FURTHER EVALUATION OF THE SIPP ASSET FEEDBACK EXPERIMENT

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1. INTRODUCTION

The Survey of Income and Program participation (SIPP) collects information relating to the economic status (income, labor force status, participation in government programs, assets and liabilities, etc.) of individuals, families and households. Households in sample are interviewed every 4 months for approximately two and a half years, with a different quarter of the sample (rotation group) being interviewed each month. For the 1984 panel about 20,000 households were initially interviewed. Because of households becoming unavailable for interviews (attrition) and a sample cut, about 14,800 households were available for their final interviews. The set of questions asked at each interview is called the core questionnaire, while information collected less often during the life of the panel is done so via topical modules.

One set of questions asked in the survey concerns the types of assets and liabilities held and the amounts of each. Some of the questions about types of assets held are on the core, while the rest of the questions occur on the assets and liabilities topical module administered at the fourth wave. (A wave is usually a period of four months during which each rotation group is interviewed once and the collected data are processed together.) This topical module was repeated on the seventh wave, with new assets and liabilities being identified and all amounts being updated. For all SIPP panels this topical module is currently repeated yearly.

This yearly collection of asset and liability information makes it possible to estimate annual changes in asset and liability equity. If this is to be done, it is important that the data be collected in a manner that will make the computation of yearly differences of amounts for individuals as accurate as possible. One possible way of enhancing accuracy is to provide each respondent information about his/her previous year reported values. In wave 7 of the 1984 panel a test of this feedback methodology was carried out. The persons in half of the sample were eligible to receive the amounts of individually and jointly held assets reported by them in wave 4. The year-to-year changes for this feedback group and the nonfeedback group were then to be compared to determine if they differed.

The asset data from these topical modules have been analyzed and summarized for households as reported by McNeil and Lamas (1987). (For further details of the background and design of the experiment, the reader is referred to that paper.) They presented tables of mean and median annual changes in total net worth for the two treatment groups. These comparative values were given for the population split into subpopulations as defined by each of several characteristics, including age, race and Spanish origin, education, type of household, labor force activity, and monthly household income. Annual changes for components of net worth for the whole population are also given, as are distributions of changes in net worth by change in household composition, including and excluding imputed values. A savings regression model was also estimated for the two treatment groups.

When trying to draw conclusions from their summary tables, no obvious pattern of annual changes emerges in the comparison of the treatment groups. Sometimes the feedback group has a larger absolute value of change and sometimes the nonfeedback group does. According to Lamas and McNeil (1987), the tables of distributions by change in household composition show "some evidence that the feedback procedure reduces the estimates of change." However, no statistical comparisons between the treatment groups are made. No standard errors for (wave 7 - wave 4) differences were available to them, and no statistical tests were performed on the tables of distributions by household composition.

In this study we continue to analyze the data from the asset feedback experiment, via statistical comparison of year-to-year correlations and mean annual differences between the feedback and nonfeedback groups. Development of software has enabled us to calculate the appropriate standard errors. In the next section we present the methodology used in ths study, including examination of subpopulations and variance/covariance computation methodology. Two tables used for analysis are discussed in section 3. The final section discusses the results of these analyses.

2. METHODOLOGY

Feedback is a method for achieving two goals: getting more consistent reports of the types of assets and liabilities held, and getting more accurate measures of asset and liability amounts and their annual changes. For the asset and liability types appearing on the SIPP core questionnaire, a feedback procedure is used to identify whether or not members of the household held them, but not the amounts held. On the topical module asset/liability types and amounts are asked about simultaneously with no feedback mechanism. The asset feedback experiment was carried out to investigate the value of using feedback for amounts on the core questionnaire and for all asset/liability questions on the topical module. The purpose of the current study is to look closely at the distributions of the data on amounts and to determine if there are differences between the feedback and nonfeedback groups that were not detected by the previous analyses.

After reviewing the results of Lamas and McNeil (1987), two major analytical objectives were established: (a) compute and compare correlations between waves 4 and 7 for the treatment groups; (b) compute variances for mean

annual change in asset amounts, to be used in comparing the treatment groups. A computational objective was the development of software to estimate variances for SIPP data using replication procedures, in order to allow us to carry out the desired statistical analyses.

2.1 Defining Subpopulations for Analysis

The initial stage of analysis included the computation of the distributions of asset and liability amounts for waves 4 and 7. When examining these distributions it is noticeable that there are a number of very large (positive and negative) values. The same is true when looking at the annual changes for households that responded in both waves. These large values are not typical of the population as a whole, and their inclusion can unduly influence mean values and inflate variances. Thus, we want to compare the treatment groups without letting these atypical values adversely affect the comparison. Direct adjustment of these atypical values was rejected at this time because of the large number of variables and annual differences that require adjustment. If this analysis suggests adjustment would be useful in evaluation the value of feedback, it will be done in the future.

The analyses were performed on the total population and two subpopulations of households that responded in both wave 4 and 7, subpopulation membership being identified by total amounts of assets and liabilities held. Let M_i = Max (|wave 4 total assets|, |wave 7 total assets|, |wave 4 total debt|, |wave 7 total debt|) for household i. These variables were selected because in each wave total net worth = total assets - total debt. The tables include results for two nested subpopulations defined by values of M_i<50,000 and M_i<200,000. Calculations were then done separately for each of these subpopulations (denoted by SP1 and SP2 in the sequel). The purpose of this separation of households was twofold: using M_i<50,000 allows us to look at changes for households with smaller amounts of total assets apart from changes for households with larger amounts (feedback might affect reporting of these changes differently), and using M_i<200,000 is a rough way of simultaneously adjusting for extreme values in all asset/liability types.

2.2 Variance/Covariance Computation

Variances and covariances for households, not persons, were calculated using the Census Bureau's fifty replicate factors for the SIPP 1984 panel documented in Roebuck (1985). In order to reduce the amount of work required, all computations were performed using a matched wave 4 - wave 7 data file which included records for all households that were interviewed in both waves. The computations are based on weighting for the wave 7 month of interview, where the weighting calculations are carried out on a full wave 7 file.

For each of the fifty replicates, household nonresponse and second stage person adjustments are carried out using the household initial weight times its replicate factor as the initial replicate weight. This reweighting is done, instead of simple multiplying each person's final weight by its replicate factor, because it more accurately represents the overall weighting procedure applied to the entire sample. Each final replicate weight of the household reference person is then used in computing the estimates of characteristics of interest for that replicate. The variances of these characteristics are then computed from the replicate estimates.

3. ANALYSIS

In this section two tables summarizing the results of calculations are given and discussed. The first table presents correlations between wave 4 and wave 7 household values of assets and liabilities for the feedback and nonfeedback groups, as well as the standard errors of the differences of correlations between the two groups. Table 2 gives the mean wave 7 minus wave 4 values for the treatment groups and the standard errors of the annual differences for each group. The comparisons for a given asset/liability type include all households reporting holding the given type in at least one of these two waves.

The individual asset types in the tables are defined in Table 1 of Lamas and McNeil (1987), except that we have combined rental property into other real estate, and regular checking accounts and U.S. savings bonds into other assets. In addition we have included secured and unsecured debt as types of liabilities. Total net worth is defined as the sum of asset amounts minus secured and unsecured debt. No adjustment of the wave 7 dollar values to constant 1984 dollars was made.

When comparing values for the two treatment groups an asterisk denotes that they are significantly different at the .10 level of significance. For the total population and within each subpopulation the amounts for the different asset/liability types are not independent. However, any correlations in the differences between two types are probably very small and will have little affect on the significance levels of the comparisons. More importantly, it is also the case that because of the nesting of the subpopulations, their amounts are correlated with each other and with the amounts for the total population to a much larger degree. As a result, the tests for the three sets of households should not be treated as independent.

3.1 Comparisons

Before comparing the treatment groups, note the standard errors for the total population and SP2. For all annual mean differences the standard errors are smaller for SP2, in several cases at least 75% smaller. Similar results hold for the standard errors of the correlations, except that two of them are slightly larger and two only 6% smaller for SP2. For total net worth the reduction is 86%. These generally smaller standard errors suggest the use of the trimmed population SP2 rather than the total population for overall

comparison, due to the reduction of the effects of extreme values.

Three of the correlations for SP2 differ significantly between the treatment groups at the .10 significance level. Home equity, other real estate and IRA/KEOGH accounts are significantly larger for the feedback group. Of the nonsignificant differences, five of them have larger nonfeedback correlations and five of them are less than one standard error. It is of interest to note that total net worth has larger correlations than any of its components.

SP1 is used in an attempt to determine if there are treatment differences exhibited by households with smaller amounts. The only significant differences are for other interest earning accounts and stocks/mutual funds shares. For the individual types 7 of 11 have larger nonfeedback correlations, but all 10 of the nonsignificant cases differ between the treatment groups by less than one standard error. Again total net worth has the highest correlations.

Only two of the asset/liability types in SP2 have significantly different mean annual changes. In both cases the feedback values are closer to 0, but in one of these two cases the absolute values are almost the same but the signs differ. Although of the nonsignificant differences all but two of them have annual changes closer to zero for the feedback group, none of them has a treatment difference of more than one standard error. For SP1 nine of the differences are closer to zero for the nonfeedback group, but only three of the nonsignificant differences are larger than one standard error. Of the four significant differences, three of them are closer to zero for the feedback group, with two of these again due to opposite signs.

Based on these results, no general increase in correlations through the use of feedback is indicated for the population as a whole, although for SP2 all significantly larger correlations are from the feedback group. For SP1 the consistency of correlation differences of less than one standard error suggests no effect of feedback in this subpopulation. For the mean annual changes in SP1 and SP2 the values for the feedback group are almost always closer to 0 than those for the nonfeedback group, although again the differences between groups are usually less than one standard error. Altogether, there is little statistical evidence of the effect of implementing feedback methodology for amounts.

4. DISCUSSION

Change in amounts of asset/liabilities can occur gradually, e.g., by interest accumulation or depreciation, or in lump sums via purchase or transfer between sources. It seems that feedback of amounts could have a relatively large effect on the reported percentage amounts of gradual changes, but a relatively small effect on the lump sum changes. It is probably the case that most mean annual differences are dominated by the lump sum changes (especially for households holding substantial assets/liabilities), thus masking any effect that feedback might have on the reporting of gradual changes. This would lead to nonsignificant results as obtained in this study.

However, for the asset/liability types that are identified and reported on after the feedback form is made available to the respondent, amount feedback could prevent erroneous lump sum changes from being reported. Consider the case where it is difficult to distinguish between two asset types or the respondent cannot recall the exact date of transfer of holdings between them. A respondent thinks he had only asset A in wave 4 and only asset B in wave 7, but notes that the amount he is reporting for asset B is very close to the amount that was previously reported for asset A. The respondent realizes that it really is asset A that he still has. Thus a mistake in reporting both asset type and amount has been avoided, an occurrence that would be impossible without feedback. Because of masking by actual lump sum changes within asset/liability types, the effect of feedback in such situations would probably show up more in reducing reported changes between types than within types. The only way to verify such a hypothesis would be to keep track of actual transfers, purchases, etc., via administrative financial records.

In summary, the data presented here do not give any statistical evidence of consistent differences in the measure of annual changes in asset and liability amounts due to the use of the feedback procedure. A possible explanation for this has been suggested above. When proposing experiments of this type in the future, it would be useful to first examine the distributions of the variables of interest and calculate the variances of the statistics to be compared in order to determine if the experiment could hope to identify statistical differences in light of these characteristics.

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TABLE 1

Correlations of Wave 4 and Wave 7 Amounts;
Standard Errors of Correlation Differences Between
Feedback and Nonfeedback Groups

	Correlations		Standard Errors
Total Population	NF[1]	F	
Home Equity	.444	.515	.120
Vehicle Equity	.587	.628	.046
Business Equity	.257*	.064	.101
Interest Assets at Fin. Inst.	.535	.458	.067
Other Interest Earning Accounts	.452	.390	.117
Stocks and Mutual Fund Shares	.239	.644*	.122
Other Real Estate	.375	.470	.119
Other Assets	.218	.575	.285
IRA or KEOGH Accounts	.491	.666*	.094
Secured Debt	.385	.560*	.102
Unsecured Debt	.178	.212	.090
Total Net Worth	.508	.605	.105

	Correlations		Standard Errors
Subpopulation 1	NF	F	
Home Equity	.488	.500	.047
Vehicle Equity	.533	.521	.034
Business Equity	.016	.000	.123
Interest Assets at Fin. Inst.	.589	.576	.056
Other Interest Earning Accounts	.213	.735*	.168
Stocks and Mutual Fund Shares	.368*	.105	.148
Other Real Estate	.167	.154	.142
Other Assets	.242	.323	.136
IRA or KEOGH Accounts	.301	.390	.121
Secured Debt	.731	.722	.031
Unsecured Debt	.387	.380	.053
Total Net Worth	.707	.699	.022

	Correlations		Standard Errors
Subpopulation 2	NF	F	
Home Equity	.566	.625*	.027
Vehicle Equity	.640	.605	.047
Business Equity	.246	.149	.090
Interest Assets at Fin. Inst.	.605	.606	.037
Other Interest Earning Accounts	.314	.413	.110
Stocks and Mutual Fund Shares	.311	.296	.064
Other Real Estate	.210	.354*	.070
Other Assets	.279	.359	.063
IRA or KEOGH Accounts	.305	.542*	.100
Secured Debt	.663	.624	.027
Unsecured Debt	.339	.319	.063
Total Net Worth	.733	.752	.015

Notes. 1: NF=Nonfeedback, F=Feedback
*: Correlations significantly different at alpha=.10.
Group with larger correlation is denoted.

TABLE 2

Mean Wave 7 Minus Wave 4 Values
and Their Standard Errors:
Asset/Liability Held in At Least One Wave

	Mean Values (Wave 7 - Wave 4)		Standard Errors	
Total Population	NF	F	NF	F
Home Equity	2113	2181	1078	938
Vehicle Equity	-346	-325	91	62
Business Equity	-859	-12736	10067	8466
Interest Assets at Fin. Inst.	927	-700*	684	500
Other Interest Earning Accounts	9696	5360	2084	2181
Stocks and Mutual Fund Shares	2902	637	2426	4592
Other Real Estate	-563	-2299	3567	2940
Other Assets	1274	-952	944	1706
IRA or KEOGH Accounts	602*	1491	389	262
Secured Debt	1214	163	2046	1148
Unsecured Debt	-89	20	217	360
Total Net Worth	2842	-990	1849	2282

	Mean Values (Wave 7 - Wave 4)		Standard Errors	
Subpopulation 1	NF	F	NF	F
Home Equity	-648	-5	343	364
Vehicle Equity	-282	-229	62	59
Business Equity	200	-274	928	739
Interest Assets at Fin. Inst.	193	-155*	103	147
Other Interest Earning Accounts	963	206	701	416
Stocks and Mutual Fund Shares	-95*	1102	243	410
Other Real Estate	-1068	1022*	851	745
Other Assets	-128	-31	58	58
IRA or KEOGH Accounts	860	867	264	181
Secured Debt	470	72	296	278
Unsecured Debt	-19	-4	21	85
Total Net Worth	-399	-93	193	219

	Mean Values (Wave 7 - Wave 4)		Standard Errors	
Subpopulation 2	NF	F	NF	F
Home Equity	46	50	506	410
Vehicle Equity	-337	-297	61	60
Business Equity	3408	-413*	1378	1289
Interest Assets at Fin. Inst.	480	217	231	291
Other Interest Earning Accounts	1782	1530	564	923
Stocks and Mutual Fund Shares	29	372	690	566
Other Real Estate	-1125	-451	1088	759
Other Assets	-290	-219	134	131
IRA or KEOGH Accounts	1478	1405	253	235
Secured Debt	1528	974	372	437
Unsecured Debt	-167	135*	103	116
Total Net Worth	650	67	398	468

Note. *: Mean values significantly different at alpha=.10.
Group with absolute value closer to 0 is denoted.

Evaluation of the Survey of Income and Program Participation's Cross-Sectional Noninterview Adjustment Method

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I. Introduction

This paper presents results of a study conducted to evaluate the effectiveness of the Survey of Income and Program Participation's (SIPP) cross-sectional household noninterview adjustment procedure in the context of the entire weighting scheme. As described in more detail in section V, the study uses 1984 panel data to approximate estimates that would be obtained if data were available for respondents missing at a later wave. These estimates are compared to the SIPP estimates obtained when these data are missing.

Before providing the details of the study, results, and future plans, the paper presents an overview of the design and content of the SIPP in section II, describes the weighting methodology in section III, and discusses compensation procedures for the SIPP's nonresponse in section IV.

II. Design and Content of the SIPP

The SIPP is a nationally representative survey program of the U.S. Bureau of the Census. It is designed to obtain comprehensive information about the financial situation of persons, families, and households in the noninstitutionalized population of the United States. The survey collects information on cash and noncash income, eligibility and participation in various government transfer programs, labor force status, assets and liabilities, and many other topics. (e.g. work history, marital history, educational attainment, etc.)

The SIPP is a continuing survey with new national probability samples of households (panels) introduced each year. Sample households are interviewed every four months for about 2½ years (8 interviews).

To facilitate field and processing operations, each panel is divided into four approximately equal subsamples (i.e. rotation groups). Only one rotation group is interviewed in a given month so that one cycle (i.e. wave) of interviewing, in general, requires four consecutive months.

Interviewing for the first panel (i.e. the 1984 panel) of the SIPP began in October 1983. At the first interview, the panel consisted of approximately 20,000 occupied and eligible households in 174 Primary Sampling Units (PSUs). Due to budget constraints 17.8% of the eligible sample was dropped in March 1985 (the middle of the fifth interview). The later panels have begun with fewer households.

All persons in a sample household at the time of the first interview remain in the sample even if they move to new addresses. At each interview, information is obtained for each person who is 15 or more years old. In addition, persons aged 15 and over who subsequently share living quarters with original sample persons (individuals who were living in an interviewed sample unit at the time of the first interview) are interviewed as long as they reside with an original sample person. Generally, no attempts are made to interview nonrespondents in subsequent waves. (For further details see Nelson, et.al. (1985).)

III. Cross-Sectional Weighting Overview

The SIPP data are weighted in several stages to account for sampling, nonresponse, and coverage errors, with the intent of reducing the mean square error of estimates. Weighting for Wave 1 and subsequent waves differ somewhat.

The final monthly weight for each sample person in Wave 1 is the product of four sets of factors. These factors are the base weight, the noninterview adjustment factor, the first stage factor, and the second-stage factor. For subsequent waves, the final weight for each sample person is also the product of four sets of factors. The first factor (i.e. the initial weight) is the product of the first three Wave 1 weighting factors. The other factors are the mover's adjustment (see Huang (1984)), the subsequent wave noninterview adjustment factor, and a second stage adjustment factor corresponding to the time period covered by the subsequent wave. Except for the 1984 panel, the second stage adjustment factor includes an Hispanic adjustment. (For details of the weighting factors see U.S. Department of Commerce (1988f, 1988g, 1988i).)

IV. Nonresponse in the SIPP

A. Compensation for Nonresponse

The SIPP noninterview adjustment factor accounts for household nonresponse. A noninterview occurs when no one is home, household members are temporarily absent (e.g. on vacation), household members refuse to participate, a household cannot be located, or when households refuse due to extenuating circumstances. Additionally, noninterviews occur when initial occupants of a unit move within the United State and cannot be located and/or contacted. (See Nelson, et al. (1987).)

Imputation procedures are used to compensate for nonresponding eligible persons in responding households (type Z nonresponse) and item nonresponse. (See U.S. Department of Commerce (1984) and Nelson, et al.(1985).) For the 1984 panel only, households containing type Z