

Permanent Income

Thomas S. Coleman

Draft – 16 December 2013

PEOPLE: Milton Friedman

RELATED: Consumption Smoothing, Lifecycle Consumption, Consumption Function

DATES: Milton Friedman published *A Theory of the Consumption Function* in 1957.

CHICAGO: Milton Friedman is one of the best-known economists to have taught at University of Chicago.

VIGNETTE

Changes in income can be thought of as either permanent changes or transitory changes. The key idea, and it is an hypothesis or theory that must be tested against evidence, is that households or individuals respond to permanent changes but not to transitory changes. An increase in income that is transitory will be saved and not spent.

Friedman developed and tested the permanent income hypothesis during the 1950s to address a very specific set of problems, the apparent contradiction between evidence from time-series and cross-sectional responses to changes in income. The concept of permanent versus transitory income, however, has become embedded throughout economics and remains as relevant today as it was over 50 years ago. How much consumers spend out of increased income was a vital question when governments undertook the substantial fiscal stimulus in response to the financial crisis of 2007-2008, and the question remains relevant today as governments consider fiscal austerity.

Consumption Function

The consumption function is an important concept in economic theory, Keynesian macroeconomics in particular. Introduced by J.M. Keynes in 1936 in *The General Theory of Employment, Interest, and Money*, it represents the relation between aggregate income and consumer spending. Keynes presumed the relationship was stable, or at least stable enough to act as the fundamental building block for the multiplier, the mechanism by which an increase in aggregate expenditure produces a larger increase in demand.

In its simplest form the consumption function would be a linear (technically affine) function:

$$C = c_0 + c_1 * Y$$

The coefficient c_1 is the marginal propensity to consume and measures how much of each additional dollar of income consumers spend (versus save). Note that the coefficient c_1 need not be a constant – it can depend on such factors as the level of interest rates, the average level of wealth, distribution of income and wealth across the population – but it is presumed to be fairly stable over time.

Empirical studies, however, soon showed some important and challenging inconsistencies, particularly between observations from cross-sectional or household-level studies on the one hand and time series or aggregate data on the other. When examining behavior across individuals or households at a point in time, economists found that consumers with higher incomes saved more and their consumption showed a much less than one-for-one response – from an extra dollar of income only a small portion was consumed and a large fraction was saved. And yet analysis revealed a different trend when they examined aggregate data over long time spans or across countries with widely differing incomes. Economists found a roughly constant share of national income being saved, in other words consumption increased in line with income. The cross-sectional observations appeared to be inconsistent with both the aggregate observations and with the assumptions behind the Keynesian consumption function.

Permanent Income

Friedman showed that the Keynesian foundations of the consumption function were fundamentally flawed. His explanation was as simple as it was brilliant; his own words provide the simplest explanation:

The central theme of this monograph can be illustrated by a simple hypothetical example. Consider a large number of men all earning \$100 a week and spending \$100 a week on current consumption. Let them receive their pay once a week, the paydays being staggered, so that one-seventh are paid on Sunday, one-seventh on Monday, and so on. Suppose we collect budget data for a sample of these men for one day chosen at random, defined income as cash receipts on that day, and defined consumption as cash expenditures. . . . It may well be that the men would spend more on payday than on other days but they would also make expenditures on other days, so we would record the one-seventh with an income of \$100 as having positive savings, the other six-sevenths as having negative savings. Consumption might appear to rise with income, but, if so, not as much as income, so that the fraction of income saved would rise with income. [Chapter 9 of *A Theory of the Consumption Function*, Princeton University Press, 1957]

So we have cross-sectional data showing that those with higher incomes save more and that the ratio of savings to income rises with income (the ratio of consumption to income declines). But in reality there is no savings (considering all the men together) and presumably if the incomes for all these men rose from \$100 to \$120 they would all consume \$120 and there would still be no savings overall. In other words, at the aggregate level there would be no tendency for savings to rise with income and the propensity to consume out of income would be one.

Friedman’s hypothesis was that many of the puzzling and inconsistent results regarding savings and consumption were simply a result of “inappropriate concepts of income and consumption.” In the example of staggered paydays, individual savings rise and the ratio of consumption to income declines with rising income only because we are measuring daily income. If we used an appropriate measure of income, weekly income in the simple example, then there would be no rise in savings with income, and consumption (the ratio of consumption to income) would not change with income.

Building on the idea behind the simple example, Friedman introduced the concept of permanent income as distinct from the measured income reported by individual consumers or measured at the aggregate level. Although difficult to define, we might think of permanent income as corresponding roughly to the long-term expected income or lifetime income or wealth. As Friedman states, “the concept of permanent income is easy to state in these general terms, hard to define precisely.” In the example above the analogue of permanent income would be individuals’ \$100 weekly income. Measured income would be either \$100 or \$0, depending on which day we measure an individual’s income.

The difference between measured income and permanent income is *transitory income*:

$$\text{measured income} = \text{permanent income} + \text{transitory income} .$$

Friedman's central hypothesis can now be simply stated, in two parts. First, consumers respond to changes in permanent income but largely ignore changes in transitory income. Second, measured income is a combination of both permanent and transitory income.

The result is that any attempt to relate consumption to measured income will not measure a behavioral relationship but a statistical artifact. Say that transitory income is a large component of measured income, as will likely be the case when examining individual household income for a large number of differing households. Some will have low income because they have low income year-after-year, but some will simply have a poor year (unemployment, a poor bonus, or some other bad luck). Similarly some will have high income because of unusually good luck, purely transitory reasons.

Among households with high measured incomes, there will be a large portion with high transitory income and these households will not increase their consumption in response to the transitory income. So the measured consumption will not rise with measured income, or more accurately will do so much less than it would versus permanent income.

Consider, in contrast, a situation where transitory income is a small component of measured income. In this case consumption would be expected to rise much more with income because a rise in measured income would represent primarily a rise in permanent income. This would often be the case for aggregate data because across the whole economy there would be households with both high and low transitory income and the transitory component would tend to average out across households. Changes over the years in measured aggregate income would thus tend to reflect primarily changes in permanent income.

This simple hypothesis can, at least conceptually, account for the seeming inconsistency of the cross-sectional and the time series observations. Across households at a point in time, those households with higher measured income tend to have a large component of higher transitory income, and consumption will generally not go up with transitory income. This means the cross-sectional response of consumption to higher measured income will be relatively small (the marginal propensity to consume is low; the ratio of consumption to income goes down as income goes up; the savings rate goes up as income goes up).

For aggregate income (averaging or aggregating across households at a point in time) the transitory income will tend to average out, so measured aggregate income and changes in aggregate income over time will tend to measure permanent income. This implies that for long time spans using aggregate income, the response of consumption to income will be higher than for cross-sectional observations.

This idea was not completely new – it can be traced back to the writings of the one of the Bernoulli clan in the 18th century. Friedman's genius, however, was two-fold: First in taking this simple idea and fully exploring and exploiting its implications; and second in collecting empirical evidence and using that evidence to truly test the theory, both marshaling evidence in support of the hypothesis but also searching for evidence that would disprove it.

Friedman believed that ideas and hypotheses had to be put up against data. The hypothesis alone, the fact that in theory it could explain the difference between the cross-sectional and the time series data (the microeconomic and the macroeconomic data) was not sufficient – a useful economic theory must be able to account for the quantitative observations. Much of *A Theory of the Consumption Function* was dedicated to measuring and testing the data to determine whether the permanent income hypothesis could in fact account for the differences between the microeconomic and macroeconomic data.

Permanent Income Today

Friedman's concept of permanent income remains powerful and relevant today. How much consumers spend out of increased income was a vital question when governments undertook the substantial fiscal

stimulus in response to the financial crisis of 2007-2008, and the question remains even more relevant today as governments consider fiscal austerity. The justification for fiscal stimulus is that during a recession every \$1 of government spending or tax cut would create \$1 or more of economic growth – the so-called fiscal multiplier. The worry during a period of fiscal austerity is that the reverse will occur – every \$1 of government spending cuts or increased taxes will cut growth.

The justification behind the fiscal multiplier is that government spending or tax cuts will increase consumer income, consumers will spend out of that increased income, leading to further increases in income, further spending, and so on. But the critical question is how much consumers will actually spend out of the increased income – a large portion (a high propensity to consume and low propensity to save) will lead to a larger multiplier. And so we return to the concept of permanent versus transitory income, asking whether consumers treat the increased income from government stimulus as permanent or transitory – because if it is transitory the propensity to consume will presumably be small.