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Introduction

James M. Poterba

Household saving rates differ widely across developed nations. Why? Remarkably little economic research has been directed at this question. Although the econometric study of household consumption behavior has been one of the most active topics in applied economics during the last decade, most of this research has been directed at testing, and usually rejecting, standard models of life-cycle consumption and saving behavior. Most of this research has been based on data sets for single nations, most often the United States. The papers in this volume attempt to move beyond this focus by reporting on the patterns of household saving behavior in six OECD nations.

Table 1 presents more precise data on the household saving rates since 1970 for the six countries included in this study. These saving rates are calculated using national income accounts data reported by the OECD and correspond to the net saving of households and unincorporated enterprises divided by their after-tax income. The saving rate is defined as net saving divided by total current receipts less direct taxes and other current transfers to the government. In 1990–91, the most recent year for which data are available, the saving rates in the United States and the United Kingdom were lower than those in the other nations considered in this project. Measured on the OECD basis, the U.S. household sector saved 6.3 percent of its disposable income, less than half the saving rate of households in Italy and Japan. The U.S. saving rate has declined from an average level of 9.3 percent of disposable income in the 1970s.[1] Saving

1. The OECD definition of personal saving differs in several ways from that in the U.S. National Income and Product Accounts (NIPA). The U.S. accounts show an average personal saving rate of 4.4 percent for 1990–91, while the Flow of Funds Accounts show an average of 9.8 percent. The average for a hybrid estimate, the NIPA measure computed using Flow of Funds data, is 6.1 percent. These data are presented in Board of Governors of the Federal Reserve (1993, table F.8).

Table 1   Personal Saving Rates in OECD Nations (%)

Country	1970–79	1980–89	1990–91
Canada	10.6	12.8	10.4
Germany	12.4	11.1	12.2
Italy	19.2	17.5	15.7
Japan	18.5	14.2	12.9
United Kingdom	5.7	4.7	3.9
United States	9.3	8.3	6.3

Source: Organisation for Economic Cooperation and Development, *National Income Accounts/ Comptes Nationales: 1960–1991* (Paris: (OECD, 1993).

rates in most of the other nations also declined between the 1970s and the more recent period.

Each of the papers in this volume analyzes a household-level database to develop summary statistics on patterns of saving by age, income, and other demographic characteristics in one of the six nations shown in table 1. Where possible, this information is augmented with data on household asset ownership. The studies concentrate on presenting descriptive information rather than testing particular models of household saving behavior. It is hoped that future researchers will draw upon the data collected in this volume both to develop and to test hypotheses about saving behavior.

Defining Personal Saving

Two basic approaches to defining household saving must be distinguished at the outset of this project. The first, which is the basis for saving in the National Income and Product Accounts (NIPA), equates saving with the flow of income minus the flow of expenditures during a given time period. The second approach defines saving as the change in a household's net worth during a given time period. These two measures can differ substantially whenever there are large capital gains or capital losses on existing assets.

Most discussions of saving, whether focusing on time-series comparisons for a single economy or on international comparisons at a given date, employ the first definition of saving. There are three reasons for this. First, the flow saving measure indicates the amount of resources that an economy has set aside to finance investment. In a closed economy, the flow of saving equals the flow of investment. Investment in turn is of intrinsic interest because it is a direct measure of the new capital being deployed in an economy. In an open economy the equality of saving and investment is broken by international capital flows, but the flow of saving remains of interest because it measures the volume of domestically financed investment and, hence, the asset acquisition that can be expected to contribute to future income.

A second reason for focusing on the NIPA definition of household saving is

that it directly reflects individual decisions about how much to consume and how much to save. The alternative definition of saving, the change in net worth, equals the NIPA saving measure plus any capital gains or losses on existing assets. Such gains and losses are often much larger than the NIPA saving flow, which makes it impossible to tell whether households are consuming a higher, or lower, fraction of their flow income at different points in time.

Finally, there are data-based reasons for focusing on the NIPA definition of household saving. Survey data on household income and expenditures are far more common than data on net worth. Most developed nations now collect information on consumption and income with large cross-sectional sample surveys, such as the Consumer Expenditure Survey (CEX) in the United States. Many fewer nations collect information on wealth. Even in those nations that do collect balance sheet data, it is often impossible to construct saving rates, because net worth is sampled once, not twice, for each household. Measuring saving as the *change* in net worth requires at least two observations on the assets and liabilities of sample households.

Defining saving as the difference between income and expenditures does not uniquely identify a measure of personal saving, because there are many plausible definitions of both income and expenditures. In this study, income is measured *after tax;* this corresponds to disposable personal income in the national income accounts. Contributions to mandatory government pension schemes, such as Social Security in the United States, are included in taxes for the purposes of this analysis. Also, following the national accounts, personal income excludes realizations of capital gains and losses.

The one significant way in which the income definition in this study differs from that in the national accounts is in the treatment of imputed income on owner-occupied housing.[2] The national accounts include this as income, while the present analysis excludes it. This is largely because it would be difficult to construct estimates of this imputed income flow in many countries where information on the value of owner-occupied housing is not collected as part of the consumer expenditure survey. Housing tenure usually is recorded, however; so to assess the potential impact of this exclusion on the results, most of the country chapters present disaggregated information on saving rates by owner-occupants and renters.

Expenditures are defined inclusive of spending on consumer durables. One could in principle measure consumption as outlays on nondurables and services plus an accrual-equivalent cost of spending on durables, but this again requires detailed information on the value of the durable stock that is not available in many surveys. While the saving rate for a single household that pur-

2. There are other aspects of the income definition used here, such as the absence of any correction for inflation's effects on the household balance sheet, that make the current definition an imperfect proxy for true economic income. Making comparable corrections for inflation, however, would require more detailed information on household asset positions than was available for some nations.

chases a major durable in a given year will be erroneously low, and that of a household that spends very little on durables will be too high, these sources of error should cancel to some degree in the cross section of households.

The unit of observation in the subsequent chapters is the *household*. This avoids the difficult problem of attributing consumption within a household to various family members, but it raises a separate set of concerns. In some of the countries included in this study, notably Japan and Italy, multigenerational households are common. The difficulty of purchasing housing in these two nations, in Italy because of high down-payment requirements and in Japan because of high real estate prices, leads many individuals in their twenties, thirties, and even forties to live with their parents or other older relatives. This raises difficulties for the measurement of age-specific saving rates, because the individuals in a given age group that choose to live in multigenerational households are unlikely to be a random sample of the population. Each of the country chapters discusses the particular problems that household definition raises for analyzing saving behavior.

A final issue of definition and methodology that deserves mention is the choice between *cross-sectional* and *cohort* information on saving behavior. To illustrate the difference between these approaches, consider a snapshot sample survey that collects information on saving rates of a population subsample at a given date. Summary statistics on age-specific saving rates based on such a survey describe cross-sectional saving patterns at a point in time. What inferences about the relationship between age and saving behavior can such data support? The answer depends critically on the degree of heterogeneity in economic circumstances of individuals in different birth cohorts.

Consider the case in which the lifetime incomes of individuals who are currently aged 55 are substantially lower than the lifetime incomes of those who are 45. If saving rates at all ages depend positively on the present value of lifetime resources, then the 45-year-old household might display a higher saving rate than the 55-year-old. We could observe this pattern even if the 55-year-old household's saving rate at age 45 were lower than its current saving rate, and if the saving rate for the currently 45-year-old household were rising and would be higher in 10 years than it is today. If the only available data are from a single cross-sectional survey, it is impossible to identify cohort saving patterns. If saving data are collected as part of a panel-data study, then it is straightforward to disentangle the cohort and cross-sectional effects. Such panel-data sets are rare, however.

A more common situation is one in which *repeated cross sections* of households are surveyed. A random sample of households is drawn in one year, and data on income and expenditures are recorded. The next year, a different random sample is drawn and asked the same battery of questions. If each year's cross section represents a random sample, then following a suggestion developed by Deaton (1985), it is possible to construct "synthetic cohort profiles" by linking together the saving rates of 45-year-olds in the survey at date *t*, the

saving rates of 46-year-olds in the survey at date $t+1$, and so on. In the United Kingdom and the United States, the repeated cross-sectional surveys that constitute the Family Expenditure Survey and the Consumer Expenditure Survey, respectively, can now be linked to create synthetic panel-data sets spanning more than a decade.

Table 2 summarizes the data sources for each of the country studies in this volume. The table illustrates the substantial variation across countries in both the nature of the available data, and the extent to which synthetic panel data can be created. In the United Kingdom, largely comparable cross-sectional data sets are now available for a period of 22 years. In Italy, at the other extreme, there is only a single public-use database, the 1987 Survey of Household Income and Wealth, that provides suitable information for this project. The sample sizes of the underlying surveys vary from slightly more than two thousand in some years of the Canadian Family Expenditure Survey, to fifty thousand in each wave of the Japanese National Survey of Family Income and Expenditure. Such differences in sample sizes imply differences in the precision of the estimates presented in different country chapters.

Hypotheses about Why Saving Rates Differ

The current project was designed to collect information that can inform the question of why saving rates differ across countries. To provide a framework for evaluating the subsequent country chapters, it is useful at the outset to identify several of the leading explanations that have been advanced to account for such international differences.[3]

Demographic Composition

The life-cycle hypothesis of saving, developed by Modigliani and Brumberg (1954), predicts that a given individual will save at different rates at different ages. It is usually applied to a stylized individual whose income rises during the early part of his working life, then stabilizes or declines, and finally falls sharply at retirement. Such an individual will exhibit a rising saving rate as his income rises, and will dissave, consuming more than his current income, after retirement.

The aggregate household saving rate in an economy composed of such life-cycle individuals will depend critically on the relative sizes of different age cohorts in the population. There are substantial differences in the demographic composition of the various developed nations considered in this study. Japan and Germany have the highest average (and median) ages of their populations, while the United States and Canada have the lowest. The potential impact of

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3. A more detailed discussion of these explanations and several others, along with information on aggregate saving rates in various OECD nations, can be found in Dean et al. (1990).

Table 2   Data Sources for International Comparisons of Personal Saving

Country	Data Source	Sample Size	Data Years
Canada	Family Expenditure Survey (FAMEX)	2,100–3,500	1978–90[a]
Germany	German Income and Expenditure Surveys (EVS)	45,000	1978, 1983
Italy	Survey of Household Income and Wealth (SHIW)	8,000	1987
Japan	National Survey of Family Income and Expenditure (NSFIE)	50,000	1979–89[a]
United Kingdom	Family Expenditure Survey (FES)	7,000	1969–90
United States	Consumer Expenditure Survey (CEX)	3,500–7,000	1980–90

Source: Author's tabulations based on individual country chapters.
[a]Data are not available for all years during time span.

demography on aggregate household saving rates suggests a need to compare age-specific saving rates in different nations.

Credit Institutions

The structure of credit institutions is another factor that can affect household saving behavior. If households in one country must accumulate a larger down payment than residents of another nation before they can purchase a home, they may save a higher fraction of their income until they become home owners. They may also respond in other ways, for example, by deferring house purchase and purchasing a smaller house. If the availability of credit for smoothing fluctuations in income, for example due to temporary job loss, is different across nations, this may affect the level of precautionary saving that households undertake. If households can borrow against their illiquid assets to varying degrees using financial instruments such as home equity loans, this may also affect the level and the age profile of household saving rates. Dean et al. (1990) summarize a number of the important changes in the structure of credit markets in OECD nations, and their potential effects on personal saving behavior.

Social Insurance Programs

One of the factors that has received the greatest discussion in international comparisons of saving behavior is the role of social insurance programs, particularly Social Security. Holding fixed the length of retirement, the availability of generous government-provided retirement income programs substantially reduces the incentive for younger households to save. Other social insurance programs can also have important effects on the returns to saving. If a nation offers a comprehensive system of health insurance or health care, for example, the need to set aside resources as a precaution against illness will be reduced. The various country chapters therefore devote some attention to the structure

of social insurance programs in each nation, and to the interaction between these programs and household saving behavior.

Lifetime Income Profiles

Another factor that can contribute to international differences in household saving rates, and one that is related to the discussion of demographic differences above, is variation in the profile of income that households expect to receive over their lifetimes. An individual who expects to receive a rapidly rising income stream as he ages will save less than one who expects relatively little income growth. Individual income growth is determined by two factors: the overall rate of income growth in the macroeconomy, and the rate at which an individual's income grows, conditional on the overall level of economic activity. One of the problems in attributing differences in observed saving rates to differences in economic growth is the lack of data on the *prospective* growth rates that individuals currently *expect*. This problem notwithstanding, each of the country studies presents information on the age-income profile of current survey cohorts.

Saving Opportunities

A final significant factor that could account for some international differences is the disparity in the opportunities for saving that individuals face. In some countries, for example, returns on saving are virtually untaxed, while in others, tax rates are high and after-tax rates of return are likely to be lower. In a companion volume, Poterba (1994), teams of authors from each of the countries represented in this volume provide a detailed description of the saving institutions in their countries, and in particular the effects of government policies in affecting the rates of return available to savers.

The foregoing hypotheses do not represent an exhaustive list of the potential explanations for differences in saving behavior. Nevertheless, they provide some guidance for evaluating the empirical findings presented in each of the country chapters.

Principal Findings

The country chapters are not directed at hypothesis testing, but at summarizing the available facts about saving in each nation. Even these summaries, however, provide important information on some of the candidate explanations for international disparities in saving rates. First, the country studies provide very little evidence that supports the life-cycle model, and they consequently raise questions about the power of international differences in demographic composition to explain differential saving rates. Table 3 synthesizes the age-specific saving rates in the six countries. The table shows that, in virtually all nations, the saving rate is *positive* even after retirement. In the nations with the highest

Table 3   **Age-Specific Personal Saving Rates, OECD Nations (%)**

Age Group	Canada	Germany	Italy	Japan	United Kingdom	United States
<30	0.0	9.8	10.0	17.9[a]	5.0[a]	−2.2
30–34	3.0	9.8	20.0	27.4	8.0	7.1
35–39	3.0	10.6	26.0	31.8	12.0	9.4
40–44	5.0	10.2	22.0	31.8	12.0	9.8
45–49	5.0	10.2	23.0	28.5	11.0	11.2
50–54	8.0	10.4	31.0	31.5	10.0	13.9
55–59	11.0	11.0	32.0	34.5	13.0	16.6
60–64	9.0	12.2	34.0	31.7	6.0	8.6
65–69	6.0	9.2	36.0	32.0	2.0	7.1
70–74	6.0	9.7	31.0	33.8	9.0	1.1
>74	8.0	10.2[a]	n.a.	31.1[a]	n.a.	n.a.

[a]Saving rate for German and Japanese households >75 relates to those 75–79. That for Japanese, U.K., and U.S. households <30 is an arithmetic average of the saving rates for those <24 and 25–29.

overall saving rates, Italy and Japan, the saving rate among elderly households, those aged 65 and greater, actually exceeds 30 percent!

There is some evidence, particularly in low-saving countries, that household saving rates peak in the decade prior to retirement. In the United Kingdom, for example, households aged 55–59 exhibit a saving rate of 13 percent, compared to 2 percent for those aged 65–69 and 7 percent for those aged 70–74. In the United States, the saving rate of 55–59-year-olds is 16.6 percent, compared with 7.1 percent for those aged 65–69. The U.S. data also display the lowest saving rate (1.1 percent) for the oldest age group, in this case the 70–74-year-olds. In Italy and Japan, however, there is very little change in estimated household saving rates once households reach middle age.

A second finding that emerges from the country studies is that most households build up relatively limited financial reserves against financial emergencies, the "precautionary saving" motive. Table 4 shows the age-wealth patterns for the four countries for which it is feasible to make such comparisons. In each case, the estimates are *medians* within each age category. The table shows that in each of the countries except Japan, the median household accumulates very little in financial assets. In Canada, for example, median holdings peak at $17,200 for households between ages 60 and 64. In the United States, the peak is substantially lower, $7,000, for the same age group. Although the mean financial asset holdings for each group are substantially greater than the median, the results do suggest that a very substantial share of households are accumulating relatively little financial wealth.

The contrast between financial asset holdings of Japanese and U.S. households is striking, and it is not confined to any particular age range. At ages 30–34, for example, the median Japanese household has net financial assets 10

Table 4	Age Profiles of Median Net Financial Assets (thousand 1990 U.S.$)			
Age Group	Canada	Italy	Japan	United States
25–29	0.0	4.1	15.4	0.9
30–34	0.9	4.3	25.1	2.5
35–39	1.3	10.1	33.5	2.0
40–44	2.4	9.3	40.8	2.3
45–49	5.2	10.2	48.5	2.3
50–54	8.2	15.8	51.6	1.6
55–59	11.0	13.6	63.3	2.8
60–64	17.2	8.9	79.5	7.0
65–69	15.4	10.0	76.4	5.8
70–74	11.1	7.4	69.5	6.1

Notes: Entries for Canada are based on the 1984 Survey of Consumer Finances, converted to 1990 Canadian dollars and then converted to U.S. dollars using the 1990 exchange rate. Entries for the United States are from the 1990 Consumer Expenditure Survey. Data for Japan are from the 1989 NSFIE, and for Italy from the 1987 SHIW, converted to U.S. dollars using the average prevailing exchange rate in the year of the survey and then the U.S. inflation rate between the base year and 1990.

times larger than those of the median U.S. household in the same age group ($25,000 vs. $2,500). The disparity widens to more than 20:1 for households nearing retirement age, and is more than 10:1 for elderly households, those in their seventies.

One issue related to the precautionary saving motive is the relationship between income and saving behavior. Lower-income groups in many nations are more likely to experience periods of economic adversity, yet they are also more likely to qualify for social insurance programs in the event of such a change. The various country studies yield consistent evidence that saving rates rise sharply with income. In Canada, Germany, and the United Kingdom, the estimated saving rates are *negative* for households in the bottom quintile of the income distribution. In the top quintile of the income distribution, the saving rate is approximately 17 percent. In the United Kingdom, the comparable saving rate is 24 percent, and in Japan, 42 percent. The United Kingdom and Japan exhibit comparably large changes between the saving rates at the bottom and at the top of the income distribution. In Japan, however, saving rates at all income levels are significantly higher than those in the United Kingdom.

A final finding that emerges from the country studies is a complex linkage between individual saving and the availability of social insurance benefits. In Germany, for example, various social insurance programs provide for most of a household's needs in old age, such as medical care and a substantial level of retirement pension. Yet the saving rate of individuals approaching retirement is substantial. This finding, and related results in other nations, suggests that a bequest motive or similar factors may be a key explanation for some components of saving behavior.

Future Directions

The relatively small sample of countries included in this study makes it impossible to conduct large-scale statistical tests with the resulting data. Yet the high quality and unique character of the data sets should prove a valuable input to further theoretical and empirical work on the determinants of household saving. This conclusion suggests several natural directions for further work.

One potential avenue for future research concerns the relationship between population demography and personal saving behavior. Standard life-cycle analysis suggests that countries in which the elderly account for a relatively high fraction of the population will exhibit lower saving rates than comparable countries with younger populations. Yet such analyses treat the age-specific saving rates of households as independent of the aggregate age structure of the population. Weil (1993) suggests that this may be a strong assumption. He develops an alternative link between age structure and saving, focusing on the effect of anticipated bequests in reducing the saving rate of the currently young cohort in economies with high elderly fractions. His study is the first to use the data in this volume to enlighten further work on saving decisions.

A second important issue is the link between social insurance systems, particularly those directed at retirement saving, and personal saving rates. In keeping with this project's focus on presenting facts rather than testing hypotheses, none of the studies explicitly analyze the link between social insurance programs and age-specific household saving rates. Such a study requires a detailed codification of the social insurance system in each nation to compute measures of social security wealth and other similar summary statistics that might affect household saving patterns. This is left for future investigation. Yet in light of the patterns of saving behavior presented in this volume, future researchers should be able to provide new insights on the effects of social insurance and other government policies on individual saving decisions.

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