## Contents

1. History of Economic Development  
2. Reform and Restructuring  
3. Transition to a Knowledge Economy  
4. New Challenges  
5. Policy Response  
6. Summary and Conclusion
Transformation of the Korean Economy (1945~2003)

A. Growth Trend

Per Capita GNI (US$)

- Liberation (1945)
- Korean War (1950~53)
- Big Push
- OECD (1996)
- F. Crisis (1997)

6 Five-Year Economic Development Plans

- 1945
- 1953
- 1962
- 1970
- 1980
- 1995
- 2003

1945: 67
1953: 87
1962: 100 (1964)
1970: 1,000 (1977)
1995: 11,432
1998: 7,355
2003: 12,646

Timeline:
- Liberation (1945)
- Korean War (1950~53)
- Big Push (1962~70)
- Crisis (1997)
- OECD (1996)
B. Changes in Industrial Structure

Changes in Employment Structure

Changes in GDP Structure

<table>
<thead>
<tr>
<th>Year</th>
<th>Agriculture / Fisheries</th>
<th>Service Sector</th>
<th>Manufacturing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>63.0</td>
<td>71.5</td>
<td>28.3</td>
</tr>
<tr>
<td>2002</td>
<td>9.3</td>
<td>71.5</td>
<td>20.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Agriculture / Fisheries</th>
<th>Service Sector</th>
<th>Manufacturing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>36.8</td>
<td>47.3</td>
<td>15.9</td>
</tr>
<tr>
<td>2002</td>
<td>15.9</td>
<td>63.2</td>
<td>32.5</td>
</tr>
</tbody>
</table>
Economic Take-off with Outward-looking Development Strategy (1960~80)

A. Economic Conditions of the early 1960s

- Capital Shortage
- Weak Technology Base
- Underdeveloped Private Sector

- Abundant Labor
- High Level of Education
- Strong Economic will
B. Working Mechanism of Outward-looking Development Strategy

- Foreign Capital Inducement (Economic Aids, External Debt)
  - Capital Good Imports
  - Raw Material Imports
  - Foreign Technology Imports

- Economic Growth
  - Reproduction
  - Export Promotion
  - Manufacturing Processing

- Private Enterprises
  - Financial · Tax Support

- Government
  - Technology Development
  - Well-educated Labor force
C. Continued High Growth Based on Strong Entrepreneurship and Government Support

Diligent Workers

Private Enterprises

Strong Entrepreneurship

Overseas Marketing and Economic Growth

Efficient Economic Policy making

Financial Support
Tax Support
Marketing Support

E P B
Office of the President
Economic Ministries

Government Think-tank

Economic Policy Design

Strong export promotion supports high Growth (Export Growth of 30% per annum)
D. Heavy and Chemical Industry Development during 1970s

- Iron and Steel
- Electronics
- Petro-Chemical Products
- Automobiles
- Ship-building
- Machinery

Policy Change toward Heavy and Chemical Industry Development

- Mobilizing Financial Resources
- Selecting National Champions (Chaebol)
- Accelerating Competition
E. From Agriculture to Manufacturing/
From Light Industry to Heavy Industry

Changes in Export Commodity Profile

- **Export Commodity Profile**
  - Wig
  - Textile
  - Automobile
  - Semiconductor

- **Years**
  - 1960
  - 1970
  - 1980
  - 1990
  - 1999
  - 2003

- ** HCI Product**: Semiconductor, Mobile Phone, DTV, Display, Automobile, Ship-building, etc.
- ** Light Industry Product**: 79.8%
- ** Agricultural Product**: 6.1%
- ** 1960**: 50%
- ** 1980**: 14.1%
- ** 2003**: 14.1%

- **Export Commodity Profile**
  - 50%

- **Graph**
  - Wig
  - Textile
  - Automobile
  - Semiconductor

A. Pitfalls of Government-led Economic Development

- Financial Suppression Due to Prolonged Government Intervention
- Over-investment in HCI
- Inefficient Resource Allocation

- Increased Production Cost
- Efficiency Loss
- Weakened Export Competitiveness

- 1979: Negative Export Growth for the first time since 1960
- 1980: Negative Economic Growth (-3.9%)
B. Recovering Growth Potential with Economic Stability

Stabilization Policy in the early 1980s

- Budget Freeze/Cut
- Zero-Base-Budgeting
- Phasing-out of Policy Loans and Interest Rate Deregulation
- Investment Adjustment in HCI

Results

- Disinflation
  - Inflation at around 3%
- Strong Exports
  - Current Account Surpluses
- High Economic Growth
  - GDP Growth of 8% per annum

Inflation at around 3%
Disinflation
Current Account Surpluses
GDP Growth of 8% per annum
High Economic Growth
Increased Corporate Failure

Deteriorated Financial Soundness

Continued Government Intervention

Massive Capital Outflow
Denied Rollover of Short-term external Debt

IMF Rescue Package

Heavy Corporate Debt Leverage
Labor Market Rigidity
South East Asian Crisis
Establishing market disciplines

Market Opening and FDI

Financial sector restructuring

Corporate sector restructuring

Public sector restructuring and fiscal support

Labor market restructuring

Expanding social safety net
Reform in the Public Sector

Customer-oriented services

Reorganizing Government Administrative structure
- Consolidating overlapping functions
- Expanding newly demanded sectors
- Entrusting certain functions to the private sector
- Transferring central government functions to local governments

Innovating Government Operating system
- Organizing a results-oriented administration system
- Creating open personnel management
- Introducing an annual salary
- Expanding out-sourcing
- Introducing responsible administrative institution
- Introducing charter of administrative service

Reforming public Corporations & Gov’t-affiliated agencies
- Reforming public corporations
  - Privatization
  - Enhancing management efficiency
- Reforming government-affiliated agencies
  - Reducing unnecessary functions
  - Consolidating overlapping functions
  - Transferring to private sector
  - Enhancing management efficiency
## Reform in the Corporate Sector

### Five Major Principles of Corporate Restructuring

1. Transparency of corporate management
2. Dismantling cross-debt guarantees
3. Significantly improving capital structure
4. Identifying core businesses and strengthening cooperative relationships with small and medium-sized companies
5. Enhancing accountability of controlling shareholders and enhancing their management accountability
Reform in the Financial Sector

Abolishing government influences

Bank Management on a Fully commercial basis
- Improve ownership & Governance structure
- Remove line-of-business restrictions & high entry barriers
- Strengthen prudential regulation & supervision

Establish a financial infrastructure
- Enhance credit analysis
- Broadening credit information management system
- Upgrade accounting, auditing & disclosure standards to international best practice

Enhance stability Of financial system
- Strengthen independent & efficient central bank system
- Establish effective financial supervision system
- Consolidate financial supervisory functions

Enhancing competitiveness & Efficiency of financial industry
Reform in the Labor Market

Invigorating The labor market

- Diversifying employment patterns
- Flexible wages

- Strengthening job placement services

- Increasing labor supplies
- Effective vocational training

Enhancing competitiveness and Creating jobs

Building sound and strong social safety nets
Fostering future industries

- Building technology infrastructure
- Linking S&T with industry/market
- Long-term planning for Strategic areas
- Cluster approach

Promoting services industry

- Enhancing productivity through innovation
- Stimulating competition by liberalization
- Introducing advanced expertise and management skills

Linking Leading Industries

Creating jobs and absorbing workers

Realizing the 21st century industrial structure
Strategy for Informatization

Informatization

- Home banking, telecommuting
- Using IT in education, health and welfare distribution sector
- Electronic commerce

Realization of the 21st Century information society

Higher national Welfare and Quality of life

Development of IT industry

- More supports for basic research
- Deregulation and FDI promotion

Higher Competitiveness Of the industry
Swift Crisis Resolution and Economic Recovery

Crisis Resolution Measures

- Cleaning up Nonperforming Loans
- Expanding Social Safety Net
- Reducing Moral Hazard
- Improving Corporate Governance
- Accelerating Liberalization

Results

1. Early Graduation from the IMF Program
   - Foreign Reserves of more than US$100bn

2. Rapid Economic Recovery
   - GDP Growth: 1998 -0.67% → 1999 10.7%

3. Social Stability with Productive Welfare System
Korea’s Development Stages

Development Stage
- Factor-Driven Stage
- Investment-Driven Stage
- Innovation-Driven Stage

Sources of Competition
- cheap labor
- manufacturing capability
- innovative capability

Major Direction of Industrial Policy
- Expand export-orient light industries
- Expand heavy and chemical industries
- Expand technology-intensive industries
- Promote high-technology innovation
- Transition to knowledge-based economy

S&T Role of Government
- Scientific Institution Building
  - MOST/KIST
  - S&T promotion act
  - 5-year economic plan includes S&T
- Scientific Infrastructure Setting
  - GRI
  - Daeduck sci. town
  - R&D promotion act
  - KSIST: highly qualified personnel
- R&D and Private Research Lab Promotion
  - NRDP
  - Promoting private research labs
  - Promotion of industrial R&D
- Leading Role in Strategic Area
  - HAN
  - Enhancing univ. research capability
  - Promoting co-op research
  - Policy coordination
  - GRI restructuring

Innovative Capability of Private Sector

<New Challenges>
- Innovative Capability of Private Sector
- Sources of Competition
  - cheap labor
  - manufacturing capability
  - innovative capability
### The technological capability building process in Korea’s machinery industry

<table>
<thead>
<tr>
<th>The process of development</th>
<th>Technology imports</th>
<th>Production and R&amp;D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1960s – 1970s</strong></td>
<td>Policy goal: establishment of production base</td>
<td>Packaged technology: turn-key based plants</td>
</tr>
<tr>
<td>Characteristics: heavy dependence on imported technologies</td>
<td>Assembling technology</td>
<td>OEM-dominated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Almost no in-house R&amp;D</td>
</tr>
<tr>
<td><strong>Early 1980s</strong></td>
<td>Policy goal: promotion of self-reliance</td>
<td>Unpackaged technology: parts/components-related technology</td>
</tr>
<tr>
<td>Characteristics: Import-substitution, localisation of parts/components production</td>
<td>Operation technology</td>
<td>Product development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-house R&amp;D begins</td>
</tr>
<tr>
<td><strong>Late 1980s – 1990s</strong></td>
<td>Policy goal: export-promotion by means of expansion of domestic market</td>
<td>Materials-related technology</td>
</tr>
<tr>
<td>Characteristics: beginning of plant exports, learning advanced and core technologies</td>
<td>Control technology</td>
<td>Product innovation</td>
</tr>
<tr>
<td></td>
<td>Design technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High-quality product tech.</td>
<td>Process improvement</td>
</tr>
</tbody>
</table>
Changing Relationship between TI and R&D
Korea’s Industrial Policy

- **1960-1970s**
  - Direct Intervention ➔ Nurturing Specific Industries
    - Export industries in 1960s, Heavy chemical industries in 1970s
  - Support & Protection Measures
    - Financial/Tax Incentives, Import Regulations, Entry Barriers

- **1980s**
  - Government intervention gradually reduced
  - Emphasis on enhancing competition

- **1990s**
  - Further Liberalization & Market Opening
  - Further emphasis on investment in tech. development
Korea’s S&T Policy

- **1960-1970s**
  - Building institutions
    - KIST (1966); MOST (1967); KAIST (1973)
    - Technology Development Promotion Act (1967)

- **1980s**
  - National R&D Programs (NRDP, 1982)
  - Private enterprises began to act

- **1990s**
  - Mission-oriented R&D by line ministries
    - Targeted, and top-down approach
  - Private/public partnership in technology development
Transition to a Knowledge Economy

Improving the Quality of Life

Creativity & Autonomy
Respect & Reward for Knowledge
Upgrading Economic Structure

Building National Innovation System

Government
Law & Institution
Industry
Growth engine
People
Life-long learning

Creative Human Resource
Innovative R&D system
World-frontier Information Infra
Knowledge-intensive Industrial Structure

Changes in World Economic Environment: The Advent of KBE
Changes in Korea - Indicators

ECON. INCENTIVE REGIME:
- Tariff & Non-tariff barriers
- Property Rights
- Regulation

INNOVATION:
- Researchers in R&D
- Manuf. Trade as % of GDP
- Scient. & Tech. Pub. per million people

INFORMATION INF/RE.:
- Tel. Lines per 1000 people
- Computers per 1000 people
- Internet hosts per 10,000 people

EDUCATION:
- Adult literacy rate
- Secondary Enrollment
- Tertiary Enrollment

Education

most recent 1995
Restoring Economic Vitality
- Encourage active investments
  - Promote foreign direct investment and SOC investment
  - Ease investment-related regulations, and expand tax/financial incentives
- Reduce financial market uncertainties
  - Resolve the insolvency issue of the financially-vulnerable institutions
- Maintain flexible fiscal policy stance

Creating Jobs
- Partnership between labor & management
- Provide employment opportunities for the youth & the disadvantaged
- Enhance the role of the public sector in job creation

Improving Welfare of the Needy
- Lower private educational costs
- Reduce credit delinquencies
- Continue to contain inflation
- Curb speculation in the real estate market
- Expand the social safety net

New Challenges

Partnership between labor & management
Provide employment opportunities for the youth & the disadvantaged
Enhance the role of the public sector in job creation

Creating Jobs

Restoring Economic Vitality

Improving Welfare of the Needy
Strong Concern over Job Creation

Employment Elasticity* (2 Year Moving Average)

Source: KDI

* Employment Growth Rate / Economic Growth Rate
Korea’s Productivity Gap

Income and productivity levels, 2002
Percentage point differences with respect to the United States

Gap with respect to United States GDP per capita = Effect of labour utilisation¹ + Effect of labour productivity²

Ireland
Canada
Denmark
Switzerland
Netherlands
Austria
Iceland
Belgium
France
Australia
Finland
Italy
Germany
Japan
Sweden
United Kingdom
Spain
New Zealand
Portugal
Greece
Korea
Czech Republic
Hungary
Slovak Republic

-80 -60 -40 -20 0 20 -80 -60 -40 -20 0 20 -80 -60 -40 -20 0 20
Investment and Physical Capital and R&D

(1) 1993–1997 average
(2) 1998–2002 average

- Machinery & Equipment Investment
- Business R&D Investment

Countries represented: Sweden, Finland, Japan, Switzerland, Korea, Germany, Denmark, Australia, Italy, Spain, New Zealand, Greece, Ireland, Canada, Netherlands, Belgium, UK, Iceland, Austria, France, Luxembourg, Denmark, Australia, Italy, New Zealand, Greece.
Changes in M&E Investment

![Changes in M&E Investment](chart.png)

- **Germany**, **Netherlands**, **OECD**, **Korea**, **Sweden**, **USA**, **Japan**

- **(as of GDP)**

- **1993-1997**

- **1998-2002**

- **Legend:**
  - \(\text{1993-1997} \) [Blue]
  - \(\text{1998-2002} \) [Dark Red]
Changes in Business R&D Investment

- Netherlands
- OECD
- Germany
- Korea
- USA
- Japan
- Sweden

(\% as of GDP)

- 1993–1997
- 1998–2002
Innovation

- Enhancing productivity
- Reducing social conflicts
- Increasing economic stability

Integration

- Creating jobs
- Developing human capital
- Securing welfare resources

Synergistic Interaction

Accelerating Innovation

Inducing Integration
Capabilities to Achieve the Vision

Highly skilled human resources

• Highly educated population
  - 40% of population aged 25~34 are university graduates
    (Ranked 3rd globally as of 2001)
• Abundance of highly educated female workforce

World-class IT infrastructure

• Rapid buildup of world class IT infrastructure
  - Internet accessibility (Ranked 3rd globally)
  - Proportion of Internet Users (Ranked 2nd globally)
  - High-speed Internet (Ranked 1st globally)
  - Share of mobile users is approx. 70%

Broad industrial base and Hi-tech leading companies

• High proportion of knowledge-intensive manufacturing:
  - Ranked 2nd among OECD countries
  - Global leader in IT home appliances, mobile phones, semiconductors, etc.
• Broad industrial base with global leading firms
  - Semiconductor (DRAM) : Samsung (1st), Hynix (3rd)
  - L C D : LG Phillips (1st), Samsung (2nd)
  - Automobiles : Hyundai-Kia (9th)
  - Shipbuilding : Hyundai (1st), Samsung (2nd), Daewoo (3rd)
  - Steel : POSCO (4th)
Flexibility

- Relatively flexible to reform and change
  - Evidenced by the extensive reform efforts and innovative policies following the financial crisis of 1997

Sound Government Budget

- Balanced and sound government budgeting
  - Accumulated Budget Deficit/GDP(%) = 22.1 (OECD Average = 73.0)

Locational Advantage

- Strategically located at the center of Northeast Asia, one of the three largest economic zones in the world
  - Accounting for nearly 20% of world GDP
- Gateway to major markets
  - Proximity to China, Japan, Southeast Asia, Central Asia

2001 National Debt/GDP Ratio

<table>
<thead>
<tr>
<th>Country</th>
<th>2001</th>
<th>2016 ~ 2020</th>
<th>OECD Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>22.1%</td>
<td></td>
<td>73.0%</td>
</tr>
<tr>
<td>Finland</td>
<td>51.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>59.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OECD Average</td>
<td>73.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: OECD

World GDP share of 3 economic zones

<table>
<thead>
<tr>
<th>Economic Zones</th>
<th>2001</th>
<th>2016 ~ 2020</th>
<th>OECD Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>25.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAFTA</td>
<td>36.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast Asian Economies</td>
<td>20.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: DRI-WEFA
Gross R&D Investment

- R&D expenditure as % of GNP
- Researchers (per million population)

Countries shown include:
- USA
- Australia
- Denmark
- Canada
- UK
- Netherlands
- Korea
- Spain
- Italy
- Poland
- Switzerland
- Finland

Other countries shown are:
- Russia
- Japan
- China
- Turkey
- Brazil
- India
- Austria
- China
- India
- Brazil
- India
Making Innovation System more effective

- Strengthening upstream sectors
  - Innovation Capabilities
- Strengthening Linkages
  - Innovation networks and clusters
- Need to do more to tap into global knowledge and to combine it effectively with domestic R&D effort
- Innovativeness of SME
  - Positive sign, but majority of SME is weak in their readiness to cope with rapid changes, e.g., globalization, IT revolution
### Making Innovation System more effective

#### New Role of Government Research Institutes

<table>
<thead>
<tr>
<th>Domestic condition</th>
<th>Mission &amp; Role</th>
<th>Research area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Period of inception-beginning (1960-1970)</strong></td>
<td></td>
<td>Weak research capability of private enterprises and Universities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Goal-oriented research in line with technology demands from the government and industry</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• GRI’s leading role in industrial technology development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Imitation of simple technology in growing industry</td>
</tr>
</tbody>
</table>

| **Period of Structural Adjustment (1980s)** |                | Partial improvement in research capability of private enterprises and universities |
|                                           |                | • Adjusting the role and character as an agency for implementing the government’s R&D programmes |
|                                           |                | • Big R&D projects which require nation-wide drive; central role in cooperative research among industry-university-research institutes |
|                                           |                | Improvement of mature technology                                              |
|                                           |                | Imitation of future advanced technology                                         |

| **Period of Take-off (1990s)**                               |                | Industry-led innovation system                                                |
|                                                            |                | Increased research capability of universities                                 |
|                                                            |                | • More emphasis on future-oriented large complex development                   |
|                                                            |                | • Rising necessity of redefining GRI role and preparing new take-off basis     |
|                                                            |                | Development of future advanced technology through creative research            |

---

**Domestic condition**

**Mission & Role**

**Research area**
• SMEs in Korea

- **year 1998**
  - Active exporting (21.6%)
  - R&D spending (7.6%)
  - Venture (3.0%)

  All manufacturing SME (80,636 firms)

- **year 2002**
  - Active exporting (11.6%)
  - R&D spending (18.1%)
  - Venture (8.8%)

  All manufacturing SME (99,754 firms)
Educational Attainment in OECD: Adult Population

OECD: percentage of the population that has attained upper secondary or tertiary education (1998)

<table>
<thead>
<tr>
<th>Age group</th>
<th>Tertiary</th>
<th>Upper secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-34</td>
<td>47</td>
<td>30</td>
</tr>
<tr>
<td>35-44</td>
<td>42</td>
<td>38</td>
</tr>
<tr>
<td>45-54</td>
<td>19</td>
<td>30</td>
</tr>
<tr>
<td>55-64</td>
<td>14</td>
<td>30</td>
</tr>
</tbody>
</table>
Education & Training System

• Korea has high assets in educational investment and attainment
• Improving quality of formal education and developing effective lifelong learning are critical.
• Should put more emphasis on *excellency* and *creativity*
• Reshuffle vocational training system to meet the need of rapid changes in industry and technology
Summary and Conclusion

• Korea has achieved high growth through the partnership between government and business.
• Old strategy had limitations; delayed reform brought the financial crisis.
• Crisis offered an opportunity to make economy-wide reform and restructuring.
• Transition to a knowledge economy was the vision and strategy.
• The process is continuing and rolling over as new challenges are coming.
Thank you !!!