AN EXPERIMENT IN DATA COLLECTION: USE OF FINANCIAL RECORDS

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Introduction

Economists have long been concerned with the consumption and saving behavior of consumers, starting with the simplest absolute income notions and proceeding on through relative income, permanent income, life cycle,wealth and uncertainty hypotheses.[1] Much of the literature attempts to explain consumption rather than consumer expenditures. That is, the mix of saving between additions to financial assets and real assets (durables-housing) is not of concern to many theories, and that mix is of course the essence of most short-term fluctuations in the spending-saving ratio for the household sector.

In general, economists have used two different types of data to examine saving behavior. Traditional explorations continue to rest heavily on attempts to extract good causal specifications from time series data--a pursuit that is perennially enticing but inevitably frustrating. The problems faced by economists in trying to specify appropriate models when working entirely with aggregate time series data are well-known and do not require extensive elaboration: the difficulties are especially relevant where one is interested in the question of which types of income, and with what lag structure, impact on spending-saving behavior. Depending on what else is included in such equations, it is probably true that lag structures of anywhere from one to fifteen years can be "found" without there being any persuasive empirical evidence that one end of this range is much better than the other. Although most economists probably feel that the relevant lag structures are on the short end rather than the long end of this spectrum, their views are more apt to be related to what are seen as plausible modes of behavior than to convincing empirical evidence. To the extent that future income has a variance as well as a mean, and to the extent that large variances mean high discount rates, it does not seem at all reasonable to suppose that distant and uncertain income prospects would carry much weight in current consumption and saving decisions, to say nothing of the fact that imperfections in capital markets sharply reduce the ability of households to borrow against even highly certain (subjectively) future prospects.

Economists have also used cross-section or budget-type data to analyze consumer spending and saving. While only a limited number of such data bases exist, they have been thoroughly mined by the profession. A good deal of the effort devoted to cross-section analysis of consumption data has been given to explaining why the parameters of variables like income look so different in cross-section and time-series analysis. A substantial literature, centering around the permanent income theory, has been built on analysis of measurement errors, transitory changes, and similar phenomena.[2] In general, the budget data have tended to reflect annual consumption and income observations for a cross-section of household. Thus it has been dificult to generate models with any dynamic content, since the basic data lack any good measures of change over time.

It has been increasingly evident that existing models, and the data base underlying them, are seriously deficient for purposes of explaining and predicting expenditures. For this reason, they have also been deficient in attempting to measure the impact of changes in fiscal, monetary, and other economic policies on changes in the spending-saving rate. Since the major portion of aggregate demand and of changes in demand emanate from the consumer sector, this means that microeconomic stabilization policy cannot be accurately and confidently specified at the present time with existing models. In short, we know substantially less about consumer spending-saving behavior than is necessary either to understand or predict consumer behavior with sufficient accuracy to meet public policy needs, especially around the vicinity of turning points in economic activity.

It is interesting to speculate about the reasons for this, in view of the enormous input of highly skilled professional resources into this area. Some of the problems with the aggregate model approach are reasonably clear: not all households or groups of households react to a given stimulus in the same way; expectations about future developments clearly play an important role in spending and saving decisions; and the available number of degrees of freedom in aggregate macrodata are simply insufficient to permit a test or even an adequate specification of the appropriate model. To be more specific: it is probably true that income changes mean one thing for young families on the way up and quite another for mature families whose prospects have stabilized and whose stocks of durables are larger; uncertainty about the future or a change in uncertainty may have a quite different effect for families who view their long-term prospects as being highly favorable than for those who view them otherwise; the earnings of secondary workers such as wives and older children may well have an impact on expenditures whether the earnings are real or only potential, since wives who have potentially high market earnings are likely to influence household spending behavior whether or not they are actually in the labor force; perceived needs for retirement income must have been changing substantially during a period when social security benefits, private pension coverage, and current income have all been expanding rapidly; and so on. Aggregate economic life is so highly collinear that it is virtually impossible to disentangle these effects in time-series.

The discussion suggests some of what needs to be done to improve our knowledge of the spending-saving relation among households.

1. There is need to work with data at the micro-level in order to specify more precisely the relations among income, saving and consumption for different groups of households. No present set of microdata provides dynamic information on household income, consumption and saving.

2. The needed microdata must have the characteristics of being relatively free from response and measurement error. One of the major advantages of using aggregate data, and one of the reasons why these are used so often, is that the aggregation or averaging process tends to eliminate response and measurement error. In moving to analysis of micromodels, the response-measurement error problem becomes serious, since sufficient error will tend to introduce unknown (typically downward) biases in the coefficients of any model. Present measurement technology is probably not able to produce good microdata with sufficiently low measurement error to meet policy needs.

3. We need to improve our knowledge of the role of consumer expectations, anticipations and uncertainty on spending-saving behavior. Events over the past decade (e.g., the response in the 1968 surtax and the 1972 overwithholding episode, the high saving rates in 1971-72, the burst of anticipatory buying during the first half of 1973, the impact of the 1975 tax cut and the dramatic decline in saving rates since then) have made it clear that expectational phenomena make a difference to behavior, and that the relevant expectations cannot be accurately predicted from a simple extrapolation of past values of objective variables. In particular, it has become clear that spending-saving behavior is strongly influenced by changing expectations about price inflation.[3]

It is the argument of this paper that improvements in our ability to explain consumer spending and saving behavior cannot be accomplished without a basic change in the accuracy with which micromodels of consumer behavior can be estimated. Attractive as the time-series approach is, it does not seem plausible that any real improvement in understanding aggregate behavior can be achieved unless we can construct models which reflect microbehavior, which do so on the basis of data with a substantially lower error component than has typically been the case, and which contain the basic dynamic characteristics of measuring changes at a micro-level over time.

The spirit of the paper is that conventional ways of measuring consumption, saving and income for individual households are incapable of yielding the degree of precision required for estimating the kind of micromodel behavior that seems required to advance the state of knowledge in this area. Despite considerable improvement in the technology of measurement, we are still in a position where basic reliance is placed on the recollection of houshold respondents about the financial flows within the household sector. In the case of expenditure surveys, recollection is, where possible, aided by records relating to the transaction, but there has not been any systematic attempt to base the collection of data on records rather than recall.

The basic argument is that the collection of household sector financial flow data based entirely or mainly on financial records is a feasible undertaking, and that this type of microdata represents one possible solution to the problem of reducing measurement error to the point where micromodels are not dominated by the error component in both dependent and independent variables. The paper also takes the view that appropriate micromodels not only need highly accurate measurements of the relevant financial flows in order to understand spending and saving behavior, but that these data need to be supplemented with a range of anticipatory data--expectations, plans and attitudes, which are in general not uniquely related to past behavior, but rather reflect partly unknown combinations of variables.

Availability of Financial Records

In an economy where financial records were either nonexistent or not systematically maintained, basing an expenditure, income and saving survey on such records would be useless. But in an economy like the U. S., an extremely large fraction of all household financial flows are obtainable directly from easily accessible records. This statement is more true today than it was a decade ago, and more true then than two decades ago. The basic financial record for most households is a checkbook--more precisely the checkbook stub in which expenditures and receipts are recorded. According to a 1973 pilot study conducted at the Survey Research Center, approximately 85 percent of all U. S. households have checking accounts. The proportion of financial flows that go through checking accounts is larger than that, because households who lack checking accounts are apt to be poorer, older, and less well educated than the population at large.

Needless to say, not all these flows can be attributed to specific kinds of expenditures, since many checking account entries reflect cash withdrawals in one form or other. These proportions also vary considerably by income, age and education of respondent as indicated in Table 1. For households with incomes in excess of $15,000, the fraction of total expenditures represented by cash outlays tends to be under 40 percent and gets down as low as 30 percent for households with incomes over $35,000 per annum. The proportion of cash outlays also varies with age, being relatively lower for younger respondents than for older ones. This is presumably a generation effect rather than a disguised income effect, since both young and old heads of households tend to have low family income, with the highest income levels being found in the middle age ranges. By education level, there are marked differences in the fraction of outlays for cash, which run about 70 percent for those with less than eight years of schooling to about 35 percent plus for those with sixteen or more years of schooling.

The pilot study also obtained data on the frequency with which people are paid (essential for identifying receipts from records), and the mode of payment (essential for being able to identify whether or not we have accounted for a receipt in a checking account record). For example, Table 2 indicates

TABLE 1

Proportion of Expenditures by Three Types of Payment, by Income, Age and Education

	Cash	Check	Charge
All	.499	.424	.077

Income

	Cash	Check	Charge
Under $5,000	.615	.341	.044
$ 5,000 - 7,499	.583	.363	.054
$ 7,500 - 9,999	.515	.412	.072
$10,000 - 12,499	.489	.444	.067
$12,500 - 14,999	.449	.467	.083
$15,000 - 17,499	.356	.529	.114
$17,500 - 19,999	.451	.458	.091
$20,000 - 22,499	.414	.525	.060
$22,500 - 24,999	.355	.481	.164
$25,000 - 29,999	.380	.492	.128
$30,000 - 34,999	.338	.514	.148
$35,000 and over	.310	.506	.184

Age of Respondent

	Cash	Check	Charge
18 - 24	.416	.449	.075
25 - 34	.423	.497	.080
35 - 44	.452	.463	.085
45 - 54	.517	.392	.092
55 - 64	.576	.352	.072
65 and over	.587	.362	.051

Education

	Cash	Check	Charge
Under 8 years	.700	.272	.028
9 - 11 years	.654	.305	.040
12 years	.509	.428	.063
13 - 15 years	.416	.496	.087
16 years and more	.366	.497	.137

TABLE 2

Basic Financial Records Data for Job Holders (Percent of Families)

	Checking Account Families	No Checking Account Families

A: HOURS WORKED PER WEEK

< 5	1.5%	0.0%
5 - 9	1.1	0.0
10 - 19	4.7	2.9
20 - 29	4.7	14.7
30 - 39	15.0	2.9
40	44.5	61.8
>40	28.1	17.6
Other, irregular	0.4	0.0
DK, NA	0.0	0.0

B: FREQUENCY OF PAYMENT ON JOB

Every week	39.2	82.4
Every 2 weeks (twice a month	38.8	8.8
Once a month	13.6	2.9
Other	7.7	2.9
DK, NA	0.7	2.9

C: METHOD OF PAYMENT ON JOB

Check or Cash

Check	94.1	79.4
Cash	4.8	14.7
Both	0.4	2.9
Other	0.0	0.0
DK, NA	0.0	2.9

D: FREQUENCY OF OTHER SELECTED RECEIPTS

Social Security	21.5	29.2
Pension	11.4	7.7
ADC, welfare	3.4	10.8
Income tax refund	62.8	36.9
Insurance dividend	21.2	10.8
Insurance claim	16.9	1.5
Consultation fees	2.1	0.0
Sale of financial assets	11.2	0.0
Dividend from stock, mutual funds	24.0	1.5
Interest from bonds	13.2	3.1
Tips	3.2	0.0
Odd jobs	14.2	12.3
Sale of assets	5.0	1.5
Gifts, bequests	7.5	3.1
Rents from real estate	13.0	3.1
Repayment of debts	5.0	0.0
Land contract, mortgage	3.4	0.0

that 40 percent of household heads are paid every week, just about 40 percent every two weeks, and the remaining 20 percent once a month or less frequently. Of these receipts, almost 95 percent are in the form of a check. Other forms of receipts were also identified with respect to frequency among families: for example, over 20 percent of household heads report a social security receipt in the family unit; over 11 percent a pension receipt; just over 3 percent ADC or welfare payments; almost 63 percent an income tax refund; over 20 percent insurance dividends, almost 17 percent insurance claims, and about 11 percent receipts from the sale of financial assets.

In addition to checking account records, which would be basic instruments involved in a financial flow survey because they represent a continuous and often comprehensive record of transactions, there are also substantially better annual records available than in the past for a number of critical financial flows. Much of the gain here during recent years is a consequence of changes in the reporting requirements associated with the federal income tax. For example, not only do hoholds receive W-2 forms reflecting annual wage payments, but a wide variety of information returns on other types of income are also provided to households by institutions, along with a few expenditure reports (e.g., interest payments, property taxes, and mortgage repayments). In short, the typical U. S. household is in a situation where, without any great effort on their part, the basic ingredients for a comprehensive survey of income, expenditures and saving could be conducted almost entirely on the basis of financial records containing a high degree o precision, many of which are inherently dynamic in the sense that movements over time are automatically reflected.

Although it is easy to demonstrate that the requisite financial records exist in a large fraction of U. S. households, and that they are capable of reflecting an even larger fraction of total financial flows, that does not prove that a survey based on such records is a feasible undertaking. An obvious issue is: how does one obtain the cooperation of households in attempting to conduct such a survey, given the sensitivity of many households to incursions into their private affairs? I do not think the question can be answered a priori, but what indirect evidence we have on related issues suggests that sensitivity in this and other areas is in fact limited to a relatively small fraction of total households and does not necessarily constitute a serious problem.

For example, the consumer expenditure surveys conducted decennially by the U. S. Bureau of Census constitute a major intrusion not only in the household's privacy but also on its time: households are asked to produce detailed estimates of expenditures for each quarter, are asked to document expenditures by records where possible, and are asked extensive and detailed questions about income. The typical househould is asked to spend upwards of 10 hours in talking about the financial details of its expenditures and income with the Census interviewers. Despite what many of us would find to be an inordinate set of demands, response rates in

such surveys (1972-73) are typically upwards of 90 percent. That is in part due, of course, to the fact that the work of the Census Bureau is widely regarded as essential; in addition, many respondents may tend to think that they have no legal right of refusal simply because the U. S. Census Bureau is taking the survey. But a better explanation, in my judgment, is that most respondents are extremely cooperative provided they are convinced that the survey is useful, and that many respondents regard the demands made by the survey as an interesting diversion from their daily activities and not as an intrusion.

Other very partial evidence is a bit more pessimistic about the prospects for response rates--more precisely, about the probable extent of wholehearted cooperation from respondents, without which the data base would be unusable. Some years back, the Survey Research Center conducted a small experiment in an attempt to examine the structure of response errors in asset surveys.[4] Respondents were asked to complete forms similar to the capital gains reporting form used for income tax purposes, in an attempt to get accurate information on asset holdings, especially holdings of common stock. While about three-quarters of the sample agreed to participate in the study, only a bit more than half actually completed all of the necessary reporting. Response rate and cooperation experience with the 1962 Federal Reserve Board Survey of Financial Characteristics was better,[5] although again the fact that the interviewing was done by the Census Bureau may mean that the results obtained are misleading as to what is obtainable by other survey organizations.

The Experimental Study

In any event, the question cannot be answered without a serious attempt to obtain such data in the field. An experimental study, now in the planning phase, calls for a number of steps to maximize response rates:

1. Research on the question of interviewer cooperation suggests that data quality is higher and response rates improved if respondents are asked to make a formal commitment to cooperate with the study and to provide complete and accurate data.[6]

2. A number of benefits can be provided to the respondent in return for cooperation with the study. These include payment, where experience suggests that follow-up surveys have higher response rates when payment is used, and provision of an "expenditure pattern" report to the respondent, based on a comparison of expenditure patterns for their household with the average pattern for similar households.

It should be kept in mind that the target population for this study is not the entire population of U. S. households. The use of records will inevitably work poorly for families without checking accounts, and we would not propose to include such families in the panel. We also expect to eliminate families below a certain income cutoff, not because the study could not be conducted but because variation in saving behavior would be uninteresting. A cutoff will also be adopted for high income families with substantial

wealth, where the relevant financial flows, while accessible in principle, are likely to be complex, difficult to obtain, and hard to interpret. Moreover, cooperation rates among wealthy families generally tend to be low for these kinds of data. Thus the survey would be focused on the broad range of families in the lower-middle to upper-middle income groups, a population which accounts for the bulk of total income and total spending, and probably for the bulk of the total time-series variance in spending and saving behavior.

Tentative Schedule of Activities

The first step in creation of the data base is to conduct a survey much like the pilot study discussed above, which simply identifies the kind of financial records that would need to be examined in order to obtain a comprehensive picture of the income and expenditure flow for the household. We envision using a questionnaire schedule much like the 1973 Financial Records one, with a check-box appended on which the interviewer would note the types of records that would be needed for that particular household. The initial interview would contain a final section in which the interviewer explained the next phase to the respondent, attempted to extract a commitment from the respondent to proceed with the study, indicated the benefits that would accrue to the respondent (payment, description of expenditure patterns, etc.), scheduled a follow-up interview, and made clear to the respondent exactly what records should be at hand for purposes of the follow-up interview.

The next phase would involve the follow-up interview where actual data on expenditure and income flows would be obtained. What we have in mind here is an interview schedule which is essentially more like an accounting ledger than a survey. The interviewer would identify the relevant type of record, then ask the respondent to read off the characteristics of the relevant entries. For checking accounts, for example, the respondent would be asked to read off the amount of the check, the date, the general characteristics of the expenditure; for deposits, the data would include the source and the amount; and interviewers would note any supplementary information suggesting that additional records should be examined (i.e., a credit card payment, indicating that actual expenditures need to be obtained from the credit card billing record). In the case of checks drawn to cash, or checks made out for more than the amount of the purchase with the difference being drawn in cash, we would expect to get a general classification from respondents as to the types of purchases involved.

The survey would also attempt to get beginning and ending checking account balances, both for their intrisic interest as well as to check the consistency of the flow data. For other financial records, e.g., savings accounts or credit card billings, the same type of information would be sought--type of financial flow, date of transaction, and beginning and ending balances.

Where a checking account or other financial transaction indicated the existence of an asset, for example, a dividend check, insurance payment, owned business, or an investment account, the interviewer would note the existence of the asset and follow-up questions would be asked about both value and changes in value for the assets in question. Housing transactions are the simplest case in point, where mortgage or property tax payments would be followed by questions about characteristics of the mortgage from which amoritization could be inferred. In cases where the follow-up interview indicated that additional records would contain relevant information, respondents would be asked to locate them; alternatively, the interviewer would try to arrange a second follow-up. In all cases, data from the follow-up interview would be carefully examined by the coding and analyses staff for completeness, indications that other records might be obtainable and would be useful, etc., with a call-back being made in cases where additional information appeared to be obtainable.

Current plans call for attempting to get a 12-month history of financial flows from each household in the sample. To insure that the expenditure and income data can be combined with relevant other data, we plan to interview respondents who have previously been involved in the Survey Research Center's Quarterly Surveys of Consumer Attitudes, which obtain a substantial amount of attitudinal/expectational data. Since we want to relate both expectations and changes in expectations to behavior, we need observations on expectations that precede the expenditure and income data. All respondents will have been asked attitude questions on two prior occasions, the earliest of which would either be simultaneous with or prior to the time span covered by the financial flow data. Finally, this experimental phase of the study will be limited geographically to a collection of states in the North Central and Northeast parts of the country, both to maintain better control over the interview situation and to facilitate interviewer training.

If the data collection project is successful, the resulting data base will be exceptionally rich in several dimensions of consumer behavior that have not been adequately treated in either the theoretical or empirical literature. Specifically, such areas as the time-phase relationships among expenditure categories, the timing relationships among receipts and various expenditures, the effects of anticipated changes in receipts on spending and saving, and interactions between receipts (or other "objective" variables) and attitudes/expectations in the determination of spending decisions, would all be represented in the data base.

Model Testing

While theories of expenditure systems, permanent income, stock adjustment, etc., exist and are well known, they are essentially silent about the dynamic timing of decisions to spend and save. Such theories have rarely been put to the test of a real microdata base with matched observations on all relevant variables. Most of these well-known approaches can be expected to fail in

in important ways when applied to such a data base, or will at the very least, require important additional specification inputs to make them work.

The research process thus involves:

1. Creation of the data base.

2. Application of existing analytical approaches to the data base in a search for basic specifications that seem to work, types of specification changes needed to accommodate existing models to the data, and decision-modes that are markedly different from the ones in standard models--e.g., modes based on threshold effects, discrete decisions, lumpiness, etc.

3. Use of the results of the search process to specify a model or set of models that appear consistent both with theory and empirical regularities.

Although the use of financial records for measuring consumption income, and saving as inputs into behavior modeling is the principal purpose of the experiment, an interesting possible by-product is the potential use of financial records reporting as a more accurate and possibly less expensive mode for the collection of consumption expenditure data. For that use, considerably more information would have to be obtained than the information directly available out of financial records. For example, a survey of consumer expenditures would not be satisfied with a checkbook entry of a particular amount drawn to cash, and it would be necessary to obtain detailed purposes for which the cash withdrawal was used. But one might conceive of starting with a basic survey of financial flows via financial records, then supplementing many of the entries with a follow-up examination of the particular expenditures involved. The same problem would arise for credit card payment entries, where an expenditure analysis would be concerned with purchases as well as with payments. But the basic mode of operation seems feasible, and would quite possibly produce more accurate data for certain types of consumption expenditure and for the aggregate. And it may be no worse for other types of expenditures than the conventional procedures now in use.

1. A 1972 monograph by Thomas Mayer (Permanent Income, Wealth and Consumption, University of California Press, 1973) gives some flavor of the voluminous literature in this area. Several Brookings papers on Economic Activity (Bosworth, Hymans, Taylor, Juster and Wachtel), as well as a 1975 paper (Juster and Taylor) in the American Economic Association Papers and Proceedings volume, contains more recent discussions.

2. The basic work is Milton Friedman's Theory of Consumption Function, Princeton University Press for the National Bureau of Economic Research, 1957.

3. See in particular Juster and Wachtel, "Inflation and the Consumer," Brookings papers on Economic Activity, 1972; Juster, "Savings Behavior, Uncertainty and Price Expectations," in the 21st Conference on Economic Outlook, The University of Michigan, 1973; Juster and Taylor, 1975 Papers and Proceedings of the American Economic Association; and Juster, "Inflation and Consumer Savings Behavior--Some Time-Series and Cross-Section Results," paper presented at the CIRET Conference in 1975.

4. The results of these experiments have never been published. A working paper prepared by Louis Mandell describes the experiment and the results.

5. The nonresponse rate for the 1962 Federal Reserve Board Survey of Financial Characteristics was approximately 27 percent overall: in the highest income group, more than half the sample were nonrespondents. See page 15 in the technical note to the SFCC, published in August 1966 as a Federal Reserve technical paper.

6. Oksenberg, L., Vinokur, A., and Cannell, C. F. The Effects of Commitment to Being a Good Respondent on Interview Performance (a research report). Ann Arbor, Mich.: Survey Research Center, The University of Michigan, 1975. Also a chapter in Experiments in Interviewing Techniques: Field Experiments in Health Reporting, C. F. Cannell, L. Oksenberg, and J. M. Converse (Eds.), in press.

7. The 1973 questionnaire schedule can be obtained by request to the author.