

Pseudo-Panel Estimates of Saving and Wealth Accumulation

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The textbook intertemporal budget identity used in dynamic models of household income and wealth accumulation provides a useful framework for comparing and contrasting various ways to estimate household saving. On the left-hand side of the budget identity is the change in wealth, and on the right-hand side is sources and uses of funds, usually written as disposable income minus consumption. In principle, given the budget identity, one could use micro data to produce equivalent estimates of household-level saving by measuring either the change in wealth or income minus consumption. In practice, estimates of saving differ wildly depending on which data source and which side of the budget constraint is used, and none of the measures line up well with published aggregates. The Survey of Consumer Finances (SCF) collects household-level data on balance sheets and incomes, and is well-suited for studying saving and wealth because of the over-sampling of high-wealth families. In this paper we use a pseudo-panel approach applied to SCF data to study saving and wealth accumulation in the US for the period 1995 to 2016.

The first step in using the micro data to study saving and wealth accumulation is reconciliation with and benchmarking against published macroeconomic aggregates. This includes the income and related flows in the National Income and Product Accounts (NIPA) and household wealth levels in the Financial Accounts of the United States (FA). We do this reconciliation in two steps. First, we compare the saving trends in the SCF to those in the NIPA and FA accounts that have been adjusted to match the concepts available in the SCF. The adjustments include removing non-profit institutions serving households from both data sets and the various imputations and in-kind flows in the NIPA. Those adjustments bring the SCF in close alignment with the macro data. Second, we show that the conceptually-adjusted NIPA and FA data show the same basic time-series properties as the unadjusted data. In particular, the decline in aggregate saving between 1995 and 2007, followed by a rebound between 2007 and 2016, shows up clearly in the published NIPA and FA data and in the conceptually-adjusted NIPA and FA data. Thus, moving to a basically cash-flow (and measurable) accounting framework does not distort the macro phenomena being investigated. This is not surprising, because adjustments for unmeasurable flows like in-kind government medical benefits affect income and consumption equally. Although saving rates of the conceptually-adjusted data are higher in every year because the denominator is smaller after imputations and in-kind transfers are removed, the trends and fluctuations in saving are basically the same.

Having established the ability to track macro income and wealth using the micro data, the second step involves using the intertemporal budget identity to decompose aggregate wealth change into

saving versus capital gains, and solving for consumption. The FA and NIPA data show that around 70 percent of wealth change in the period since 1995 is due to changes in asset prices, with different assets (especially owned housing versus financial assets) contributing differently across the various sub-periods. The same decomposition is applied to the SCF, and after adjusting for the timing of capital gains because SCF respondents tend to report asset values with a lag, the intertemporal budget identity is then used to solve for aggregate consumption in the SCF, using income minus the change in wealth that is not attributable to capital gains.

The reconciled micro data on consumption is able to track macro aggregates, and this sets up the third and principal methodological contribution of the paper, which is decomposing saving and wealth accumulation across groups using a pseudo-panel methodology. The concept of “groups” in pseudo-panel analysis includes decomposition by characteristics that are either fixed (race, sex, education) or change systematically between the cross-section surveys (age). One area of on-going effort within the overall project framework is developing ways to estimate outcomes in situations where group composition changes, in which the point estimates for wealth by group are not sufficient statistics for capturing changes. The solution (in on-going work) is to model the joint distribution between wealth and transitions across groups.

The group-level analysis also introduces the need for estimates of wealth transfers between groups, and those transfers are both *intervivos* and bequests at death. Bequests at death are modeled in the SCF using three-year cohort-mortality. The mortality estimates are adjusted for differentials in death rates related to socio-economic variables, including income. Bequests are assumed to go to a surviving spouse if one is present in the data, otherwise, the bequests go into an inheritance “pool” that is distributed across groups using SCF-estimated inheritance probabilities and conditional distributions. This approach preserves the micro-level correlations between individual characteristics (including income and wealth) with bequests made and received. *Intervivos* transfers are also captured to some extent in the SCF, and the uncertainty about the extent of those transfers is captured in the sensitivity analysis.

The output from this project is estimates of income, saving, wealth change, and consumption across groups and time. The reconciliation of micro and macro concepts and data implies that the estimates will be useful to macroeconomists interested in studying trends and fluctuations in consumption, saving, and wealth. The reconciliation of flows and stocks at the micro (group) level implies that microeconomists will have useful (but heretofore elusive) benchmarks for modeling household behavior, and particularly, the extent to which measurement error in one or more component of the intertemporal budget constraint might be impacting inferences made using available household budget data.