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A COMMENT ON THE INTEREST RATE REFORM IN SOUTH KOREA

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INTRODUCTION

Among the reforms proposed by the Ranis Report (1974) for the Philippine economy is the removal of the official ceilings on bank deposit and lending rates of interest. According to the Report, the development of the organized sector of the domestic financial system has been hampered by the offering of very low rates of interest (often negative in real terms) to savers and relatively low rates to borrowers. These rates have been held way below the opportunity cost of capital, and as a result the Report points out that savings rates have been low and declining, and the allocation of credit has been inefficient. At low levels of interest rates, the demand for credit has far exceeded the limited supply of loanable funds.

A basic contention of the Report is that an increase in interest rates will lead to higher levels of saving and investment. With higher rates, the banking system will be more competitive in attracting savers' funds. The resources of the banking system may be expected to increase as savers are given a chance to earn a decent real rate of return. And although loan rates will be higher than

* Work on this paper was undertaken by the author on the suggestion of Dean José Encarnación, Jr.

their previous levels, the opportunity cost of capital would still exceed the loan rates, and increased borrowing may be expected to take place.^{1/}

The experience of the Republic of Korea was cited as a case to support the Report's recommendations of higher interest rates as a means to stimulate saving and investment. In 1965, loan and deposit rates of interest in Korea were raised markedly, and this was interpreted to have been the key factor in raising saving rates after 1965. Inflation was held down, and bank lending at the higher interest rates increased about as fast as time and savings deposits grew. The domestic investment ratio grew after 1965 and so did real output. Apparently the conclusion to be drawn is that temporarily high interest rates succeeded in stimulating saving and investment in the Korean economy.^{2/}

This paper attempts to take a closer look at the impact of the interest rate adjustment in Korea on real savings. On a more general level, the issue of concern is whether an increase in the level of interest rates raises or reduces real savings. One can argue that higher interest rates should lead to reduced savings due to increased borrowing costs to business. At best, one cannot say in advance whether an increase in the interest rate will increase or decrease ex post saving. If it is true that temporarily high rates of interest led to increased real saving in Korea in the 1960's, then perhaps the Korean experience can offer valuable lessons in monetary policy for the Philippines and other developing countries.

INTEREST RATES AND PRIVATE SAVING

The adjustment of interest rates in Korea in 1965 was one element in a broad package of policies aimed primarily at checking a rampant inflation which had been plaguing the domestic economy for two decades and which was threatening to grow into a full-blown hyperinflation. After the division of Korea in 1945, the government of the Republic of Korea had to resort to inflationary finance over and above the large inflows of foreign aid for the social and economic rehabilitation after the war. During the period from 1953 to 1963, the money supply, wholesale prices, and consumer prices increased at average annual rates of 38%, 21% and 23%, respectively. The inflationary situation was aggravated further when the military regime, which took over the government in 1961, expanded credit and the money supply at higher rates than previously in an effort to accelerate capital formation and reduce the country's dependence on foreign aid. In 1964 inflation was at an unprecedented high level as a result of the monetary expansion. On the other hand, the annual growth rate of GNP in 1961-1962 was only about 3%, and in 1963 Korea's balance of payments position dwindled to a very weak point.

The government initiated a firm anti-inflationary financial program in late 1963, the primary emphasis of which was the curbing of monetary expansion and the achievement of a more efficient allocation of resources via the price system. Policies were aimed at reducing

the gap between money demand and available supplies so that inflation would be checked and at enlarging the role of the market system in determining relative prices of goods and services.

On September 30, 1965, the Monetary Board of the Bank of Korea announced that the interest rate on regular commercial bank loans was being raised to 26% per annum from its previous level of 16%. The official ceiling on nominal interest rates on time and savings deposits was raised from 15% to 30% per annum, with some scaling down of rates on time deposits of shorter maturities. (A complete table on the interest rates in Korea from 1960 to 1973 is found in Appendix A.)

The intention of the reform was to boost the level of private saving in order to increase investment and control inflation. The general level of interest rates was raised sharply to reflect the true scarcity value of capital and encourage savers by providing an attractive real interest rate, i.e., the nominal rate adjusted for the rate of price increase. The government also wanted to attract funds from the unorganized financial sector (the "curb market") into the banking system in order to strengthen the influence of the monetary authorities over the financial system. Even the new levels of loan rates were lower than the rates prevailing in the curb market outside the banking system, which ranged between 4 and 5% a month.

Table 1 contains the data which indicate the response of the public (in terms of preference to hold assets as time and savings deposits) and of business (in terms of borrowing from banks) to the adjustments in interest rates during the 1960's. The table also gives the values for the level of real savings and the saving ratio (saving as a percentage of GNP).

To get a simplified measure for "the" real interest rate on deposits and loans, the following procedure was used: following Brown (1973) and McKinnon (1973), the average annual interest rate on one year time deposits of deposit money banks was chosen as representative of deposit rates. From this nominal rate, the rate of increase in prices as measured by the GNP price index was subtracted to get the real deposit rate found in column 1. The same process was used to get the real loan rate in column 2, using the average annual interest rate on loans on one-year-bills of deposit money banks as the nominal rate.

High rates of inflation in 1963 and 1964 accounted for the negative real rates during those years. The sharp rise in real rates from 1965 onward reflected both the raising of nominal interest rates on loans and deposits and the moderation of the rate of inflation, which was brought down from an annual average of 22.3% in 1961-1964 to 11% in 1965-1969 (as measured by the GNP price index). The nominal rates began to be lowered in April of 1968 in line with the authorities'

TABLE 1

REAL INTEREST RATES, CHANGES IN DEPOSITS AND LOANS, AND REAL PRIVATE SAVING IN KOREA, 1961-1971

Year	Real Deposit Rate of Interest, %	Real Loan Rate of Interest, %	% Increase (Decrease) in Constant Price Deposits of Banks ^b	% Increase (Decrease) in Constant Price Loans of Banks ^b	% Increase (Decrease) in Real Private Saving, Billion Won ^a	Time and Savings Deposits As % of Money Supply	% Increase (Decrease) in Real Private Saving	Private Saving As % of GNP
1961	- 3.4	2.0	-	-	34.34	15.7	-	5.6
1962	1.6	3.2	97.9	19.2	18.27	29.8	(46.8)	2.9
1963	-13.2	-12.5	(17.6)	(11.4)	49.70	31.1	172.0	7.2
1964	-17.0	-16.1	(14.5)	(18.1)	48.79	29.8	(1.8)	6.5
1965	11.2	10.9	95.9	26.2	46.73	47.3	(4.2)	5.3
1966	17.1	13.1	103.0	26.2	81.70	83.3	74.8	8.9
1967	19.5	15.5	66.4	55.9	67.93	107.4	(16.9)	6.8
1968	15.6	13.8	77.0	54.8	77.26	170.5	13.7	6.9
1969	11.7	12.4	57.6	53.9	142.28	207.2	84.2	10.9
1970	8.6	9.8	11.2	16.9	132.68	187.1	(6.7)	9.3
1971	11.2	12.6	11.4	15.4	125.37	195.3	(5.5)	8.0

^a Deflated by the GNP Price Index, 1965 = 100.^b Deposit money banks are composed of the Commercial Banks and the Specialized Banks. As of 1972, the Commercial banks were composed of 5 nationwide Commercial Banks, 10 Local Banks, 6 Foreign Banks operating in Korea, and the banking accounts of the Korea Trust Bank. The specialized banks were the Korea Exchange Bank, Medium Industry Bank, Citizens National Bank, Korea Housing Bank, and the Credit Service Sector of the Agricultural Cooperatives.

schedule to gradually lower them as financial stability was more firmly established and stronger saving habits had been inculcated in the people. The lowering of nominal rates accounted for the decline in real rates after 1968.

An indication that the public was encouraged to save more was the remarkable response of time and savings deposits to the higher interest rates. The increase in time and savings deposits expanded the supply of funds which the banking system had available to lend out. Column 3 shows that constant price time and savings deposits doubled in 1966 and increased by more than half each year until 1969. At the higher interest rates, there was a market shift in the public's preference to hold time and savings deposits relative to money (demand deposits and currency), as column 5 indicates. Time and savings deposits rose from less than half of the money supply prior to the interest rate reform to double the money supply in 1971. This shift in relative liquid asset holdings of the public again suggests that a significant change in the public's saving habits and attitudes took place after the interest rate of reform.

There certainly was no shortage of borrowers at the higher loan rates, as column 4 shows. The constant price value of loans by deposit money banks increased at even higher rates after the reform. Real loans expanded by 26% in 1965 and 1966 and by an average of 54.9% in each of the years from 1967 to 1969. It appears that the

real rate of return on competitive investments was even higher than the new level of interest rates.

In connection with the credit policy of the monetary authorities, it is relevant to note that prior to 1965, quantitative restriction of credit was used to check the expansion of money and the inflation rate. In November of 1965, the Korean central bank raised its discount rate sharply from 10.5 to 21% and then relaxed its ceilings on the amounts that commercial banks could discount at the new rate and also relaxed other specifications on the uses to which discounted funds could be put. This contrasts with the orthodox deflationary practice of increasing quantitative restriction on rediscounting and reserve requirements while maintaining the discount rate as well as other interest rates.^{3/}

Column 6 contains the figures for real private saving. Private saving is actually one of three saving components of gross domestic investment as found in the national income accounts of Korea. The other two are government saving and foreign saving. Technically, the sum of these three sectors' savings and the statistical discrepancy between saving and investment equals gross domestic investment. Private saving is composed of saving of households, incorporated businesses, nonprofit institutions, private businesses and corporations, and government corporations. Government saving is exclusive of government corporations' saving and represents the excess of current receipts over current expenditures, plus capital

reserves. Foreign saving is equal to the current trade (goods and services) deficit and hence is the excess of goods and services imports over goods and services exports. Net current transfer receipts are thus shown as part of government and private savings. What is referred to as national or domestic saving is the sum of government and private saving.^{4/}

In studying the response of saving to changes in the interest rates, the most relevant saving component to consider is private saving. This includes the savings of households and of business firms, two sectors which are directly affected by the level of interest rates. Because government saving and foreign saving are what they are defined to be, changes in interest rates would affect them in no direct and significant manner. Brown (1973) has pointed this out in the case of government saving:

"The growth of government saving cannot be attributed to the interest rate reform.... It is possible to hypothesize relationships between government savings and interest rates on the basis of government surpluses and deficits and choices between government investment and consumption decisions, but scatter diagrams show no relationship whatever between interest rates and the government deficit (not surprising in view of government administrative control of interest rates) and none between real interest rates and government saving prior to 1964. After that time both rise, but probably because of independent government decisions rather than causally."^{5/}

Likewise it could be asserted that changes in the current trade deficit are influenced by factors in the external trade sector quite independent of bank interest rates.

Looking at the real private figures in column 6, one finds that real private saving declined in each of the years since 1961 prior to the interest rate reform except in 1963. It increased sharply (by 74.89%) in 1966 just after the reform year, declined in 1967 by 16.9% from the previous year's level, and then increased again in each of the two succeeding years, reaching a peak of 142 billion won in 1969. In 1970 and 1971, real private saving declined by 6.7% and 5.5%, respectively. It is significant to note, however, that in 1971 the level of real private saving was greater than twice its 1965 level.

Private saving as a percentage of GNP rose from an average of 5.6% in the years 1960-64 prior to the reform to an average of 8.4% in the years 1966-1969 after the reform. Column 8 shows that from a 1965 level of 5.8%, private saving as a percentage of GNP increased to 8.9% in 1966. At its peak level in 1969, private saving was 10.9% of GNP.

The issue to consider is whether the increase in private saving can be said to be largely the result of the increase in interest rates, as the ILO Report contends. Several studies

of the Korean economy would have us believe that the increase in interest rates was the principal cause of the boom in savings (see, for example, Brown (1973), McKinnon (1973), Hasan (1976), and Cole and Lyman (1971)). Brown particularly presents a strong, comprehensive, and quite convincing case for the interest rate reform backed by statistical evidence he has found fit to use. The results of his regression analysis, based on adjusted data for private saving,^{6/} indicate that both interest rates and income were consistently significant determinants of private saving rates in Korea over the period 1957-1970.^{7/} His evidence yields a strong positive association between interest rates and the saving rate. He concludes that the increase in interest rates was an important causal factor in the rise of the private saving rate in Korea after 1964; in fact the increase in interest rates was an even more important factor than is suggested by the statistical results.

This contention defies accepted notions regarding the impact of higher interest rates on savings. A closer look leads one to the literature on savings in developing countries. Williamson (1968), for example, estimated several personal savings functions using data from Southeast Asian nations (including Korea) and found out, among other things, that higher interest rates are associated, if anything, with

lower real saving in Asia. Mikesell and Zinser (1973), in a survey of the literature on savings functions in developing countries, present various and sometimes conflicting findings on the effect of interest rates on savings. They sum it all up in this manner:

"Several other studies have concentrated principally on the apparent beneficial effects of interest rate reforms in Korea, Taiwan, and Indonesia, where increases in bank deposit rates (along with increased loan rates) have been accompanied by sharp rises in savings deposits without dampening the business demand for loans. But this may simply entail a redirection of savings and a change in the pattern of investment toward more productive forms rather than an increase in the saving propensity. Nevertheless, it is quite conceivable that a period of negative real interest rates will disrupt the established savings pattern for most income classes. Some income receivers may tend to save more out of concern for future security, specially if they can acquire relatively secure assets; others may be led to exchange their money income for consumer goods. No steady state hypothesis with respect to savings behavior is likely to have much validity under conditions of extreme monetary instability."8/

In all the savings functions estimated in the literature, the income variable comes out highly and consistently significant, as is predicted by theory. This leads one to speculate whether higher real savings in Korea after 1964 was the result of rising income or of increased interest rates (or possibly of both, and, if so, to what extent are the effects of each variable on savings). Logically then, the next step is to estimate savings functions incorpo-

rating these variables and possibly others using Korean data for the relevant time period.

REGRESSION ANALYSIS

Simple Keynesian functions postulate a primary relationship between saving and income. Other models include, together with various measures of income, the interest rate, price level, and price expectations variables to explain variation in saving levels. Estimating savings functions is not without difficulties. A number of complex theoretical and econometric problems are involved; e.g., separating out income and substitution effects of interest rate changes, quantifying the role of expectations and planning horizons in saving decisions, and solving a difficult econometric identification problem. This last problem leads to confusion as to whether the coefficients estimated in a model can be identified as the structural parameters of a savings function or whether they relate to investment or mongrel functions.

In the light of the factors mentioned, it would be ideal to go about estimating the parameters of a simultaneous equations model of saving as recommended, for example, by Leff and Sato (1975). However, this is not done in this paper for the following considerations: 1) There is quite

an extensive body of data necessary to estimate a simultaneous equations model which is simply not wholly available at the present time, and 2) The savings functions estimated by investigators who rabidly champion the primacy of the interest rate reform in boosting Korean savings (see Brown (1973) and Kwang-Suk Kim (1967)) are all multivariate single equation models. It is precisely the intention of this paper to question these results; hence the savings functions to be estimated here are patterned after those of Brown and Kim.

The basic function to be estimated involves saving as the dependent variable to be regressed on three main explanatory variables: income, the interest rate, and a lagged saving variable to capture ratchet effects and the effects of lagged saving on current saving. Although the point of interest is private saving, three other levels of saving are also regressed on the explanatory variables: household saving, domestic saving, and aggregate saving (or, technically, gross domestic investment). Within each saving category, saving is expressed in three forms: real or constant price saving, real per capita saving, and the saving rate (saving as percentage of income).

The estimation makes use of time-series data covering the 18-year period 1958-1975. Data sources are the Economic

Statistics Yearbooks published by the Bank of Korea. The following notations are used (all real figures have been deflated by the GNP price index, 1970=100):

S_h , for real household saving, in billion won

S_h/DY , for household saving rate, in percent (household saving over private disposable income)

S_h/P , for real per capita household saving (real household saving over midyear population)

S_p , for real private saving, in billion won

S_p/DY , for private saving rate, in percent (private saving over private disposable income)

S_p/P , for real per capita private saving (real private saving over midyear population)

S_d , for real domestic saving, in billion won

S_d/Y , for domestic saving rate, in percent (domestic saving over GNP)

S_d/P , for real per capita domestic saving (real domestic saving over midyear population)

I , for real gross domestic investment, in billion won

I/Y , for investment rate, in percent (gross domestic investment over GNP)

I/P , for real per capita gross domestic investment (real gross domestic investment over midyear population)

Y , for current-price GNP, in billion won

$\bar{Y}$, for real GNP, in billion won

$\bar{Y}/P$, for real per capita GNP

DY , for current-price private disposable income, in billion won

$\overline{DY}$, for real private disposable income, in billion won

$\overline{DY}/P$, for real per capita private disposable income

n , for nominal interest rate, in percent (average annual interest rate on time deposits of 12

months' maturity)

p , for rate of inflation shown in the GNP price index in percent

i , for real interest rate, in percent (nominal interest rate minus the rate of inflation)

The data are found in Appendix B.

The regression equations appear in Table 2. An interesting result is that the coefficient of the interest rate variable is generally insignificant in almost all equations whereas the coefficient of the income variable comes out consistently highly significant.

In the household saving equations, disposable income proves to be an important variable in the explanation of

TABLE 2. REGRESSION EQUATIONS

A. HOUSEHOLD SAVING FUNCTIONS

Equation No.	Dependent Variable	Independent Variables (t-values/in parentheses)	R ²	F-Value	Durbin-Watson Statistic
1.	S_h	$= -116.372 + 0.117 \overline{DY} + 0.100 i - 0.064 S_{ht-1}$ (3.754) (0.084) (-0.252)	.722	15.738	1.833
2.	S_h	$= -81.484 + 0.132 \overline{DY} - 2.152 n - 1.114 p - 0.151 S_{ht-1}$ (4.055) (-1.031) (-0.797) (-0.583)	.735	12.801	2.070
3.	S_h	$= -109.739 + 0.110 \overline{DY} + 0.129 i$ (6.960) (0.112)	.740	25.146	1.887
4.	S_h/p	$= -5256.996 + 0.136 \overline{DY}/p + 10.785 i$ (6.961) (0.311)	.737	24.820	1.998
5.	S_h/p	$= -4409.941 + 0.141 \overline{DY}/p - 34.057 n - 31.640 p$ (6.934) (-0.560) (-0.755)	.734	16.606	2.154
6.	S_h/DY	$= 0.811 + 0.001 DY + 0.087 i - 0.010 S_h/DY_{t-1}$ (2.214) (1.067) (-0.031)	.364	4.248	2.101
7.	S_h/DY	$= 0.477 + 0.001 DY + 0.100 n - 0.079 p + 0.003 S_h/DY_{t-1}$ (1.978) (0.785) (-0.753) (0.008)	.316	2.967	2.092
8.	S_h/DY	$= 0.807 + 0.001 DY + 0.086 i$ (3.695) (1.224)	.407	6.827	2.107

TABLE 2 (Cont'd)

B. PRIVATE SAVING FUNCTIONS

Equation No.	Dependent Variable	Independent Variables (t-values in parentheses)	R ²	F-Value	Durbin-Watson Statistic
9.	S _p	= -173.357 + 0.220 $\overline{DY}$ - 0.805 i + 0.139 S _p t-1 (3.901) (-0.501) (0.593)	.896	50.094	1.587
10.	S _p	= -112.401 + 0.254 $\overline{DY}$ - 5.019 n - 0.873 p + 0.034 S _p t-1 (4.666) (-1.913) (-0.512) (0.153)	.914	45.902	1.775
11.	S _p	= -197.220 + 0.250 $\overline{DY}$ - 1.097 i (12.074) (-0.733)	.901	78.353	1.443
12.	S _p /P	= -9267.387 + 0.294 $\overline{DY}$ /P - 25.653 i (12.155) (-0.600)	.901	78.581	1.577
13.	S _p /P	= -7479.910 + 0.303 $\overline{DY}$ /P - 120.279 n - 18.354 p (12.837) (-1.700) (-0.377)	.911	59.094	1.772
14.	S _p /DY	= 6.269 + 0.002 DY + 0.072 i + 0.058 S _p /DY _{t-1} (2.303) (0.855) (0.162)	.652	11.631	1.870
15.	S _p /DY	= 6.305 + 0.002 DY + 0.071 n - 0.073 p + 0.058 S _p /DY _{t-1} (2.186) (0.503) (-0.696) (0.154)	.626	8.100	1.870
16.	S _p /DY	= 6.701 + 0.002 DY + 0.073 n - 0.078 p (5.732) (0.540) (-0.814)	.652	11.602	1.854
17.	S _p /DY	= 6.623 + 0.002 DY + 0.077 i (6.024) (0.983)	.675	18.644	1.852

TABLE 2 (Cont'd)

C. DOMESTIC SAVING FUNCTIONS

Equation No.	Dependent Variable	Independent Variables (t-values in parentheses)	R ²	F-Value	Durbin-Watson Statistic
18.	S _d	= -321.072 + 0.314 $\bar{Y}$ + 0.929 i - 0.234 S _d _{t-1} (5.996) (0.772) (-1.072)	.966	160.556	1.922
19.	S _d	= -300.385 + 0.318 $\bar{Y}$ - 0.145 n - 1.433 p - 0.238 S _d _{t-1} (5.891) (-0.067) (-0.965) (-1.065)	.964	115.125	1.972
20.	S _d	= -264.041 + 0.260 $\bar{Y}$ + 1.022 i (21.547) (0.846)	.965	237.994	2.119
21.	S _d /P	= -12080.152 + 0.301 $\bar{Y}$ /P + 41.773 i (20.486) (1.122)	.962	213.308	2.063
22.	S _d /P	= -12573.148 + 0.299 $\bar{Y}$ /P + 67.250 n - 30.000 p (19.237) (1.004) (-0.654)	.959	134.831	2.128
23.	S _d /Y	= 1.856 + 0.000 Y + 0.041 i + 0.797 S _d /Y _{t-1} (0.510) (0.424) (2.951)	.781	21.253	2.148
24.	S _d /Y	= -0.909 + 0.001 Y + 0.241 n - 0.008 p + 0.592 S _d /Y _{t-1} (1.017) (1.360) (-0.084) (1.942)	.793	17.256	2.191
25.	S _d /Y	= 5.370 + 0.002 Y + 0.207 i (6.026) (2.156)	.669	18.184	1.126

TABLE 2 (Cont'd)

D. INVESTMENT FUNCTIONS

Equation No.	Dependent Variable	Independent Variables (t-values in parentheses)	R ²	F-Value	Durbin-Watson Statistic
26..	I	$= -235.771 + 0.326 \bar{Y} + 1.290 i + 0.071 I_{t-1}$ (4.448) (0.693) (0.313)	.954	119.82	1.751
27.	I	$= -342.834 + 0.342 \bar{Y} + 5.703 n + 0.780 p - 0.009 I_{t-1}$ (4.941) (1.838) (0.368) (-0.012)	.960	103.149	1.678
28..	I	$= -251.821 + 0.348 \bar{Y} + 1.296 i$ (19.312) (0.718)	.957	191.299	1.685
29..	I/P	$= -11602.756 + 0.388 \bar{Y}/P + 50.679 i$ (16.577) (0.854)	.942	139.788	1.491
30.	I/P	$= -15468.910 + 0.374 \bar{Y}/P + 250.495 n + 41.650 p$ (18.823) (2.925) (0.710)	.961	139.834	1.729
31..	I/Y	$= 5.102 + 0.001 Y + 0.084 i + 0.693 I/Y_{t-1}$ (0.976) (0.784) (3.017)	.705	14.535	1.811
32.	I/Y	$= 1.788 + 0.001 Y + 0.557 n + 0.024 p + 0.281 I/Y_{t-1}$ (2.408) (3.119) (0.258) (1.230)	.813	19.466	1.977
33.	I/Y	$= 14.885 + 0.002 Y + 0.218 i$ (4.722) (1.808)	.545	11.200	1.007

variation in household saving. The coefficient of real disposable income is positive and significant at the 1% level in all three equations with real household saving as the dependent variable (Equations 1-3). The relationship between the real interest rate and real household saving is positive but insignificant, and when the nominal interest rate and inflation rate variables replace the real interest rate, both their coefficients are negative and insignificant. The F-values for all three equations are significant at the 1% level.

When real per capita household saving is regressed on the explanatory variables (Equations 4 and 5), similar results arise. The coefficient of real per capita disposable income is positive and significant at the 1% level; that of the real interest rate is positive but insignificant; those of the nominal interest rate and inflation rate are negative and insignificant.

In the equations with the household saving rate as dependent variable (Equations 6-8), the coefficient of disposable income is the only one that comes out significant. In Equation 7, this coefficient is significant at the 10% level and the F-value is insignificant (probably due to a relatively high correlation between disposable income and the

lagged household saving rate, $r=.726$). When the lagged household saving rate is dropped (Equation 8), the coefficient of disposable income becomes significant at the 1% level and the F-value is likewise significant at the 1% level. Generally though, the explanatory variables do not fare as well in the explanation of variation in the household saving rate as they do in the explanation of real household saving and real per capita household saving. This is indicated by much lower values for $\bar{R}^2$ in the household saving rate equations. For all the household saving equations, the Durbin-Watson statistic is insignificant at the 10% level, indicating the absence of serial correlation among the stochastic disturbance terms.

The private saving equations are the focal point of interest. As already mentioned, in the analysis of the impact of the interest rate reform on savings, private saving is most directly affected by changes in loan and deposit rates of interest.

In all three equations with real private saving as the dependent variable (Equations 9-11), the coefficient of real disposable income is positive and significant at the 1% level. The coefficient of the real interest rate is negative and insignificant. When the nominal interest rate and the inflation rate replace the real interest rate (Equation 10),

the coefficient of the nominal interest rate is negative and significant at the 10% level. F-values for the three equations are significant at the 1% level, and the Durbin-Watson statistics are insignificant at the 5% level.

In Equations 12 and 13, real per capita private saving is the dependent variable. Again, only the income variable, real per capita disposable income, has a positive and significant coefficient at the 1% level. The coefficients of the real interest rate, the nominal interest rate, and the rate of inflation are all negative and insignificant.

The private saving rate equations (Equations 14-17) yield similar results. The coefficient of the disposable income variable is positive and significant at the 5% level in Equations 14 and 15 where the lagged private saving rate is included among the explanatory variables. When the lagged private saving rate variable is dropped, the coefficient of disposable income becomes significant at the 1% level. The coefficients of the nominal interest rate and the inflation rate are positive and negative, respectively, in Equations 15 and 16 and both insignificant. In Equations 14 and 17, the real interest rate has a positive but insignificant coefficient. Although the values for $\bar{R}^2$ are lower than in

the other private saving equations, the F-values are still significant at the 1% level.

The domestic saving equations (Equations 18-25) yield a similar pattern of results with the exception of the domestic saving rate equations. In the equations with real domestic saving and real per capita domestic saving as dependent variables (Equations 18-22), the coefficients of the income variable, real GNP and real per capita GNP, are positive and significant at the 1% level. The coefficients of the real interest rate, nominal interest rate, the rate of inflation, and lagged domestic saving are all insignificant. In Equations 23-25, where the domestic saving rate is the dependent variable, the GNP variable has a significant coefficient only when the lagged domestic saving rate variable is dropped as an explanatory variable (Equation 25), and here also the real interest rate has a positive coefficient significant at the 5% level. Otherwise, only the lagged domestic saving rate variable has a significant coefficient (Equations 23 and 24). Multicollinearity is evident here; there is a high correlation ($r=.849$) between the GNP variable and the lagged domestic saving rate variable.

F-values for all domestic saving equations are significant at the 1% level. Durbin-Watson statistics are all insignificant.

at the 5% level except in Equation 25 where a low Durbin-Watson statistic indicates that the stochastic disturbance terms are not independent.

For total saving (gross domestic investment), the income variable again comes out consistently significant in explaining variation in gross domestic investment. With real investment as the dependent variable (Equations 26-28), the coefficient of real GNP is significant at the 1% level in all three equations. The real interest rate and lagged real investment variables have insignificant coefficients. When the nominal interest rate and the rate of inflation replace the real interest rate as explanatory variables, the coefficient of the nominal interest rate comes out positive and significant at the 10% level; that of the inflation rate is insignificant.

When real per capita investment is the dependent variable (Equations 29-30), the real per capita GNP variable has a positive coefficient significant at the 1% level, and in Equation 29 the nominal interest rate variable also has a positive coefficient significant at the 2% level. The real interest rate and inflation rate variables have insignificant coefficients.

With the investment ratio as dependent variable (Equations 31-33), the GNP variable again has a positive and significant coefficient in all equations except Equation 31, where the coefficient of the lagged investment ratio is the only one that comes out significant. A problem of multicollinearity is involved here; the correlation between GNP and the lagged investment ratio variable is relatively high ($r=.766$). When the lagged investment ratio variable is dropped in Equation 33, GNP has a coefficient significant at the 1% level and the real interest rate has a coefficient significant at the 10% level. However, the $\bar{R}^2$ value drops to .545 (although the F-value is still significant at the 1% level) and the Durbin-Watson statistic drops to a significant level indicating the presence of serial correlation. Otherwise, for all the other investment equations, the F-values are significant at the 1% level and there is no serial correlation among the stochastic disturbance terms.

These results indicate the primary role played by income growth in raising savings in Korea during the critical years of her economic development. The evidence presented here conflicts with the claims of several studies already mentioned that higher interest rates were primarily responsible for raising savings and the saving rate in Korea after 1964.

Too much importance has unjustifiably been attached to the interest rate reform in Korea to the neglect of the other factors which should be considered in any study of economic development.

The interest rate reform ought to be considered in the proper perspective, i.e., alongside the programs and policies which were initiated to stimulate the development of the Korean economy. Needless to say, the interest rate reform cannot be taken in isolation because it was merely one element in a broad package of policies designed to stabilize the shaky economy in the early 1960's. But before going to these other factors, it is necessary to consider an issue relating to the effectivity of the higher interest rates in Korea after 1965 which has not been given the attention it deserves.

SUBSIDY ELEMENT

Although the nominal interest rates were raised sharply in 1965, there was a subsidy element which enabled many borrowers of funds to obtain loans at rates cheaper than the official standard lending rate. While the new deposit rates were apparently successful in increasing monetary savings, the application of high loan rates of

interest was subverted by two factors: the extension of loans at preferential rates to specific borrowers, and the inflow of cheaper credit from foreign sources. The extension of loans at preferential rates has been reported on by S.

Kanasa-Thasan (1969):

"Although the standard loan rate of commercial banks was raised to 26% per annum, approximately one third of total commercial bank credit was extended at preferential rates, mostly for increasing exports or for the import of raw materials by export industries. Since the preferential rates applicable to the export industry range between 6% and 7% per annum, the weighted average lending rate of commercial banks has been estimated to be about 18-20% per annum. Moreover, the total amount of loans extended by specialized financial institutions.... which receive a substantial part of their resources through budgetary transfer, has ranged between two and three times that of commercial banks in recent years. A substantial part of such loans was for long term and medium term and was extended at preferential rates; preferential loan rates were often applied even for 'operational loans' for working capital."9/

Loans obtained from foreign sources, both private and official approved by the government, were also cheaper than domestic funds because the standard loan rate did not apply to them. Brown (1973) reported that of the \$1.5 billion total of over-three-year foreign capital agreements extended to Korea as of January 31, 1969, manufacturing firms received 46% and accounted for 30-35% of total fixed investment during

this period. Agriculture, forestry, and fishing received about 5% of foreign funds and accounted for about 10% of total fixed investment. Tertiary industry received a slightly smaller proportion of the foreign resources than its share of total investment. The inflow of foreign funds played a significant role in boosting investment:

"The most significant point is that total investment was considerably increased by the foreign loan inflow. The question of what proportion of an industry's investment is financed by foreign loans is in principle much less important than an industry's share in total investment, since the increase of foreign capital availability for one industry means that a larger share of domestic credit and domestically owned foreign exchange can be made available to other industries. In Korea, however, foreign capital also carried with it the advantage of significantly lower interest costs."^{10/}

Several factors were mainly responsible for the large inflow of foreign loans after 1965. One was the interest rate reform. After the reform made foreign credits cheaper than domestic bank credit, Korean businessmen always sought foreign credits as an alternative to commercial bank loans. Another factor was the government's policy since 1962 of attracting foreign capital to stimulate domestic growth. By making available government and bank loan guarantees at low fees (3% per year), the government did not discourage businessmen from borrowing abroad and in fact assured foreign lenders

who did not show much interest in examining the soundness of the use of their credit once loan guarantees were issued. A third factor was the maintenance of a relatively stable exchange rate even as inflation progressed after 1965. Brown (1973) argues that had the exchange rate been changed to reduce the value of the won more nearly in step with the rate of inflation, the estimated cost of foreign borrowing would have been higher and the desire to borrow abroad reduced.

Due to availability of credit at lower than standard interest rates, the cost of borrowing in general was not as high and restrictive as it would have been as a result of the interest rate reform:

"As a result of these factors, the average interest cost of all borrowed funds for enterprises was undoubtedly far below the standard loan rate of banks; and with the continued increase in wholesale prices at an average annual rate of about 7%, the real cost of borrowed funds was reduced even further. Moreover, with the increased availability of bank credit, partly consequent on the rise in time and savings deposits, business enterprises have been able to reduce their dependence on the curb market. Since interest rates prevailing in that market were substantially higher than even the new standard loan rates of banks, this switch helped the enterprises to keep down the increase in their interest costs resulting from the interest rate reform.

The demand for bank credit therefore remained very strong under the stimulus of the rapid economic expansion."11/

ECONOMIC GROWTH IN KOREA

Growth in Korea in the 60's--the increase in saving, investment and output and the slowing down of the rate of inflation -- was achieved only because of a purposeful, carefully planned, and sustained program of development initiated by the government of the so-called Third Republic which took over in 1961. Korea launched its first economic development plan in 1962, and since then a second and third five year plans have been successfully completed. As a result, the economy achieved rapid growth and modernization. GNP grew by an average annual rate of 9.4% during the period from 1962 to 1974, and real per capita GNP almost tripled. In general, industrialization and export expansion led the growth of the economy, and along with this macro-economic growth, there was substantial progress in the modernization of industry and in the improvement of people's living standards.

Political considerations often play a vital part in the study of economic development of a nation, and the Korean

case is no exception. There was a proposal to formulate an economic development plan in Korea by the Liberal Party regime in the latter 1950's but this did not materialize. In the following Democratic Party regime of the Second Republic, 1960-61, a three year plan and a five year plan were prepared, but this also proved abortive because of the collapse of the regime. It was the Third Republic that made the 1960's the decade of development and the turning point in the history of modernization in Korea.

Seeing economic development and industrialization as the only ways to cast off long stagnation and dependence, the government drafted a blueprint of development, the First Five Year Economic Development Plan, put into force in 1962. The ultimate goal of the plan was to break out of the vicious circle of poverty and to consolidate the foundation for a self-supporting economy. The priorities of this first plan (1962-66) were the development of energy industries, the expansion of social overhead capital, the increase in exports and development of import substitution industries, and the improvement in agricultural productivity. The Second Five Year Plan (1967-71) had more or less the same objectives with two priority areas added: the improvement of industrial

structure through construction of heavy industries and the advancement of scientific technology. The Third Five Year Plan (1972-76) concentrated on the development of heavy industries, self-sufficiency of food, increase in farm incomes, export expansion and improvement of trade structure, development of national land, and the evolution of scientific technology.

In order to raise adequate funds to finance the implementation of the development plans, and also in order to increase domestic savings which is a driving force for the constant growth of an economy, the Korean government since 1962 has encouraged the inflow of foreign capital and has taken various measures to mobilize domestic capital efficiently. First, there was a currency reform on June 10, 1962, the aims of which were to mobilize hoarded capital and use it as industrial funds, and to curb the galloping inflation owing to the increased money supply since 1960.

Second, as already mentioned, interest rates on bank loans and deposits were raised to realistic levels in 1965 in order to accelerate the mobilization of financial savings via boosting time and savings deposits and suppressing disguised demand for bank loans. Time and savings deposits immediately increased and continued to expand. Subsequently, along with

price stabilization, interest rates were reduced step by step to moderate the burdens of enterprises. In 1972 the interest rates were reduced to levels even below those prior to the reform; nevertheless, time and savings deposits continued to grow. Third, the government enforced the "August Economic Emergency Measures" in 1972 to rationalize the supply of funds for enterprises, which were suffering from oppressive interest burdens and low efficiency of capital, because they depended on curb markets for raising funds. With the emergency measures, interest rates of banking institutions were adjusted downward and extant curb market loans were frozen so as to break the bottleneck confronting enterprises.

Foreign capital has definitely played a prominent role in boosting the development of the Korean economy. This has been acknowledged in the literature on Korean economic growth:

"Foreign capital has been chosen by economic planners as the major source of economic development in Korea.... Foreign capital has helped Korea to rise above a low level of income."^{12/}

Accordingly, in the early stage of foreign capital inducement, the government enacted the Law for the Encouragement of Foreign Capital Inducement in 1961, and took the

necessary steps to bring about conditions suitable for introducing foreign capital and coping with the sharply swelling demand for foreign loans. At first there were very liberal conditions for the entry of legitimate foreign loans. Gradually, the government changed its policy from quantitative preference to qualitative screening. After normalization of Korea-Japan diplomatic relations in 1965 and a favorable exchange situation, more emphasis was laid on efficient administration of foreign loans already procured rather than on foreign capital inducement. In light of the exchange risk on the part of enterprises borrowing foreign funds resulting from drastic changes in foreign exchange rates in the 1970's, the government began encouraging direct investment rather than foreign loans.

In the course of Korea's economic development efforts, industrialization and export promotion have been the major policy goals. In fact, export promotion has been advocated as being of first importance among all economic policies, and the primary concern in making policies for trade administration, taxes, financing, and fiscal matters.^{13/} Exports augmented national wealth by earning foreign exchange and increased production and employment through increased demand. In spite of the lack of natural resources needed

for industry, Korea has an abundant supply of labor with a high level of education. To cope with various unfavorable domestic economic factors, the exchange rate was readjusted to a realistic level in 1964. This measure resulted in a drastic improvement in export profitability. Also, the government gave tax concessions and adequate financing at preferential rates to prop export promotion. Various measures were taken to improve trade administration and develop export industries. With these measures, export markets diversified so that the number of countries buying Korean goods increased from 25 in 1961 to 116 in 1973, and commodity exports rose from no more than 32 million dollars in 1960 to 3257 million dollars in 1973.^{14/}

The Korean economy has showed an unprecedented high rate of growth in the years 1962-1973. In this span the average annual growth rate of the economy recorded a high level of 9.6%, a contrast to the 4.4% average annual growth rate during the preceding eight years (1954-61). GNP rose to \$12.4 billion in 1973, 5.9 times the \$2.1 billion dollars in 1961, before economic development plans existed in Korea. The industrial structure of the Korean economy also underwent gradual change until in 1973 it had become similar to that of a developed economy. Between 1961 and 1973, the share

of the primary sector in the overall industry of the country fell from 40.2% to 26.0% while the share of mining and

manufacturing rose from 15.2% to 27.1%, and of social overhead capital and other services from 44.6% to 46.9%.^{15/}

In the light of all these developments, the increase in savings in Korea appears logical. With the rise in national and per capita income as a result of booming export and manufacturing industries in Korea, savings had to increase. This has been acknowledged by the Korea Development Institute:

"Along with the growth of per capita GNP, per capita income has also increased, which in turn, has brought about a sharp rise in the national savings ratio."^{16/}

Seung Hee Kim (1970) has this to say regarding the impact of rising income and of interest rates on saving in Korea:

"The increase in investments and exports contributed to rapid economic growth, and rapid growth in turn brought about a high savings rate and large import requirements.... Domestic savings both in absolute and relative terms have been very low in Korea and reflect the low level of both GNP and per capita income. But domestic savings has started to increase in the past few years as the Korean economy entered a new stage of development. The domestic savings/GNP ratio increased from an average of 3.8% in 1957-61 to 8.0% in 1962-66 and 13.7% in 1967-68. The increase in the savings rate is partly the result of growth itself and partly the result of government policies, most noteworthy of which are financial stabili-

zation programs, interest rate and tax reforms in the 1960's."^{17/}

In considering the interest rate reform in particular, it is important to consider that it was just one feature of a program designed to check inflation and stabilize the

Korean economy:

"The crucial elements in Korea's anti-inflationary financial program can be identified as follows: in the fiscal area they would clearly include the drive to increase the government's internal tax revenue and to implement a realistic pricing policy in regard to public enterprises; in monetary policy, the interest rate reform and the development of indirect monetary control techniques; in balance of payments policy, the implementation of a range of measures -- including the fluctuating exchange rate, the liberalization of import controls, and reform of the tariff system -- directed toward the progressive opening up of the Korean economy."^{18/}

These policies were successful because they were implemented in a balanced and sustained manner.

In 1960, the Korean government began a series of reforms designed to stabilize the economy and promote growth. These reforms included a comprehensive tax reform, a new interest rate policy, and a series of measures to liberalize trade and foreign exchange. The government also implemented a series of measures to control inflation, including a new exchange rate and a series of measures to control the money supply. These reforms were successful in stabilizing the economy and promoting growth, and they laid the foundation for the rapid economic development of the 1960s and 1970s.

CONCLUSION

To sum up the contention of this paper, real savings expanded in Korea during the 1960's primarily because of the increase in output and income effected by vigorous economic development plans and policies. The interest rate reform was one such element in a broad package of policies and it may have initially stimulated the increase in financial assets -- time and savings deposits. But without the sustained increase in income, real saving would never have risen steadily.

FOOTNOTES

1. The Ranis Report estimated the real rate of return in manufacturing to be at least 15% in 1974. Corresponding the recommended nominal interest rate on loans was 17-18 which, if adjusted for an expected rate of inflation of 5%, reduced to a 12-13% real interest rate. The Report points out that nominal rates should be flexible enough to reflect changes in the rate of inflation and changes in the real returns to capital as economic conditions themselves change. See International Labor Office, Sharing in Development: A Programme of Employment, Equity, and Growth for the Philippines (Geneva, International Labor Office, 1974), Chapter 7.
2. International Labor Office, pp. 240-241.
3. For treatment of Korean credit policy during the reforms in greater detail, see S. Kanasa-Thanan, "Stabilizing an Economy--A Study of the Republic of Korea," in International Monetary Fund Staff Papers, Vol. 16 (March 1969), pp. 7-9.
4. A better and more detailed explanation of the measurement and decomposition of gross domestic investment and saving is found in Gilbert T. Brown, Korean Pricing Policies and Economic Development in the 1960's (Baltimore, The Johns Hopkins University Press, 1973), Appendix A.
5. Brown, p. 192.
6. To make the private saving data better suited and more relevant to the analysis of the effect of higher interest rates on savings, Brown adjusted the figures for private saving in the following manner: first, he added the "statistical discrepancy" by which estimates of new investment exceeded estimates of saving to the private saving component of aggregate saving. This was done on the assumption that the excess of estimated investment over saving represented an underestimate of saving. Since the estimates of foreign saving and government saving in the Korean national income accounts tend to be more reliable and accurate than the estimate of

private saving (according to Brown), he supposed that the underestimate was of private rather than foreign or government saving. Hence he concluded that it would be valid to add the statistical discrepancy to private saving. Second, the saving data were adjusted to exclude changes in agricultural inventories in order to equate changes in saving to changes in real interest rates. Brown that changes in agricultural inventories depended primarily on the vagaries of the weather and were so large in some years as to obscure basic trends in saving rates. Therefore, Brown's data for private saving included the statistical discrepancy between measurements of investment and saving each and excluded the increase in agricultural inventories each year.

7. Brown, pp. 193-199.
8. Raymond F. Mikesell and James E. Zinser, "The Nature of the Savings Function in Developing Countries: A Survey of the Theoretical and Empirical Literature," in The Journal of Economic Literature, Vol. XI (March 1973), p. 18.
9. S. Kanesa-Thanan, pp. 10-11.
10. Brown, p. 217.
11. S. Kanesa-Thanan, p. 11.
12. Seung Hee Kim, Foreign Capital for Economic Development--A Korean Case Study (New York, Praeger Publishers, 1970), p.
13. Korea Development Institute, Korea's Economy Past and Present (1975), p. 34.
14. Korea Development Institute, p. 36.
15. Korea Development Institute, pp. 44-46.
16. Korea Development Institute, p. 50.
17. Seung Hee Kim, p.
18. S. Kanesa-Thanan, p. 23.

APPENDIX A

RATES OF INTEREST IN KOREA, 1960-1974

INTEREST RATES ON DEPOSITS OF DEPOSIT MONEY BANKS¹

(% PER YEAR)

Effective From	Time Deposits ²				Passbook Deposits	Notice Deposits	Extra Deposits	Installment		New Household Deposits	Household Deposits
	3 Months	6 Months	1 Year Or Over	2 Years Or Over				Savings Deposits			
1960	1.1	6.0	8.0	10.0	1.8	3.65	1.1	4.0	-	-	-
1961	7.10	6.0	12.0	15.0	1.8	3.65	1.1	4.0	-	-	-
1962	2.1	6.0	12.0	15.0	1.8	3.65	1.1	10.0	-	-	-
1964	3.16	9.0	12.0	15.0	1.8	3.65	1.0	10.0	-	-	-
1965	9.30	18.0	24.0	26.4	1.8	5.00	1.0	30.0	-	-	-
1968	4.1	15.6	20.4	26.4	1.8	5.00	1.0	28.0	12.0	-	-
	10.1	14.4	19.2	25.2	1.8	5.00	1.0	25.0	12.0	-	-
1969	6.1	12.0	16.8	22.8	1.8	5.00	1.0	23.0	9.6	-	-
1971	6.28	10.2	14.4	20.4	1.8	5.00	1.0	21.0	8.7	-	-
1972	1.17	8.4	11.4	16.8	1.8	5.00	1.0	17.0	6.6	-	-
	8.3	6.0	8.4	12.0	1.8	3.65	1.0	12.0	4.8	-	-
1973	5.1	6.0	8.4	12.0	1.8	3.65	1.0	12.0	4.8	-	-
1974	1.24	12.0	13.2	15.0	1.8	3.65	1.0	13.2	4.8	-	-

¹Maximum rates decided by Monetary Board.

²Actual rates agreed upon by the Korean Bankers Association.

APPENDIX A (Continued)

INTEREST RATES ON LOANS AND DISCOUNTS OF DEPOSIT MONEY BANKS¹ (% PER YEAR)

Effective From	Discounts on Bills	Loans for Export Trade	Loans for Suppliers of U.S. Offshore Procurement	Loans on Other Bills					Overdrafts	Loans Overdue	Call Loans	Loans on Installments Savings
				Up to 1 Year	1-3 Years	3-5 Years	5-8 Years					
								Years				
1959	7.15	13.87	-	17.52	-	-	-	18.25	20.0	13.87	17.50	
1962	4.1	13.87	-	16.43	-	-	-	18.25	20.0	13.87	16.43	
	12.1	13.87	6.00	15.70	-	-	-	18.25	20.0	13.87	15.70	
1964	3.16	14.00	6.00	16.00	-	-	-	18.50	20.0	12.0	15.70	
1965	9.30	24.00	6.00	26.00	-	-	-	26.00	36.5	22.0	26.00	
1967	6.29	24.00	6.00	26.00	-	-	-	28.00	36.5	22.0	26.00	
1968	10.1	26.00	6.00	25.20	-	-	-	28.00	36.5	22.0	25.20	
1969	6.1	24.60	6.00	24.00	-	-	-	26.00	36.5	21.0	24.00	
1970	4.1	24.00	6.00	24.00	-	-	-	26.00	36.5	21.0	24.00	
1971	6.28	22.00	6.00	22.00	22.5	23.0	-	24.00	36.5	19.0	22.00	
1972	1.17	19.00	6.00	19.00	19.5	20.0	-	22.00	31.2	19.0	19.00	
	8.3	15.50	6.00	15.50	16.0	16.5	-	17.50	25.0	15.0	15.50	
	10.2	15.50	6.00	15.50	16.0	16.0	16.5	17.50	25.0	15.0	15.50	
1973	5.14	15.50	7.00	15.50	15.5	15.5	15.5	17.50	25.0	15.0	15.50	
1974	1.24	15.50	9.00	15.50	15.5	15.5	15.5	17.50	25.0	15.0	15.50	

¹Maximum rates decided by Monetary Board.

Source: Korean Development Institute, Korea's Economy Past and Present, 1975.

APPENDIX B. TIME-SERIES DATA FOR REGRESSION ANALYSIS

	Sh	Sh/DY	Sh/P	Sp	Sp/DY	Sp/P	Sd	Sd/Y	Sd/P	I	I/Y
1958	40.46	4.4	1734.2	86.08	9.3	3689.5	52.94	5.0	2269.1	187.78	12.9
1959	15.63	1.7	651.2	73.37	7.9	3056.7	43.52	3.9	1813.1	119.20	10.7
1960	-13.53	(1.4)	-547.9	39.22	4.2	1588.2	16.24	1.4	657.6	122.94	10.9
1961	11.08	1.1	434.5	67.25	6.8	2637.5	46.14	3.9	1809.6	154.54	13.0
1962	-35.56	(3.6)	-1355.6	36.15	3.6	1378.1	19.16	1.6	730.4	158.99	13.0
1963	8.02	0.7	297.2	86.44	7.8	3203.0	82.85	6.2	3070.0	245.27	18.5
1964	28.54	2.3	1031.1	99.57	8.1	3597.4	106.87	7.4	3661.2	210.37	14.6
1965	3.56	0.3	125.7	88.36	6.9	3119.3	115.02	7.5	4060.4	231.90	15.1
1966	70.95	5.0	2433.1	155.62	11.0	5336.8	204.08	11.9	6998.6	374.13	21.7
1967	36.36	2.5	1230.8	145.93	9.9	4939.9	221.62	12.0	7502.1	410.18	22.1
1968	29.95	1.9	992.7	153.67	9.6	5093.3	285.01	13.6	9446.5	558.58	26.8
1969	144.06	7.7	4686.7	271.78	14.6	8841.8	421.20	17.5	13702.9	715.92	29.8
1970	88.02	4.5	2800.1	243.20	12.3	7736.6	423.20	16.3	13462.7	704.66	27.2
1971	81.94	3.8	2574.5	240.51	11.0	7556.6	411.00	14.5	12913.2	722.29	25.6
1972	114.45	4.9	3536.8	334.96	14.3	10351.0	452.08	15.0	13970.3	630.76	20.9
1973	283.74	10.6	8623.0	614.52	23.0	18675.6	775.64	22.1	23572.1	922.61	26.3
1974	267.42	9.1	7992.5	621.02	21.2	18560.6	735.70	19.3	21988.1	1187.60	31.2
1975	155.39	5.0	4480.6	526.01	17.1	15167.1	743.92	18.0	21450.4	1127.05	27.3

APPENDIX B (Continued)

	I/P	Y	$\bar{Y}$	$\bar{Y}/P$	DY	$\overline{DY}$	$\overline{DY}/P$	n	P	i
1958	5905.4	207.19	1067.15	45739.6	178.62	920.72	39463.4	12.0	-0.5	12.5
1959	4966.0	221.00	1108.33	46174.6	184.60	927.64	38646.8	11.1	2.6	8.5
1960	4978.3	246.34	1129.72	45746.9	204.31	937.20	37951.0	10.0	9.5	0.5
1961	6060.9	297.08	1184.48	46453.8	248.22	988.92	38784.2	12.5	15.1	-2.6
1962	6061.1	348.89	1220.98	46547.2	283.62	991.68	37805.6	15.0	13.9	1.1
1963	9088.4	488.54	1328.31	49220.4	406.26	1103.97	40907.5	15.0	28.7	-13.7
1964	7600.6	700.20	1441.99	52098.8	600.18	1234.94	44618.1	15.0	32.1	-17.1
1965	8186.5	805.32	1529.70	54001.5	670.67	1275.04	45011.5	17.8	8.2	9.6
1966	12830.2	1032.45	1719.18	58956.8	847.75	1412.92	48454.0	26.4	14.1	12.3
1967	13885.1	1269.95	1853.01	62726.7	1010.88	1475.74	49955.6	26.4	14.2	12.2
1968	18513.8	1598.04	2087.12	69176.4	1227.38	1602.32	53108.0	26.1	11.8	14.3
1969	23291.0	2081.52	2400.49	78095.2	1618.55	1866.84	60733.9	23.8	13.2	10.6
1970	22416.4	2589.26	2589.26	82368.7	1972.27	1972.27	62741.2	22.8	15.3	7.5
1971	22693.5	3151.55	2826.82	88815.5	2428.68	2178.19	68436.3	21.6	11.5	10.1
1972	19492.0	3860.00	3023.63	93437.3	2990.60	2341.90	72370.2	14.8	14.5	0.3
1973	28038.6	4901.67	3507.45	106593.2	3735.09	2673.65	81253.6	12.0	9.4	2.6
1974	35494.2	6747.07	3811.27	113908.7	5176.32	2924.47	87404.6	15.0	26.7	-11.7
1975	32497.6	9080.33	4129.32	119065.8	6765.91	3076.81	88717.4	15.0	24.2	-9.2

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