Do Capital Controls Affect the Response of Investment to Saving? Evidence from the Pacific Basin

Sun Bae Kim

Economist, Federal Reserve Bank of San Francisco. I am grateful to Reuven Glick, Michael Dooley, and the editorial committee of Brian Cromwell, Mark Levonian, and Ramon Moreno, for their numerous helpful comments and suggestions. I also wish to thank Gregory Holmes for his valuable research assistance.

This paper examines the effect of capital controls on the response of investment to savings in Pacific Basin countries. A robust finding is that the size of the savings coefficient tends to be smaller (larger) in countries with relatively higher (lower) capital controls. Additionally, relaxation in capital controls for the most part had no discernible impact on the savings-investment relationship in individual country time-series regressions. At least a partial resolution to these puzzles is found in the government policy response: Countries with a relatively high saving-investment correlation tended to have governments that countered widening current account imbalances with fiscal policy; the reverse generally held true for countries with low saving-investment correlation. In fact, for this latter group of countries, financing the government deficit through foreign borrowing was a major factor in loosening the link between national saving and investment.

The last two decades have witnessed a successive wave of deregulation of international capital markets. How has this greater freedom of movement of capital among countries affected national saving and investment, two key macroeconomic variables? Theoretically the answer is relatively straightforward: With greater capital mobility, the level of investment a country can undertake need not be constrained by the level of domestic saving, since any shortfall can be financed by foreign saving. In other words, the dismantling of capital controls would loosen the link between national saving and investment.

The empirical evidence, on the other hand, has been more controversial. Most notably, Feldstein and Horioka (1980) found that among industrial countries, the investment rate is highly correlated with the saving rate, thus suggesting that capital is less mobile internationally than commonly presumed. The study subsequently spawned two additional puzzles: First, the saving-investment correlation does not appear to decline over time despite the continued relaxation of capital controls (Feldstein 1983, Penati and Dooley 1984); second, the saving-investment correlation appears to be weaker for developing countries than for industrial countries, despite the generally accepted view that the latter group of countries tend to have more developed financial markets with comparatively fewer restrictions on international transactions (Dooley, et al., 1987, Wong 1990). In sum, available evidence to date suggests that the degree of capital control has relatively little bearing on the observed response of investment to national saving.

This paper examines the effect of capital controls on the response of investment to saving in Pacific Basin countries. The exercise is of interest for at least two reasons. First, a frequently emphasized factor in the economic dynamism of the Pacific Basin is the growing integration of the region, in terms of flows of both goods and capital. Whether one can find a systematic link between progressive dismantling of capital controls and loosened saving-investment linkages in the region is an empirical question that has not been addressed to date. Second, the Pacific

Basin encompasses a broad array of countries in varying stages of economic and financial development, degree of capital controls, and speed of dismantling these controls. The region therefore provides us with substantial cross-country variation to assess the impact of capital controls on saving-investment linkages.

This study uses the Feldstein-Horioka (FH hereafter) methodology with due adjustments made to address some of the econometric criticisms levied against it. Unlike most empirical work in the area, the paper focuses on time series correlation between savings and investment. This approach allows cross-country comparisons in the response of investment to national savings, as well as analysis of the relationship over time in a given country. The advantage of this approach is that it makes it possible to exploit our knowledge of the divergent history of capital controls of the countries in the region.

The analysis reveals that capital controls have had little impact on saving-investment relationships in the Pacific Basin. In fact, the estimated size of the savings coefficient tends to be smaller (larger) in countries with relatively higher (lower) capital controls, and this result is robust across several specifications. Additionally, relaxation in capital controls for the most part had no discernible impact on the saving-investment relationship in individual country regressions. At least a partial resolution to these puzzles is found in government policy response. Most notably, countries with a relatively high saving-investment correlation, despite low capital controls, tended to have governments that countered widening current account imbalances with fiscal policy. The reverse generally held true for countries with low saving-investment correlation, despite relatively high capital controls. In fact, for this latter group of countries, financing the government deficit through foreign borrowing was a major factor in loosening the link between national saving and investment.

The balance of the paper is organized as follows. Section I surveys changes in capital controls in the Pacific Basin countries over the past three decades. Section II briefly discusses the FH test of capital mobility and reviews some of the major criticisms leveled against it. Section III then undertakes various tests of saving-investment correlation in the Pacific Basin countries and interprets the results in light of what we know about the history of capital controls in the region. Section IV concludes.

I. Deregulation of Capital Controls in the Pacific Basin

In order to provide a more concrete context for the empirical analysis that follows, this section highlights some of the important policy changes affecting capital flows that have

occurred in the thirteen Pacific Basin countries up until 1991 (Australia, Canada, Hong Kong, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore, Taiwan, Thailand, and the U.S.). The purpose here is not to provide an exhaustive and comprehensive account of financial deregulation in the region. Rather, the basic aim is to sketch out the salient features of the regulatory environment of the countries under review, then draw some cross-country comparisons on the degree of capital mobility and how such mobility may have changed over time in individual countries as a result of policy reforms.

Until at least the late 1970s, most Pacific Basin countries maintained tight regulation and administrative control over their financial systems, including interest rate restrictions, segmented financial markets and institutions, underdeveloped money and capital markets, and credit allocation and control mechanisms.[1] These policies reflected the then widely held view that economic growth and other national goals would be better served by restraining market forces in the pricing as well as the allocation of credit.

In order to prevent domestic entities from circumventing these regulations through overseas transactions, most Pacific Basin countries also applied, to varying degrees, controls over international capital movements. Capital controls curbed capital flight, insulated domestic interest rates from the rest of the world, and maintained the compartmentalization of domestic financial markets. Additionally, these controls buttressed the fixed exchange rate system and helped to achieve balance-of-payments objectives.

As is evident from the summary of capital controls in the Appendix, Pacific Basin countries diverge considerably as to when liberalization of capital controls was intiated, as well as with respect to its speed once the process was under way.[2,3] At one end of the spectrum are four coun-

1. For overviews of financial markets and liberalization in the Pacific Basin up to the mid-1980s, see Cargill, Cheng and Hutchison (1986), Mathieson (1986), Patrick and Cole (1986), and Greenwood (1986).

2. Countries also have diverged in the sequencing of deregulation; that is, whether relaxation of international capital accounts followed or preceded liberalization of the domestic financial sector. According to the so-called sequencing theory (McKinnon 1991, Edwards 1990), international liberalization, particularly of the capital account, should come at the last stage of economic liberalization. Within the Pacific Basin, Singapore, Korea, and Taiwan have broadly conformed to this theory by liberalizing the domestic financial sector while maintaining a considerable degree of capital control. Indonesia, Malaysia, Japan, and Thailand appear to have adopted a reversed order of financial liberalization. See Santiprabhob (1992).

3. Emphasis differs on what has been the prime impetus to relaxing exchange and capital controls. Cargill, Cheng, Hutchison (1986) contend that strict exchange and capital controls were not compatible with

tries, consisting of Canada, the United States, Hong Kong, and Singapore, which traditionally have imposed few restrictions on international capital flows or removed any existing restrictions relatively swiftly. The U.S. and Canada have long had a large and sophisticated financial system relatively unencumbered by regulations, domestically as well as internationally. The U.S. imposed no exchange controls in principle except for the period of 1963–1974 when some restrictions applied to capital outflows; these restrictions were removed in 1974. Canada, the first industrialized country to shift to a floating exchange rate regime in 1970, also has been free of exchange controls. Over the years, the country also streamlined procedures for foreign direct investment flows which were quite liberal to begin with by international standards. For both countries, therefore, regulatory changes pertaining to international capital flow since the 1970s have been small by international standards.

Hong Kong and Singapore relaxed capital controls relatively early in a bid to become international financial centers. Hong Kong abolished all exchange controls in late 1972, making its capital markets one of the least restricted in Asia. Singapore progressively liberalized exchange controls through the 1970s and finally abolished them in 1978. The city-state also established a favorable policy environment toward foreign direct investment, especially with respect to repatriation of profit. The only notable remaining barrier to capital mobility is the restriction that banks designated to operate in the offshore market are not allowed to transact in Singapore dollars.[4] From the standpoint of regulatory impediments at least, both Hong Kong and Singapore can thus be considered to have had nearly perfect capital mobility since at least the early to mid-1970s.

In contrast to Hong Kong and Singapore, the two other rapidly growing Asian newly industrializing economies (NIEs), Korea and Taiwan, have initiated financial deregulation relatively late and substantial barriers to international capital mobility still remain. Taiwan traditionally

has restricted capital outflow and did not liberalize controls on current account transactions until 1987. Although significant progress has been made since 1989 in liberalizing capital inflow and outflow, tight control is still applied on foreign ownership of "strategic" industries, including banking.

Korea began its financial liberalization process in 1981–1983. But government controls remain a pervasive feature of its financial system, particularly in the domain of international financial transactions. The authorities have adopted a gradual step-by-step approach to liberalizing current account transactions and restrictions continue to apply to both capital inflows and outflows.[5] For example, throughout the 1980s, government approval was required for any external borrowing exceeding US$200,000. Beginning in the early 1980s, however, the Korean government initiated a series of steps deregulating foreign direct investment to enhance competition in the domestic market and to encourage transfer of advanced technology from abroad.

The Philippines also still has extensive capital controls. Unlike Korea and Taiwan, the Philippines initially had a fairly liberal regime toward international capital flow. This policy was abruptly reversed, however, with the advent of the international debt crisis in 1983. As the only Pacific Basin country facing serious debt servicing problems, the Philippines reimposed foreign exchange controls in 1983. Although policies have relaxed somewhat since, restrictions remain in virtually all categories of both current and capital account transactions.

The experiences of the remaining six countries (Australia, Indonesia, Japan, Malaysia, New Zealand, and Thailand) fall somewhere between the extremes of the two groups of countries discussed above. All six initially had stringent international capital exchange controls. The speed and the timing of the relaxation of these controls have varied considerably among them, however.

Indonesia and Malaysia liberalized foreign exchange controls in 1970 and 1973, respectively, thus initiating moves toward fairly open capital markets much earlier than Taiwan or Korea. Both countries also progressively relaxed foreign direct investment rules from the mid-1980s on. Some restrictions to capital flow remain, however. In the case of Malaysia, capital outflows cannot be financed by local borrowing and prior approval is necessary for foreign

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domestic interest rate liberalization and greater exchange rate flexibility. In fact, exchange and capital controls are redundant in the face of flexible interest rates and flexible exchange rates. Greenwood (1986), on the other hand, holds the view that financial liberalization in the seven East Asian countries do not appear to derive from the advent of floating exchange rates in the early 1970s. Most of the changes come *after* 1979, which timing suggests that financial liberalization was prompted more by the volatility of interest rate differentials than by the advent of floating rates.

4. Singapore thus has a bifurcated financial system with various regulations insulating the domestic banking sector from the offshore market. Growth of the offshore sector, in particular the Asian dollar market, has been spectacular since its establishment in 1974.

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5. As of December 1991, Koreans were still required to convert export receipts into domestic currency within a specified time period. The main objective of this policy is to prevent the accumulation of foreign exchange above some minimum working balance. In addition, to limit possible disguised capital flight, payments on invisibles were subject to quantitative limits or advance approval.

direct investment or foreign lending or borrowing by financial institutions. Additionally, surrender requirements for export proceeds still remained in place as of December 1991. Indonesia still restricts capital account transactions in three ways: foreign exchange banks and nonfinancial institutions must adhere to Bank of Indonesia directives when borrowing abroad; foreign exchange banks are required to set aside special reserves on foreign borrowing; and finally, prior approval must be obtained for foreign direct investment.[6]

Australia and New Zealand embarked relatively late in financial liberalization, but once initiated, regulatory barriers to capital mobility were dismantled quite quickly. Australia eliminated most exchange controls as of December 1983 when it moved to a flexible exchange rate regime. Beside the frequently encountered requirement of prior approval on foreign borrowing, the only notable restriction to capital flows in Australia is that foreign governments and international organizations are not permitted to borrow in the domestic capital market. New Zealand launched a comprehensive financial liberalization program in 1984 which, within a space of a few months, freed interest rate controls, credit ceilings, and ratio requirements, and floated the New Zealand dollar.[7] In this newly liberalized regime, foreign exchange controls became redundant and were disposed of accordingly. As of the end of 1991, the only noteworthy restriction on capital account transactions is that permission is required for foreign direct investments of amounts NZ$10 million or greater.

Thailand and Japan, the last two countries under review, have both adhered to a program of cautious and measured pace of financial liberalization. Thailand freed inward capital flows in the early 1970s, but strict controls have traditionally applied to capital outflows. This restriction began to be loosened only recently in a stepwise fashion. The first stage (May 1990) eased controls on current account transactions and simplified capital account transactions. In the second stage (April 1991), further liberalization was implemented on current account transactions, limits on outward capital flows without authorization was raised, and banks were allowed for the first time to offer foreign exchange accounts.[8] In the final stage, yet to be scheduled, all remaining foreign exchange controls are to be lifted and residents are to be permitted to purchase overseas property and financial instruments without prior approval from the Central Bank.

Japan traditionally applied capital controls to influence international capital flows in the desired direction, depending upon the prevailing balance-of-payments position and exchange rate objective. Japan amended its Foreign Exchange and Foreign Trade Law in 1980, the official intention being to free, in principle, all international transactions from direct government intervention. In reality, however, the process of financial liberalization, domestic as well as international, was already set in motion by the mid-1970s. For example, interest rates on foreign currency deposit were liberalized in 1974, foreigners were allowed in the gensaki market in May 1979, and Japanese banks were permitted to make short-term foreign currency loans to residents (impact loans) in June 1979, and long-term loans in March 1980. The 1984 Yen/Dollar Agreement provided further impetus to remove barriers to international capital flows, including the abolition of yen-dollar swap limits for foreign banks in Japan and the deregulation of forward exhange transactions. The relaxation of capital controls in Japan, however, as is the case with domestic financial liberalization, has been gradual and is still ongoing.

In summary, what can we say about capital mobility in the Pacific Basin based on the foregoing survey of regulatory changes? First, most liberalization in the region did not begin until the late 1970s or the early 1980s; notable exceptions are Canada, the U.S., and the two city-states. One implication is that saving-investment linkages would be tighter in most Pacific Basin countries than, say, among OECD countries, which began liberalizing in the early 1970s with the advent of flexible exchange rates.[9]

The second point relates to the difference in the degree of capital mobility among the Pacific Basin countries discussed. Any cross-country comparison on capital mobility based on these regulatory considerations is necessarily an imprecise exercise. For one, appraising the impact of a change in policy on potential capital mobility requires a dose of subjective and qualitative judgements. In addition, since these countries have pursued different policies at different points in time, it is difficult to generalize across a long period of time whether one country's policy has been "on average" more restrictive than another with respect to international capital flows. These caveats notwithstanding, one may hazard to divide the Pacific Basin countries into three groups on the basis of how early each deregulated international financial transactions, and on how rapidly

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6. Recently, concern about the country's external debt has led Indonesian authorities to set an annual quota of US$2.6 billion for borrowing to finance private projects in 1992 and 1993.

7. New Zealand in fact initiated financial liberalization in 1976-1977, but reversed course in 1981 by reimposing comprehensive controls over interest rates and foreign portfolio investment by domestic residents.

8. According to the International Monetary Fund, Thailand still had, as of December 1991, surrender requirement for export proceeds, advanced import deposits, and limitations on foreign currency deposits by residents.

9. The usual *ceteris paribus* condition applies here.

capital controls were dismantled once deregulation was initiated. The first group, which includes Canada, the U.S., Hong Kong, and Singapore, may be categorized as having a relatively low degree of capital controls, while the second, consisting of Korea, the Philippines, Taiwan, and possibly Thailand, may be deemed to have a high degree of capital controls. It is difficult to assign a precise ranking to the remaining countries; hence they may be grouped under a third category of intermediate degree of capital controls. The balance of the paper investigates the extent to which these varying degrees of capital controls in the region explain observed differences in the response of domestic investment to national saving.

II. THE FELDSTEIN-HORIOKA TEST OF CAPITAL MOBILITY

It is natural to expect that the degree of capital controls is an important determinant of investment's response to national saving. Consider two extreme cases. If capital controls prevent a country from borrowing (or lending) internationally, all investment within the country must necessarily be financed out of its own saving; in other words national saving and investment will be perfectly correlated. On the other hand, if there were no impediments to international capital flows, one would expect no systematic relation between national saving and investment. One direct way to test these propositions is to run a regression of the form:

(1) $(GDI/GDP)_i = \alpha + \beta(GNS/GDP)_i + \epsilon_i$

where GDI and GNS are gross domestic investment and saving, respectively, and GDP is gross domestic product. This is in fact the regression that Feldstein and Horioka ran on a cross-section of sixteen OECD countries over the period 1960–1974. The regression using data averaged over the entire sample period yielded a coefficient on saving of 0.88, which is significantly different from zero but not significantly different from unity. Similar estimates of β were obtained when the regression was repeated on shorter subsample periods. FH interpreted these results to mean that about 90 percent of domestic saving is invested in the country of origin, thus leading them to reject the hypothesis of perfect capital mobility.[10] However, this conclusion has been subjected to a number of criticisms.

Criticisms

The most frequently levied criticism against the FH methodology concerns the fact that the explanatory variable in their regression, domestic saving, is itself endogenous. This will be the case, for example, if saving and investment are both procyclical, as they are commonly known to be. Simultaneity problems also will arise if governments are averse to large current account balances and respond endogenously to offset private net capital flows so as to reduce the size of these imbalances (Fieleke 1982, Westphal 1983; Summers 1988). In a time series context, the inclusion of large countries in the sample may be another cause of endogeneity. For instance, if a country is sufficiently large, a decrease in saving in that country would raise the world interest rate, thus reducing investment at home as well as abroad (Murphy 1986).

On the theoretical front, a plethora of models has been constructed to formalize the notion that rather than reflecting any genuine lack of capital mobility, the high saving-investment correlation may arise because saving and investment are influenced in the same direction by common exogenous disturbances affecting the economy. For example, even with perfect capital mobility, exogenous changes in population growth, the growth rate of income, productivity, or terms-of-trade shocks, may all generate co-movements in savings and investment (see, for example, Obstfeld 1985, Summers 1988, Glick and Rogoff 1992).[11]

Co-movements in saving and investment also may be reconciled with perfect financial capital mobility by the presence of nontraded consumption goods or immobile factors of production (Frankel 1985, Murphy 1986; Engel and Kletzer 1987, Wong 1990). The basic intuition here is that the integration of capital markets is not a sufficient condition to break the link between domestic saving and investment; imperfect integration of goods markets or other factors of production may act as a binding constraint and force the economy to behave more like a closed economy in terms of saving and investment.

Finally, several authors have suggested that government policy itself may be a source of endogeneity. Summers (1988) and Bayoumi (1990) among others have suggested that the observed high correlation between saving and investment rates is evidence of a successful balance-of-payment policy on the part of national governments. For instance, governments may impose constraints on cross-border capital flows whenever the deficit (or surplus) in the current account exceeds a predetermined level. Alternatively, they might adjust their budget deficits to offset

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10. Feldstein (1983) subsequently estimated the same equation using pooled time series cross-section data. Again, the coefficient on the saving rate did not differ significantly from unity.

11. See Tesar (1991) for a survey of these models.

the gap between investment and saving. Finally, Roubini (1988) argues in the context of an intertemporal model of consumption and taxation that fiscal deficits play an important role in the determination of the current account and the saving behavior.

Robustness of the FH Result

In their original 1980 study, Feldstein and Horioka were in fact cognizant of potential problems that might arise due to the endogeneity of domestic saving. To control for cyclical endogeneity, the authors ran their cross-section regressions using averaged data over sufficiently long periods so as to cancel out any business cycle effects. As an added measure, FH also reran their regressions using instrumental variables that are correlated with saving but not investment.[12] This did not materially alter the results, however. Moreover, instrumental variable estimations were subsequently performed by Dooley, et al. (1987) and Bayoumi (1990) on cross-section data, and by Frankel (1985) on U.S. time series data. But again, all of these studies found that the high savings-investment correlation persisted.

At least for a sample of industrialized countries, the FH finding of a high saving-investment correlation thus seems to have stood up surprisingly well to the econometric critiques levied against it. As noted above, however, numerous theoretical models have cast doubt on whether this empirical finding can be taken as evidence of low capital mobility. To the extent that one questions whether FH's equation is genuinely structural, the high saving-investment correlation may be attributed to a set of "omitted variables," such as some common shocks or the extent of integration of domestic goods and factor markets. However, relatively little empirical work has been done to test directly how sensitive FH's saving-investment correlation is with respect to the inclusion of such variables.

A notable exception is Wong (1990), which examined whether the relative size of the nontraded goods sector of an economy has any effects on the correlation between its saving and investment ratios. Wong ranked a sample of 40 developing countries by their import-GDP ratios, as a proxy for the inverse of the size of the nontraded goods sector. Breaking the sample into two and running separate regressions on them, Wong found that the group with the lower import ratios (that is, larger nontraded goods sector) had a

higher regression coefficient on saving and a better goodness of fit. Wong also found that a Chow test rejected at the 5 percent significance level the null hypothesis that the two country groups exhibit the same structural saving-investment relationship. Splitting the sample into finer groups confirmed the basic finding that as countries' import ratios decrease the saving-investment correlation increases.

III. Saving-Investment Correlation in the Pacific Basin

Simple Saving-Investment Correlation

To serve as a benchmark, Table 1 presents the ordinary least squares results for individual country time series regression:

$$(2) \quad \Delta(GDI/GDP)_t = \alpha + \Delta\beta(GNS/GDP)_t + \epsilon_t.$$

The sample period runs from 1961 to 1990 and all data used are nominal annual national account data from the IMF's *International Financial Statistics*. Gross domestic investment, *GDI*, is defined as the sum of gross fixed capital formation and the change in stocks. Gross national saving, *GNS*, is defined as gross domestic saving (*GDS*) plus net factor income and net current transfers from abroad; *GDS*, in turn, is defined as gross domestic product (*GDP*) minus private and government consumption.[13] Since both the saving and investment exhibited a tendency to rise over time in many of the sample countries, the regressions were run on first-differenced data.[14]

One advantage of running individual country time series regressions is that it allows for any possible differences in the degree of capital mobility. Inspection of Table 1 readily reveals the diversity in the size and statistical significance of the regression coefficient. Indeed, *F* tests rejected the validity of pooling for various combinations of the sample countries: countries with relatively low capital controls (Canada, U.S., Hong Kong, and Singapore); countries with relatively high capital controls (Korea, Taiwan, Philippines, and Thailand); industrialized versus developing countries; and finally, larger versus smaller countries as measured by the size of GDP.

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12. The instruments consisted of the proportion of retirees and dependents in the total population, the benefit-earning ratio of the social security program, and the labor force participation rate. All of these variables affect saving according to the income hypothesis, but they have no obvious relevance for investment.

13. As in Feldstein and Horioka (1980), the focus is on gross rather than net saving and investment so as to minimize the possibility of spurious correlation due to measurement errors in depreciation.

14. Dickey-Fuller tests could reject the null hypothesis of a unit root in *GDS/GDP* and *GDI/GDP* only for New Zealand and Philippines. The same test on the first-differenced series rejected this null, that is, year to year changes in saving and investment rates appear stationary.

TABLE 1

TOTAL INVESTMENT–SAVING CORRELATION, 1961–1990

$\Delta(GDI/GDP)_t = \alpha + \beta\Delta(GNS/GDP)_t$

	β	R^2	D.W.
Australia	0.001 (0.157)	0.00	2.40
Canada	1.017*** (0.160)	0.60	2.27
Hong Kong	0.616*** (0.162)	0.31	2.13
Indonesia	0.211 (0.141)	0.08	2.32
Japan	0.981*** (0.139)	0.65	1.54
Korea	0.446*** (0.154)	0.24	1.76
Malaysia	−0.112 (0.152)	0.02	1.43
New Zealand	0.116 (0.249)	0.01	1.97
Philippines	0.360* (0.218)	0.06	1.54
Singapore	−0.041 (0.263)	0.09	1.92
Taiwan	0.076 (0.249)	0.00	2.10
Thailand	0.639*** (0.181)	0.31	2.36
U.S.	0.939*** (0.126)	0.69	1.56

NOTE: OLS estimation; standard errors in parentheses.
*Significance levels: * = 10 percent
                       ** = 5 percent
                      *** = 1 percent

An immediately striking pattern in the table is that Canada, the U.S., and Japan have a regression coefficient on saving that is not significantly different from unity; that is, a 1 percent increase in the growth of the national saving rate leads to a 1 percent increase in the growth of the

domestic investment rate.[15,16] It is difficult to reconcile this result with what we know about capital controls in these countries. As the earlier discussion stressed, Canada and the U.S. have had among the least restrictive policies with respect to international capital flows while Japan may be considered an intermediate case.

Significantly lower coefficients are obtained for Korea, Thailand, and the Philippines (0.446, 0.639, and 0.360, respectively), despite the fact that these countries traditionally have imposed much greater regulatory barriers to international capital flows. In a similar vein, Australia, New Zealand, and Taiwan—countries which maintained relatively strict capital controls until at least the early 1980s—all have coefficients that are not statistically different from zero.

To investigate whether deregulation of capital controls in the Pacific Basin has increased capital mobility and thereby weakened the linkage between national saving and investment, regressions were run with the coefficient on saving interacted with a dummy variable. This variable took a value of 0 until a given breakdate and a value of 1 thereafter. The breakdates for each country were chosen to coincide with the shift in regulatory regime or, in the case of advanced industrialized countries, the advent of the flexible exchange system after the collapse of Bretton Woods. For a subset of countries where the deregulation process did not yield a strong prior on a single breakdate (Indonesia, Malaysia, and Thailand), two alternative breakdates were considered.

As reported in Table 2, a statistically significant change in savings-investment relationship is detected in only five of the thirteen countries in the sample. Futhermore, where such changes occurred, the results often were difficult to interpret in terms of changes in capital mobility. For instance, Singapore's saving coefficient turns from being negative and statistically insignificant to being positive and significantly different from 0 (at 5 percent) after the breakdate. In the case of the U.S., the coefficient rises from 0.632 to 1.097 after the breakdate, both statistically significantly positive at the 5 percent level. Both of these results appear anomalous in light of our priors based on the regulatory and institutional background on capital mobility in these countries. The results are equally puzzling for the two cases where the saving coefficient declines in size over time. In Korea, β turns from 0.528 (significantly

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15. Recall that the regression was performed on first-differenced series of the savings and investment rates.

16. Both the Ljung-Box Q statistic and the generalized LM test (not reported) indicate the presence of serial correlation for only two countries in the sample: Malaysia and Taiwan.

TABLE 2

TOTAL INVESTMENT–SAVING CORRELATION
ALLOWING FOR STRUCTURAL BREAK

$\Delta(GDI/GDP)_t = \alpha + \beta_0\Delta(GNS/GDP)_t$
$+ \beta_1 * D * \Delta(GNS/GDP)_t$

	β_0	β_1	BREAK DATE	$\bar{R}^2$	D.W.
Australia			1983		
Canada			1973		
Hong Kong			1973		
Indonesia	0.604*** (0.213)	−0.035 (0.230)	1970; 1983	0.27	2.64
Japan			1973		
Korea	0.528*** (0.155)	−0.591** (0.278)	1985	0.34	1.94
Malaysia			1973; 1983		
New Zealand			1984		
Philippines	−0.037 (0.257)	0.970** (0.435)	1983	0.27	1.55
Singapore	−0.312 (0.328)	0.327** (0.137)	1975	0.24	2.37
Taiwan			1983		
Thailand			1970; 1983		
U.S.	0.632** (0.215)	1.097** (0.560)	1973	0.74	1.31

NOTE: OLS estimation; standard errors in parentheses. The critical
values for β were determined by a bootstrap procedure. D denotes the
bivariate dummy variable which takes a value of 1 in the years indi-
cated and a value of 0 in the earlier years. Blank spaces in columns
β_0 and β_1 indicate that no statistically significant structural break was
found for the break date. For Indonesia, Malaysia, and Thailand, two
alternative break dates were tested. The result reported for Indonesia
pertains to the 1970 break date. See Table 1 for significance levels.

different from 0 at 1 percent) to −0.591 (significant at
5 percent) after the breakdate. The coefficient on saving
in Indonesia also turns negative (but insignificant) after
the breakdate.

Finally, for purposes of broader international compari-
son, Table 3 reproduces time series estimates of β for a
number of OECD countries reported by other authors. As
can be readily inspected, the size of the coefficient on
saving tends to be uniformly larger for the group of OECD

countries than for the group of Pacific Basin countries; that
is, according to the FH interpretation, capital mobility has
been *lower* for the OECD countries than for the Pacific
Basin countries. The average size of β for these OECD
countries is 0.71 compared to 0.41 for the Pacific Ba-
sin countries; excluding the countries that overlap (that is,
U.S., Japan, and Canada) brings the average for the Pacific
Basin down to 0.23. These comparisons further call into
question whether one can draw unqualified inferences
about capital mobility on the basis of a simple saving-
investment analysis.

Sensitivity of the Saving Coefficient to Endogeneity Problems

As discussed in Section II, the "naive" version of the FH
saving-investment analysis may be fraught with endog-
eneity problems. This could be due to the omission of some
third factor, such as growth or the relative size of the
nontradable sector. Alternatively, endogeneity may be pres-
ent in the form of policy responses by a government averse
to large external imbalances. This section explores the
extent to which the puzzles reported in the preceding sec-
tion are statistical artifacts of such endogeneity problems.

Controlling for the Cyclicality of Inventory Investment

If saving and investment both respond to some common
exogenous shocks, ordinary least squares estimates of β
will be upwardly biased. One simple way to correct this
problem is to use fixed investment rather than total invest-
ment as the dependent variable (Bayoumi 1990).[17] The
difference between the two is inventory investment, which
arguably is much more susceptible to unexpected shocks to
the economy.

The results reported in Table 4 indeed show the size and
the significance of the regression coefficient falling for a
number of countries when fixed investment is used as the
dependent variable. The fall is particularly marked for
Canada, Japan, and the U.S., with the size of β roughly
half of that obtained from the regression using total invest-
ment. A non-neglible decline in the coefficient is also
observed for Korea and Hong Kong. These results suggest
that for a subset of the sample countries at least, aggregate
demand and supply shocks may explain a significant part

17. As mentioned earlier, another method to deal with the endogeneity
problem is instrumental variable estimation. For most of the sample
countries, however, the variables typically used in the literature as being
correlated with saving but not investment (see footnote 12) turned out to
be poor instruments. The instrumental variable estimation results are
therefore not reported.

TABLE 3

Total Investment–Saving Correlation for Twelve OECD Countries, 1961–1986

$\Delta(GDI/GDP)_t = \alpha + \beta\Delta(GNS/GDP)_t$

	β
Austria[a]	0.72 (0.28)
Belgium	0.63 (0.12)
Canada	0.83 (0.16)
Federal Republic of Germany	0.87 (0.17)
Finland	0.98 (0.30)
France	0.80 (0.26)
Greece	0.73 (0.13)
Italy[a]	0.75 (0.29)
Japan[b]	0.84 (0.15)
Norway[b]	−0.21 (0.31)
United Kingdom	0.33 (0.18)
United States	1.00 (0.10)

Source: Bayoumi (1990), Table 7; data for Austria and Italy taken from Obstfeld (1989), Table 7.6.
Note: Standard errors in parentheses. $\bar{R}^2$ and D.W. statistics are not reported by the authors.
[a]Data for 1967–1984.
[b]Data for 1966–1986.

TABLE 4

Fixed Investment–Saving Correlation, 1961–1990

$\Delta(GDFI/GDP)_t = \alpha + \beta\Delta(GNS/GDP)_t$

	β	$\bar{R}^2$	D.W.
Australia	0.011 (0.085)	0.00	1.76
Canada	0.401*** (0.140)	0.23	1.43
Hong Kong	0.461*** (0.175)	0.20	2.00
Indonesia	0.252 (0.108)	0.17	2.23
Japan	0.522*** (0.130)	0.37	1.31
Korea	0.261** (0.128)	0.13	1.34
Malaysia	−0.338*** (0.117)	0.24	0.91
New Zealand	−0.039 (0.145)	0.00	1.93
Philippines	0.259 (0.195)	0.06	1.29
Singapore	0.176 (0.198)	0.03	1.20
Taiwan	−0.266** (0.128)	0.14	1.09
Thailand	0.203 (0.139)	0.07	1.32
U.S.	0.492*** (0.081)	0.57	1.32

Note: OLS estimation; standard errors in parentheses. See Table 1 for significance levels.

of the time series correlation between total saving and investment.[18] Even adjusting for such an endogeneity problem, however, Table 4 leaves a puzzling pattern: β tends to be largest and statistically significant in Canada, Hong Kong, Japan, and the U.S. With the exception of Japan, these are also countries with relatively lower barriers to capital mobility.[19]

Controlling for Growth and the Role of Nontradables

As noted earlier, a number of formal models demonstrate that saving and investment will be correlated, even with perfect capital mobility, due to factors such as productivity shocks or lack of integration of goods markets. This section explores, albeit in a preliminary fashion, whether any systematic changes in saving-investment correlation can be detected for the Pacific Basin countries when the simple regression equation (2) is controlled for some of these omitted variables.

The analysis focuses on two variables. The first is the rate of growth in GDP, which has been suggested in several studies as a possible spurious variable in the saving-investment regression (for example, Obstfeld 1985, Fry 1986). For instance, countries with rising incomes are likely to exhibit both higher rates of saving and investment over time. If this argument is correct, one would expect the regression coefficient on saving to decline when growth is included as an explanatory variable. Following Wong (1990), the second variable examined is the ratio of imports to GDP, as an inverse proxy for the relative size of the nontraded goods sector. The maintained assumption here is that the larger the ratio of imports to GDP, the more open or integrated is the economy with respect to the goods market. The inclusion of this variable in the regression equation is therefore hypothesized to also reduce the size of β.

The individual country regression equations were of the form:[20]

$$(3) \quad \Delta \left(\frac{GDI}{GDP} \right)_t = \alpha + \beta \Delta \left(\frac{GNS}{GDP} \right)_t + \gamma \Delta \left(\frac{M}{GDP} \right)_t$$
$$+ \zeta \Delta \left(\frac{GDP_t}{GDP_{t-1}} \right) + \epsilon_t.$$

The results reported in Table 5 show that the import-to-GDP ratio, or the "openness" variable, turns out to be highly significant for all countries in the sample, with Singapore as the notable exception. The growth variable, on the other hand, is significant in only two countries (Australia and Indonesia). When controlled for these two effects, the linkage between saving and investment appears to weaken for at least a subset of Pacific Basin countries.[21] Again, the decline in β is most conspicuous in Canada and the U.S., from 1.017 to 0.695 and from 0.939 to 0.710, respectively, while in the case of Hong Kong, β turns from 0.616 (significant at 1 percent) to being statistically insignificant. A decline in β is also observed for Japan and Thailand, but the change in the size of the estimated coefficient appears too marginal relative to the size of the standard error to warrant a firm conclusion.

The augmented model thus provides some limited evidence of the omitted variable problem in the simple saving-investment correlation analysis. Some "anomalies" nevertheless remain in the results of the augmented model. Notably, β rises in the Philippines from a marginally significant 0.360 in the simple model to 0.496 (significantly different from zero at the 1 percent level) in the augmented model. For the remaining countries, the regression coefficient on saving is statistically not different from zero in the augmented model as in the basic model. The discrepancy between the earlier assessment of capital controls in the sample countries and the estimated size of β therefore remains largely unaccounted for.

The Role of Policy Response toward External Imbalances

A number of studies have suggested that the high correlation between saving and investment reflects successful

18. Similar time series results are reported by Bayoumi (1990) for ten OECD countries over a slightly shorter sample period of 1960-1986.

19. Structural break tests using *GDFI* did not yield results that were materially different from those in Table 4. For the sake of brevity, therefore, these results are not reported.

20. Openness and growth were nonstationary and hence were first differenced. Regressions were run with these variables entered directly

TABLE 5

EFFECTS OF IMPORT SHARE AND GROWTH ON THE INVESTMENT–SAVING CORRELATION

$$\Delta \left(\frac{GDI}{GDP}\right)_t = \alpha + \beta \Delta \left(\frac{GNS}{GDP}\right)_t + \gamma \Delta \left(\frac{M}{GDP}\right)_t + \zeta \Delta \left(\frac{GDP_t}{GDP_{t-1}}\right) + \epsilon_t$$

	β	γ	ζ	$\bar{R}^2$	Q-msl
Australia	0.141 (0.082)	1.149*** (0.129)	0.167*** (0.046)	0.750	0.925
Canada	0.695*** (0.210)	0.491*** (0.152)	0.047 (0.070)	0.685	0.909
Hong Kong	0.595 (0.150)	0.174** (0.088)	−0.065 (0.059)	0.468	0.972
Indonesia	0.015 (0.151)	0.404*** (0.139)	−0.007*** (0.002)	0.246	0.266
Japan	0.892*** (0.134)	0.433*** (0.111)	0.042 (0.047)	0.759	0.352
Korea	0.482*** (0.164)	0.457*** (0.160)	−0.001 (0.004)	0.356	0.607
Malaysia	0.015 (0.157)	0.422*** (0.090)	0.012 (0.061)	0.447	0.021
New Zealand	0.237 (0.178)	0.763*** (0.128)	0.025 (0.076)	0.543	0.327
Philippines	0.496*** (0.191)	0.502*** (0.105)	0.077 (0.066)	0.474	0.547
Singapore	0.075 (0.280)	0.082 (0.051)	0.056 (0.114)	0.030	0.251
Taiwan	−0.191* (0.110)	0.691*** (0.081)	−0.036 (0.026)	0.810	0.177
Thailand	0.555*** (0.141)	0.578*** (0.121)	0.106 (0.055)	0.600	0.292
U.S.	0.710*** (0.146)	0.632 (0.279)	0.123 (0.123)	0.736	0.960

NOTE: OLS estimation; standard errors in parentheses. Q-msl is the marginal significance level of the Box-Ljung Q statistics for serial correlation.

balance-of-payment policy on the part of national governments (Fieleke 1982, Summers 1988, Bayoumi 1990).[22] In particular, Summers (1988) argues that if governments are averse to large capital inflows or outflows, they might adjust their budget deficits to offset the gap between private saving and investment.[23]

To see whether such policy responses may account for the puzzling cross-country difference in the size of β, the following set of regression equations was estimated:

(4) $\Delta(DEF/GDP)_t = \alpha + \phi\Delta((PS - GDI)/GDP)_t$,

where DEF is general government budget deficit and PS is private saving. $\phi = 1$ implies that fiscal policy completely offsets any imbalance in private saving and investment so that no capital flow occurs; in the polar opposite case of $\phi = 1$, which is an implicit assumption in FH, deficits are exogenous.

As reported in Table 6, the coefficient ϕ is significantly different from zero and positive in all of the countries except Australia, Taiwan, and the Philippines. More revealing, however, is the cross-country comparison of the size of the estimated regression coefficient. The government's propensity to offset current account imbalances tends to be weaker in countries with lower saving-investment correlation. With the notable exception of Korea, and to a lesser extent New Zealand, countries with high or intermediate cases of capital control (Taiwan, Philippines, Thailand, Malaysia, and Indonesia) have a relatively low or statistically insignificant β (as reported in Tables 1, 4, or 5) and also tend to have a low or statististically insignificant ϕ. By contrast, countries with low or intermediate degrees of capital controls (Canada, the U.S., and Japan) and a relatively high β, tend to have relatively high ϕ; that is, the "endogenous" policy response to maintain external balance tends to be higher in Pacific Basin countries with a

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22. Possible justifications for discouraging capital outflows include: social return to domestic investment exceeding that of foreign investment, risk of capital expropriation by foreign government or labor, and negative terms of trade effects. Aversion to a large influx of foreign capital may be due to a large appreciation in the real exchange rate and its deleterious impact on the economy's traded goods sector.

23. This is not to say that fiscal policy is determined exclusively, or even primarily, out of balance of payments considerations. Rather, it is when the current account balance exceeds some predetermined level that fiscal or even monetary policies are implemented to reduce or eliminate those deficits or surpluses. One example is efforts initiated by the U.S. in the second half of the 1980s to reduce the budget deficit, and thereby put a check on the ballooning current account deficit. Another example of a policy reaction in the opposite direction is Japan which, in a bid to reduce unprecedented current account surpluses that emerged in the second half of the 1980s, pursued expansionary fiscal and monetary policies.

TABLE 6

TEST OF THE ENDOGENOUS POLICY RESPONSE HYPOTHESIS

$\Delta(DEF/GDP)_t = \alpha + \phi\Delta((PS - GDI)/GDP)_t$

	SAMPLE PERIOD	ϕ	$\bar{R}^2$	D.W.
Australia	1962–90	0.064 (0.078)	0.02	1.68
Canada	1962–89	0.569*** (0.141)	0.38	2.21
Hong Kong	1972–90	0.232*** (0.107)	0.22	1.91
Indonesia	1962–89	0.237*** (0.059)	0.38	2.13
Japan	1971–89	0.473*** (0.145)	0.38	1.69
Korea	1962–90	0.925*** (0.032)	0.77	1.72
Malaysia	1965–90	0.300*** (0.052)	0.58	1.49
New Zealand	1962–90	0.435*** (0.085)	0.49	2.42
Philippines	1962–90	0.160* (0.094)	0.10	2.62
Singapore	1962–90	0.597*** (0.072)	0.72	2.39
Taiwan	1962–90	−0.072 (0.064)	0.04	2.34
Thailand	1964–90	0.360*** (0.129)	0.24	2.33
U.S.	1962–90	0.786*** (0.110)	0.65	2.11

NOTE: OLS estimation; standard errors in parentheses. DEF denotes general government budget deficit and PS denotes private saving. See Table 1 for significance levels.

high saving-investment correlation.[24] These findings thus do help to reconcile the puzzling pattern that the saving-investment correlation tended to be relatively weaker or insignificant in countries which traditionally imposed higher restrictions on international capital flows.

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24. The exception here is Singapore which had an insignificant β but a relatively high ϕ.

TABLE 7

EXTERNAL DEBT INDICATORS

	INDONESIA	KOREA	MALAYSIA	PHILIPPINES	THAILAND
	PUBLIC DEBT AS PERCENT OF GNP				
1970	25.6	20.3	9.5	8.8	4.6
1975	25.5	27.5	14.2	9.2	4.2
1980	20.1	26.3	17.0	19.2	12.4
1985	31.9	32.7	52.0	43.6	26.9
1990	44.0	7.5	39.9	51.7	15.8
	TOTAL DEBT AS PERCENT OF GNP				
1980	28.0	48.7	28.0	49.5	26.0
1985	43.8	52.5	71.9	83.9	47.8
1990	66.4	14.4	48.3	65.4	32.6
	GOVERNMENT DEFICIT AS PERCENT OF GNP				
1970	3.02	0.77	3.77	0.14	3.66
1975	3.70	1.98	8.47	1.19	2.06
1980	2.42	2.23	13.33	1.39	4.88
1985	0.98	1.17	7.36	1.95	5.46
1990	0.90	0.70	2.70	3.46	4.84
	FOREIGN BORROWING AS PERCENT OF GOVERNMENT DEFICIT				
1970	87.1	66.6	0.4	100.0	NA
1975	97.0	77.2	47.8	18.7	83.0
1980	92.9	38.3	4.4	66.0	23.5
1985	74.4	46.9	16.8	0.0	32.8
1990	NA	27.2	NA	11.1	0.0

SOURCES: World Bank, *World Debt Tables,* and IMF, *International Financial Statistics.*

In fact, Table 7 presents evidence suggesting that for this latter group of countries, the government itself has played a central role in the flow of foreign borrowing, thus driving a wedge between national saving and investment. Throughout the 1980s, public or publicly guaranteed debt usually accounted for anywhere between one-half to three-quarters of total foreign borrowing in all five countries,[25] with significant proportions of the foreign borrowing going toward financing the government budget deficit.[26] Though comparable data are unavailable for the earlier period, the relative importance of public borrowing was undoubtedly even higher, and this may constitute an additional reason

why saving-investment linkages are weaker in these Pacific Basin countries despite their traditionally more stringent capital controls.[27]

IV. CONCLUSION

This paper examined the time series evidence on the saving-investment correlation for a group of Pacific Basin countries. Its main findings may be summarized as follows. First, the simple bivariate saving-investment model (as originally formulated by FH) yielded coefficients on saving that often contradicted our priors based on our knowledge of capital controls in the region. Most notably, the saving coefficients were much higher and statistically significant in countries that have traditionally imposed much looser capital controls. Additionally, structural break tests in saving-investment correlation failed to detect the effects of regulatory shifts for most of the sample countries.

Part of this anomalous pattern across countries in the size of the estimated coefficient can be accounted for by simultaneity problems. For a subset of countries, controlling for the procyclicality of inventory investment reduced the size of the estimated coefficient on saving. The growth rate and the openness of the economy (as a proxy of the integration of the goods market) were also found to exert a negative impact on the overall saving-investment correlation. These results thus provide some support to models that emphasize the role exogenous shocks or the nontradable sector play in explaining observed co-movements in savings and investment.

A more significant factor accounting for the puzzling pattern of tighter saving-investment linkages found in countries with relatively lower capital controls, however, appears to be the greater propensity of government policy to counteract large external imbalances. By contrast, such policy reactions appear much weaker in those Pacific Basin countries with relatively higher capital controls. In fact, for this group of countries, the financing of the public sector deficit itself has been an important impetus to capital inflow, and this appears to have helped to weaken the link between domestic investment and savings.

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25. The sources cited do not report data for Taiwan.

26. Kharas and Kiguel (1988) provides a systematic analysis on this issue.

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27. Again, the Korean evidence is difficult to interpret. The result in Table 6 suggests a very high propensity of the Korean government to engage in fiscal policy that counteracts external imbalances. The evidence in Table 7 appears to contradict this interpretation.

APPENDIX

SUMMARY OF CAPITAL CONTROLS IN PACIFIC BASIN COUNTRIES

KEY:

x   HEAVY RESTRICTIONS:
   full surrender of export proceeds; advanced export deposits required; tight restrictions on size of permitted payments for invisibles; foreign currency deposits not allowed; foreign borrowing/lending with prior approval only; taxes or reserve requirements on foreign borrowing.

*   MODERATE RESTRICTIONS:
   surrender of export proceeds required above set limit; fractional advanced import deposits required; fewer restrictions or moderate limits on payments for invisibles; foreign currency deposits allowed with set limits and with transaction notification requirements; foreign borrowing/lending permitted within set limits.

o   MILD RESTRICTIONS:
   payments for invisibles subject to verification; fewer restrictions on size and flexibility of foreign currency accounts; foreign borrowing/lending permitted without approval but limits apply to net foreign currency position.

NO RESTRICTIONS:
indicated by a blank.

	1960 – 1969	1970 – 1979	1980 – 1989	1990 – 1992

AUSTRALIA

	1960 – 1969	1970 – 1979	1980 – 1989	1990 – 1992
	+ - - - - + - - - -	+ - - - - + - - - -	+ - - - - + - - - -	+ - -
Required Surrender of Export Proceeds	XXXXX XXXXX	XXXXX XXXXX	XXX	
Advanced Import Deposits				
Payments for/Proceeds from Invisibles	XXXXX XXXXX	XXXXX XXXXX	XXX	
Foreign Currency Deposits by Residents	XXXXX XXXXX	XXXXX XXXXX	XXX	
Foreign Lending/Borr. by Financial Institutions	XXXXX XXXXX	XXXXX XXXXX	XXX	
Tax or Special Reserve Req. on Foreign Borr.				

CANADA

	1960 – 1969	1970 – 1979	1980 – 1989	1990 – 1992
	+ - - - - + - - - -	+ - - - - + - - - -	+ - - - - + - - - -	+ - -
Required Surrender of Export Proceeds				
Advanced Import Deposits				
Payments for/Proceeds from Invisibles				
Foreign Currency Deposits by Residents				
Foreign Lending/Borr. by Financial Institutions				
Tax or Special Reserve Req. on Foreign Borr.				

HONG KONG

	1960 – 1969	1970 – 1979	1980 – 1989	1990 – 1992
	+ - - - - + - - - -	+ - - - - + - - - -	+ - - - - + - - - -	+ - -
Required Surrender of Export Proceeds	ooooo ooooo	oo		
Advanced Import Deposits	***** *****	**		
Payments for/Proceeds from Invisibles	***** *****	**		
Foreign Currency Deposits by Residents				
Foreign Lending/Borr. by Financial Institutions	***** *****	**		
Tax or Special Reserve Req. on Foreign Borr.				

INDONESIA

```
                                              +----  +----  +----  +----  +----  +----  +--
Required Surrender of Export Proceeds         xxxxx  xxxxx  xxxxx  xxxxx  x**
Advanced Import Deposits                      xxxxx  xxxxx  xxxxx  xxxxx  **o
Payments for/Proceeds from Invisibles         *****  *****  *
Foreign Currency Deposits by Residents        xxxx
Foreign Lending/Borr. by Financial Institutions  *****  *****  *****  *****  *****  *****  **
Tax or Special Reserve Req. on Foreign Borr.  xxxxx  xxxxx  xxxxx
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JAPAN

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                                              +----  +----  +----  +----  +----  +----  +--
Required Surrender of Export Proceeds         xxxxx  xxxxx  x*
Advanced Import Deposits                       *****  *0000  o
Payments for/Proceeds from Invisibles          *****  *****  *****  **o
Foreign Currency Deposits by Residents        xxxxx  xxxxx  xxxxx  xxxxx  xxxxx  xxxxx  **
Foreign Lending/Borr. by Financial Institutions  *****  *****  *****  ****o  00000  00000
Tax or Special Reserve Req. on Foreign Borr.   *****  *****  *****  *****
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KOREA

```
                                              +----  +----  +----  +----  +----  +----  +--
Required Surrender of Export Proceeds         xxxxx  xxxxx  xxxxx  xxxxx  xxxxx  xxxxx  xx
Advanced Import Deposits                      xxxxx  xxxxx  xxxxx  xx
Payments for/Proceeds from Invisibles         xxxxx  xxxxx  xxxxx  xxxxx  xxxxx  xxxxx  xx
Foreign Currency Deposits by Residents         *****  *****  *****  ****o  00000  00000  oo
Foreign Lending/Borr. by Financial Institutions  xxxxx  xxxxx  xxxxx  xxxxx  xxxxx  *****  **
Tax or Special Reserve Req. on Foreign Borr.
```

MALAYSIA

```
                                              +----  +----  +----  +----  +----  +----  +--
Required Surrender of Export Proceeds         xxxxx  xxxxx  xxxxx  xxxxx  xxxxx  xxxxx  xx
Advanced Import Deposits
Payments for/Proceeds from Invisibles          *****  *****  ***
Foreign Currency Deposits by Residents
Foreign Lending/Borr. by Financial Institutions  *****  *****  *****  *****  **000  00
Tax or Special Reserve Req. on Foreign Borr.
```

NEW ZEALAND

```
                                              +----  +----  +----  +----  +----  +----  +--
Required Surrender of Export Proceeds         xxxxx  xxxxx  xxxxx  xxxxx  xxx
Advanced Import Deposits                      xxxxx  xxxxx  xxxxx  xx
Payments for/Proceeds from Invisibles          *****  *****  *****  *****  ****
Foreign Currency Deposits by Residents        xxxxx  xxxxx  xxxxx  xxxxx  xxxxx
Foreign Lending/Borr. by Financial Institutions  xxxxx  xxxxx  xxxxx  xxxxx  xxxxo
Tax or Special Reserve Req. on Foreign Borr.
```

```
                                          1960 – 1969    1970 – 1979    1980 – 1989    1990 – 1992

PHILIPPINES
                                       +----  +----  +----  +----  +----  +----  +--
Required Surrender of Export Proceeds   XXXXX  XXXXX  XXXXX  XXXXX  XXXXX  XXXXX  XXX
Advanced Import Deposits                XXXXX  XXXXX  XXXXX  XXXXX  XXXXX  XXXXX  XXX
Payments for/Proceeds from Invisibles   XXXXX  XXXXX  XXXXX  XXXXX  XXXXX  XXXXX  XXX
Foreign Currency Deposits by Residents  OOOOO  OOOOO  O****  *XXXX  XXXXX  XXXXX  XXX
Foreign Lending/Borr. by Financial Institutions  OOOOO  O****  *XXXX  XXXXX  XXXXX  XXXXX  XXX
Tax or Special Reserve Req. on Foreign Borr.

SINGAPORE
                                       +----  +----  +----  +----  +----  +----  +--
Required Surrender of Export Proceeds   *****  *****  *****  ***
Advanced Import Deposits
Payments for/Proceeds from Invisibles   *****  *****  *****  ***
Foreign Currency Deposits by Residents  *****  *****  *****  ***
Foreign Lending/Borr. by Financial Institutions
Tax or Special Reserve Req. on Foreign Borr.

TAIWAN
                                       +----  +----  +----  +----  +----  +----  +--
Required Surrender of Export Proceeds   *****  *****  *****  *****  *****  ***
Advanced Import Deposits                *****  *****  *****  *****  *****  ***
Payments for/Proceeds from Invisibles   *****  *****  *****  *****  *****  ***
Foreign Currency Deposits by Residents  XXXXX  XXXXX  XXXXX  XXX
Foreign Lending/Borr. by Financial Institutions  *****  *****  *****  *****  ****
Tax or Special Reserve Req. on Foreign Borr.

THAILAND
                                       +----  +----  +----  +----  +----  +----  +--
Required Surrender of Export Proceeds   XXXXX  XXXXX  XXXXX  XXXXX  XXXXX  XXXXX  XX
Advanced Import Deposits                XXXXX  XXXXX  XXXXX  XXXXX  XXXXX  XXX*
Payments for/Proceeds from Invisibles   XXXXX  XXXXX  XXXXX  XXXXX  XXXXX  XXXXX  **
Foreign Currency Deposits by Residents  XXXXX  XXXXX  XXXXX  XXXXX  XXXXX  *****  **
Foreign Lending/Borr. by Financial Institutions  XXXXX  XXXXX  XXXXX  XXXXX  XXX**  *****  **
Tax or Special Reserve Req. on Foreign Borr.

UNITED STATES
                                       +----  +----  +----  +----  +----  +----  +--
Required Surrender of Export Proceeds
Advanced Import Deposits
Payments for/Proceeds from Invisibles      OO  OOOOO  OOOOO
Foreign Currency Deposits by Residents
Foreign Lending/Borr. by Financial Institutions   OO  OOOOO  OOOOO
Tax or Special Reserve Req. on Foreign Borr.
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