

THE U.S. HOUSEHOLD SAVINGS RATE AND CONSUMPTION

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Summary

The most interesting aspect of movements in personal income over the past few months has been the savings rate and behavior of personal outlays relative to personal income. (Although others have no doubt commented on the importance of changes in the savings rate, I have not seen extensively it reported.) The savings rate has increased dramatically, from 0.0 in April 2008 to 5.0 in January 2009. Of equal importance, however, the majority of the adjustment has resulted from spending falling relative to income. I believe this is good news because it signals that households have completed some portion of the adjustment necessary to bring spending in line with income and historic norms, thus bringing the end of the current recession closer.

Details on Recent Movements in Savings Rate

The “savings rate” is simply the difference between current income and spending – the excess of income left after spending and taxes are accounted for. The definition is:

$$\text{Savings Rate} = (\text{Disposable Personal Income} - \text{Personal Outlays}) / \text{Disp Pers Inc} .$$

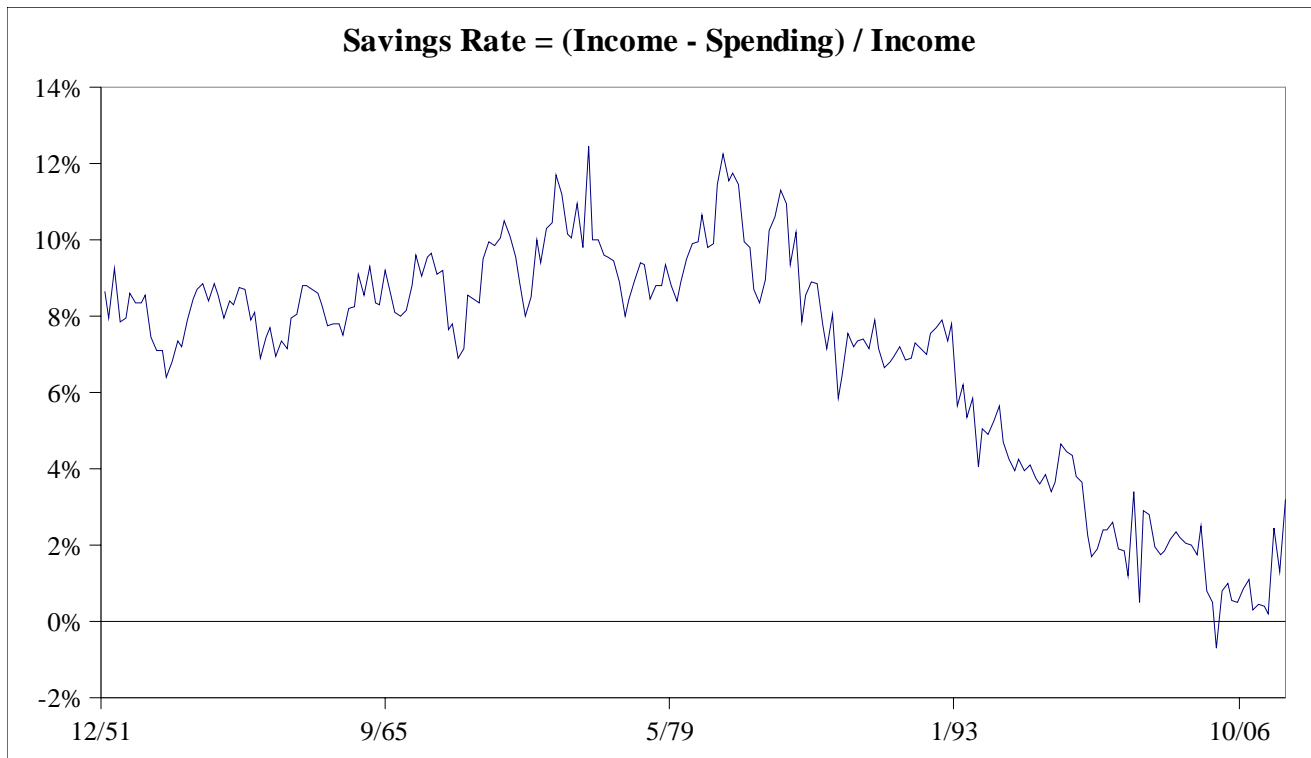
This “savings rate” is not exactly the savings one usually thinks of, but rather a definition of the excess of income over spending in the aggregate economy. One could equally well talk of the “spending rate” – $\text{Outlays} / \text{Income}$ – which is just one minus the savings rate.

In any case, this “savings rate” has fallen significantly over the past 15 years, from 6% and above up to 1993 to 1% and below over the past few years, as seen in figure 1. The fall in the savings rate occurred at the same time that household debt levels rose substantially. I have long held that the savings rate would revert back to higher levels in concert with households decreasing their levels of debt. (See the essays under “Household debt and spending” at <http://www.closemountain.com/publications.html>.)

The current severe contraction is the process whereby households are adjusting their debt levels and spending levels. Consumption is roughly 70% of GDP.¹ So any fall in consumption (personal outlays) will have a large negative impact on GDP growth. This has been the case during the current recession: since the official start of the recession (fourth quarter 2007) consumption has fallen 1.5% and GDP has fallen 0.8%.

Figure 1 – Savings Rate, US, Quarterly, 1952-2008

¹ For 1982-2008 the ratio was 68%, for 2008 it is 71%.



Monitoring the savings rate is critical because a high savings rate is probably the key variable that will signal when households have finished their adjustment process. As mentioned above the savings rate has risen dramatically over the past few months: from 0.0 in April 2008 to 5.0 in January 2009. We need to decompose the rise in the savings rate, however, in order to understand it a little more. To do so it is useful to consider savings as a percent of total personal income. Basically,

$$\begin{aligned} \text{Disposable Personal Income} &= \text{Personal Income} - \text{Personal Current Taxes} \\ \text{Savings} &= \text{Disposable Personal Income} - \text{Personal Outlays} \end{aligned}$$

The standard definition of the savings rate is savings divided by Disposable Income:

$$\begin{aligned} \text{Savings Rate (DPI)} &= (\text{Disposable Personal Income} - \text{Personal Outlays}) / \text{Disp Pers Inc} \\ &= 1 - \text{Personal Outlays} / \text{Disp Pers Inc} \end{aligned}$$

We can, however, define a savings rate divided by personal income that is only slightly different:

$$\begin{aligned} \text{Savings Rate (PI)} &= (\text{Personal Income} - \text{Personal Current Taxes} - \text{Personal Outlays}) / \text{Pers Inc} \\ &= 1 - \text{Pers Curr Taxes} / \text{Pers Inc} - \text{Pers Out} / \text{Pers Inc} \end{aligned}$$

Since DPI and PI differ only by Pers Curr Taxes, which has monthly changes that are not large relative to the level of DPI and PI, the two measures will be very much the same. The advantage of the second is that we can decompose changes in that savings rate into changes due to taxes and that due to changes

due to outlays (spending).

Table 1 shows the both definitions of the savings rate, together with a decomposition for the personal income version. The savings rate jumped in May but that was due largely to the (temporary) tax rebates during summer 2008. The Savings Rate (PI) jumped by 4.3 percentage points, of which 3.3 were due to falling taxes and 1.0 due to falling spending. The savings rate fell in June through August as the effect of the tax rebates disappeared.

Starting in August, however, spending relative to income (Personal Outlays divided by Personal Income) have fallen: from 87.2% in July to 84.5% in January 2009, the lowest since 2001. (One can see the same by noting that Personal Outlays have fallen faster than Personal Income over this period.) For the change from April 2008 to January 2009, the Savings Rate (PI) has risen by 4.5 percentage points, of which 2.8 points are due to falling outlays relative to income and 1.7 points due to falling taxes relative to income. The rise in savings rate due to falling outlays is, I believe, the real news in the personal income figures since it indicates that households have made some real progress in rebalancing spending relative to income. It is hard to predict how far the process will continue but the fact that it has proceeded this far in such a short time is encouraging since it says that some of the economic forces driving the recession have been dissipated.

Table 1 – Savings Rate and Decomposition for April 2008 – January 2009

	Apr 08	May 08	Jun 08	Jul 08	Aug 08	'Sep 08	Oct 09	Nov 09	Dec 09	Jan 09
Sav Rate DPI	0.0%	4.8%	2.5%	1.7%	0.8%	1.4%	2.6%	3.1%	3.9%	5.0%
Sav Rate PI	0.0%	4.3%	2.2%	1.5%	0.7%	1.2%	2.3%	2.7%	3.4%	4.5%
PersOut/PI	87.3%	86.3%	86.6%	87.2%	86.8%	86.4%	85.3%	85.0%	84.3%	84.5%
Tax/PI	12.7%	9.4%	11.1%	11.3%	12.5%	12.4%	12.4%	12.3%	12.2%	11.1%
Ch due to PersOut		1.0%	-0.3%	-0.6%	0.4%	0.4%	1.0%	0.3%	0.7%	-0.1%
Ch due to Tax		3.3%	-1.7%	-0.2%	-1.2%	0.0%	0.1%	0.1%	0.0%	1.2%
%PI	0.0%	1.8%	0.1%	-0.8%	0.3%	0.1%	0.0%	-0.4%	-0.2%	0.4%
%PersOut	0.4%	0.7%	0.5%	-0.1%	-0.2%	-0.4%	-1.2%	-0.8%	-1.0%	0.5%

Long-Term Implications of Change in Savings Rate

One might be concerned that if spending falls relative to income (from say, 87% to 81% which was the average 1952-1992) then there will be a permanent lowering of GDP growth. I do not believe this will be the case. The adjustment from 87% to 81% over a short period would imply a significant fall in GDP as consumption falls relative to income and GDP, but if spending relative to income were to remain stable at 81%, spending could grow at the same rate as GDP, simply making a marginally lower contribution to overall growth than before. Once the savings rate adjustment is complete, the growth rate of consumption can be the same as before the adjustment. Although the base is lower now, the growth can be the same and therefore the growth in GDP will be only slightly lower than before. During the transition, of course, the growth in consumption can be negative and have a substantial negative impact on GDP growth.

Table 2 shows growth in GDP and consumption for 1980:I through 2007:IV (both cyclical peaks) and for two sub-periods (all period begin and end dates cyclical peaks). In the earlier sub-period the savings rate was high and thus consumption as a proportion of GDP was somewhat lower than in the latter period (67% versus 71%). Consumption grew somewhat faster than GDP and contributed substantially to GDP growth (accounting for 70% of GDP growth). In the later period the savings rate was lower, consumption was on average a higher proportion of GDP, and consumption contributed more to GDP

growth (81%). Nonetheless, during the earlier period overall consumption and GDP growth was higher. I do not believe there is any necessity that a slightly higher savings rate (implying lower consumption as a proportion of GDP) necessitates substantially lower growth.

Table 2 – Real GDP and Consumption Growth

	80:I – 07:IV	80:I – 90:III	01:I – 07:IV
%GDP (ar)	2.92%	3.01%	2.44%
%GDP (avg)	2.97%	3.09%	2.46%
%C (avg)	3.30%	3.37%	2.89%
due to C (avg)	2.18%	2.15%	2.00%
%	74%	70%	81%
C as % of GDP	68%	67%	71%
Savings rate	5.5	8.9	1.4

Speculation on Reason for Rise in Savings Rate

I believe the most likely explanation for the rise in the savings rate is a “wealth effect” – a rational response of households to a fall in wealth. The appendix briefly discusses the idea of the wealth effect and the permanent income hypothesis. Basically, households change consumption based on changes in permanent income, not transitory income. This implies that an increase in permanent income, even when current or observed income does not rise, will produce an increase in current consumption. Similarly, a fall in permanent income will produce a fall in current consumption (and a rise in the savings rate).

My hypothesis is that sometime in the 1990s the US economy and the world economy experienced an increase in potential growth and thereby an increase in expected future growth and lifetime wealth or permanent income. (In addition, the volatility of GDP growth fell and overall employment increased. Both of these could have contributed to higher expected future earnings.) Households rationally increased current spending and debt during the 1990s and 2000s – i.e. decreased the savings rate. I just think households over-estimated potential growth and consequently lowered the savings rate too much. With the current recession expectations are being scaled back, estimates of future earnings (and thus wealth) are being reduced, and consumption is responding to the fall in permanent income.

APPENDIX – Discussion of the Permanent Income Hypothesis

The term “Wealth Effect” is a short-hand for the role of wealth or permanent income in an inter-temporal model of consumption, as originally elucidated by Milton Friedman in *A Theory of the Consumption Function* (NBER 1957). Households choose consumption today based on total or lifetime wealth which is determined by current assets, current earnings, and future expected labor and non-labor earnings – an important point here is that wealth is inclusive of human as well as non-human capital. This is often referred to as the permanent income hypothesis – consumption will depend on

permanent income or wealth. The dependence of current consumption on wealth or permanent income has two important implications. First, there will be a smoothing of consumption over time. Second, consumption will be quite sensitive to changes in permanent income or wealth but will show little sensitivity to changes in transitory income.

To understand the permanent income hypothesis it is useful to think of variations in income as split into two components: permanent and transitory. Transitory income is that component of current income that occurs only today and will disappear in the future; for example a temporary fall in wages due to an economic slow-down which is anticipated to be reversed in the near future. Permanent income is the annuity value of total wealth, or the income today derived from total wealth (a real interest rate times wealth).

Consumption depends on both transitory and permanent income, but the responses to the two are quite different. Any change in transitory income will elicit only a small change in consumption since, by definition, transitory changes have a negligible impact on wealth. Nearly all of a transitory increase in income will be saved rather than spent. A change in permanent income has a very different effect, with the consumption rising by roughly the full amount of any increase in permanent income. Nearly all of a permanent increase in income will be spent rather than saved.

The distinction between permanent and transitory income helps to explain some otherwise puzzling observations. Over the long run total consumption rises virtually one-for-one with total income. But when looking across individuals or at a single household over time or over a short time period changes in income have a small impact on consumption. In other words the long-run sensitivity of consumption (propensity to consume out of income) is high while the cross-sectional and short-run sensitivities are low. The explanation is that long-run changes in income represent secular changes in wealth and permanent income and so generate large changes in consumption. Cross-sectional and short-run changes in income are dominated by transitory changes and so produce small changes in consumption. In particular the permanent income hypothesis helps to explain why consumption is smooth over the business cycle while income is more volatile.

The permanent income hypothesis has one additional implication that we are particularly interested in. Consumption responds to permanent income rather than observed income. This implies that an increase in permanent income, even when current or observed income does not rise, will produce an increase in current consumption. Furthermore, to finance the increase in current consumption debt must be increased or assets run down. As an example, consider a household that receives the promise of large inheritance to be delivered next year. The household wealth has increased but the current income has not. Yet it is rational for the household to increase consumption, and to finance the consumption by borrowing against the promised inheritance or running down other assets.

To calculate contribution, it is (or pretty close to):

$$\text{GDP}_t = C_t + I_t + \text{NX}_t + G_t$$

$$\text{GDP}_t / \text{GDP}_{t-1} = C_t / \text{GDP}_{t-1} + I_t / \text{GDP}_{t-1} + \dots$$

$$\text{GDP}_t / \text{GDP}_{t-1} = C_{t-1} / \text{GDP}_{t-1} * C_t / C_{t-1} + \dots$$

$$1 + \% \text{GDP} = \text{Cshare} * (1 + \% C) + \text{Ishare} * (1 + \% I) + \dots$$

$$\% \text{GDP} = \text{Cshare} * \% C + \text{Ishare} * \% I + \dots$$

From the last recession (01-IV to 08-II ??) GDP has averaged 2.7% ??, and C has contributed 2.2% ?? of this.

$$\text{Savings Rate} = (\text{DPI} - \text{PersOutlays}) / \text{DPI} \text{ or } (\text{PI} - \text{PO} - \text{Tax}) / \text{PI}$$

Savings rate for 2008:I was 0.2. Avg for 82:IV – 90-III was 8.2. Say that it ends up at 6% – for Savings Rate to go from 0% to 6% (change of 600bp) all due to change in PO, PO has to fall by about 6% (since $\text{PO} \approx \text{PI}$ or DPI). Since C is about 70% of GDP, this means GDP would have to fall about 4.2% due to fall in C.

From 08:I to 08:IV GDP fell by 1.0% (1.4% at ann rate). This might mean that GDP has to fall by another 3.2%. From 08:II to 08:IV GDP -1.7%, implies fall by another 2.5%.

Savings rate (PO/PI) has gone from 0.0 (4/08) to 4.5% (1/09) and of this 1.7pp has been due to change in taxes (only 0.5% changes during 2008 with temp tax rebates, 1.2% in 1/09 mainly from “net nonwithheld income taxes (payments of estimated taxes plus final settlements less refunds)”) and 2.8pp due to falling Personal Outlays. (All as % of PI). But what matters is PersOut rel to PI, so if PI rises and PO stays constant, PO/PI falls. From 08:I to 08:IV real PI +0.5%, PO – 1.9%,

What really matters is when PO goes down relative to PI, whether PO ↓ or PI ↑. For 08:IV PI +1.1%, PO -1.1% (both real), and PO/PI went from 86.8 to 84.9 (savings rate vs DPI went from 1.3 to 3.2 and vs. PI from 1.1 to 2.8). For Jan 09 PI +.4%, PO +.5% (both mthly, nominal), and PO/PI went from 84.3 to 84.6 (savings rate vs. DPI 3.9 to 5.0 and vs. PI from 3.4 to 4.5, but all because taxes went down and DPI up.)