Industrial Development of Korea:
Policies and Performance in a Historical Perspective

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In the Seminar with ITSR in Tehran, Iran

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Korea Institute for Industrial Economics and Trade (KIET)
I. Transformation of Korea at a Glance
BC 2333. Foundation of Ancient Chosun
→ AD 917 Ancient Kingdoms and Unified Silla Dynasty
918 – 1391. Koryo Dynasty
1392 – 1910. Chosun Dynasty
1945. Independence and the division of South & North Korea
1948. Foundation of the Republic of Korea
1950–53. Korean War
1962. Launching of the First 5 Year Economic Development Plan
1996. Ending of the 7th 5 Year Plan
1996. Joining the OECD
2010. Joining the OECD DAC
   (Official transformation to Aid Donor)
Modern Korea, Then and Now

Seoul in 1960 and in 2010: Cheongye Stream
Korea transformed from a poor country to a globally leading industrial producer just in one generation.

**GDP Per Capita ($, Current)**

<table>
<thead>
<tr>
<th>Year</th>
<th>1960 (A)</th>
<th>1970</th>
<th>1980</th>
<th>1990</th>
<th>2000</th>
<th>2005</th>
<th>2015 (B)</th>
<th>B/A</th>
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</thead>
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<tr>
<td></td>
<td>87</td>
<td>270</td>
<td>1,810</td>
<td>6,000</td>
<td>9,790</td>
<td>15,830</td>
<td>27,195</td>
<td>313</td>
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</table>

**Exports: the World’s 6th as of 2015 ($billion, current)**

<table>
<thead>
<tr>
<th>Year</th>
<th>1960(A)</th>
<th>1970</th>
<th>1980</th>
<th>1990</th>
<th>2000</th>
<th>2005</th>
<th>2015(B)</th>
<th>B/A</th>
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<tr>
<td></td>
<td>0.3</td>
<td>1.2</td>
<td>20.5</td>
<td>73.7</td>
<td>209.0</td>
<td>284.7</td>
<td>526.7</td>
<td>1,605</td>
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</table>
Historical Comparison with Developing Countries

Exports ($billion, current)

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Korea</td>
<td>0.12</td>
<td>1.21</td>
<td>20.47</td>
<td>73.74</td>
<td>196.62</td>
<td>540.90</td>
<td>632.46</td>
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<tr>
<td>Iran</td>
<td>0.58</td>
<td>2.03</td>
<td>12.96</td>
<td>16.57</td>
<td>23.53</td>
<td>118.82</td>
<td>-</td>
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<tr>
<td>Egypt</td>
<td>-</td>
<td>1.09</td>
<td>6.99</td>
<td>8.65</td>
<td>16.17</td>
<td>46.73</td>
<td>43.69</td>
</tr>
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</table>

Source: World Bank Data
### Historical Comparison with Developing Countries

#### GDP per Capita (US $, current)

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<tr>
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</thead>
<tbody>
<tr>
<td>Korea</td>
<td>156</td>
<td>292</td>
<td>1,778</td>
<td>6,642</td>
<td>11,948</td>
<td>22,151</td>
<td>27,222</td>
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<td>Iran, Islamic Rep.</td>
<td>192</td>
<td>385</td>
<td>2,440</td>
<td>2,222</td>
<td>1,664</td>
<td>6,300</td>
<td>-</td>
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<tr>
<td>Egypt</td>
<td>-</td>
<td>221</td>
<td>528</td>
<td>765</td>
<td>1,461</td>
<td>2,668</td>
<td>3,615</td>
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</table>

Source: World Bank Data
# Global Ranking of Korean industries by Market Share

<table>
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<tr>
<th>Industry</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
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</thead>
<tbody>
<tr>
<td>Shipbuilding</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Digital TV</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Display</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Petrochemicals</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Automobile</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Iron and steel</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Communication Equipment</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Semiconductor</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>General Electronics</td>
<td>12</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Aerospace</td>
<td>20</td>
<td>14</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: KIET
Social Development Accompanied Economic Growth

With the rise of income, the society itself has largely changed from a poverty–ridden underdeveloped one to a prospering mass–consumption society with highly–educated people.

College Education level among Age Group 25–34 is the top in the World:
Korea 69%, Japan 60%, USA 47%, OECD Average 42% (2015)

II. Import Substitution: 1945–1959
Initial Conditions for Industrial Development

- Small land with Agrarian Economy
- Poor Capital and Technology
- Virtually No Natural Resources
- Relatively abundant Human Resources
- Legacies of Colonization
  - Longtime-exploited, uneducated, poor people
- Impacts of the Cold War:
  - Division of the Nation into South and North Korea in 1945
    - 70% of industrial facilities located in North Korea
    - Electric power supply was cut off from North Korea in 1948
    - Korean War 1950–53
Colonial Rule 1910–45

Japanese Police executing Korean loyalists and protesting Korean people

– from a recent Korean Drama and a real picture of the days
Independence and State-building

1945. Independence and the Division of Nation

At the end of the WW2, USA and USSR advanced into the Korean Peninsula to end the Japanese rule, which brought division of the nation and the Cold War conflict.

1948. Republic of Korea established

- The ROK established Private Property and Market Economy system, while the North followed the Soviet style Communist economic system
- Distribution of industrial facilities formerly owned by the colonial Japanese authority and immigrants formed the basis of modern enterprises.

1949, Land Reform Act: Distribution of Land to Farmers

1950–53. Three Years of WAR with the Communist North

- Almost all the land, houses and industrial facilities destroyed or abandoned
With her brother on her back, a war weary Korean girl

About 1 million deaths, 2 million injuries and missing from both sides

A refugee family

Korean War 1950–53
Children waiting for Relief Aid Food

http://blog.naver.com/texasatm
Foreign Aid was the main source of government finance and national economic activities

1950.12. UNKRA (United Nations Korean Reconstruction Agency) established

- 1955 Government Foreign Exchange Financing Plan: 73% Grant Aid, 7% Loan, 20% Other sources

Based on the relief aid consumer goods delivery, some light industries processing aid materials were developed

- 3 White Industries: Flour, Sugar, Cotton-weaving
- 3 Powder Industries: Cement, Flour, Fertilizer

Import Substitution was necessary to protect the consumer goods industries and to save the foreign exchanges

- Massive trade deficit according to the imports of machineries
- High tariff, import quota, import – export link system (license)
Slow Changes of Economic Structure

Industrial Structure 1953~1960 (% of GDP)

Source: National Statistic Office
### Inflow of Foreign Capital by Periods
(Amounts and Weights, US$ Million)

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<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Public Loans</td>
<td>5</td>
<td>63</td>
<td>1,130</td>
<td>3,431</td>
<td>10,105</td>
<td>4,688</td>
<td>19,422</td>
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<tr>
<td>Commercial Loans</td>
<td>71</td>
<td>1,950</td>
<td>5,858</td>
<td>7,937</td>
<td>5,206</td>
<td>21,022</td>
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<tr>
<td>Bank Loans</td>
<td>205</td>
<td>1,226</td>
<td>14,881</td>
<td>10,296</td>
<td>26,608</td>
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<td></td>
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<tr>
<td>Bonds by Private Firms</td>
<td></td>
<td>834</td>
<td>4,515</td>
<td>5,349</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDI</td>
<td>13</td>
<td>227</td>
<td>704</td>
<td>1,157</td>
<td>5,684</td>
<td>7,785</td>
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<tr>
<td>ODA (Grants)</td>
<td>3,117</td>
<td>739</td>
<td>763</td>
<td>4,619</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3,122</td>
<td>886</td>
<td>4,275</td>
<td>112,719</td>
<td>34,914</td>
<td>30,389</td>
<td>186,305</td>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Loans</td>
<td>0.2%</td>
<td>7.1%</td>
<td>26.4%</td>
<td>3.0%</td>
<td>28.9%</td>
<td>15.4%</td>
<td>10.4%</td>
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<tr>
<td>Commercial Loans</td>
<td>8.0%</td>
<td>45.6%</td>
<td>5.2%</td>
<td>22.7%</td>
<td>17.1%</td>
<td>11.3%</td>
<td></td>
</tr>
<tr>
<td>Bank Loans</td>
<td>4.8%</td>
<td>1.1%</td>
<td>42.6%</td>
<td>33.9%</td>
<td>14.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bonds by Private Firms</td>
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<td>2.4%</td>
<td>14.9%</td>
<td>2.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDI</td>
<td>1.5%</td>
<td>5.3%</td>
<td>0.6%</td>
<td>3.3%</td>
<td>18.7%</td>
<td>4.2%</td>
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<tr>
<td>ODA (Grants)</td>
<td>99.8%</td>
<td>83.4%</td>
<td>17.8%</td>
<td>2.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Assembled by the Author from Korea Development Bank (1993)
Limits to Growth of Import Substituting Industries

- By the end of the 1950s, the light industries faced the limits of so small domestic market

Cut down of Grant Aid

- The US government cut down foreign aid due to the budget deficit and growing defense budget
  - 1954 $383 million → 1961 $199 million

Growing Trade Deficit

- Owing to the imports of machineries and intermediary goods for the import substituting industries, trade deficit expanded

Shortage of Foreign Exchanges

- Foreign Aid reduction and trade deficit led to the foreign exchange shortage

Japan’s Success by Exports as a Role Model
Changes of Government

Political Changes and President Park’s Regime

- 1960. 4. Peoples Revolution and Collapse of President Lee’s government
- 1961. 5. Military Coup led by General Park
- 1963. 12. General Park inaugurated as the 5th President
  - President Park’s rule lasted until his assassination in October 1979, which enabled strong and consistent implementation of policies
  - Conflicting views exist on his economic performance and dictatorship

1961. 7. Establishment of Economic Planning Board

- A Strong Ministerial Authority governing the Economic Planning and Implementation, Budget, Market monitoring
- 1963. The position of the EPB head was raised to Deputy Prime Minister
- 1971. KDI (Korea Development Institute) established to help the economic planning
- The Basic Goal was **Self-Sustaining Economy** to Escape from Aid-dependent Economic Structure. To stabilize daily lives of people, **Energy Supply** (Electric, Coal), **Agricultural Production** were set as the main target areas.
- Also some basic industries and infrastructure were given priorities:
  - Fertilizer, Cement, Petroleum, Chemicals
- **Liberalization and Export Promotion** were set as the Policy Direction.
- **Financing for the Plan** was still dependent on Foreign Capital:
  - Foreign Aid 47%, Domestic Savings 34%, Foreign Loan 19%

**Labor–Intensive Export Industries Developed**
- 1964.9. The First Export Industries Complex setup in Guro, Seoul
- **Textile, Footwear, Wigs, Plywood, Electronics** as the leading industries
  - Nylons: 1963 Hankuk Nylon (now Kolon), 1964 Hanil Nylon
- 1959 Gold Star (Now LG) produced Radios, 1966 produced BW TV sets

**Basic Goal:** Modernization of Industrial Structure

**Main Target Sectors:** Export–oriented Labor–intensive industries and some Heavy Industries (Iron & Steel, Machinery, Chemicals) to substitute imports


**Policy Direction:** Industrial Advancement and Export Promotion

**Light Industries leading Exports**

- Textile & Garments industries based on Synthetic fibers grew as the leading industry, which took up some 50% of the total export in the early 1970s.
  - 1967 Taekwang Acryl factory in Ulsan, 1968 Polyester factories by Daehan, Sunkyung, Samyang
- Footwear industry grew rapidly with the migration of Japanese producers to Busan
- 1971 Electronics Industry Complex in Gumi

**Startup of Heavy Industries for Import Substitution**

- The growing demands on machineries and intermediary goods from the light industries led to the expansion of trade deficit, so import–substitution was necessary
  - 1968 POSCO established
Overall Export Promotion Plan Setup on Annual Basis

- Export Management by the Nation: Export target were set for industrial sectors, major organizations and companies, and regionally.
- Export Diplomacy: export target for every embassies abroad were also set from 1964 when the total export exceeded $100 million.
- The President checked the record on monthly meetings.

1967 Guro Export Industries Complex in Seoul

“Export Country” – slogan of the Nation
Export Drive: A Nation Standing on Export

Expanded Meeting for Export Promotion
A Series of Legislation to promote Export

- 1962. 3. Export Promotion Law
- 1962. 4. KOTRA (Korea Trade Promotion Agency) Law
- 1964.9. Export Industry Complex Development Law
- 1967. 1. Trade Law
- 1968. 12. Export Insurance Law

Major Policy Tools: Tax and Finance

- Tax Concession and Customs Preferential Treatment for Exporters
  - Refund of Customs Tax for imports of raw materials
  - Tax concession on enterprises in export industry zones
- Financial support for exporters: preferential interest rates
  - Local L/C (Bank guarantee of Payment) to ensure the supply of raw and intermediary goods
- Preferential Treatment in Foreign Exchange control
Average Growth Rate 1960–72 was 8.5%
Per capita GDP grew from $87 in 1960 to $304 in 1972
Export grew very fast while imports grew also fast

### Exports and Imports Trends 1961–1969

<table>
<thead>
<tr>
<th>Year</th>
<th>Exports (million USD)</th>
<th>Export growth (%)</th>
<th>Imports (million USD)</th>
<th>Imports growth (%)</th>
<th>Balance (million USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>40.878</td>
<td>24.5</td>
<td>316.142</td>
<td>-8.0</td>
<td>-275</td>
</tr>
<tr>
<td>1962</td>
<td>54.813</td>
<td>34.1</td>
<td>421.782</td>
<td>33.4</td>
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<tr>
<td>1963</td>
<td>86.802</td>
<td>58.4</td>
<td>560.273</td>
<td>32.8</td>
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<tr>
<td>1964</td>
<td>119.058</td>
<td>37.2</td>
<td>404.351</td>
<td>-27.8</td>
<td>-285</td>
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<tr>
<td>1965</td>
<td>175.082</td>
<td>47.1</td>
<td>463.442</td>
<td>14.6</td>
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<tr>
<td>1966</td>
<td>250.334</td>
<td>43.0</td>
<td>716.441</td>
<td>54.6</td>
<td>-466</td>
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<tr>
<td>1967</td>
<td>320.229</td>
<td>27.9</td>
<td>996.246</td>
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<td>1969</td>
<td>622.516</td>
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<td>1823.611</td>
<td>24.7</td>
<td>-1201</td>
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</tbody>
</table>

(source: KOTIS)
During the 1960s, Korea’s export growth was 3–4 times higher than global average performance.

### International Comparison of Export Growth

<table>
<thead>
<tr>
<th>Year</th>
<th>Korea</th>
<th>Global</th>
<th>U.S.</th>
<th>Japan</th>
<th>Korea</th>
<th>Global</th>
<th>U.S.</th>
<th>Japan</th>
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<td>1962</td>
<td>34.1</td>
<td>4.5</td>
<td>3.9</td>
<td>16.1</td>
<td>33.5</td>
<td>5.2</td>
<td>11.6</td>
<td>-3.0</td>
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<tr>
<td>1963</td>
<td>58.2</td>
<td>9.6</td>
<td>6.9</td>
<td>10.9</td>
<td>32.7</td>
<td>8.7</td>
<td>4.7</td>
<td>19.5</td>
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<tr>
<td>1964</td>
<td>36.9</td>
<td>11.8</td>
<td>14.5</td>
<td>22.4</td>
<td>-27.9</td>
<td>11.1</td>
<td>9.1</td>
<td>17.8</td>
</tr>
<tr>
<td>1965</td>
<td>47.1</td>
<td>8.8</td>
<td>3.9</td>
<td>26.6</td>
<td>14.6</td>
<td>8.9</td>
<td>14.2</td>
<td>2.9</td>
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<tr>
<td>1966</td>
<td>42.9</td>
<td>9.6</td>
<td>10.0</td>
<td>15.7</td>
<td>54.6</td>
<td>10.1</td>
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<td>1967</td>
<td>28.0</td>
<td>5.0</td>
<td>5.3</td>
<td>6.8</td>
<td>39.1</td>
<td>4.6</td>
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<td>1968</td>
<td>42.2</td>
<td>11.8</td>
<td>10.1</td>
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<td>11.0</td>
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<td>11.4</td>
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<td>1969</td>
<td>36.7</td>
<td>14.3</td>
<td>9.6</td>
<td>23.3</td>
<td>24.7</td>
<td>13.8</td>
<td>8.6</td>
<td>15.7</td>
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</table>

# Changes of Industrial Structure

## Top 10 Export Items (%)

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</thead>
<tbody>
<tr>
<td></td>
<td>Item</td>
<td>Share</td>
<td>Item</td>
<td>Share</td>
</tr>
<tr>
<td>1</td>
<td>Iron ore</td>
<td>13.0</td>
<td>Textiles</td>
<td>40.8</td>
</tr>
<tr>
<td>2</td>
<td>Tungsten</td>
<td>12.6</td>
<td>Plywood</td>
<td>11.0</td>
</tr>
<tr>
<td>3</td>
<td>Raw Yarn</td>
<td>6.7</td>
<td>Wigs</td>
<td>10.8</td>
</tr>
<tr>
<td>4</td>
<td>Coal</td>
<td>5.8</td>
<td>Iron ores</td>
<td>5.9</td>
</tr>
<tr>
<td>5</td>
<td>Cuttlefish</td>
<td>5.6</td>
<td>Electronic goods</td>
<td>3.5</td>
</tr>
<tr>
<td>6</td>
<td>Fish</td>
<td>4.5</td>
<td>Confectionery</td>
<td>2.3</td>
</tr>
<tr>
<td>7</td>
<td>Graphite</td>
<td>4.2</td>
<td>Footwear</td>
<td>2.1</td>
</tr>
<tr>
<td>8</td>
<td>Plywood</td>
<td>3.3</td>
<td>Tobaccos</td>
<td>1.6</td>
</tr>
<tr>
<td>9</td>
<td>Rice</td>
<td>3.3</td>
<td>Iron products</td>
<td>1.5</td>
</tr>
<tr>
<td>10</td>
<td>Swine bristle</td>
<td>3.0</td>
<td>Metal products</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Source: KOTIS)
Dramatic change of industrial structure

- From a traditional agriculture-based economy to a manufacture-leading economy

**Industrial Sector Trend 1960～1972 (% of GDP)**

(source: Bank of Korea)
Industrial “Sequencing” : Demands from Industrial Structure

- Labor-intensive Export industries demanded materials and capital goods produced by heavy and chemical industries
- Such demands for imports led to the rapid expansion of Trade Deficit
  - Textile and Apparel: Petrochemicals for Synthetic fibers
  - Electronics: Steel and Nonferrous Metals
  - All light industries: Industrial and Transportation Machinery
- Import substituting HCI faced the limits of small domestic market, so Export Orientation of HCI was necessary to overcome the limits to growth

Confrontation with North Korea and Needs for Defense Industry

- HCI and Defense industry are basically the same one project. Weapons come from HCI. HCI factories produce industrial machinery during peace time, but produce weapons in emergency time.

(Oh Won-Chul, Report to the President, Jan. 1973)
Drive for Heavy & Chemical Industry Development

The Third 5 Year Plan (1972–1976)

- Development of HCI and Reduction of Trade Deficit through Import substitution of Capital goods were given top priority

1973, 1. Declaration of HCI Drive by President Park

- Target: Export $10 billion, Per Capita Income $1,000 by 1980
- 1973. 3. Committee for HCI Drive with the Minister of EPB as the chair
- 1973. 5. Plan for HCI Development

The Fourth 5 Year Plan (1977–81)

- Balanced Development and Equality were raised as new issues, while Drive for HCI development continued
Plan for HCl Development

◆ Six Strategic Industries Targeted
  ❖ 2.8 trillion won ($8.9 billion) to be invested during 1973–81
  ➢ 64% of total manufacturing investment

<table>
<thead>
<tr>
<th>Industries</th>
<th>1973</th>
<th>1981</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel</td>
<td>1 million tons</td>
<td>10 million tons</td>
<td>2nd POSCO</td>
</tr>
<tr>
<td>Shipbuilding</td>
<td>0.25 million tons</td>
<td>5 million tons</td>
<td>near Jinhae</td>
</tr>
<tr>
<td>Petrochemicals</td>
<td>100 thousand tons (ethylene)</td>
<td>800 thousand tons</td>
<td>Ulsan, Yechon</td>
</tr>
<tr>
<td>Automobiles</td>
<td>30 thousands</td>
<td>500 thousands</td>
<td>Ulsan</td>
</tr>
<tr>
<td>Machinery</td>
<td></td>
<td>production $4.8 billion</td>
<td>Changwon</td>
</tr>
<tr>
<td>Nonferrous Metals</td>
<td></td>
<td>zinc 80 th. Tons</td>
<td>Onsan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aluminium 100 th</td>
<td></td>
</tr>
<tr>
<td>Electronics</td>
<td></td>
<td>export $2.5 billion</td>
<td>Gumi</td>
</tr>
</tbody>
</table>

❖ Automobiles were merged with Machinery
POS CO built its first Integrated Steel Mill with 1.03 Million Tons capacity in Pohang in 1973. Its second Mill in GwangYang was built in 1985. It built the world largest blast furnace with 6000 m³ in 2013.

HYUNDAI HEAVY INDUSTRIES built 600m dock with 450 ton goliath crane in Ulsan in 1974, and appeared as the world largest shipbuilding company. Its subsidiary HMD (Hyundai Mipo Dockyard) built in 1975 also became the world largest company in the repair shipbuilding.
Establishment of Industrial Complexes

- Industrial cites and infrastructure were provided by Ministry of Construction and Transportation (MOCT) and local governments

- New industrial complexes were built for the HCI

- Roads, water, electricity, communication system, pollution control, and other facilities were provided by MOCT

- For public utility corporation, Korea Land Development Corporation, Water Resource Development Corporation, and Agriculture Promotion Corporation were established and mobilized

- KICOX (Korea Industrial Complex Corporation), which was established in 1964 with the first industrial complex in Guro, managed the industrial complexes
Ulsan Industrial Complex was built from mid-1960s and continuously expanded to have 23 complexes with the size of 66 million \( \text{m}^2 \) as of 2013. With Hyundai Automobile, Hyundai Heavy Industries and their partner companies, Ulsan is nicknamed as “Hyundai City”.

Ulsan has also Petrochemical complex. There are some world largest single factories in their business areas such as SK Energy and S-Oil.

Changwon Industrial Complex was built from 1973 as a Machinery industry site. As of 2013, has 2013 companies with Export record $19.6 billion dollars.
Mobilization of Investment Funds

Policy loans: Government’s role for investments

Credit allocation by the government through the banking system (industrial bank) was the most powerful means of supporting targeted industries.

Industrial Banks, practically owned by the government, were directed to allocate loans to targeted industries on a preferential basis.

During the latter half of the 1970s, the share of policy loans in domestic credit rose steadily from 40% to over 50%.

<table>
<thead>
<tr>
<th>Year</th>
<th>General bank loan rate</th>
<th>Curb market rate</th>
<th>Average borrowing cost (manufacturing)</th>
<th>Consumer price inflation</th>
</tr>
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<tbody>
<tr>
<td>1970</td>
<td>24.0</td>
<td>49.8</td>
<td>14.7</td>
<td>15.4</td>
</tr>
<tr>
<td>1975</td>
<td>15.5</td>
<td>41.3</td>
<td>11.3</td>
<td>25.4</td>
</tr>
<tr>
<td>1980</td>
<td>23.4</td>
<td>44.9</td>
<td>18.7</td>
<td>28.7</td>
</tr>
<tr>
<td>1985</td>
<td>11.5</td>
<td>24.0</td>
<td>13.4</td>
<td>2.5</td>
</tr>
<tr>
<td>1990</td>
<td>11.5</td>
<td>18.7</td>
<td>NA</td>
<td>8.6</td>
</tr>
</tbody>
</table>

(source: Bank of Korea)
Enhanced Export Drive

Mobilization of the Whole State for Export

National Mentality: “Export only is our lifeline”
- National Awards by the President and Ministers to Exporters
- To be an exporter was the fast way to be rich, so private entrepreneurs were active

KOTRA as the window for Export marketing
- Provided overseas market information and technical assistance to exporting SMEs

Role of KITA (Korea International Trade Association)
- Not Conventional Trader’s Association but as an Instrument to promote export
  - Membership fee was obligatory (semi-tax)

Middle East Institute was established in 1976
- Responding to the Oil Shock and Construction boom in the Middle East, it was established as the first public think-tank studying overseas market information
- In 1982, it was changed into present KIET specializing in industrial studies. The overseas market study was taken over by KIEP established in 1989.
General Trading Company System

- In 1975, GTC system was introduced by Ministry of Commerce and Industry with Japanese trading companies as a model (Mitsubishi, Mitsui).

- The GTC permit was annually revised, and the number of GTCs ranged from 7 to 13: Samsung, Daewoo, Hyosung, Hyundai, etc.

  - Eligibility for GTC: export record $0.2 billion and 20 overseas branches, etc.

- GTCs were given preferential tax and finance treatment to engage in export of every possible goods.
Manpower Training

- Establishment of vocational schools at various levels
  - High Schools and Colleges specializing in Agriculture, Fisheries, Technology, Commerce
- Establishment of KIST (1966) for Science and Technology development
- Trade department in Major Universities
- Language training for Businessmen and Officials
  - Special language training center was established in HUFS (Hankuk University of Foreign Studies) with boarding system for selected members living together with foreign teachers – fully funded by KITA

Labor Dispute Control

- Strict control on labor disputes to take advantage of cheap labor
## Performance of HCI Drive

### Exports and Imports Trends 1971–1979

<table>
<thead>
<tr>
<th>Year</th>
<th>Exports (million USD)</th>
<th>Export growth (%)</th>
<th>Imports (million USD)</th>
<th>Imports growth (%)</th>
<th>Balance (million USD)</th>
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</thead>
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<tr>
<td>1971</td>
<td>835.185</td>
<td>34.2</td>
<td>1983.973</td>
<td>8.8</td>
<td>-1148.79</td>
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<tr>
<td>1972</td>
<td>1067.607</td>
<td>27.8</td>
<td>2394.32</td>
<td>20.7</td>
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<td>1973</td>
<td>1624.088</td>
<td>52.1</td>
<td>2522.002</td>
<td>5.3</td>
<td>-897.914</td>
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<td>1974</td>
<td>3225.025</td>
<td>98.6</td>
<td>4240.277</td>
<td>68.1</td>
<td>-1015.25</td>
</tr>
<tr>
<td>1975</td>
<td>4460.37</td>
<td>38.3</td>
<td>6851.848</td>
<td>61.6</td>
<td>-2391.48</td>
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<tr>
<td>1976</td>
<td>5081.016</td>
<td>13.9</td>
<td>7274.434</td>
<td>6.2</td>
<td>-2193.42</td>
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<td>1977</td>
<td>7715.343</td>
<td>51.8</td>
<td>8773.632</td>
<td>20.6</td>
<td>-1058.29</td>
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<td>1978</td>
<td>10046.46</td>
<td>30.2</td>
<td>10810.54</td>
<td>23.2</td>
<td>-764.081</td>
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<tr>
<td>1979</td>
<td>12710.64</td>
<td>26.5</td>
<td>14971.93</td>
<td>38.5</td>
<td>-2261.29</td>
</tr>
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</table>

(source: KOTIS)
## Changes of Industrial Structure

### Industrialization and Export Components Trends 1970–1980

<table>
<thead>
<tr>
<th>Year</th>
<th>Industrialization (%) ※</th>
<th>Exports (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HCl</td>
<td>Light</td>
</tr>
<tr>
<td>1970</td>
<td>37.8</td>
<td>62.2</td>
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<tr>
<td>1973</td>
<td>40.5</td>
<td>59.5</td>
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<td>1975</td>
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<td>53.6</td>
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<td>53.2</td>
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<td>1978</td>
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<tr>
<td>1979</td>
<td>51.2</td>
<td>48.8</td>
</tr>
<tr>
<td>1980</td>
<td>52.6</td>
<td>47.4</td>
</tr>
</tbody>
</table>

※ Share of value-added in the manufacturing sector

(source: Bank of Korea, KOTRA)
Combination of Government direction, active Private Entrepreneurs, diligent and cheap Labor plus Foreign Capital led to the world fastest Growth and transformation of Korea from an LDCs to an NICs (Newly Industrializing Countries)

Exports growth accompanied imports growth and Balance of Payment problem, while dependence on Foreign Capital led to the Foreign Debt problem

Unbalanced Industrial, Regional development and strict labor control brought social conflicts
V. Industrial Rationalization: 1980–1987
Background for Industrial Rationalization

Problems ensued from Government Drive
- Intensive support and intervention by the government in HCI caused excess overlapped investment as private entrepreneurs hasted to get the government support without well-prepared business prospect.
- Massive investment with loan in longterm yielding industrial sectors caused the worsening of financial status for many companies.

Aggravation of External Conditions
- The HCI drive plan did not take into consideration the sudden Oil Shocks in the 1970s and followed Stagnation of the World Economy
- Most of the HCI were highly energy-consuming industries, so Korea without any production of energy resources faced serious difficulties from the sudden oil prices rises.
Industrial Rationalization

Rationalization of Structurally Depression Industries

With the stagflation of world economy, some business sectors fell into deep depression.

**1983 Maritime Transportation Adjustment**: Government led the merge of small companies by tax and financial concession such as exemption of acquisition tax, delay of debt payment, etc.

- 66 companies merged into 17

**1984 Overseas Construction Adjustment**: The decline of Middle East construction boom from the early 1980s led to the failure of many Korean companies.

- The Government also led the merge and selling of companies through tax and financial incentives

**Industrial Development Act of 1986**

- The government led the adjustment of over-invested HCI and some labor-intensive businesses losing competitiveness.
Timely Change of Government Policy

Despite the criticism on the failures of HCI drive, timely changes of government policies by Industrial Rationalization helped the Korean industries to survive the severe depression of the world economy and to grow continuously.

Strong Government intervention combined with the Dictatorship of President Chun (1980–87) led to corruption and concentration issues.

- After the assassination of President Park in 1979, General Chun took a coup in 1980 and was inaugurated as the President.
VI. Promoting High-Tech Industry: 1987–1990s
Emphasis on R&D

Changes in Targeted Industries

- Labor-Intensive (textiles, footwear)
- Capital-Intensive (shipbuilding, steel)
- Technology-Intensive (automobile, semiconductor)

Changes in Trade Environment

- Technology protection reinforced by developed countries
- Intellectual property rights protection emerged as a major issue under WTO (TRIPs in 1994)

Needs for structural change

- With rising labor costs, cost advantage were no longer as valid as before.
- Also, developed countries were increasingly checking Korea as a competitor, and growth from imitation (reverse-engineering) were now facing decreasing return. Korea needed to transform its labor intensive industrial structure to that of technology intensiveness.
Technology development strategies in industrial development

In 1960s, industrial development required absorbing “imported technologies”

In 1970s, promoting Heavy–Chemical industries required new advanced technologies

- Numerous public research institute including KIST (Korea Institute of Science and Technology) was established for developing and absorbing newly demanded industrial technologies

In 1980s, focus was to catch–up advanced technologies

- Government support of R&D activities in private sectors
- Private–sector R&D investment increased substantially
  (private vs. public, 36:64 in 1980 → 81:19 in 1990)
Technology Development

Shift from Capital–Intensive to Technology–Intensive Policy

- In 1990s, numerous projects enhancing technology infrastructure were launched
  - Leading technologies and mid–term foothold technologies
- Private sector technology innovation system was reinforced

Expanded Meeting for Technology Promotion

- Regularly convened and presided by the President (similar to ‘Enlarged meeting for Export Promotion’)
- Participated by relevant ministers, entrepreneur, and scientists.
Increasing R&D Expenditure

Trend of R&D expenditure and the ratio of R&D to GDP

[unit: hundred million Korean won]

(source: Ministry of Education, Science and Technology)
Korean Model of R&D Development (catch-up)

Initially lead by public research centers during 1960-70s

- **Science and Technology**
  - Korea Institute of Science and Technology (1966)
  - Electronics and Telecommunications Research Institute (1976)

- **Economics**
  - Korea Development Institute (1971)
  - Korea Institute for Industrial Economics and Trade (1976)

Private R&D promoted by government assistance to SMEs during 1970-80s

- Korea Productivity Center (KPC)

Private R&D from Conglomerates since 1980s

- LG R&D Center (1983)
- Samsung Advanced Institute of Technology (1986)
Process of Korea’s R&D Development

R&D Trend by Performer

(source: KORIS, 2011)
VI. Exploring New Engines for Growth
As the size of the economy grows, the speed of the growth inevitably slows down. To explore new sources of sustainable economic growth is a new imperative.
Sustainable Development

Efforts to nurture higher value-added industries

Since 2000s, Korean industrial economy have confronted by Increasing intensity of global competition and maturing of major industries.

In order to transform its existing industrial structure to higher value-added, the government have increased their supports in upstream and convergence technology development and nurturing material and component industry.

The Fourth Industrial Revolution based on Creative Industry

Software, Artificial intelligence, Culture, Finance, Tourism as new engine of sustainable growth.

Coping with Climate change: Green Growth

Green industry based on Renewable Energy and Eco-friendly materials.
Korean Wave, so-called K-Pop and Dramas are so popular throughout all Asian countries, replacing the Western Pop and movies.

Now Korea is associated not only with the images of construction workers, Samsung mobile phones, Hyundai cars, but with images of the tradition of 5,000 years history and advanced modernity.

Korean Wave, combination of tradition and modernity.
VII. Assessing Korean Economic Development
# Performance of Economic Development Plans

<table>
<thead>
<tr>
<th>Period</th>
<th>GNP Growth Annual</th>
<th>Export Growth Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>1962~1966</td>
<td>7.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>38.6%</td>
</tr>
<tr>
<td>2nd</td>
<td>1967~1971</td>
<td>9.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>33.8%</td>
</tr>
<tr>
<td>3rd</td>
<td>1972~1976</td>
<td>9.7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>32.7%</td>
</tr>
<tr>
<td>4th</td>
<td>1977~1981</td>
<td>7.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11.1%</td>
</tr>
<tr>
<td>5th</td>
<td>1982~1986</td>
<td>8.7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12.6%</td>
</tr>
<tr>
<td>6th</td>
<td>1987~1991</td>
<td>9.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.7%</td>
</tr>
<tr>
<td>7th</td>
<td>1992~1996</td>
<td>7.4%</td>
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<tr>
<td></td>
<td></td>
<td>16.1%</td>
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</table>

Assembled from Bank of Korea, IMF data
## Changes of Industrial Structure

### Top 10 Export Items (%)

<table>
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<th></th>
<th></th>
<th></th>
<th></th>
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</tr>
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<td>Item</td>
<td>Share</td>
<td>Item</td>
<td>Share</td>
<td>Item</td>
</tr>
<tr>
<td>1</td>
<td>Textiles</td>
<td>40.8</td>
<td>Garments</td>
<td>16.0</td>
<td>Garments</td>
</tr>
<tr>
<td>2</td>
<td>Plywood</td>
<td>11.0</td>
<td>Steel Plate-rolled Products</td>
<td>5.4</td>
<td>Semiconductor</td>
</tr>
<tr>
<td>3</td>
<td>Wigs</td>
<td>10.8</td>
<td>Footwear</td>
<td>5.2</td>
<td>Footwear</td>
</tr>
<tr>
<td>4</td>
<td>Iron ores</td>
<td>5.9</td>
<td>Vessel</td>
<td>3.6</td>
<td>Video Apparatus</td>
</tr>
<tr>
<td>5</td>
<td>Electronic goods</td>
<td>3.5</td>
<td>Audio Apparatus</td>
<td>3.4</td>
<td>Vessel</td>
</tr>
<tr>
<td>6</td>
<td>Confectionery</td>
<td>2.3</td>
<td>Man made filament fabrics</td>
<td>3.2</td>
<td>Computer</td>
</tr>
<tr>
<td>7</td>
<td>Footwear</td>
<td>2.1</td>
<td>Rubber Products</td>
<td>2.9</td>
<td>Audio Apparatus</td>
</tr>
<tr>
<td>8</td>
<td>Tobaccos</td>
<td>1.6</td>
<td>Woods &amp; Wood items</td>
<td>2.8</td>
<td>Steel Plate-rolled Products</td>
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<td>9</td>
<td>Iron products</td>
<td>1.5</td>
<td>Video Apparatus</td>
<td>2.6</td>
<td>Man made filament fabrics</td>
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<tr>
<td>10</td>
<td>Metal products</td>
<td>1.5</td>
<td>Semiconductor</td>
<td>2.5</td>
<td>Automobile</td>
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<td></td>
<td>Total</td>
<td>81.1</td>
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(source: KOTIS)
<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>%</th>
<th>Country</th>
<th>%</th>
<th>Country</th>
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<th>Country</th>
<th>%</th>
<th>Country</th>
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<tbody>
<tr>
<td>1</td>
<td>U.S.</td>
<td>47.3</td>
<td>U.S.</td>
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<td>2</td>
<td>Japan</td>
<td>28.1</td>
<td>Japan</td>
<td>17.4</td>
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<td>19.4</td>
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<td>10.7</td>
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<td>3</td>
<td>HongKong</td>
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<td>SaudiArabia</td>
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<td>7.1</td>
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<td>6.2</td>
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<tr>
<td>5</td>
<td>Canada</td>
<td>2.3</td>
<td>Hong Kong</td>
<td>4.7</td>
<td>Singapore</td>
<td>2.8</td>
<td>Taiwan</td>
<td>4.7</td>
<td>Singapore</td>
<td>4.2</td>
</tr>
<tr>
<td>6</td>
<td>Netherlands</td>
<td>1.6</td>
<td>Iran</td>
<td>3.5</td>
<td>U.K.</td>
<td>2.7</td>
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<td>3.3</td>
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<td>7</td>
<td>U.K.</td>
<td>1.6</td>
<td>U.K.</td>
<td>3.3</td>
<td>Canada</td>
<td>2.7</td>
<td>U.K.</td>
<td>3.1</td>
<td>Is Taiwan</td>
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<td>8</td>
<td>Vietnam</td>
<td>1.5</td>
<td>Indonesia</td>
<td>2.1</td>
<td>Taiwan</td>
<td>1.9</td>
<td>Germany</td>
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<td>Sweden</td>
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<td>2.0</td>
<td>Vietnam</td>
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<td></td>
<td><strong>Total</strong></td>
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<td><strong>71.6</strong></td>
<td><strong>72.9</strong></td>
<td><strong>68.8</strong></td>
<td><strong>62.4</strong></td>
<td><strong>(source: KOTIS)</strong></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Globally Diversified Export Destination
Assessing Korean Economic Development

Government’s active role as an economic actor

Government intervention was carried out on the basis of belief that government’s endeavor can lead to successful national economy.

During the succession of each 5-year Economic Development Plan, the government have implemented various measures and policies to promote exports, strengthen national finance, and etc.

While respecting market economy, the government was able to conduct flexible response to rapidly changing economic environment.

However, excess government interventions are blamed for the undermined self-sustainability in financial industry, accumulated corporate debts, and yielding insolvent enterprises.
Export-Oriented Strategy

Export-oriented policy is considered as the optimal choice of the period in response to Korea’s physical constraint, especially in lack of natural resources and small domestic markets.

- Export promotion on the basis of abundant labor force was rational decision and optimum method to achieve such high level of economic growth in short period of time.

However, high level of foreign dependency have increased vulnerability to external shocks.

Also, during the process of export-oriented policy, a structure demanding high dependency in Japanese intermediary and capital goods became permanent, which gave rise to trade deficit with Japan.
Active response to changing global economic environment

Limited domestic markets and lack of natural resources have caused Korean economic structure to be more international-oriented, absorbing greater influences from change in global economic environment.

From the early phase of economic development, Korea, in hopes to enlarge its export have participated in globalization movement.

Human resources development

Along with favorable socio-economic conditions, traditional Confucian value on educational ardor have contributed in rapid economic development.

- High educational level, and faithful, industrious and enthusiastic labors have contributed in economic growth.
Assessing Korean Economic Development

Efficient use of foreign resources

Until 1962, foreign aid from US occupied most part of the national finance, and afterward, foreign loans were effectively utilized in promoting domestic industrialization.

Foreign aid $\rightarrow$ commercial loan $\rightarrow$ FDI

Favorable international situation

1960s have witnessed global market expansion with stable growth of advanced economies and the liberal international trade under the GATT system.

Korea took advantage of these favorable international conditions by export drive, while almost all other developing countries were indulging in domestic market-oriented Import Substitution.
Confucian Tradition: The last Kingdom of Korea, Chosun dynasty (1392–1910) took Confucianism as its ideological foundation, which lasted for over 500 years and has become a strong tradition.

Confucian tradition as cause of success
- Loyalty to Nation, Respect for Seniors, Credibility in Relationships
- Strong emphasis on Education
- Honesty and Sincerity in Public Service

Confucian tradition as cause of failure
- Endless factional (party) strife
- Strong emphasis on one’s position and honor
- Hierarchical Social System
Economic concentration to Conglomerates (Chaebol)

- Lacking natural and financial resources, Korea have selected a good few industries and efficiently concentrated most of resources on these sectors, thereby allowing some conglomerates to grow rapidly.

- Resources concentration problems arose where beneficiary of banks loans were monopolized by these conglomerates, leading to problem of inefficient distribution of resource.

- Conglomerates' economic power → constraining fair competition.

- Political Patronage and Moral hazard problems.
New Challenges and Changing Policies

◆ Increase of Income and Improved Standard of Life
  ● Increase of Labor Cost and Rent
    ➢ Production Automation and Outward FDI
  ● Changes of Life style and Labor attitude in parallel with Upgraded Education level
    ➢ Imports of foreign labor
  ● Private sector-led industrial structure and Democratization
    ➢ Direct government intervention difficult

◆ Intensified Competition in the Global Market
  ● Innovation and Technology driven new products as imperative
    ➢ Increase of R&D

◆ WTO regulations and New Global Standards
  ● Direct subsidies and financial assistance impossible
    ➢ Insurance, export credit, project financing expanded
Industrial Vision and Strategy

◆ From a Fast Follower to Global Leader
  ● From Learning (Catch-up) to Innovation and Creation
  ● Technology and Knowledge-based Competitiveness:
  ● Importance of R&D and “Creative Economy”

◆ Open and Strong Industrial Welfare State
  ● Active Participation in FTAs and Global networks
    ➢ The only country so far that concluded FTAs with EU and USA
  ● Respect for Global Standard and Regulation
  ● Social Development and Welfare
  ● Knowledge Sharing for Developing Countries
    ➢ Significant increase of Foreign Aid (ODA) donation
Our mission

◆ to explore new engines for sustainable growth
◆ to provide insights for continued industrial development based on technology and innovation
◆ to build-up human capacity for industrial development
◆ to promote knowledge-sharing globally for common prosperity and poverty reduction, realizing the Sustainable Development Goals

Half Century of Korea – Iran Relationship

Teheran Street in Seoul

Iranian Youth welcoming K-Stars
Thank You

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