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Asia's Productivity Performance and Potential: A Sectoral Perspective

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Dynamics of growth in Asia have changed over past decades

Table 1: Growth rates of GDP per person engaged for Major Countries and Regions

	China	South Asia	Southeast Asia	East Asia	Japan	European Union	United States
	GDP per person engaged (annual compound growth rate)						
1960-1973	1.3	1.9	3.2	6.0	8.1	4.4	2.3
1973-1985	4.0	1.6	1.7	4.6	2.4	1.9	1.0
1985-1997	4.8	3.3	4.2	4.7	1.9	1.7	1.4
1997-2002	5.9*	2.7*	-1.3*	3.0*	0.9	0.9	2.2

Source: Groningen Growth and Development Centre Total Economy Database

*1997-2001

South Asia = India, Bangladesh, Sri Lanka, Pakistan
Southeast Asia = Malaysia, Indonesia, Thailand, Philippines
East Asia = Korea, Taiwan, Hong Kong Singapore

Productivity levels relative to U.S. suggest large remaining gaps

Levels of GDP per hour worked, 1990-2002

	1990	1995	1997	1999	2001	2002
USA	100.0	100.0	100.0	100.0	100.0	100.0
European Union	84.8	90.4	89.7	88.1	88.9	86.9
Japan	70.7	73.0	74.3	74.3	74.0	72.5
East Asia (4)	35.6	43.1	45.7	46.4	48.9	
SE Asia (4)	11.7	14.7	14.6	12.8	13.1	
China	6.3	8.2	8.8	9.4	9.0	
South Asia	6.1	6.8	7.0	7.1	7.3	

Source: Groningen Growth and Development Centre Total Economy Database

South Asia = India, Bangladesh, Sri Lanka, Pakistan
Southeast Asia = Malaysia, Indonesia, Thailand, Philippines
East Asia = Korea, Taiwan, Hong Kong Singapore

Sectoral productivity growth and structural change need to be addressed

- Intersectoral shifts of resources can have impact on aggregate productivity growth
- Opportunities created by ICT are strongly sector specific
- Catch-up and convergence framework requires measures of sectoral productivity levels relative to productivity leaders in world economy

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Groningen Growth and Development Centre Database

(at http://www.eco.rug.nl/GGDC/index-dseries.html)

1) GGDC Total Economy Data Base: 66 countries, GDP, population, labour input, (for some countries) capital input (based on Maddison, 1995, 2001)
2) GGDC Sectoral Data Base: OECD countries and additional 10 Asian countries, 10, 29 or 51 industries, GDP, labour input, (for some countries) capital input (based on Van Ark, 1996, this paper)
3) ICOP Industry Data Base: 30 countries, industry-of-origin PPPs, output and productivity levels (see website)

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Shift-share analysis

$$P^T - P^0 = \sum_{i=1}^{n} (P_i^T - P_i^0) \cdot \overline{S}_i + \sum_{i=1}^{n} (S_i^T - S_i^0) \cdot \overline{P}_i$$

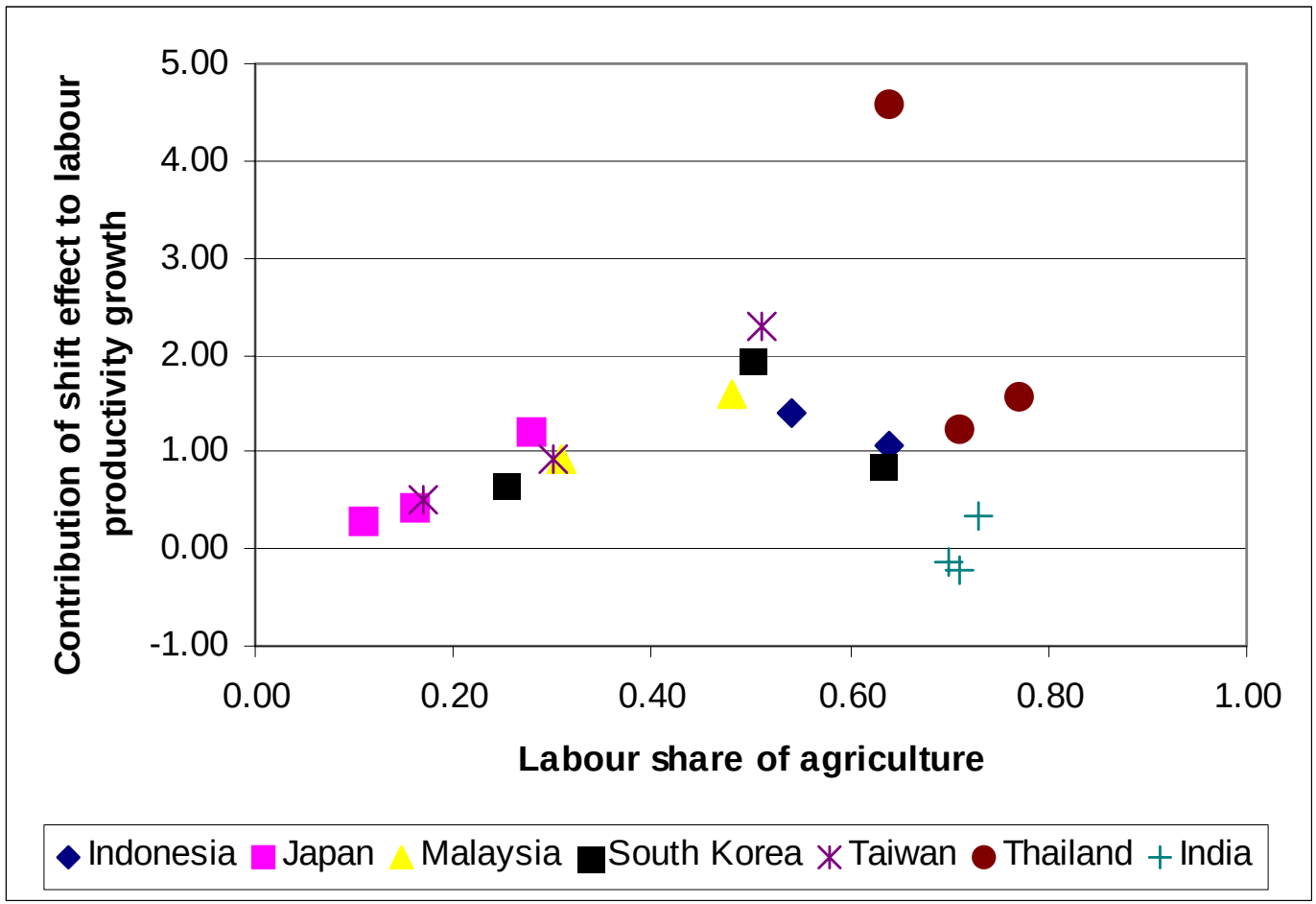
Two adjustments:

1) increase shift effect caused by shift from agriculture to non-agriculture by taking account of difference between marginal and average productivity

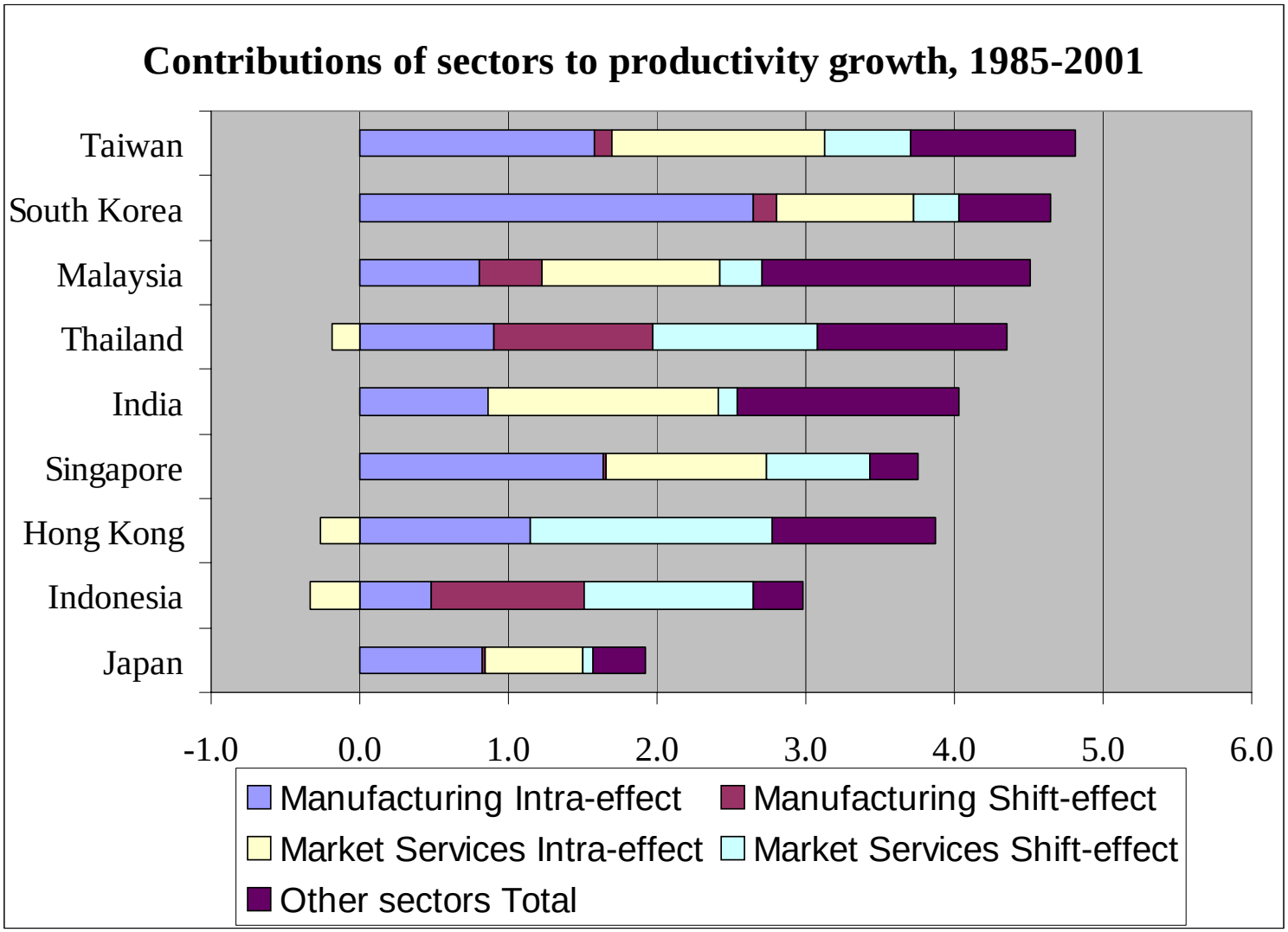
2) re-allocate shift effects from sectors that decline in employment share to those that increase in employment share

Shift out of agriculture still strongly contributes to productivity growth in low income countries in Asia

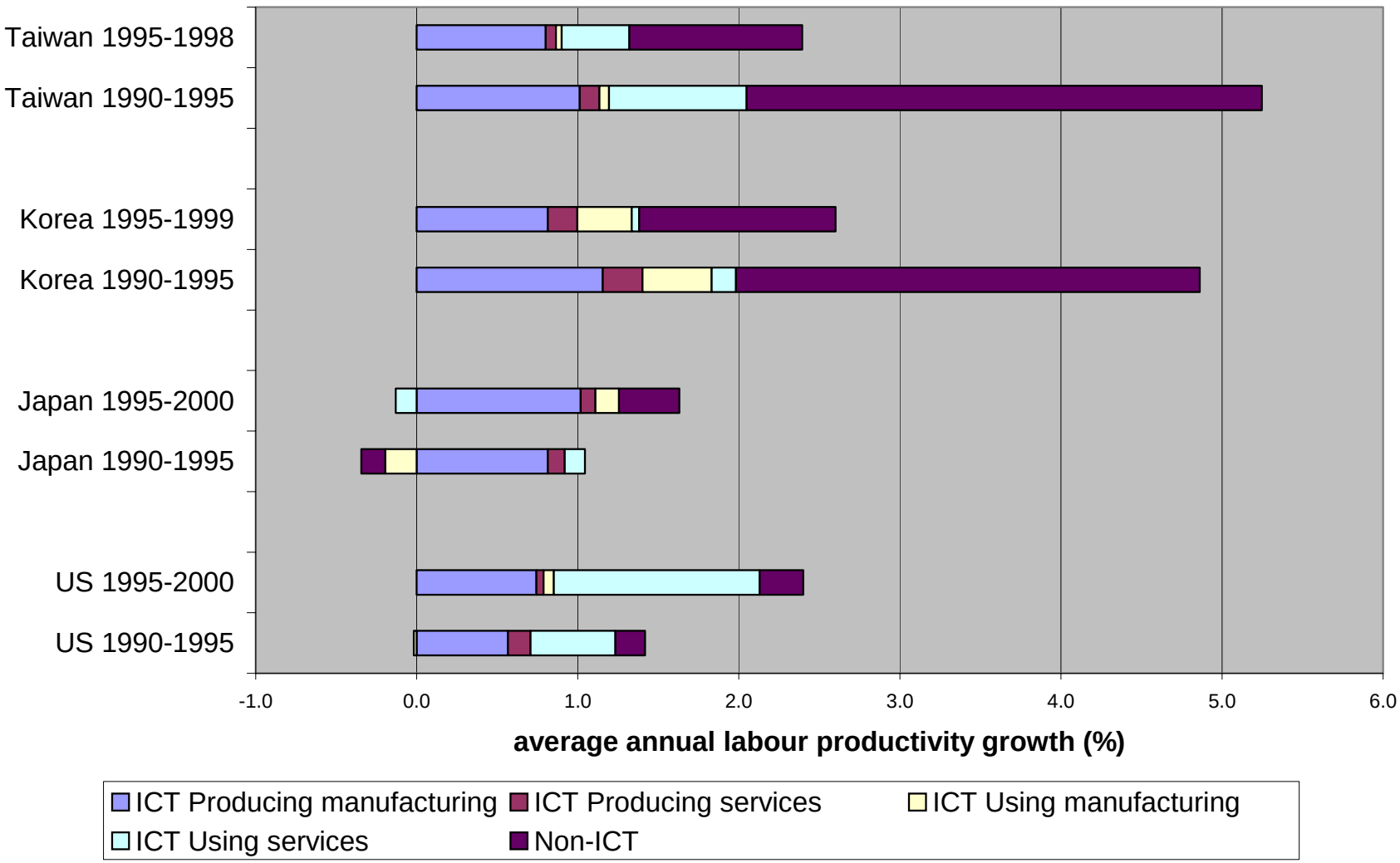
Contribution of shift out of agriculture to aggregate labour productivity growth



Across the region intra-manufacturing productivity growth remains important contributor



ICT-producing manufacturing plays a major role in advanced Asian countries



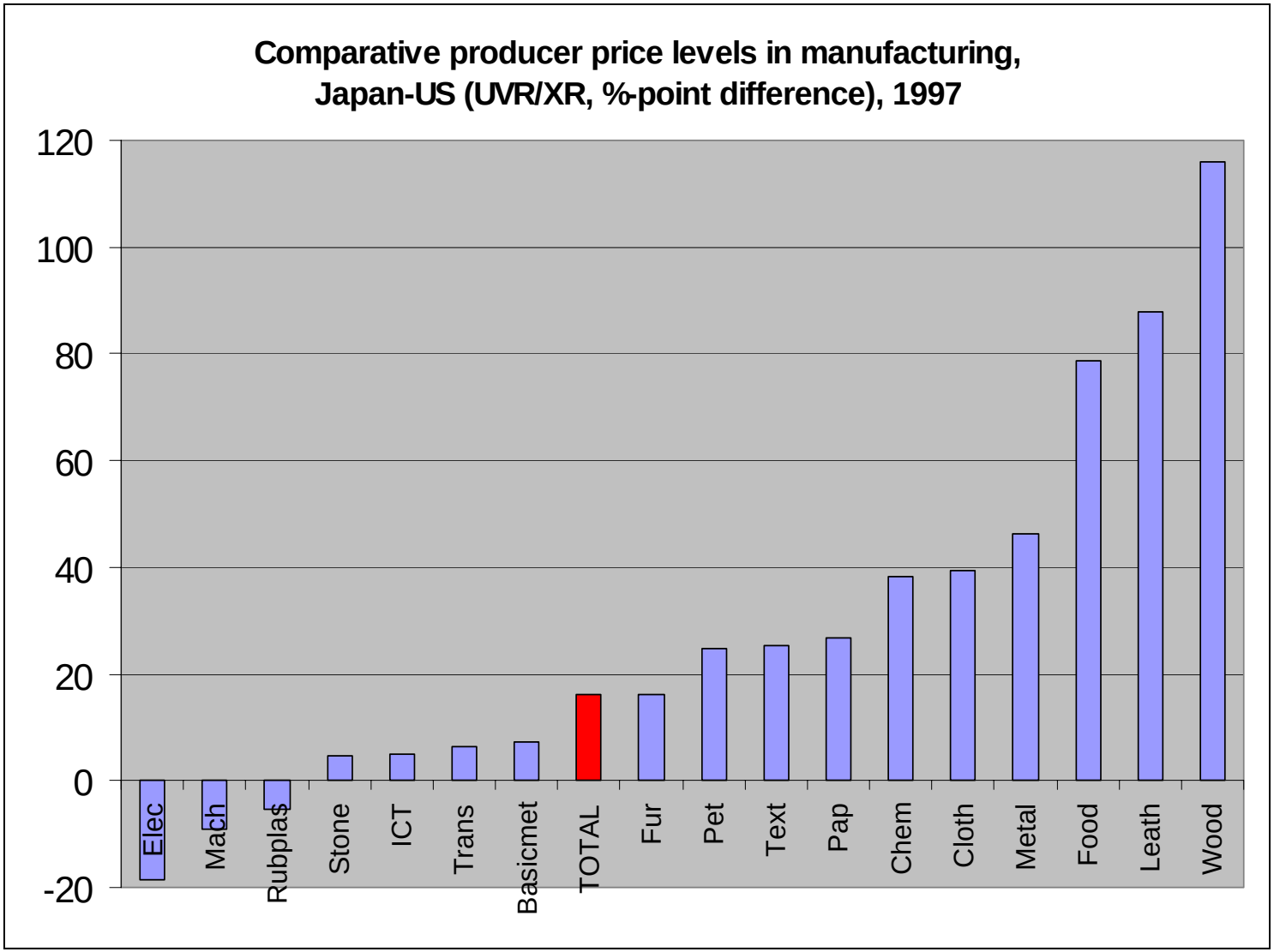
Manufacturing productivity gaps relative to U.S. remain large during 1990s

ICOP Estimates of Comparative Labour Productivity Levels in Manufacturing, 1973-2001

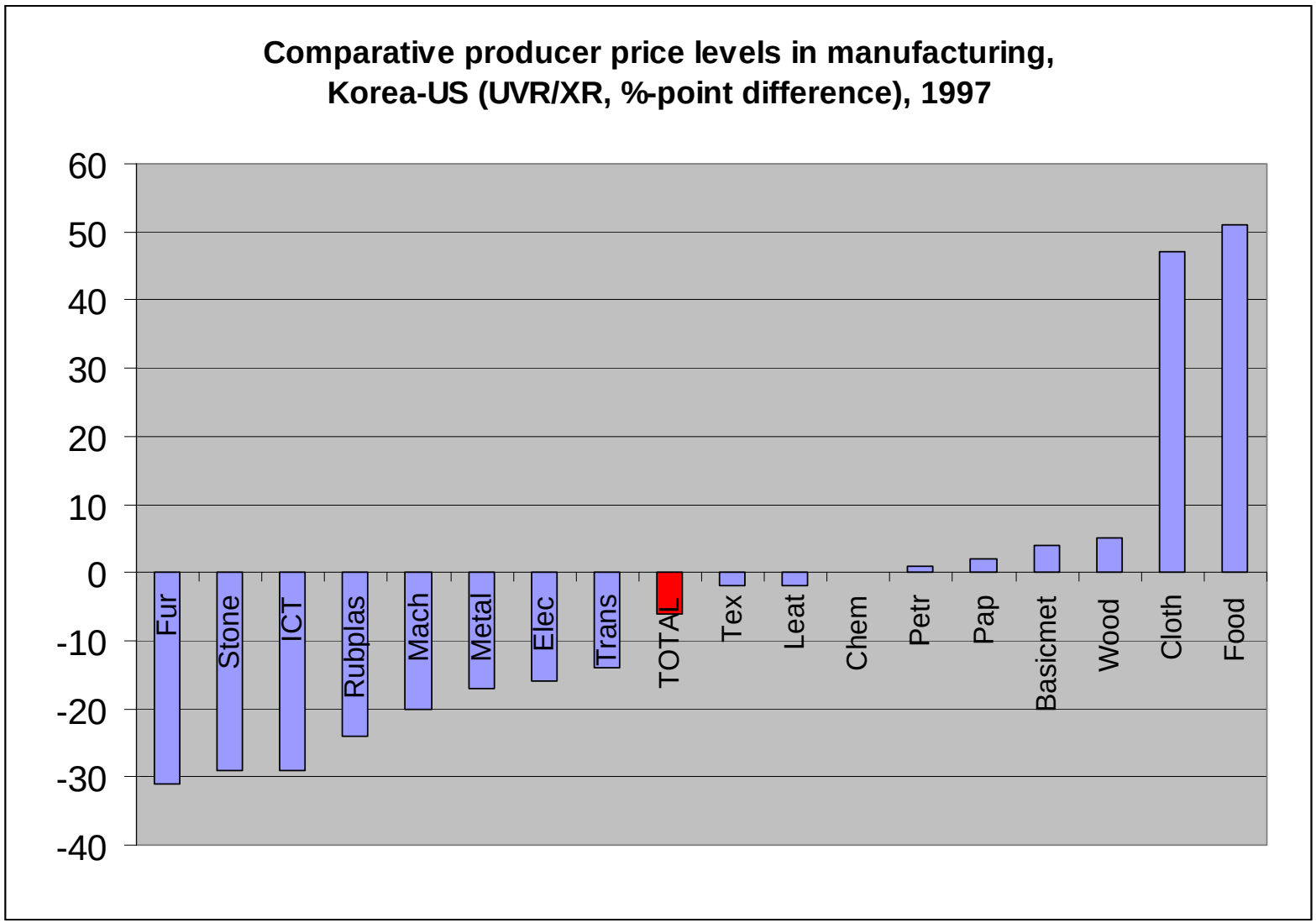
	Value added per person engaged			
	1973	1987	1997	2001
India				
all firms	2.3	2.2	2.7	2.6 (d)
registered firms only (a)	7.7	8.8	11.7	12.0 (e)
China				
all firms	5.8	4.5	7.6	9.2 (f)
large firms only (b)		5.7	8.0	9.7 (f)
Indonesia				
medium & large only (c)		8.2	13.3	10.4
all firms	3.1	5.8	6.2	5.1
Taiwan	32.4	42.6	52.9	51.3
Korea	16.3	24.5	38.8	47.9
Japan	69.4	78.8	80.0	73.2
United States	100.0	100.0	100.0	100.0

(a) establishments with 20 or more employees and establishment with between 10-20 employees using power; (b) enterprises above township level; (c) establishments with 20 or more employees except those in oil and gas refineries; (d) 2000; (e) 1998; (f) 1999

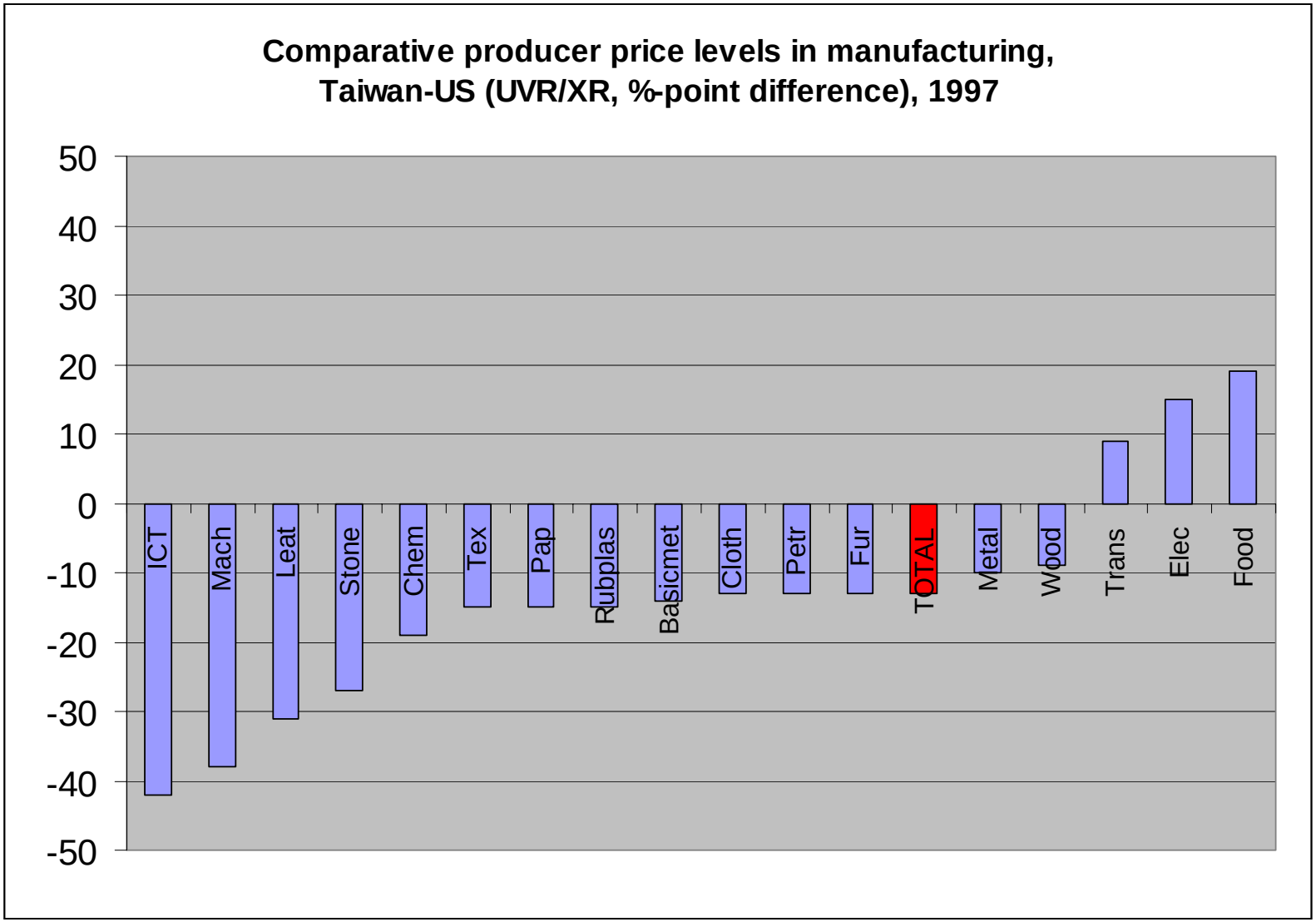
Differences in relative producer price levels affect comparative productivity levels in Japan



Relative producer price levels are lower in Korea than in Japan



… and even lower in Taiwan



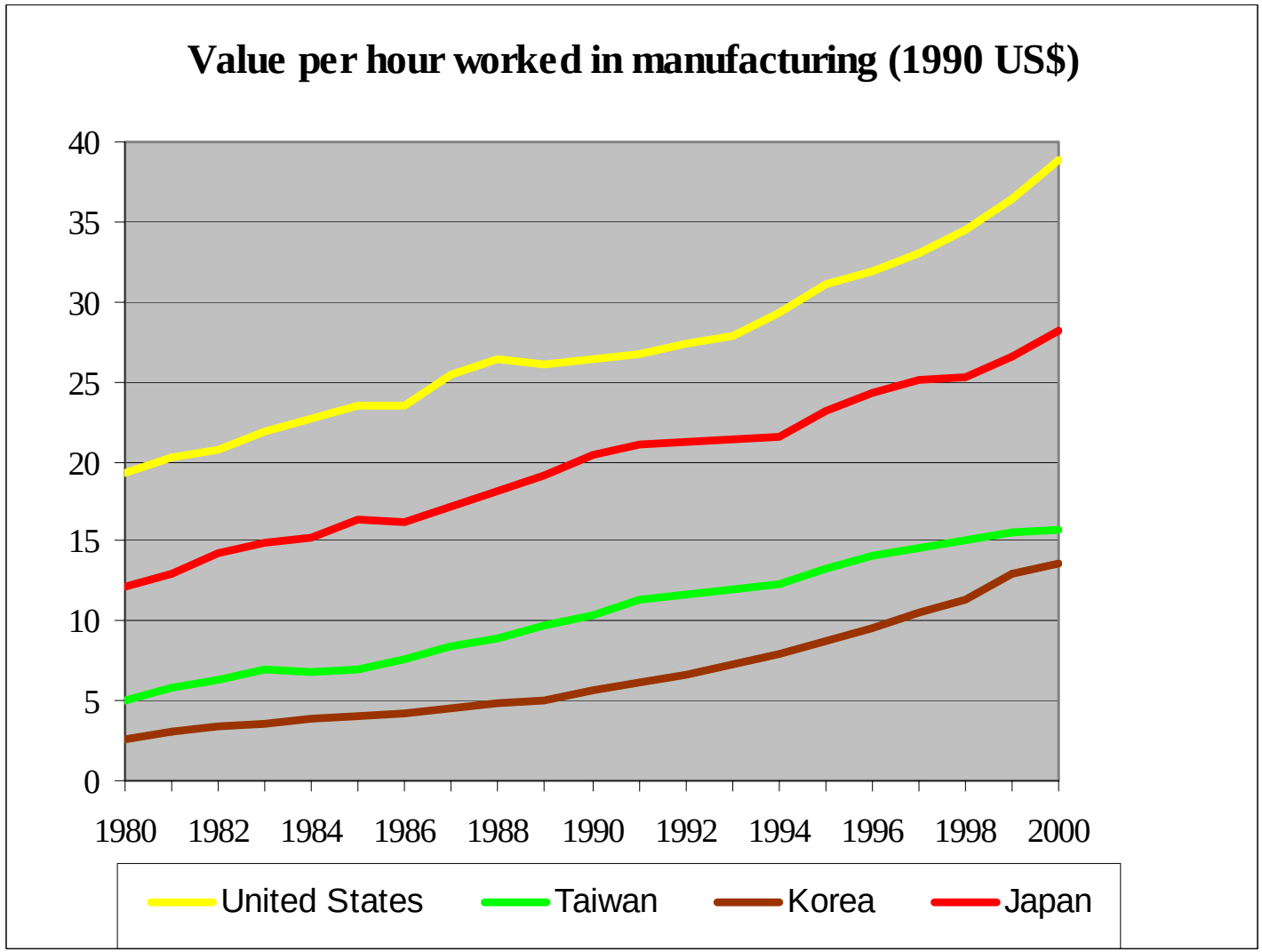
Large variation in relative productivity levels across manufacturing industries

Labour Productivity (GDP per hour) relative to U.S., 1997

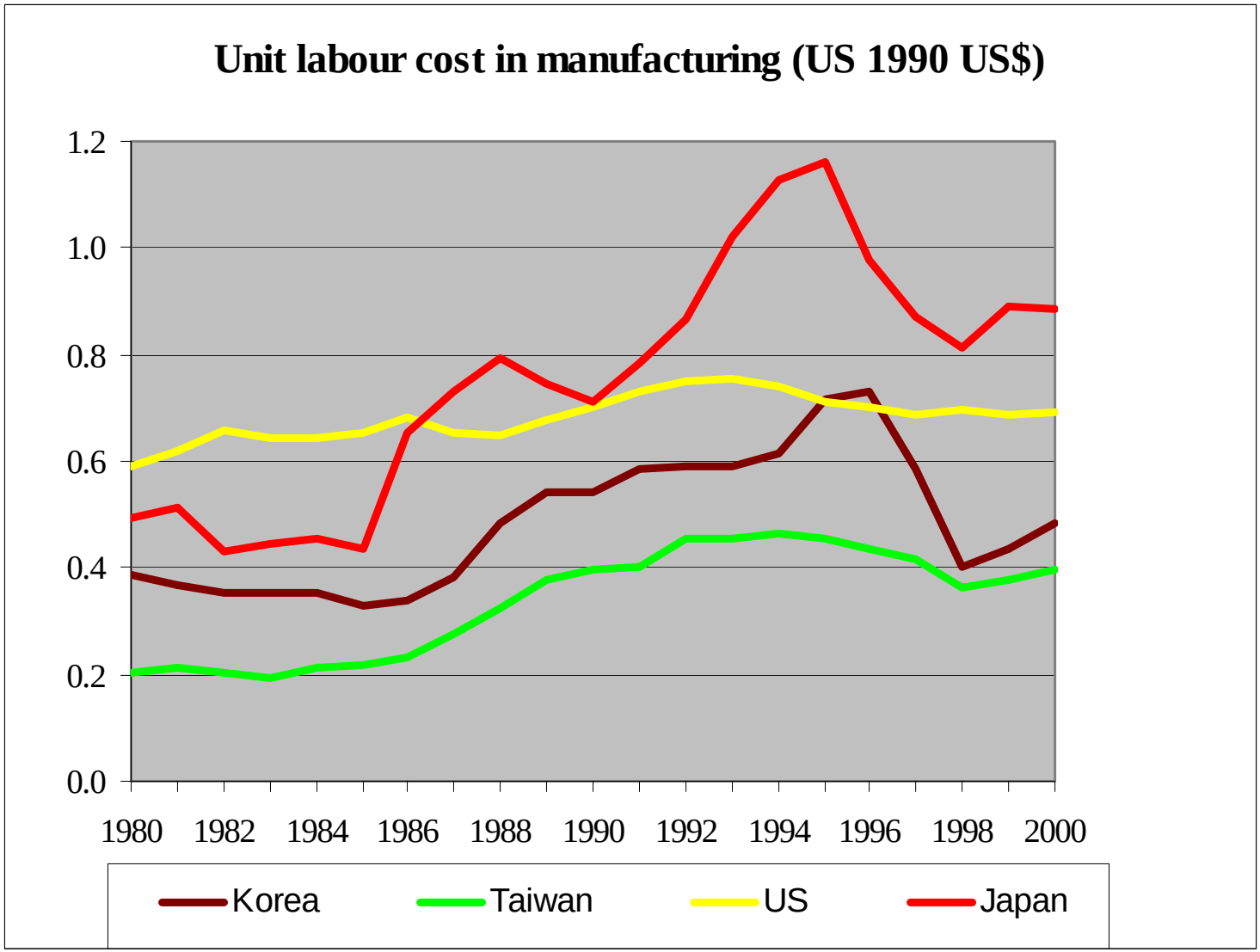
	Japan	Korea	Taiwan
Food and kindred products	37	22	51
Textile mill products	32	22	69
Wearing apparel	64	15	40
Leather products and footwear	54	15	31
Wood products	26	29	32
Paper products, printing and publishing	79	31	33
Chemicals and allied products	76	46	37
Petroleum and coal products	205	224	162
Rubber and plastic products	116	26	46
Non-metallic mineral products	89	52	53
Basic metal products	168	63	62
Fabricated metal products	52	31	28
Machinery and equipment	133	24	56
Transport equipment	75	36	39
Office, accounting and computing machinery	65	21	42
Electrical machinery and instruments	101	32	30
Furniture and miscellaneous manufacturing	79	33	45
Total manufacturing	76	32	44

ICOP estimates for 1997 benchmark year

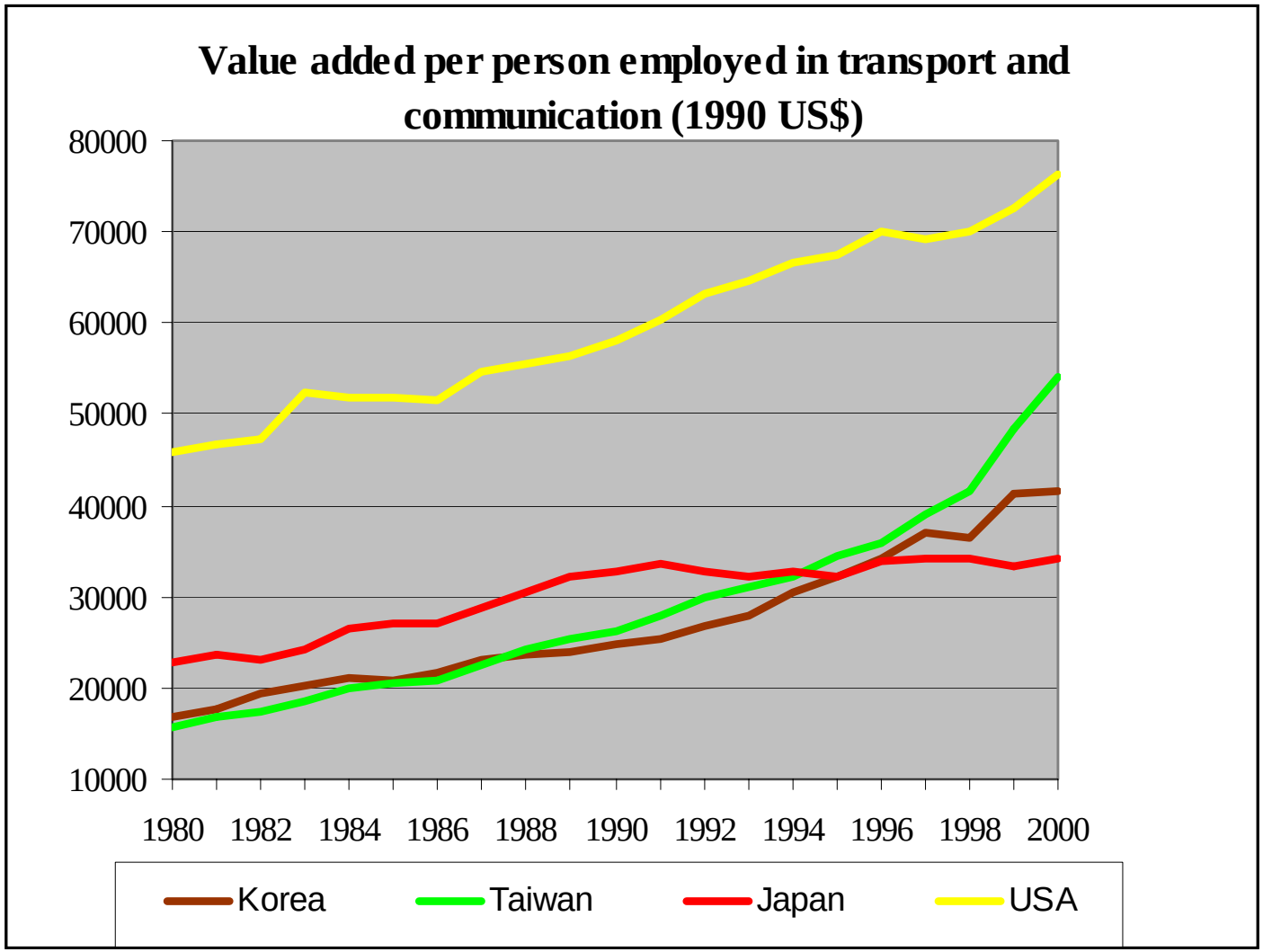
East Asia's productivity gaps relative to U.S. remain large ...



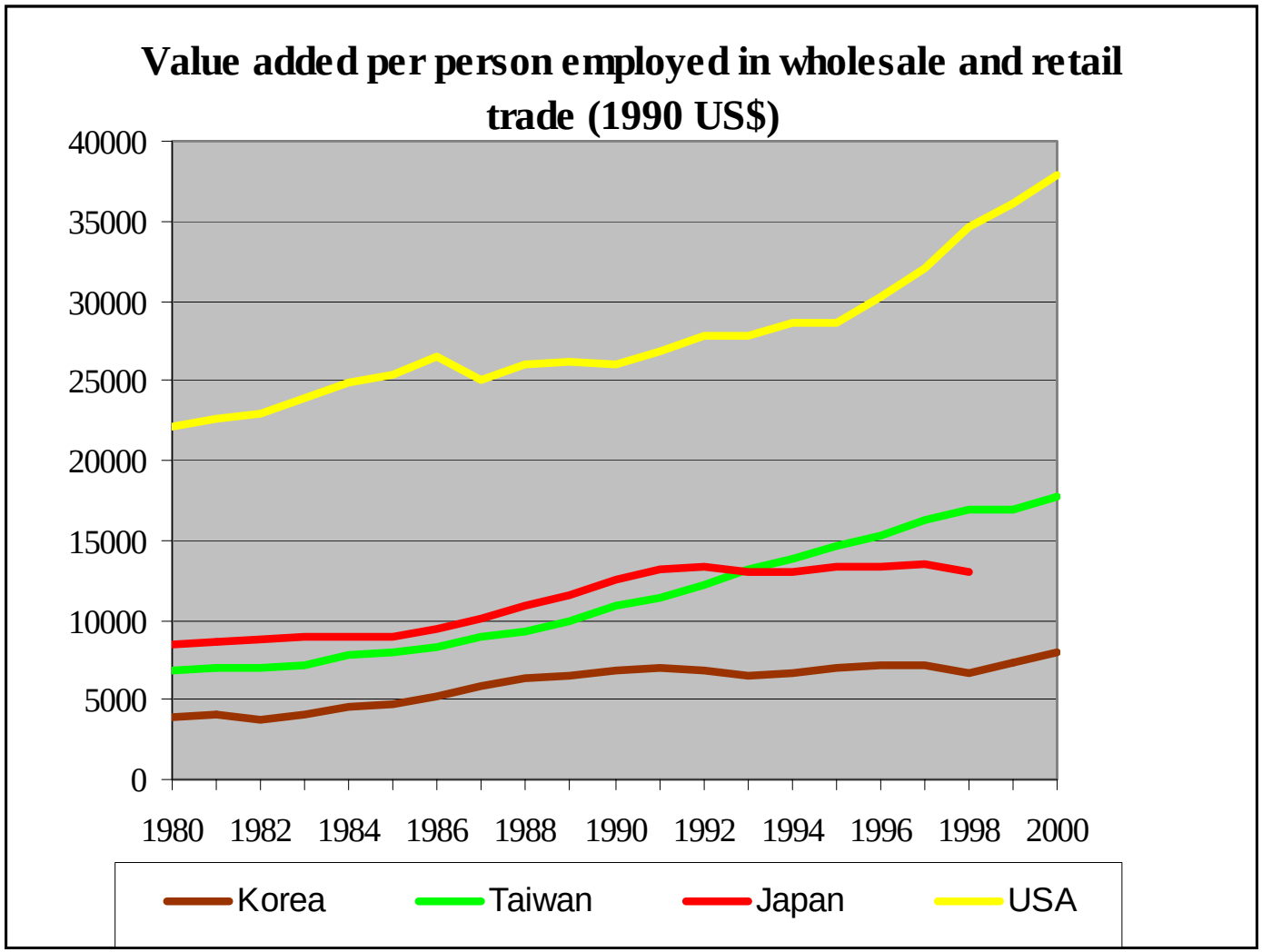
… and cost competitiveness relative to U.S. is eroding



Productivity gaps in transport and communication in East Asia relative to U.S. are also large



… and productivity is even further behind in wholesale and retail trade



Main conclusions

- Asian countries remain relatively strong in manufacturing
- … with advanced countries benefiting from comparative advantages in ICT-producing manufacturing
- Potential for services productivity growth is substantial
- … but benefits from ICT-use on services productivity are still limited
- Potential for catch-up in manufacturing and services is large
- Japan's competitiveness position in manufacturing and in particular service industries has strongly weakened compared to other advanced countries in East Asia

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