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# FRBSF WEEKLY LETTER

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## Saving-Investment Linkages in the Pacific Basin

In the last two decades continuing deregulation has opened up international capital markets. What does this greater freedom of capital movement among countries imply about the relation between national saving and investment? Theoretically the answer is straightforward: With greater capital mobility, a country's level of investment need not be constrained by the level of domestic saving, since any shortfall can be financed by foreign saving. Thus, the dismantling of capital controls should have loosened the link between national saving and investment rates.

But the empirical evidence has not supported this conclusion. In a widely cited cross-country study, Feldstein and Horioka (1980) found that the investment rate is highly correlated with the saving rate, which suggests that capital is less mobile internationally than commonly presumed. Subsequent work has found no evidence of any decline in the saving-investment correlation over time. Moreover, the correlation appears to be stronger for industrialized countries than for developing countries, even though industrialized countries tend to have more developed financial markets and fewer restrictions on international transactions.

This *Letter* examines saving-investment linkages in a group of Pacific Basin countries and also finds that the degree of capital controls has relatively little impact on the relation of domestic investment and saving. This puzzling result is explained in terms of the response of government policy to capital flows and the associated current account imbalances. Governments in countries with fewer capital controls have tended to counteract current account imbalances through fiscal policy intervention because of an aversion to large imbalances. Large capital inflow may be deemed undesirable, for example, because it causes the exchange rate to appreciate which, in turn, weakens the export sector. Such a policy response toward external imbalances has dampened differences in investment and national

saving rates. In countries with a high degree of capital controls, on the other hand, governments have tended not to offset current account imbalances with fiscal policy, but rather to finance government deficits through foreign borrowing. This has loosened the link between national saving and investment in these countries.

### Capital controls in the Pacific Basin

While the degree of capital controls eludes precise measurement, it is possible to classify Pacific Basin countries into three broad groups according to how early deregulation was initiated and how quickly capital controls were dismantled. (For details, see Kim 1993). At one end of the spectrum are Canada, the U.S., Hong Kong, and Singapore, with a relatively low degree of capital controls. The U.S. and Canada have long had a well-developed financial system relatively unencumbered by regulations, domestically as well as internationally. Hong Kong and Singapore removed most capital controls in the early to mid-1970s in a bid to become international financial centers.

The second group, Korea, Taiwan, and the Philippines, lies at the opposite end of the spectrum. Korea and Taiwan did not initiate any significant liberalization until well into the 1980s, and substantial barriers to international capital mobility still remain in both countries. In the Philippines, a policy of liberalizing capital controls was reversed abruptly in 1983 with the advent of the international debt crisis.

The third group, Australia, Indonesia, Japan, Malaysia, New Zealand, and Thailand, falls somewhere in the middle of the spectrum. All six countries initially had stringent international capital exchange controls. Indonesia, Malaysia, and Thailand began liberalizing controls in the early 1970s but restrictions still remain. Japan began relaxing capital controls in the mid-1970s. As with domestic financial liberalization, however, the process has been gradual and still is ongoing.

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By contrast, Australia and New Zealand did not begin liberalization until the early 1980s, but once initiated, regulatory barriers to capital mobility were dismantled quite quickly.

## Effects on saving-investment linkages

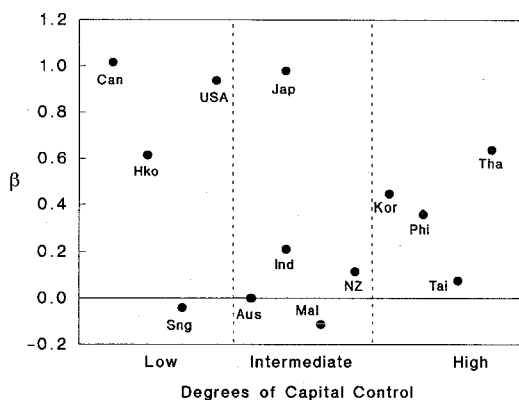
It is natural to expect that the degree of capital controls is an important determinant of investment's response to national saving. To see why, consider two extreme cases. If capital controls prevent a country from borrowing internationally, all investment within the country must be financed out of its own saving; in other words, national saving and investment rates will be perfectly correlated. Suppose on the other hand that there is no impediment to capital flows, as is the case within national borders. For example, if investment opportunities are different in New York and California, and if residents in both states can freely borrow or lend across state lines, the saving rate in New York or California need not be related to the state's investment rate. By the same analogy, if a nation's saving decision is based on a different set of considerations from those guiding its investment decisions, one would expect no systematic relation between national saving and investment, provided international capital markets are fully integrated.

Figure 1 illustrates the extent to which the degree of capital controls in Pacific Basin countries explains observed differences in the response of domestic investment to saving. The three groups of countries are arranged along the horizontal axis in ascending order of capital controls. The vertical axis measures the sensitivity of a country's investment rate to a change in its saving rate,  $\beta$ , as estimated from the regression of investment on saving. For example, a value of  $\beta$  equal to 0.5 indicates that a 1 percent increase in the national saving rate leads to a 0.5 percent increase in the investment rate; a value of 1 implies that any given change in saving is fully reflected in the change in investment.

The strength of the saving-investment linkage in Pacific Basin countries does not appear to be systematically related with the degree of capital controls. If anything, the linkage tends to be stronger in the group of countries with the lowest degree of capital controls. The regression coefficient on saving is close to 1 in Canada and the U.S. despite their having some of the least restrictive policies with respect to international capital flows. Japan, a country classified as having an

intermediate degree of capital controls, also has a  $\beta$  that is not significantly different from 1. By contrast, significantly weaker saving-investment linkages are observed for Korea, Thailand, and the Philippines, despite the fact these countries traditionally have much more stringent capital controls.

**Figure 1: Capital Controls and the Response of Investment to Saving ( $\beta$ )**



## Explaining the puzzle

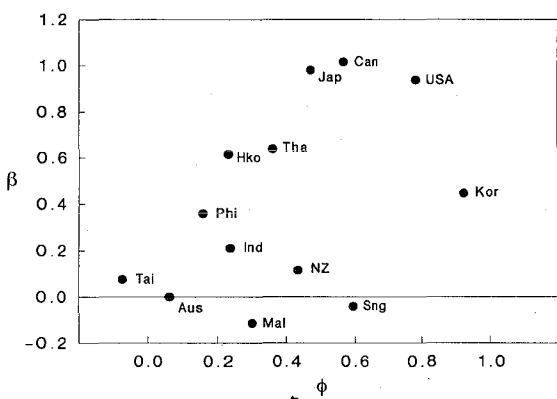
One possible explanation for this puzzling result is that correlations between saving and investment also may reflect some common exogenous disturbances affecting the economy. For example, even with perfect capital mobility, changes in population growth, productivity, or the growth rate of income all may generate co-movements in saving and investment, thus giving the appearance of immobile capital. Additionally, imperfect integration of goods markets or other factors of production may force the economy to behave more like a closed economy in terms of saving and investment. However, adjusting for some of these effects did not materially alter the puzzling cross-country pattern of saving-investment linkages in the Pacific Basin.

An alternative explanation is that some governments are averse to large capital inflows or outflows, that is, to current account imbalances, and adjust their budget deficits to offset the gap between private saving and investment. This is not to say that fiscal policy is determined exclusively, or even primarily, by balance of payments considerations. Rather, the explanation presumes that when the current account balance exceeds some predetermined level, then fiscal or monetary policies are implemented to reduce or eliminate those deficits or surpluses. For example, in the second half of the 1980s, the U.S. tried to reduce fiscal spending and thereby reduce its growing current account deficit; on the opposite side of the coin is Japan which sought to reduce the cur-

rent account surpluses that emerged in the second half of the 1980s by pursuing expansionary fiscal and monetary policies.

To assess the plausibility of this argument, Figure 2 plots the saving-investment linkages against a variable  $\phi$ , which measures the propensity of government policy to counteract large external imbalances.  $\phi$  is estimated by regressing government budget deficit on the gap between private saving and investment. A value of  $\phi$  equal to 1 implies that fiscal policy completely offsets any imbalance in private saving and investment so that no net capital flow occurs. In the polar opposite case of  $\phi$  equal to 0, fiscal policy does not change in response to current account imbalances.

**Figure 2: Fiscal Policy Response to Current Account Imbalances ( $\phi$ ) and Response of Investment to Saving ( $\beta$ )**



The government's propensity to offset current account imbalances ( $\phi$ ) tends to be stronger in countries (such as Canada, the U.S., and Japan) with a higher saving-investment correlation ( $\beta$ ). Thus, despite the low or intermediate degree of capital controls in these countries, the policy response to maintain external balance has tended to raise the saving-investment correlation. Conversely, because the propensity to offset current account imbalances tended to be lower in countries that traditionally imposed higher restrictions on international capital flows (such as Taiwan, the Philippines, Indonesia, and Malaysia), the saving-investment correlation has tended to be relatively weak or insignificant in these countries.

In fact, there is 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. For the five countries for which data are available (Indonesia, Korea, Malaysia, the Philippines, and Thailand) public or publicly guaranteed debt accounted for one-half to three-quarters of total foreign borrowing throughout the 1980s, with significant proportions of the foreign borrowing going toward financing the government budget deficit. Though comparable data are unavailable for the earlier periods, the relative importance of public borrowing was undoubtedly even higher. This may constitute an additional reason for why saving-investment linkages are weaker in these Pacific Basin countries despite their traditionally more stringent controls.

### Conclusion

Theory suggests that the greater the degree of capital controls, the more investment will be constrained by the availability of domestic saving. An examination of Pacific Basin countries suggests, however, that the relationship turns out to be more complex. Countries with few capital controls exhibit a relatively high saving-investment linkage, that is, lower net capital mobility, if the government pursues a fiscal policy that tends to offset imbalances in private saving and investment. Canada, the U.S., and to a lesser extent Japan, fall into this category. By contrast, net international capital movements can be substantial despite stringent capital controls if the government itself is the primary agent that borrows in the international capital market. This was the case for Indonesia, Korea, Malaysia, the Philippines, and Thailand, where the public sector has traditionally played a relatively larger role in allocating domestic investment. For this group of countries, capital controls, by preventing private capital outflow, may have in fact accentuated the imbalance between total saving and investment.

**Sun Bae Kim**  
Economist

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P.O. Box 7702  
San Francisco, CA 94120

**San Francisco**  
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