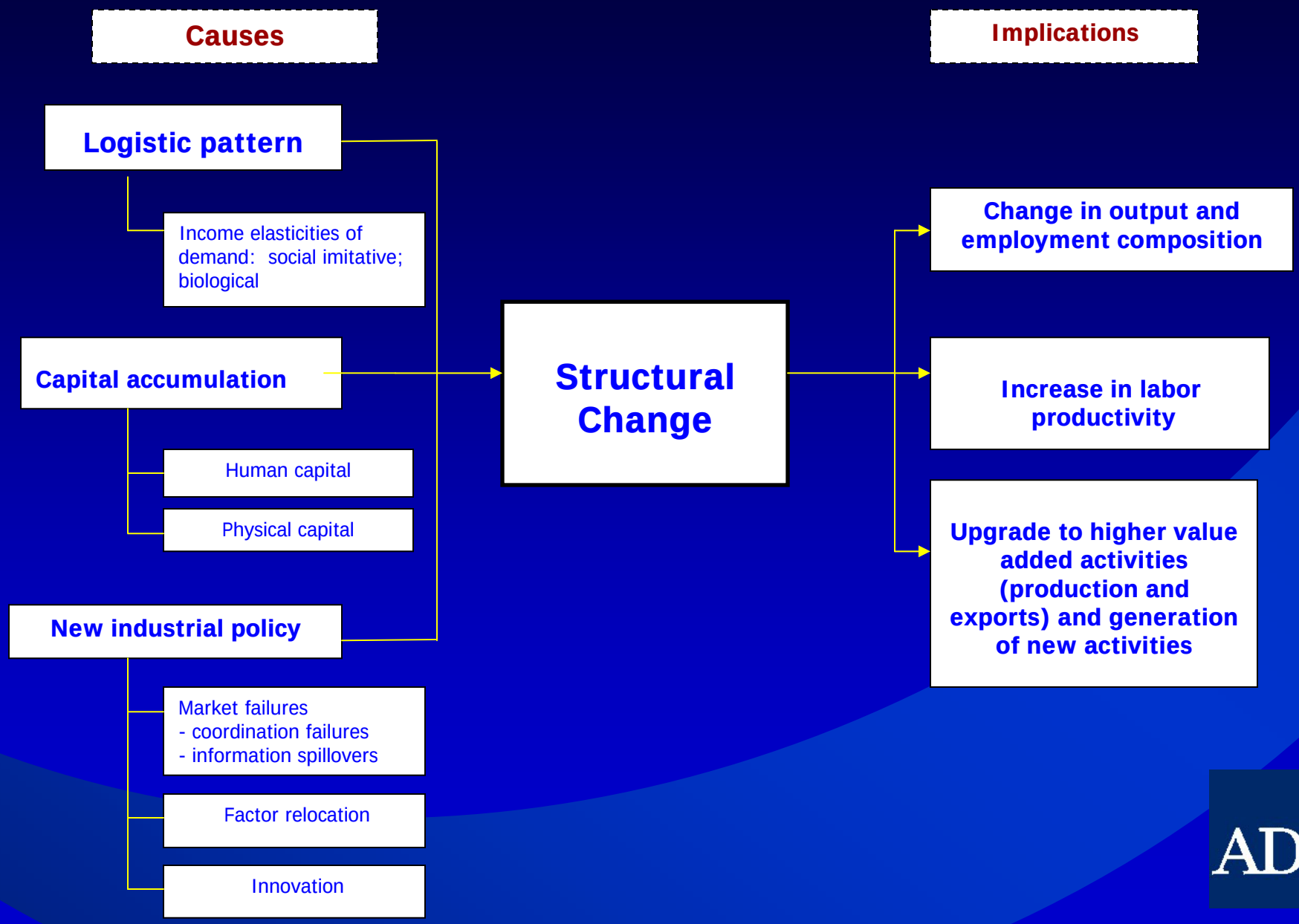
Specialization patterns are not pinned down by factor endowments

Countries that promote exports of more "sophisticated" goods grow faster

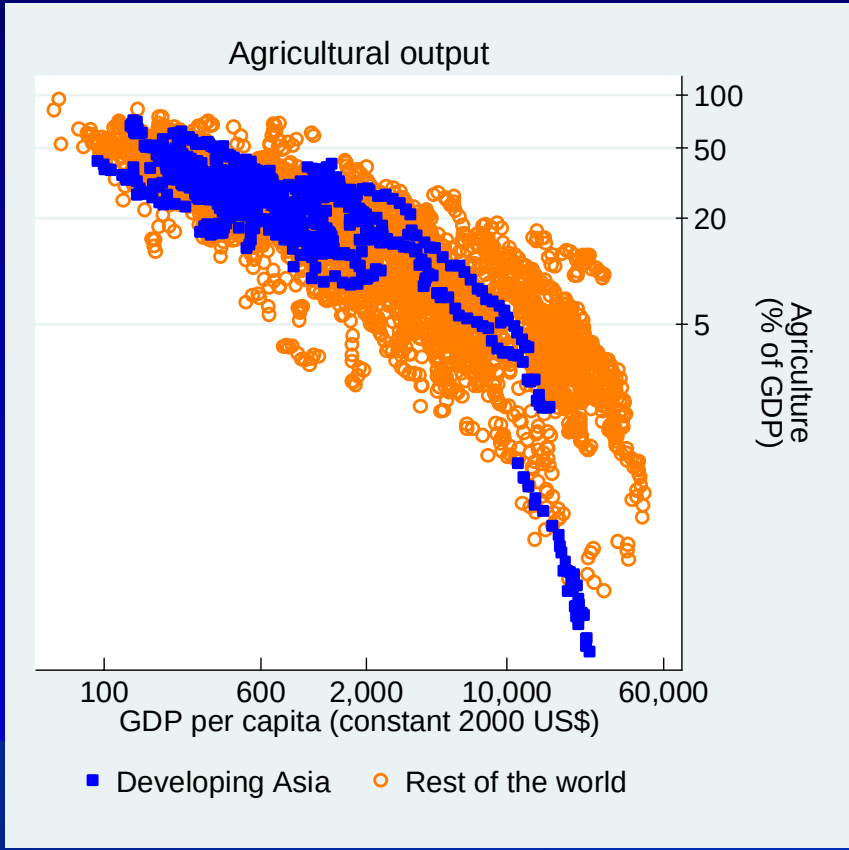
Some specialization patterns are more conducive than others in promoting industrial upgrading

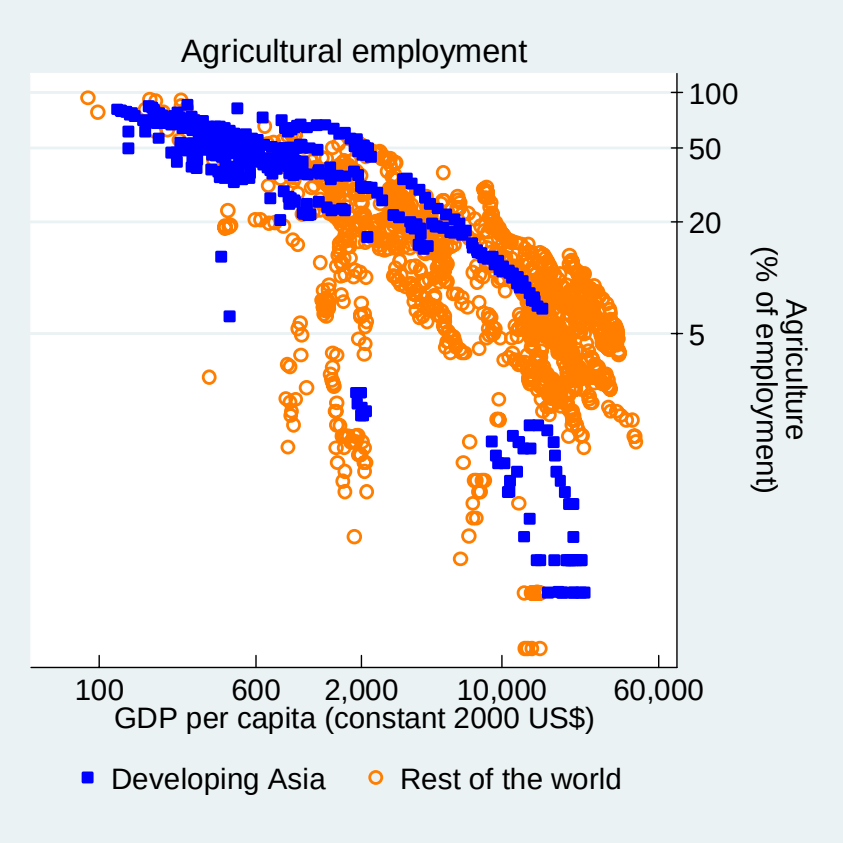
ADB

Structural change: Causes and implications



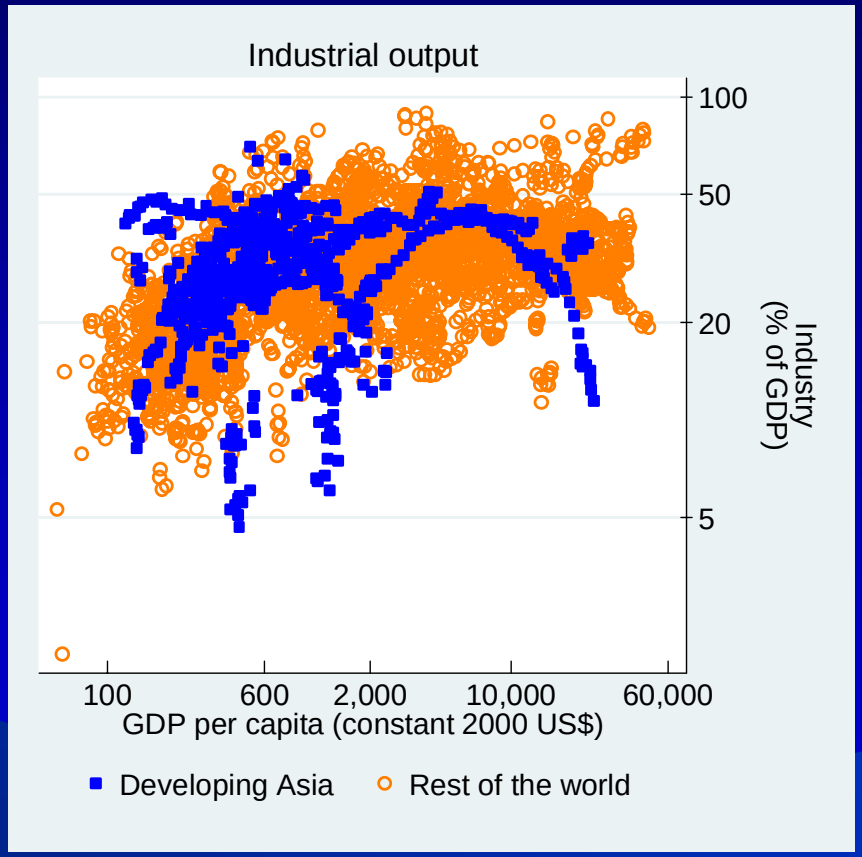
Agricultural output and employment shares vs. per Capita GDP

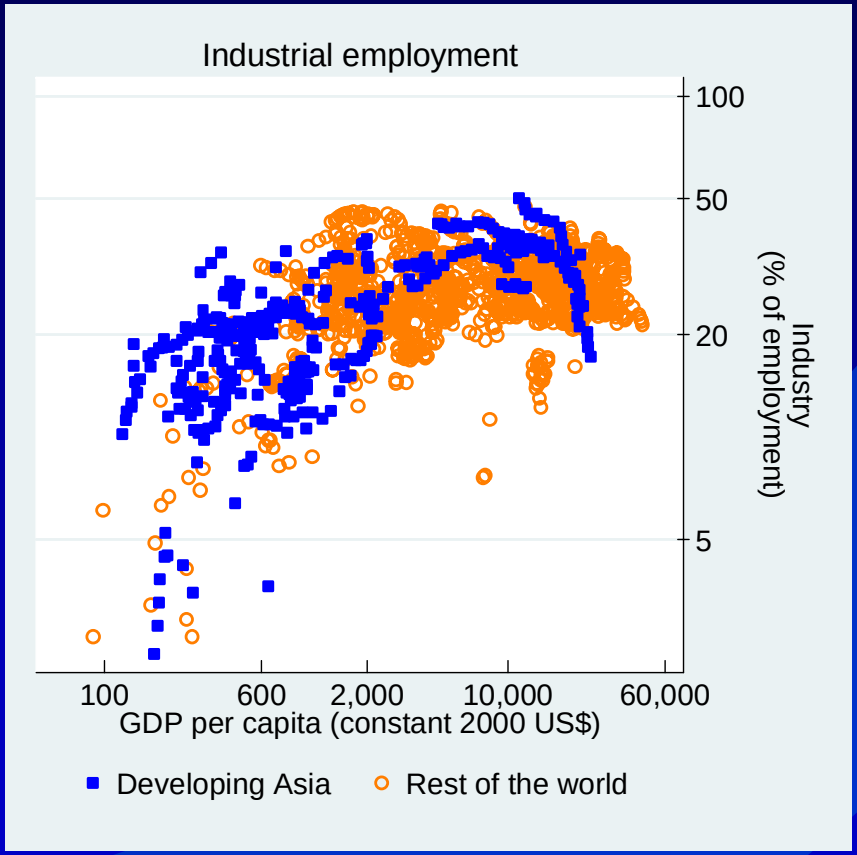




ADB

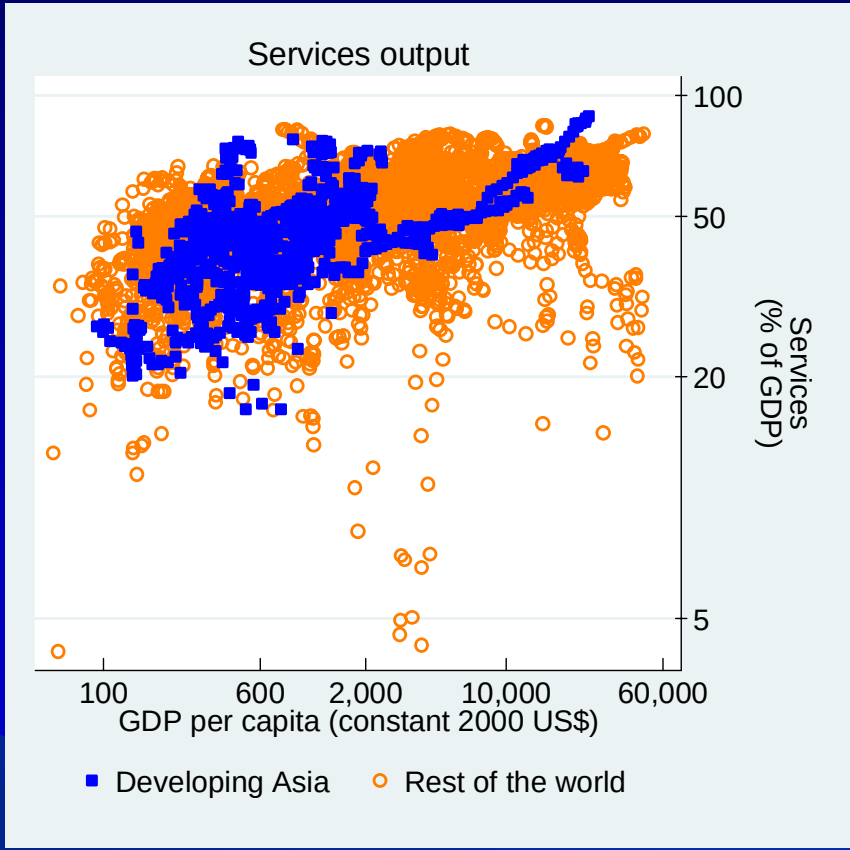
Industrial output and employment shares vs. per Capita GDP

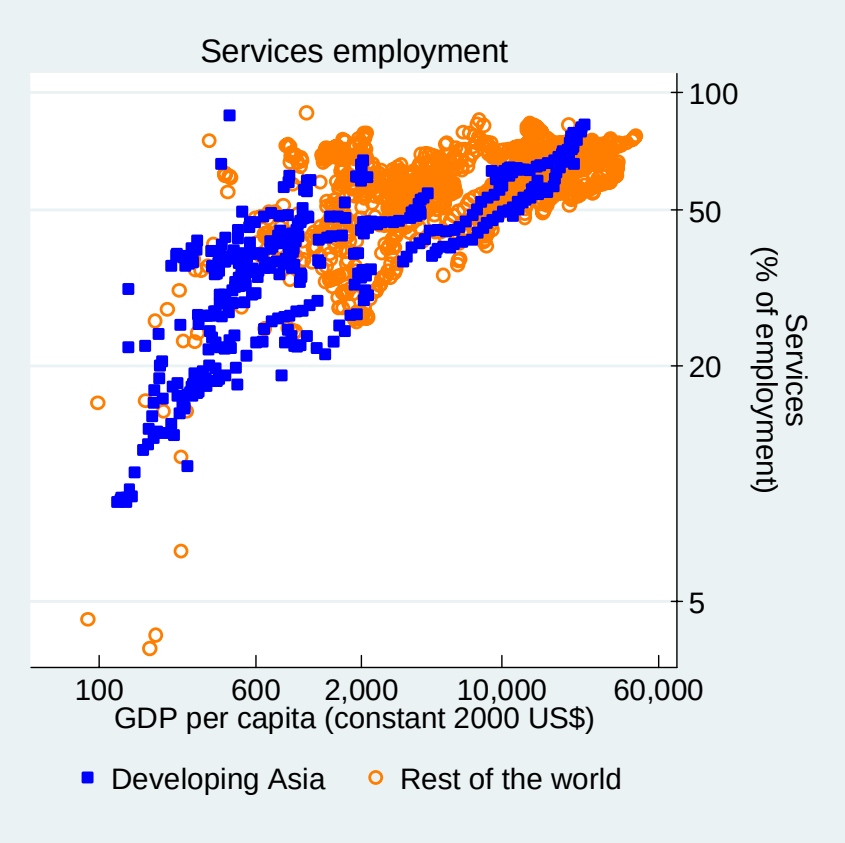




ADB

Services output and employment shares vs. per Capita GDP





ADB

Objectives of my talk

To provide an account and characterization of Pakistan's growth in the context of its structural transformation (long-run) in a comparative perspective

To understand the implications and development challenges for Pakistan (e.g., reforms) from the point of view of structural change

To discuss policy options

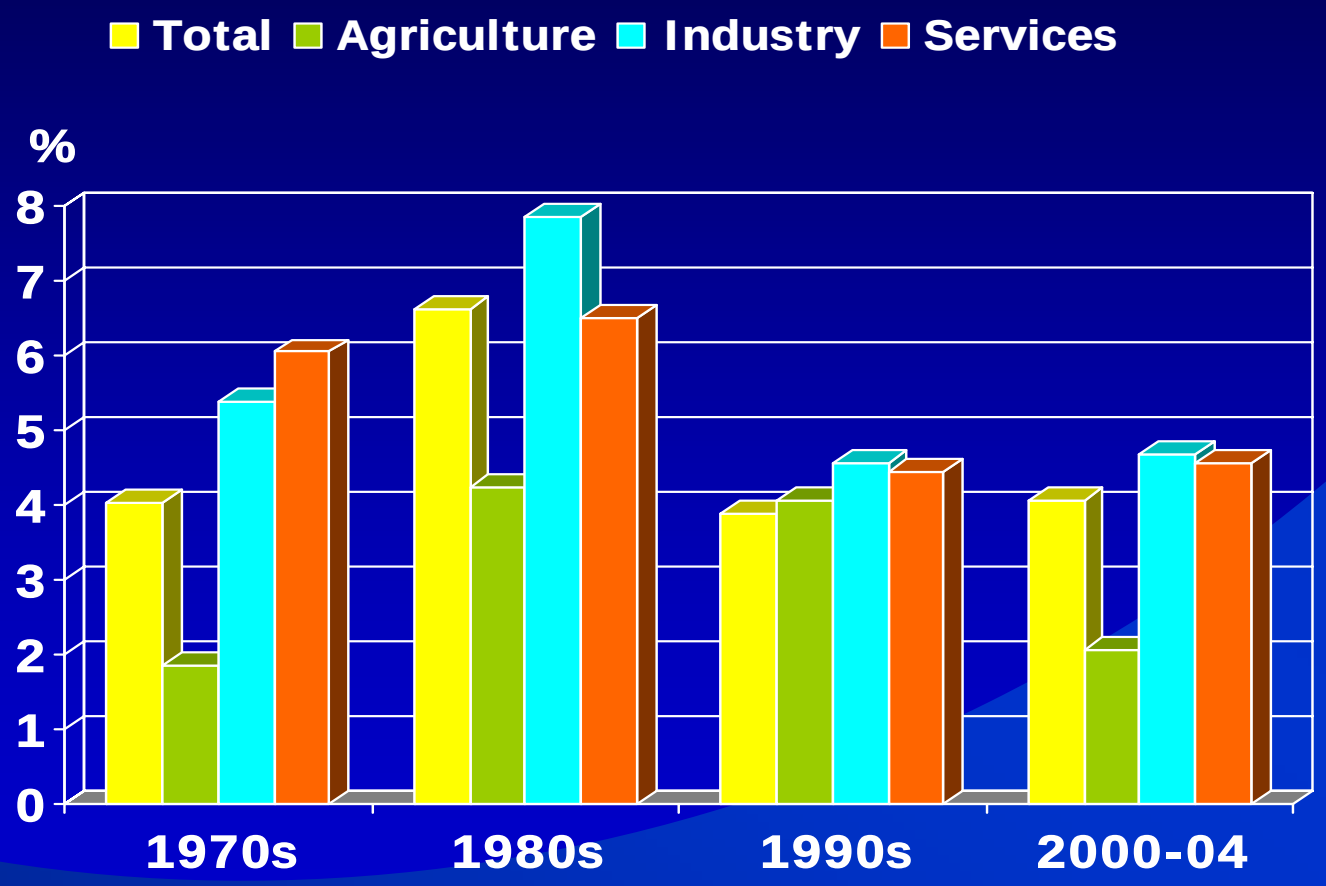
ADB

Presentation

- Structural change and the broad contours of change in developing Asia
- Structural change in Pakistan
  - * Benchmarking Pakistan
  - * Growth by sectors and labor productivity growth
  - * Output and employment shares
  - * Structure of employment
  - * Levels of Labor Productivity
  - * Manufacturing sector (specialization, technology)
  - * Exports (sophistication)
- Product Space; Industrial Policy
- Conclusions and policy issues

ADB

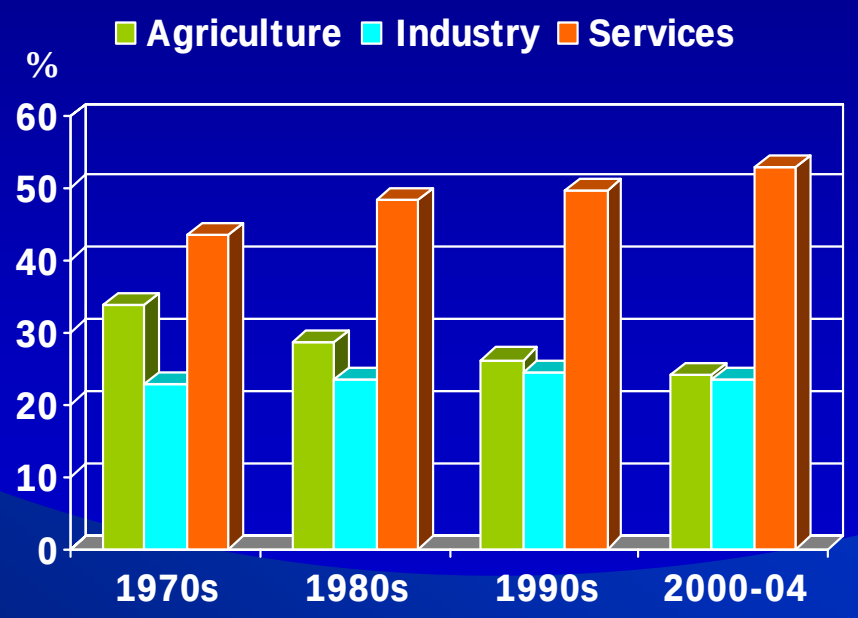
Pakistan:
Annual growth by sector



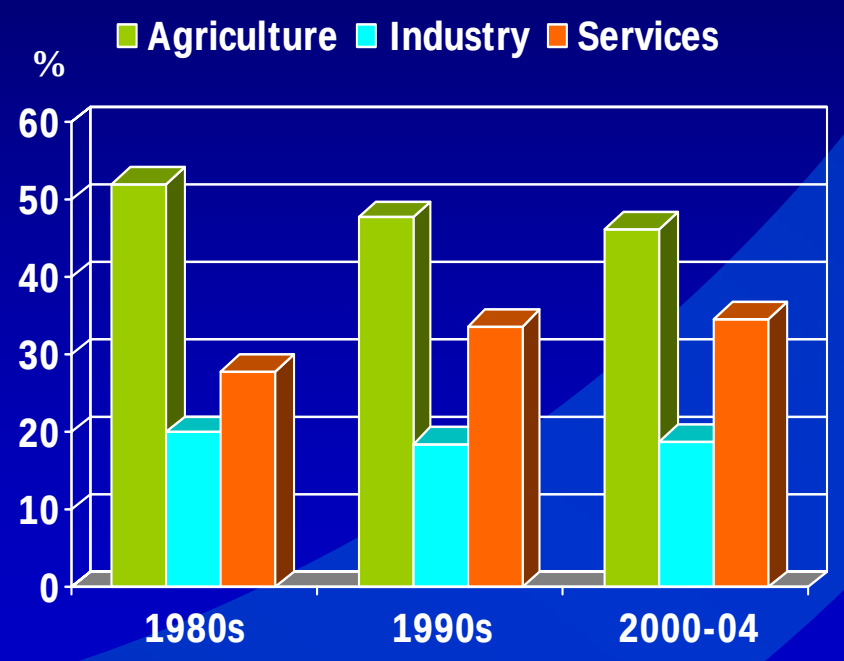
ADB

Pakistan
Output and employment shares

Output shares



Employment shares



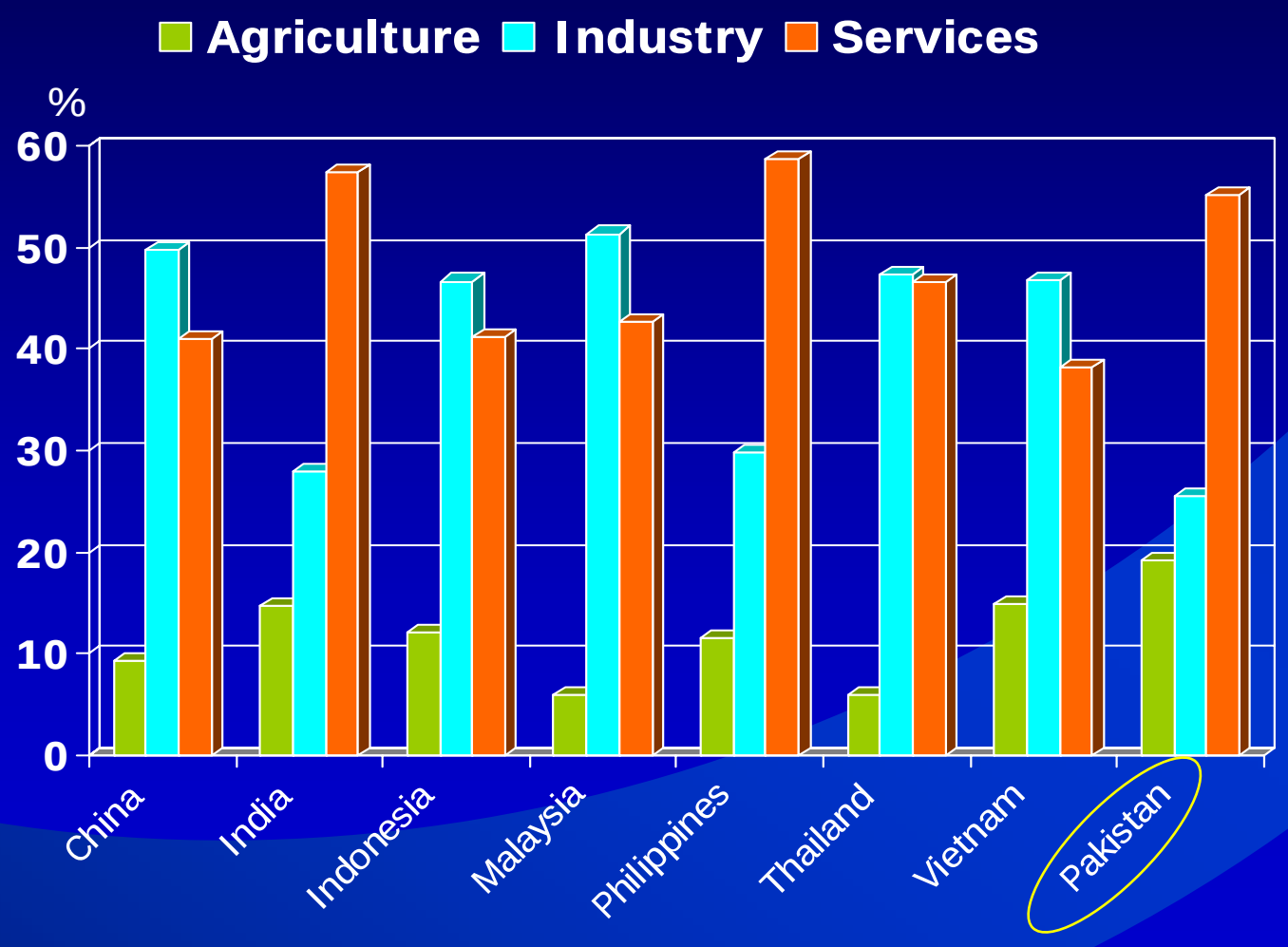
ADB

Pakistan
Services sector, share of output (%)

	1971-1975	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005
1. Transport, Storage and Communication	7.49	7.66	9.22	8.32	10.08	10.38	12.57
2. Wholesale and Retail Trade	14.89	15.62	15.48	16.62	16.43	15.32	16.77
3. Finance and Insurance	2.29	2.57	2.98	2.99	3.18	3.22	3.51
4. Ownership of Dwellings	4.16	3.73	4.88	4.57	4.35	4.50	3.56
5. Public Administration and Defense	7.36	7.83	8.38	9.30	7.87	7.89	6.80
6. Community Services/ Others	7.47	8.30	7.31	7.37	7.78	8.79	9.14
Total	43.65	45.71	48.25	49.18	49.69	50.10	52.34

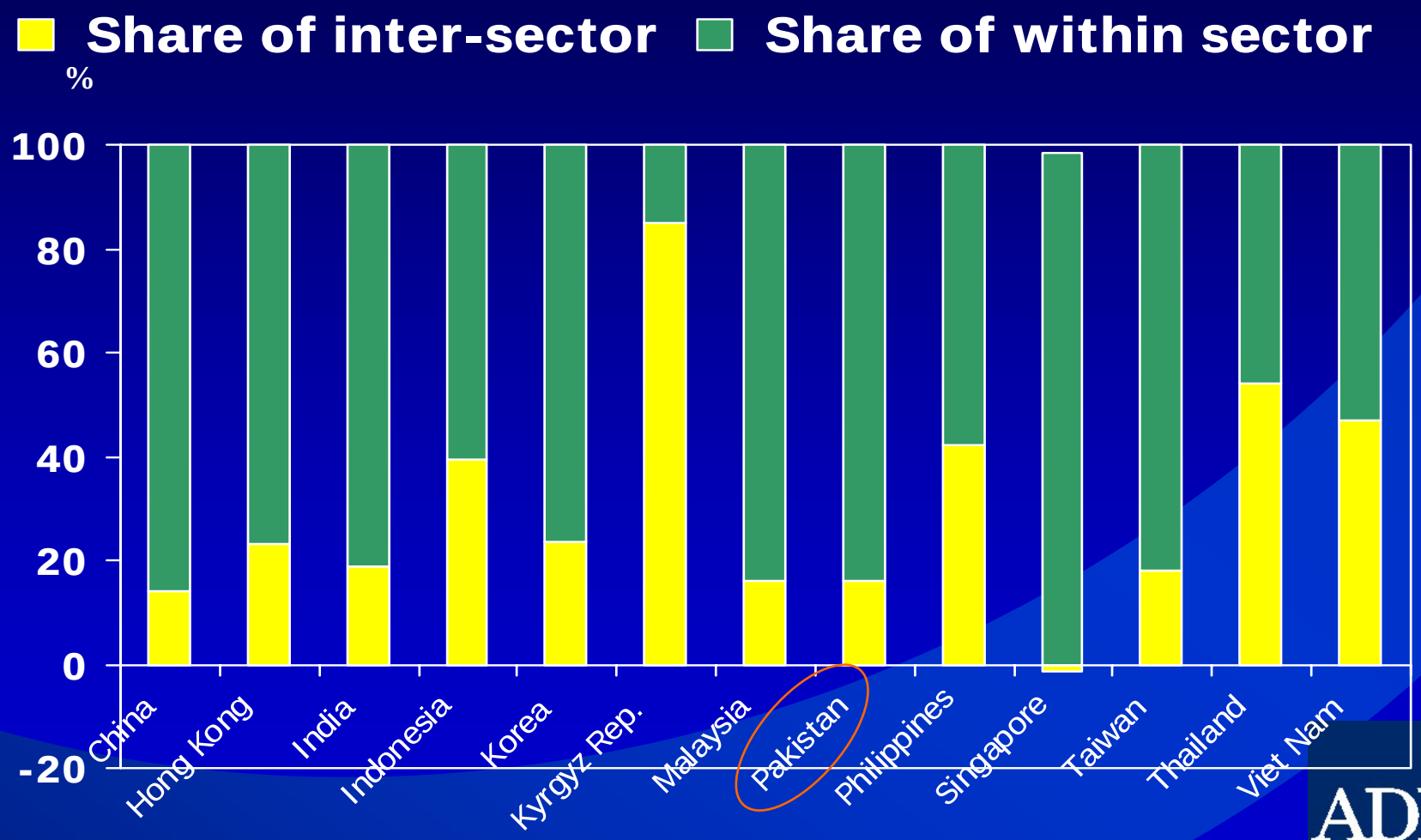
ADB

Growth accounting, 1970-2004



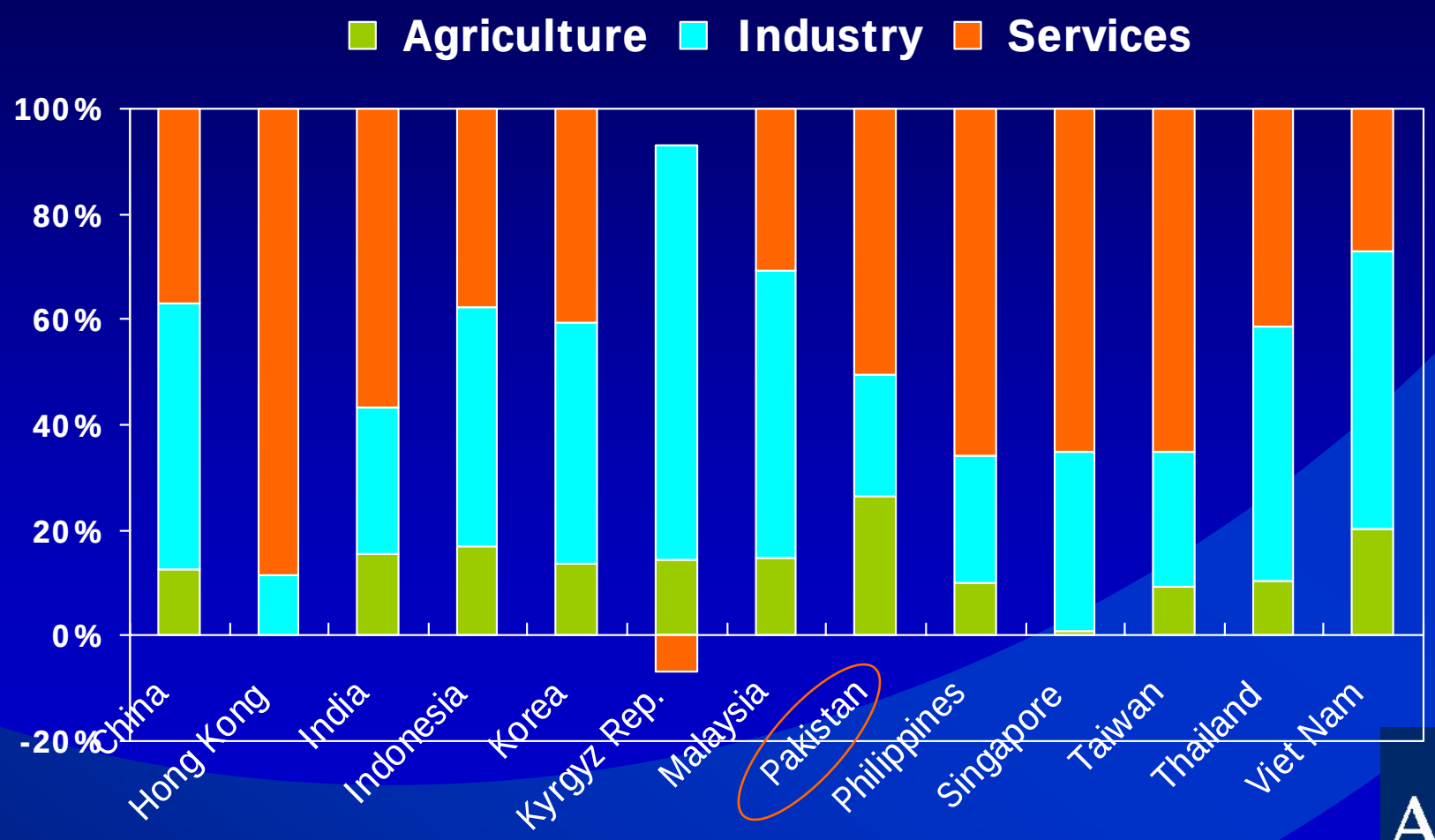
ADB

Inter-sector and within-sector productivity growth



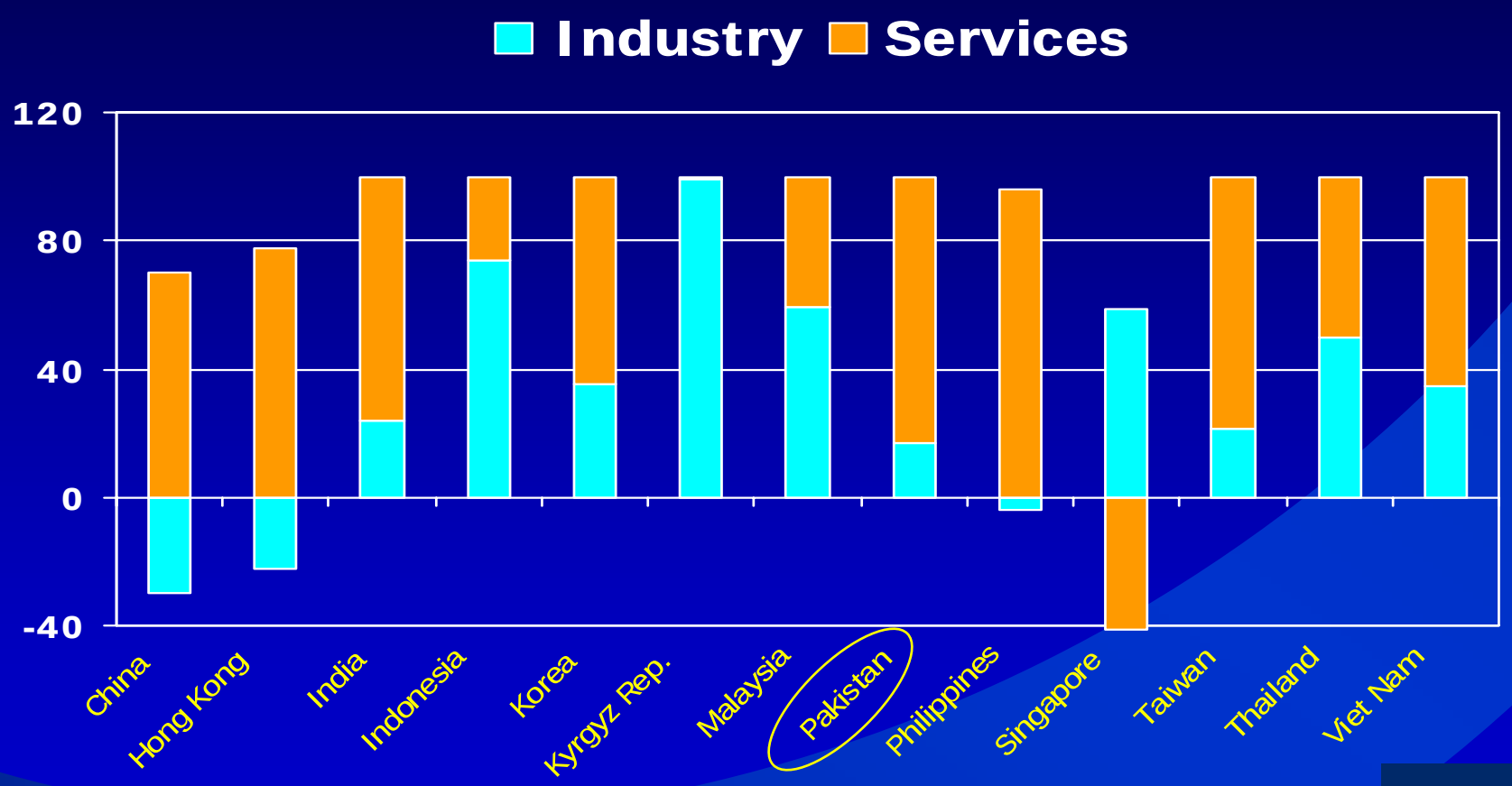
ADB

Sector contributions to labor productivity growth



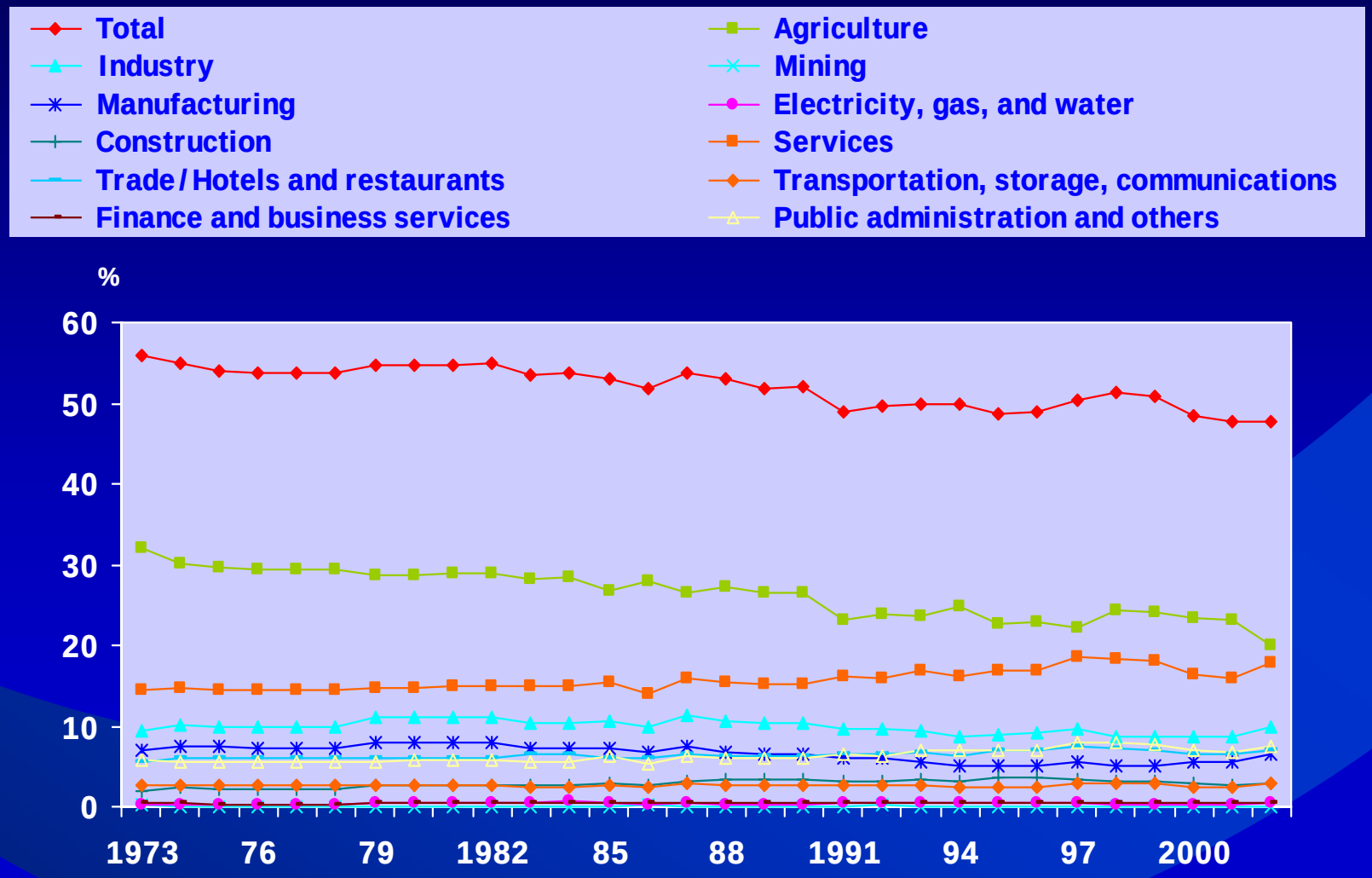
ADB

Baumol's structural bonus: industry vs. services



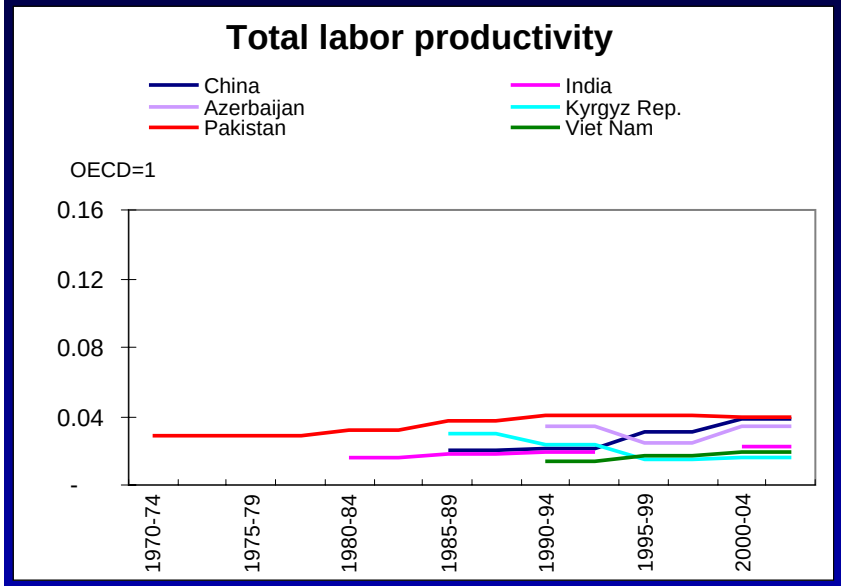
ADB

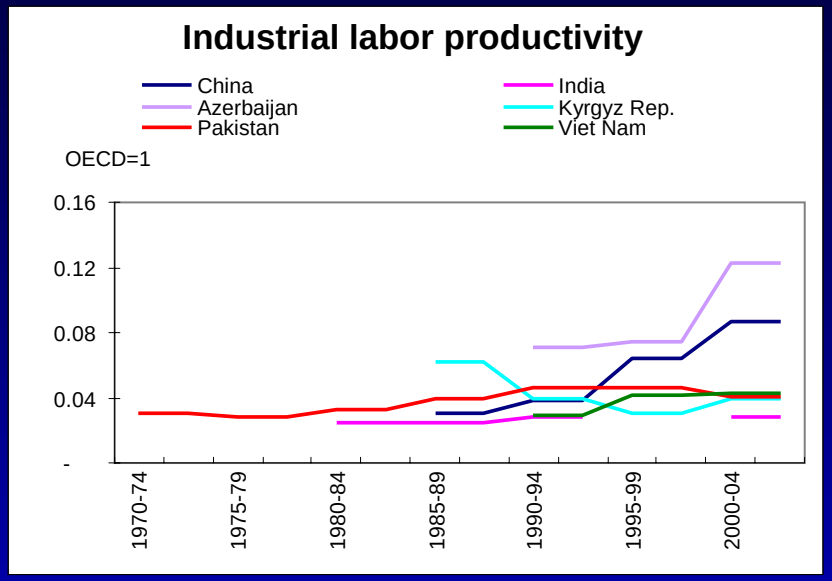
Pakistan
Employed persons as % of working age population

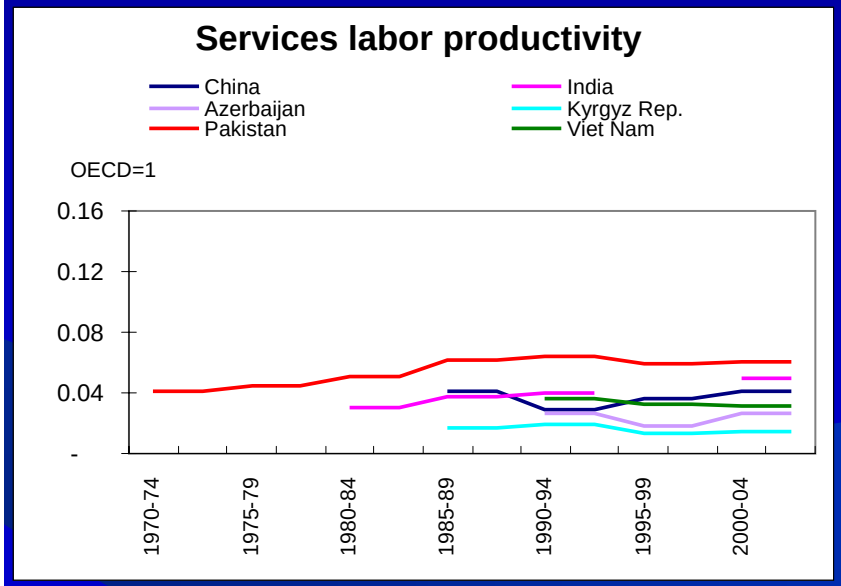


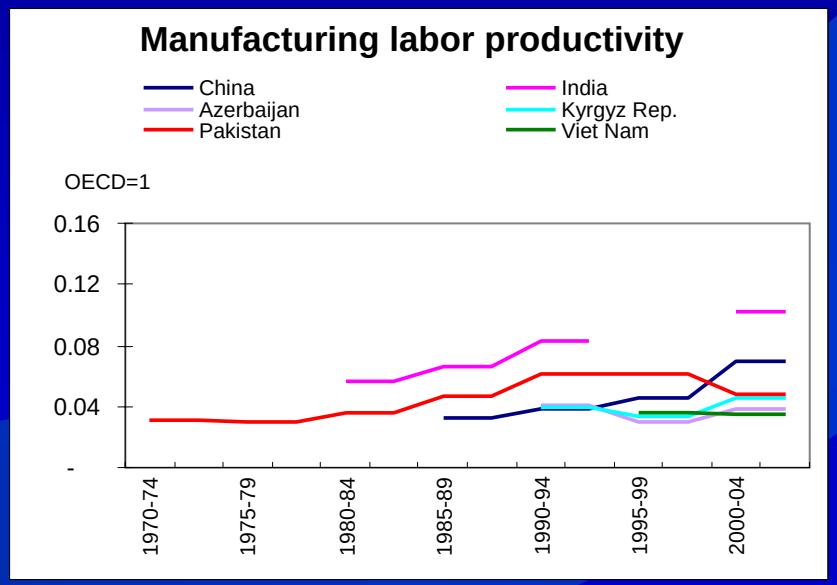
ADB

Labor productivity, relative to OECD

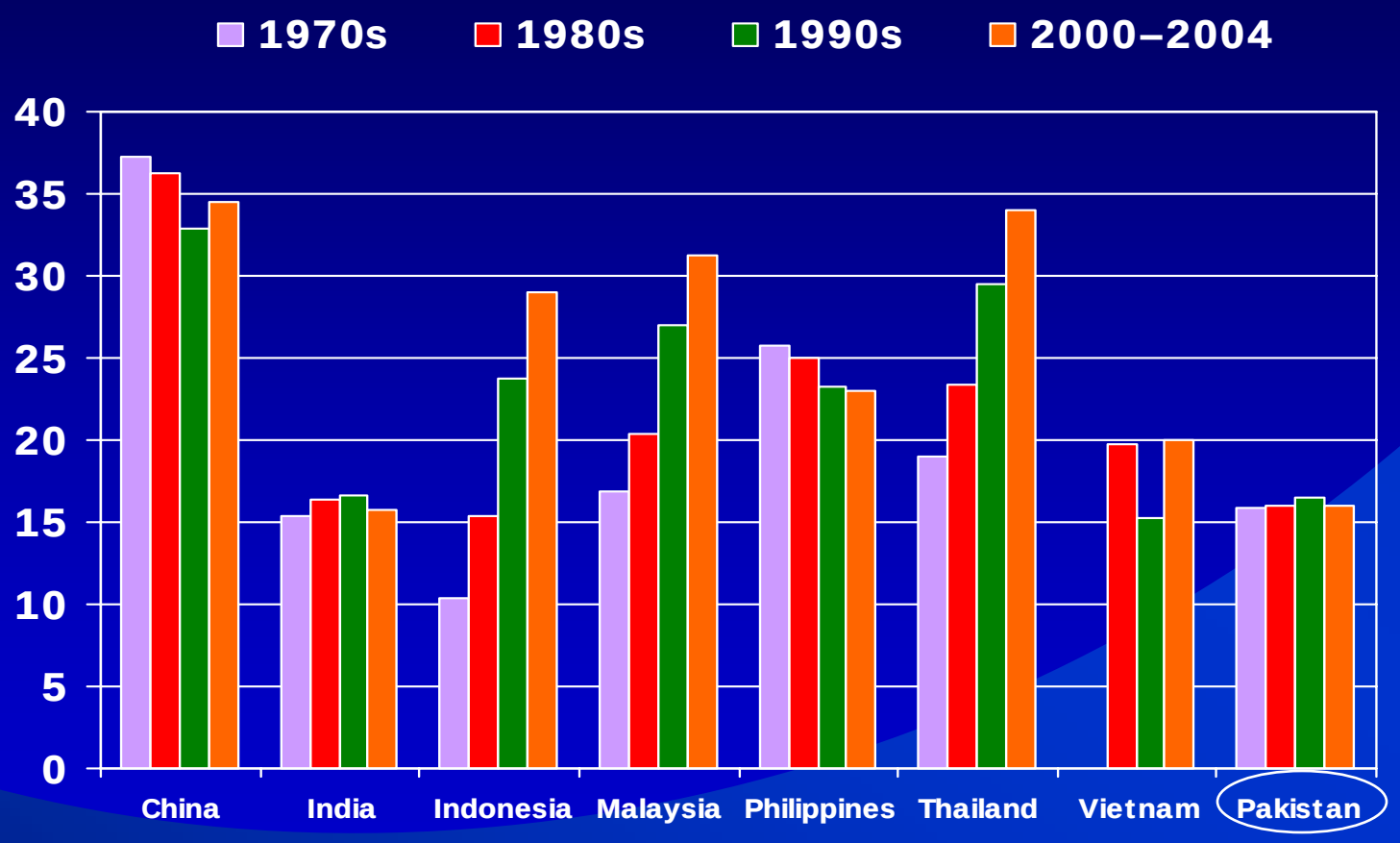








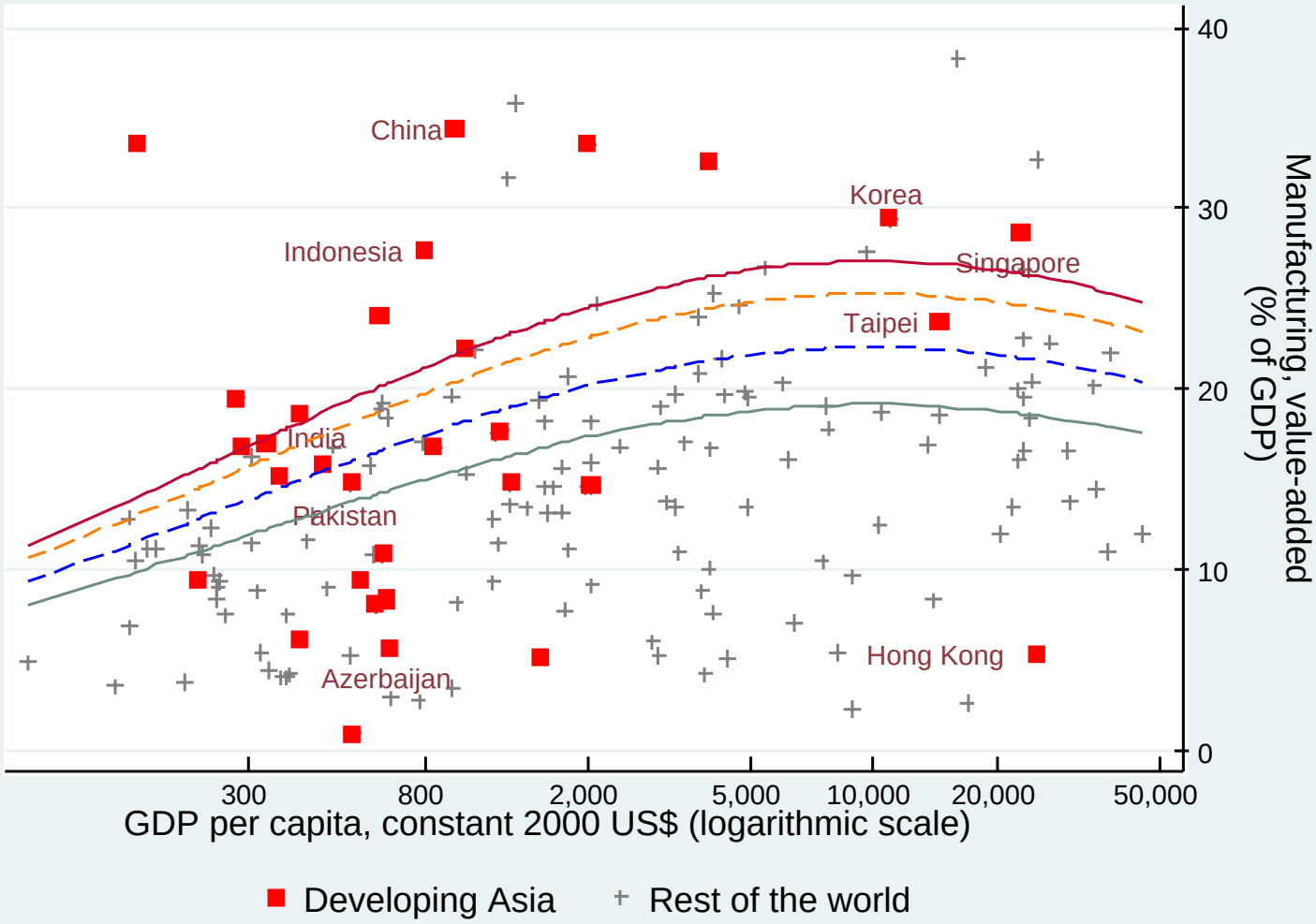
Manufacturing output shares



Note: The 1980s data for Vietnam refer only to 1985-1989.

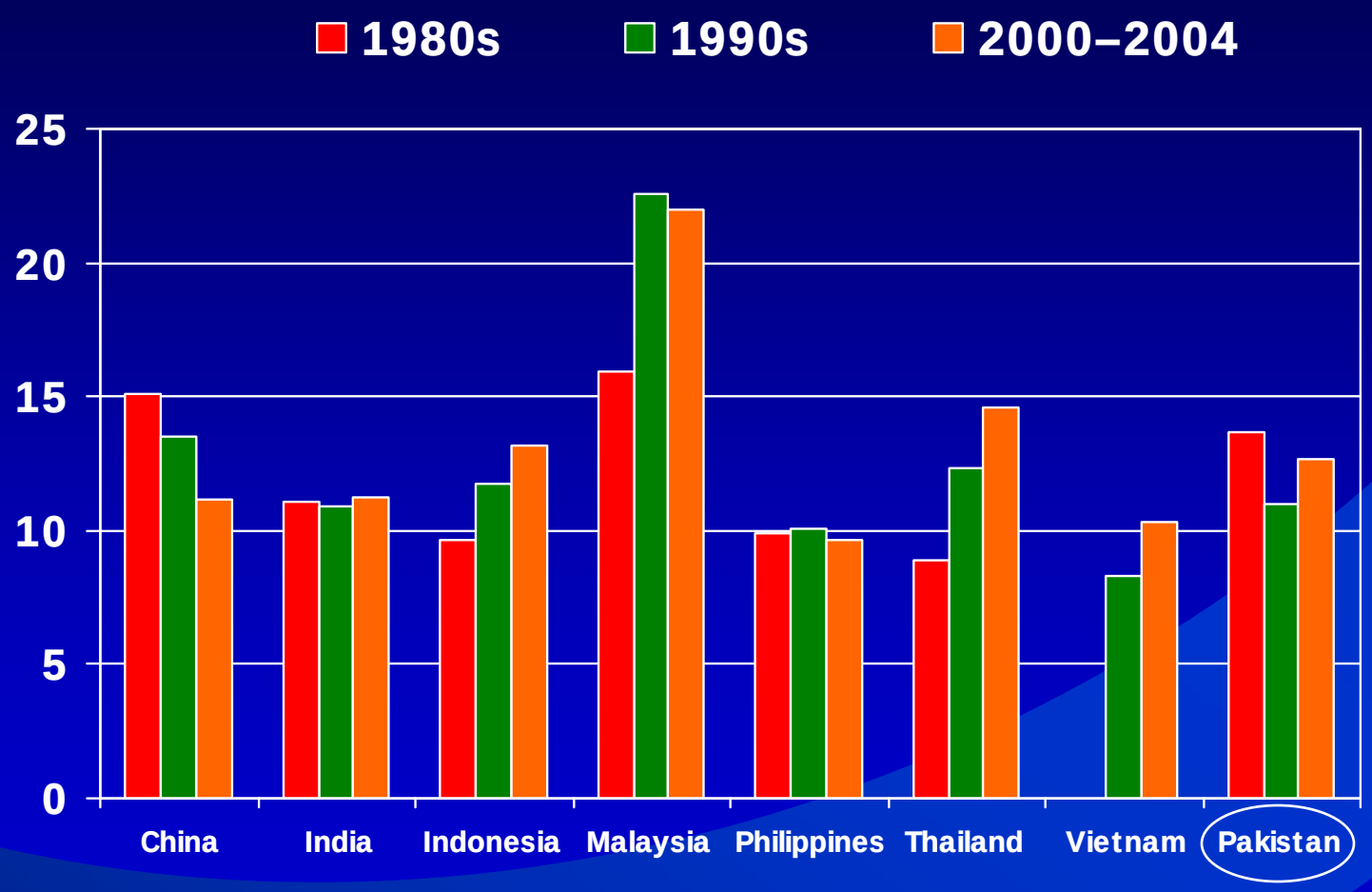
ADB

Fitted Regression Line of Manufacturing Output Shares vs. GDP per Capita, 2000



ADB

Manufacturing employment shares



Note: The 1990s data for Vietnam refer only to 1996 to 1999.

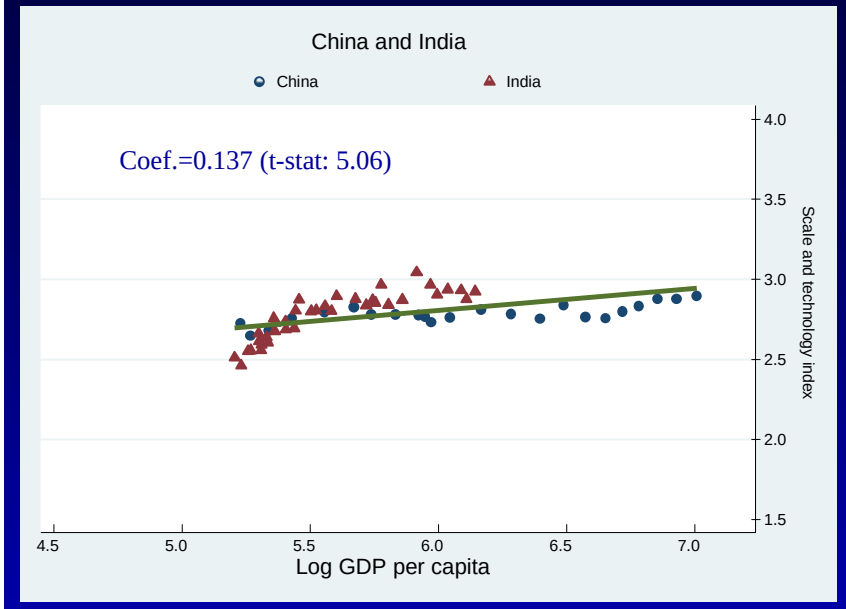
ADB

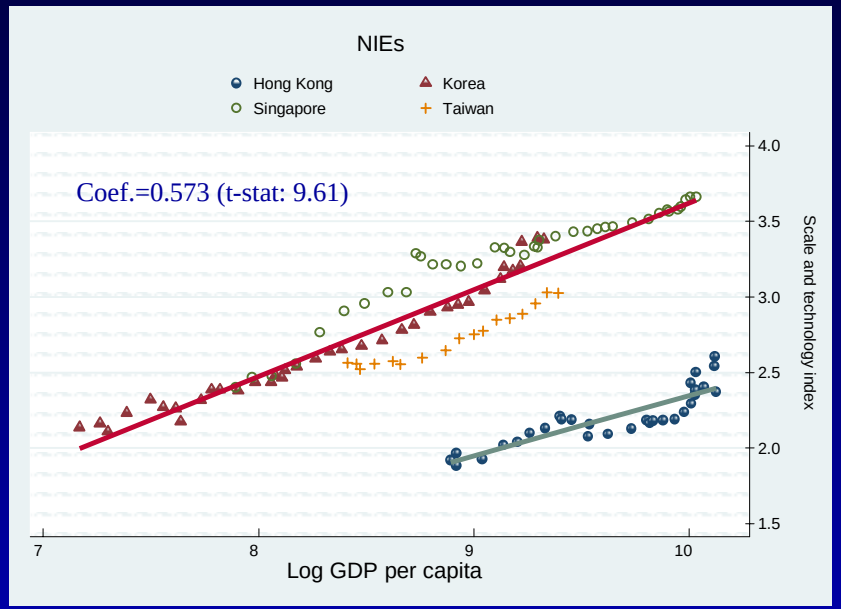
Pakistan
Manufacturing branches (%)

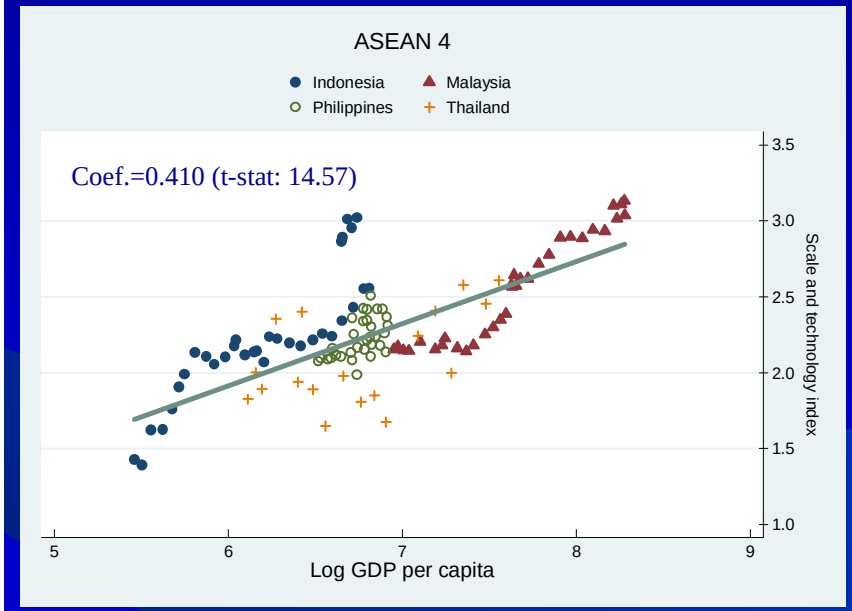
	1970s	1980s	1990s
Food and beverages	30.45	30.94	22.89
Textiles	27.78	18.14	25.06
Apparel, leather, and footwear	2.04	2.37	2.80
Wood and wood products	0.26	0.39	0.37
Paper and paper products	1.61	1.15	1.54
Printing and publishing	1.22	1.06	2.00
Industrial chemicals	11.20	14.29	15.50
Petroleum and coal products	5.27	6.01	3.26
Rubber and plastic products	1.80	1.80	1.42
Non-metal mineral products	4.43	7.75	7.76
Basic metals	3.06	6.20	5.13
Metal products	1.62	1.06	0.81
Non-electrical machinery	1.84	2.14	2.09
Electrical machinery	3.31	3.26	5.43
Transport equipment	2.99	2.89	3.05
Others	1.11	0.55	0.88
Total	100.00	100.00	100.00

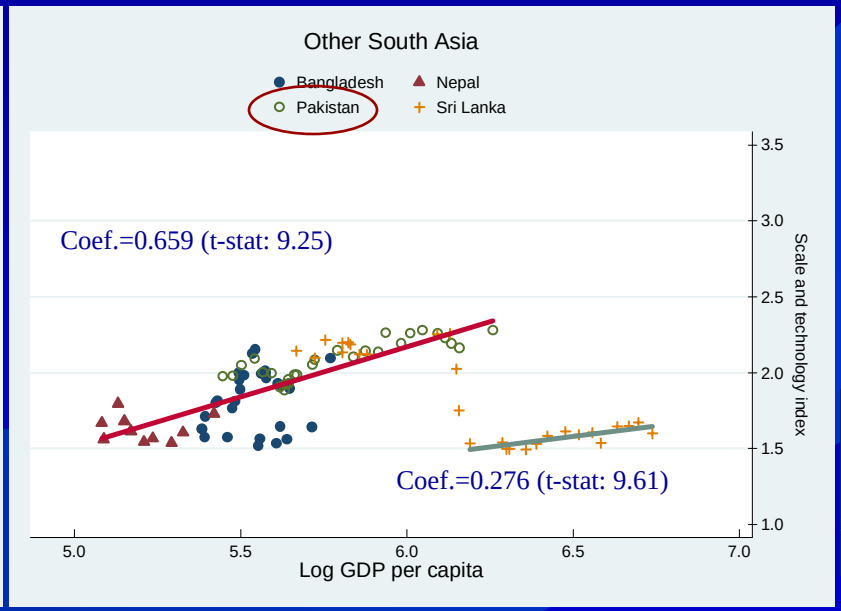
ADB

Technology and scale index

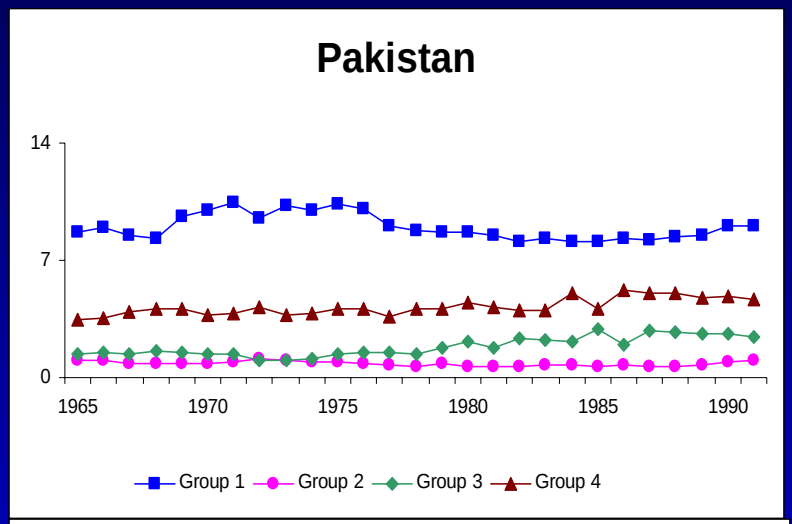


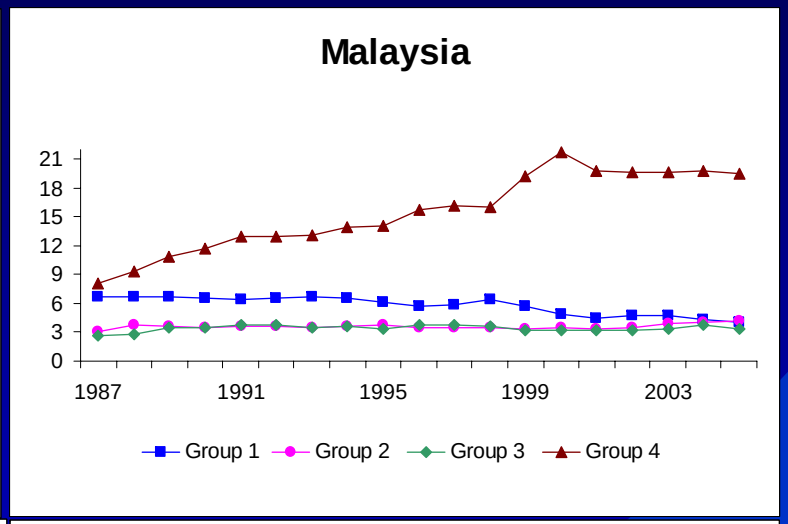


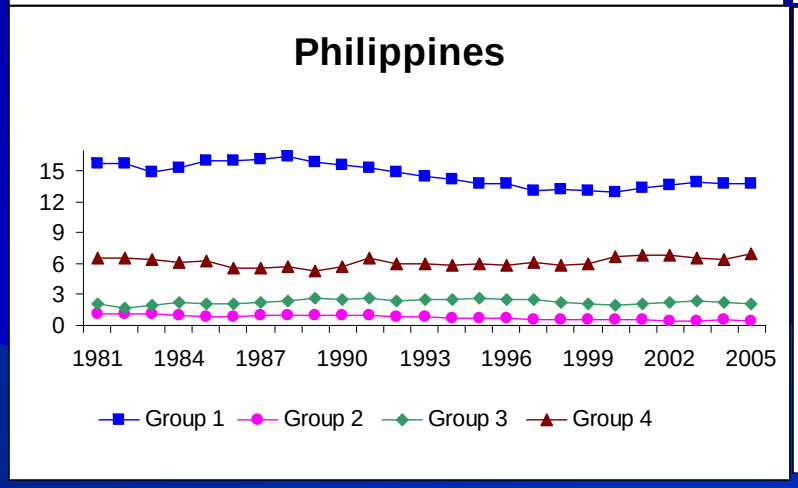


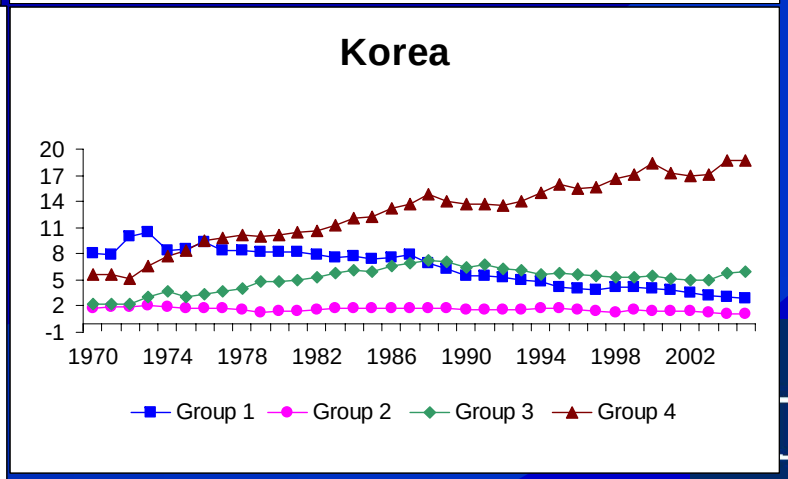


Shares of manufacturing groups in GDP based on technology and scale (%)

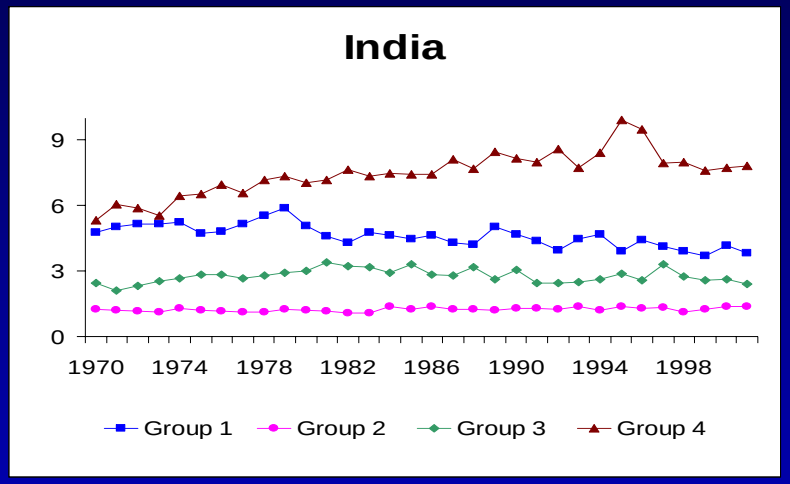


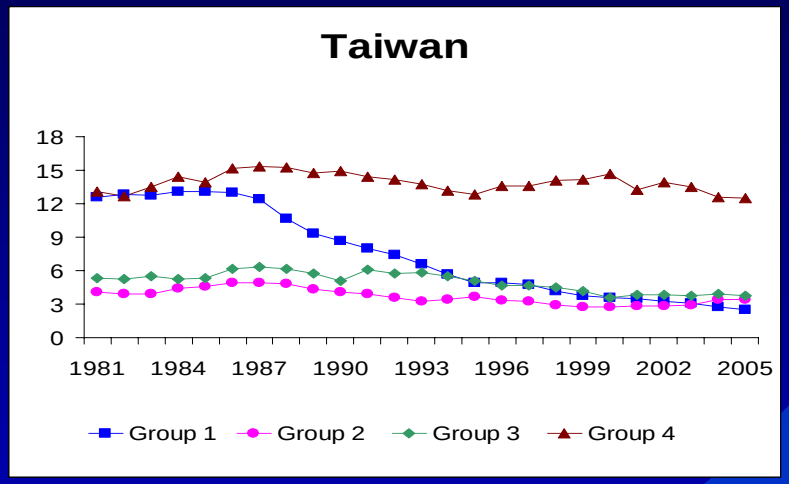


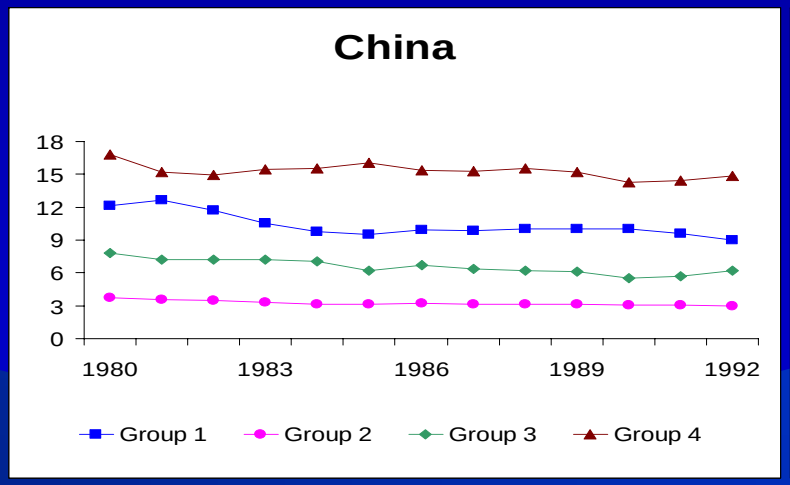


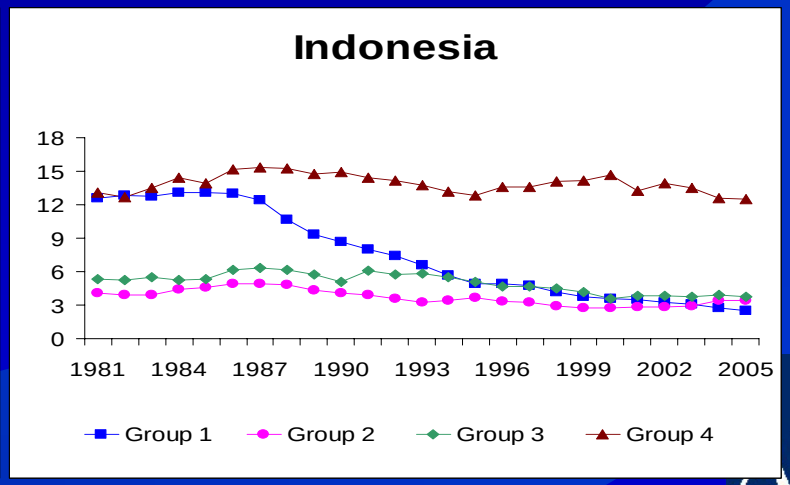


Shares of manufacturing groups in GDP based on technology and scale (%)

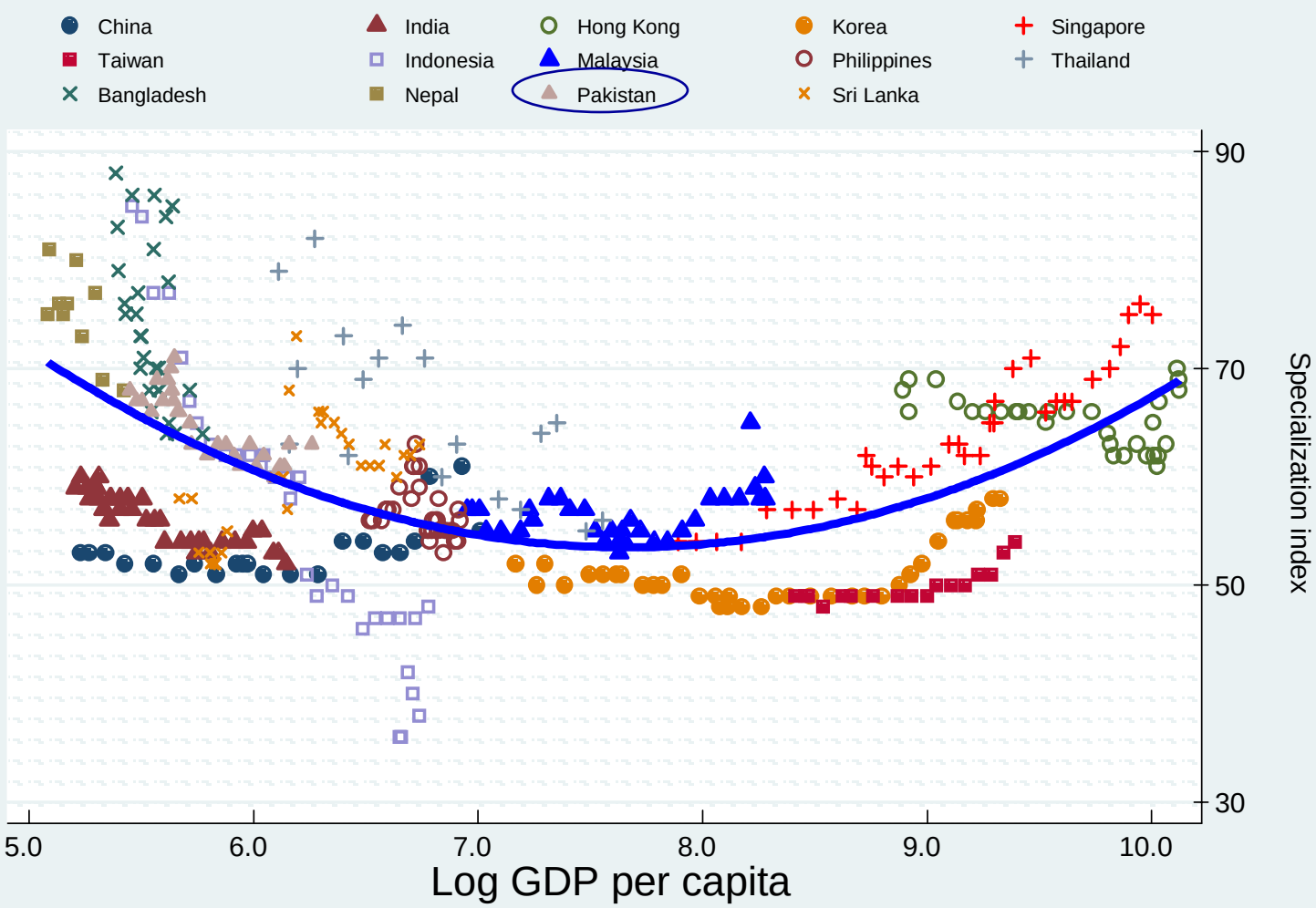








Combined specialization index of Asian developing economies: Manufacturing value-added



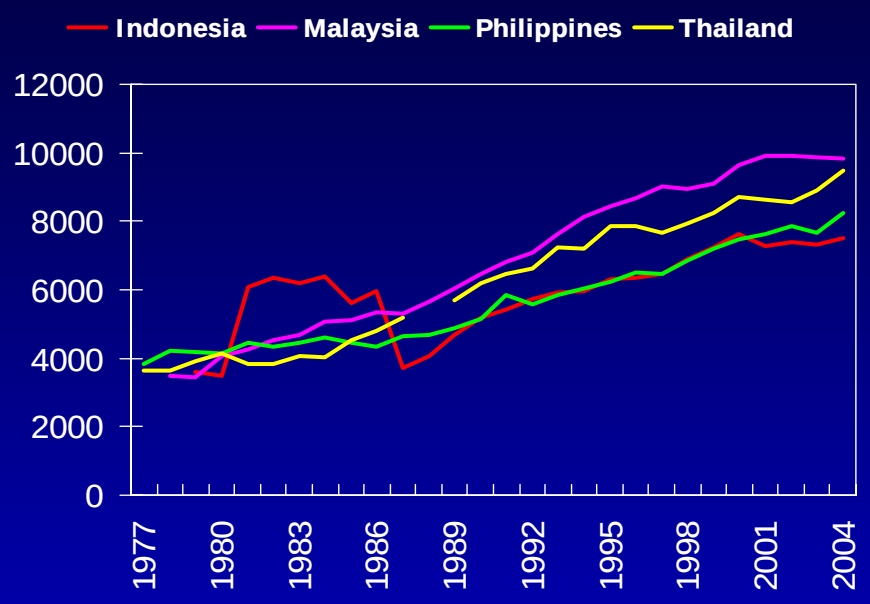
Pakistan's top 10 Exports

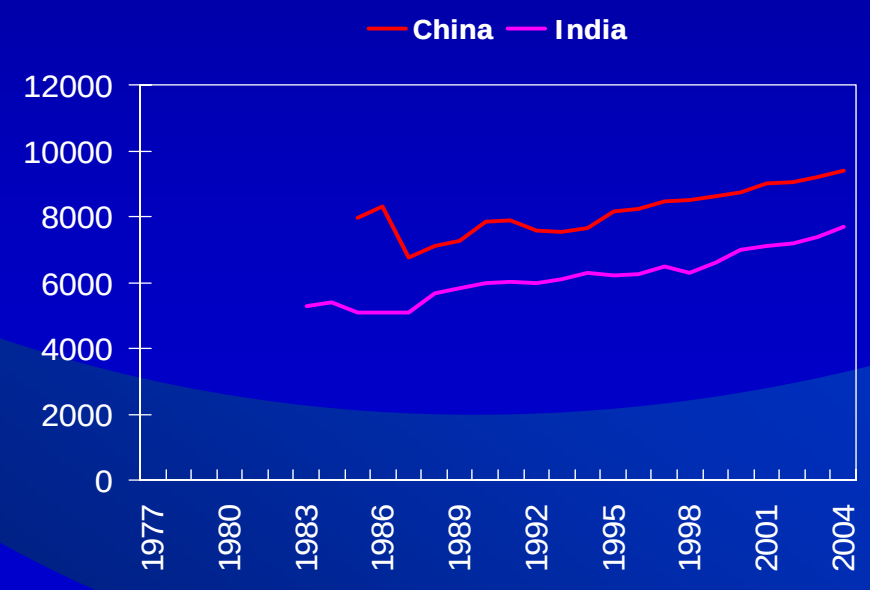
1986	% of total exports	2004	% of total exports
Rice, semi-milled or milled (unbroken)	15.4	Other woven fabrics, less 85% of cotton, bleached, etc., finished	8.2
Other woven fabrics, 85% plus of cotton, bleached, etc., finished	9.9	Bed linen of cotton	7.8
Carpets, carpeting and rugs, knotted-- of wool or fine animal hair	9.6	Cotton yarn-- measuring, per single yarn, from 14 to 40 km/kg, not for retail	7.5
Bed linen of cotton	6.2	Rice, semi-milled or milled (unbroken)	5.9
Other woven fabrics with 85% or more of grey cotton, not mercerized	5.9	Toilet and kitchen linen of cotton	4.4
Toilet and kitchen linen of cotton	4.1	Under-garments, knitted or crocheted-- of cotton, not elastic nor rubberized-- men's and boys, shirts	3.9
Goat and kid skin leather	3.4	Other woven fabrics with 85% or more of grey cotton, not mercerized	3.6
Fabrics, woven, less 85% of continuous synthetic textile materials	3.0	Outerwear knitted or crocheted, not elastic nor rubberized-- other, clothing accessories, nonelastic, knitted or crocheted-- of cotton	3.0
Women's, girls', infants' outerwear, textile, not knitted or crocheted-- other outer garments of textile fabrics, not knitted, crocheted	2.7	Men's and boys' outerwear, textile fabrics not knitted or crocheted-- trousers, breeches and the like-- of cotton	2.8
Medical, surgical and veterinary instruments and appliances	2.7	Knitted or crocheted textile articles, nes, not elastics, etc.	2.6
% share of top 10 exports	62.8	*% share of top 10 exports*	49.7
PRODY of the top 10 exports (weighted average of the per capita GDPs of the countries exporting a given product)	5,014	PRODY of the top 10 exports (weighted average of the per capita GDPs of the countries exporting a given product)	3,458
EXPY (weighted average of the PRODYs). Income level of a country's export basket	4,664	EXPY (weighted average of the PRODYs). Income level of a country's export basket	4,628

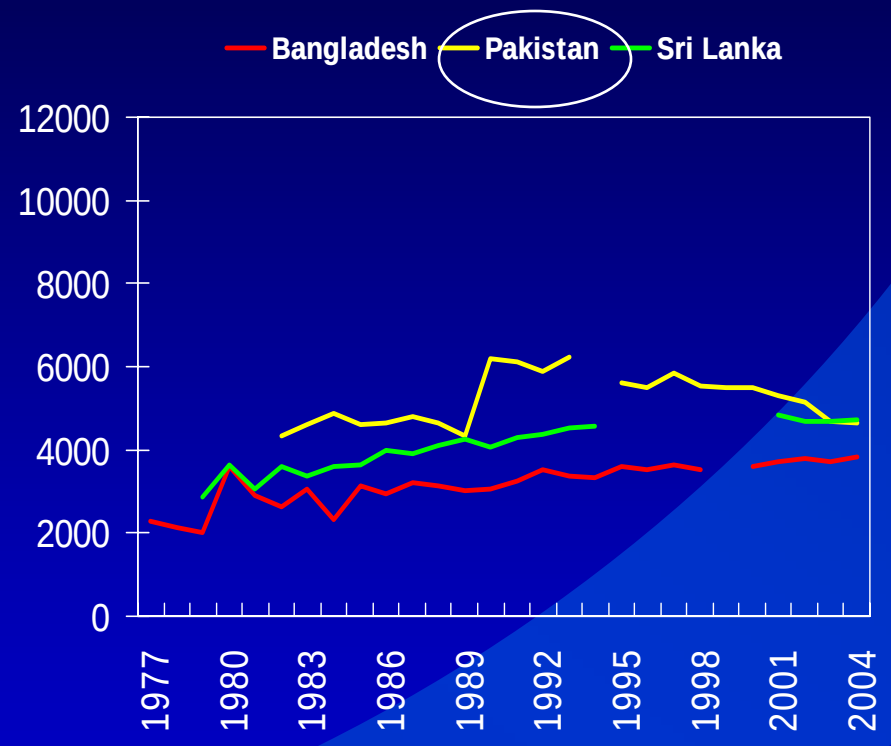
Why does Pakistan export soccer balls but no hats?

ADB

Export complexity score







ADB

The scorecard: Where is Pakistan in the structural change ladder?

Growth occurs through change

Sectoral contributions to output growth

Service or agricultural economy?

The role of employment reallocation

Low and falling labor absorption

Relatively low level of labor productivity

Is the manufacturing share low?

Manufacturing concentrated in food and beverages and textiles

Relatively low level of technology of the manufacturing sector

Relatively low export sophistication

ADB

But there is light at the end of the tunnel

Pakistan's degree of transformation has been lower and slower than in other Asian countries. What lessons can be learnt?

Policy makers should be able to seize the current momentum

…and implement a growth strategy that transforms the economy the way it was done by the successful Asian countries

Sector-specific reforms with a view to fostering competition should be viewed from this point of view

ADB

Why do some countries find it easier to transform?

- Transformation, diversification, upgrading, etc. do not come naturally. In a world where agents have to explore, learn, and adapt to an unfolding and unpredictable environment, economic modernization is hardly preordained.

- Industrial and technological upgrading require purposeful efforts in the form of "industrial policy"....but this is not about "picking the winners"

  It is about eliciting information from the private sector on significant externalities and about constraints that exist and the opportunities available

  It requires strategic collaboration and the development of the appropriate institutional arrangements

  The success of Korea or Taiwan can be viewed as a series of successful policy interventions in this sense

- How does an economy "discovers", "diversifies" "and develops new products"? On forests and monkeys....

ADB

THANK YOU

ADB

Industrial Policy

Why? The need to create a demand for new economic activities. Markets alone are likely to undersupply the incentives and demand for investment in new activities. There are two reasons:

- Those entrepreneurs that “discover” a new activity or innovate may not be able to collect adequate returns as these are skimmed off by copycats who later enter the market
- New activities cannot emerge in an economic and technological vacuum; they require and environment where connected activities co-evolve (complementary activities)

The upshot is innovation activities that have high social returns but much lower private returns. To spur innovation and technological improvement, it follows that steps must be taken to raise private returns

ADB

Basic principles of the New Industrial Policy (Rodrik 2004)

- *Elements of an institutional architecture*

- Place political leadership at the top
- Set up coordination and deliberation councils
- Set up mechanisms of transparency and accountability

- *Designs principles for industrial policy*

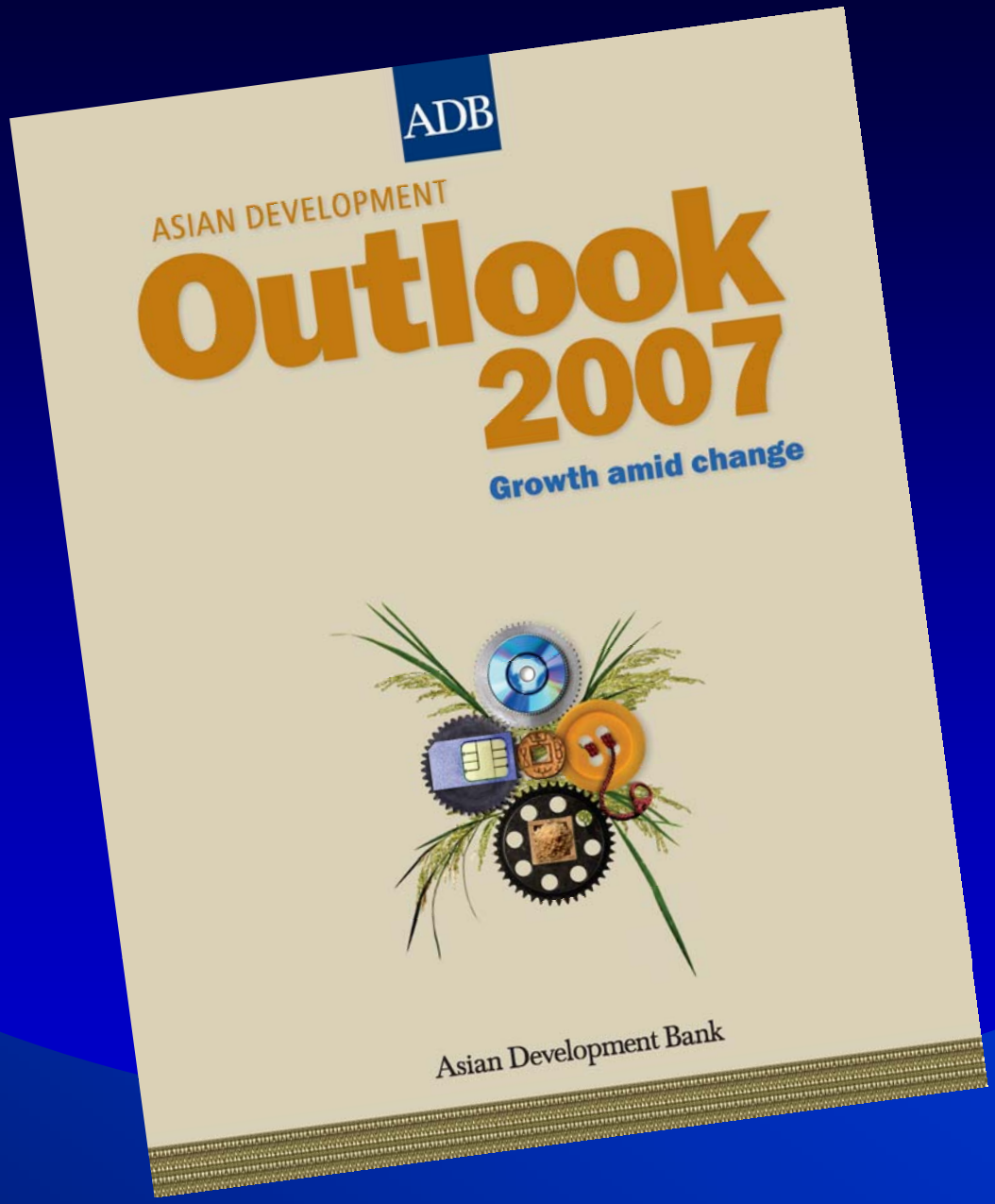
- Incentives should be provided only to “new” activities
- There should be clear benchmarks for success and failure
- There must be a built-in sunset clause
- Public support must target activities, not sectors
- Activities that are subsidized must have the clear potential of providing spillovers and demonstration effects
- The authority for carrying out industrial policies must be vested in agencies with demonstrated competence
- 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
- The agencies carrying out promotion must maintain channels of communication with the private sector
- Optimally, mistakes that result in “picking the losers” will occur
- Promotion activities need to have the capacity to renew themselves, so that the cycle of discovery becomes an on-going one

ADB

Design principles for technology policy

- Strategies need to be attuned to a country's level of development
- The acquisition of technological capabilities is cumulative and is path-dependent (i.e., contingent on what has gone before). It is very difficult to leapfrog
- For low income countries, strategies should be directed at enabling assimilation and adaptation of foreign technologies. Not until quite sophisticated capabilities have already been mastered does it make sense to invest in R&D aimed at innovation

ADB



Developing Asia: Sustaining growth

ADB

Recent characterizations of Pakistan's economy

Easterly (2003): "...growth without development"

Prichett (2003): "non-converging steady growth: productivity not near subsistence but growth neither rapid nor near zero (between 1 and 5 percent)"

Baumol, Litan and Schramm (2007): "precapitalist economy"

Haque (2006): "uninformed of the new research on economic growth"

ADB

New Literature

Rodrik: Industrialization matters for growth and structural transformation. It requires purposeful actions

Imbs and Wacziarg: Countries' production structures become more diversified first and tends to concentrate thereafter

Hwang, Hausmann and Rodrik: (i) Specialization patterns are indeterminate; (ii) There is a strong relationship between the level of income of a country and a measure of the sophistication of exports (it predicts future performance)

Hidalgo, Klinger, Barabasi and Hausmann: (i) Developing new activities is a complex process; (ii) Capabilities are specific to products

Hausmann and Rodrik: Industrial Policy as an exercise in coordination between public and private sectors

ADB

Growth and Change: The two sides of a coin

Growth occurs through change. Prosperity is the result of cumulative economic change (e.g., successful Asia)

Structural change is about the transformation of the economy with a view to:

(i) Transferring resources to higher value added sectors

(ii) Diversifying production while upgrading it

(iii) Producing and exporting a more sophisticated range products

(iv) Increasing labor productivity

It entails:

(i) Identifying the products that the country can produce profitably by using its capabilities

(ii) Using new inputs and methods of production

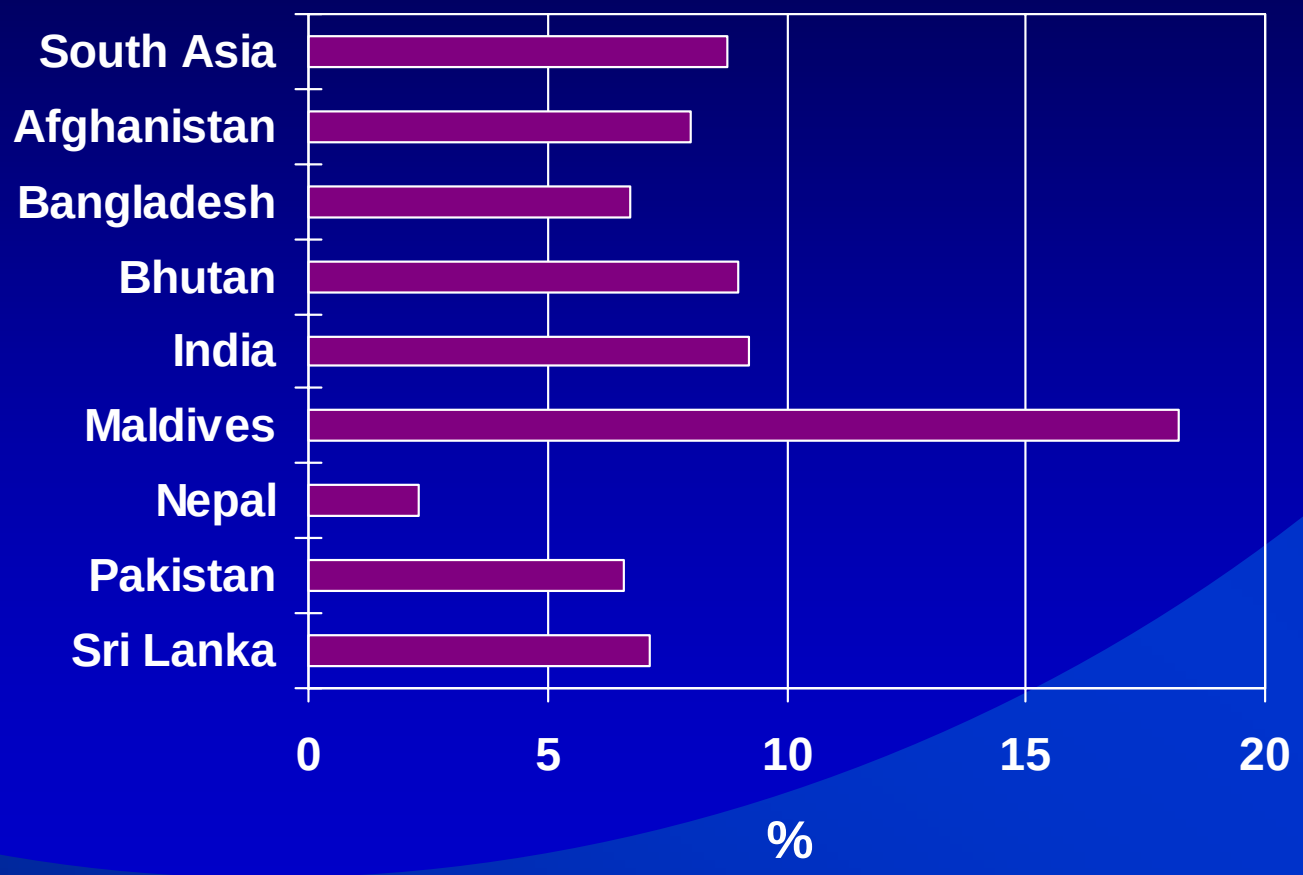
(iii) Exploring new activities and developing new capabilities

Objective of developing countries:

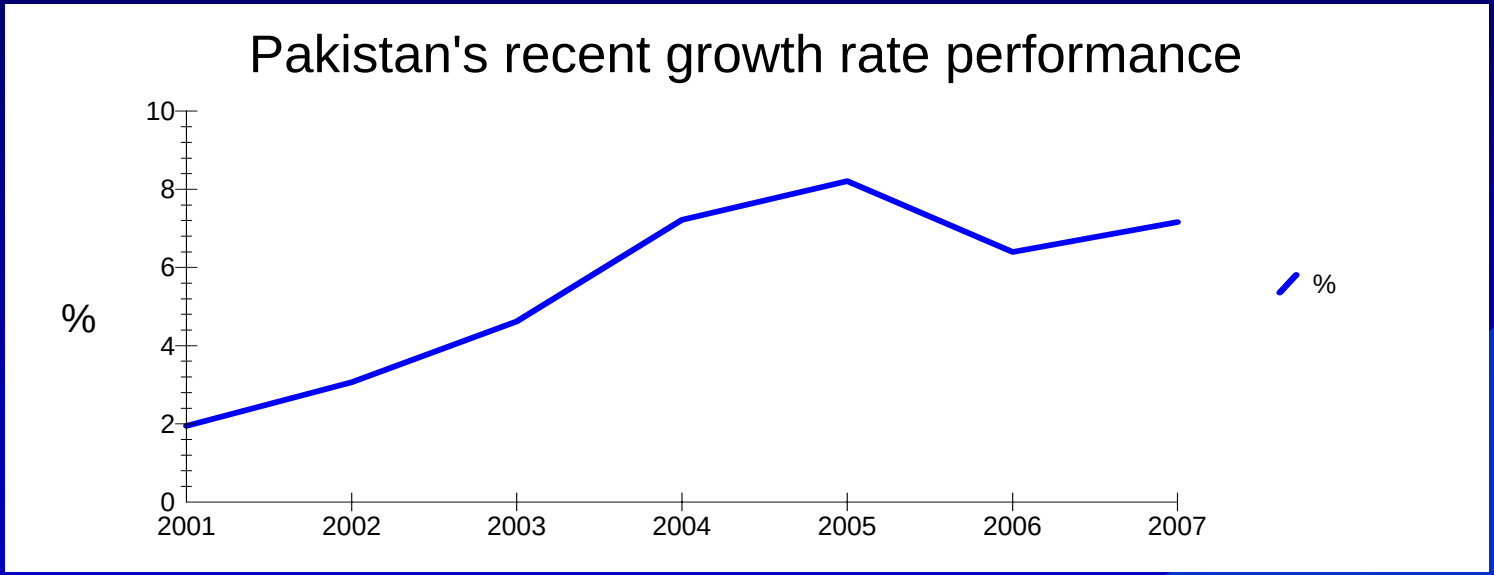
Catch Up

ADB

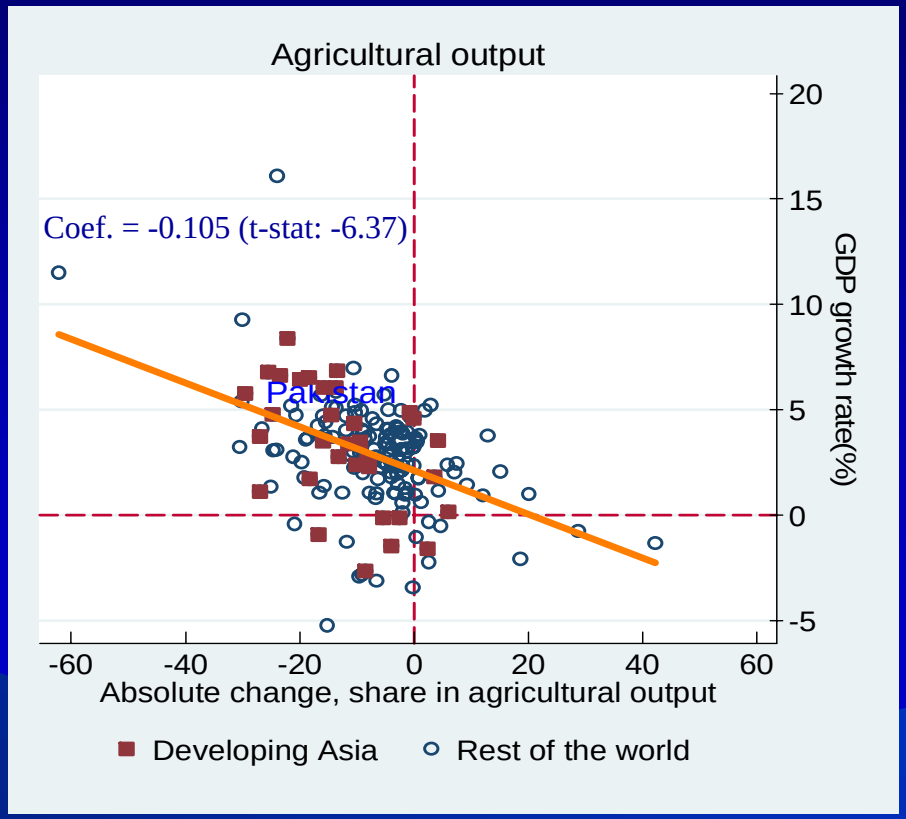
2006 GDP Growth, South Asia

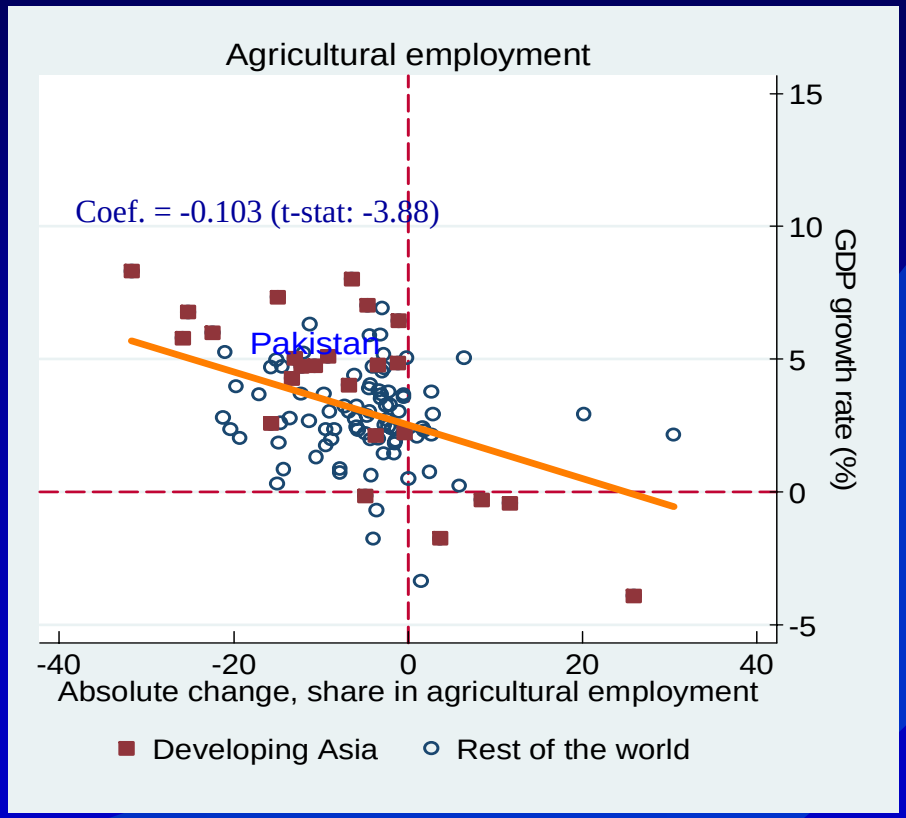


ADB


Pakistan's recent growth rate performance
%
10
8
6
4
2
0
2001
2002
2003
2004
2005
2006
2007
%

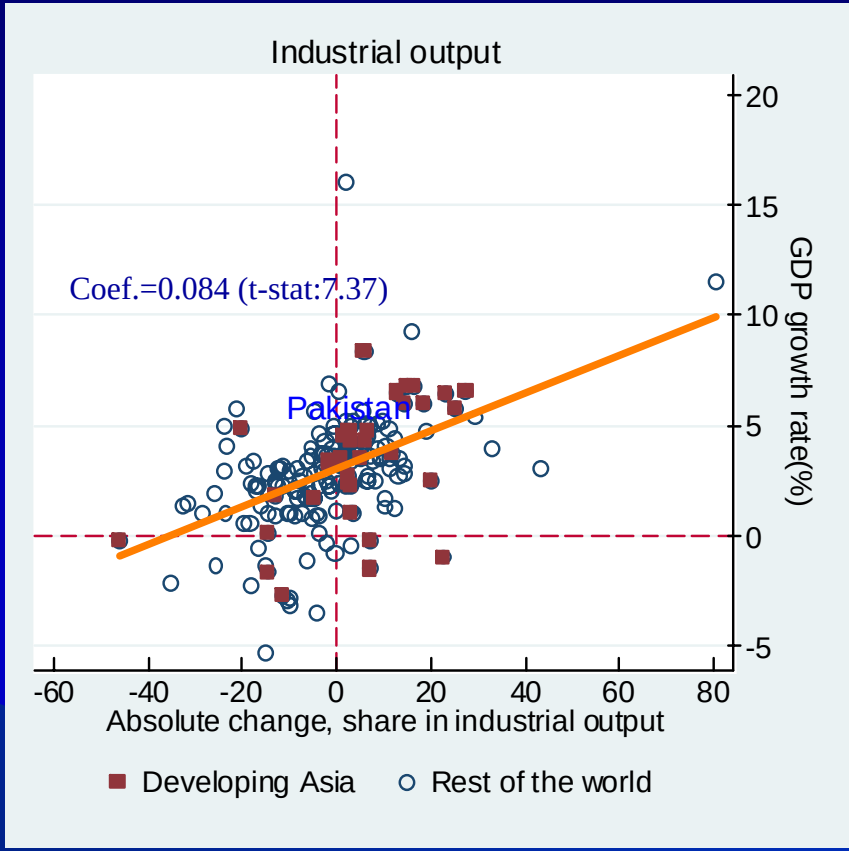
Change in agricultural output and employment shares vs. output growth

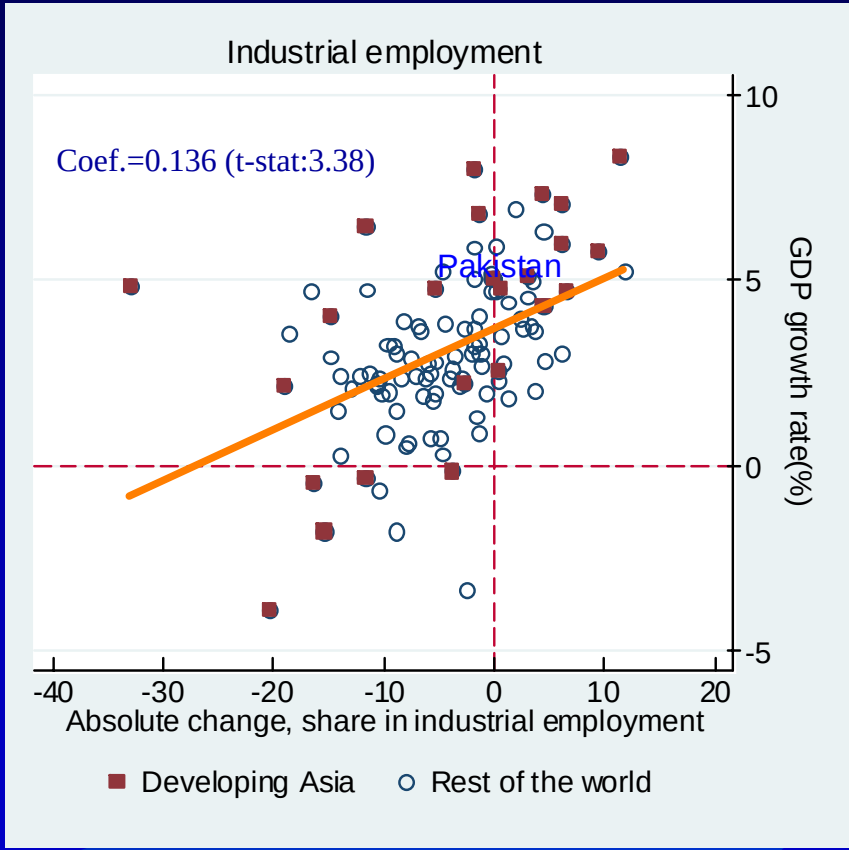




ADB

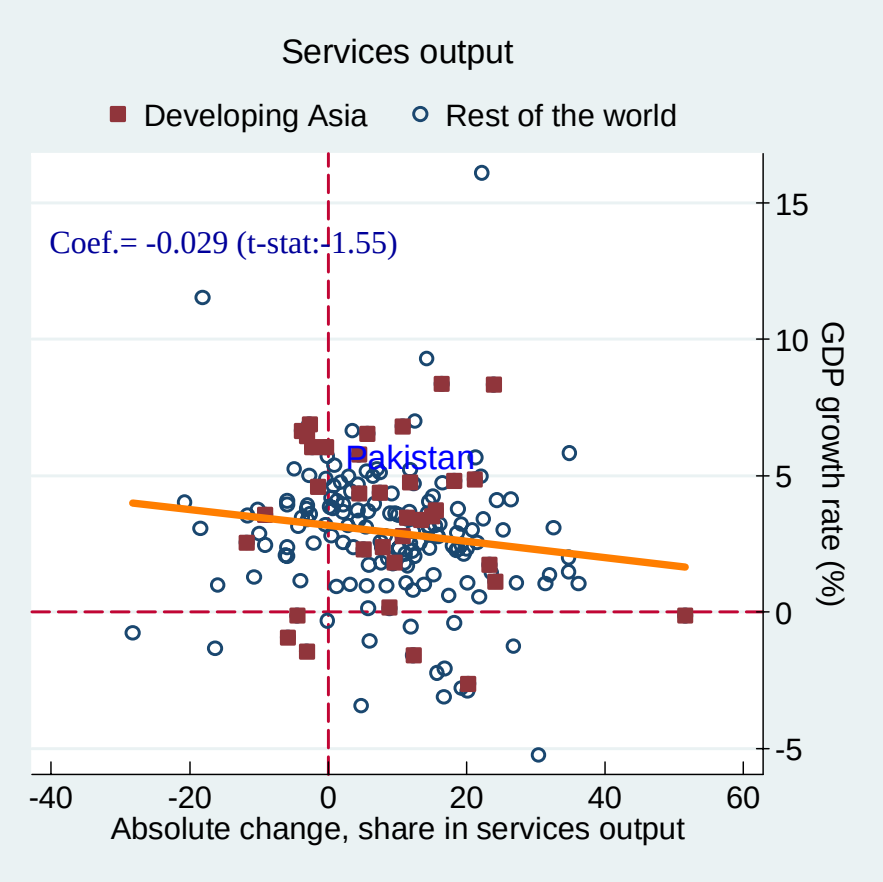
Change in industrial output and employment shares vs. output growth

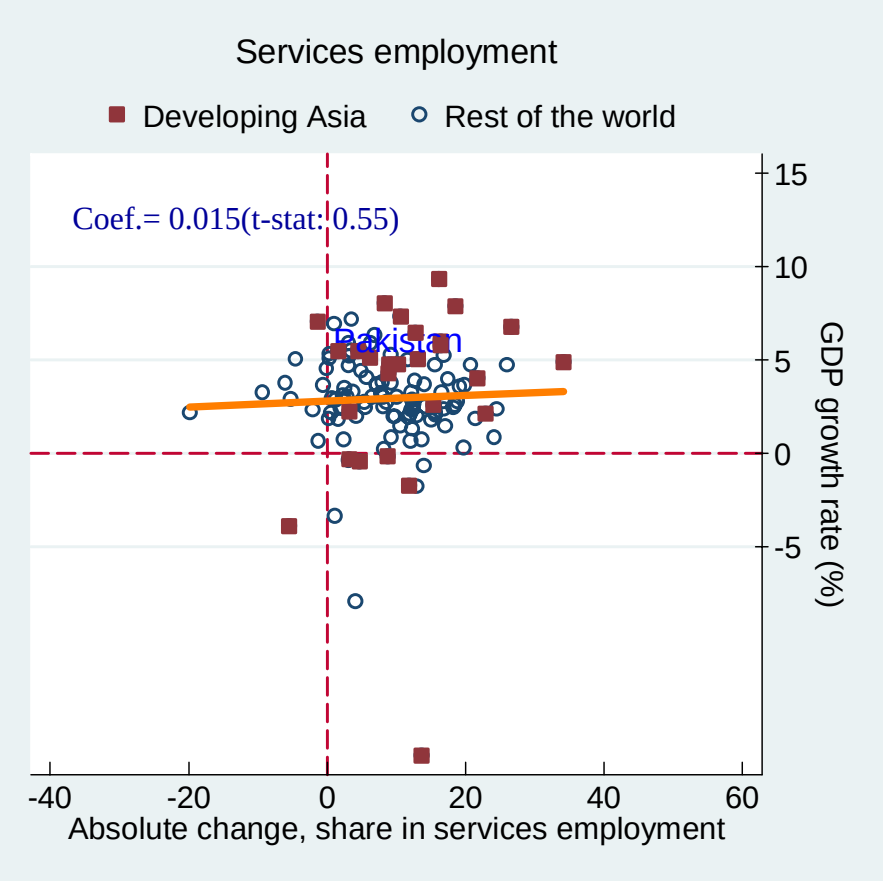




ADB

Change in services output and employment shares vs. output growth





ADB

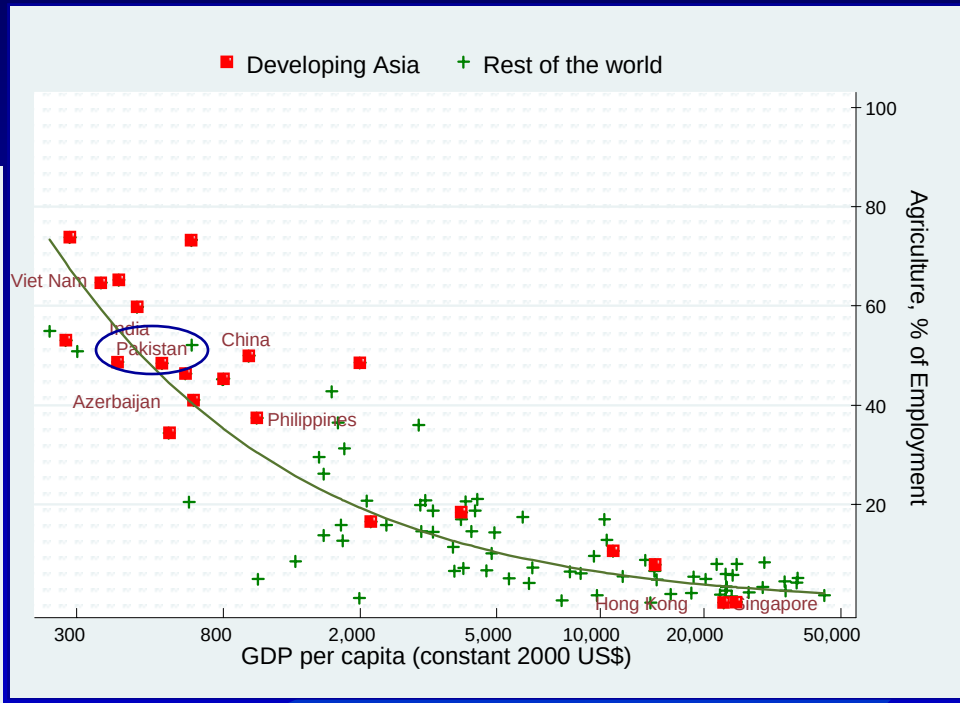
Logistic regressions

Logistic cross-sectional regressions indicate that Pakistan's output (for 2004) and employment (for 2000) shares in agriculture are about what should be expected give the country's income per capita, 22.5% and 24.5%, respectively. And the same for manufacturing output (for 2000), 14.5%. Actual employment shares in agriculture and industry (both for 2000), 48.5% and 18%, respectively, are slightly above what the regressions predict, 45.5% and 15.5%, respectively. In the case of services (for 2000), the actual output share (51.2%) is significantly above the predicted at 43.4% (i.e., given the country's income per capita), while the employment share is about what it should be, 33.5%.

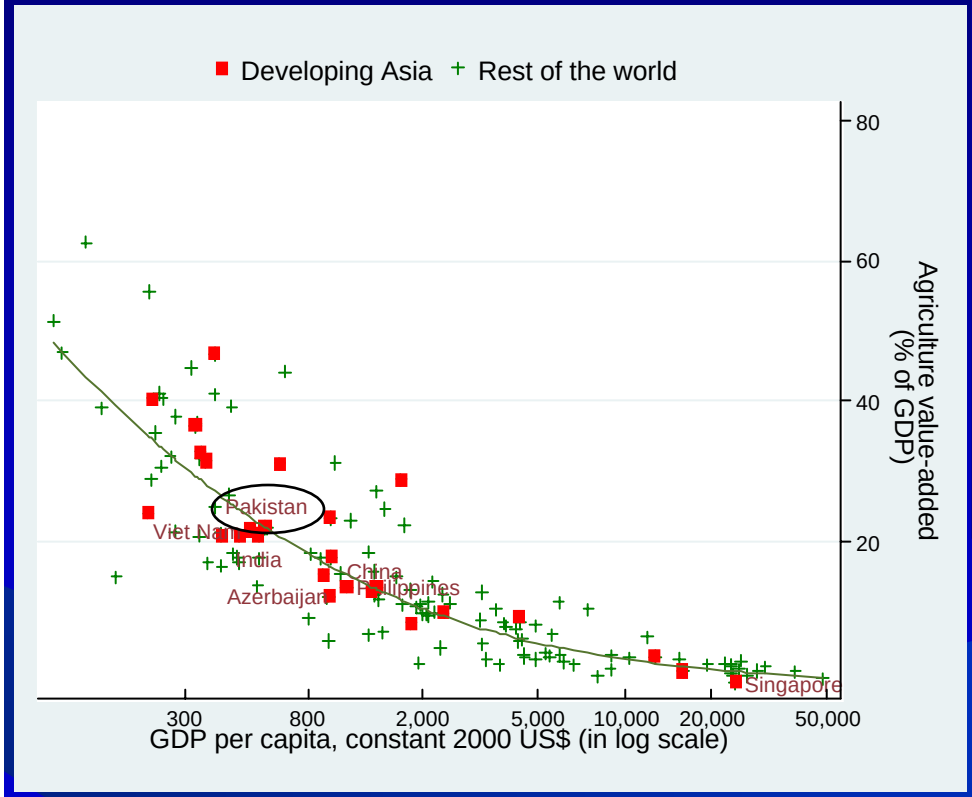
ADB

Fitted Regression Line of Agricultural Output / Employment Shares vs. GDP per Capita

Employment, 2000



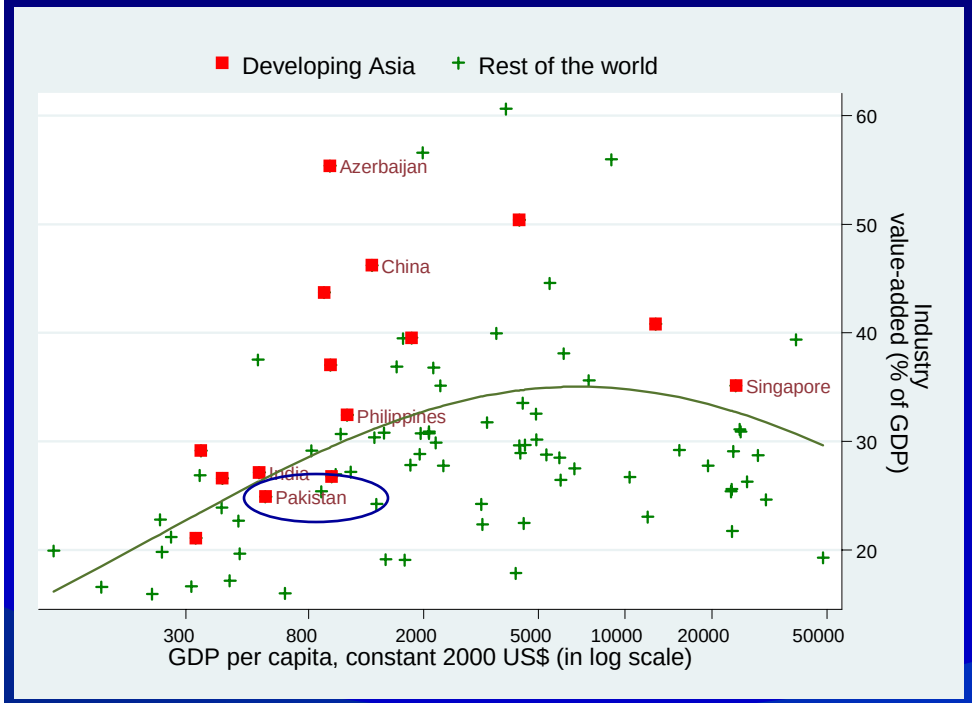
Output, 2004



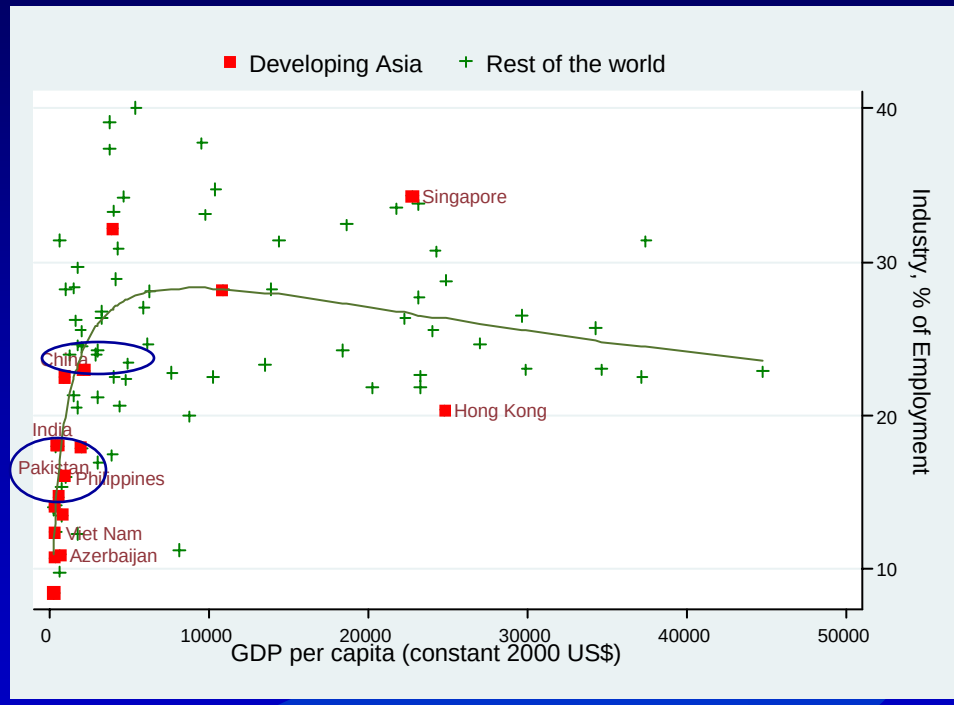
ADB

Fitted regression line of industry output / employment shares vs. GDP per capita

Output, 2004



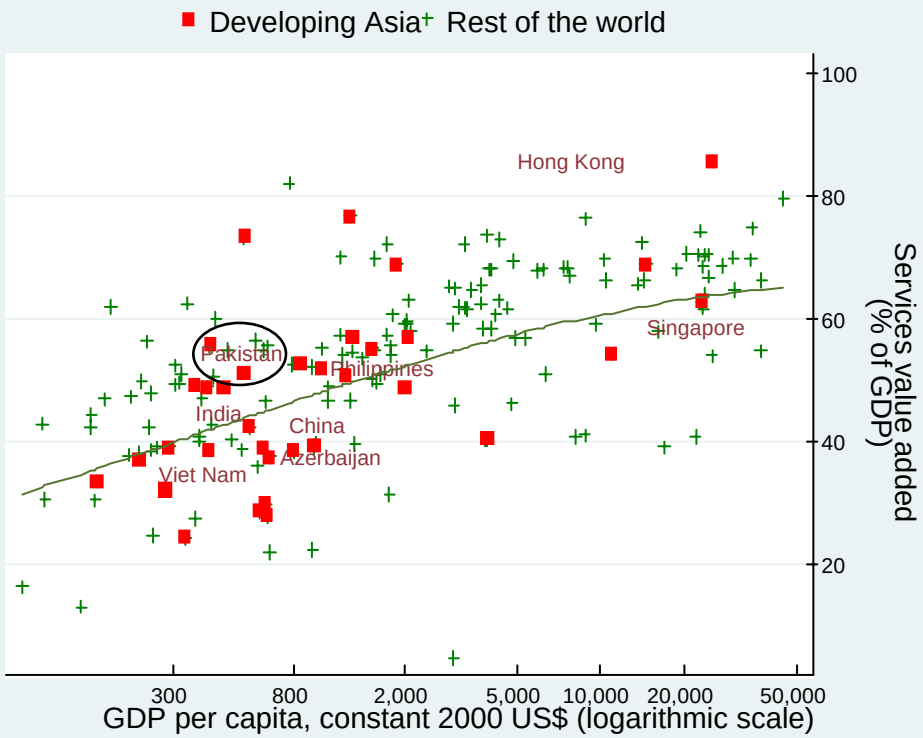
Employment, 2000



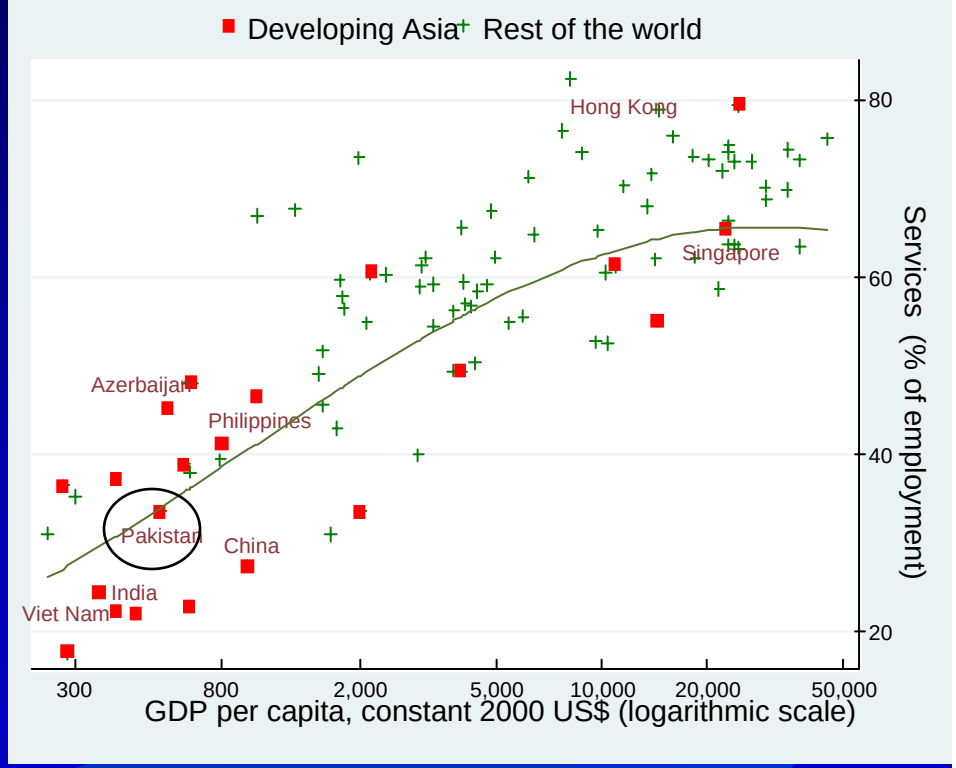
ADB

Fitted Regression Line of Services Output / Employment Shares vs. GDP per Capita, 2000

Output

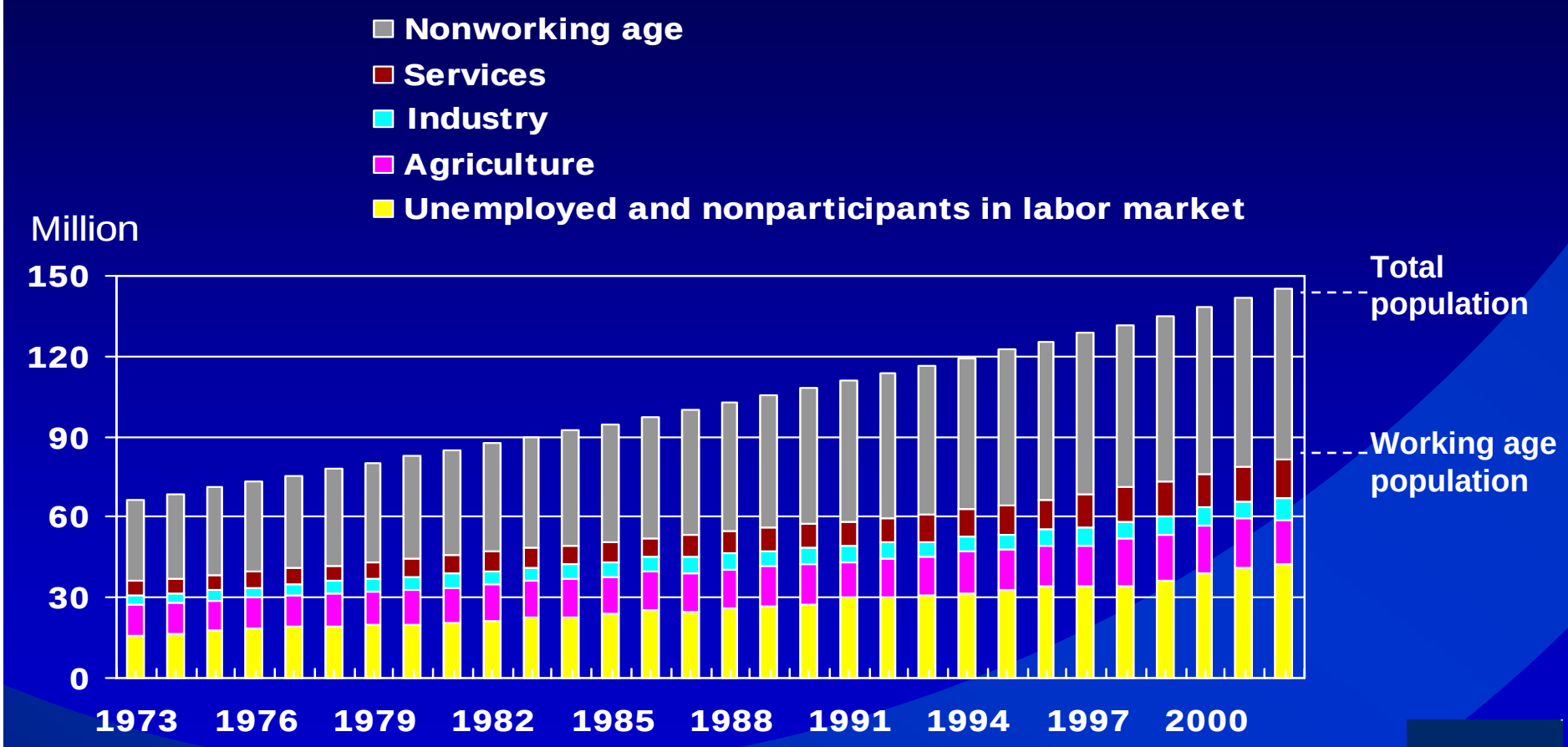


Employment



ADB

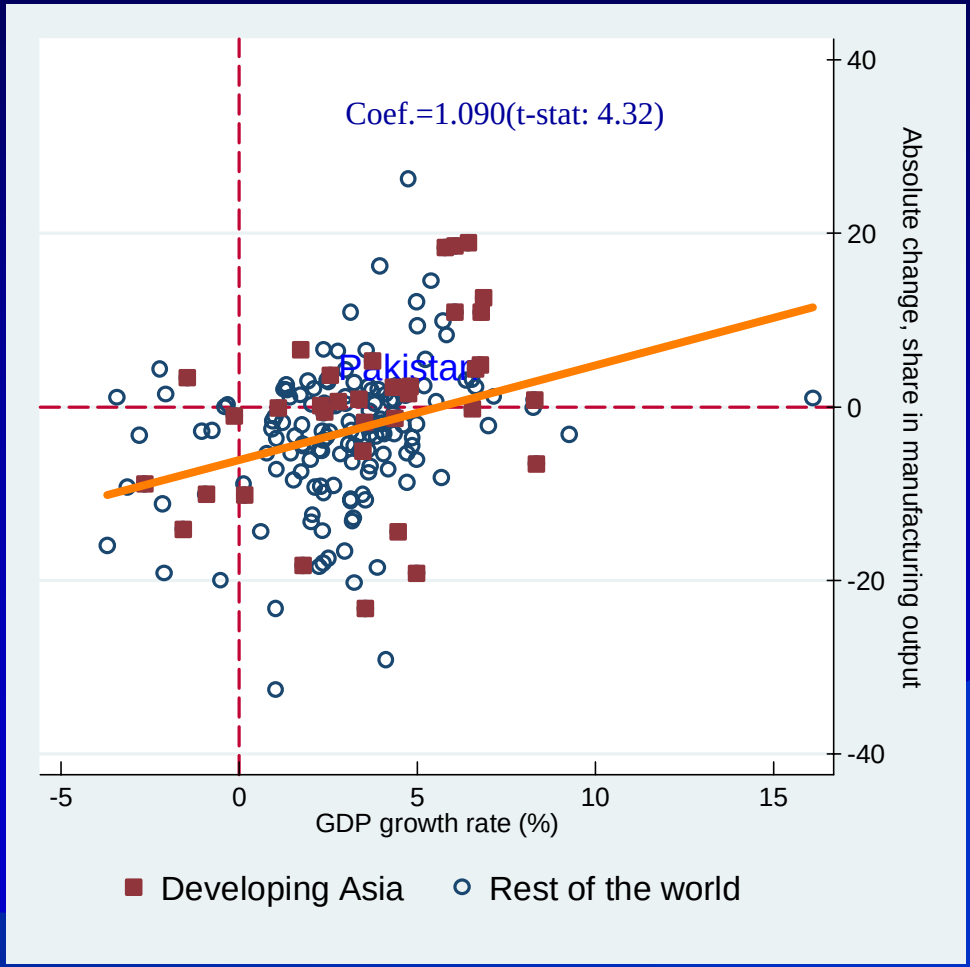
Pakistan
Employment and population



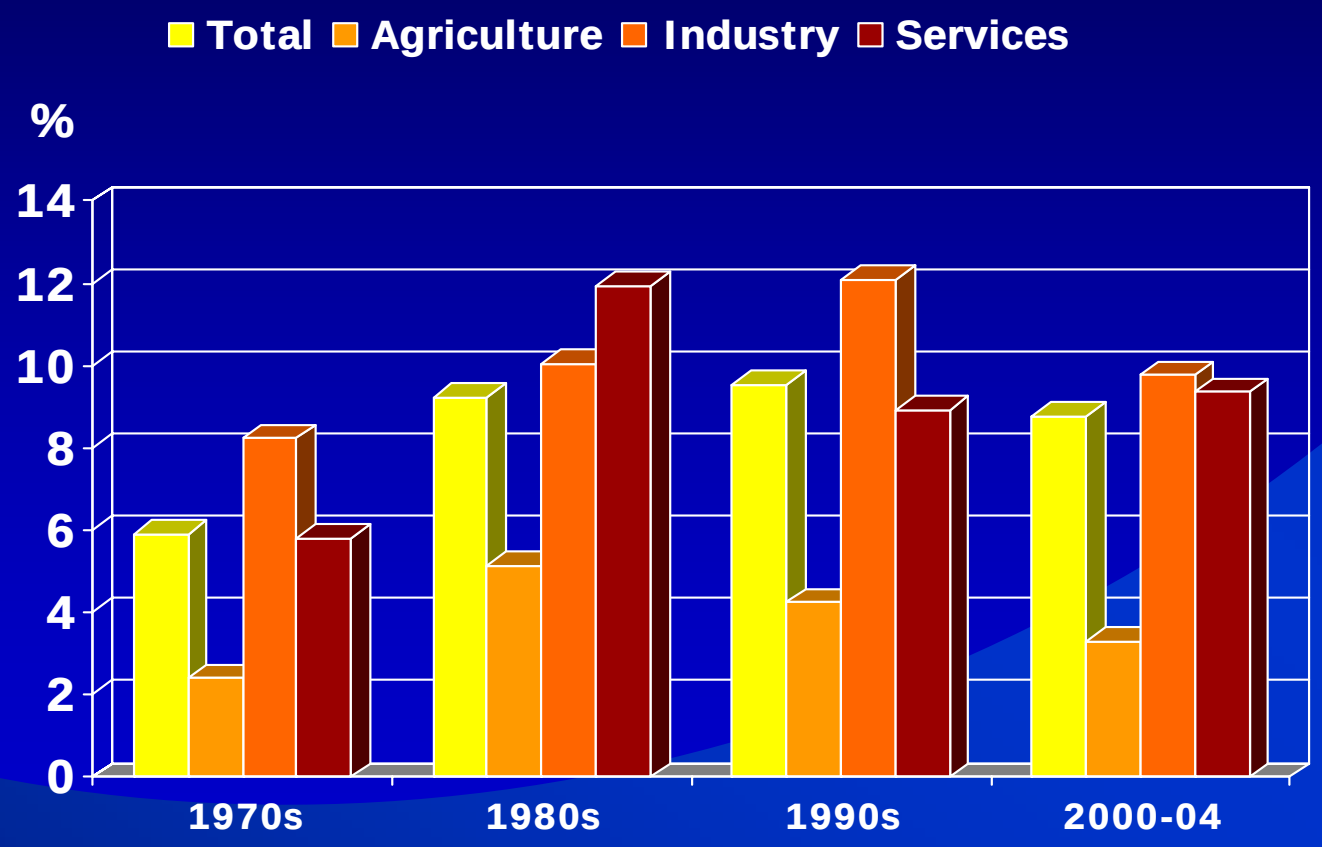
Note: Nonworking age refers to population below 15 and above 64.

ADB

Change in manufacturing output share vs. output growth



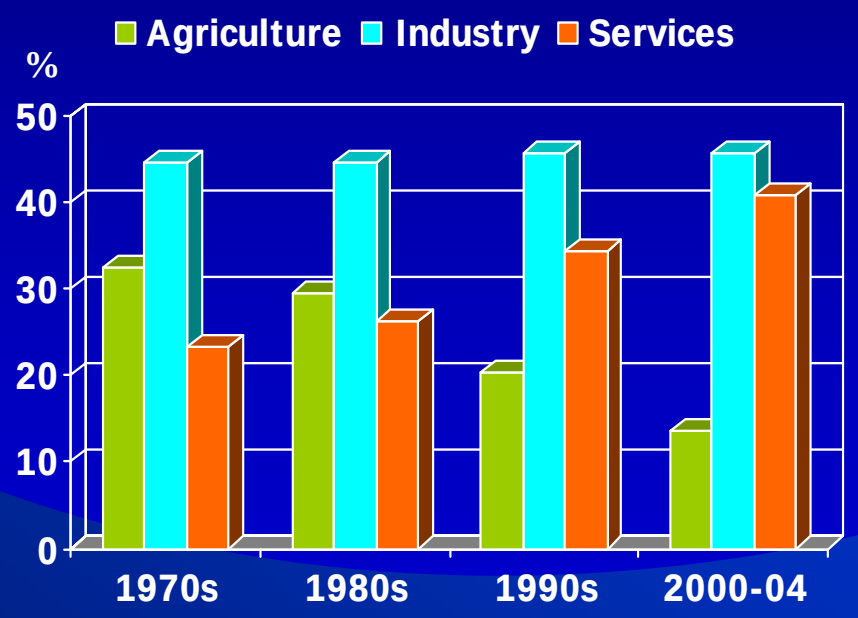
China:
Annual growth by sector



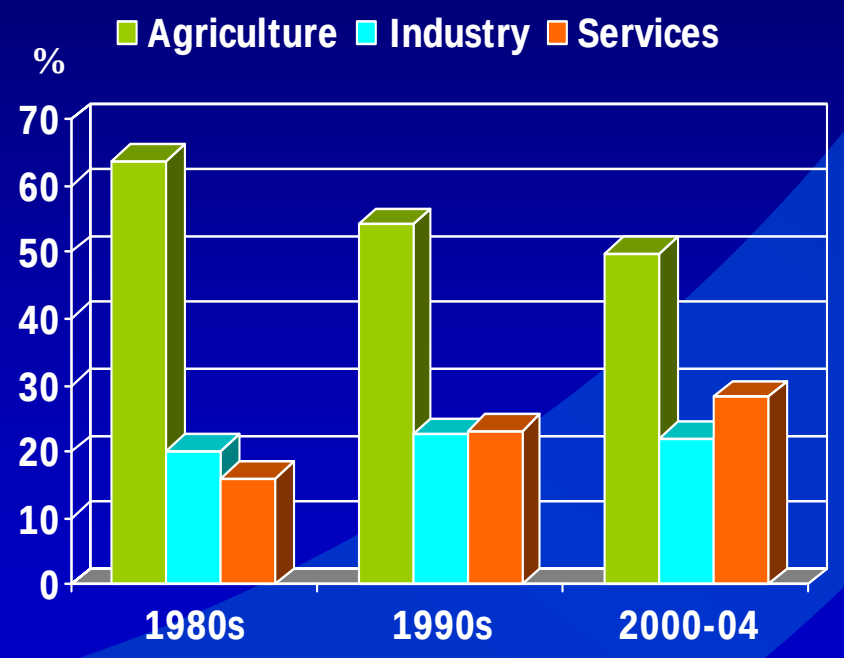
ADB

China:
Output and employment shares

Output shares



Employment shares

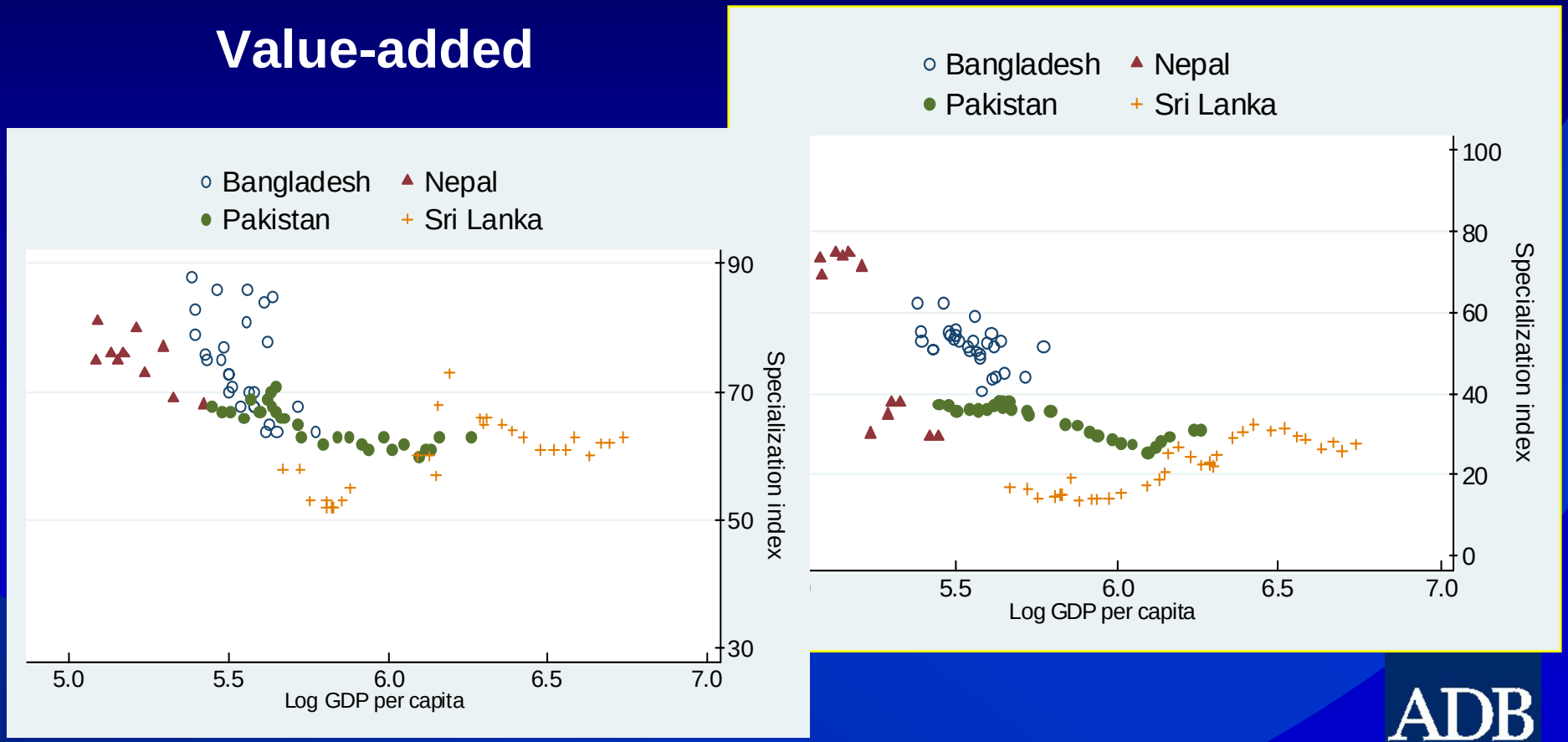


ADB

Specialization index

Employment

Value-added



$$X_j = \sum_l x_{jl}$$

$$PRODY_k = \sum_j \frac{(x_{jk} / X_j)}{\Sigma (x_{jk} / X_j)} Y_j$$

$$EXPY_i = \sum_l \left(\frac{x_{il}}{X_i} \right) PRODY_l$$

ADB