The Korean Economy

Ch.3 Korea's Industrial Development

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Korea's Industrial Development

- Characteristics ?

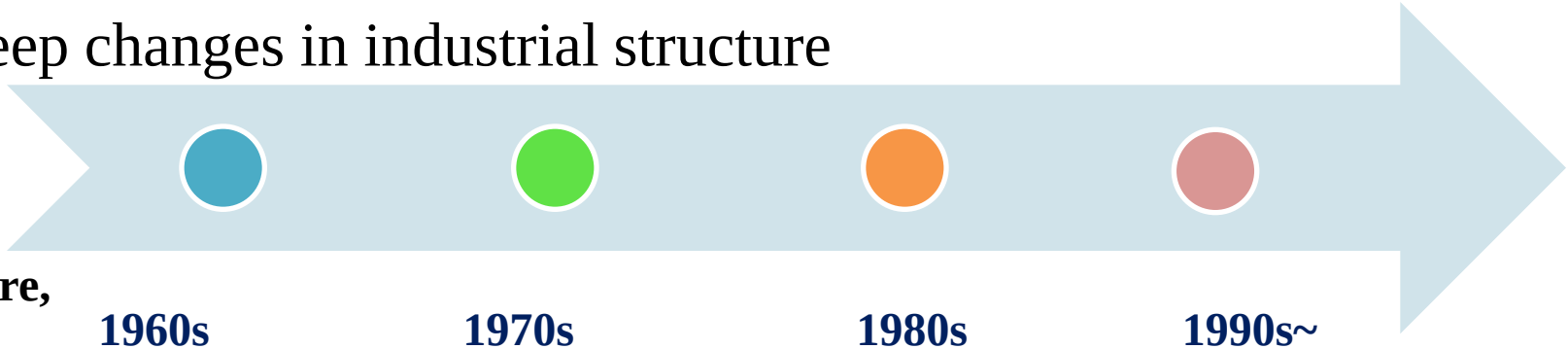
Korea's Industrial Development

- Characteristics
  - HCI-based manufacturing (finished goods-> ???)
  - Government-led policies (factor supply, infrastructure,…) → ???
  - Large firms (*Chaebuls*)
  - Step-by-step but compressed
  - Agriculture -> light mfg -> ??? -> ???
  - Initially import-substitution, followed by all-out export promotion

Ⅰ. Introduction

Korea

- Deep changes in industrial structure



Agriculture, Primary industries

1960s **Labor-intensive manufacturing**

1970s **Capital-intensive, High-productivity manufacturing**

1980s **Research & Development**

1990s~ **Information and Communication Technology industries**

Capital based on domestic savings

Investment in Technology

Flexible resource allocation

Foreign trade

Entrepreneurship

Institutional, physical infrastructure

Q) How to develop new growth engines?

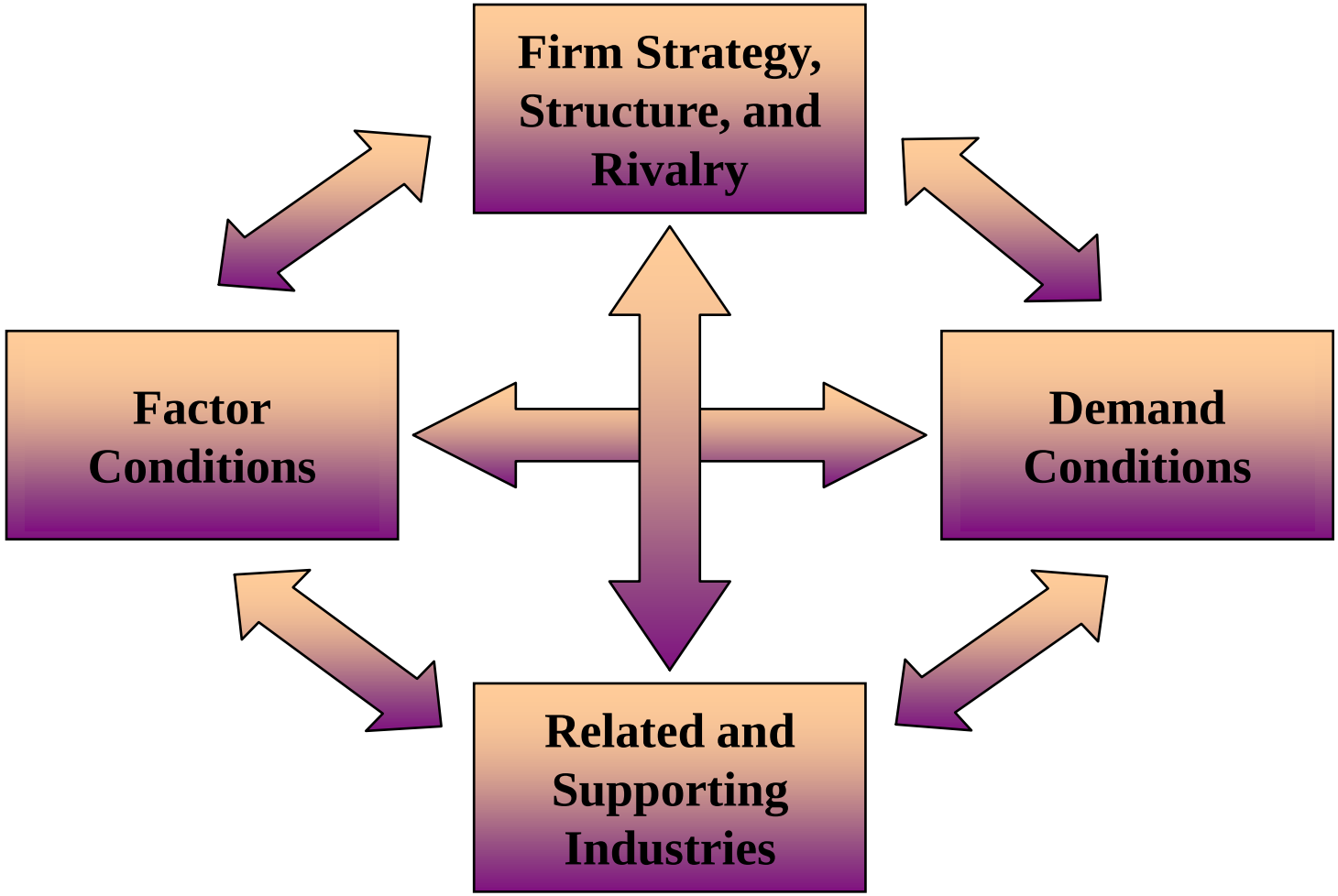
Strategic Trade Policy

Governmental role and influence in factor condition

- Alter conditions for industries in general
  - change conditions that affect factor proportions, efficiency, and innovation

- Target conditions for a specific industry
  - Pros and cons
    - »hard to identify and target appropriate industries
    - »too many countries identify the same industry, leading to excessive competition

Global Competitive Advantage: The Porter Diamond



The Porter Diamond

Indicates four important conditions for competitive superiority

- Demand conditions—observation of need or demand
  - –usually in home country
  - –production started near the observed market
- Factor conditions— availability and terms for acquiring them
- Related and supporting industries—existence of infrastructure
- Firm strategy, structure, and rivalry
  - –influenced by other three conditions

Existence of the four favorable conditions

Absence of one of the four conditions

Ⅱ. Structural changes in the Korean economy

Rapid changes in industrial structure

Annual output growth by sector

(Unit: %)

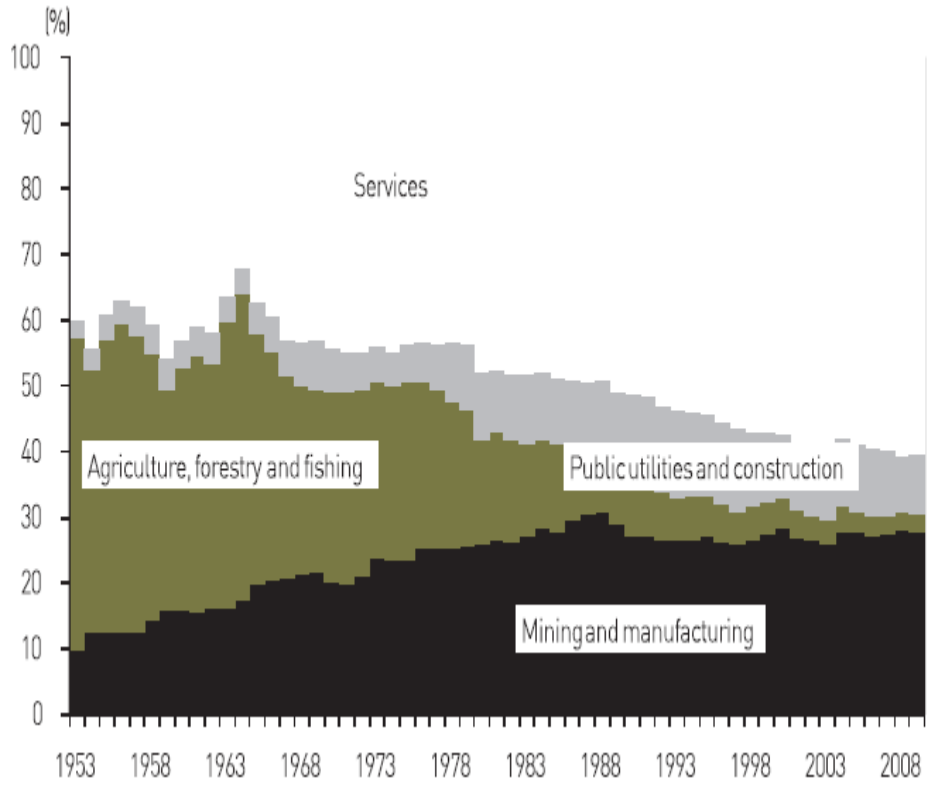
	1953-1960	1960-1970	1970-1980	1980-1990	1990-2000	2000-2009
Agriculture, forestry and fishing	2.3	4.4	1.6	3.5	1.9	1.8
Mining and manufacturing	12.1	15.7	14.1	11.4	8.2	5.3
Mining			4.7	-0.2	-1.3	-0.3
Manufacturing	12.7	16.8	15.8	12.2	8.4	5.4
Light industries			12.7	7.0	1.1	-0.6
Heavy and chemical industries			17.2	14.4	9.8	6.6
Public utilities and construction	9.3	19.2	10.3	10.3	2.7	3.3
Public utilities			15.8	17.6	10.3	5.8
Construction			10.1	9.7	1.4	2.6
Services	3.8	8.6	6.8	8.4	6.1	3.6
Gross Domestic Product	3.8	8.4	9.0	9.7	6.5	3.9

- Output grew annually by 17% in 1960s, 16% in 1970s

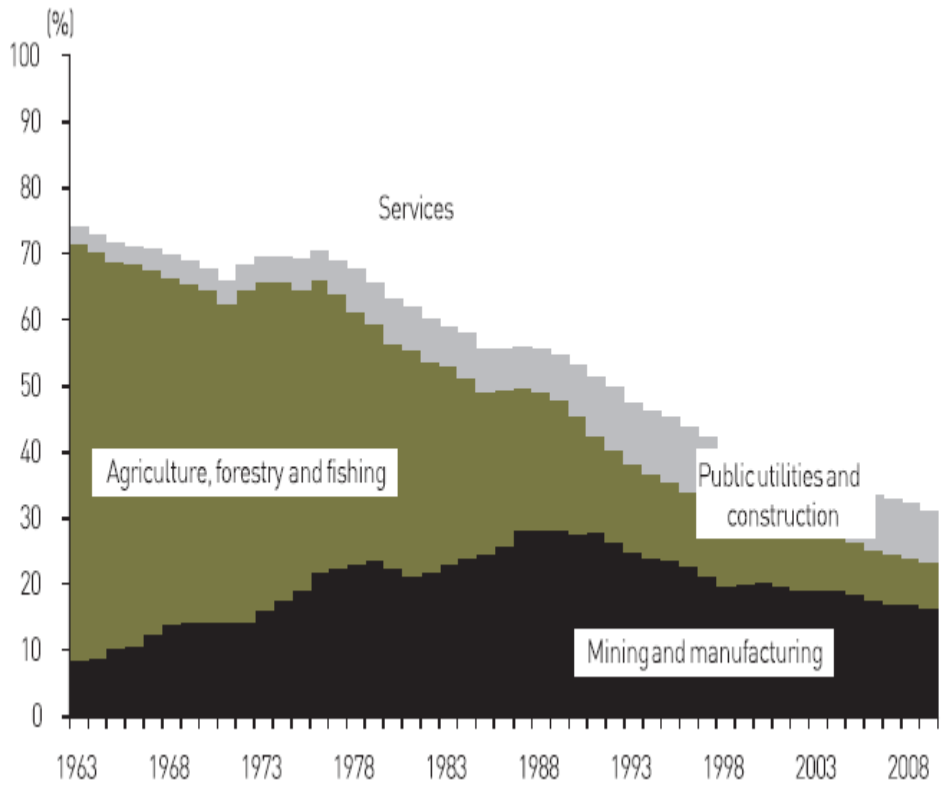
Ⅱ. Structural changes in the Korean economy

Rapid changes in industrial structure

Share in gross value-added by sector



Share in total employment by sector



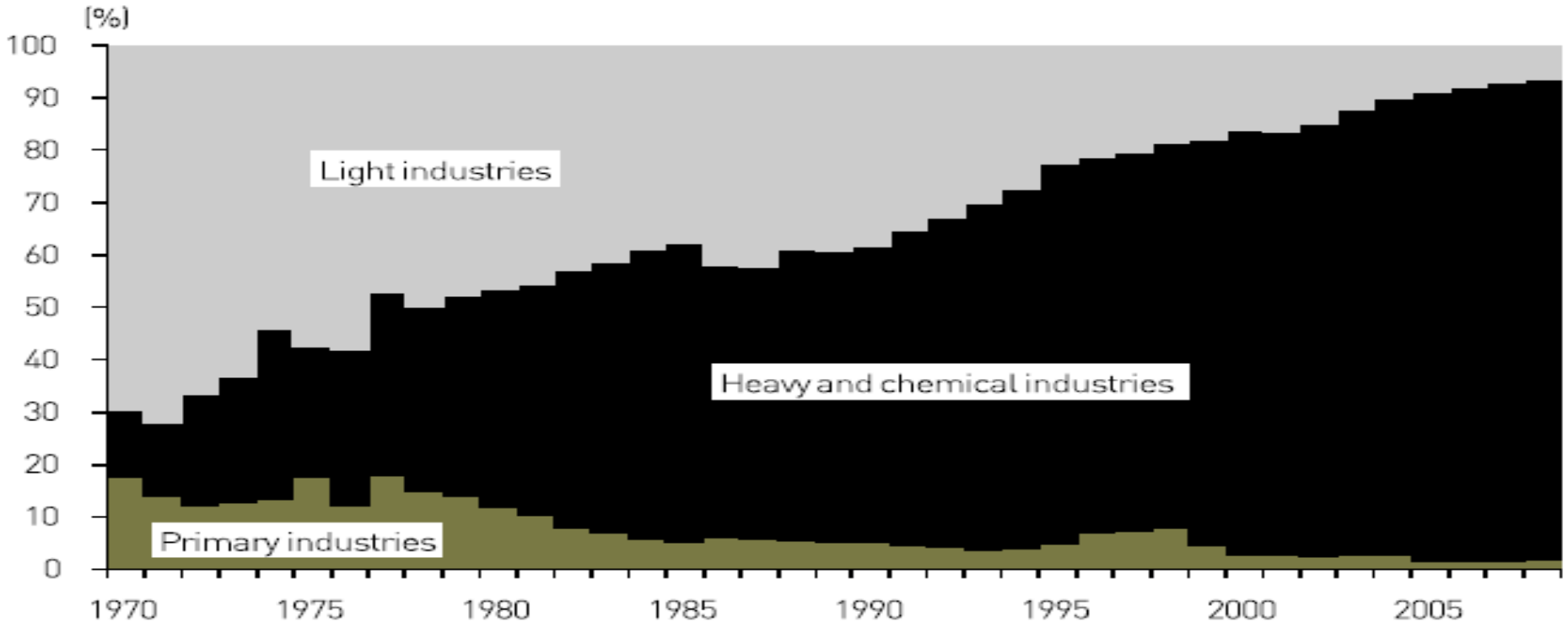
- Manufacturing : 12% (1953-1960)
  → 23% (1971-1980)

- Manufacturing employment increased rapidly

Ⅱ. Structural changes in the Korean economy

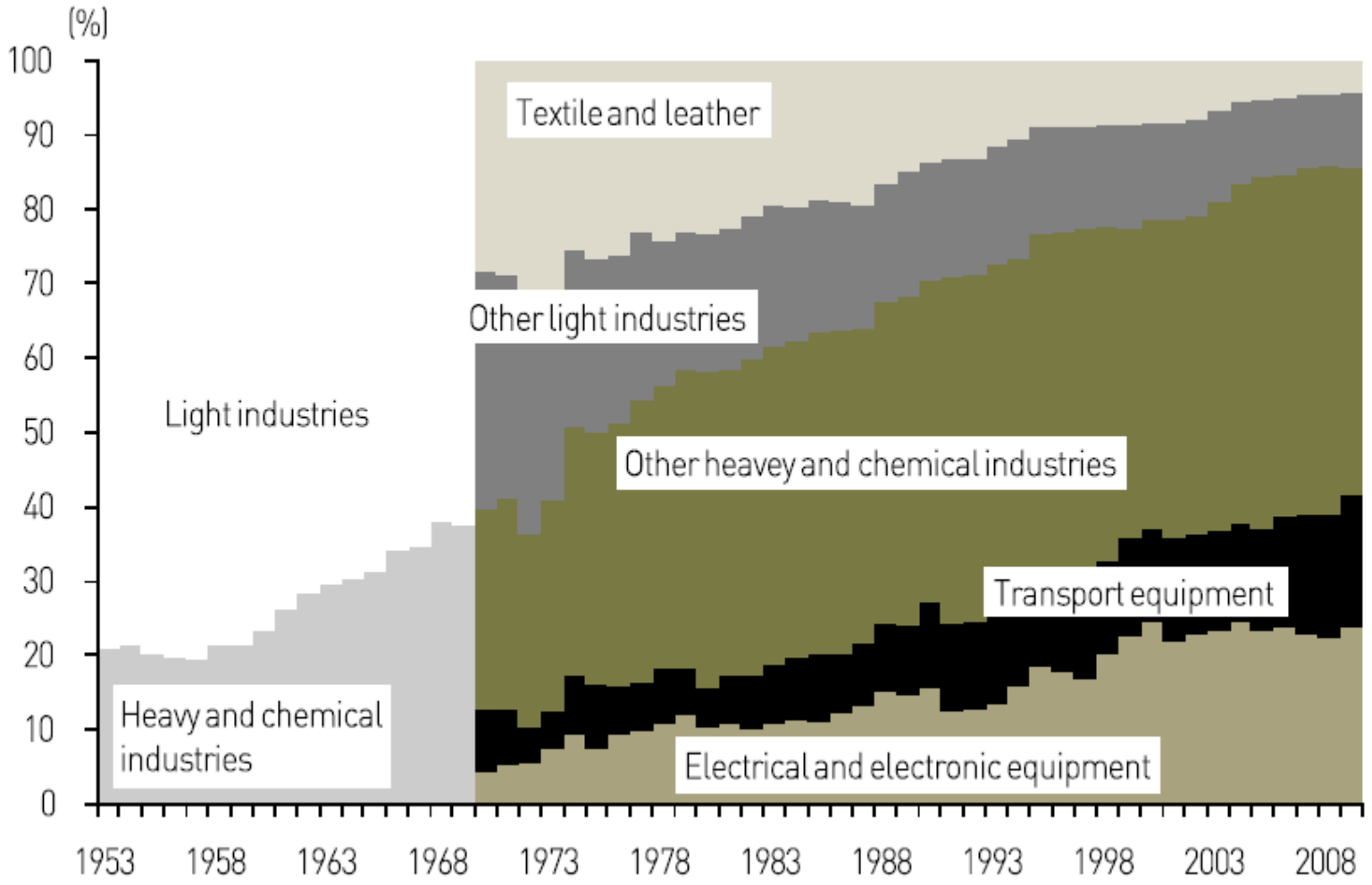
Rapid changes in industrial structure

Share in exports by sector



- In 1970, primary industries (17%), light industries(70%), HCIs (13%)
- In 2008, primary industries (2%), light industries(6%), HCIs (92%)

Figure 3-3. Share in manufacturing value-added by subsector



Source: Bank of Korea (http://ecos.bok.or.kr).

Table 3-3. Share of the top 10 export items in total exports

(Unit: %)

Rank	1961		1970		1980	
1	Iron ore	13.0	Textile	40.8	Garments	16.0
2	Tungsten	2.6	Plywood	11.0	Steel plate-rolled products	5.4
3	Raw yarn	6.7	Wigs	10.8	Footwear	5.2
4	Coal	5.8	Iron ore	5.9	Ships	3.6
5	Cuttlefish	5.6	Electronic goods	3.5	Audio equipment	3.4
6	Live fish	4.5	Confectionery	2.3	Man-made filament fabrics	3.2
7	Graphite	4.2	Footwear	2.1	Rubber products	2.9
8	Plywood	3.3	Tobaccos	1.6	Woods and wood items	2.8
9	Rice	3.3	Iron products	1.5	Video equipment	2.6
10	Swine bristle	3.0	Metal products	1.5	Semiconductors	2.5
Sum		62.0		81.1		47.6

Rank	1990		2000		2008	
1	Garments	11.7	Semiconductors	15.1	Ships and ship components	10.2
2	Semiconductors	7.0	Computers	8.5	Petroleum products	8.9
3	Footwear	6.6	Automobiles	7.7	Mobile phone equipment	8.5
4	Video equipment	5.6	Petroleum products	5.3	Automobiles	8.3
5	Ships	4.4	Ships	4.9	Semiconductors	7.8
6	Computers	3.9	Mobile phone equipment	4.6	Flat display screens	4.4
7	Audio equipment	3.8	Synthetic resin	2.9	Steel plate-rolled products	3.8
8	Steel plate-rolled products	3.8	Steel plate-rolled products	2.8	Synthetic resin	3.5
9	Man-made filament fabrics	3.6	Garments	2.7	Automobile parts	3.3
10	Automobiles	3.0	Video equipment	2.1	Computers	2.5
Sum		53.4		56.6		61.3

Source: Institute for International Trade (http://www.kita.net).

Table 3-4. Distribution of employment by sector

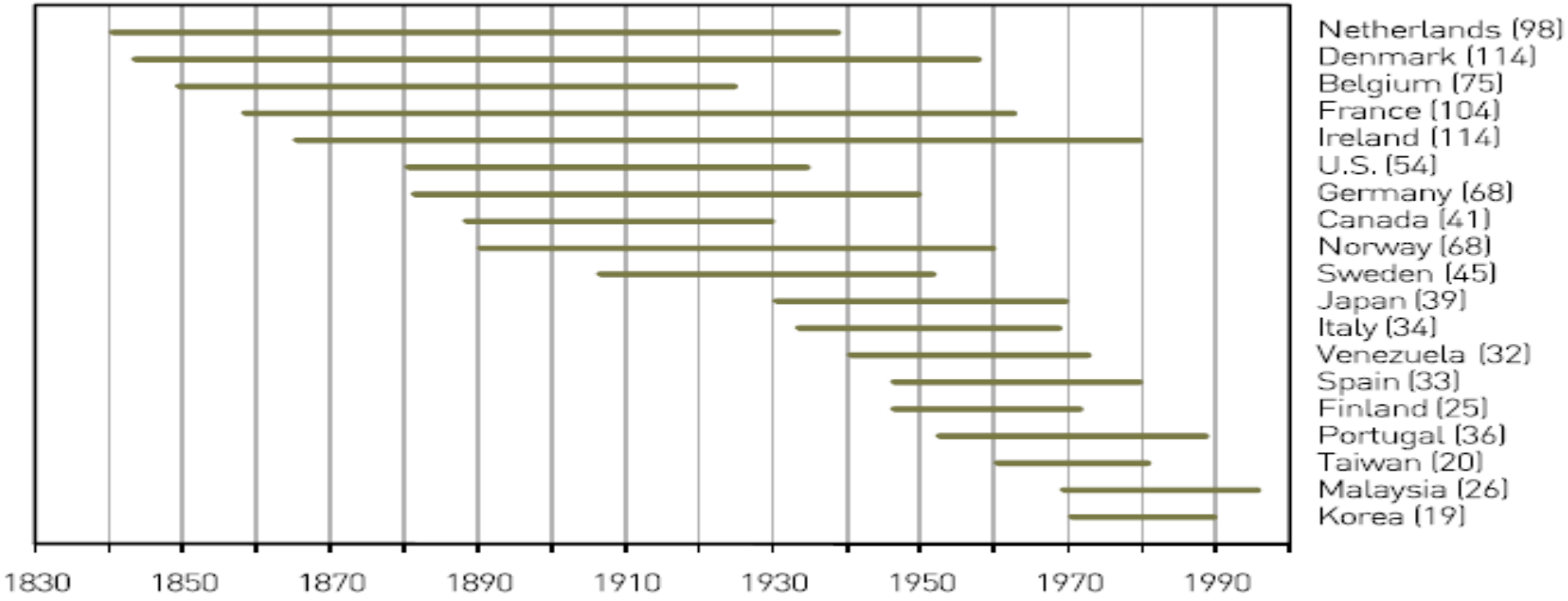
(Unit: %)

Country	Year	Agriculture	Industry	Services
U.K.	1700	60.0	15.0	25.0
	1820	40.0	30.0	30.0
	1890	16.0	44.0	40.0
U.S.	1880	51.9	25.9	22.2
	1900	43.0	30.0	27.0
	1920	30.9	38.7	30.4
	1940	25.5	37.4	37.1
	1950	17.7	43.0	39.3
Japan	1880	80.9	6.5	12.6
	1900	68.5	13.5	18.0
	1920	54.4	20.5	25.1
	1940	44.3	26.9	28.8
	1948	56.0	21.3	22.7
Korea	1963	63.1	11.2	25.6
	1970	50.4	17.2	32.3
	1980	34.0	28.7	37.3
	1990	17.9	35.0	47.1
	1996	11.7	32.1	56.2
	1997	11.3	30.9	57.8
	1998	12.4	27.5	60.1
	1999	11.6	27.1	61.3

Ⅱ. Structural changes in the Korean economy

Rapid changes in industrial structure

Periods of industrialization



- Similar patterns of structural change as other countries
- Korea achieved "compressed" growth in the last few decades as in Taiwan and other East Asian countries

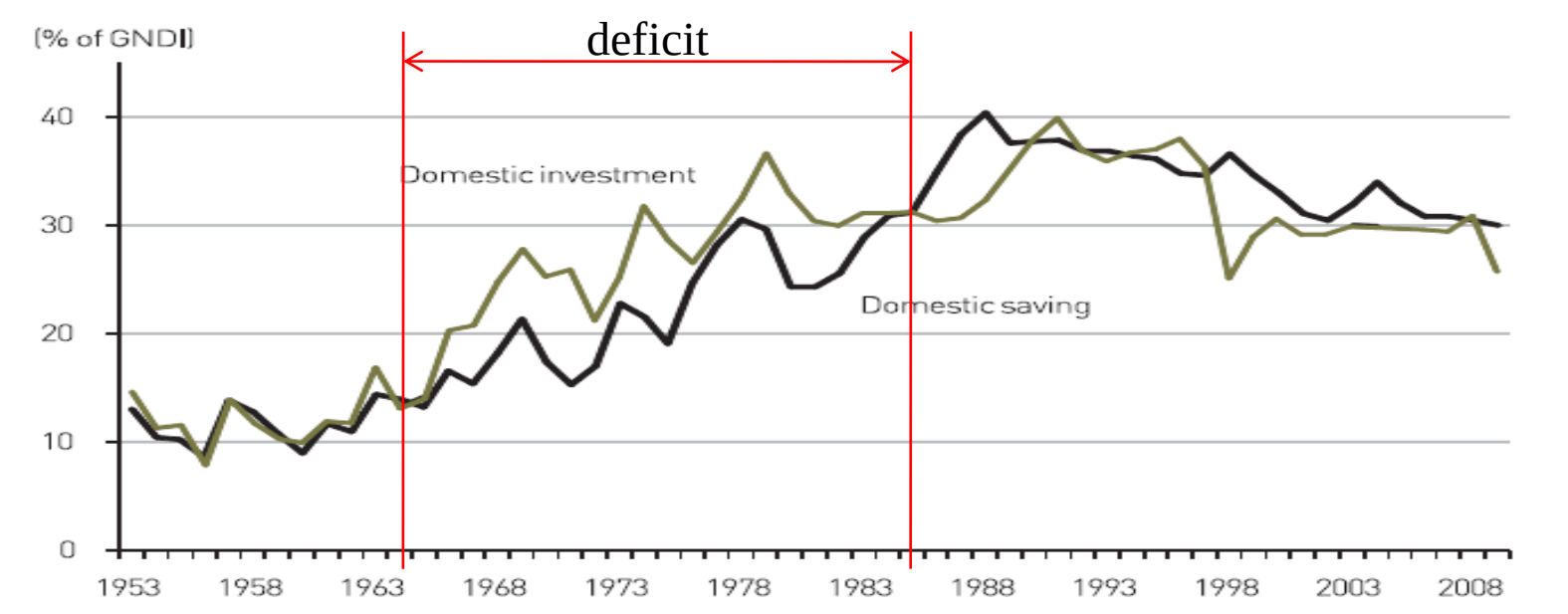
Ⅱ. Structural changes in the Korean economy

Capital accumulation and productivity growth

- The rapid accumulation of productive capital

→ rapid economic growth and structural transformation

Investment and savings rate



- 30~40% investment rate (mid 1970s – present)
- Peak in 1991 at 40%
- Most of East Asia's economic growth stemmed from factor accumulation (Krugman 1994)

Ⅱ. Structural changes in the Korean economy

Capital accumulation and productivity growth

Sources of growth in major regions (1961-2004)

(Unit: %)

	GDP growth	Per worker GDP growth	Contribution from	
			K/L	TFP
World (83)	4.0	2.4	1.2	1.3
Industrial countries (22)	3.3	2.1	1.1	1.1
China	7.2	5.4	2.1	3.4
Korea	7.1	4.7	2.9	1.8
1961-1970	7.7	4.7	3.0	1.6
1971-1980	7.3	4.6	3.8	0.8
1981-1990	8.6	6.1	2.8	3.4
1991-2000	5.8	4.1	2.7	1.5
2001-2004	4.5	2.9	1.3	1.5
East Asia (5)	5.7	2.8	1.8	1.0
Latin America (22)	3.7	1.0	0.6	0.4
South Asia (4)	4.9	3.0	1.1	1.8
Sub-Saharan Africa (19)	3.4	1.0	0.6	0.3
Middle East and North Africa (9)	4.4	2.0	1.2	0.9

- TFP growth explains 38% of the per worker GDP growth in Korea
- Technological process (physical capital-using → less capital-using →intangible capital using)

Q) Where did efficiency improvement come from?

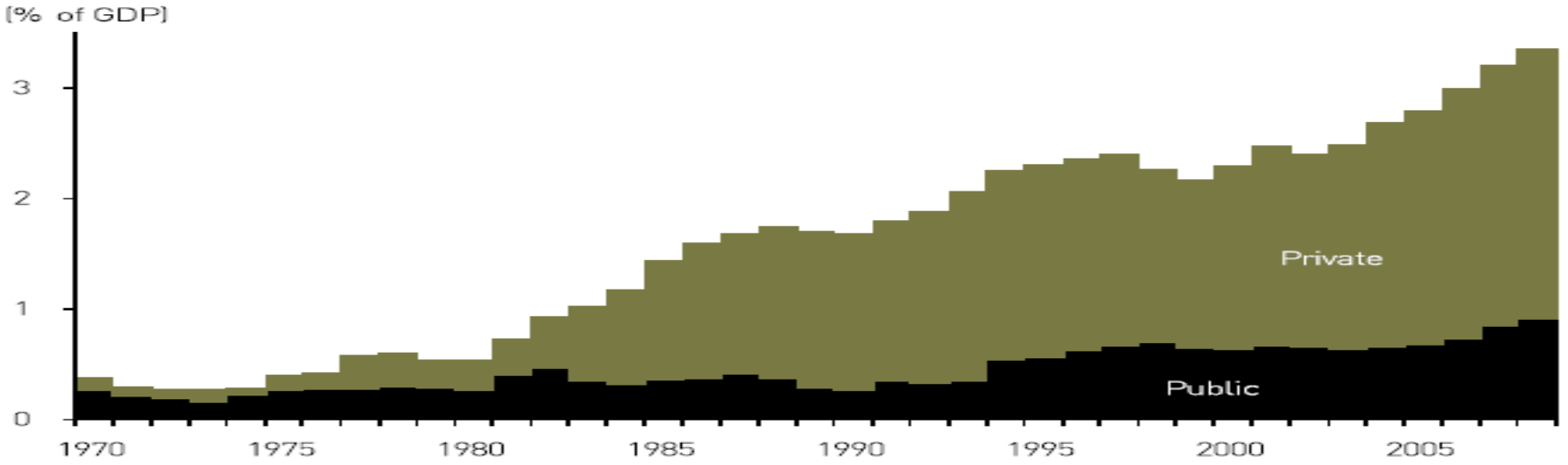
Ⅱ. Structural changes in the Korean economy

Capital accumulation and productivity growth

- Technological progress
  - domestic R&D activities
  - imports of capital goods
  - acquisition of foreign technologies
  - knowledge transfer through FDIs
  - international trade

→ All of these factors, except FDIs, played a pivotal role in Korea

R&D expenditure



Ⅱ. Structural changes in the Korean economy

Capital accumulation and productivity growth

- Technological progress

Imports by commodity group

(Unit: billion dollars, %)

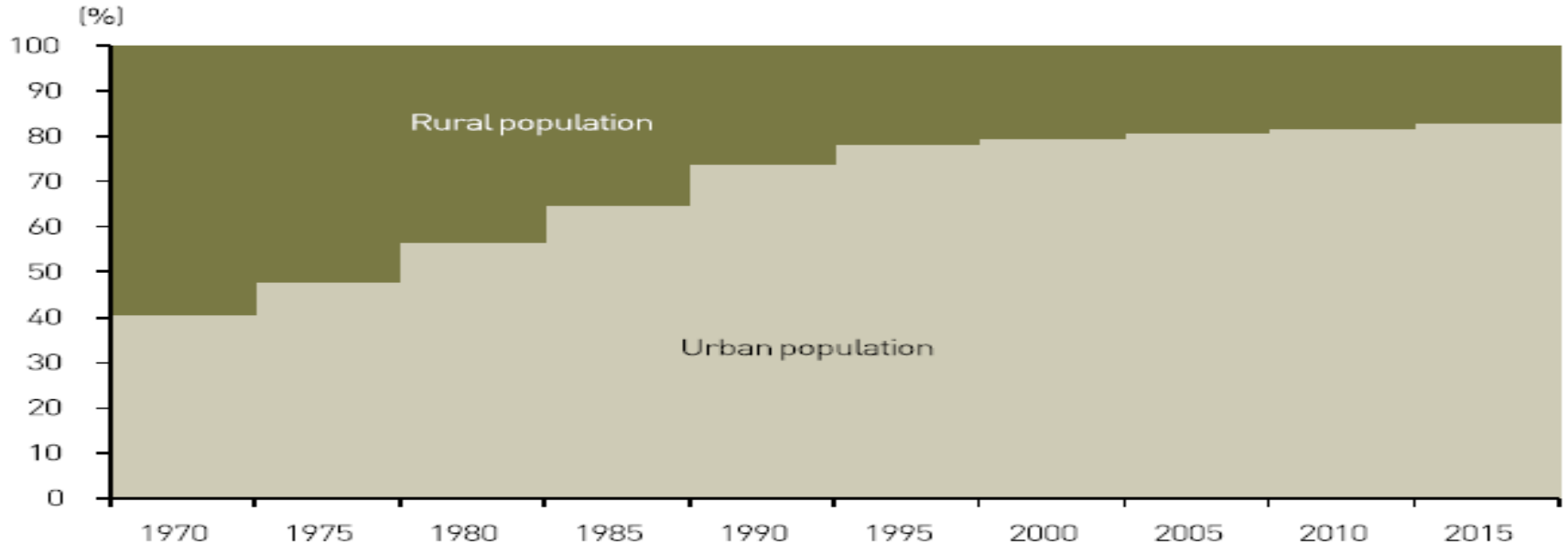
	1970	1980	1990	2000	2009
Total imports[1)] (% of total imports)	2.0 (100.0)	22.3 (100.0)	69.5 (100.0)	160.5 (100.0)	323.1 (100.0)
Materials (% of total imports)	1.0 (52.9)	14.5 (65.0)	38.2 (54.9)	81.6 (50.8)	186.1 (57.6)
Capital goods (% of total imports) Capital goods for domestic use (% of total imports) (% of GDP) (% of gross fixed capital formation) (% of facilities investment)	0.5 (23.1)	5.1 (23.0)	25.6 (36.8)	64.6 (40.2) 37.2 (23.2) (7.0) (23.2) (56.7)	104.0 (32.2) 59.1 (18.3) (7.1) (24.2) (77.8)
Consumption goods (% of total imports)	0.5 (24.0)	2.7 (12.1)	5.7 (8.2)	14.0 (8.7)	32.7 (10.1)

Ⅱ. Structural changes in the Korean economy

Capital accumulation and productivity growth

- Resource allocation
  - less productive → more productive sectors
    ex) the migration of labor and capital
    (agriculture to manufacturing, light industries to HCIs, rural to urban areas)
  - Sectoral mobility declined as the supply of young workers from rural areas fell off

Urbanization trend



Ⅱ. Structural changes in the Korean economy

Capital accumulation and productivity growth

- Resource allocation
  - Korean government impeded the market-based resource reallocation
    - directed credits, the promotion of HCIs, repeated bailouts of insolvent firms, the protection of SMEs
  - The long period of financial repression
  - International trade
  - High profitability in high-productivity sectors

Comparative advantage
(factor endowments → economies of scale)

- International trade
  - create knowledge spillovers
  - access the global market
  - provide new opportunity

Ⅱ. Structural changes in the Korean economy

Capital accumulation and productivity growth

- Challenges
  - The government aims at promoting productivity growth continuously

impediments

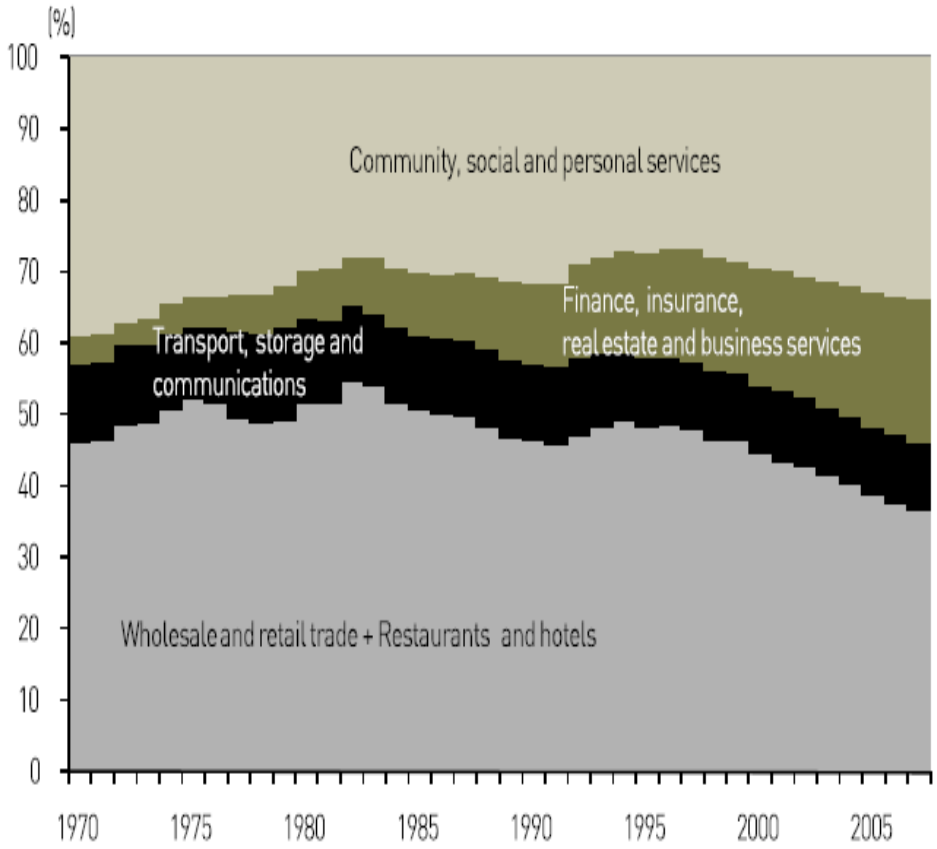
  - Needs to import and deploy foreign technologies
  - Quality of education
  - Productivity of the service sector and SMEs
    - Wholesale and retail trade
  - However, many professional services do have room for improvement
  - SMEs refocus the policy on complementing

Ⅱ. Structural changes in the Korean economy

Capital accumulation and productivity growth

Labor productivity of the service sector (1963-2008)

Employment share in the service sector



Ⅲ. Historical development of Korean industry

Responding to new challenges in the 1990s

- Technology development
  - various national R&D projects
  - Focus on the information and communication technology(ICT) sector

-New development vision for Korean HCIs

  - new materials and bio-industry sectors

→ structural changes in Korean industry, creation of an information-based society

- Samsung Electronics

Growth contribution by ICT industries

(Unit: %)

	1998	1999	2000	2001	2002	2003	2004
GDP Growth	-6.9	9.5	8.5	3.8	7.0	3.1	4.6
ICT Growth	23.0	35.3	33.8	10.5	17.6	14.2	20.4
Contribution (percentage points)	1.1	2.2	2.3	1.0	1.8	1.6	2.5

Great increase of R&D investments and private-sector R&D spending

Ⅲ. Historical development of Korean industry

In search of new growth engines in the 2000s

1) How to deal with restructuring between industries to handle changes from market opening and technology advancement?
2) How to develop future growth engines?

Focus on advanced technology industries

- Create leading-edge engines
- Nurturing the future development of existing industries

"Green growth" economic strategy for the next 60 years

- next-generation growth engine businesses
- higher environmental standards

Ⅳ. Conclusion

Conclusion

- In the last 60 years, Korea achieved a phenomenal economic growth through a rapid industrialization process

- Korea's industrialization process depended critically on the dynamism of the private sector

Many tasks lie ahead to sustain its growth
and adapt to changing environments

- to encourage innovation through regulatory reform and external liberalization
- to strengthen the competitiveness of industry
- to identify future growth industries in a open market environment

Q&A