An Enduring Partnership: Incorporating Administrative Data into Sample Design for the Survey of Consumer Finances[1]

Barry W. Johnson, Statistics of Income, IRS

The triennial Survey of Consumer Finances (SCF) is distinguished as an outstanding source of information on income and balance sheets, demographics, and economic expectations of U.S. households. It includes representative coverage across the income and wealth spectra, enabling users to study assets that are widely distributed in the economy as well as those that are much more concentrated.[2] This is made possible by a dual frame sample design that includes both a traditional area probability sample and a list sample that is used to oversample high-wealth households. Since its institution, the list sample has been developed using administrative data accessed through a partnership between the Federal Reserve Board of Governors (FRB) and the Statistics of Income Division (SOI) of the Internal Revenue Service. This partnership recognizes the essential contribution of the SCF in helping policymakers understand the impact of current and proposed tax policies on American households.

Section 1 provides background on the SCF, a brief history of SOI's support of the survey, and a discussion of the importance of these data to tax policy research. Section 2 describes the evolution of the list sample while Section 3 discusses benefits to SOI and FRB of partnering on the SCF. Some direct comparisons of SOI and SCF estimates are presented in Section 4 in order to demonstrate the importance of benchmarking results for improving data quality, and Section 5 provides concluding remarks. The goal of this paper is to document the benefits of partnering on projects of National interest as a model for advancing a wide range of institutional goals.

1. Background

The FRB's Survey of Consumer Finances collects data on the assets and liabilities of U.S. households. These data include extensive information on financial services used, employment histories, pension rights, and demographic characteristics. The survey has its roots in the FRB's 1962 Survey of Financial Characteristics of Consumers (SFCC).[3] Since 1983, the FRB has conducted the SCF triennially based on a cross-sectional sample of U.S. households, although on a few occasions, it has re-interviewed respondents to create panel datasets.[4]

SOI is the premier source of statistics on the Federal tax system. It collects data from more than 100 different tax return and information documents to produce microdata that

---

[1] The views expressed in this paper are those of the author alone do not necessarily reflect those of the IRS or Treasury Department. It is dedicated to Arthur Kennickell, Fritz Scheuren, Louse Woodburn, Gerhard Fries, Kevin Moore, and Brian Bucks. It is also important to recognize SOI staff, David Paris and Michael Parisi for their ongoing work in support of the SCF.

[2] There have been several studies that highlight the superior coverage of the distributions of income and wealth in the SCF as compared with other major U.S. surveys. Czjaka et. al (2004) discuss comparisons with Survey of Income and Program Participation (SIPP) and the Panel Study of Income Dynamics (PSID).

[3] A full description of the SFCC can be found in Projector and Weiss (1966).

[4] The 1986 survey was a re-interview of 1983 respondents (Avery, Elliehausen, and Kennickell, 1987) and the 1989 SCF contained an overlapping panel cross-section based on the 1983 SCF design (Kennickell and Woodburn, 1992). There was also a 2009 follow-up of 2007 SCF respondents designed to measure the impact of the Great Recession (Bricker, *et. al,* 2011).

directly support the budget and tax-law evaluation functions of the legislative and administrative branches of the Federal government. SOI also makes extensive summary tabulations and analyses available to researchers and the public on its TaxStats Web pages, www.irs.gov/taxstats.

While SOI data are extremely useful for many types of estimates and analyses, evaluating tax law provisions (existing or proposed) requires information that taxpayers do not report on their tax returns. For example, the Federal tax system does not collect comprehensive information on the composition of personal wealth, debts, household demographics, or pension and retirement plans. It is often impossible to estimate how taxpayers will be affected by, or react to, a tax law provision without considering these related dimensions of personal finances. In addition, tax return data cannot be used to study the entire distribution of income in the U.S. because the income tax filing threshold exempts very low-income earners from filing tax returns. Surveys, especially the SCF, are an extremely important source of the supplemental information required, yet not present in administrative records, for understanding economic behavior. Tax policy analysts use SCF data in a variety of ways, both directly (for estimation) and indirectly (for augmenting and calibrating models).[5]

The importance to tax administration of the high quality, comprehensive data on household financial characteristics embodied in the SCF has long been recognized. A quote from a December 1988 memorandum from then Assistant Secretary for Tax Policy, Donaldson Chapoton, summarizes the widespread use of the data:

> "[The Surveys of Consumer Finances] provide the best and in some cases the only detailed data on the financial characteristics of households in the United States. These data are invaluable to the development of Federal tax policy and therefore of the utmost importance to the Office of Tax Policy as well as to the Congressional Joint Committee on Taxation…The Federal Reserve surveys are also relied upon extensively by the Comptroller of the Currency and by other Treasury staffs."

Because of the importance of the SCF to tax administration, SOI has provided support to the FRB for the list portion of the sample in each wave of the survey, as well as for its predecessor, the SFCC.

At the fore of the relationship between the FRB and SOI has been a shared emphasis on protecting the confidentiality of the data provided by survey respondents and the SOI data. Carefully constructed agreements between the two organizations detail protocols for handling sensitive information and ensure that the sample mechanism is transparent and efficient. Because of these controls, the FRB never receives personally identifiable data from SOI files. Likewise, SOI never receives confidential information on survey respondents, nor does the survey research organization responsible for implementing the survey receive tax information on potential respondents.

2. The SCF List Sample
From the start, the SCF sought to achieve representative coverage of U.S. household finances by using a dual frame sample design. This design incorporates a standard area

---

[5] For example, the Treasury Department's Office of Tax Analysis uses data from the SCF in its analysis of the distribution of tax burdens (Cronin, 1999).

probability sample (AP), augmented by a list sample designed to target high-wealth individuals (Frankel and Kennickell, 1995). SOI's role has been critical to the development and evolution of the list sample.

The SCF list sample is drawn from statistical data records collected by SOI. While the role of the list sample is to ensure the inclusion of high-wealth households, there is no information in SOI files that directly captures the value of household wealth. Rather, SOI draws its data from income tax returns filed by individuals or jointly by married couples. This presents a number of challenges. First, income is at best an imperfect indicator of wealth. Second, overlap with the SCF's sample unit, the household, is imperfect. As the following sections will show, the methods used overcome these limitations in order to stratify and select an efficient sample of the targeted population have evolved over time, driven by careful research and analysis of survey results, and by advances in statistical methods and computer technology.

Early Years 1962, 1983
SOI drew the list sample for the 1962 SFCC from tax returns filed by high-income individuals included in its Tax Year 1960 file. The list sample included only those returns reporting adjusted gross incomes (AGI) of at least $50,000. SOI assigned the returns to 2 strata, by size of total income: $50,000 -$99,999 and $100,000 or more. While SOI identified a total of 752 potential respondents, only 329 participated in the survey.[6] The response rate was 50 percent for the lower-income stratum and about 37 percent for the highest-income group.

The list sample for the 1983 SCF again used SOI statistical data as its foundation. It incorporated information derived from Tax Year 1980 tax returns reporting at least $100,000 in AGI. For sampling purposes, SOI divided these returns into 6 strata based on the size of AGI and presence or absence of business income. A significant innovation in this wave was the incorporation of a total wealth estimate for each stratum in order to select sampling rates that would efficiently target wealth. Wealth was estimated by capitalizing income from dividends and interest received, using average rates of return, and by estimating the value of real property from reported real estate tax liabilities.[7] SOI staff selected a sample of almost 6,700 filers, with a goal of achieving a realized sample of 1,000 respondents. To protect taxpayer data, the research protocol required that the U.S. Comptroller of the Currency contact and ask each potential respondent to volunteer as a participant. Response rates were lower than expected, resulting in completed list sample interviews for 459 respondents.

Sample Design Improvements, 1989-Present
The lead up to the 1989 SCF, and the years that follow, encompass a period of intense research into all aspects of the SCF sample and data collection processes, resulting in advancements and innovations too numerous to detail here.[8] Instead, this brief section highlights advances in sample design and selection that resulted directly from the collaboration between the FRB and SOI. Also in this period, financial support of the SCF

---

[6] These numbers include households selected into the area probability portion of the sample whose income placed them in these strata for weighting purposes.

[7] This work built on techniques developed by Daphne Greenwood (1983).

[8] In recognition of this work, Arthur Kennickell, Director of the FRB's Microeconomic Survey Unit, was awarded the 2007 Julius Shiskin Memorial Award for Economic Statistics http://www.nabe-web.com/publib/news/07/08/05.html.

was increased to support larger realized sample sizes, increasing the number of respondents included in both the AP and list portions.

For the 1989 SCF, as in the previous surveys, SOI income data were again used for the list sample frame. In this year, however, rather than limiting the file by size of income, a wealth index was computed for each record in the SOI file by capitalizing a number of income flows using average rates of return. This wealth index was used to assign records to sampling strata. In a significant change from 1983, potential respondents received a package containing a description of the survey, and letters from the Chairman of the Federal Reserve Board and the organization conducting the survey, requesting their cooperation. Also enclosed with these materials was a prepaid, return postcard for those individuals who did *not* wish to participate. About 36 percent of the original sample of list cases refused participation at this stage. Interviewers approached the remaining list cases with the same intensity as the area-probability cases, yielding an overall interview rate of about 34 percent for the list sample, resulting in 866 completed list sample cases (Kennickell and Woodburn, 1992). The 1989 list sample accounted for about half the net worth measured by the survey, providing nearly all the observations in the top 5 percent of the wealth distribution. Hence, this design achieved its intended purpose.

In their 1992 paper, Kennickell and Woodburn report that the wealth index described above was "noisy" and a better predictor of gross assets than of net worth. In 1995, to improve the accuracy of the wealth index, the SCF introduced a more refined approach. This approach incorporated using both income capitalization and a model relating income and wealth developed from historic SCF data to produce two values of the wealth index for each SOI record. The results of these two approaches were blended to assign records to an appropriate sampling strata (Frankel and Kennickell, 1995).

Beginning with the 1995 SCF, the size of the list sample was increased. For this and each subsequent survey, the achieved list sample size was approximately 1,500 respondents. The response rate has held relatively steady over time, at about one-third, lower (10-15 percent) for respondents in the highest-wealth strata.

One persistent frustration of the list sample design was that year-to-year variations in realized income sometimes caused the assignment of essentially low-wealth individuals to high-wealth strata, or conversely, high-wealth individuals to low-wealth strata. By 2001, improvements in computer technology allowed SOI to access and work directly with large administrative data files. For that year, the SCF list sample design was modified to include 2 years of data in order to smooth year-to-year income fluctuations. Records from the most recent SOI sample year were linked to prior year SOI data where there was a match, or linked to administrative data when no corresponding prior-year record in the SOI file existed. The wealth index was calculated using an average of the income realized over the 2-year period (Kennickell, 2001). This approach proved successful in reducing classification errors associated with income variation. It was further refined in 2004 so that the selection program used 3 years of data to estimate average income for the purpose of assigning a wealth index to potential respondents (Kennickell, 2005).

3. Additional Benefits of Collaborating on the SCF
In order to ensure 1) SCF data provide the maximum benefit for tax administration and 2) that the administrative data used in support of the list sample are used strictly in accordance with statutory limits, SOI staff have contributed to many facets of the project.

These include working with FRB staff to develop statistical methods related to sample design, file weight computation, and variance estimation, as well as participating in field-interviewer training sessions and developing the disclosure limitation strategies used to prepare data for public release. Collaborating with the FRB staff and their contractors in this way benefits SOI and its customers in addition to the important benefits the SCF data bring to tax administration.

The processes undertaken to collect data, whether from administrative sources such as tax returns and information documents or surveys, is surprisingly similar. These include designing samples; collecting and editing data; and producing data and analyses for the public. This means that many of the techniques and innovations introduced to improve SCF field interviews and data collection have direct applications for SOI data collection processes and vice versa. For example, exposure to the Computer Assisted Personal Interview (CAPI) instruments, developed by NORC at the University of Chicago, suggested many improvements to SOI's data collection systems. These include introducing online reference materials accessed through dedicated 'hot' keys and field-level verification tests applied when data can't be directly tested mathematically. . Likewise, SCF desk guides and other training materials have occasionally been adapted for SOI data editing manuals and training programs, improving both the technical accuracy of SOI's work and strengthening conceptual unity between the data produced by the two organizations. Working with the SCF computer-programming staff has also led to improvements in SOI's data cleaning and programming techniques. Similarly, exposure to SOI's data collection applications and quality review systems simulated structural changes in SCF data editing tools and practices such as integrated data editing programs and real-time quality reviews and feedback cycles for interviewers during data collection. [9]

However, the work undertaken in the areas of survey/project management and statistical innovation are more important than these technical innovations. For data producers, evaluating the accuracy and representativeness of estimates derived from a data file should be the highest priority. Too often, data producers neglect this work in favor of data analyses bearing more directly on policy issues. Fortunately, the FRB has consistently placed considerable emphasis on this aspect, amassing an impressive library of research papers that highlight the important influence data collection processes exert on inferences made from resultant data files. FRB's contributions to this literature include studies of field interviewer-induced nonsampling error and the effect on nonresponse bias and data quality from the amount of pressure put on both potential survey respondents to participate and interviewers to meet production quotas. [10] They also include the influence of the survey delivery mechanism on respondent participation and item nonresponse and the importance of auxiliary information and interviewer observations to data editing and imputation processes. The FRB has been a pioneer in implementing multiple imputation techniques and in applying these techniques to protect respondent privacy in public-use

---

[9] Methods introduced to identify, correct, and prevent data errors during the data collection phase of the SCF are documented in two recent papers by Project Director and Vice-President Catherine Haggerty, et. al. (2012, 2013). See also Kennickell, 2006a.

[10] Recent works on interviewer effects include Kennickell (2006b) and (2008). In his 2010 paper, Kennickell discusses the influence of marginally cooperative respondents on bias and on problems related to longitudinal editing and imputation.

files.[11]   The innovative work of the FRB has had an enormous influence on statistical organizations worldwide.[12]

Likewise, improving the processes for producing and disseminating statistical data products is a high priority for SOI. Beginning in the late 1980s, under the leadership of then Director, Dr. Fritz Scheuren, SOI renewed its focus on methodological and technical innovations. Supported by improved computing technology, it embraced production processes emphasizing the continuous improvement models advocated by Joseph M. Juran and W. Edwards Demming.   SOI made improvements to its sampling and weighting techniques, introduced longitudinal panels of individual income taxpayers, and conducted special studies that advanced the understanding of taxpayer behavior and the economy during this period (Petska and Scheuren, 1992).

Against this backdrop, the partnership between the FRB and SOI has produced an unanticipated synergy. Regular sharing of ideas and technical expertise has benefited staff and processes in both organizations. The resulting advances have improved the efficiency and representativeness of SOI and SCF statistical samples, while strengthening the privacy protection of individual data released in public-use files.

4.   Benchmarking Estimates

An important step in using sample data to make inferences for any population is to benchmark the estimates against comparable data from independent sources. While the SCF benchmarks its data against several sources, this section focuses on comparisons with selected SOI data series. One reason the SOI/FRB partnership has proved so fruitful is that the data produced by each organization are quite complimentary, especially when studying income and wealth distributions in the United States. The two examples described below demonstrate how such comparisons can be an important mechanism for identifying weaknesses in a data system and devising improvements that foster greater consistency in seemingly common measures, which can be vital to strengthening public confidences in official statistics. This demonstrates yet another benefit of the collaboration between SOI and the FRB.

Wealth Estimates

SOI has for almost 50 years, produced estimates of wealth derived from Federal estate tax return data using the estate multiplier technique (Mallot, 1908; Raub and Newcomb, 2007). Estate tax returns contain detailed inventories of relatively wealthy decedent assets and liabilities at the time of death. In the 1980s, SOI began a series of comparisons of its wealth estimates with comparable SCF figures.[13] There are a number of conceptual differences between the two data series that complicate this process. The most significant of these is that the SCF bases its data on households whereas the SOI bases its estimates on individuals (Johnson and Moore, 2005). It is, however, possible to make direct

---

[11] Kennickell (2011) discusses editing and imputation of the SCF and Kennickell and Lane (2007) discuss the use of these techniques for disclosure limitation adjustments and their effects on inferences made from public-use versions of the SCF.

[12] For example, the sample design and sample management practices instituted by the FRB have been studied extensively by the European Central Bank in preparation for a similar survey of Eurozone residents (Perez-Duarte and Slacalek, 2008) and Arthur Kennickell has served as a consultant for this effort.

[13] The earliest work in this area compared 1962 SOI estimates to the SFCC (Wolff and Marley, 1987). Scheuren and McCubbin (1987) produced an extensive comparison of 1983 SOI and SCF wealth data that ultimately led to significant changes in the list sample selection methodology.

comparisons between estimates for single individuals in the SOI data to those for households headed by unmarried/unpartnered individuals in the SCF data.[14]   Figure 1 shows that these estimates are quite similar.[15]

	Survey of Consumer Finances				Estate Tax Estimates			
	% reporting	Mean	Median	Total	% reporting	Mean	Median	Total
Sindgle/widowed/div/sep								
Total assets	100.0	2,102	1,099	4,564,262	100.0	1,833	1,068	4,822,014
Financial assets	100.0	1,122	653	2,435,399	100.0	1,189	745	3,108,671
Nonfinancial assets	98.5	980	488	2,128,862	96.0	678	343	1,713,343
Personal residence	85.0	286	230	620,366	67.1	320	240	564,534
Other real estate	50.7	270	17	586,918	36.1	386	215	367,051

Table 1: Comparisons of SCF and Estate Tax Data Estimates of Wealth , by Marital Status, for Households or Estates with >= $675,000 in Assets (Money amounts are in the thousands of dollars)

While direct comparison of estimates from unrelated sources is an ideal method of validation, it can be almost as informative to make indirect comparisons for data that vary conceptually in ways that are well understood. Figure 2 compares year-to-year changes between the shares of U.S. wealth held by the wealthiest 1 percent of households (SCF estimates) to similar estimates for individuals (SOI data). The magnitudes differ because the units of observation differ, but similarities in the trends observed in SCF and SOI data provide a degree of validation to both sets of estimates.

Figure 2: Concentration of U.S. Wealth, 1989-2001

---
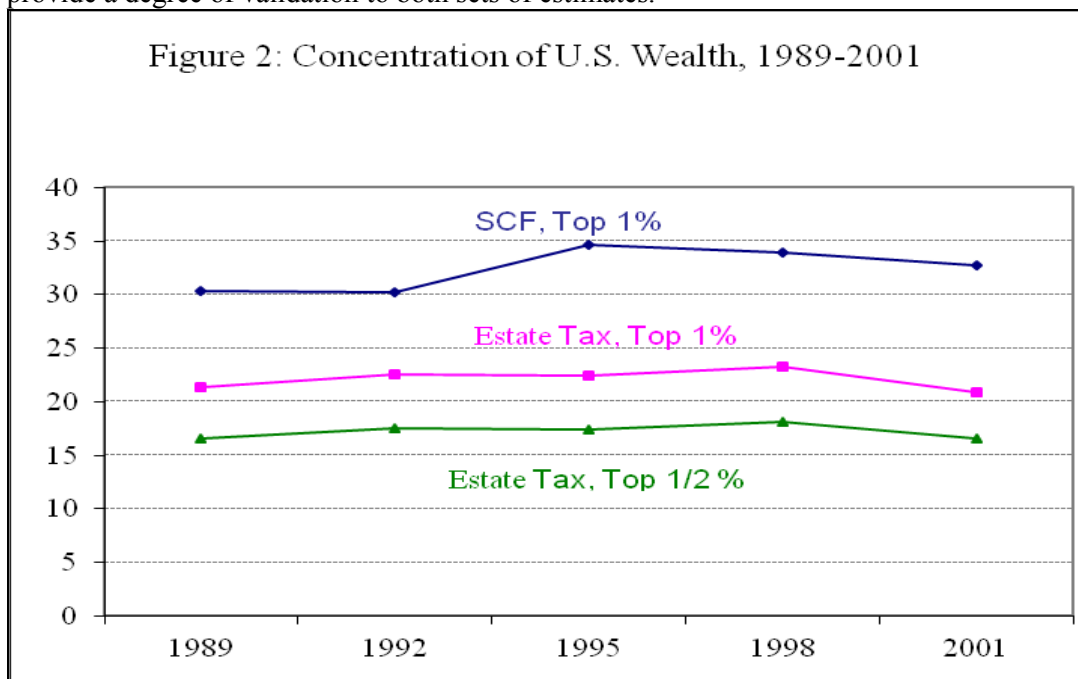
[14] In the SOI data, single includes individuals who, at the time of death, were single, widowed, divorced, or separated.

[15] Figures 1 and 2 were originally published in Johnson and Moore, 2005.

Comparisons of SOI wealth estimates with those from the SCF have been very important to the credibility of the SOI program and to the SCF as well. First, the relative consistency between the two data sources has lent a great deal of validity to the SOI data series and to the statistical methodology used to produce the estimates. Second, the comparisons have led to significant improvements in the SOI estimation process. For example, because of these comparisons, SOI made several improvements to the weight computation methodology (Johnson and Woodburn, 1994). Other changes resulting directly from this work include improvements to model-based approaches for better estimating certain assets whose values cannot be directly obtained from estate tax returns, such as the equity value of certain types of life insurance.

Income Estimates
There is significant overlap between the data captured in the SCF and income variables in SOI data collected from IRS Form 1040. In fact, for some SCF income items, respondents are asked to report values directly from their tax returns, potentially increasing comparability across the data sets. Here again, differences in the unit of observation can confound some comparisons. Income tax returns report information for individuals (those who are single, divorced, separated, widowed, and those who are married but elect to file separately) or the joint income of married couples. For the SCF, the data represent a Primary Economic Unit (PEU), which consists of an economically dominant single individual or couple (married or living as partners) in a household and all other individuals in the household who are financially interdependent with that individual or couple.[16] These concepts will overlap for a significant percentage of the population, however, the data below demonstrate that these differences affect certain aggregates.

Figure 3 shows percentage differences between selected income estimates for SOI and SCF data for relatively low-income respondents.[17,18] A positive difference means the SCF estimate is larger than the SOI. The number of tax returns filed estimated from the SCF is based on the number of PEUs and significantly understates the actual number of filers because in many cases a PEU is composed of several filing units, for example dependent children frequently file tax returns separately from their parents. Despite this, the aggregate estimates for wages and salary; pensions, annuities and Social Security income; and total income are quite close for most years shown.
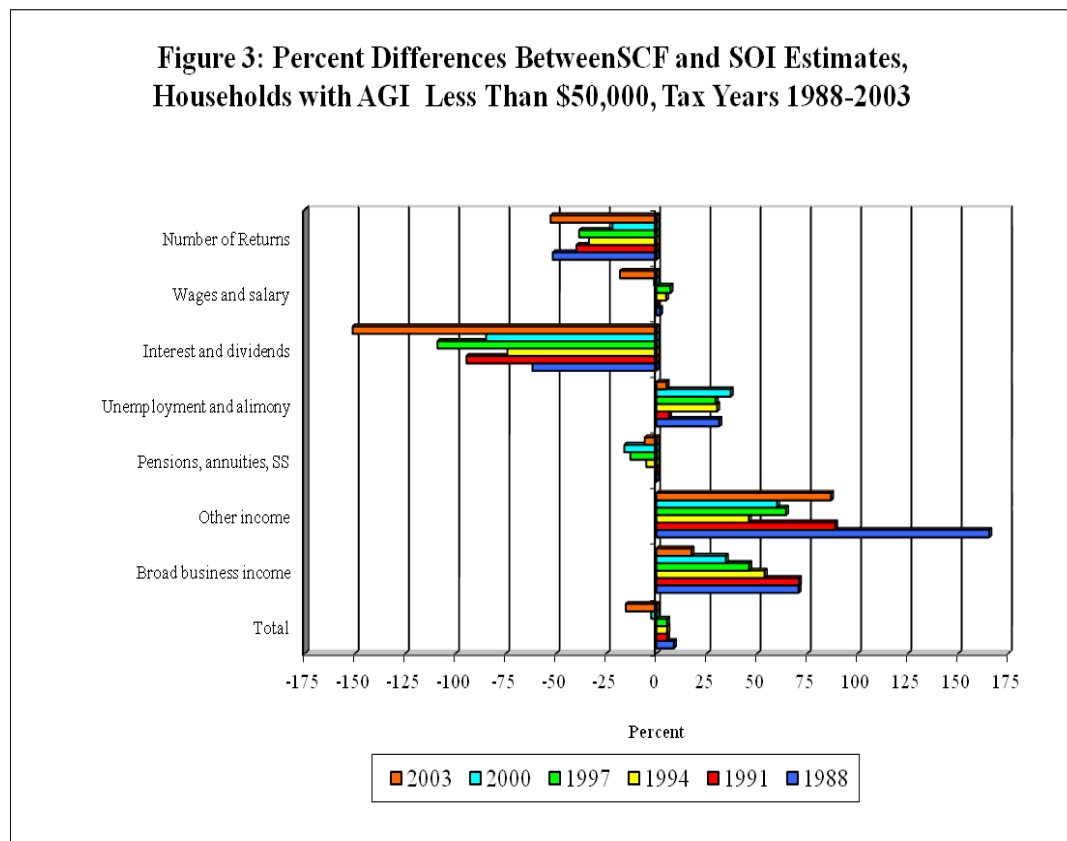
Some of the differences between SCF and SOI estimates are due to provisions in the tax code that exempt certain types of income, such as interest earned on government bonds and child support payments, which results in larger estimates from the survey data. For some SCF respondents, differences in the conceptual frameworks of survey participation and tax return preparation also seem to influence these results. For example, while it is often important to capture the value of capital losses (negative values) for tax purposes, losses may be reported as 0 in response to survey questions. Likewise, small amounts of interest income or dividends may be omitted as trivial when responding to a survey, but

---

[16] For example, in the case of a household composed of a married couple who own their home, a minor child, a dependent adult child, and a financially independent parent of one of the members of the couple, the PEU would be the couple and the two children (Source: Codebook for 2010 Survey of Consumer Finances,
http://www.federalreserve.gov/econresdata/scf/files/codebk2010.txt)

[17] Tabulations of SOI income data are published annually in IRS Publication 1304 and available at www.irs.gov/taxstats.

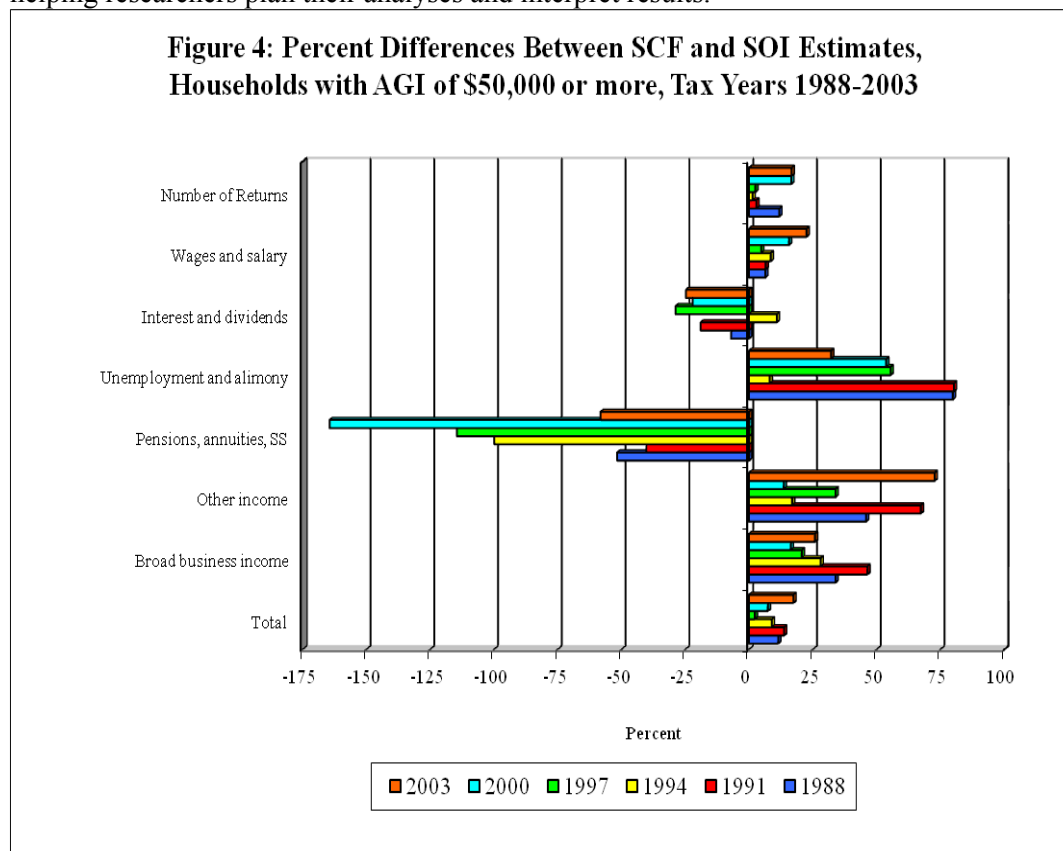[18] Figures 3 and 4 were originally published in Johnson and Moore, 2008.

are included in tax statistics since institutions automatically report these amounts to the IRS. It is important to recognize that while the percentage differences for several income types shown in the figure are quite large, the underlying values are often quite small. For example, the median value of interest and dividend income in the SCF estimates for this group was just $1,200.

Figure 3: Percent Differences BetweenSCF and SOI Estimates, Households with AGI Less Than $50,000, Tax Years 1988-2003

For higher-income respondents, differences between SCF and SOI estimates for some income items are much smaller than for the lower-income group (Figure 4). One reason is that the values are larger and so small differences do not distort the statistics as much. For example, the average interest income reported for this group was $6,000. More importantly, while all SCF respondents are encouraged by the field interviewers to refer to copies of their tax returns for some of the income items shown here, respondents in this income class were much more likely to do so. Research has shown that referencing tax returns increases the accuracy of responses to this portion of the SCF.

Overall, differences between the SOI and SCF estimates have declined across waves of the survey, most notably in the reporting of business income. This decline has been driven mainly by changes designed to reduce misclassification of income items by survey respondents. Cognitive testing and experience have led to some changes in both SCF question design and to the order in which questions are asked during the survey. An important change was the transition from a paper survey instrument to CAPI after the 1992 SCF. The CAPI instrument performs real-time tests intended to ensure that all dollar values are entered as reported by the respondent. It also makes online tools available to interviewers, such as definitions and code lists, which improve the quality of data collected in the field.

Given basic differences in the unit of observation, the very specific requirements of the tax code, and other differences, SOI and SCF estimates for some income items may never align perfectly. Especially in these cases, systematic comparison of estimates is critical because they encourage both SOI and the SCF team to carefully evaluate each data item and document differences. This type of documentation is an invaluable resource for helping researchers plan their analyses and interpret results.

Figure 4: Percent Differences Between SCF and SOI Estimates, Households with AGI of $50,000 or more, Tax Years 1988-2003

5. Conclusion

The partnership between the FRB and SOI is a model for intra-organization cooperation on an important National priority, the creation of a comprehensive, high quality data set suitable for a wide range of economic analyses, including studies that inform tax policy. This partnership has first and foremost emphasized careful adherence to statutory restrictions on the use of administrative data and the utmost fidelity to the confidentiality pledges made to survey respondents. Within this framework, it has achieved its primary objective of supporting the tax policy aspects of tax administration. Happily, the partnership has also resulted in additional benefits that have led to important advances in the quality and efficiency of work undertaken by both SOI and the FRB. The potential for these types of collateral benefits should be an important consideration in evaluating any prospective intra-agency partnership, especially in an era of constrained resources.

6. References

Avery, Robert, Gregory Elliehausen, and Arthur Kennickell, (October 1987), "Changes in Consumer Installment Debt: Evidence from the 1983 and 1986 Surveys of Consumer Finances," *Federal Reserve Bulletin*, volume 73 pages 761-78.
http://www.federalreserve.gov/econresdata/scf/files/1986_bull1087.pdf.

Avery, Robert, Gregory Elliehausen, and Arthur Kennickell, (December 1986) "Measuring Wealth with Survey Data: An Evaluation of the 1983 Survey of Consumer Finances," http://www.federalreserve.gov/econresdata/scf/files/wealth83.pdf.

Bricker, Jesse, Brian Bucks, Arthur Kennickell, Traci Mach, and Kevin Moore, (2011) "Surveying the Aftermath of the Storm: Changes in Family Finances from 2007 to 2009," Federal Reserve Working Paper 2011-17 http://www.federalreserve.gov/pubs/feds/2011/201117/201117pap.pdf.

Cronin, Julie-Anne, (September 1999) U.S. Treasury Distributional Analysis Methodology, U.S. Department of the Treasury, OTA Paper 85, http://www.treasury.gov/resource-center/tax-policy/tax-analysis/Documents/ota85.pdf

Czajka, John, Jonathan E. Jacobson and Scott Cody (2004) "Survey Estimates of Wealth: A Comparative Analysis and Review of the Survey of Income and Program Participation," *Social Security Bulletin*, Volume 65, No 1. http://www.ssa.gov/policy/docs/ssb/v65n1/v65n1p63.html

Frankel, Martin and Arthur Kennickell, (October 1995) "Toward the Development of an Optimal Stratification Paradigm for the Survey of Consumer Finances," http://www.federalreserve.gov/econresdata/scf/files/frankelkennickellasa95.pdf.

Greenwood, Daphne T., (March 1983) "An Estimation of Family Wealth and Its Distribution from Micro-Data 1973," *Review of Income and Wealth,* pages. 23-44.

Haggerty, Catherine and Arthur Kennickell, (2012) "The Survey of Consumer Finances: Creating a Consistent Culture of Quality." In H2R Proceedings, Techniques and Methodologies Section. Alexandria, VA: American Statistical Association.

Haggerty, Catherine, Micah Sjoblom, and Steven Pedlow, (August 2013) "Identifying Data Problems and Improving Data Quality in the Survey of Consumer Finances," *Proceedings of the American Statistical Association, Survey Research Methods Section* [CD-ROM], Alexandria, VA: American Statistical Association.

Johnson, Barry and Kevin Moore, (January 2005) *"*Consider the Source: Differences in Estimates of Income and Wealth from Survey and Tax Data," http://www.federalreserve.gov/econresdata/scf/files/johnsmoore.pdf.

Johnson, Barry and Kevin Moore, (2008) "Differences in Income Estimates Derived from Survey and Tax Data," http://www.irs.gov/pub/irs-soi/08rpjohnson.pdf.

Johnson, Barry and R. Louise Woodburn, (1994) "The Estate Multiplier Technique, Recent Improvements for 1989," in *Statistics of Income Compendium of Federal Estate Tax and Personal Wealth Studies*, U.S. Internal Revenue Service, publication 1773, pages 391-400.

Kennickell, Arthur B., (January 2005) "The Good Shepherd: Sample Design and Control for Wealth Measurement in the Survey of Consumer Finances," http://www.federalreserve.gov/econresdata/scf/files/samplingperugia052.pdf.

Kennickell, Arthur B., (August 2011) "Look Again: Editing and Imputation of SCF Panel Data," http://www.federalreserve.gov/econresdata/scf/files/ASA2011.1.pdf.

Kennickell, Arthur B., (October 2008) "Look and Listen, But Don't Stop: Interviewers and Data Quality in the 2007 SCF," http://www.federalreserve.gov/econresdata/scf/files/asa20072.pdf.

Kennickell, Arthur B., (October 2001) "Modeling Wealth with Multiple Observations of Income: Redesign of the Sample for the 2001 Survey of Consumer Finances," http://www.federalreserve.gov/econresdata/scf/files/scf2001list.sampleredesign9.pdf.

Kennickell, Arthur B., (September 2006a) *"How Do We Know If We Aren't Looking?* An Investigation Of Data Quality in the 2004 SCF," http://www.federalreserve.gov/econresdata/scf/files/asa20063.pdf.

Kennickell, Arthur B., (September 2010) *"Try, Try Again: Response and Nonresponse in the 2009 SCF Panel,"* http://www.federalreserve.gov/econresdata/scf/files/ASA2010findfal.p.

Kennickell, Arthur B., (June 2006b), "Who's Asking? Interviewers, Their Incentives, and Data Quality in Field Surveys*,"* http://www.federalreserve.gov/econresdata/scf/files/iariw20067.pdf.

Kennickell, Arthur B., and Julia Lane, (July 2007) "Measuring the Impact of Data Protection Techniques on Data Utility Evidence from the Survey of Consumer Finances" http://www.federalreserve.gov/econresdata/scf/files/Disclosure3.pdf.

Kennickell, Arthur B. and Douglas McManus, (August 1993) "Sampling for Household Financial Characteristics Using Frame Information on Past Income," http://www.federalreserve.gov/econresdata/scf/files/asa93.pdf.

Kennickell, Arthur B. and Louise R. Woodburn, (April 1992) "Estimation of Household Net Worth Using Model-Based and Design-Based Weights: Evidence from the 1989 Survey of Consumer Finances," http://www.federalreserve.gov/econresdata/scf/files/concentration1989final.pdf.

Mallet, B., (1908) "A Method of Estimating Capital Wealth from the Estate Duty Statistics," *Journal of the Royal Statistical Society*, volume LXXI, Part I, pages 65-92.

Pérez-Duarte, Sébastien and Jirka Slacalek, (2008) "A prospective euro area survey on household finances and consumption: Policy needs and preparatory work" The 2008 World Congress on National Accounts and Economic Performance Measures for Nations

Petska, Thomas and Fritz Scheuren, (1992) "Turning Administrative Systems into Information Systems: the Statistics of Income Program of the IRS," *Proceedings of the National Tax Association.*

Projector, Dorothy S. and Gertrude S. Weiss, (1966) *Survey of Financial Characteristics of Consumers,* Board of Governors of the Federal Reserve System. http://www.federalreserve.gov/econresdata/scf/files/6263_bull0364.pdf.

Raub, Brian and Joseph Newcomb, (Winter 2012) "Personal Wealth 2007," *Statistics of Income Bulletin*, Internal Revenue Service, volume 31 number 3, http://www.irs.gov/pub/irs-soi/12pwwinbulwealth07.pdf.

Scheuren, Fritz and Janet McCubbin, (1987) "Piecing Together Personal Wealth Distributions" *Proceedings of the American Statistical Association, Survey Research Methods Section.*

Statistics of Income – Individual Income Tax Returns, Internal Revenue Service, Washington, DC, Publication 1304.

Wolff, Edward N. and Marcia Marley, (March 1987) "Long-Term Trends in U.S. Wealth Inequality," paper presented at the Conference on Research on Income and Wealth, National Bureau of Economic Research.