International Capital Mobility: What Do Saving-Investment Correlations Tell Us?

Comment on Dooley, Frankel, and Mathieson

STEPHEN M. MILLER*

Students and practitioners of international finance are well aware of the substantial integration of international financial markets. The concept of covered interest rate parity is frequently invoked when international macroeconomic models are constructed, at least for industrial countries, and is extensively employed by foreign exchange traders. Thus the observation of a strong positive correlation between national saving and domestic investment rates calls into question accepted views regarding the degree of international capital mobility.

If international capital is freely and highly mobile, then there is little reason to expect countries with high saving rates to have high investment rates as well, or so the story goes. That is, world saving, like water seeking a common level, flows from low- to high-interest-rate countries, financing capital accumulation in the most productive economies. Hence, the empirical regularity of a high correlation between national saving and domestic investment rates is in apparent contradiction with integrated international financial markets.

Can this conundrum be resolved? Dooley, Frankel, and Mathieson (1987) explained the apparent contradiction by distinguishing between the international integration of markets for bonds and of markets for physical capital. Assuming that bonds substitute perfectly across coun-

* Mr. Miller is visiting Principal Analyst in the Fiscal Analysis Division of the Congressional Budget Office, U.S. Congress, where he is on leave from his position as Professor of Economics at the University of Connecticut. The author thanks J.S. Dreyer and G.R. Iden for comments; the views expressed are his alone and do not necessarily reflect those of the Congressional Budget Office or its staff.
tries but imperfectly for physical capital within each country and that no trade in physical capital occurs, they constructed a theoretical model that is qualitatively consistent with the observed strong empirical regularity. They concluded that their results cast "...considerable doubt... that national markets for physical capital are highly integrated" (p. 528).

The Dooley-Frankel-Mathieson rationalization is not necessarily the only explanation. A high degree of correlation between saving and investment rates follows, as I demonstrate below, if the household sector is assumed to be "ultrarational." The high correlation, moreover, is independent of the degree of capital mobility. The idea of an ultrarational household sector evolves from the empirical regularity referred to as Denison's law; that is, the stability of the gross private saving rate (see David and Scadding (1974)). Under the ultrarationality hypothesis, the household sector sees the business sector as an extension of itself. Business saving decisions are incorporated directly into the household consumption-saving decision, ex ante. The appropriate level of saving aggregation is the private rather than the household sector.

If the gross private saving rate is a constant, for purposes of argument, then movements in the national saving rate occur because of movements in the government saving rate. An ultrarational world, according to David and Scadding (1974), implies that bond-financed (tax-financed) government expenditure substitutes for domestic investment (consumption) expenditure on an ex ante, one-to-one basis. It follows,

1 Other rationalizations for a high correlation between saving and investment rates without restricted capital mobility also exist. A popular scenario argues that policy authorities have current account balance as a major objective (see Summers (1986)). Thus, changes in the private sector saving rate, for example, induce policy adjustments, creating a balance between saving and investment rates and not allowing significant or sustained imbalances in the current account. Another scenario differentiates capital mobility associated with nominal and real interest rate parity (see Frankel (1985)). Nominal parity is linked to the degree of financial market integration; real parity is relevant for the saving-investment correlation. Thus, the failure of goods-market integration (that is, the failure of purchasing power parity) can explain the high correlation between saving and investment rates, not capital immobility. Also focusing on international goods flows, Bovenberg (1988) has produced a positive correlation by assuming imperfect substitutability between domestic and foreign goods and expenditure shares biased toward domestic goods.

2 Bailey (1972) argued that an optimal fiscal policy finances government consumption and investment expenditure with taxes and debt, respectively. In such a world the ultrarational household sector substitutes government investment (consumption) for private investment (consumption). Of course, the observed allocation of tax and bond financing of government expenditure does not imply the same mix of government consumption and investment; that is the rub. I discuss this point below.
therefore, that the national saving and domestic investment rates are perfectly correlated.

The ex ante substitutions deserve further explanation. National income accounting definitions include

\[ Y = C + S(H) + S(B) + T \]  

and

\[ S(H) + S(B) = I_D + (X - M) + (G - T), \]  

where \( Y \) is national product, \( C \) is consumption expenditure, \( S(H) \) and \( S(B) \) are household and business saving, \( T \) is government taxes minus transfers, \( I_D \) is domestic investment, \( X - M \) is net exports, and \( G - T \) is the government deficit.

Divide each term in equation (1) by \( Y \) and solve for the gross private saving rate (GPSR). The GPSR is constant only if the ratio \((C + T)/Y\) is constant. Under such circumstances, tax-financed government expenditure substitutes for consumption expenditure on an ex ante, one-to-one basis. That is, if government consumption equals tax-financed government expenditure, then government consumption substitutes for private consumption.

Next, divide each term in equation (2) by \( Y \). If the GPSR is constant, then the ratio \([I_D + (X - M) + (G - T)]/Y\) must be constant. Thus, with a constant GPSR, debt-financed government expenditure substitutes ex ante for domestic investment, for net exports, or for both. The ultrarationality hypothesis considers a closed economy; the possible substitution for net exports is not explicitly addressed. But the issue is the crux of the present debate. If debt-financed government expenditure is viewed by the private sector as government investment, then debt-financed public expenditure substitutes on an ex ante, one-to-one basis for private investment; the argument is analogous to the substitution between private and government consumption. Consequently, there is no reason for the debt-financed government expenditure to substitute ex ante for net exports. Another recently observed empirical regularity

\[ \text{The standard, intermediate-run description of the effect of an increase in the government deficit in a small open economy with near-perfect capital mobility is as follows. An increase in the government deficit drives up interest rates, generates a capital inflow, lifts the exchange value of the domestic currency, and leads to a deterioration in the trade balance. That is, an increase in the government deficit crowds out net exports. The adjustment in the trade balance is an endogenous response to other events in the economy. The ultrarationality hypothesis implies that these events never occur because investment responds to the policy change, ex ante.} \]
supports the ex ante, one-to-one substitution between the government deficit and domestic investment—the stability of the ratio of nonfinancial sector debt to gross national product (GNP).\footnote{Friedman (1982) presented evidence for the stability of the ratio of nonfinancial sector debt to GNP in Canada, the Federal Republic of Germany, Japan, the United Kingdom, and the United States. But he later (1987) also described the apparent breakdown of the stability of the ratio during the 1980s in the United States. That breakdown is discussed below.}

In sum, in an ultrarational world the gross private saving rate is constant. The government saving rate, \((T - G)/Y\), is perfectly correlated with both the national saving rate, \((NS/Y) = GPSR + (T - G)/Y\), and the domestic investment rate. Hence the national saving rate and the domestic investment rate are expected to correlate perfectly in an ultrarational world, a conclusion that is independent of the degree of international capital mobility.

An ultrarational world modifies the discussion of Dooley, Frankel, and Mathieson (1987, pp. 505–06 and pp. 525–28) as follows. First, the function for the investment rate (that is, their equation (1)) now includes \((T - G)/Y\) as an argument with a theoretical coefficient of unity.

Second, the covariance decomposition (that is, their equation (3)) now contains the covariance between \((T - G)/Y\) and \(NS/Y\), which equals unity in an ultrarational world, with a coefficient of unity. That is, a covariance of unity between the saving and investment rates is entirely explainable in an ultrarational world, even if the world interest rate is exogenous and capital is perfectly mobile.

Third, an exogenous shift in the home-country fiscal deficit schedule (that is, their Figure 1) does not shift the investment-plus-fiscal-deficit schedule in an ultrarational world. Interest rates remain unchanged, and capital flows are not triggered.

The empirical evidence in support of an ultrarational household sector exists but is not overwhelmingly persuasive. For example, Modigliani (1970) argued in favor of private, rather than personal, saving as the appropriate level of aggregation. David and Scadding (1974) provided some empirical support for an ultrarational household sector, whereas Kormendi (1983) supported a consolidated approach to modeling consumption behavior in the United States. Miller (1982) raised questions about the ultrarationality hypothesis for the United States. Finally, Demopoulos, Katsimbris, and Miller (1983, 1986) found evidence in support of an ultrarational household sector in several Organization for Economic Cooperation and Development countries, especially in countries having adopted integrated corporate tax systems. Further, the empirical evidence of the stability of the ratio of nonfinancial debt to GNP
and the strong positive correlation between saving and investment rates also are consistent with the ultrarationality hypothesis, as argued above.

In sum, an ultrarational household sector represents a potential explanation for the high positive correlation between saving and investment rates. The hypothesis, moreover, does not require a low degree of international capital mobility.

Recent experience in the United States suggests a possible breakdown in the empirical regularity. The fiscal and trade deficits are positively correlated in the 1980s; the standard description (see footnote 2) appears to hold. Do the arguments presented above disintegrate with such an observation? Not necessarily. The ultrarational household sector only substitutes perceived government investment for private investment. If the government begins financing a large share of its consumption with debt, then the debt financing of government expenditure in excess of government investment may crowd out net exports. In addition, the ratio of nonfinancial debt to GNP must also rise, an empirical observation made by Friedman (1987). Further testing clearly is warranted.

REFERENCES


Frankel, Jeffrey A., "International Capital Mobility and Crowding Out in the U.S. Economy: Imperfect Integration of Financial Markets or of Goods


