Lecture Note for East Asian Economic Growth :

4. The Economic Planning of Korea

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1. Political Background: emergence of a political leadership committed to economic development

- Poverty and political instability throughout Rhee's regime

- Rhee's autocratic government overthrown by student uprising in 1960

- In less than a year, the government was paralyzed due to the split in the party in power

- In 1961 Military coup succeeded, but faced strong pressure for the greater democratization.

- The military regime realized that the economic development is the key to its own political success and therefore a strong program of economic development is needed.

1. Political Background: interaction between economic and political development

- **Economic and political development can be mutually reinforcing.**
  - ◆ Strong leadership committtment to economic development ⇒ pre-plan steps & viable plan possible ⇒ broadly based political support for the government ⇒ political stability & democratization

- **Contributions of Planning**
  - ◆ A thorough review of Korean economy
  - ◆ A number of reforms necessary for implementation of plans
  - ◆ Revaluation of exchange rate & lowering the import barrier
  - ◆ Loosening the control over the banking system
  - ◆ More efficient tax collection system

2. Planning Models & Methodology

- **Two-prong approach**
  - ◆ Macro-econometric growth model ⇒ selection of growth rate consistent with the constraints of savings and foreign exchange
  - ◆ 43×43 input-output model ⇒ balance of demand and supply in each sector & minimal level of investment in each sector

- **Improvements in planning device**
  - ◆ A mixed integer programming model ⇒ checking the optimality of investment decisions
  - ◆ Regional model ⇒ regional decentralization of industry

2. Planning Models & Methodology

- Consistent Policy Implications from diverse models
  - Binding constraint changes from savings to foreign exchange availability
  - The ranking of sectors by comparative advantage
    - light manufacturing,
    - low capital-output skill-intensive branches of heavy manufacturing,
    - desirability of undertaking construction of petrochemical plant and an iron and steel complex with a priority on the former
  - Underinvestment in agriculture in mid 60's
  - Need to emphasize the physical overhead capital
  - Restriction on the expansion of money supply
  - 20% devaluation of exchange rate

3. By-products of Economic Planning

- Apparatus useful for screening the investment proposals

- A thorough review of the economy gave government officials a basis for rational policy desions

- Up-to-date mass of economic data

- Creation of a series of industry committees, composed of engineers, business experts, economists, ministry officials, technical experts ⇒ consensus building mechanism for formulation and implementation of the plan ⇒ made the planning process public and acceptable

4. Special Features of Korean Economic Planning

- Mutual reinforcement of economic and political development (leadership commitment to economic development is essential)

- Good match between planning theory and actual planning procedures

- Strong feedback between administrative and institutional mechanisms ⇔ formal planning technology

- Vast improvement in data base ⇔ improvement in planning model

- Plan is successful!

5. Macroeconomic Model of Korea Economy (1956-1966)

- **Data: Bank of Korea National Income Division**
  - Weight: $w_s = 0.96^{1966-s}$

- **Production Fuctions**
  - **Agriculture, Forestry, Fishery**

  $$V^a = 192.08 + 9.18\,D^w + 1.812\,K^a, \qquad R^2 = 0.963$$
  $$(9.342) \quad (3.016) \qquad (5.152)$$

  - **Mining & Manufacturing**

  $$V^m = -2.723 + 0.931\,K^a + 0.329\,M^i, \qquad R^2 = 0.985$$
  $$(6.701) \quad (0.066) \qquad (0.102)$$

  - **Social Overhead**

  $$V^o = 5.341 + 0.338\,K^o_{t-1}, \qquad R^2 = 0.973$$
  $$(1.870) \quad (0.019)$$

  - **Services**

  $$V^s = 138.48 + 0.636\,K^s, \qquad R^2 = 0.946$$
  $$(11.270) \quad (0.050)$$

5. Macroeconomic Model of Korea Economy (1956-1966)

- **Consumption**
  - ◆ **Food Consumption**

$$C^f = 164.27 + 0.334(V - T) - 17.813 PI^g / PI^w, \quad R^2 = 0.976$$
$$\quad\quad (21.722) \quad (0.017) \quad\quad\quad (6.663)$$

  - ◆ **Nonfood Consumption**

$$C^{nf} = 2.816 + 0.385(V - T) + 4.473 PI^g / PI^w, \quad R^2 = 0.933$$
$$\quad\quad (45.368) \quad (0.037) \quad\quad\quad (13.916)$$

  - ◆ **Government Consumption**

$$C^g = 55.257 + 0.285 T, \quad R^2 = 0.946$$
$$\quad\quad (1.721) \quad\quad (0.023)$$

5. Macroeconomic Model of Korea Economy (1956-1966)

- **Investment**
  - ◈ **Agriculture, Forestry, Fishery**

$$I^a = -3.944 + 0.329GL + 0.111(V^a_{t-2} - V^a_{t-3}), \quad R^2 = 0.877$$

$$ (3.600) \quad\quad (0.083) \quad\quad\quad (0.050)$$

  - ◈ **Mining & Manufacturing**

$$I^m = -42.258 + 1.126V^m_{t-1} + 0.786K^m_{t-1} + 0.240(\overline{MS} + \overline{TD} + GL)_t, \quad R^2 = 0.995$$

$$ (2.149) \quad\quad (0.070) \quad\quad (0.058) \quad\quad\quad (0.029)$$

  - ◈ **Social Overhead**

$$I^o = -225.01 - 1.071K^o_{t-1} + 0.537V^o_{t-2} + 0.193GL, \quad R^2 = 0.920$$

$$ (61.460) \quad (0.299) \quad\quad (0.157) \quad\quad\quad (0.520)$$

  - ◈ **Services**

$$I^s = 4.811 + 0.240(\overline{MS} + \overline{TD}) + 0.230(V_{t-1} - V_{t-2}), \quad R^2 = 0.995$$

$$ (2.938) \quad (0.033) \quad\quad\quad\quad (0.051)$$

5. Macroeconomic Model of Korea Economy (1956-1966)

■ **Imports**

◆ **Machinery and Equipments**

$$M^k = -17.386 + 0.220I - 0.205(X - M), \quad R^2 = 0.983$$
$$\quad\quad (2.596) \quad\quad (0.014) \quad\quad (0.034)$$

◆ **All other Imports**

$$M^{nk} = 40.4667 + 0.421V^n - 1.302PI^m / PI^w, \quad R^2 = 0.898$$
$$\quad\quad (21.935) \quad\quad (0.054) \quad\quad (0.354)$$

◆ **Intermediate Raw Materials**

$$M^i = 26.049 + 0.333V^n - 0.966PI^m / PI^w, \quad R^2 = 0.883$$
$$\quad\quad (18.964) \quad (0046) \quad\quad (0.306)$$

5. Macroeconomic Model of Korea Economy (1956-1966)

■ Definitions and Identities

$$C = C^{nf} + C^{f} + C^{g}$$

$$I = I^{a} + I^{m} + I^{o} + I^{g} + I^{i}$$

$$M = M^{nk} + M^{k}$$

$$V = V^{a} + V^{m} + V^{o} + V^{s} + V^{f}$$

$$K_{t}^{a} = 0.97 K_{t-1}^{a} + I_{t}^{a}$$

$$K_{t}^{m} = 0.94 K_{t-1}^{m} + I_{t}^{m}$$

$$K_{t}^{o} = 0.85 K_{t-1}^{o} + I_{t}^{o}$$

$$K_{t}^{s} = 0.97 K_{t-1}^{s} + I_{t}^{s}$$

$$M = X + F + V^{f}$$

$$S = V - C = I + X - M + V^{f}$$

$$C + I + X - M + V^{f} = V^{a} + V^{m} + V^{o} + V^{s} + V^{f}$$