Saving and real interest rates in developing countries

Reinhart, Carmen and Ostry, Jonathan

University of Maryland, College Park, Department of Economics

1995

Saving and the Real Interest Rate in Developing Countries
Jonathan Ostry and Carmen M. Reinhart
December 1995

Raising real interest rates has been cited as a way to increase private saving, and thus provide the resources for growth. But this may not be a viable approach in the poorest developing countries in which most people live at subsistence level. In these situations, consumption is not very responsive to fluctuations in real interest rates and financial liberalization my not be the catalyst to higher higher saving rates.

How does private saving respond to changes in real interest rates in developing countries?

The answer will influence judgments about the effectiveness of a range of policies, For example, financial liberalizations, which generate higher real interest rates, will result in greater savings by households only if the latter decide to defer consumption; in other words, if the sensitivity of consumption and saving to higher interest rates is significant. Similarly, when fiscal policy shocks contribute to movements in domestic interest rates, their impact on the external current account will depend on how responsive private saving is to changes in real rates of return.

In this article, we present some evidence to suggest that raising domestic interest rates to stimulate saving if unlikely to be successful in the poorest developing countries, where consumption choices arc heavily inf1uenced by subsistence considerations. Indeed, the evidence suggests that the interest rate sensitivity of saving to real rates of return rises with a country's income level. Hence, the same policies undertaken in different countries could produce very different outcomes, depending on the country's level of

development.

Is saving responsive?

There is little consensus in the empirical literature on the interaction between saving and the real rate of interest in developing countries, Some studies have concluded that, for a large number of developing countries, there docs not appear to be *any* systematic relationship between rates of return and consumption/saving behavior; others have suggested that there may be considerable regional variation in this elasticity. One reason may simply be the poor quality of the data in general and, more specifically, the fact that there is considerable variation in the economic significance and informational content of the data on real rates of return. Lack of sophistication and depth in domestic financial markets or direct regulation may result in interest rates that do not adequately reflect expectations about the underlying economic fundamentals. In many low-income developing countries, there arc few banks, and there is little scope for true market determination of in rates. This feature of credit markets in the least developed countries may itself make saving Jess responsive to interest rates.

Another reason that might explain the failure of existing studies to detect significant effects of interest rates on household saving in developing countries relates to the fact: that particularly in the poorest countries, subsistence considerations arc likely to he a significant factor determining consumption behavior. Given that, to be able to save, households must first achieve a subsistence consumption level, the interest rate sensitivity of private saving will be close to zero for countries where a large share of the population lives at or near subsistence consumption levels, Indeed, a subsistence model would predict a nonlinear relationship between saving behavior and the level of

development, with the most significant changes occurring when countries move from

low-income to low-middle-income status, and relatively minor changes between middle

income and high-income countries. Of course, the interest rate sensitivity of saving could

be low even in middle-income countries if the income distribution were sufficiently

skewed so that a large proportion of the population lived at or near subsistence levels,

A frequently used proxy for the importance of subsistence in household budgets is

the budget share going to food. It is indeed noteworthy that food consumption accounts

for a markedly lower share of total expenditure in high-income than in low-income

countries. As shown in Table 1, food consumption accounts for an average of 13 percent

of total expenditure in high-income countries and for only 8 percent of total consumption

in the United States. For middle-income countries, such as Mexico and Thailand, the

share is often 30--40 percent while, for the poorest countries, the share of food is over 50

percent; it is in the 60-70 percent range in some countries, such as Sierra Leone and

Sudan. The very sharp differences in food expenditure across countries with different per

capita income levels suggests that subsistence considerations may indeed be important in

understanding saving behavior, particularly in low-income developing countries.

Table 1

Food as a share of expenditure [1]
(1990)

Country groupings	Percent [2]
Low-income	55.6
Lower-middle-income	32.1
Upper-middle-income	30.5
High-income	13.0

Source: Judith Jones Putnam and Jane A. Allshouse, *Food Consumption, Prices and Expenditures*, United States Department of Agriculture, Statistical Bulletin No. 867.

[1] Expenditure on food as a percent of total personal expenditure. For details of the countries included in each country grouping, see World Bank, *World Development Report 1994: Infrastructure for Development*, Washington, DC, 1994.

[2] Data refer to averages for each country grouping.

There are, however, additional reasons why saving may be less responsive to changes in real interest rates in low-income than in middle-income countries. Some have argued that low-income countries are characterized by pervasive liquidity constraints, which implies that changes in consumption will be heavily influenced by changes in current income, rather than by changes in rates of return.

Savings and income

Subsistence considerations offer two main predictions about saving behavior. First, saving rates should increase with the level of real income at the initial stages of development, with the largest increases in the saving rate occurring as a country moves from low- to middle-income levels. Second, saving should become more responsive to changes in real interest rates as countries become richer. The first prediction follows directly from the role of subsistence consumption in the low income developing countries, and the fact that the share of subsistence in total consumption as perhaps proxied by the food share----declines as income increases.

The second prediction may also be related to subsistence considerations, since incentives to save over time should affect only that portion of the budget left over after subsistence has been achieved, that is, discretionary income. Among countries in various income groups, the patterns of saving rate. that emerge are broadly consistent with the predictions of the subsistence model. As Table 2 shows, private saving is, on average, considerably lower for the poorest developing countries, where the saving rate is about one half that of the high income group, In fact, such differences also appear within regions. World Bank data show that median gross domestic saving as a percentage of GDP (1987-91 average) was 5.6 percent for low-income African countries and 19 percent for middle-income African countries.

Table 2

Income and personal saving rates

Country groupings	GNP per adult in 1985 dollars (1980–87 average)	Personal saving as a percentage of GDP (1985–93 average)
Low-income	1,380	11.2
Lower-middle-income	2,806	16.7
Upper-middle-income	4,896	19.5
High-income	16,161	20.0

Sources: IMF, *World Economic Outlook, October 1994*, Washington; and World Bank, *Adjustment Policy Research Report*, Oxford University Press, New York, 1994.

Furthermore, the relationship between the level of income and the saving rate appears to be nonlinear, as the largest increases in saving rates occur in the transition from low- lower-middle-income levels, where the average personal saving rate rises by 5.5 percentage points. The average for the upper-middle income countries is still 2.8 percentage points above that of the lower middle-income group, but there appears to be relatively little difference between the average saving rates in the high-income and upper-middle-income countries in the sample.

It is noteworthy that liquidity constraint and precautionary motives for saving could produce the opposite pattern in saving rates. If poor consumers who borrow but face an uncertain income stream, the demand for precautionary saving rises. Hence, the liquidity-constraint precautionary saving hypothesis would predict that it is the poorest consumers, who have no access to credit market, who would save the most

Still, there appear to be marked cross-country differences in saving rates that cannot

be accounted for by a subsistence explanation. For example, saving rates tend to be higher among the Asian countries than among the Latin American countries in the sample, despite similar income levels. The more equitable income distribution that characterizes the Asian countries may be a factor behind those differences. Institutional arrangements (such as pension funds), which play a more prominent role in several Asian countries may also be conducive to fostering higher saving rates.

The role of real interest rates in saving behavior is more difficult to gauge. One problem--which is particularly important in Africa--is that financial markets remain thin and governments often set interest rates at nonmarket levels. Nevertheless, there is some evidence that "financial saving increased as a result of the increase in real interest rates associated with liberalization of financial markets in developing countries, both in Africa and elsewhere. For example, increases in saving rates have been associated with higher real interest rates in Indonesia and the Republic of Korea and, more recently, in Argentina, Chile, and Pakistan. There is also some evidence that reform programs in Africa-·-which caused real interest rates to move from sharply negative to mildly positive levels-were successful in mobilizing domestic savings.

Empirical findings

When households are assumed to maximize utility, or welfare, subject to a resource constraint, the interest-rate sensitivity of household saving depends on how easily households can substitute future consumption for current consumption (technically known as the *intertemporal elasticity or substitution* (IES) in consumption). If a given change in real interest rates induces large shifts in consumption, then the IES—one of the

parameter; describing household preferences—will be correspondingly large. In our work

on this issue, macroeconomic data from a sample of countries were used to evaluate

the magnitude of the IES for households from developing countries with diverse income

levels. The low-income countries in the sample were Egypt, Ghana, India, Pakistan, and

Sri Lanka. The low-middle income countries were Colombia, Costa Rica, C6te d'Ivoire,

Morocco, and the Philippines. Three upper-middle-income countries also were included

in the analysis: Brazil, Korea, and Mexico. In addition to not requiring that the lES be

equal across countries with very different per capita incomes (consistent with the

subsistence model), our methodology allowed relative prices (of imports and home

goods) to enter into households' saving decisions. To take one example, a temporary

reduction in

import prices should reduce saving. Other things being equal, because the price of

imports is a factor whose changes over tic (like the changes in interest rates) affect

incentives to consume today or in the future. Estimation of the IES for countries with

different per capita incomes is, however, an intermediate step. Ultimately, the aim of our

analysis is to quantify the responsiveness of saving to policies that alter domestic interest

rates, that is, the elasticity of saving with respect to the interest rate.

      It is possible to simulate how saving responds to changes in real interest rates

using our empirical estimates of the IES. By estimating how these vary with income level

within our sample of 12 countries, we can infer values of the IES outside the sample

(using information on the per capita income levels for other countries) and thereby

simulate the interest rate elasticity of saving for a broad range of countries.

Our results (see Table 3) suggest that a 1 percentage point rise in the real rate of interest should elicit a rise in the saving rate of only about two tenths of 1 percentage point for the poorest countries in the sample. For the wealthiest countries, by contrast, the rise in the saving rate in response to a similar change   in the real interest rate is about two thirds of a percentage point. As Table 3 shows, the results are not very sensitive to the initial level of the real interest rate.

Table 3
Interest sensitivity of saving under alternative scenarios[1]

	Initial real interest rate		
Country groupings	3 percent	4 percent	5 percent
Low-income			
Average for group	0.312	0.306	0.300
Average for 10 poorest	0.177	0.174	0.171
Lower-middle-income	0.532	0.522	0.512
Upper-middle-income	0.560	0.549	0.539
High-income	0.584	0.573	0.562

Source: M. Ogaki, J.D. Ostry, and C.M. Reinhart. "Saving Behavior in Low- and Middle-Income Developing Countries: A Comparison," *IMF Staff Papers* (forthcoming).

[1] The data refer to the change (in percentage points) in the saving rate owing to a 1 percentage point increase in the real interest rate. For example, in high-income countries with a real interest rate of 3 percent, a 1 percentage point rise in the real interest rate would raise the saving rate by nearly two thirds of a percentage point (0.584 of a percentage point). At higher baseline levels of the real interest rate, the saving response diminishes slightly.

In general, the cross-country variation in the responsiveness of saving to a change in the real interest rate is wide, consistent with the predictions of the subsistence consumption model and the wide variation in income levels in the sample of countries included in our study. As with saving rates, the relationship between a country's income level and the interest elasticity of saving varies as one move up the income scale. Specifically, in low-income countries, the IES (and hence the interest rate elasticity of

private saving) is close to zero. In low-middle-income countries, there is a marked rise in the IES. The IES is found to increase again in the upper-middle income countries, though 111crcis little difference between this group and the high-income countries.

Implications

The main conclusion that emerges from this analysis is that much of the considerable variation among countries in both the level of saving and the responsiveness of saving to the real interest rate can be systematically explained by the country's income level. Specifically, the hypothesis that the saving rate and its sensitivity to interest rate changes is a rising function of income finds considerable empirical support. In particular, our results may help to explain why the rising real interest rates that typically accompany financial liberalization have failed to elicit an appreciable rise in private saving in many countries. Though financial liberalization policies----·and the resulting increase in interest rates---may have a number of positive effects (including increasing both the efficiency of investment and economic growth),the results suggest that the direct impact of such policies on household saving behavior is likely to be relatively small in low-income countries.

Other policy questions—for example, the relationship between government deficits and the current account of the balance of payments will also depend on the responsiveness of private saving to real interest rates, to the extent that changes in public saving (increases or decreases in the budget deficit or surplus) alter domestic rates of return. Hence, our findings may shed some light un the wide variation among countries in the response of the current account to fiscal policy changes that alter interest rates.

The failure of saving to respond to changes in real interest rates in many low-income countries is particularly problematic, since these are also the countries that have the least access to international capital markets and foreign savings. But even for developing countries that can obtain foreign financing, achieving or maintaining adequate domestic savings is essential for sustained growth. As the turbulence at the end of 1994 in Mexican and other emerging financial markets highlighted, foreign financing can be volatile and reversals can be quite abrupt.

Increasing national saving in lower income countries may therefore require an alternative strategy. A recent World Bank study of high-performing Asian economies highlights the role of lower public sector deficits (achieved through expenditure cuts rather than tax increases) as an important means of achieving higher national saving. Reducing the level and volatility of inflation, and promoting macroeconomic stability more generally were also seen as useful ways of promoting saving. Mandatory saving program may also have been effective in boosting saving in some Asian countries. In contrast, in upper-middle-income developing countries, the household saving rate is likely to increase significantly as interest rates move up, and the response is unlikely to be very different from what would typically be observed in industrial countries.

References:

Ogaki, Masao, Jonathan Ostry, and Carmen M. Reinhart "Saving Behavior in Low- and Middle-Income Developing Countries: A Comparison," (with *IMF Staff Papers*, Vol. 43 No. 1, March 1996, 38-71.

Ostry, Jonathan, and Carmen M. Reinhart, "Private Saving and Terms of Trade Shocks: Evidence from Developing Countries," *IMF Staff Papers*, Vol. 39 No. 3, September 1992, 495-517.