This paper investigates whether there are any systematic links between domestic savings and export growth in light of the Korean experience, beginning with the early 1960s when trade policy shifted from an inward to outward orientation. The paper also examines how domestic investment might have been affected by the trade reforms. The study reveals that the impressive growth of Korea's domestic savings over the 1960-95 period owes in no small part to the trade reforms and the subsequent rapid growth of exports. Evidence also suggests that the long-lasting investment boom experienced by Korea over the 1960-95 period was initiated and maintained to a significant degree by the trade reform of the 1960s and thereafter. [F43, E21]

1. INTRODUCTION

It has been thought that trade reform primarily affects the allocative efficiency of resources rather than the rate of resource accumulation or technical progress, since it is fundamentally designed to rectify distortions between domestic and international prices. This belief led to an early argument that trade reform is likely to have a once-and-for-all level effect on income of a static nature, but not a long-run growth effect of a dynamic nature.

Yet numerous empirical studies\(^1\) including cross-country and individual country studies,
have invariably pointed to evidence showing strong links between the degree of openness to an international flow of goods and services and the growth performance of the individual countries concerned. A number of channels through which trade reform might have influenced growth performance in these economies have been put forth in the literature. Among the most frequently cited channels are: positive impact on factor accumulation and employment, diffusion of international information and production technologies, easier access to cost-effective imported capital goods of newer vintage, increased efforts toward labor training and research and development, and a better chance of having a general policy environment conducive to growth, etc.²

The purpose of this study is to explore the role of trade policy in capital accumulation in light of the Korean experience, beginning with the early 1960s when policy shifted from an inward to outward orientation. More specifically, this paper investigates whether there are any systematic links between growth in domestic savings and growth in exports, and how domestic investment might have been affected by the trade reform.

To set the stage, Section 2 briefly reviews the trend of Korea’s saving and investment in relation with its growth performance over the 1960-95 period. Section 3 then investigates possible links between mobilizing domestic savings and exports, and Section 4 provides an assessment of the role of outward-oriented trade policy in supporting a long-lasting investment boom in Korea. Finally, Section 5 provides concluding remarks.

2 SAVINGS AND INVESTMENT: A TREND IN KOREA

Table 1 presents Korea’s gross domestic saving, investment rates, and GDP growth rates compared with other East Asian economies and Upper-Middle-Income and High-Income groups as reported by the World Bank over the 1965-95 period. As can be seen, Korea had a gross

²For an excellent review on this subject, see Krueger (1980 and 1985), World Bank (1987 and 1993), Bhagwati (1996), and Srinivasan (1996). See also Coe and Helpman (1995), and Coe and Helpman and Hoffmaister (1997) for the effect of trade on technological changes.
domestic saving rate of only 8 percent of GDP as of 1965, the lowest among the sample countries and income groups. Since then, however, the saving rate has steadily risen, reaching over 36 percent by 1995, the highest among the sample countries, excluding Singapore, which has been known for forced savings led by the government.

Korea’s gross domestic investment rate was the lowest among the East Asian sample economies or income groups as of 1965. Its rate was only 15 percent of GDP but since then it has grown to more than 37 percent of GDP by 1995: the highest level among the sample economies or income groups. An important feature is that despite its unusually fast growth, the domestic savings were never able to meet the galloping domestic demand for investment during most of the 1960-95 period. This required imports of foreign capital to fill up the domestic saving-and-investment gap. Foreign savings played a particularly important role in the 1960s and 1970s, and though Korea had a brief period of current account surplus for 1986-89, it still remained as a net capital importer, borrowing about one percentage point of GDP on average for the first five years of the 1990s.

Table 2 provides information on how domestic investments have been financed in Korea over the 1960-95 period. As can be seen, as of 1960, the gross domestic investment of 11 percent of GDP was financed mostly by the net transfer from the rest of the world, with only less than one percentage point financed by national savings. Even in 1965, about half of the domestic investment of 15.1 percent of GDP was financed by the net transfer from abroad, coming mostly from the United States as grant-in-aids. Since the late 1960s, however, foreign borrowing began to replace the grant-in-aid type of transfers from abroad as a major source of foreign savings; in the later half of the 1970s, nearly one third of domestic investment, which amounted to about 10 percent of GDP, was financed by the foreign borrowing. Since the mid-1980s, almost all domestic investments have been financed by national savings. Another important feature shown in table 2 is the savings by the government sector. This has played a significant role in raising the overall domestic saving rates for the 1960-95 period. The government sector’s saving, which registered a negative 2.1 percent of GDP in 1960, steadily increased over time, reaching more than 10 percent of GDP by 1995. Simultaneously, the private sector’s saving rose to 25.5 percent of GDP in 1995 from 2.9 percent of GDP in 1960. As a result, the national saving rate, which
 registered a meager 0.8 percent of GDP in 1960, increased to more than 36 percent of GDP by 1995.

3. DETERMINANTS OF SAVING: DOES EXPORT MATTER?

There are a number of studies by different authors for various sample periods investigating the determinants of Korea’s saving behavior. However, only a couple of studies, have examined the role of exports as a potential determinant of saving for Korea. Before discussing the role of exports in saving growth, it may be worthwhile to make a brief review of what has been found as important variables in determining domestic saving in Korea.

First of all, according to Yusuf and Peters’ (1984) study, four variables, out of many more variables tested against data for 1965-81, stand out as the most important determinants of domestic savings for Korea. They include current or permanent income, income growth rate, inflation rate, and the real interest rate on time deposit. Both current and permanent incomes proved to be significant variables but current income performed better than permanent income in the regressions. The importance of the income growth variable supports the view suggested by the so-called “ratchet” theories in which individuals are assumed to adjust their consumption slower than their income growth. A positive relationship that exists between savings and inflation rate was argued as the evidence confirming the importance of the government’s occasional reliance on the inflation tax to increase flow of resources into investment. Despite the dubious role the real interest rate played as a determinant of domestic saving, as found in some earlier studies for Korea, the real time deposit rate turned out to be a significant incentive to encourage domestic savings.

Using a very different approach, namely sectoral accounting method, Nam (1988) also estimated saving functions for Korea with a data set for 1963-84, and found that income

variables, especially income growth rate, explained most of the changes in domestic saving rates. This finding was later confirmed by Edwards’ (1995) cross-country study with panel data for 36 countries, from 1970 to 1992. Nam also found that the real interest rate played a significant role in domestic savings in Korea.

More recently, Collins (1994) attempted to distinguish between anticipated and unanticipated real income by estimating saving functions for Korea with a data set for 1971-88. She found that they fit Korean savings data significantly better than formulations that simply included real income, confirming a life-cycle theory that the propensity to save out of unanticipated transitory income should be larger than the propensity to save out of anticipated and relatively permanent income. Collins also found a positive, and statistically significant, relationship between saving and real interest rates, but the quantitative impact of changes in the real interest rate was not that large.\(^4\)

Studies such as the ones mentioned above, however, provide little guidance as to potential links that may exist between saving and trade reform. This reflects the difficulty of introducing trade-reform-related variables like exports as an explicit independent variable in addition to real income in saving functions due to the possibility of a high correlation between them. In fact, the presence of a high correlation between exports and income prevented Yusuf and Peters (1984) from testing the importance of exports as a determinant of saving in their study for Korea.

Undoubtedly, the major impact of trade reform on saving is likely to be realized through its effect on income, which can be affected by a variety of channels as mentioned before. Trade reform can generate additional real income, and to the extent that the marginal propensity to save exceeds the average propensity to save, the additional increase in real income obtained by the trade reform would help raise the average propensity to save. This argument may hold true especially for an economy suffering from underutilized resources.

Maizels suggested another avenue through which trade reform may help raise domestic savings further (1968: 58): a greater-than-average share of income generated by exports may be

\(^4\) For instance, if the real interest rate were to double from, say, 5 percent to 10 percent, total saving would increase by just less than 1 percent of GNP.
Maizels argued this possibility because the propensity to save could be higher in the export sector than elsewhere, government savings could rely heavily on foreign trade, and a sustained growth in exports could result in a rise in the marginal savings propensities in other sectors. For example, Maizels tested his hypothesis dealing with these “direct effects” of exports on saving by fitting following equations to the data by country.

\[ S_t = a_0 + a_1 Y_t + u_t \]  
\[ S_t = b_0 + b_1 (Y_t - X_t) + b_2 X_t + u_t \]

where \( S_t \) = the gross domestic saving, \( Y_t \) = the gross domestic product, \( X_t \) = the value of exports, all in constant prices, and \( u_t \) = the stochastic term. His test covered 11 nations, mostly primary-exporting nations, with a sample period of 10 to 11 years from the early 1950s to early 1960s. The estimation result led him to conclude that “the regression results can reasonably be taken as supporting the view . . . that there is likely to be a positive association in many primary-exporting countries between exports and saving (1968: 96).”

Lee (1971) later tested Maizels’ hypothesis with a much larger sample of 28 countries, including 20 developing countries and a longer data period of up to 17 years (1950-67). The results by and large confirmed Maizels’ hypothesis. In the meanwhile, Laumas (1982) estimated equations (1) and (2) using a time-varying parameter model for 40 countries with data spanning a period of 21 years (1955-75), finding that in as many as 23 out of 25 primary-exporting countries, the marginal propensity to save out of exports was greater than the marginal propensity to save out of the domestic sector, but this was true only in 8 out of 15 non-primary exporters.

Empirical evidence in the literature appears to support Maizels’ hypothesis for primary exporting countries but is ambiguous regarding non-primary exporting countries. Interestingly enough, Lee (1971) and Laumas (1982) provided mixed evidence for Korea. While Lee provides an estimate of the marginal propensity to save out of exports which is insignificant, Laumas provides an estimate which is statistically significant. In addition, Laumas’ estimate of the marginal propensity to save out of exports was also numerically much larger than of the
marginal propensity to save out of non-export GDP. However, such differences may have resulted from different policy environments that prevailed for the sample period covered in each study. Considering that major trade reforms took place in Korea around the mid-1960s, with, for example, exchange rate devaluation of 1961 and 1964, by almost one hundred percent each, and significant lift of import controls in 1967, Lee’s data period (1955-68) appears to overlap mostly with an inward-oriented period of the trade regime whereas Laumas’ data period (1955-75) includes both inward- and outward-oriented periods, roughly half and half each.

In fact, there are reasons to believe that the trade reform undertaken in the early to mid-1960s and ensuing rapid growth in exports might have profoundly affected the pattern of domestic savings in a number of ways other than its effect on real income. First of all, the trade reform would have made exports more profitable relative to domestic sales due to increases in export prices relative to domestic prices, opening up vast and lucrative export-oriented investment opportunities for domestic firms. This would have encouraged firms to mobilize resources through all possible means of saving to finance their investment projects, including internal savings. In fact, corporate-sector saving played a dominant role in Korea in mobilizing domestic resources for investment, especially in the 1960s and 1970s, making up more than a half and a third of national savings in the respective periods (see Nam 1988: 3).

Second, increased real income due to export growth may be perceived as temporary or transitory by domestic households and firms because export earnings tend to be heavily influenced by many factors that are beyond the control of exporters, such as the world market conditions and movements in real exchange rates. In fact, a simple calculation reveals that the variance of real growth rate of export earnings was more than twelve times larger than that of non-export GDP, whereas the mean value of export growth rates was only three times as large as that of non-export GDP growth rates for the 1960-96 period. Thus, to the extent that an increase in export earnings is perceived by households and firms as unanticipated, the marginal propensity to save out of an increase in export earnings is likely to be larger than that for an increase in non-export GDP. As was already mentioned, Collins’ (1994: 243) estimation results

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5 The mean values of real growth rate of GDP, of non-export GDP, and of export GDP, are estimated at 8.3 percent, 6.7 percent and 19.2 percent respectively for the 1960-96 period, whereas the corresponding variances are estimated at 10.9, 15.1 and 190.1, respectively, for the same period.
for Korea’s savings function suggest that a one percent increase in anticipated real income raises savings by just 0.05 percent of the GDP, but a one percent in real income that is unanticipated raises the savings rate by more than ten times as much, 0.6 percent of the GDP.

Finally, another potential link between domestic savings and exports may be found in government sector’s savings in Korea. As can be seen from table 2, the government sector’s savings has emerged as a significant contributor to the national savings, from a negative 2.1 percent in 1960 to more than 10 percent in 1995. Thus, to the extent that the government sector’s savings did not crowd out private sector’s savings, the government sector would have contributed to raising national savings rate. No negligible part of the government sector’s savings, however, has come from the collection of custom duties on imports. Despite continued reductions in tariff rates and the elimination of other import barriers in Korea over the 1960-95 period, tariff revenue has persistently comprised greater than 10 percent of total tax revenue, due mainly to rapidly increasing imports. Thus, considering the tax burden ratio to GDP has been on average around 20 percent of the GDP in this period, it appears that the rapid growth of exports, and hence imports, at most, could have contributed to domestic saving growth by as much as 2 percent of the GDP.

For the reasons discussed above, it appears that the Maizels’ hypothesis, generally accepted as well-supported by empirical evidence for primary exporting countries, may well be supported by other countries that have undergone a trade reform from inward to outward orientation.

In what follows, we address the importance of export in the time-series dynamics of savings in Korea. For this purpose, we employ the impulse-response analysis and the variance decomposition analysis based on the vector autoregression (VAR) models for the logs of export, income (Gross Domestic Product), and savings (Gross Domestic Saving). Our data set consists of annual observations on each of these series for the period 1960-1996. For each series we could not reject the null hypothesis of a unit root at a 5% significance level. Based on the Johansen test for cointegration, two cointegrating vectors were detected. Thus, in the presence of

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6. The time-series data were obtained from the Bank of Korea, National Income Accounts (Seoul, 1984) and National Accounts (Seoul, 1996). The GDP deflator was used to compute constant values for these data.
cointegration among the three variables at hand, inferences would have to be made based on an error-correction VAR model. However, considering that we have only a limited number of observations for each series we present results based on both the VAR model and the error-correction VAR model. Actually, inferences were robust with respect to alternative VAR models employed. Even though we have only 37 observations for each series, we expect that the results summarized below might provide us with at least a partial clue to the importance of export in the savings dynamics. The ordering of the variables for the VAR models are given by export, income, and savings.

For the first differenced series (growth rates), a VAR(1) model was selected as optimal on the basis of the Akaike information criterion. The three rows in Figure 1.A depict responses of $\Delta \ln X_{t+k}$, $\Delta \ln Y_{t+k}$, and $\Delta \ln S_{t+k}$, $k=1,2,\ldots,10$, to one standard-error shocks in $\Delta \ln X_t$, $\Delta \ln Y_t$, and $\Delta \ln S_t$. Of particular interest is the first two graphs in the third row of Figure 1.A, which depict the responses of savings growth to one standard error innovations in the export growth and the income growth, respectively. A unit shock to the export growth or a unit shock to the income growth increases the savings growth one year later and that increase is significant. Figure 1.B depicts the variance decompositions of k-step-ahead (k=1, 2, ..., 10) forecast errors in export growth, income growth, and savings growth. The decomposition of the forecast error variance for the savings growth depicted in the third row of Figure 1.B reveals the relative importance of the export growth shock, the income growth shock, and the savings growth shock in the forecast error variance of the savings growth. Figure 1.B suggests that about 25% of the long-run forecast error variance of the savings growth is due to the export growth and about 47% is due to the income growth.

Figures 2.A and 2.B report similar results based on a VAR(2) model for the level data. (As a VAR(1) model is optimal for the first differenced data, a VAR(2) model is optimal for the level data.) The first two graphs in the third row of Figure 2.A show a positive response of savings that is significant in response to a unit increase in export or to a unit increase in income. The third row of Figure 2.B shows that about 20% of the long-run forecast error variance of savings is due to the export shock and about 55% is due to the income shock.

Figures 3.A and 3.B summarize the impulse-responses and the variance decompositions
obtained from an error-correction VAR(1) model in the presence of two cointegrating vectors. The results are both qualitatively and quantitatively almost indistinguishable from those in Figures 2.A and 2.B which are based on a VAR model in the level data. As mentioned earlier, the empirical results seem to be robust with respect to alternative VAR models employed and they seem to provide evidence in favour of an important, if not major, role of export in the time series dynamics of savings in Korea for the sample period covered. Shocks to export or the export growth seems to account for about 20-25% of the forecast error variance of savings or the savings growth in the long run.

It is well known that Korea’s major trade reforms took place in the 1960s, though import liberalization was a continuing process. As a consequence, the export to GDP ratio continued to rise from a mere 3 percent in 1960 to 20 percent in 1972, reaching a peak of 40 percent in 1987, and then began to decline back to 33 percent by 1995. Thus, exports appears to have contributed toward lifting up saving rates in Korea ever since the trade reform took place in the early 1960s for almost three decades, until 1987 when the export to GDP ratio began to fall. Since then, the relatively sluggish growth in exports appears to have helped slow down the saving rates in Korea. The gross domestic saving to GDP ratio, which started from a negligibly small level in 1960, less than one percent, continued to rise to over 16 percent in 1972, reaching a peak of over 39 percent in 1988, and then declined down to 37 percent by 1995.

In conclusion, it seems plausible that the impressive growth of Korea’s domestic savings over the 1960-95 period owes in no small part to the trade reforms undertaken in the early 1960s and onward and the subsequent rapid growth of exports.

4. INVESTMENT UNDER OUTWARD ORIENTATION

In a closed economy, domestic investment is necessarily constrained by domestic saving capacity. But in an open economy, domestic capital formation can be financed by foreign borrowing or foreign direct investment as well. Indeed, there appears to have been no shortage of investment demand in Korea for the 1960-95 period. Realized domestic investment has exceeded
the domestic savings capacity ever since 1960, except for a brief period of trade surplus for 1986-89, despite a sustained and phenomenal increase in domestic savings for the 1960-95 period. Undoubtedly, such a rapidly rising and high level of domestic investment has been a major factor behind the rapid growth of the Korean economy since the early 1960s. A natural question to be asked is then what would have caused such a long lasting investment boom for the Korean economy?

An authentic argument is that the policy shift toward outward orientation in the early 1960s must have played a pivotal role in placing the Korean economy into a virtuous circle of growth, almost perpetuating an investment boom as long as export intensity in GDP kept rising (see World Bank 1993). As export demand increases, for instance, as a result of a policy shift to outward orientation, not only does domestic production respond to it but its derived demand for capital also spurs investment, which in turn contributes to increased domestic income and savings. Increased domestic savings, then, enable the economy to meet even greater demands for investment, increasing export potential of the economy further.\textsuperscript{7} This virtuous circle of growth appears to have been well set into motion in Korea with the early 1960s’ trade reform, in which export incentives were set realistic enough to make exporting labor intensive products a profitable business. Moreover, the government’s commitment to export promotion was strong enough to convince the domestic business sector where their future investment opportunities would lie.

Table 3 presents a trend in domestic capital formation and exports, both as a proportion of GDP, and trend in real GDP growth rates, all by five-year averages over the 1956-95 period. Several salient features are to be noted. First, export response to the trade reform of the 1960s was rather quick: the export to GDP ratio which was averaged at 3.0 percent in 1956-60 jumped to 6.8 percent in 1961-65 and then to 14.1 percent in 1966-70, more than doubling every five-

\textsuperscript{7} Not all agree with this argument, however. Rodrik (1995), for example, categorically dismisses this argument for Korea, claiming that the increase in the relative profitability of exports during the 1960s was too insignificant to account for the export boom that ensued, and that exports were initially too small to have a significant effect on aggregate economic performance. He argues, instead, that a more important cause of growth should be found in the investment boom that took place independent of the trade reform in the 1960s. It is solely based on initial conditions such as the presence of a well educated labor force and equality in income and wealth. This was thus called a predestination view by page (1994: 233). What follows in the remainder of this section will show that Rodrik is wrong in arguing that Korea’s investment boom has nothing to do with the trade reform of the 1960s.
year period. By contrast, the investment to GDP ratio responded much slower initially, increasing from 10.6 percent on average in 1956-60 to 13.0 percent in 1961-65, but then jumped to 23.6 percent in 1966-70, suggesting that an export boom activated by the trade reform led to an investment boom, concurrently or subsequently. Investment responded vigorously only after export growth moved into a higher gear in the later half of the 1960s.

Second, the GDP growth rate also accelerated as exports and investment picked up. It rose from an average rate of only 3.3 percent in 1956-60 to 6.4 percent in 1961-65 and then to 11.2 percent in 1966-70, allowing for even faster growth in domestic savings. As was already seen from table 2, the national savings rate rose from a negligibly small level of 0.8 percent of savings comprised 9 percent of the GDP in 1970, of which 7 percentage points came in the form of loans. To be sure, such a large amount of foreign borrowing would not have been possible were export earnings not been growing fast enough under the outward-oriented trade regime.

In fact, when exchange rates are appropriately set under outward orientation, a small economy like Korea, exporting mostly manufactured products, is likely to be met by a rather elastic world demand for its exports. Hence, realized investment in Korea is most likely to have been constrained not by demand for investment, but by the capacity of domestic savings and the ability to borrow from abroad. Both of these savings sources must have heavily benefited from the rapid growth of exports under outward orientation.

Finally, investment in fixed capital formation in Korea continued to rise, reaching a peak of 36.3 percent of the GDP on average in 1990-95. Exports peaked off from a historical high of 37.9 percent on average in 1986-90 to 30.6 percent in 1991-95 though their absolute value continued to rise. This suggests that Korea’s demand for investment no longer critically hinged on the prospect of export growth as it had before.

All of these seem to suggest that Korea’s long-lasting investment boom was in a significant way affected by the trade reform of the 1960s and onward, which helped increase domestic savings and the capacity to borrow from abroad. In addition, the positive impact of the trade reform on the rate of return to investment appears also to have helped stimulate and induce domestic investment demand further, at least until very recently.

Following the Stolper-Samuelson theorem, one may be led to believe that trade
liberalization in a labor-abundant economy results in a rise in real wage but a decline in capital rental rate, and hence a decreased demand for domestic investment. However, Korea’s and Taiwan’s experiences show that both wage rate and rental rate can rise for at least a sustained period ensuing their trade reforms, possibly due to economic gains that can be reaped from the trade reforms.

According to Hong’s (1981, table 15) estimation, for instance, the average rate of real return on fixed capital in Korean manufacturing was only 12 percent in 1954-61, in terms of the most conservative measure, but rose to 17 percent in 1962-66, then to 26 percent in 1967-71 and 27 percent in 1972-76. According to Kwak’s (1994: 64) estimation, however, the real rate of return on capital appears to have turned into a declining trend by the late 1970s; it averaged at 21 percent for the 1972-79 period, and lower at 14.2 percent during the 1980-90 period. Needless to say, real wages continued rising throughout the entire period of 1960-95 with an annual average growth rate of 7.6 percent in Korean manufacturing. Taiwan’s experience shows a similar trend to Korea.  

Trade reform might also have influenced domestic investment through its effect on the price level of domestic or imported capital goods. Like many other countries, the Korean government has tried to keep the price level of capital goods as low as possible by using any available means at its disposal, including fiscal, financial and trade policy measures. Thus, trade liberalization in Korea has long meant first lifting import barriers on capital goods. During the heavy-and-chemical-industry investment drive in the 1970s, subsidies were provided to induce investment and even exchange rates were kept overvalued to prevent the domestic price of imported capital goods from rising, despite inflationary pressure much higher at home than abroad.

Table 4 presents a long-term trend in the price of capital goods, in the domestic wholesale price index and in the import price index as well as its relative ratio to the overall wholesale price

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8 According to Kuo and Fei (1985: 57), the average rate of profit in manufacturing was estimated at 8.9 percent in 1951-53 but steadily rose to 27.9 percent in 1960-62 and then to 35.8 percent in 1969-70. Kuo and fei argue that rapid industrialization under outward orientation largely caused this rise. They also observe that the real interest rate in Taiwan declined from 20.8 percent in 1951-53 to 11.5 percent in 1960-62 and then to 9.1 percent in 1969-70 due to ever-rising domestic savings. They conclude that the availability of low cost funds together with high profitability in manufacturing spurred the long lasting investment boom in Taiwan.
index for the 1965-95 period. No doubt, the figures are subject to a considerable degree of error since there must have been significant changes in quality and in the composition of capital goods over the 1965-95 period. Nonetheless, they are revealing on several accounts. First, the relative price of capital goods to the overall wholesale price index shows a significant decline over the 1965-95 period. However, a major drop occurred over the 1970s, from 1.00 in 1970 to 0.62 in 1980 but there has been little change since then. This suggests that major changes in the price structure of the Korean economy took place during the 1970s, reflecting two oil-price shocks, farm-price supports, and removal of trade barriers on imported capital goods.

Second, the decline in the relative price of imported capital goods to the overall wholesale price index is even more dramatic: it declined from 0.97 in 1970 to 0.34 in 1980 and then rose to 0.43 by 1990 but declined again back to 0.36 by 1995. This could largely be a result of the realignment of international price structures in the aftermath of the two oil-price shocks and the misalignment of the won-dollar exchange rate, but it could also partly be a result of technological innovations, particularly, in producing capital goods, achieved by industrial countries.

Finally, given such a significant decline in the relative price of imported capital goods, it is not too surprising to find a rising share of capital goods in Korea’s total imports: the share averaged at 16.1 percent in 1961-65 rose to 28.7 percent in 1976-80 and then to 38.0 percent in 1990-95 (see table 5). In value terms, the expenditures on importing capital goods amounted in current prices to U.S. $42.5 million (2 percent of GNP) in 1961, rose to U.S. $6.2 billion (11.2 percent of GNP) in 1995, comprising roughly a third of total investment expenditure made in the respective years. No doubt, such a large amount of capital goods imported over such a long period of time would not have been possible without early lifting of import barriers on capital goods and without rising export earnings generated under outward orientation.

5. CONCLUDING REMARKS

Traditionally, it has been thought that trade reform affects domestic savings mostly through its positive effect on real income that can be obtained by various static and dynamic
efficiency gains with which it is associated. But the study suggests that an increase in exports can also directly affect the savings behavior of households, firms and government to augment domestic savings through a variety of channels.

Evidence also seems to suggest that the long-lasting investment boom experienced by Korea over the 1960-95 period was initiated and maintained to a significant degree by the trade reform of the 1960s and thereafter. The virtuous circle of growth, initially ignited by the surge of exports, appears to have been well under operation until the late 1980s when the export to GDP ratio began to fall causing a decline in the domestic saving rate.

The investment boom also appears to have been supported by the high and rising rate of returns to investment, for at least a couple of decades following the trade reform of the 1960s, contrary to what would have been predicted by the Stolper-Samuelson theorem. Furthermore in the 1970s, the significant drop in the price of capital goods, in both absolute and relative terms, seems to have boosted domestic investment demand to substitute labor for capital.
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Lee, Joong-Koon, “Exports and the Propensity to Save in L.D.C.s,” The Economic Journal,
June 1971, 341-351.
Table 1. Saving, Investment and Growth in East Asian Economies (in % of GDP)

<table>
<thead>
<tr>
<th></th>
<th>Gross Domestic Saving</th>
<th>Gross Domestic Investment</th>
<th>Real Growth Rate of GDP</th>
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<tr>
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<td>Japan</td>
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<td>31</td>
<td>31</td>
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<tr>
<td>Upper-Middle-Income c</td>
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<tr>
<td>High-Income</td>
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<td>23</td>
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</table>


b 1994 figure.

c There are large changes in the country composition of Upper-Middle-Income groups between the two sub-periods of 1965-80 and 1980-95.
Table 2. Financing Sources of Korea’s Gross Domestic Investment, 1960-95
(in percent of GDP)

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross Domestic Investment</th>
<th>National Saving</th>
<th>Foreign Saving</th>
<th>Statistical Discrepancy</th>
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</thead>
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<td>Private</td>
<td>Government</td>
<td>Net transfer</td>
<td>Net Borrowing</td>
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<td>1960</td>
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<td>2.9</td>
<td>-2.1</td>
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<td>1965</td>
<td>15.1</td>
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<td>1970</td>
<td>25.0</td>
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<td>1975</td>
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<td>15.1</td>
<td>3.6</td>
<td>1.1</td>
</tr>
<tr>
<td>1980</td>
<td>30.5</td>
<td>15.6</td>
<td>5.7</td>
<td>0.7</td>
</tr>
<tr>
<td>1985</td>
<td>29.6</td>
<td>22.3</td>
<td>5.7</td>
<td>3.4</td>
</tr>
<tr>
<td>1990</td>
<td>36.9</td>
<td>27.1</td>
<td>8.4</td>
<td>0.7</td>
</tr>
<tr>
<td>1995</td>
<td>37.0</td>
<td>25.5</td>
<td>10.5</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Table 3. Capital Formation, Exports, and GDP Growth in Korea

<table>
<thead>
<tr>
<th>5 Year Average&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Gross Fixed Capital Formation (as % of GDP)</th>
<th>Exports of Goods and Services (as % of GDP)</th>
<th>Real GDP Growth Rate (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1956-60</td>
<td>10.6</td>
<td>3.0</td>
<td>3.3</td>
</tr>
<tr>
<td>1961-65</td>
<td>13.0</td>
<td>6.8</td>
<td>6.4</td>
</tr>
<tr>
<td>1966-70</td>
<td>23.6</td>
<td>14.1</td>
<td>11.2</td>
</tr>
<tr>
<td>1971-75</td>
<td>24.1</td>
<td>24.5</td>
<td>8.0</td>
</tr>
<tr>
<td>1976-80</td>
<td>30.6</td>
<td>31.1</td>
<td>7.2</td>
</tr>
<tr>
<td>1981-85</td>
<td>28.5</td>
<td>36.5</td>
<td>8.1</td>
</tr>
<tr>
<td>1986-90</td>
<td>30.8</td>
<td>37.9</td>
<td>10.0</td>
</tr>
<tr>
<td>1991-95</td>
<td>36.3</td>
<td>30.6</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Sources: The Bank of Korea, Economic Statistic Yearbook, various years.

<sup>a</sup> Each percentage estimate is a simple average of underlying ratios and growth rates measured by year for five years.
Table 4. **Trend in the Relative Price of Capital Goods in Korea, 1965-95**

<table>
<thead>
<tr>
<th>Year</th>
<th>Wholesale Price Index</th>
<th>Import Price Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Items</td>
<td>Capital Goods</td>
</tr>
<tr>
<td>1965</td>
<td>100</td>
<td>100 (1.00)</td>
</tr>
<tr>
<td>1970</td>
<td>146</td>
<td>146 (1.00)</td>
</tr>
<tr>
<td>1975</td>
<td>349</td>
<td>285 (0.74)</td>
</tr>
<tr>
<td>1980</td>
<td>786</td>
<td>484 (0.62)</td>
</tr>
<tr>
<td>1985</td>
<td>1,008</td>
<td>642 (0.64)</td>
</tr>
<tr>
<td>1990</td>
<td>1,084</td>
<td>752 (0.69)</td>
</tr>
<tr>
<td>1995</td>
<td>1,266</td>
<td>842 (0.67)</td>
</tr>
</tbody>
</table>

Source: Bank of Korea, Economic Statistics Yearbook, various years.

*Inside the parentheses represented the ratio of capital goods price index to the wholesale price index for all items.*
Table 5. Imports of Capital Goods and Others in Korea, 1961-95
(as % of total import)

<table>
<thead>
<tr>
<th>5 Year Average</th>
<th>Capital Goods</th>
<th>Raw Materials</th>
<th>Consumer goods and Others</th>
<th>Crude Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961-65</td>
<td>16.1</td>
<td></td>
<td>83.9&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>1966-70</td>
<td>31.2</td>
<td></td>
<td>68.8&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>1971-75</td>
<td>27.9</td>
<td>43.7</td>
<td>17.7</td>
<td>10.7</td>
</tr>
<tr>
<td>1976-80</td>
<td>28.7</td>
<td>41.8</td>
<td>11.3</td>
<td>18.2</td>
</tr>
<tr>
<td>1981-85</td>
<td>29.5</td>
<td>38.3</td>
<td>10.7</td>
<td>21.5</td>
</tr>
<tr>
<td>1986-90</td>
<td>36.2</td>
<td>42.4</td>
<td>12.8</td>
<td>8.6</td>
</tr>
<tr>
<td>1991-95</td>
<td>38.0</td>
<td>39.4</td>
<td>12.7</td>
<td>9.9</td>
</tr>
</tbody>
</table>


<sup>a</sup>The number represents raw materials, consumer goods and others, and crude oil combined.
Figure 1.A. Impulse-Response Analysis (along with Two Standard-Error Confidence Bands): VAR(1) in Growth Rates

Note: $[D(LNX) = \Delta \ln X; D(LNS) = \Delta \ln S; D(LNY) = \Delta \ln Y]$
Figure 1.B. Variance Decomposition: VAR(1) in Growth Rates

Note: $[\Delta \ln X; \Delta \ln S; \Delta \ln Y]
Figure 2.A. Impulse-Response Analysis (along with Two Standard-Error Confidence Bands): VAR(2) in Levels

Note: [LNX = lnX; LNS = lnS; LNY = lnY]
Figure 2.B. Variance Decomposition: VAR(2) in Levels

Note: [LNX = lnX; LNS = lnS; LNY = lnY]
Figure 3.A. Impulse-Response Analysis: Error-Correction VAR(1)

Note:  \[\text{LNX} = \ln X; \text{LNS} = \ln S; \text{LNY} = \ln Y\]
Figure 3.B. Variance Decomposition: Error-Correction VAR(1)

Note: \[D(LNX) = \Delta \ln X; D(LNS) = \Delta \ln S; D(LNY) = \Delta \ln Y\]