

## DIFFERENCES IN HOUSEHOLD SAVINGS BEHAVIOR: EVIDENCE FROM INDUSTRIAL AND DEVELOPING COUNTRIES

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### I. INTRODUCTION

UNDERSTANDING the nature of household savings behavior is critical in designing policies to promote savings and investment. Given the differences in the economic environment of the developing and industrial countries there should be substantial variation in the household behavior. Most of the empirical literature that analyzed cross-country savings behavior concentrated on aggregate savings due to the lack of consistent information on household behavior and possible differences in the household savings in developing versus industrial countries were disregarded. This study aims at examining the differences in household savings behavior in developing and industrial countries from a cross-country perspective.

Household savings literature is based on two major hypotheses. Following the pioneering work of Keynes [21] which defines savings as a linear function of income, the first major breakthrough in savings literature is the permanent income hypothesis of Friedman [11]. This hypothesis differentiates permanent and transitory components of income as determinants of savings. Permanent income is defined in terms of the longtime income expectation over a planning period and a steady rate of consumption maintained over lifetime given the present level of wealth. Transitory income is the difference between actual and permanent income and since individuals are assumed not to consume out of this income category, marginal propensity to save on transitory income will be unity. Empirical tests of the permanent income hypothesis are mainly concerned with the effect of initial wealth on savings as well as the marginal propensities to save out of permanent and transitory components of income. However, the results of empirical studies on permanent income hypothesis are divergent for both developing and industrial countries [20] [13] [14] [15].

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The second major contribution to savings literature comes from Ando and Modigliani's life cycle hypothesis [2], whose basic assumption is that individuals spread their lifetime consumption evenly over their lives by accumulating savings during earning years and maintaining consumption levels during retirement. Tests of the life cycle hypothesis are therefore mainly concerned with the effect of demographic variables such as age groups [20], birth rates [25] [26], and dependency ratios [16] on savings behavior. The second group of variables used to describe savings during working life and dissavings during retirement are financial variables such as interest rates [30], inflation rates [22], available financial instruments, and initial wealth levels which affect the intertemporal consumption decisions of households.

Based on the two major hypotheses, former empirical tests of savings behavior have certain drawbacks. First, empirical studies estimated savings behavior either for a single country (e.g., [29]) or a group of countries. These studies, using cross-sectional data, concentrated on either developing countries [22] [28] [33] or industrial countries [19]. When we consider the country choices in these previous studies, it is clear that the savings behavior was estimated for selected samples without any comparison with countries at different levels of development. Therefore one can argue that the samples used in prior studies are consistent within themselves but are not appropriate to detect differences across country groups.

The second flaw in the previous empirical work, as pointed out by Schmidt-Hebbel, Webb, and Corsetti [34], is the use of national aggregate savings data assuming that private savings account for a predominant part of total savings. Here we encounter two problems. Aggregate savings used as a proxy for household savings are subject to cross-country inconsistencies due to the difference in the methodology employed in their derivation as a residual from the commodity flows. Besides, aggregate savings can be used as a proxy for household savings only if the Ricardian equivalence holds, and thus, private and public savings can be substituted, and household savings are a perfect substitute for private corporate savings. In our review of the literature the only exception that we encountered is the cross-country savings study conducted by Schmidt-Hebbel, Webb, and Corsetti [34] in which the household savings from the *U.N. System of National Accounts* were used to examine determinants of savings for developing countries.

The third drawback of previous empirical cross-country research is that the impact of the level of development on the household savings behavior was not investigated. The cross-country estimation of household savings reaches a consensus on the significance of a group of variables such as income and wealth while there is still controversy about the explanatory power of other factors such as rates of return, inflation, and demographics [34]. However, it is possible to perceive differences in the contribution of consensus variables to savings in each group of countries and some of the controversy about other explanatory variables can be attrib-

uted to the level of economic and financial development.

The purpose of the present study was to learn more about the differences in the nature of the household savings behavior in industrial versus developing countries. In order to alleviate the above-mentioned shortcomings, our approach entailed the following. (1) The same econometric model was applied to both developing and industrial countries so that differences in the impact of independent variables could not be attributed to model specifications. (2) As the dependent variable, household savings data were derived from the *U.N. System of National Accounts*. As a result a theoretically correct measure of household savings statistics was provided and most importantly the data set was comparable across countries. (3) The model was specified to demonstrate cross-country differences in the elasticity of savings with respect to variables used in both permanent income and life cycle hypotheses and with variables whose effectiveness are agreed upon. (4) The model also examined if there is sufficient evidence to attribute the discrepancy of the explanatory power of other variables to differences in the development level of countries. Therefore, the conclusions of this paper were expected to settle some of the controversy about the savings behavior in the previous empirical studies associated with the use of data with different aggregations and compiled from noncomparable sources.

The “single reduced-form equation” proposed by Schmidt-Hebbel, Webb, and Corsetti [34] for estimating household savings in a group of developing countries was used in this study to compare the savings behavior in developing and industrial countries. In this framework, we investigated the issues relating to (1) the discrepancy in the explanatory power of nonconsensus variables with reference to the level of economic development and (2) the differences in the effectiveness of the use of consensus variables in explaining household savings for developing versus industrial countries. A brief review of relevant empirical work and specification of the model is described in the following section. Section III is devoted to empirical results and Section IV contains discussions and conclusions.

## II. DETERMINANTS OF SAVINGS

### A. *Income*

Both the Keynesian savings function [21] and the permanent income hypothesis [11] indicate a positive effect of income on savings. Using time series data for forty-nine countries, Rossi, for example, indicated the positive impact of current income levels on savings rate without differentiating types of income [32]. According to the permanent income hypothesis [11], which distinguishes between permanent and transitory components of income, households will spend mainly the permanent income and therefore the transitory income will immediately be channeled to savings with marginal propensity of savings from this income approaching unity. Studying a group of developing countries, Gupta observed that savings re-

spend positively to transitory income [17]. Koskela and Viren studying a group of industrial countries and defining transitory income as unanticipated changes also concluded that unanticipated real income had a positive effect on savings [22]. Based on the survey of consumer finances, Avery and Kennickell indicated that in the United States, families with higher real income and families that received support or large gifts, which is an alternative definition of transitory income, experienced a higher level of savings [3].

In addition to permanent and transitory income components, the rate of growth in income is used as an additional explanatory variable in empirical savings studies. Increased growth rates in income are also expected to have a positive effect on household savings. Collins, for example, found that income growth would increase savings especially if it were concentrated in higher saving households [8]. In this study all three definitions of income, namely, permanent income, transitory income, and growth rate of income, were used as explanatory variables.

#### B. *Wealth*

Different definitions of wealth are used in the literature depending upon the different assumptions regarding the formation of expectations about intertemporal consumption [33]. Still, wealth is expected to have a negative effect on savings through the reduction of savings out of permanent income [5]. As in the case of the Schmidt-Hebbel, Webb, and Corsetti study [34], this study also adopted the view that monetary asset holdings can be used to measure wealth both because monetary assets lessen the dependence on current income, especially when it declines temporarily, and the data for monetary assets are available on a comparable basis for all countries in the sample.

#### C. *Rates of Return*

The effect of interest rates on savings was inconclusive in the previous empirical studies. According to intertemporal consumption decision, an increase in the rates of return increases savings but real income effect of higher rates of return can affect savings adversely. In his survey article, Balassa argued that the effect of real interest rates on savings is positive for developing countries [4]. Studying a group of industrial countries Koskela and Viren also observed that savings increase as real rates of interest increase [22].

The effect of interest rates may also be explained by the inflation effect: assuming that nominal rates of interest are constant, a rise in the inflation rate lowers the real cost of borrowing and hence has a positive effect on consumers' expenditure and a negative effect on savings. Examining the household savings behavior in Australia, Ouliaris indicated that real interest rates exert a negative influence on the savings ratio and the fall in real interest rates contributes to the rise in savings ratio [30].

Finally, a cross-section time series sample from developing countries provides

evidence that in the majority of the cases the response of savings growth to real rates is not different from zero [12]. The author argued that in developing countries assumptions about elasticity of substitution may not be realistic because a significant fraction of the population may not be able to borrow, even at black market rates.

#### D. *Inflation*

The intertemporal consumption argument suggests that inflation expectations may encourage expenditures on durables at the expense of savings. On the contrary, it is also suggested that inflation decreases the real value of financial wealth fixed in nominal terms, and households trying to restore their wealth-income position will increase their savings. Empirical literature on the effect of inflation on savings provides ample evidence that supports both views.

Gupta, for example, found that in a group of Asian countries, both expected and unexpected components of inflation had a positive effect on savings [17], while Lahiri's results were inconclusive [24]. Koskela and Viren reported that savings increase as the inflation rate increases and as surprise inflation increases in a group of industrial countries [23].

Kauffmann on the other hand compared the United States and Germany, and suggested that the lower savings activity of U.S. households was due to the higher inflation rates in the United States than in Germany [19]. Bovenberg and Evans, analyzing personal savings in the United States, concluded that due to reduced inflation during the 1980s the personal savings rate was reduced [6].

#### E. *Foreign Savings*

In the empirical work analyzing aggregate savings, foreign savings indicators are commonly used as explanatory variables. The access to foreign borrowing in international markets is expected to supplement domestic savings and fill the gap between domestic investment and national savings. The capital inflows are therefore expected to reduce household savings. Giovannini observed a significant negative effect [12], and Gupta a positive effect of foreign savings [17]. However, foreign savings which are expected to influence national aggregate savings should not be a significant decision parameter for household savings.

#### F. *Demographic Variables*

The life cycle hypothesis implies that demographic variables affect savings rates [2]. The dependency ratio which is defined as the share of population under age fifteen or over sixty-five is the most popular demographic variable used in savings literature. The young and the elderly are expected to consume out of past savings while the persons of working age are expected to accumulate savings. It is also indicated that there is a close causal link between the development of well-orga-

nized capital markets and the number of children in the family [18]. Both are perceived as alternative means of maintaining income in old age. Therefore, as a country becomes more developed, the age structure is likely to change and higher savings rates are likely to replace the benefits expected from children. The lower savings propensity of U.S. households in comparison to German households was attributed to the different age structure in the two countries [19]. Additionally, the changing age structure of the population, and especially the rise in the share of the population over the age of sixty-five in the United States from the 1950s to the 1980s resulted in the reduction of personal savings rate [6].

On the other hand, Cornia and Jerger, using ILO statistics, showed that household size contributes to savings only for middle and higher income economies, and does not have any significant effect in developing countries [9]. The same conclusion was reached by Tansel who studied the population growth and savings in Turkey; family size does not exert any significant influence on savings [36].

### III. SPECIFICATION OF THE MODEL AND DATA

A reduced-form behavioral function for households savings rates was estimated to test the determinants of household savings. This specification is consistent with the savings hypothesis mentioned above. The linear savings rate function is

$$S/Y = f(\ln Y_p, \ln Y_T, Y_G, R, I, W/Y, S_F/Y, D), \quad (1)$$

where  $S$  is the household savings,  $Y$  is the household disposable income,  $\ln Y_p$  is the natural logarithm of trend per capita household income,  $\ln Y_T$  is the natural logarithm of deviations from trend per capita income,  $Y_G$  is the growth rate of the trend per capita income,  $R$  is the real interest rate,  $I$  is the rate of inflation,  $W/Y$  is the wealth to income ratio where total wealth is represented by money plus quasi money,  $S_F/Y$  is the foreign savings to income ratio, and  $D$  is the dependency ratio.

The importance of this study is due to the use of a data set most suitable for analyzing the household savings behavior. The household savings data derived from the *U.N. System of National Accounts* have two advantages. One advantage is that, in this source, the data are broken down to government, corporate, and household sectors. The data on household savings are calculated as the difference between the total receipts and the total disbursements of the household sector. Therefore, in this study unlike in most of the savings studies savings values are the savings of the household sector and do not include the government and the corporate sector savings. The second advantage is that the same source and definition are used in obtaining the household savings data for all the countries included in the study. These household savings data are thus comparable across countries for both the developing and industrial ones. Therefore, it is possible to reach more definitive conclusions about the viable differences in savings behavior across countries.

The sample covered the period between 1975 and 1989 for a total of thirty countries, nineteen of which are developed and eleven are industrial countries (the country list is presented in the Appendix). Consecutive annual observations for each country ranged between six and fifteen. A total of 322 data points were analyzed, 103 of which for developing countries and 219 for industrial countries.

The household disposable income data was also derived from the *U.N. System of National Accounts*. Disposable income is defined as the difference between the total current receipts of the household sector and the direct taxes and other current transfers to general government. The data on nominal interest rates, inflation rates, money and quasi money, and current account balances were obtained from the International Monetary Fund's *International Financial Statistics*.

For per capita disposable income, three different variables were derived from the disposable income series. As in the case of the Schmidt-Hebbel, Webb, and Corsetti study [34], the trend disposable income, the deviation from trend, and the growth rate of disposable income were used as different explanatory variables to define the savings rates. The trend disposable income is defined as the estimated value of the log of household per capita disposable income regressed on a time trend. In order to obtain each estimated value, observations overlapping over a five-year period including the current year were used in the regression. The difference between the log of actual disposable income and the fitted value is the deviation from the trend, which was used as the transitory income variable. The estimated coefficient for the time variable is the trend rate of growth of disposable income. To avoid a loss in the number of observations, the disposable income values for four years prior to the start of the sampling were estimated using the growth rates of GDP for each country.

The remaining variables gathered from the *International Financial Statistics* are defined as follows: the inflation rate is the annual change in the log of the consumer price deflator (line 64). The nominal interest rate is the deposit rate (line 601). The real interest rate is defined as  $R = (1 + \text{nominal rate}) / (1 + \text{inflation rate}) - 1$ . For the wealth variable, the sum of M1 (line 34) and quasi money (line 35) is divided by the nominal disposable income. Foreign savings variable is defined as the ratio of the current account balance to the disposable income. The dependency ratio refers to the population below fifteen and above sixty-five years of age as a percentage of the total population. Since this information is available with five-year intervals, the fitted values, obtained from the regression on a time trend, were used as explanatory variables.

#### IV. EMPIRICAL RESULTS

Household savings were estimated in the following equation:

$$s_{it} = \sum \psi_i D_{it} + \sum \beta_k X_{kit} + \varepsilon_{it}, \quad (2)$$

where subscript  $i$  indicates the countries,  $t$  is the time, and  $k$  is the independent variable. The term  $s_{it}$  is the savings rates,  $D_{it}$  is the vector of the country dummy that takes the value of 1 for the  $i$ th country, and 0 otherwise, and where  $X_{kit}$  is the matrix of independent variables described above, and  $\varepsilon_{it}$  is the vector of errors with the classical assumptions of the linear model.

The model was estimated first without country dummies. The OLS (ordinary least squares) estimation without the country dummy variables assumes that the intercept and the slope coefficients are the same for all countries. Since the sample included a wide variety of countries with different economic conditions, there were restrictions on the estimated coefficients. Therefore a fixed effect model was also used to include country-specific intercepts, and the country differences were accounted for assuming that these differences are stable over time. Thus, all fixed country-specific effects were incorporated into the coefficients of the country dummies.

Whether the fixed-country-specific effect model is an appropriate presentation was tested by the Breusch-Pagan procedure which investigates the presence of cross-country and time effects in the residuals of the OLS regression. As the test result ( $\chi^2 = 43.77$  with  $P < 0.01$ ) reject the null hypothesis of the absence of cross-country and time effects, the fixed-country effect model is a superior specification compared to the OLS specification on the pooled cross-section data. Therefore, the fixed-country model estimations with higher adjusted  $R^2$ 's were considered in evaluating the results. The results of the OLS estimation and the fixed-country-specific effect models are reported in Table I.

When savings rates were estimated for all countries the model used in this study performed reasonably well, accounting for 35 per cent of the total variation. In this equation only income growth and inflation rate variables showed significant coefficients. As income growth increased, savings rates increased and as inflation increased, savings rates decreased.

The restriction imposed by pooling the developing and industrial countries into one sample was tested by a Chow test. The  $F$ -statistic calculated is 16.05 against the critical value of 2.01. Therefore the data rejected the restriction imposed by including the developing and industrial countries in the same sample, indicating that the parameters of the equations describing the savings behavior of the industrial and developing countries are different.

When the countries in the sample were divided into two subgroups of developed and industrial countries, and two separate savings equations were estimated, (1) the explanatory power of the independent variables improved significantly (the adjusted  $R^2$  was equal to 75 per cent and 52 per cent for developing and industrial countries, respectively), (2) the coefficient estimates of independent variables changed sign and magnitude, and different significant variable combinations were observed in the regressions for the developing and industrial countries.

TABLE I  
 DETERMINANTS OF HOUSEHOLD SAVINGS FOR DEVELOPED AND DEVELOPING COUNTRIES  
 (Household Sector Savings as a Percentage of Household Disposable Income as the Dependent Variable)

Estimation Technique	Independent Variables								Adj. $R^2$
	Trend Income (log)	Income Growth (Five-Year Average)	Deviation of Income from Trend (log)	Real Interest Rate	Inflation Rate	Real Balances (Ratio to Income)	Foreign Savings (Ratio to Income)	Dependency Ratio	
OLS	0.031 <sup>a</sup> (4.61)	1.818 (4.65)	0.250 (0.46)	-0.005 (-2.68)	-1.156 (-3.31)	0.000 (0.48)	-0.073 (-1.14)		0.106
Fixed-country-specific effect model:									
All countries	-0.032 (-1.64)	2.735 (6.45)	0.681 (1.284)	-0.003 (-1.384)	-0.953 (-2.77)	0.000 (0.95)	0.022 (0.36)		0.347
Industrial countries	0.233 (3.30)	8.397 (10.31)	2.787 (2.98)	-0.041 (-4.00)	-2.298 (-3.22)	0.000 (1.45)	-0.015 (-0.232)		0.516
Developing countries	-0.011 (-1.29)	0.014 (0.14)	0.143 (1.59)	-0.0003 (-0.98)	-0.126 (-1.92)	-0.146 (-2.34)	0.116 (1.94)		0.749
All countries	0.055 (1.07)	2.848 (5.96)	0.687 (1.44)	-0.002 (-1.30)	-0.964 (-2.72)	0.000 (0.99)	0.037 (0.58)	0.017 (1.22)	0.351
Industrial countries	0.314 (3.75)	7.944 (9.36)	3.010 (3.21)	-0.042 (-4.18)	-2.386 (-3.36)	0.000 (1.62)	0.019 (0.28)	0.038 (1.78)	0.522
Developing countries	-0.028 (-2.41)	0.055 (0.58)	0.124 (1.40)	-0.0002 (-0.92)	-0.096 (-1.45)	-0.157 (-2.56)	0.099 (1.68)	-0.006 (-2.07)	0.758

<sup>a</sup> Numbers in parentheses below coefficient estimates are  $t$ -values.

Overall, the results supported the view that the household savings behavior of the developed and industrial countries is not identical. For industrial countries, all of the three income variables showed highly significant and positive parameters. For developing countries, only the trend income variable had a significant parameter with a negative sign. This finding indicates that in industrial countries, as permanent income increases, households increase their savings rates while in developing countries, as permanent income increases, households tend to change their spending patterns in favor of consumption. These results can be attributed to the fact that the households of developing and industrial countries are in different income ranges with different consumption patterns due to the difference in economic development levels. In high-income industrial countries, as permanent income increases, households do not change their consumption patterns and the savings rates increase. In developing countries on the other hand, the households are relatively poor and therefore an increase in permanent income is channeled to consumption rather than savings through alteration of consumption patterns. The same paradigm is also observed for different effects of income growth and transitory income on household savings in developing versus industrial countries. It is likely that due to established consumption patterns in industrial countries, as income growth increases, the savings rate will increase and transitory income will be saved. In developing countries, on the other hand, the faster growth of income and even transitory increases will be used to change and increase household consumption.

The effect of domestic real interest rates was negative for industrial countries. For developing countries the results confirmed the findings reported in many recent studies in which no definite relationship between real return and savings rates was observed. This fact can be interpreted as strong evidence that the presence of well-developed and functional financial markets and higher income levels of households make savings responsive to changes in the real returns of the economy. The negative sign of the parameter coefficients indicates that the income effect of higher interest rates outweighs the substitution effect in industrial countries. In developing countries, on the contrary, to expect income and substitution effect may not be realistic because of inefficiencies or the lack of financial markets and because of binding liquidity constraints.

Correspondingly, other evidence of the same phenomena is observed when the parameter estimates of the wealth variable (i.e., the ratio of real balances to income) are analyzed; in developing countries as real balances increase, savings rates decrease, while in industrial countries no significant relationship is observed. The wealth indicator, defined in terms of real balances in the economy, does not reflect the level of wealth for industrial countries where a large spectrum of alternative financial instruments and markets are available. However, in developing countries, the inefficiencies and lack of such alternatives make real balances a more realistic measure of household wealth. The significant negative coefficient for real balances

in developing countries reflects the relaxation of the liquidity constraint on consumption and therefore a decline in savings rates.

The impact of the inflation rate is negative for industrial countries, while no significant effect is observed in developing countries where inflation rates are typically higher. These results support the view that in industrial countries higher inflation rates may reduce the savings ratio via money illusion; households interpret nominal income rises as real income increases and augment consumption. Nevertheless, the households in developing countries which experience persistent higher inflation rates adjust to past inflation rapidly, and there is a lower probability of money illusion. Therefore, the households in developing countries do not respond to increases in the inflation rates the way their counterparts in industrial countries do.

The foreign savings variable is typically used in savings studies as an indicator of external liquidity constraints, and is therefore expected to have a negative parameter coefficient. The results of this study showed that neither for developing nor for industrial countries, the foreign savings variable exerted a significant impact on savings. Foreign savings, defined as the ratio of the current account imbalance to income, are not an appropriate measure of liquidity constraint for households. Indeed, external balances are more relevant for the aggregate savings levels of the economy, but individual households are not directly influenced by the level of external savings in the economy.

The savings rates are estimated with and without the dependency rates. The inclusion of a demographic variable does not alter the results of the parameter estimates except for the coefficient of trend income. Since both variables are defined as a function of the time trend, when the dependency rate is included in the equation the coefficient estimates of the trend income are affected due to the collinearity between these two variables.

In equations where this demographic variable is included, the dependency ratio has a negative parameter coefficient in the savings rate equation for developing countries while it does not make a significant contribution in industrial countries, mainly due to the variation in the age composition in developing and industrial countries over time. The age composition in industrial countries is relatively stable and a smaller proportion of the population is below fifteen and above sixty-five. In developing countries, on the other hand, the birth rates are higher and the age composition changes rapidly. Therefore as the dependency ratio decreases, higher savings rates are expected to become a substitute for the benefits expected from children. This finding confirms the assumption that in addition to the differences in the economic environment of industrial and developing countries, the differences in the population structure are major contributing factors for the variation between the household savings behavior of these two groups of countries.

These findings have important policy implications for promoting savings in indi-

vidual developing countries. Many of these countries have either implemented liberalization programs or are in the process of liberalizing their economies. Financial liberalization is a major component of efforts to develop market-oriented economies and substantial increases in the growth rate of a country are expected through financial market deregulation. The underlying assumption in these policies advocated by McKinnon [27] and Shaw [35] is that private savings are sensitive to real interest rates and the removal of interest rate ceilings through liberalization will increase savings rates. The availability of credits will relax the liquidity constraint on investment, will accelerate capital accumulation, and hence raise growth rates. However our findings cast doubt on the success of this approach for developing countries while supporting it for industrial countries.

Even though the above discussion is based on household savings data, similar results were reported by researchers using private savings (household plus corporate savings) due to the lack of household level data. We first take the long-lasting financial liberalization episode of Turkey as an example. One of the major components of the IMF-sponsored liberalization program that started in 1980 was the creation of market-determined positive real interest rates which were expected to contribute positively to the increase of savings. However, analysis of the total private savings in Turkey after liberalization revealed that the private sector savings was not responsive to real interest rates contrary to the predictions of McKinnon and Shaw hypothesis [27] [35] [37].

The real interest rates increased drastically after the start of the liberalization process in 1980 but in the first six years private savings continued to stagnate. Akyüz attributes the low savings rates to a redistribution of income from the high savings rate groups (corporate income earners) to low savings rate groups (rentier income) [1]. Rittenberg supports that assumption by emphasizing the shaken public confidence following the bankruptcy of the major brokerage houses during this period [31]. After 1986, the ratio of private savings to GNP which increased sharply from an average of 10.5 per cent during the 1981–86 period to an average of 19.8 per cent during the 1987–93 period cannot be attributed to the real interest rates which changed from 9.4 per cent to 7.2 per cent respectively. In 1986, the Istanbul Securities Exchange became operational and the post-1986 period can be characterized by the formation and rapid growth of competitive financial markets and introduction of numerous financial instruments to satisfy the needs of both individual and institutional investors. This fact shows that increased real interest rates are not sufficient to induce higher savings if they are not supported by functional financial markets and instruments. Interest rates can be used as an effective policy tool only in conjunction with financial markets that can allocate funds among investors and creditors.

The same phenomena can also be observed in the individual country experiences of financial liberalization. Evidence from other developing countries reveal similar

findings. In Uruguay, for example, private savings were not responsive to interest rates during the financial liberalization process that started in 1974 [10]. Similarly, Giovannini reported that the coefficient of real interest rate was not significant in the domestic savings estimates in any of the seven developing countries including Burma, India, the Republic of Korea, Malaysia, the Philippines, Singapore, and Taiwan [12].

In examining the changes in the total household savings, the major obstacle is the lack of reliable and consistent savings data at the household level. None of the aforementioned country studies were conducted by using household savings. In Turkey, for example, four different institutions conducted five national income surveys with different objectives [7]. The 1963 survey was conducted by the State Planning Organization and was based on income tax declarations at which time income tax coverage was not comprehensive. The 1968 and 1973 surveys were conducted by the Institute of Demographic Studies of Hacettepe University, and were focused respectively on fertility and agricultural sector. The number of registered voters instead of the total population was the sample chosen in the 1986 survey conducted by the Turkish Industrialists' and Businessmen's Association. The only reliable household savings data were derived from the 1987 household survey conducted by the State Institute of Statistics. Hence, across time comparisons of the household savings in Turkey are not meaningful. The data used in this paper (*U.N. System of National Accounts*) enabled us to analyze household savings behavior not only across time for an individual country but also across a wide range of countries.

## V. CONCLUSIONS

This study, to our knowledge, is the second that used household data from the *U.N. System of National Accounts* to estimate savings, and is the first that compared the savings behavior of developing and industrial countries using the same data set. Since the data set used did not include government and corporate savings it is a theoretically correct measure of household savings. The main conclusion of the study is that the determinants of household savings behavior for industrial countries are not valid for developing countries and vice versa. Hence, the important policy implication is that the schemes designed to motivate household savings should incorporate the level of development of the economy.

The conventional policy measures used to increase household savings such as higher levels and faster growth of disposable income, and lower real returns and inflation rates are only effective in industrial countries. Therefore, in formulating policies geared towards increasing savings, policymakers in developing countries should not simply adopt policies designed for industrial countries.

The establishment of new and more sophisticated financial markets and adapta-

tion of new instruments are crucial in increasing savings rates in developing countries. Three factors were found to be the significant determinants of savings rates in these countries: dependency ratio, real balances, and trend income. The lack of well-functioning financial markets and instruments that satisfy various needs cause children to be perceived as future support and financial wealth to be held in terms of money. Adopting a financial liberalization program to promote development will assist households in these countries to channel savings to financial instruments and enhance savings rates.

The negative relationship between trend income and savings rates in developing countries should not suggest that higher savings rates result from lower trend income levels. To our understanding, there is a threshold trend income level beyond which increases in income are channeled to savings leading to higher savings rates. In countries with per capita income below this threshold, increases in trend income are used for consumption by these relatively impoverished households resulting in lower savings rates. With the aid of these comparable and consistent cross-country household savings data, the possible existence of this threshold and other factors that may influence savings rates are challenging topics for further research especially for developing countries in the process of financial liberalization.

#### REFERENCES

1. AKYÜZ, Y. "Financial System and Policies in Turkey in the 1980's," UNCTAD Discussion Paper No. 25 (Geneva: United Nations Conference on Trade and Development, 1989).
2. ANDO, A., and MODIGLIANI, F. "The Life-Cycle Hypothesis of Saving: Aggregate Implications and Tests," *American Economic Review*, Vol. 53, No. 1, Part 1 (March 1963).
3. AVERY, R. B., and KENNICKELL, A. B. "Household Saving in the U.S.," *Review of Income and Wealth*, Series 37, No. 4 (December 1991).
4. BALASSA, B. "The Effects of Interest Rates on Saving in Developing Countries," *Banca Nazionale del Lavoro Quarterly Review*, No. 172 (March 1992).
5. BEHRMAN, J., and SUSSANGKARN, C. "Do the Wealthy Save Less?" (Philadelphia, Pa.: Department of Economics, University of Pennsylvania, 1989).
6. BOVENBERG, A. L., and EVANS, O. "National and Personal Saving in the United States: Measurement and Analysis of Recent Trends," *IMF Staff Papers*, Vol. 37, No. 3 (September 1990).
7. ÇAKMAK, E. H. "Size Distribution of Income in Turkey," Paper presented at the Eastern Economic Association Conference (New York, 1995).
8. COLLINS, S. M. "Savings Behavior in Ten Developing Countries," Paper presented at the NBER Conference on Savings, Maui (Cambridge, Mass.: National Bureau of Economic Research, 1989).
9. CORNIA, G., and JERGER, G. "Rural vs Urban Saving Behaviour: Evidence from an ILO Collection of Household Surveys," *Development and Change*, Vol. 13, No. 1 (January 1982).

10. DE MELO, J., and TYBOUT, J. "The Effects of Financial Liberalization on Savings and Investment in Uruguay," *Economic Development and Cultural Change*, Vol. 34, No. 3 (April 1986).
11. FRIEDMAN, M. *A Theory of the Consumption Function* (Princeton, N. J.: Princeton University Press for the National Bureau of the Economic Research, 1957).
12. GIOVANNINI, A. "Saving and the Real Interest Rate in LDCs," *Journal of Development Economics*, Vol. 18, Nos. 2-3 (August 1985).
13. GUPTA, K. L. "Foreign Capital and Domestic Savings: A Test of Haavelmo's Hypothesis with Cross-Country Data: A Comment," *Review of Economics and Statistics*, Vol. 52, No. 2 (May 1970).
14. ———. "Personal Saving in Developing Nations: Further Evidence," *Economic Record*, Vol. 46 (June 1970).
15. ———. "On Some Determinants of Rural and Urban Household Saving Behavior," *Economic Record*, Vol. 46 (December 1970).
16. ———. "Dependency Rates and Savings Rates: Comment," *American Economic Review*, Vol. 61, No. 3, Part 1 (June 1971).
17. ———. "Aggregate Savings, Financial Intermediation, and Interest Rate," *Review of Economics and Statistics*, Vol. 69, No. 2 (May 1987).
18. HAMMER, J. S. "Children and Savings in Less Developed Countries," *Journal of Development Economics*, Vol. 23, No. 1 (September 1986).
19. KAUFFMANN, B. "Savings Behavior of Private Households in the United States and West Germany," *Jahrbucher für Nationalökonomie und Statistik*, Vol. 207, No. 2 (1990).
20. KELLEY, A., and WILLIAMSON, J. "Household Saving Behavior in the Developing Economies: The Indonesian Case," *Economic Development and Cultural Change*, Vol. 16, No. 3 (April 1968).
21. KEYNES, J. M. *The General Theory of Employment, Interest and Money* (New York: Harcourt, Brace & Co., 1936).
22. KOSKELA, E., and VIREN, M. "Saving and Inflation: Some International Evidence," *Economics Letters*, Vol. 9, No. 4 (1982).
23. ———. "Anticipated versus 'Surprise' Inflation in Household Consumption Behavior," *Economics Letters*, Vol. 17, Nos. 1-2 (1985).
24. LAHIRI, A. K. "Dynamics of Asian Savings: The Role of Growth and Age Structure," Working Paper 88/49 (Washington, D.C.: International Monetary Fund, 1988).
25. LEFF, N. H. "Dependency Rates and Savings Rates," *American Economic Review*, Vol. 59, No. 5 (December 1969).
26. ———. "Dependency Rates and Savings Rates: Reply," *American Economic Review*, Vol. 61, No. 3, Part 1 (June 1971).
27. MCKINNON, R. I. *Money and Capital in Economic Development* (Washington, D.C.: Brookings Institution, 1973).
28. MIKESSELL, R., and ZINSER, J. "The Nature of the Savings Function in Developing Countries: A Survey of the Theoretical and Empirical Literature," *Journal of Economic Literature*, Vol. 11, No. 1 (March 1973).
29. ORTMAYER, D. L. "A Portfolio Model of Korean Household Saving Behavior, 1962-1976," *Economic Development and Cultural Change*, Vol. 33, No. 3 (April 1985).
30. OULIARIS, S. "Household Saving and the Rate of Interest," *Economic Record*, Vol. 57 (September 1981).
31. RITTENBERG, L. "Investment Spending and Interest Rate Policy: The Case of Financial

- Liberalization in Turkey,” *Journal of Development Studies*, Vol. 27, No. 2 (January 1991).
32. ROSSI, N. “Government Spending, the Real Interest Rate, and the Behavior of Liquidity-Constrained Consumers in Developing Countries,” *IMF Staff Papers*, Vol. 35, No. 1 (March 1988).
  33. SCHMIDT-HEBBEL, K. “Foreign Shocks and Macroeconomic Adjustment in Small Open Economies” (Ph.D. diss., Department of Economics, Massachusetts Institute of Technology, 1987).
  34. SCHMIDT-HEBBEL, K.; WEBB, S. B.; and CORSETTI, G. “Household Saving in the Developing Countries: First Cross-Country Evidence,” *World Bank Economic Review*, Vol. 6, No. 3 (September 1992).
  35. SHAW, E. S. *Financial Deepening in Economic Development* (New York: Oxford University Press, 1973).
  36. TANSEL, A. “Household Saving, Income and Demographic Interactions,” *METU Studies in Development*, Vol. 19, No. 1 (1992).
  37. UYGUR, E. “Financial Liberalization and Economic Performance in Turkey” (Ankara: Central Bank of the Republic of Turkey, 1993).

## APPENDIX

## LIST OF COUNTRIES

Industrial Countries	Developing Countries
1. Australia	1. Botswana
2. Austria	2. Colombia
3. Belgium	3. Ecuador
4. Canada	4. Honduras
5. Finland	5. Jamaica
6. France	6. Korea
7. Germany	7. Mauritius
8. Greece	8. Philippines
9. Italy	9. South Africa
10. Japan	10. Sri Lanka
11. Netherlands	11. Thailand
12. New Zealand	
13. Norway	
14. Portugal	
15. Spain	
16. Sweden	
17. Switzerland	
18. United Kingdom	
19. United States	