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No. 10

WHY HAVE AMERICANS STOPPED SAVING?

Benjamin P. Keefer

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Benjamin P. Keefer

Table of Contents

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WHY HAVE AMERICANS STOPPED SAVING?

Abstract. In this paper, I analyze potential reasons for the fall in the personal savings rate during the last twenty years. Economists are still unsure about the causes and implications, with some even debating its existence. After exploring the viewpoints of various authors, I then turn my attention to constructing a savings function and using it to explain changes in personal savings over time.

1. Introduction

In 1998, the National Income and Product Accounts (NIPA) showed that the personal savings rate had fallen below zero for the first time since the Great Depression (see Figure 1). For many economists, the decline in the personal savings rate since the 1970s has caused much concern. Twenty years ago, Lawrence Summers and Chris Carroll (1987) suggested that should the savings rate continue to fall, America would likely lose its competitive edge and government surpluses might be necessary. Implicitly, they are arguing that savings is necessary for investment. Figure 2 shows the strong correlation between household savings and their net investment. In fact, America's investment in the twenty years preceding Summers' and Carroll's research trailed those of other industrialized countries, as seen in Figure 3 (Summers 1987). Equally worrisome, Douglas Bernheim et. al. (2000) state that given Social Security's likely insolvency in 75 years and imminent benefit cuts, middle-class individuals of ages 51-55 (at the time of the cuts)

ought to set aside twenty percent of income for retirement. Even if Social Security remains solvent, those same individuals ought to be saving nearly fifteen percent of their income in order to prepare for retirement. According to their calculation, the government either needs to raise payroll taxes by nearly forty percent immediately or slash benefits by 30 percent starting in fifteen years to ensure the sustainability of the program.

How has this fall in personal savings come about? Figure 4 shows how growth in normalized income has outpaced growth in personal saving. This phenomenon is not restricted to America. Most developed countries have exhibited similar declining levels of personal savings. Thus, any explanation for the decline in the savings rate of Americans

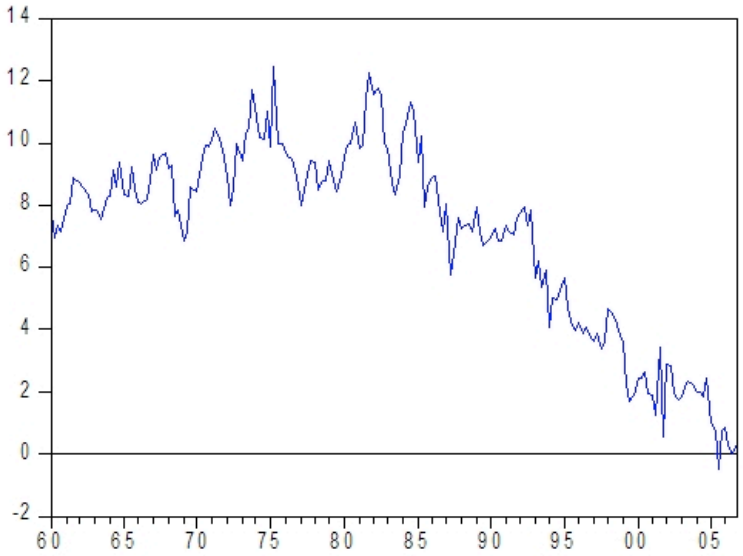


FIGURE 1. Personal Savings Rate (NIPA)

must also explain the secular declines abroad (see Figure 5, source: OECD data).

Summers and Carroll (1987) conjecture that people save less because they have fewer incentives. In their estimation, there are four primary motives to save: old age, precautionary savings, future consumptions of durable goods, and bequests. With higher transfer payments in the form of Social Security and Medicare, life insurance policies that are more favorable and more available, and loosened liquidity constraints, three of the four primary incentives to save are lessened. Thus, they argue that households savings preferences have fundamentally changed.

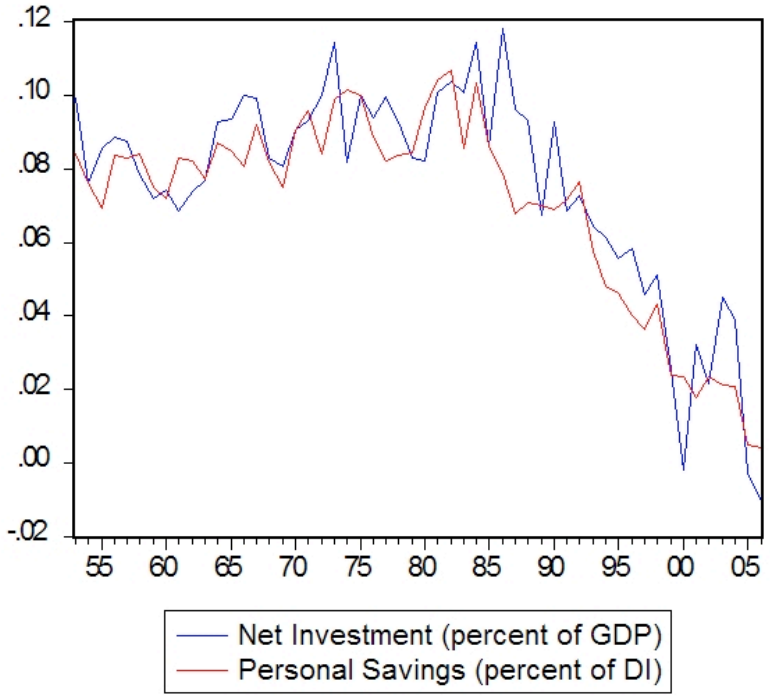
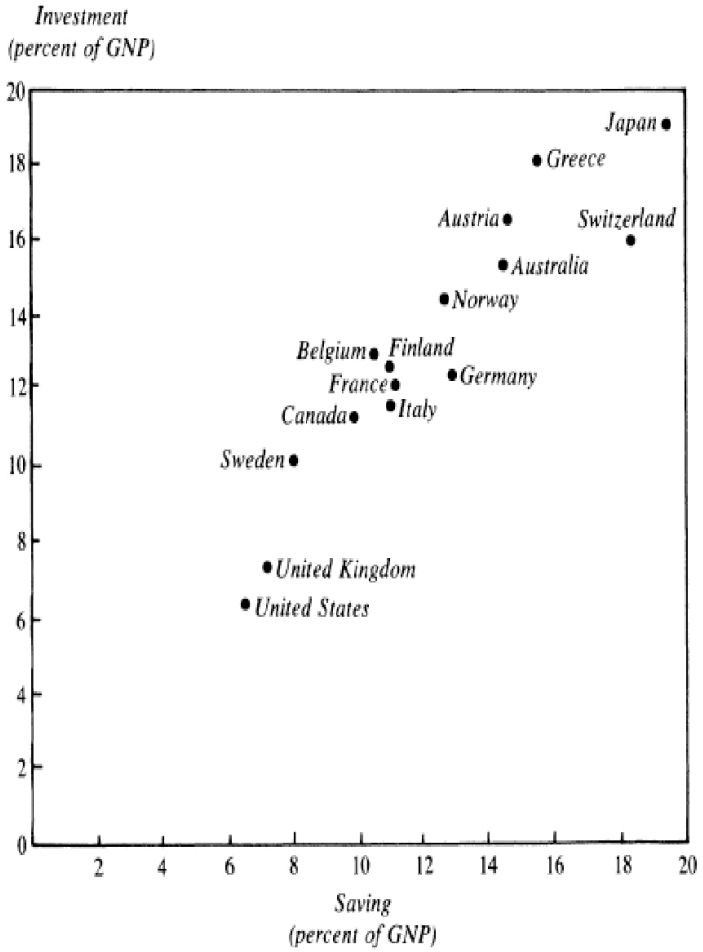


FIGURE 2. Personal Savings Rate (NIPA) and the Net Personal Investment Rate (FFA)

Barry Bosworth et. al, (1991) take a different approach, referring to micro-evidence from surveys. They find that the decline in savings in recent years cannot be explained by the life-cycle hypothesis. Instead, they find that a decline in the rate of savings was common for all groups, and especially for older individuals. They find mixed evidence that the wealth effect was responsible for the decline in savings: on the



Source: Lawrence H. Summers, "Tax Policy and International Competitiveness," in Jacob A. Frenkel, ed. *International Aspects of Fiscal Policies* (University of Chicago Press, forthcoming).

FIGURE 3. Investment vs. Saving

one hand, they find that homeowners increased consumption relative to renters during housing booms, but they also find that during stock booms, the savings rate of those without financial assets fell more than those who actually held them. Last, they find that the changes in savings rates move in a parallel manner for most subgroups.

William Gale and John Sabelhaus (1999) argue that another dynamic is in play. They state that there are three paradigms of saving. The first is that low levels of saving is bad because it impairs our ability to accumulate capital. The second is that the falling savings rate triggered a consumption boom, which rising savings rates would cut short. To summarize the third, they quote William Nordhaus, who believes that savings may have fallen due to measurement issues: "Our

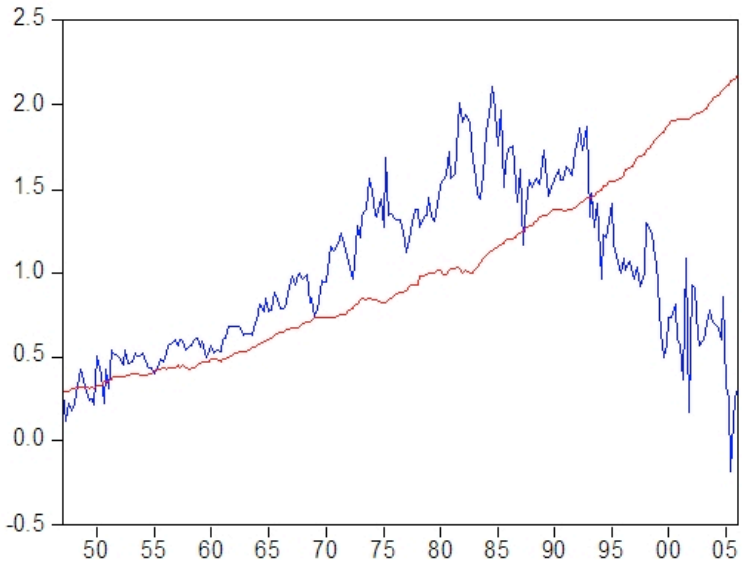


FIGURE 4. Normalized Personal Saving and Disposable Income

tools for measuring saving and investment are stone-age definitions in the information age." Rather than looking at a narrow measure of saving as income minus consumption, they argue that a broader measure, including changes in tangible and intangible capital (e.g., human, physical, and financial), may be more appropriate. In fact, after adjusting the savings figure, their data suggests that savings may have only fallen from nine percent to seven percent over the last twenty-five years. After incorporating capital gains into savings, they find that the real gains-included-savings rate was higher in the late 1990s than any other time in the previous forty years.

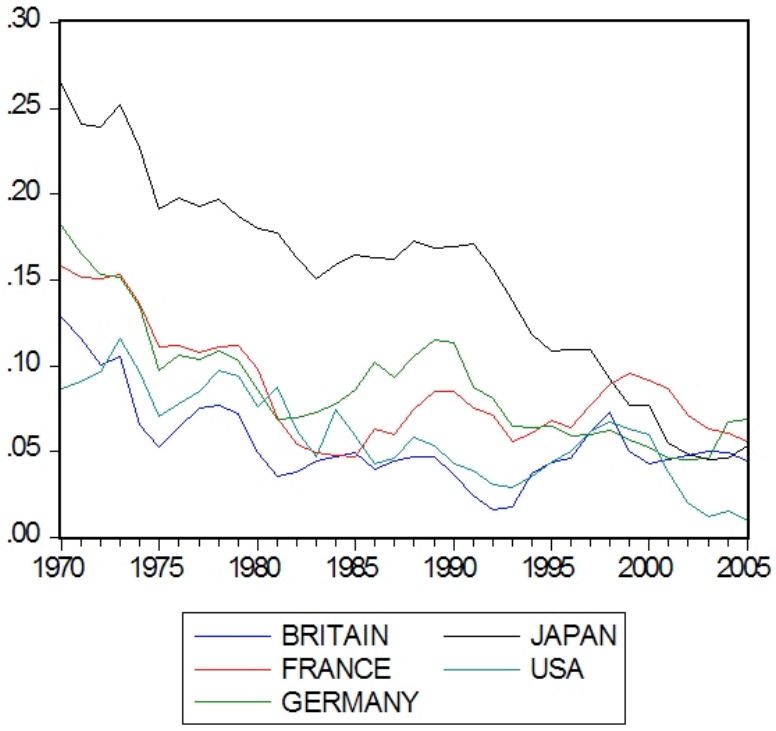


FIGURE 5. International Savings Rates for Select Countries

TABLE 1. Regression Results of Equation 1

Variable	Coefficient	Std. Error
c	48.5^{**}	(22.6)
r	39.8^{***}	(3.27)
Y	-0.006	(0.004)
Adjusted R^2	.736	

The rest of this paper will build off of the work of Gale and Sabelhaus and will be devoted to constructing a savings function that explains the decline in savings.

2. The Savings Function

From macroeconomic theory, we know that interest rates and disposable income affect personal savings. For the first regression, I will regress the real interest rate r and disposable income Y, along with a constant term c, on personal savings S:

$$S_t = c_t + r_t + Y_t + \epsilon_t \tag{1}$$

The results are shown in Table 1. Note that * on the coefficient signifies statistical significance at the 10 percent level, ** at the 5 percent level, and *** at the 1 percent level. Table 1 suggests that income and personal savings are negatively related, which contradicts theory. This is likely a result of misspecification of our model. Let us now construct the following model by adding a wealth variable:

$$S_t = c_t + r_t + Y_t + W_t + \epsilon_t \tag{2}$$

The results are given in Table 2. Notice that the signs of the coefficients

TABLE 2. Regression Results of Equation 2

Variable	Coefficient	Std. Error
c	48.4^{**}	(18.7)
r	27.2^{***}	(3.71)
Y	0.106^{***}	(0.023)
W	-0.019^{***}	(0.004)
Adjusted R^2	0.819	

are what we would expect. Moreover, the fit is significantly improved. Figure 6 compares the actual values and the predicted values. As we can see, the residual appears to be white noise. This model suggests

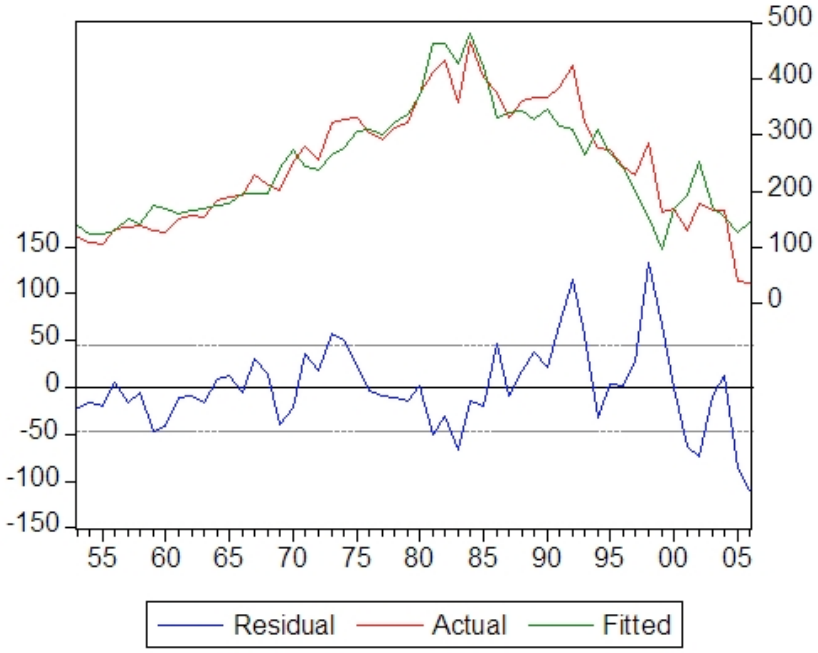


FIGURE 6. Actual Savings and Predicted Savings from Equation 2

that the decline in savings is due to large increases in household net worth. In fact, we observe substantial increases in household net worth from Figure 7 below. The large increases in wealth, given a decline in

the savings rate, suggest that another variable is in play. The missing variable turns out to be capital gains, which have been enormous in recent years. If we look at Figure 8, we see that by including capital gains in the savings rate, there is no evidence of falling savings in the United States. Rather, we observe that this new savings rate is at one of its highest levels in the last 40 years. Even with the low savings rate, net worth has outpaced consumption and aside from the stock market boom during the late 1990s, the ratio of consumption to net worth is at its lowest level since the data was collected in 1945 as seen in Figure 9. These two trends demonstrate that the conventional measure of savings has its limitations.

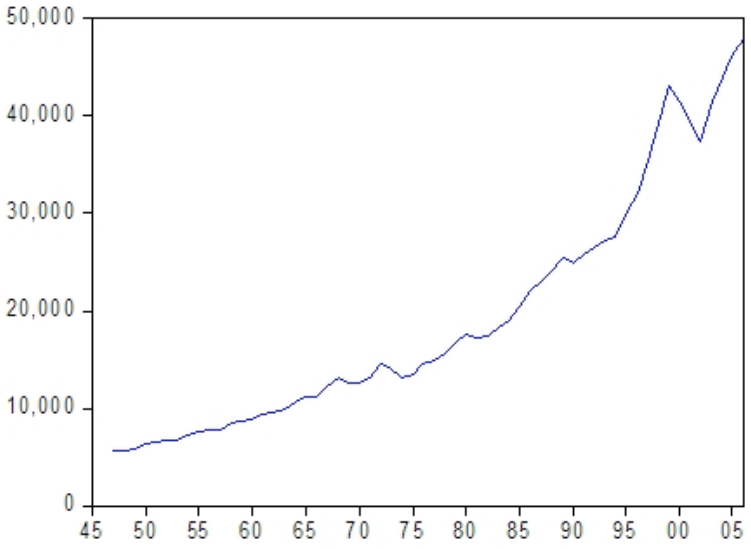


FIGURE 7. Real Net Worth

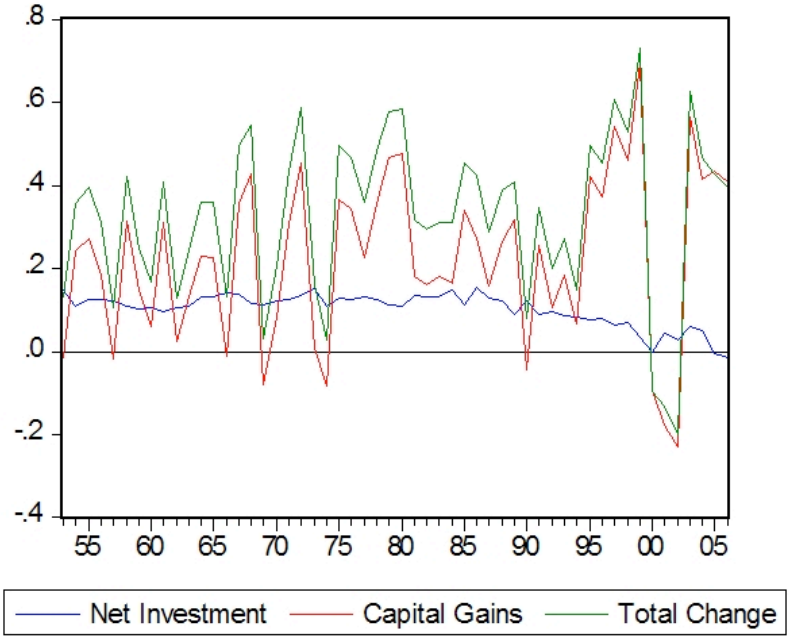


FIGURE 8. Changes in net worth as percent of disposable income

FIGURE 9. Consumption as Share of Wealth

Of course, we can extend our measure of savings to account for any number of variables (e.g., to account for changes in environmental capital) as mentioned by Gale and Sabelhaus (1999). The issue at hand is not whether any particular measure is best, but rather that the conventional measure is likely not well-suited for recent years. Just as the money supply has been extended to include various measures of money, now may be the time for different measures of savings rates to be estimated. William Nordhaus (1995) notes that for the purposes of business cycles and the economy at large, the conventional measure of savings is appropriate. However, when asking about the sustainability of current savings, the conventional measure is flawed because it relies on the conventional notion of savings, namely output minus consumption. Nordhaus argues that a more appropriate measure of savings would incorporate the changes in stocks of all variables relevant to the economy, including natural resources, technical understanding, our stock of knowledge, as well as health. Thus, conventional estimates of savings are biased because health, education, and environmental-preservation expenditures are neglected.

Nordhaus provides estimates of this new measure of savings, or as he calls the "Fisherian measure" (so named for American economist Irving Fisher), that addresses these short-comings. He finds that for the last 200 years, Fisherian savings has averaged roughly 30 percent of income. Over the last 13 years he considered, however, the Fisherian savings rate fell to approximately 18 percent, paralleling the downward trend in the conventional measure. The reason? Falling conventional

investment and a slow-down in productivity starting in most developed countries around 1973.

It is important to note that Nordhaus does not include capital gains in terms of savings, and it is debatable whether they should even be included in Fisherian measures of income and savings. In his response to Gale and Sabelhaus' work, Robert Hall infers from Nordhaus' article that capital gains should only be included in the Fisherian measure if they are due to a realization of here-to-fore unanticipated gains in future productivity. This would occur if investors had previously neglected an imminent technological gain that boosted productivity. Yet, if such capital gains are merely a revaluation, then in the absence of an increase in expected future productivity, such gains do not reflect an increase in productive capital and should not be included in Fisherian savings.

The implications of this discussion are two-fold:

(1) The current fall in savings, in the absence of continued, unanticipated gains to future productivity, is likely to be unsustainable.
(2) A lower Fisherian savings rate implies less capital investment, and a likely slowdown in the growth of income.

Thus, even though the increases in wealth from capital gains explain the decline in savings, the low savings rate is likely to be unsustainable in the future and may lead to slower economic growth.

3. Conclusion

The purpose of this paper was to assess why the personal savings rate in the United States has been falling over time. After a brief review of the literature and overview of related data, we proceeded to estimating a savings function. Our estimation suggests that the true culprit for the falling savings rate has been the extraordinarily high capital gains enjoyed in recent years, suggesting that perhaps the savings rate ought to be extended to include such measures. We conclude our discussion with an explanation of why (even though capital gains have explained the decline in savings rate), such low savings rates are unlikely to be sustainable in the future.

4. Data

The data for the regressions came primarily from the St. Louis Fed's website, although wealth-related variables were obtained from the Flow of Funds Account found on the website of the Federal Reserve: `http://www.federalreserve.gov/RELEASES/z1/Current/data.htm`. Savings was measured as real personal savings, the real interest rate was calculated as then 10 year constant maturity rate net of inflation, and real income was measured as real disposable income. All of these variables were obtained from the St. Louis Fed and then converted to a yearly format. Real wealth was measured by converting the nominal assets of households and nonprofit organizations into real terms. All conversions from nominal to real variables used the GDP deflater. Separate regressions with the CPI deflater yielded similar results. The

data covers the years 1953 to 2006. While 53 observations was smaller than desired, it was deemed sufficient for the estimations presented in the paper. It should be noted that the limited observations inhibited the construction of more comprehensive models.

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