External Shocks and Stabilization Policies:
An Analytical and Empirical Study of Korean Economy

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This paper is motivated to give full analytical treatment to the adjustment mechanism of the Korean economy to external shocks. There has been little systematic analysis on the source of inflation-*cum*-recession of the Korean economy, adjustment mechanism and desirable stabilization policies to cope with external shocks.

This paper consists of two parts. In the first part of this paper, a Keynesian-*cum*-Monetarist model is presented to analyze the impacts of external shocks on the rate of inflation and the growth rate of output. It is shown that the growth rate of output would decrease and the rate of inflation would increase in response to external shocks such as the oil price rise. Stabilization policies to cope with stagflation after external shocks are also examined. It is shown that restrictive monetary policies combined with incomes policies are most effective to cope with the adverse situation after the oil price rise.

In the second part of this paper, we analyze the impacts of imported inflation on the Korean economy in the 1970s with above model. To clarify the impact of first and second oil shock on the Korean economy, the 1970s is divided into four short periods. Emphasis is placed on how external factors interacted with internal factors in the past, how stabilization policies should have adjusted to

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cope with external shocks, and whether the outcome of short-run stabilization policies had any adverse impacts on the Korean economy in the long run. Finally, some policy recommendations for the 1980s are made in the fields of economic stabilization policies, economic strategies for structual reforms, and the role of government.

I. A Keynesian-*cum*-Monetarist Model for External Shocks and Stabilization Policies

1. The Aggregate Supply Function

To derive the aggregate supply function, we need an equation which relates the rate of output growth to the rate of inflation. Therefore, the aggregate supply function is derived from the mark-up assumption, the expectation-augmented Phillips curve and the equation which connects the rate of output growth with the level of employment.

First, let us assume that firms set their prices on the basis of their production cost which includes wages as well as oil expenditure. Then, the mark-up equation can be denoted as:

$$P = (1 + MU)(W + E \cdot P^*) \tag{1}$$

where P, W, E, P^*, and MU denote price, wage, exchange rate, price of oil, and the mark-up rate. Assuming no change in foreign exchange rate and taking a log and differentiating with respect to time, we will have:

$$\pi = \lambda w + (1 - \lambda) p^* \text{ and } \lambda = W/(W + E \cdot P^*) \tag{2}$$

where π is the rate of inflation, w is the rate of wage increase and p^* is the rate of increase in oil price.

Second, the expectation-augmented Phillips curve links the rate of wage increase to the expected rate of inflation and the level of unemployment:

$$w = \pi^* - a(u - \bar{u}), \ a > 0 \tag{3}$$

where π^* is the expected rate of inflation, u is the actual level of unemployment and $\bar{u}$ is the full employment level. If we assume static expectation so

that the expected rate of inflation of the current period is the actual rate of inflation of the last period,

$$w = \pi_{-1} - a(u - \bar{u}). \tag{4}$$

The static expectation implies that a wage earner would demand the same rate of wage increase as the rate of inflation of the last period in order to restore the purchasing power.

Third, let us define the equation which relates the rate of output growth to the rate of unemployment:[1]

$$y = \bar{y} - \bar{x} = -c(u - u_{-1}), \quad c > 0. \tag{5}$$

In equation (5), a change in the level of unemployment is related to the excess of the actual growth rate over the trend growth rate, since labor productivity tends to grow over time. If there is no change in the level of unemployment, output should grow at the trend rate with the above assumption. Here, y is the excess of the actual growth rate over the trend growth rate, $\bar{x}$ is the trend growth rate and $\bar{y}$ is the actual growth rate.

By combining equation (2), (4), and (5) together, we derive the aggregate supply function:

$$\pi = \lambda \pi_{-1} - \lambda a(u_{-1} - \bar{u}) + \frac{a\lambda}{c} y + (1 - \lambda) p^*. \tag{6}$$

If the rate of oil price rise is equal to the rate of wage increase, then equation (6) is reduced to:

$$\pi = \pi_{-1} - a(u_{-1} - \bar{u}) + \frac{a}{c} y. \tag{7}$$

On the aggregate supply side, the growth rate is positively related to the inflation rate.

2. The Aggregate Demand Function

The aggregate demand function, which is also expressed in terms of the rate of output growth and the rate of inflation, can be derived from following equation:[2]

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(1) For the estimation, capacity utilization rate can be substituted for the level of unemployment.
(2) For a detailed explanation, see In June Kim, "External Shock and Oil Money Recycling," *The Social Science Review*, Seoul National University, Volume IV, 1979.

$$Y = C(Y) + I(r(Y, \ \bar{M}/P), \ Y) + G + X(WI(P^*, Z), E, P)$$
$$- MA(Y, E, P, PI(P^*, Z)) - MT(Y, E, P^*, P) \tag{8}$$

where Y, C, I, G, $\bar{M}$, X, MA, MT, WI, PI, Z and r denote income, consumption, investment, government expenditure, money supply, exports, imports from industrial countries, imports from OPEC, the level of world income, prices of imports from industrial countries, policy variables of industrial countries, and interest rate. Let us write the equation (8) in slightly different way, so that we have:

$$Y = C(Y) + I(r(Y, \ \bar{M}/P), \ Y) + G + X(WI(P^*/P, Z), E)$$
$$- MA(Y, E, PI(P^*/P, Z)) - MT(Y, E, P^*/P). \tag{9}$$

Equation (9) can be rewritten in more general form as:

$$Y = Y(M/P, P^*/P, G, E, Z). \tag{10}$$

By totally differentiating equation (10) and dividing by the level of output, we obtain:

$$\tilde{y} = \alpha' \tilde{g} + \beta' (\bar{m} - \pi) - \gamma' (p^* - \pi), \quad \alpha', \beta', \gamma' > 0 \tag{11}$$

where $\tilde{g}$ is the rate of change in fiscal variable and $\bar{m}$ is the rate of change in money supply. Let us define g as the rate of change in full employment budget deficits and m as $\bar{m} - n\bar{x}$, where n is the income elasticity of demand for real balance. Then, the excess of the actual growth rate over the trend growth rate, y, is expressed in terms of the inflation rate as:

$$y = \alpha g + \beta (m - \pi) - \gamma (p^* - \pi), \quad \alpha, \beta, \gamma > 0. \tag{12}$$

If the rate of increase in oil price is the same as the rate of inflation, equation (12) is reduced to:

$$y = \alpha g + \beta (m - \pi). \tag{13}$$

3. Determination of the Growth Rate of Output and the Inflation Rate

The real growth rate of output and the inflation rate is determined at the point where the aggregate supply function intersects the demand function. If the rate of increase in oil price is the same as the domestic inflation rate, the growth rate of output and the inflation rate are obtained from equation (7) and (13). If we assume that the economy is in the long run equilibrium initially,

the inflation rate is the same as the growth rate of money adjusted to output growth and the actual growth rate is equal to the trend growth rate.

Now, let us start from point A in Figure 1, assuming that the economy is initially in the long run equilibrium. The rise in oil price in the first period shifts the AS curve upwards to the $A'S'$ curve and shifts the AD curve downwards to $A'D'$ curve, as shown in equation (6) and (12). In the new equilibrium, the growth rate of output is smaller than the trend growth rate of output.

The inflation rate, however, is either higher or lower than that of the previous period, depending upon the magnitude of shifts in the AS and AD curve. We may safely assume that the AD curve shifts less than the AS curve, since the higher oil price reduces aggregate demand only through the decline in net exports. Then, as shown in Figure 1, the inflation rate increases and the actual growth rate is smaller than the trend growth rate of output.

If we assume that the rate of oil price increase is the same as the inflation rate from the second period, the aggregate demand curve goes back to its original position in the second period. The aggregate supply curve also goes back to its original position, but only after several periods pass by. Since
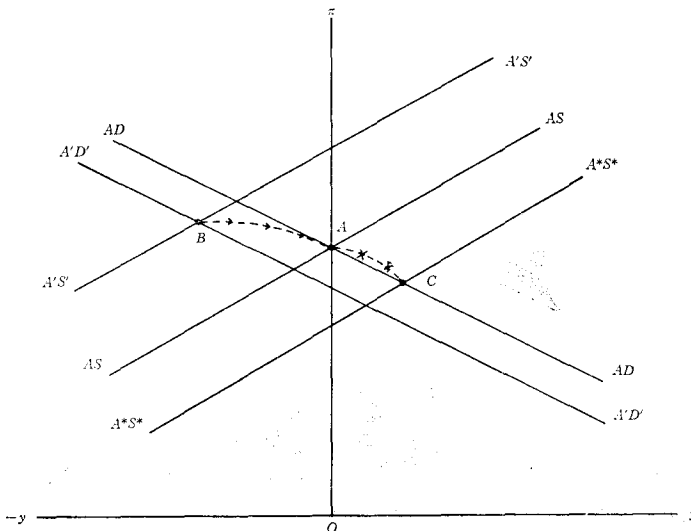

Fig. 1.

the inflation rate in the first period is greater than that in the long run equilibrium, the expected rate of inflation rises. Since the expected inflation rate in the second period is assumed to be the actual inflation rate in the first period, the aggregate supply curve shifts downward in the second period by a small amount, not falling directly back to the AS curve.

Over time, the adjustment process continues, moving the aggregate supply curve down and to the right. The inflation rate would get back to the growth rate of money adjusted to the output growth and the growth rate of output would return to the trend growth rate.

In the process of adjustment, however, there is a kind of overshooting. When the growth rate of output returns to the trend growth rate and the inflation rate becomes the long run growth rate of money supply adjusted to the output growth for the first time, the unemployment reaches its peak. In the next period, the inflation rate must be below the growth rate of money supply adjusted to the output growth and the growth rate of output must be greater than the trend growth rate. The excess of actual growth rate over trend growth rate means a reduction in the unemployment rate. The reduction in unemployment rate exerts stimulating effects on the rate of wage increase and, in turn, on inflation rate, even though the expectation on future inflation works in opposite direction. At point C, the stimulating effects of reduction in the unemployment rate on the inflation rate comes to dominate the effects of falling inflationary expectation. Eventually, the inflation rate would return to the growth rate of money supply adjusted to output growth and the growth rate of output would return to the trend growth rate, maintaining the natural rate of unemployment.

4. Stabilization Policies after the Oil Price Rise

In the previous section, the model is set up in such a way that there is a short run trade-off between the growth rate of output and the inflation rate. Therefore, in the short run, an increase in money supply stimulates the real economy. It is also assumed in the model that the rate of money growth only

gives an impact on the rate of inflation and no impacts on the growth rate of output in the long run.

In the real world, however, we are convinced that persistent high rate of monetary growth generates structual problems in the economy and leads economy into stagflation in the long run. This is mainly due to the inefficiency, unceratinty about the future, and rapid increase in speculative transactions caused by prolonged inflation and wide fluctuation of real economy.

To cope with the adverse situation after the oil price rise, stabilization policies should be applied to both demand and supply side. On demand side, restrictive monetary policies should be taken to attain price stability, even if they give deflationary impacts on the growth rate of output in the short run. In Figure 1 of the previous section, restrictive monetary policies prevent $A'D'$ curve getting back immediately to the original position, AD. On supply side, incomes policies should be taken in order to partially offset the cost-push impacts of oil price rise. In the model, we assume static expectation and the full compensation of the rise in productivity on the wage increase. But, since the oil price rise is a once-for-all one, government should make efforts to prevent high inflation rate caused by the oil price rise being fully reflected on the formation of expected inflation of the next period. Government also should make efforts to persuade laborer and entrepreneur to sacrifice some portion of increase in labor productivity and profits to lower the rate of inflation. Government should make them convinced that incomes policies contribute to making economy escape from the stagflation earlier than schedule.

If incomes policies are taken, equation (2), (4), and (6) are replaced with (14), (15), and (16):

$$\pi = \lambda(w-l) + (1-\lambda)p^* \tag{14}$$

$$w = \theta\pi_{-1} - a(u-\bar{u}) + \lambda l \tag{15}$$

$$\pi = \lambda\theta\pi_{-1} - \lambda a(u_{-1}-\bar{u}) + \frac{a\lambda}{c}y - \lambda(1-\eta)l + (1-\lambda)p^* \tag{16}$$

where l is the increase in labor productivity, θ is the proportion of the inflation rate of last period, and η is the proportion of the increase in labor

productivity which is reflected on the wage increase of the current period. In Figure 1, these policies shift down aggregate supply curve more rapidly to the original position. These policies, therefore, minimize the adverse impacts of the oil price rise, raising the rate of output growth and reducing the rate of inflation.

Immeidately after the oil price rise, it is not desirable to devalue the currency to stimulate the economy and improve the balance of payments. If devalued, equation (2), (4) and (12) are replaced with (17), (18), and (19):

$$\pi = \lambda(w-l) + (1-\lambda)p^* + (1-\lambda)e \tag{17}$$

$$\pi = \lambda\theta\pi_{-1} - \lambda a(u_{-1} - \bar{u}) + \frac{a\lambda}{c}y - \lambda(1-\eta)l + (1-\lambda)p^* + (1-\lambda)e \tag{18}$$

$$y = \alpha g + \beta(m-\pi) - \gamma(p^* - \pi) + \partial e \tag{19}$$

where e is the rate of foreign exchange depreciation. Devaluation undoubtedly gives a cost-push impact on supply side. But, it is not clear whether devaluation gives a stimulative impact or contractive impact on demand side. Since demand for oil is quite inelastic in the short run, it is quite plausible that the balance of payments situation deteriorates further immediately after the devaluation.

II. External Shocks and Stabilization Policies of Korea

1. Imported Inflation and the Development of Korean Economy in 1970s

(1) Prior to the First Oil Price Rise (Period of 1971~1973)

Prior to the first oil shock, Korea achieved a remarkable economic growth. The annual average growth rate of output during the period of 1971~1973 was around 10%. The high growth rate of output was attributable to the rapid growth in manufacturing sector whose annual growth rate exceeded 20 %. The high growth rate of manufacturing sector was achieved with a rapid expansion in exports whose annual growth rate amounted to 54.8% in dollar terms during the period. The share of manufactured goods to total exports already exceeded 85% in 1971.

During the period, Korea already suffered from double digit inflation rates.

The annual growth rate of GNP deflator which is regarded as the best indicator for a rate of inflation in Korea was around 15%. Rapid expansion of money supply (M_2) whose annual growth rate amounted to 30.3% during the period was mainly responsible for the high rate of inflation. Contribution of other factors to this double digit inflation was not so significant as that of rapid expansion of money supply. The rate of increase in unit value of imports was insignificant in 1972 and 1973, but significant in 1973 due to the worldwide commodity boom and the oil price rise. The annual growth rate of unit value of imports (11.6%) fell short of the rate of domestic inflation. Therefore, we cannot say that imported inflation initiated the high rate inflation. The growth rate of wage which gives cost-push impacts on the supply side was as high as the growth rate of GNP deflator. The growth rate of wage in manufacturing sector did not reflect the increase in productivity, even though it reflected the high rate of inflation. Therefore, there was no substantial increase in real wage. In such a situation, the increase in wage rate cannot be regarded as the cause of the high rate of inflation but rather an adjustment to the high rate of inflation made to prevent the decline in real wage.

Balance of payments position in Korea improved during the period. Current account deficits reduced to 309 million dollars in 1973 from 848 million dollars in 1971. The rapid increase in exports due to the boom in world economy contributed largely to the improvement of balance of payments.

The terms of trade gradually improved through 1960s from 121 in 1963 to 144.5 in 1971 and was quite stable during the period. It then deteriorated by a small amount in 1973 due to the rapid increase in prices of raw materials and oil. Even though unit value of exports rose by a substantial amount (26.6 %) due to the boom in world economy, the rate of increase in unit value of imports (33.5%) exceeded the rate of increase in unit value of exports. Terms of trade declined from 143.7 in 1972 to 136.4 in 1973.

During the period, Korean currency was devalued only by 7.5%, even though the annual inflation rate of Korea was higher than that in the United

States of America by almost 10%. Since foreign countries' income elasticity of demand for Korean exports had much greater impacts on determining the level of Korean exports than price elasticies, Korea could postpone adjustment of exchange rate while world economy was in boom. The loss in price competitiveness caused by higher rate of inflation was also partially compensated for by increased subsidies to export sectors. When the world economy turned into recession, however, Korea had to devalue its currency by a significant amount in order to restore the price competitiveness and to partially offset the deterioration in balance of payments. Since downturn in the Korean economy was coupled with devaluation which contributed to domestic inflation, high inflation rate was sustained in economic downturn.

(2) The First Oil Price Rise (Period of 1974~1975)

The first oil price rise after Arab-Israeli war undoubtedly led Korean economy into stagflation. The oil price rise gave a deflationary impacts on the Korean economy, since worldwide recession caused by the first oil shock reduced exports of Korea by a significant amount and enlarged payments for the oil bill. Multiplier effects of reduced consumer demand caused by the oil price rise also contributed to reducing the growth rate of output.

The annual growth rate of exports in dollar terms reduced from 54.8% of the previous period to 23.7% during the period. The slowdown in the growth rate of exports contributed largely to reducing the annual growth rate of manufacturing from 20.7% to 14.2%, which, in turn, reduced the annual growth rate of output to 7.6% from 10% of the previous period, even though Korea tried to minimize the impacts of oil price rise on the growth rate of output.

The rise in oil price gave a cost-push impact on the supply side. The rate of increase in unit value of imports was around 55.5% in 1974, accelerating the high rate of inflation. During the period, the annual rate of increase in GNP deflator was around 29.2%. Because of prolonged and persistent high rate of inflation, inflationary expectation was formed and played an important role on wage settlement. The wage rate rose at an annual rate of 31.2%

which exceeded the rate of increase in GNP deflator by a small amount. Since wage earners were only partially compensated for productivity gains, we cannot simply say that the rapid increase in wage rate was the cause of high rate of inflation.

In the face of rapid increase in prices of imports, Korea did not pursue restrictive demand management policies to cushion off the adverse impacts of imported inflation on the domestic inflation. Monetary supply grew at an annual rate of 26.1% during the period, only slightly lower than that of the previous period. But the growth rate of domestic credit during the period far exceeded that of the previous period. Therefore, we can say that the high rate of inflation was initiated with rapid increase in prices of imports and sustained with still expansionary monetary policies. High rate of wage increase was not the cause of high rate of inflation but its consequence. But, it contributed to the next round of high rate of inflation, raising the cost of production. Even though the growth rate of output during the period was not so high as that of the previous period, wage settlements began to reflect some portion of increase in productivity. It may indicate that labor surplus began to disappear in the middle of 1970s. Since wage earners were partially compensated for productivity gains, however, there was not much room for incomes policies to play on the supply side to reduce real wage further.

After the first oil shock, current account deficits of Korea increased sharply from 309 million dollars in 1973 to 2023 million dollars in 1974. The current account deficits in 1974 amounted to 10% of GNP. The sharp increase in current account deficits was attributable to the increased payments for oil bill as well as continued pursuit of export-oriented high growth strategy of Korea. The oil bill increased from 277 million dollars in 1973 to 965 million dollars in 1974. The increase in oil bill accounted for 40% of the increase in current account deficits. The rest of the increase in current account deficits, however, is to be ascribed to increased payments for imports from industrial countries.

In the face of oil price hike, Korea did not attempt to make much internal adjustments to reduce current account deficits. Instead, Korea chose to finance the current account deficits with foreign funds through oil money recycling, and attempted to minimize the impacts of the first oil shocks without revising export-oriented high economic growth strategy.

There were several good reasons why Korea avoided taking measures to revise its development strategy in order to reduce the current account deficits and, with it, external debts: First, Korea realized that there were many transitory elements in the huge increase in current account deficits immediately after the first oil price rise. The transitory elements were the abrupt one-shot increase in oil price; the reduction in growth rate of output in industrial countries; the deterioration in terms of trade against industrial countries; and short term inelastic demand for oil. Korea realized that as soon as those transitory elements vanish in the process of adjustment, the current account deficits will reduce by a substantial amount. Second, there were foreign funds available at a relatively cheap price through oil money recycling. Bank interest rates in industrial countries declined during the very period when demand for private bank credit by non-oil developing countries was very large, because the supply of world savings, including oil surplus savings, was large relative to the world demand for bank credit. Interest rate on loans in dollar terms was charged around at 7% or 8% and real interest rate after subtracting the inflation rate of the United States from the nominal interest rate was around 1% or less. Third, foreign debt outstanding after the first oil shock was not so significant that Korea need not worry much about debt management problems.

Because of the rapid increase in unit value of imports relative to the increase in unit value of exports, terms of trade deteriorated against OPEC as well as industrial countries. The deterioration in terms of trade was further aggravated by devaluation of Korean currency by 21.8% in December 1974. Terms of trade deteriorated from 136.4 in 1973 to 100 in 1975.

The devaluation was carried out as a delayed adjustment of exchange rate to reflect the difference in inflation rates between two countries rather than as a means to achieve external balance through foreign exchange adjustment.

(3) The Period between the First and the Second Oil Shock (Period of 1976~1978)

Korea overcame the first oil shock rather successfully. Thanks to the global economic recovery and expansion of overseas construction boom, Korea recovered from the first oil shock and began to show a rapid economic growth. The annual growth rate of exports during the period was around 36.5% in dollar terms and receipts from overseas construction jumped from 39 million dollars in 1975 to 2148 million dollars in 1978. The rapid growth of Korean economy during the period, however, was attributable not only to favorable world economic environment but also to expansionary demand management policies shifting industrial structure to heavy and chemical industries. The expansionary demand management policies overheated the Korean economy and enabled it to grow at an annual rate of 12.3%, although these policies contributed to the subsequent slowdown of Korean economy.

During the period the Korean government encouraged and initiated the shift of industrial structure to heavy and chemical industries. This shift, however, was promoted too rapidly and abruptly with heavily subsidized policy loans and with a large amount of foreign capital inflow to these industries. Preferential margins for policy loans were so great that real interest rate were negative, and this undoubtedly led to distortions in resource allocations and the establishment of highly capital-intensive industries against the comparative advantage of Korea. The overinvestment by expansionary monetary policies contributed to raising the growth rate of output in the short run but became one of the main causes for the recession after the second oil shock.

Inflation had been sustained at a high level. The annual rate of increase in GNP deflator was around 20.4% during the period. The high rate of inflation was resulted from the rapid growth in money supply at the annual rate of

36.1% as well as the rapid increase in wage at the annual rate of 33.5%. The rate of wage increase exceeded by significant amount the rate of increase in GNP deflator. Wage earners in manufacturing sectors were compensated for more than the rate of inflation plus productivity gains. Tremendous expansion of overseas construction and expansionary demand management policies pulled up wages in the manufacturing sector. In addition, there had been great transformation in labor market. Labor surplus no longer existed. A sharp and sustained increase in money wages and unit labor costs exerted strong cost-push pressure on the supply side. During the period, unit value of imports grew at an annual rate of 3.3%. Therefore, the impacts on the inflation of increase in prices of imports were quite insignificant. The continued high rate of inflation weakened the price competitiveness of Korean exports and made Korean economy more vulnerable to the external shocks.

As was mentioned, construction boom in the Middle East and economic recovery in industrial countries greatly helped improve balance of payments of Korea. The growth rate of exports in dollar terms was 56.2% in 1976 and, for the first time and briefly, current account was in balance in 1977. From 1978, however, balance of payments began to deteriorate rapidly because the overinvestment with a foreign capital inflow in heavy and chemical industries accelerated the growth rate of imports. In addition, Korea began to lose the price competitiveness in export markets due to the continued high rate of inflation without adjustment of foreign exchange rate. When external environments are favorable, the economy should not be overheated. Therefore, the rapid shift of industrial structure to heavy and chemical industries may be regarded as ill-planned. Korea should have attempted to maintain equilibrium in balance of payments to reduce its reliance on foreign capital while world economic environment was favorable.

During the period, terms of trade improved from 100 in 1975 to 128 in 1978. The unit value of imports rose by 3.3% a year while the unit value of exports rose by 10.6%. Even though the rate of inflation in Korea was

much higher than that of the United States, the adjustment of foreign ex-
change rate was postponed. If the exchange rate had been adjusted to reflect
the difference in inflation rates between the two countries, terms of trade
should have improved to a less extent during the period.

The delay of foreign exchange rate adjustment also contributed to a large
inflow of foreign capital. Without adjustment of foreign exchange rate, the
interest rate charged on foreign loans seemed to be much cheaper on the part
of borrower, since the nominal interest rates on domestic loans reflect the
domestic inflation rate, while the nominal interest rates on foreign loans
reflect the inflation rate in the industrial countries. This postponement of the
adjustment of foreign exchange rate misled domestic borrowers to under-
estimate the real cost of foreign borrowing and this led to a large inflow of
foreign capital.

During the period, Korea did not make much efforts to reduce its reliance
on foreign oil. The oil import bill increased at an annual rate of 19.9% and
the amount of oil imports grew at an annual rate of 14.3%.

(4) The Second Oil Shock (Period of 1979~1981)

The second oil shock in 1979 had more adverse impacts on the Korean
economy than the preceding one, because the impacts of the second oil price
rise was further aggravated by the expansionary demand management policies
prior to the second oil shock. Worldwide recession caused by the second oil
price rise reduced growth rate of Korean exports. The annual growth rate of
exports in dollar terms reduced from 36.5% of the previous period to 17.9%
in this period. The slowdown in the growth rate of exports contributed to
reducing the annual growth rate of output in manufacturing sector from 19.2
% of the previous period to 5.2% in this period. The drop of the growth
rate in manufacturing sector contributed to reducing the growth rate of output
from 12.3% of the previous period to 2.4% in this period.

In 1980 for the first time after 20 years of successful economic growth,
Korea recorded a negative growth rate of 6.2%. Social unrest after President

Park's assasination, an unprecedented bad harvest of 1980, second oil shock, and lagged adverse impacts of the expansionary monetary policies can be listed as factors responsible for the minus growth. In 1981, Korea achieved a economic growth rate of 7.1%. As a result, the level of GNP of 1981 in real terms restored what it was in 1979. The recovery of agriculture, forestry and fisheries sector contributed to about 50% of total GNP growth in 1981. However, Korea still has to cope with the lagged adverse impacts of expansionary demand management policies prior to the second oil price rise.

The rise in oil price gave a cost-push impact on the supply side. The rate of increase in the unit value of imports was 22.1% in 1979 and 26.9% in 1980. Foreign exchange rate was devalued by 36.3% in 1980 and this contributed to the rapid increase in unit value of imports in 1980. Rapid increase in wage rate also contributed to the high rate of inflation. In 1979 and 1980, growth rate of wage reflected more than the rate of inflation plus productivity gains. On the demand side, the government began to take restrictive demand management polices from the latter part of 1979. The annual growth rate of money supply reduced to 25.6% during this period from 36.1% of the previous period. Even though the growth rate of money supply reduced by a significant amount, it was still high enough to keep the rate of inflation high. The rate of increase in GNP deflator was 20.5% in 1979 and 24.3% in 1980. In 1981, the unit value of imports rose by 4.8% so that import prices for oil and raw materials remained stable. From the latter half of 1981, the Korean government decided to take incomes policies coupled with restrictive demand management policies. Government demanded labor to sacrifice some portion of increase in labor productivity to lower the rate of inflation. It set up a wage guideline and made an effort to curb inflationary expectation being reflected in wage negotiation. Due to the success of incomes policies and small increase in prices of imports, the rate of increase in GNP deflator reduced to 18.6% in 1981, and further reduced to single digit in 1982. Weakness of labor union and high rate of wage increase in the previous period contributed to

the success of incomes policies. Wage earners had been compensated for more than productivity gains for several years before the incomes policy was applied.

Because of slowdown in the growth rate of exports and increased payments for oil, the current account deficits deteriorated rapidly after the second oil price rise. Payments for the oil increased by 191.4%, from 2186 million dollars in 1978 to 6371 million dollars in 1981, even though the quantity of oil imports increased only by 6.7%. The current account deficits recorded 4.2 billion dollars in 1979, 5.3 billion dollars in 1980, and 4.7 billion dollars in 1981. The accumulation of current account deficits resulted in the rapid rise in foreign debts and debt management problems.

Due to the rise in oil price, terms of trade deteriorated from 128 in 1978 to 101.6 in 1981. During the period, the annual rate of increase in unit value of imports was around 17.9% while the annual rate of increase in unit value of exports was around 9.1%. The devaluation in 1980 also contributed to raising the rate of increase in unit value of imports. The devaluation was carried out to compensate the loss in price competitiveness in export markets due to the higher rate of domestic inflation prior to the second oil shock. The devaluation was inevitable but did not make much contribution to restoring the external balance.

2. Policy Recommendations for the 1980s

We have briefly analyzed the development of Korean economy, economic

Table 1. Indicators of Major Statistics

(annual average growth rate, in percent)

	Real Growth Rate of Output	Growth Rate of GNP Deflator	Growth Rate of Money Supply (M₂)	Growth Rate of Wage in Manufacturing	Growth Rate of Unit Value of Imports
1971~1973	10.0	15.0	30.3	14.7	11.6
1974~1975	7.6	29.3	26.1	31.2	29.2
1976~1978	12.3	20.4	36.1	33.5	3.3
1979~1981	2.4	21.1	25.6	24.1	17.9

Source:Bank of Korea, *Economic Statistics Yearbook, 1982*, pp. 75, 81, 82.
Note: For more information, see Appendix.

policies of Korean government, and impacts of the imported inflation on Korean economy. We know that Korea suffered from two external shocks in 1970s and labor surplus disappeared in the latter half of 1970s. In the face of changing domestic and world economic environments, Korea should have revised its high growth-oriented economic strategy coupled with inflationary financing. When world economic environments turned to be favorable after the first oil shock, Korea should have pursued steady economic growth strategies with an emphasis on the price stabilization. Instead, Korea continuously pursued high growth-oriented economic policies and initiated the shift of industrial structure with expansionary monetary policies. This undoubtedly aggravated impacts of the second oil shock and contributed to the stagflation of Korea after the second oil shock.

From now on, Korea must not make the mistake of overheating the economy with expansionary monetary policies. And it is desirable to maintain the rate of inflation at the same level as those of industrial countries. By maintaining the inflation rate as low as the advanced countries, preferential margins for policy loans which caused the distortion in resource allocations will automatically reduce to an insignificant level. By maintaining the inflation rate at a low level, it will be much easier to guarantee positive real interest rates, which will contribute to augmenting domestic savings and reducing dependency on foreign savings. By maintaining the inflation rate at the same level as those of industrial countries, stable foreign exchange rate can be maintained and problems caused by lagged adjustment of foreign exchange rate can be solved. Maintenance of low inflation rate is also prerequisite to financial liberalization necessary for the development of financial sector in Korea.

In the past, Korea pursued the export-oriented economic growth, and the rapid growth in exports has undoubtedly been the engine for the rapid economic growth. Some major constraints to the promotion of exports are expected, though. First, world economic outlook in the 1980s is not so bright as that in 1960s and 1970s. After the collapse of Bretton Woods system, the international

monetary order has been in disarray. Two oil shocks and high interest rates in the advanced countries led world economy into a prolonged recession, and subsequent rise of universal protectionism will not subside in near future. Second, since Korea is already called a newly industrialized country and exports of Korea almost reached 1% of world trade, Korean exports will face more protective measures by importing countries. Third, changes in the composition of Korean exports make it difficult to achieve such a high growth rate of exports in the 1980s as before. Share of heavy and chemical industrial goods increased so rapidly that Korea has to compete in export markets where industrial countries have dominated. We already see a downward trend in the growth rate of Korean exports. Since there is a limit to pursuing a rapid economic growth based mainly on the rapid expansion of exports, Korea should make an attempt to achieve a steady economic growth based on more balanced growth between domestic and foreign sectors. And to improve the competitiveness and efficiencies, an open economic policy should be continuously pursued to make domestic industries exposed to foreign competition.

Since, at the end of 1982, the foreign debt outstanding already amounted to 37. 2 billion dollars, Korea should make efforts to achieve a balance of payment equilibrium in order to reduce the debt-GNP ratio. Korea should reduce its reliance on foreign savings in capital formation by raising domestic savings. Steady growth policies with an emphasis on the price stabilization will help reduce the current account deficits.

In the past, government's heavy intervention in investment activities discouraged creativity and initiative in the private sector. This also caused inefficiency in all aspects of the society. From now on, the Korean government should promote freer competition and allow market mechanism to play its proper function, gradually reducing its direct intervention and the share of policy loans. Korean government should not be too heavy-handed in shaping the course of economic development. In the field of energy, however, Korean government should provide a long-range overall plan to diversify import sour-

ces of petroleum as well as the energy sources, to reduce its dependence on foreign energy.

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Appendix

Table 1. Indicators of Major Statistics in Korea: 1962~81

	Growth Rate of (in Percent)					Exchange Rate of Won to Dollar[1]	Nominal Interest Rate[2]
	GNP Deflator	Nominal Wage	Money Supply (M_2)	Real GNP	Manu-facturing		
1962	18.7	6.5	24.9	2.2	11.7	130.0	15.0
1971	13.4	19.2	20.8	9.4	18.8	373.2	21.6
1972	16.5	15.4	33.8	5.8	14.0	398.9	15.0
1973	15.1	9.6	36.4	14.9	29.2	397.5	12.0
1974	32.0	35.6	24.0	8.0	15.8	484.0	14.8
1975	26.5	26.8	28.2	7.1	12.6	484.0	15.0
1976	20.4	33.2	33.5	15.1	22.6	484.0	15.5
1977	17.9	33.2	39.7	10.3	14.4	484.0	15.8
1978	23.0	34.0	35.0	11.6	20.7	484.0	16.7
1979	20.5	28.5	24.6	6.4	9.8	484.0	18.6
1980	24.3	22.9	26.9	−6.2	−1.1	659.9	23.0
1981	17.1	20.2	25.3	6.4	6.8	700.5	19.3
1971~73	15.0	14.7	30.3	10.0	20.7	389.9	16.2
1974~75	29.3	31.2	26.1	7.6	14.2	484.0	14.9
1976~78	20.4	33.5	36.1	12.3	19.2	484.0	16.0
1979~81	20.6	24.1	25.6	2.2	5.2	614.8	20.3

Source: Bank of Korea, *Economic Statistics Yearbook*, 72, 75, 81, 82.
Notes: (1) Bank of Korea Standard Concentration Rate at the end of period.
(2) Annual Average of Actual Rates on Time Deposits for over 1 year.

Table 2. Industrial Structure (Ratio to GNP) in Korea: 1962~81 (In Percent)

	GNP	Agr., Forestry & Fishery	Mining & Manufacturing	Manufac-turing	Light Industry	Heavy & Chemical	SOC & Others
1962	100.0	36.6	16.3	14.3	10.2	4.1	47.1
1971	100.0	27.0	22.6	21.0	13.0	8.0	50.4
1972	100.0	26.4	23.4	22.2	14.1	8.1	50.2
1973	100.0	25.0	26.0	24.8	14.8	10.0	49.0
1974	100.0	24.8	27.3	26.1	13.0	13.1	47.9
1975	100.0	24.9	28.0	26.5	14.2	12.3	47.1
1976	100.0	23.8	28.8	27.6	14.7	12.9	47.4
1977	100.0	23.0	28.4	27.0	13.9	13.1	48.6
1978	100.0	21.9	28.4	27.0	13.8	13.2	49.7
1979	100.0	20.5	28.0	26.9	13.1	13.8	51.5
1980	100.0	16.3	30.2	28.8	13.7	15.1	53.5
1981	100.0	17.9	31.0	29.6	14.0	15.6	51.1

Source: Bank of Korea, *National Income in Korea*, 1982.

Table 3. Composition of Expenditure on Gross National Product in Korea: 1971~81

(In Percent)

	GNP	Consumption	Gross Investment	Exports	Imports	Domestic Savings	Foreign Savings	Statistical Discrepancy
1971	100.0	84.6	25.2	17.2	28.0	15.4	10.7	0.9
1972	100.0	84.3	21.7	21.8	27.0	15.7	5.2	−0.7
1973	100.0	76.5	25.6	31.3	35.1	23.5	3.8	1.7
1974	100.0	79.5	31.0	29.5	41.9	20.5	12.4	1.9
1975	100.0	81.4	29.4	29.1	39.5	18.6	10.4	−0.4
1976	100.0	76.9	25.5	34.5	36.9	23.1	2.4	0.0
1977	100.0	74.9	27.3	37.2	37.8	25.1	0.6	−1.6
1978	100.0	73.6	31.1	36.2	39.5	26.4	3.3	−1.5
1979	100.0	73.5	35.4	32.5	40.2	26.6	7.6	−1.2
1980	100.0	80.1	31.5	40.2	50.4	19.9	10.2	−1.4
1981	100.0	80.0	27.2	43.4	51.6	20.0	8.3	1.0

Source: Economic Planning Board, *Economic Management Plan for 1982*, Jan. 1982.

Table 4. Composition of Gross Saving in Korea: 1962~1981

(In Percent)

	Investment/ GNP	Gross Saving	National Saving Sub-Total	Saving of Private	Government	Foreign Saving
1962	12.8	100	25.5	37.5	−12.0	83.4
1971	25.2	100	60.9	39.4	21.4	42.5
1972	21.7	100	72.5	56.0	16.4	24.2
1973	25.6	100	92.0	75.7	16.3	14.8
1974	31.0	100	66.0	58.7	7.3	40.0
1975	29.4	100	63.3	49.7	13.6	35.5
1976	25.5	100	90.6	66.4	24.2	9.5
1977	27.3	100	92.1	71.6	20.5	2.2
1978	31.1	100	84.7	63.9	20.8	10.6
1979	35.4	100	75.1	54.6	20.4	21.6
1980	31.5	100	63.2	43.3	19.6	32.4
1981	27.3	100	73.4	47.1	26.3	30.4

Source: Bank of Korea, *Economic Statistics Yearbook, 72, 75, 81, 82.*

Table 5. Statistics on Major Interest in Korea: 1962~81

	Nominal Interest Rate[1]	Loans for Export of D.M.B. [2]	Loans for Export of B.O.K.	GNP Deflator	Real Interest Rate[3]
1962	15.0	12.5	8.4	18.7	−3.7
1971	21.6	6.0	3.5	13.4	8.2
1972	15.0	6.0	3.5	16.5	−1.5
1973	12.0	6.7	3.5	15.1	−3.1
1974	14.8	8.8	3.5	32.0	−17.2
1975	15.0	7.6	3.5	26.5	−11.5
1976	15.5	7.4	3.5	20.4	−4.9
1977	15.8	9.0	3.5	17.9	−2.1
1978	16.7	9.0	3.8	23.0	−6.3
1979	18.6	9.0	4.0	20.5	−1.9
1980	23.0	14.8	10.0	24.3	−1.3
1981	19.3	15.0	10.0	17.1	2.2
1971~73	16.2	6.2	3.5	15.0	1.2
1974~75	14.6	8.2	3.5	29.3	−14.4
1976~78	16.0	8.5	3.6	20.4	−4.4
1979~81	20.3	12.9	8.0	20.6	−0.3

Sources: Bank of Korea, *Economic Statistics Yearbook, 1982.*
         Bank of Korea, *Monthly Bulletin*, Dec. 1982.
Notes: (1) Interest Rate on Time Deposits for over 1 year.
      (2) Loans for Export of Deposit Money Bank.
      (3) Calculated by subtracting GNP deflator from nominal interest rate.

Table 6. Indexes of Foreign Trade in Korea & U.S.A.

	Korea's Unit Value of Exports	Unit Value of Imports	Net Barter T.O.T	U.S.A.'s Unit Value of Exports	Unit Value of Imports	Net Barter T.O.T.
1971	66.5	46.0	144.5	58.2	48.7	119.5
1972	67.3	46.8	143.7	60.2	52.1	115.5
1973	85.2	62.5	136.4	70.0	61.9	113.1
1974	107.9	97.2	111.0	89.4	91.7	97.5
1975	100.0	100.0	100.0	100.0	100.0	100.0
1976	111.7	98.0	114.0	103.3	103.1	100.2
1977	122.3	100.2	122.0	107.1	111.6	96.0
1978	135.4	105.8	128.0	114.5	120.4	95.1
1979	161.8	129.2	125.3	130.2	141.4	92.1
1980	170.3	163.9	103.9	147.9	180.1	82.1
1981	174.5	171.7	101.6	161.5	190.1	85.0
1971~73	73.0	51.8	141.5	62.8	54.2	116.0
1974~75	104.0	98.6	105.5	94.7	95.9	98.8
1976~78	123.1	101.3	121.3	108.3	111.7	97.1
1979~81	168.9	154.9	110.3	146.5	170.5	86.4

Sources: Bank of Korea, *Economic Statistics Yearbook, 82.*
       I.M.F. *International Financial Statistics, 1981*, Dec. 1982.

Table 7. Average Growth Rate of Nominal Exports in Korea: 1971∼81

(In Percent)

	70	71	72	73	74	75	76	77	78	79	80	Nominal Exports (Million Dollars)
71	28.3											1,132.2
72	37.8	48.0										1,675.9
73	54.8	70.0	95.2									3,270.8
74	50.4	58.6	64.1	38.0								4,515.1
75	41.5	45.0	44.0	23.7	10.8							5,003.0
76	43.8	47.2	46.9	33.7	31.6	56.2						7,814.6
77	41.6	43.9	43.1	32.4	30.6	41.7	28.6					10,046.5
78	39.6	41.3	40.2	31.2	29.4	36.5	27.5	26.5				12,710.6
79	36.7	37.8	36.4	28.5	26.6	30.9	23.5	21.0	15.7			14,704.5
80	34.6	35.3	33.8	26.8	25.0	28.0	21.8	19.7	16.4	17.1		17,214.0
81	35.2	35.9	34.6	27.0	25.4	27.9	22.2	20.7	18.7	20.3	23.5	21,254.0

Source: Economic Planning Board, *Economic Management Plan for 1982*, Jan. 1982.

Table 8. Balance of Payments in Korea: 1971∼81

(In Million Dollars)

	Current Balance Sub-Total	Trade Balance	Invisible Trade Balance	Long-Term Capital	Basic Balance	Overall Balance
1971	−848	−1,046	28	528	−320	−172
1972	−371	−575	33	496	125	182
1973	−309	−567	67	597	288	390
1974	−2,023	−1,937	−308	946	−1,076	−1,094
1975	−1,887	−1,671	−442	1,178	−709	−151
1976	−314	−591	−72	1,371	1,058	1,174
1977	12	−477	266	1,313	1,325	1,315
1978	−1,085	−1,781	224	2,166	1,081	−402
1979	−4,151	−4,396	−195	2,663	−1,488	−973
1980	−5,321	−4,384	−1,386	1,857	−3,464	−1,890
1981	−4,436	−3,419	−1,518	2,842	−1,594	−2,297

Sources: Department of Finance, *Fiscal and Financial Statistics*, Feb. 1981 and Feb. 1983.
Bank of Korea, *Economic Statistics Yearbook, 1982*.

Table 9. Exports by Type of Products in Korea: 1971~1981

(In Million Dollars and Percent)

	Food & Kindred	Crude Materials & Mineral Fuels	Light Industry Products	Heavy Industry Products	Total
1971	85(8.0)	62(5.8)	769(72.0)	151(14.1)	1,068(100.0)
1972	121(7.5)	76(4.7)	1,081(66.6)	346(21.3)	1,624(100.0)
1973	269(8.3)	146(4.5)	2,044(63.4)	767(23.8)	3,225(100.0)
1974	347(7.8)	236(5.3)	2,414(54.1)	1,463(32.8)	4,460(100.0)
1975	670(13.1)	219(4˙3)	2,916(57.3)	1,276(25.1)	5,081(100.0)
1976	590(7.6)	352(4.5)	4,471(57.9)	2,303(29.8)	7,715(100.0)
1977	1,068(10.6)	382(3.8)	5,297(52.7)	3,299(32.8)	10,046(100.0)
1978	1,070(8.4)	364(2.8)	6,809(53.5)	4,467(35.1)	12,710(100.0)
1979	1,218(8.0)	438(2.9)	7,579(50.3)	5,818(38.6)	15,055(100.0)
1980	1,269(7.2)	479(2.7)	8,469(48.3)	7,288(41.6)	17,504(100.0)
1981	1,467(6.9)	589(2.7)	10,109(47.5)	9,089(42.7)	21,254(100.0)

Source: Department of Finance, *Fiscal and Financial Statistics*, Feb. 1981 and Feb. 1983.

Table 10. Imports by Type of Goods in Korea: 1971~1981

(In Million Dollars and Percent)

	Capital Goods	Raw Materials for Export	Raw Materials for Domestic Use & Others	Petroleum	Total
1971	685(28.6)	506(21.1)	1,016(42.4)	187(7.8)	2,394(100.0)
1972	762(30.2)	688(27.3)	855(33.9)	218(8.6)	2,523(100.0)
1973	1,157(27.3)	1,556(36.7)	1,231(29.0)	296(7.0)	4,240(100.0)
1974	1,849(27.0)	2,039(29.8)	1,944(28.4)	1,020(14.9)	6,852(100.0)
1975	1,909(26.2)	2,180(30.0)	1,914(26.3)	1,271(17.5)	7,274(100.0)
1976	2,427(27.7)	2,415(27.5)	2,313(26.4)	1,609(18.3)	8,774)100.0)
1977	3,008(27.8)	2,739(25.3)	3,132(29.0)	1,931(17.9)	10,810(100.0)
1978	5,080(33.9)	3,364(22.5)	4,338(29.0)	2,190(14.6)	14,972(100.0)
1979	6,314(31.0)	3,918(19.3)	7,003(34.4)	3,104(15.3)	20,339(100.0)
1980	5,125(23.0)	4,508(20.2)	7,021(31.5)	5,638(25.3)	22,292(100.0)
1981	6,158(23.6)	5,359(20.5)	8,239(31.5)	6,376(24.4)	26,131(100.0)

Source: Economic Planning Board, *Major Statistics of Korean Economy*, 1982.