
Changes in Consumer Installment Debt: Evidence from the 1983 and 1986 Surveys of Consumer Finances

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Consumer installment debt has grown substantially during the current economic expansion. By 1986, the level of such debt outstanding had reached a record high relative to disposable income. Aggregate data, however, reveal little about the behavior underlying this growth. Household surveys provide an opportunity to learn who borrows, how much is borrowed, and for what purposes the credit is used.

This article uses survey data to examine the elements underlying the recent rise in consumer installment debt, which consists of credit card debt, automobile and home improvement loans, and other regular-payment loans for durables and personal expenses. The data are from the 1983 and 1986 Surveys of Consumer Finances, which were sponsored by the Board of Governors of the Federal Reserve System, the U.S. Department of Health and Human Services, and six other government agencies. In general, household surveys allow one to examine the distribution of debt over the population in terms of income, age, and other demographic characteristics. A particularly valuable feature of the 1983 and 1986 surveys is that the same families were interviewed in both years; this continuity allows one to link changes in consumer debt with changes in the economic circumstances of specific families.

Several findings emerge from this study. First, debt-service payments have risen at a much slower rate than the stock of debt has. This finding can be explained by a gradual lengthening of contract maturities and, more recently, a

decrease in interest rates. While little of the growth in aggregate debt payments can be attributed to changes in demographics other than the general increase in population, the growth does appear to be closely linked to increases in income and was greatest among families with high income.

Second, the types of credit consumers use have changed in importance. Credit cards appear to be playing a greater role in consumer borrowing than they had previously. The surveys also suggest that between 1983 and 1986 only a small amount of home equity credit (mortgage debt) was substituted for consumer installment credit. That three-quarters of the families with consumer installment debt were homeowners, however, suggests a potential for such substitution. Since the 1986 survey, the substitution of mortgage credit for consumer credit may have increased in response to changes in the federal tax law and to the heavy promotion of home equity lines of credit.

Third, the debt burdens of families as measured by the ratio of their payments to their income vary considerably over time. Only a few families appear to carry heavy debt burdens over long periods: most families with heavy debt burdens appear to reduce their ratio of payments to income substantially, primarily through increases in their income. Nevertheless, some concern about this group seems warranted. The share of aggregate payments made by families with large payments relative to their income rose substantially between 1983 and 1986, despite the relatively small change in the number of such families.

Finally, more than 80 percent of the families that have consumer installment debt also have financial assets or home equity sufficient to permit liquidating their debts in emergencies. This

finding appears to hold for more than half of the families with high payments relative to their income.

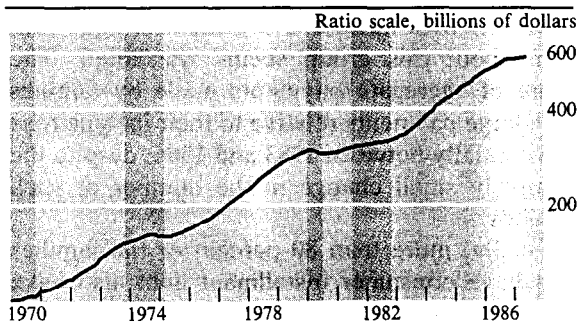
AGGREGATE CHANGES IN CONSUMER DEBT IN RECENT YEARS

The growth in consumer credit from 1983 to 1986 is the most recent expansion in a cyclical pattern that has characterized the period since World War II (see the FEDERAL RESERVE BULLETIN for June 1985). The first half of the 1970s marked the end of a long period of moderate growth in consumer debt. In the following years, consumer borrowing expanded sharply (chart 1). Consumer installment credit outstanding grew at an average compound annual rate of 15 percent between 1976 and 1979, compared with the 10 percent rate that prevailed between 1970 and 1975.

Several factors contributed to the acceleration of consumer debt in the late 1970s. Coincident with the quickening of inflation after 1975, consumers increased their use of installment credit to finance purchases of durables. At the same time, the maturities of contracts on new consumer loans began to lengthen. The lengthening of contract maturities reduced the rate at which debt had to be repaid, and thus a given stock of outstanding debt implied a lighter burden of debt service than otherwise would have been the case. The reduction in the rate of debt repayment lowered consumers' monthly payments, probably stimulated the demand for credit, and further increased the stock of outstanding debt. Finally, an increase in the use of credit cards appears also to have contributed to this growth.

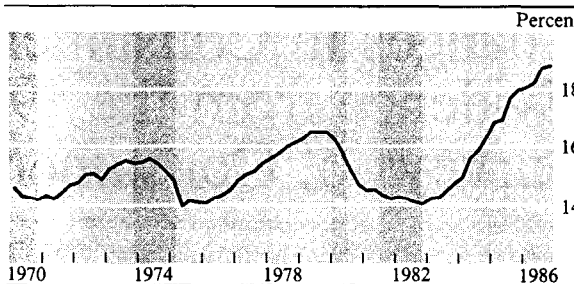
During the recessions of 1980 and 1981-82,

1. Consumer installment credit outstanding



Shaded areas represent periods of economic recession.

2. Ratio of consumer installment debt to disposable income



Shaded areas represent periods of economic recession.

growth in consumer debt slowed dramatically. Between 1979 and 1982, consumer installment credit outstanding grew at an annual compound rate of less than 6 percent per year. During this period, constraints on the supply of credit became important. Market rates of interest rose to state ceilings; as a result, lenders limited credit. Besides these constraints, the federal government's short-lived program in 1980 to control credit led creditors to adopt restrictive measures.

Consumer borrowing expanded rapidly after the 1981-82 recession. From the end of the recession until the beginning of 1987, consumer installment credit outstanding grew at an average compound annual rate of 18 percent. Much of this growth reflected the normal pattern in an economic expansion.

SOME LIMITATIONS OF AGGREGATE MEASURES

Changes in the aggregate stock of consumer installment debt may not fully reflect changes in the role of debt or their relation to other economic changes. One adjustment that is often made to this aggregate measure is to divide it by aggregate disposable personal income; this ratio is commonly used as an indicator of the burden of such debt on households (chart 2). Even with the adjustment, this measure has a serious limitation: changes in the ratio have no simple relation to changes in the circumstances of individual households. Such information is best obtained from household surveys.

Another limitation of the stock measure of consumer installment debt is that, in the short run, changes in the level of installment payments are believed to be tied more closely to changes

household behavior than are changes in the stock of debt. Unfortunately, information on aggregate consumer installment payments is not available, though it can be estimated from household survey data.

SURVEY MEASURES

Comprehensive household survey data are available for only a few years during the 1970-86 period. The Survey Research Center of the University of Michigan conducted Surveys of Consumer Finances in 1970, 1977, 1983, and 1986. These surveys collected information on family assets, debts, income, employment, and demographic characteristics. (For a more detailed description of the surveys, see the appendix.) For the 1986 survey, respondents to the 1983 survey were reinterviewed. Thus, using the 1983 and 1986 surveys, one can study changes in the consumer installment debt of individual families over a period during which aggregate consumer debt grew rapidly, and one can relate those changes to the family's income and assets.

From the data collected in the four surveys, an estimate of payments on consumer installment debt was constructed to correspond as closely as possible to payments on the measured aggregate stock. Payments on consumer installment debt are defined throughout the rest of this article as the sum of scheduled monthly payments on closed-end consumer credit and 5 percent of financed balances on credit cards, which is commonly the minimum payment on outstanding

credit card balances. Closed-end consumer credit includes all consumer installment debt with regularly scheduled payments. Financed balances on credit cards include only the part of the charges appearing on families' most recent credit card statements that remain after the most recent payments. Thus this measure of payments does not reflect the portion of the reported aggregate stock of credit card debt that is attributable to the use of credit cards as a convenient substitute for currency or checks (see the FEDERAL RESERVE BULLETIN for March 1987). The construction of these payment variables is discussed more fully in the appendix. Many families pay more on both credit card debt and closed-end consumer debt; the payment variable used here represents their minimum monthly obligation.

The surveys indicate that monthly payments on consumer installment debt measured in this way have risen less rapidly than the corresponding aggregate of consumer installment debt has. While the volume of consumer installment credit grew at an average compound annual rate of 17.9 percent from 1983 to 1986, monthly payments increased at an annual rate of 11.5 percent (table 1). This finding is consistent with the effects of changes in the terms of typical loan contracts: the continuing trend toward longer contract maturities and, since the early 1980s, lower interest rates. For example, a borrower with typical terms for a new-car loan could have borrowed 21 percent more in early 1986 than in early 1983 for the same monthly payment.

The surveys enable one to estimate more than aggregate totals. In particular, they allow the association of debt and debt payments with a

1. Aggregate and survey-based measures of debt, selected years, 1970-86¹

Percent, except as noted

Measure	1970	1977	1983	1986	Memo: Weighted average, 1970-86
<i>Aggregate</i>					
Consumer installment debt outstanding (billions of dollars)	100.5	210.0	337.0	551.8	253.8
Annual compound rate of change from preceding period	11.2	8.2	17.9	11.2
Ratio of installment debt to disposable income	14.2	15.1	14.1	19.6	15.0
<i>Survey-based</i>					
Payments per month (billions of dollars)	2.7	5.0	7.7	10.6	5.8
Annual compound rate of change from preceding period	8.1	7.3	11.5	8.4
Families with debt	52.6	56.4	56.9	58.5	55.9
Mean ratio of debtors' payments to income	10.4	10.9	9.3	10.0	10.2

1. Figures in this and all subsequent tables are based on data

supplied by families with a head 25 years of age or more (see the appendix).

broad range of economic and demographic characteristics. One can determine the types of families that have consumer debt; examine the changes in their debt; and, by looking at the abilities of debtors to repay their loans, explore the issue of debt burden. For example, a simple survey measure of payments, the mean ratio of monthly payments on family debt to gross monthly family income, gives a different picture of the perceived recent rise in debt burden than that given by the aggregate measure: whereas the aggregate ratio of installment debt to disposable income has increased more than 5 percentage points over all, the survey-based ratio of payments to income has changed only slightly over the past 16 years (see table 1). The next sections show how this apparent stability masks complex changes.

SURVEY EVIDENCE ON CHANGES IN DEBT

The 1983 and 1986 surveys allow a more detailed look at the factors connected with the recent rise in consumer debt. They reveal some ties be-

tween income, automobile purchases, the use of credit cards, and the growth in consumer credit. While the surveys show a strong association of the levels of family debt with demographic characteristics and with expenditures for durables other than automobiles, these factors appear to explain very little about the growth in debt.

Debt and Demographic Change

Much of the recent increase in consumer debt is commonly attributed to demographic changes in the population. The use a family makes of consumer installment debt has been traditionally viewed as closely associated with its stage in the life cycle. A fundamental concept of the economic life cycle is that at different points in life a family's income and desired expenditures may not match. The income of young families is generally below its long-term level, yet families in that stage must bear the large costs of furnishing a place to live and of rearing children. Theory leads one to expect that these families try to bridge the temporary gap between income and

2. Use of consumer installment credit by families with selected characteristics, 1983 and 1986
Percent, except as noted

Family characteristic	1983					1986					Memo: Distribution of families	
	Families with con- sumer debt	Monthly payment (dollars)		Median ratio of pay- ments to in- come	Share of total pay- ments	Families with con- sumer debt	Monthly payment (dollars)		Median ratio of pay- ments to in- come	Share of total pay- ments	1983	1986
		Mean	Median				Mean	Median				
<i>Income (1986 dollars)</i>												
Less than 10,000 ...	30.2	87	50	12.2	5.2	33.2	81	45	8.8	4.2	19.8	20.0
10,000-19,999	51.8	116	80	7.6	14.5	51.7	131	100	8.6	12.4	23.9	23.3
20,000-34,999	68.9	168	142	7.1	31.4	69.5	201	150	7.2	28.3	26.9	25.8
35,000-49,999	73.4	211	187	6.0	23.4	76.9	266	215	6.5	24.6	15.0	15.3
50,000 or more	62.2	283	216	4.2	25.5	65.0	386	250	4.9	30.5	14.4	15.5
<i>Age of head (years)</i>												
25-34	70.7	171	138	7.2	30.0	68.9	206	173	7.4	27.5	24.6	24.7
35-44	74.6	196	150	6.5	31.2	77.2	250	192	7.8	32.5	21.2	21.5
45-54	65.2	192	153	6.8	21.2	70.1	274	145	6.1	22.4	16.8	14.9
55-64	50.5	164	108	5.6	13.6	53.5	192	88	4.8	13.2	16.3	16.4
65 or more	21.2	89	40	4.5	4.0	25.4	101	45	4.4	4.5	21.1	22.5
<i>Type of occupancy</i>												
Homeowner	58.5	194	158	6.3	76.9	60.3	238	160	6.4	79.8	67.2	70.9
Renter	53.6	131	92	6.9	23.1	54.3	163	100	7.6	20.2	32.8	29.1
<i>Race or national origin of head</i>												
Caucasian	56.3	176	138	6.2	82.7	59.0	223	150	6.4	85.0	82.9	82.6
Nonwhite or Hispanic	59.6	169	101	7.9	17.2	56.2	195	100	8.0	15.0	17.1	17.4
<i>All families with head 25 years of age or more</i>	56.9	175	134	6.6	100.0	58.5	218	145	6.6	100.0	100.0	100.0

3. Actual and projected consumer installment payments by families with selected characteristics, 1983-86
Percent

Family characteristic	Memo: Proportion of all families, 1986 ¹ (1)	Actual 1986 share of payments ¹ (2)	Increase in payments, 1983-86		Actual growth in income per family, 1983-86 (5)
			Projected ² (3)	Actual (4)	
<i>Head 25-44 years of age</i>					
Unmarried, no children.....	10.6	10.9	30.0	88.7	47.4
Married, no children.....	5.0	8.8	-5.6	16.3	26.3
Married, youngest child under 6.....	12.6	19.7	25.6	54.6	17.5
Married, youngest child over 6.....	10.7	14.7	14.5	0.4	13.8
<i>Head 45 years of age or more</i>					
Married, children.....	5.9	8.2	-8.1	-0.2	21.0
Married, no children, not working ³	11.1	3.5	20.1	22.4	10.0
Married, no children, working.....	13.7	19.5	15.8	62.8	3.8
Unmarried, no children, not working ³	15.9	3.0	48.1	164.0	21.9
Unmarried, no children, working.....	6.6	5.5	11.9	76.6	29.1
Head over 25 years, unmarried, with children.....	8.0	6.2	19.1	45.1	45.8
All families with head 25 years of age or more.....	100.0	100.0	14.2	38.3	14.3

1. Details may not add to totals because of rounding.

2. Payments are projected by multiplying 1983 group payments by the rate of inflation and by the population increase for each group.

3. Head of family not in labor force.

expenditure by borrowing. Many economists have speculated that, during the past several years, credit has expanded in part because the "baby boom" generation has moved into the life-cycle phase most associated with the purchase of major durables, which are typically tied to the use of installment credit.

The distribution of debt payments across various income and age groups in 1986 is broadly consistent with the life-cycle theory (table 2). The use of debt, in terms both of incidence and of payment levels, is highest for families whose heads are 25 to 54 years of age and lowest among families with heads 55 years of age and older. Thus a shift of population toward younger families, which are likely to be heavy users of debt, may be expected to raise aggregate borrowing.

Survey data suggest, however, that demographic changes from 1983 to 1986 may have actually damped the growth of debt in the population. In particular, while the proportion of families with heads between 25 and 45 years of age increased from 1983 to 1986, the proportion of families of older unmarried people, which generally hold little debt, grew even faster. Calculations presented in table 3 take some account of demographic shifts by first dividing families into 10 representative life-cycle groups. Column 3 shows the growth in payments predicted for

each group on the bases of inflation and of the growth in the number of each type of family. The 14.2 percent figure at the bottom of the column is the weighted average of the predictions for each group and thus is an estimate of payment growth accounting for both population shifts and for overall population growth. If debt payments of all groups had increased equally at the rate of growth of the overall population and of inflation, payments would have grown by 19 percent over this period. That this number is greater than the 14.2 percent growth projected taking account of demographic shifts and overall growth suggests that these shifts have damped the growth of credit.

The projections of 14.2 percent and 19 percent are both much lower than the 38.3 percent growth in payments observed between the two surveys. The unexplained difference is reflected in broad deviations of predicted and actual increases for almost all the subgroups, as shown by the comparison of columns 3 and 4 of table 3. These figures suggest that, with the exception of young married couples with children six years of age or older, each group had actual growth of payments in 1986 larger than their predicted growth. The behavior of the exceptional group is somewhat puzzling. The actual increase for this group, which is largely the same as the 35- to 44-

year-old group in table 2, was very small despite a projected increase higher than average.

One explanation of this anomaly may be the relatively slow growth in income for this group (column 5 of table 3). As noted in the December 1986 issue of the FEDERAL RESERVE BULLETIN, sluggish growth in purchases of automobiles and other durables has been linked to the income performance of this group. One of the other two groups with less than average income growth—households with nonworking, married head; who are more than 45 years of age—had an actual increase in payments only slightly larger than predicted. These findings suggest that the growth in debt payments is closely linked to the growth in income. This conclusion highlights the importance of changes in income in explaining the aggregate growth of payments from 1983 to 1986. As shown in table 2, the share of payments made by families in the highest income category grew from 25.5 to 30.5 percent. This group had the highest growth in income as well (not shown in the tables).

Debt and Purchases

More than 85 percent of the debts observed in 1986 were debts acquired since 1983 and thus almost surely were connected to purchases over the intervening period. In the traditional view, most consumer installment debt is closely associated with expenditures for large durables and automobiles. Indeed, as table 4 shows, families who made large purchases between 1983 and 1986 were more likely than the group of all

families to have debts and to have larger-than-average installment debt payments in 1986 (compare with the last row of table 2). However, the incidence, level, and share of total payments of these families, except for automobile purchasers, changed only slightly over the three-year period. Families that purchased automobiles appear to have significantly increased their share of debt payments. The increase is even greater when the calculations exclude financed credit card payments (not shown in the table). The increase in the use of automobile credit relative to other closed-end credit may be due to promotional subsidies offered by automobile finance companies.

There are indications that the kinds of purchases for which debt is used may have changed. The survey data suggest that the role of credit cards in debt payments has increased substantially, though the share of the aggregate stock of consumer installment debt that credit cards account for remains comparatively small. The proportion of families having credit card debt, whether alone or in combination with closed-end debt, increased 5.7 percentage points between 1983 and 1986 (see table 5). Estimated payments for financed credit card debt, as shown in the last column of the table, rose from 16.9 percent of total installment payments in 1983 to 25.3 percent in 1986. This increase, in which virtually every income and age group participated, accounts for almost half of the increase in installment debt payments since 1983. Such a large share is surprising given that interest rates on credit cards did not fall as rapidly as other rates

4. Consumer installment debt for families with selected major expenditures between 1983 and 1986

Percent, except as noted

Expenditure	1983				1986			
	Families with debt	Median monthly payment (dollars)	Median ratio of payment to income	Expenditure group's share of all 1983 payments	Families with debt	Median monthly payment (dollars)	Median ratio of payment to income	Expenditure group's share of all 1986 payments
Move	66.5	129	7.1	31.5	63.7	160	6.8	34.1
Major purchase								
New house	69.6	170	7.2	16.4	70.2	180	6.0	17.0
Automobile	67.8	143	6.6	62.7	71.6	200	7.7	78.7
Other ¹	72.6	200	6.9	41.8	73.9	225	6.7	49.5
Major medical expense	59.2	180	8.2	24.2	62.3	182	8.0	28.1
College for children	72.9	160	5.2	14.8	74.1	198	5.1	19.8

1. Hobby or recreation items and home improvements totaling \$3,000.00 or more.

5. Distribution of families with selected characteristics, by type of consumer installment debt, 1986

Family characteristic	Percent					Memo: Share of debt payments attributed to credit card debt
	No debt	Credit card only	Closed-end only	Both credit card and closed-end	Total ¹	
<i>Income (dollars)</i>						
Less than 10,000	66.8	16.5	14.0	2.8	100.0	19.0
10,000-19,999	48.3	24.3	13.1	14.3	100.0	27.6
20,000-34,999	30.5	30.9	17.7	20.9	100.0	25.2
35,000-49,999	23.1	30.9	13.4	32.6	100.0	27.8
50,000 or more	35.0	22.9	15.8	26.4	100.0	23.3
<i>Age of head (years)</i>						
25-34	31.1	26.3	20.5	22.1	100.0	26.9
35-44	22.8	28.3	16.6	32.3	100.0	26.0
45-54	29.9	29.3	17.5	23.2	100.0	20.9
55-64	46.5	28.1	13.1	12.3	100.0	26.7
65 or more	74.6	16.4	6.8	2.2	100.0	28.2
<i>All families with head 25 years of age or more</i>						
1983	43.1	15.9	19.0	22.0	100.0	16.9
1986	41.5	25.2	14.9	18.4	100.0	25.3

1. Details may not add to totals because of rounding.

did over this period. Moreover, promotional subsidies of closed-end debt, particularly for automobiles, should have contributed, at least indirectly, to proportionately less borrowing on credit cards. This apparent contradiction may arise from changes in the way families use credit card debt. A great part of the unpaid balances on credit cards may be treated by families not as long-term installment debt but rather as payments that are delayed for a few months to accommodate mismatches in their patterns of income and expenditure. Families using credit cards in this way may be less sensitive to differentials in interest rates.

Substitution between Mortgage and Consumer Debt

Survey measures of consumer installment payments from 1983 to 1986 may understate the true change in the use of consumer debt because the relation between consumer debt and mortgage debt has changed. Driven by a significant drop in interest rates and by the spreading use of new mortgage instruments, outstanding family mortgage debt, according to survey estimates, grew 45 percent over the three years, while reported property values increased only 26 percent. This difference in growth suggests that some of the

increase in mortgage debt was used for purposes other than housing and thus could have substituted for other kinds of debt.

Survey evidence suggests that mortgage debt was indeed used that way but with only a small effect on the overall level of consumer debt (table

6. New mortgage borrowing, homeowning families with heads 25 years of age and more, 1983-86

Housing and mortgage status of homeowner	Percent of group with new mortgage	Net new mortgage financing (billions of dollars) ²	Memo		
			Percent of all families ³	Stock of consumer debt of families with new mortgages (billions of dollars)	
				1983	1986
<i>No move, 1983-86</i>					
No mortgage in 1983	4.4	22.0	24.4	2.9	2.4
Mortgage in 1983	12.2	64.1	31.2	17.3	18.6
<i>Move to new home, 1983-86</i>					
No mortgage in 1983	42.8	3.0	.9	1.5	1.2
Mortgage in 1983	91.5	2.6	3.1	8.4	12.5

1. Includes only those who owned homes in both 1983 and 1986.
 2. Amount outstanding on current mortgage less amount of retired mortgage that would have been outstanding in 1986. For movers, the net change in home value including selling costs was also subtracted.
 3. This column does not sum to 100.0 because the table covers homeowners only.

6). Of homeowners with mortgages in 1983, more than 12 percent of those who did not move during the three years ending in 1986 refinanced their mortgages, and more than 4 percent of those homeowners without a mortgage in 1983 took out a mortgage (or home equity loan) over this period. Further, more than 80 percent of the families moving from one owned home to another (the average of the last two rows of the first column of table 6 weighted by population) are estimated to have taken out new mortgage debt. The total net new financing from these mortgages (the sum of the numbers in the second column) is equivalent to more than one-sixth of the consumer debt outstanding in 1986. Determining what portion of these funds was substituted for consumer debt is difficult, however. Those families acquiring new mortgage financing actually increased their consumer debt over the three years, although their share of total outstanding debt fell from 18 percent to 12 percent (not shown in the table). If these families had maintained their dollar amount of borrowings so that they continued to account for 18 percent of total consumer installment debt outstanding, aggregate outstanding debt would have been 5.9 percent higher, other things being equal. This comparison suggests that the substitution of mortgage debt for consumer credit in 1983-86 was small.

In the future, borrowers likely will substitute mortgage financing more extensively for traditional consumer credit. The 1986 tax law gradually eliminates tax deductibility of interest payments on most consumer loans. Given sufficient home equity, however, all expenditures financed by home mortgages will still be fully deductible. The potential for substituting mortgage debt for consumer debt is considerable. In 1986, the aggregate home equity of families with consumer installment debts was 3.4 times the stock of such debts. As table 7 shows, homeowners are also considerably more likely than others to have consumer debt, and a significant portion of nearly every group of homeowners has both mortgage and consumer debt.

CHANGES IN DEBT-PAYMENT BURDENS

Because the 1983 and 1986 surveys interviewed the same families, they reveal the effects of changes in families' economic circumstances on consumer installment debt and debt burden. The most striking finding is that debt burdens of individual families vary greatly over time, a fact that is obscured in data from separate cross-section surveys. Most families with relatively heavy debt in 1983 had lighter burdens by 1986. Virtually all families that had such heavy debt in 1986 had lighter burdens in 1983.

7. Distribution of families with selected characteristics, by mortgage and consumer installment debt, 1986
Percent

Family characteristic	Homeowners ¹				Others ¹		Memo: Share of group owning homes
	No debt	Consumer installment debt only	Mortgage only	Mortgage and consumer installment debt	No debt	Consumer installment debt	
<i>Income (dollars)</i>							
Less than 10,000	56.3	24.6	9.3	9.9	68.6	31.4	58.6
10,000-19,999	39.1	18.1	13.0	29.8	42.8	57.2	59.6
20,000-34,999	17.8	15.9	12.6	53.6	30.5	69.5	70.3
35,000-49,999	11.1	14.3	11.4	62.8	26.7	73.3	84.8
50,000 or more	12.4	7.5	21.5	58.7	46.1	53.9	91.2
<i>Age of head (years)</i>							
25-34	6.2	7.0	18.9	67.9	37.9	62.1	53.0
35-44	4.2	8.5	16.3	71.1	28.5	71.5	70.7
45-54	11.7	20.1	14.2	54.0	46.2	53.8	80.2
55-64	31.2	24.2	13.1	31.5	54.7	45.3	79.1
65 or more	65.3	19.8	7.7	7.2	80.8	19.2	78.7
<i>All families with head 25 years of age or more</i>							
1983	27.5	14.5	14.0	44.0	46.4	53.6	67.2
1986	26.0	15.9	13.7	44.4	45.7	54.3	70.9

1. Details may not add to 100 percent because of rounding.

8. Distribution of families with heads 25 years of age and older, by ratio of consumer debt payments to income, selected years, 1970-86

Debt status	1970	1977	1983	1986	Memo: Share of 1986 debt payments allotted to credit card debt
No debt	47.4	43.6	43.1	41.5	...
Ratio of debt payments to income					
1-9 percent	33.0	34.7	37.6	38.9	40.0
10-29 percent	17.5	19.3	17.0	16.9	18.5
30 percent or more	2.2	2.4	2.3	2.7	11.7
All families¹	100.0	100.0	100.0	100.0	25.3

1. Details may not add to totals because of rounding.

Debt burden is difficult to measure. Debt payments, while reflecting the obligation of families, do not necessarily reflect the ability of families to pay. The fraction of family income obligated to debt service can nevertheless be used as a crude measure of debt burden. To examine changes in burden thus measured, we divided the families surveyed into four groups: those with no consumer debt, those with payments of 1 to 9 percent of gross income, those with payments of 10 to 29 percent, and those with payments of 30 percent or more of gross income. Though the proportion of families with no consumer debt was somewhat higher in 1970 than in later years, the proportion of debtors in these groups changed little after 1970 (table 8).

As is clear from the changes in the debts of individual families in the 1983 and 1986 surveys reported in table 9, much variability underlies this apparent stability. The rows show the percentage of families that moved from a given payment group in 1983 to payment groups de-

finied for 1986, as indicated by the column headings. For example, 28.4 percent of the 1983 high-payment group had no debts at all in 1986, and only 8.9 percent of the families that were in the highest debt payment group in 1983 were still in that group in 1986 (fourth row). For the other two groups of families with debts in 1983, a majority had the same debt-payment burden or a lighter one by 1986.

Sources of Change

The debt burden of a household may change for many reasons. Family finances may be affected by changes in the composition of the family, by the aging of its members, by large purchases that require financing, and by events such as becoming unemployed. These changes, in turn, may affect family borrowing and debt-payment burdens. In the short run, changes in debt likely will lag changes in income. Families faced with a shortfall in income cannot immediately curtail

9. Distribution of families with heads 25 years of age and older and with selected ratios of consumer debt payments to income in 1983, by ratio of payments to income in 1986

Ratio of payments to income, 1983	Ratio of payments to income, 1986				All families ¹
	No consumer debt	1-9 percent	10-29 percent	30 percent or more	
No consumer debt	68.5	19.9	8.9	2.7	100.0
Debt					
1-9 percent	22.9	55.4	19.8	1.9	100.0
10-29 percent	22.8	47.0	26.2	4.0	100.0
30 percent or more	28.4	28.6	34.2	8.9	100.0
All families	41.5	38.9	16.9	2.7	100.0

1. Details may not add to totals because of rounding.

10. Selected data on consumer installment debt, by change in respondent's status, 1983-86

Change in respondent's status, 1983-86	1983			1986		
	Percent of group with consumer installment debt	Median monthly payment (dollars)	Median ratio of payments to income	Percent of group with consumer installment debt	Median monthly payment (dollars)	Median ratio of payments to income
Separated or divorced.....	55.2	88	6.8	55.9	100	7.4
Widowed.....	32.3	75	7.6	31.2	50	6.0
Married.....	72.5	140	10.1	74.3	225	6.0
Had child.....	73.2	125	6.8	76.5	200	7.2

their outstanding loans without drawing on their assets or declaring bankruptcy. Similarly, families may regard some increases in income as temporary and be unwilling to take on new debt.

Changes in family structure appear to have a significant effect on families' debt burdens (table 10). For all these families, except those in which the respondent had been widowed, the incidence of debt and the level of payments increased. For

newly married couples, the payment burden fell, probably because their income significantly increased (not shown in the table).

The survey data reveal that changes in income are as important as changes in debt payments in the shifting of families' debt burdens (table 11). For example, as shown in the last column of the table, most families that had the highest ratios of payments to income in 1986 had experienced

11. Debt and income characteristics of families classified by ratio of consumer installment debt payments to income in 1983, by payment ratio in 1986

Percent, except as noted

Item	All 1986 groups	Ratio of payments to income in 1986			
		No consumer debt	1-9 percent	10-29 percent	30 percent or more
<i>All groups, 1983</i>					
Median monthly 1986 payments (dollars).....	145	0	75	300	375
Median annual 1986 income (dollars).....	22,704	15,000	30,550	24,000	10,000
Median change in income, 1983-86.....	7.1	-1.6	13.2	13.3	-20.9
Proportion making major purchases, 1983-86 ¹	61.2	43.2	71.5	80.1	72.3
Families with increase in monthly payments, 1983-86.....	38.7	0	55.0	87.1	94.9
<i>No consumer debt</i>					
Median monthly 1986 payments (dollars).....	91	0	47	204	260
Median annual 1986 income (dollars).....	15,000	13,000	25,000	16,000	4,342
Median change in income, 1983-86.....	1.3	-9	11.1	11.5	-67.8
Proportion making major purchases, 1983-86 ¹	49.2	40.3	64.5	77.3	70.5
Families with increase in monthly payments, 1983-86.....	31.5	0	100.0	100.0	100.0
<i>1-9 percent of income</i>					
Median monthly 1986 payments (dollars).....	147	0	85	306	596
Median annual 1986 income (dollars).....	29,312	22,000	34,000	25,000	17,750
Median change in income, 1983-86.....	7.1	-7.8	10.4	6.7	-33.2
Proportion making major purchases, 1983-86 ¹	70.9	57.0	72.7	80.7	83.9
Families with increase in monthly payments, 1983-86.....	53.8	0	60.1	94.6	94.9
<i>10-29 percent of income</i>					
Median monthly 1986 payments (dollars).....	186	0	80	365	575
Median annual 1986 income (dollars).....	26,000	17,172	30,000	30,000	15,200
Median change in income, 1983-86.....	15.7	7.1	23.0	28.0	-12.0
Proportion making major purchases, 1983-86 ¹	68.2	32.8	75.1	85.7	73.7
Families with increase in monthly payments, 1983-86.....	25.8	0	6.3	73.7	86.9
<i>30 percent or more of income</i>					
Median monthly 1986 payments (dollars).....	200	0	125	228	200
Median annual 1986 income (dollars).....	20,000	12,000	23,000	20,000	5,484
Median change in income, 1983-86.....	75.0	23.5	119.2	75.0	-2.2
Proportion making major purchases, 1983-86 ¹	52.1	55.2	66.1	43.9	28.4
Families with increase in monthly payments, 1983-86.....	22.3	0	9.6	31.3	100.0

1. Major purchases include automobiles, major durables, hobby or recreation items, and home improvements.

declines in their income over the previous three years; the median decline was 20.9 percent. Also, virtually all high-debt families in 1986 (94.9 percent) had increased their level of payments. Families with debts in 1986 that had lower payment ratios than they had in 1983 substantially increased their income and, in general, were more likely to have decreased their level of payments. Income increases were particularly dramatic for families that had had the highest ratios in 1983 but had lower ones in 1986, suggesting that these families may have been experiencing temporarily low income in 1983. This change in income, combined with the decrease in payments for almost 80 percent of the 1983 high-ratio group, led to the striking reduction of debt-payment burden for this group in 1986.

Purchases also played a part in changes in debt-payment burdens. Except for families that were in the group with high payment ratios in both years, debtors who stayed in the same group or moved to a higher one were also more likely than the population as a whole to have made a major purchase.

Some of the observed movements of families to lower ratio groups may have resulted from bankruptcy rather than from the repayment of debts. From aggregate data, we estimated that about 1 percent of families in the 1986 survey probably declared bankruptcy over the preceding three years (such information was not collected in the surveys). Under the extreme assumption that all families subsequently declaring bankruptcy were in the 1983 high-ratio group—a very unlikely correspondence—at most one-third of the 1983 high-ratio families could have reduced their debt burdens through bankruptcy. Thus the general lightening in the debt-payment burdens for the 1983 high-ratio group most likely reflects improvement in income rather than liquidation of debts through bankruptcy.

Families with Heavy Debt-Payment Burdens

Families in the group with the highest ratios of payments to income are of particular concern.

12. Families with selected characteristics and heavy debt in 1986, by 1983 debt-payment group
Percent, except as noted

Family characteristic in 1986	Ratio of payments to income in 1983				Memo: All families with debt in 1986
	No consumer debt	1-9 percent	10-29 percent	30 percent or more	
<i>Family income (dollars)</i>					
Less than 10,000	72.5	25.9	32.9	69.6	11.3
10,000-19,999	11.6	52.7	20.1	13.9	20.6
20,000-34,999	14.8	13.5	28.6	16.5	30.7
35,000-49,999	*	7.1	18.4	*	20.1
50,000 or more	1.1	.9	*	*	17.2
All incomes ¹	100.0	100.0	100.0	100.0	100.0
Median change in income, 1983-86 (dollars)	-6,777	-6,373	-2,900	-123	2,700
<i>Age of head (years)</i>					
25-34	16.7	27.6	19.1	*	29.1
35-44	31.7	29.2	24.9	30.4	28.3
45-54	3.4	3.1	25.5	12.0	17.8
55 to 64	12.2	36.7	23.8	12.9	15.0
65 or more	35.9	3.5	6.9	44.8	9.8
All ages ¹	100.0	100.0	100.0	100.0	100.0
<i>Type of debt</i>					
Credit card	7.5	86.7	63.3	43.3	74.5
Closed-end	97.4	92.5	96.2	100.0	56.9
All types ²	100.0	100.0	100.0	100.0	100.0
<i>Major expense, 1983-86</i>					
Purchase of car	70.5	78.9	60.5	28.4	64.3
Other purchase	3.7	49.2	40.2	16.5	35.3
Medical	45.0	42.7	17.5	44.8	22.0
All major expenses ³	86.4	89.7	83.0	73.2	79.4

1. Details may not add to 100.0 percent because of rounding.
2. Totals of details exceed 100.0 percent because some families had both types of debt.

3. Totals of details exceed the reported total because some families made more than one type of major purchase.
*Less than 0.05 percent.

Because of their heavy payment burden, they may have the greatest potential for default. While this group is small, their debt appears to be sufficient so that default would have some disruptive effects on lenders. To assess that concern, we examined in more detail the changes in the economic circumstances of the 1986 high-ratio group.

Table 12 presents the characteristics of families that had heavy debt-payment burdens in 1986 classified by their 1983 payment groups. Families that went from no debt in 1983 to a high debt-payment ratio in 1986 appear very different from those that went from a low or moderate ratio to a high one. Families that went from no debt to a high ratio were more likely to be in lower income groups in 1986 and were disproportionately elderly. Moreover, their income decreased more than that of the other groups over the three-year period. Most of the debt acquired by the group was closed-end, rather than credit card, debt and was associated largely with buying a car or with major medical expenditures. As noted earlier, because of their generally low or reduced income, borrowing for any major purchase was more likely to have caused them to have a high ratio of payments to income. The

families that had heavy burdens of debt payment in both years were similar to the group that had no debt in 1983.

In contrast to the families with no debt or with a high payment ratio in 1983, those families whose payment burdens increased from the lower levels (1–29 percent) in 1983 to the highest ones in 1986 generally were younger and were more likely to have income only somewhat below average than to be poor. For them, incurring debt was more likely to be associated with a rise in a broad range of expenditures, as reflected in the higher proportion of credit card payments in their debt service. These families, too, were more likely than the population of all debtors in 1986 to have bought a car in the prior three years.

Changes in the Distribution of Total Payments

Despite the similar proportion of families in the high-ratio groups in 1983 and 1986, the share of payments made by families with high payment ratios rose dramatically (table 13). The top pane of the table shows the percentage of all familie

13. Distribution of 1983 payment-ratio groups and 1983 and 1986 payments, by 1986 payment-ratio groups
Percent

1983 ratio of payments to income	All 1986 groups ¹	1986 ratio of payments to income			
		No consumer debt	1–9 percent	10–29 percent	30 percent or more
All groups					
Families	100.0	41.5	38.9	16.9	2.7
Total 1983 payments	100.0	20.3	51.6	25.2	2.9
Total 1986 payments	100.0	0	37.1	46.6	16.3
No consumer debt					
Families	40.5	27.8	8.1	3.6	1.1
Total 1983 payments	0	0	0	0	0
Total 1986 payments	19.6	0	5.9	6.9	6.8
1–9 percent of income					
Families	38.1	8.7	21.1	7.6	.7
Total 1983 payments	37.4	8.3	20.5	8.3	.4
Total 1986 payments	47.6	0	21.4	22.4	3.8
10–29 percent of income					
Families	19.5	4.4	9.2	5.1	.8
Total 1983 payments	55.8	10.4	28.8	14.4	2.2
Total 1986 payments	30.1	0	9.2	15.6	5.3
30 percent or more of income					
Families	1.9	.5	.5	.6	.2
Total 1983 payments	6.8	1.6	2.4	2.4	.3
Total 1986 payments	2.6	0	.6	1.6	.4

1. Because the figures in this table are based on the families interviewed both in 1983 and in 1986 and are weighted to reflect the structure of the 1986 population, the percentage of families here differs slightly from that in table 8.

14. Relation of assets to debt of payment-ratio groups, 1986¹

Percent

Payment-ratio group	Financial assets		Home equity		Financial assets plus home equity	
	Ratio to debt of all respondents in group ²	Proportion whose assets exceed their debt	Ratio to debt of all respondents in group ²	Proportion whose assets exceed their debt	Ratio to debt of all respondents in group ²	Proportion whose assets exceed their debt
1-9 percent	75.4	67.7	81.7	72.4	94.1	90.4
10-29 percent	48.8	24.0	70.7	58.8	80.4	65.6
30 percent or more	41.3	12.3	50.6	51.0	70.6	53.8
<i>All families with head 25 years of age or more</i>						
1983	50.3	51.1	77.2	66.0	87.2	80.4
1986	56.8	52.2	71.1	67.4	83.5	81.4

1. Based on families with heads 25 years of age and more.

2. To reflect implicit debt coverage at the level of the individual family, the numerator is the sum over all families of each family's

coverage up to the amount of its consumer installment debt, and the denominator is total consumer installment debt.

in each payment-ratio group, and the rest shows the percentage of total 1983 and 1986 payments each group accounted for. Thus the 16.3 percent figure in the third row of the fifth column is the share of total 1986 payments made by the 1986 high-ratio group, a figure significantly higher than the 6.8 percent share of total 1983 payments made by the 1983 high-ratio group (next-to-last row of the first column). Shares of payments, like the ratios of payments to income, are highly variable. The 1986 high-ratio group made only 2.9 percent of total payments in 1983. Similarly, by 1986 the share of payments by the 1983 high-ratio group had fallen to only 2.6 percent. Families that were in the middle-ratio groups in both 1983 and 1986 made more than two-thirds of the total payments.

CREDIT RISK

The potential for credit risk suggested by the overall rise in the ratio of total payments on consumer installment debt to income and by the increase in the share of total payments by the group with high ratios of payments to income is a cause for some concern. Survey evidence may temper this concern.

In both the 1983 and the 1986 surveys, about four-fifths of families had assets of greater value than their consumer debts outstanding (table 14). In 1986, 83.5 percent of consumer installment debt outstanding, evaluated family by family, was matched by financial assets or home equity (the fifth row of the fifth column). Given that

lenders of second mortgages generally will lend only 80 percent of home equity for consumer debts, 75 percent of families still had financial assets or usable home equity at least as great as their consumer debts, and 77 percent of debt was covered in this way (these data are not shown in the table).

Families with the smallest ratio of payments to income also had the highest ratio of assets to debt, but even families with high ratios of payments to income had assets to offset 71 percent of their debts. In 1986, more than half the group with the highest debt-payment burden had financial assets or home equity at least as large as their consumer debts.

Although home equity constitutes most of this implicit debt coverage, financial assets offered significant coverage (see the first two columns of table 14). That the majority of families with consumer installment debts have financial assets greater than the value of their debts suggests that borrowing decisions are part of more complex portfolio decisions. Further work with the 1983 and 1986 surveys will explore these connections.

CONCLUSIONS

While the data from the 1983 and 1986 surveys are not sufficient to explain fully the great increase in consumer installment debt between these years, they do suggest that such debt has more complex variations over time than might be implied by either aggregate data or simple cross-section surveys. In spite of the recent sharp rise

in aggregate consumer installment debt, the surveys offer evidence of a smaller rise in the associated debt-service payments. While cross-section surveys give an appearance of stability in the patterns of debt holdings and debt burdens, observation of the same families over the 1983–86 period indicates that the debt positions of families move considerably over time.

The survey evidence on credit risk suggests that most consumer debt is, at least implicitly, covered by family assets, even for those families with the highest ratios of debt payments to income. Moreover, according to the data, fam-

ilies with high debt-payment burdens in 1983 were able to improve their positions through growth in income by 1986. Whether those in the 1986 high-ratio group will be able to improve their positions may depend on overall economic conditions. During 1983–86, the economy's expansion, the decrease in unemployment, and the increase in disposable income probably aided the lightening of the burden of families that had high ratios of payments to income in 1983. If economic growth moderates, families in the current high-ratio group may find reducing their debt-payment burdens more difficult.

APPENDIX: PREPARATION OF SURVEY DATA

This appendix briefly discusses the collection and the preparation of the data used in the text. Issues include the design and the content of the surveys, the editing procedures employed to deal with problems of missing data, the construction of sampling weights used to calculate the population estimates, and definitions for debt variables.

Survey Design

Most of the survey data in this article were drawn from the 1983 and 1986 Surveys of Consumer Finances conducted by the Survey Research Center of the University of Michigan under the direction of Richard T. Curtin.¹ The sample for the 1983 survey consists of an area probability sample (3,665 households in the final sample) and a supplementary sample of high-income respondents drawn from tax files (438 cases in the final sample). The area probability

sample was selected using a method known as multistage area probability sampling, which draws a representative sample of housing units or households in the contiguous 48 states of the United States exclusive of individuals on military bases and in institutions.² The supplemental high-income sample of the 1983 survey was intended to increase the representation of wealthy families in the survey. The high-income sample was drawn from a large sample of 1980 tax returns using multifaceted sampling criteria. The sampling procedure was designed to preserve the privacy of tax information and to protect the identity of survey respondents. The results reported in this article are based on the full 1983 sample, which includes the supplemental high-income observations.³

The unit of observation was the family. A "family" consists of all individuals living togeth-

1. Data were used also from the 1970 and 1977 Surveys of Consumer Finances; see George Katona, Louis Mandell, and Jay Schmeideskamp, *1970 Survey of Consumer Finances* (Institute for Social Research, 1971), and Thomas A. Durkin and Gregory E. Elliehausen, *1977 Consumer Credit Survey* (Board of Governors of the Federal Reserve System, 1978). Data from the 1983 and 1986 Surveys of Consumer Finances are available from the National Technical Information Services, 5285 Port Royal Road, Springfield, Virginia 22161.

2. See Leslie Kish, *Survey Sampling* (Wiley, 1965).

3. The distribution of consumer debt in the 1983 area probability sample differs only slightly from that in the full 1983 sample, which includes the high-income observations. Hence, consumer credit statistics from the full 1983 sample can be compared with statistics from the cross-section samples in the 1970 and 1977 surveys. For variables that have highly skewed distributions, however, the full 1983 sample is not comparable to 1970 and 1977 cross-section samples. See Robert B. Avery, Gregory E. Elliehausen, and Arthur B. Kennickell, "Measuring Wealth with Survey Data: An Evaluation of the 1983 Survey of Consumer Finances," *Research Papers in Banking and Financial Economics* 99 (Board of Governors of the Federal Reserve System, Division of Research and Statistics, Financial Studies Section, 1987).

er in the same household who are related by blood, marriage (including partnership), or adoption. A "family" may also be a single individual. In a few cases, when two or more families lived in a household, only the primary or economically dominant family was interviewed. The head of the family or a financially knowledgeable spouse was selected as a respondent.

Respondents were interviewed in person for 75 minutes. The interview solicited a detailed inventory of the families' assets and liabilities, including all deposit accounts, stocks, bonds, business and property holdings, homes, insurance, automobiles, pensions, and all debts and mortgages. Besides the standard demographic data, income information, and work history, information was obtained on the respondent's use and understanding of credit and other financial services. Interviewing took place between February and July of 1983.

The 1986 survey reinterviewed respondents to the 1983 survey. If the respondent had been divorced or separated since the 1983 interview, both the original respondent and the former spouse were included in the 1986 sample. Other members who left the family to form new households, however, were not included. As in the earlier survey, the unit of observation was the family.

The questionnaire for the 1986 survey covered the marital history of the respondent and the spouse, the disposition of wealth in divorce or upon death of a spouse, changes in employment of the respondent and the spouse, purchases and sales of houses since 1983, refinancings of mortgages, purchases of automobiles, expenditures for consumer durables, current debt payments and asset holdings, attitudes about saving, expenditures for children's education, charitable activities, unusual expenses and income, and total family income in the 1983-86 period.

The 2,822 interviews were conducted by telephone from June to September 1986; they lasted an average of 27 minutes. Table A.1 summarizes the sample composition for the 1986 survey.

The samples used for this article include only families with heads 25 years of age or older. The reason for using this subsample is that the design for the 1986 survey undersampled new households in the under-25 age group and hence was

A.1. Composition of the sample of the 1986 Survey of Consumer Finances

Family characteristic	Percent of 1983 sample	Percent of 1983 group also in 1986 sample
<i>Age (years) and marital status in 1983</i>		
24 or less		
Married	3.3	64.7
Unmarried male	2.1	56.0
Unmarried female	2.6	46.7
25-34		
Married	13.5	65.6
Unmarried male	4.1	59.2
Unmarried female	5.0	58.0
35-44		
Married	13.6	70.7
Unmarried male	1.8	71.1
Unmarried female	4.1	62.1
45-54		
Married	10.5	70.9
Unmarried male	1.7	50.6
Unmarried female	3.2	66.5
55-64		
Married	9.8	72.1
Unmarried male	1.5	48.9
Unmarried female	3.7	70.6
65 or more		
Married	9.9	60.6
Unmarried male	1.8	41.4
Unmarried female	7.7	55.1
<i>1983 income (dollars)</i>		
10,000 or less	24.0	46.5
10,000-19,999	26.8	62.4
20,000-34,999	26.1	70.8
35,000-49,999	12.9	75.8
50,000 or more	10.2	77.6
<i>Race or national origin of head</i>		
Caucasian	82.6	67.5
Nonwhite or Hispanic	17.4	47.6
<i>1983 ratio of payments to income</i>		
No consumer debt	43.5	57.6
1-9 percent	36.9	69.5
10-29 percent	17.3	68.9
30 percent or more	2.4	62.1
All families	100.0	64.0

deemed inadequate for representing change in that group. Statistics computed from the 1983 survey, which should be representative of all age groups, suggest that the exclusion of families in the under-25 group will reduce measured outstanding debt 5.5 percent and installment debt payments 6.1 percent.

Errors of Sampling, Reporting, and Nonresponse

The results of this survey, and the estimates of population characteristics derived from it, are subject to errors based on the degree to which

A.2. Approximate 95 percent sampling errors of survey estimates of percentages in the 1983 and 1986 surveys and of changes in percentages between the two surveys¹

Survey results	Full 1983 sample	Full 1986 sample	Changes between 1983 and 1986 surveys ²
50	1.5	1.8	2.4
30	1.4	1.6	2.2
20	1.2	1.4	1.9
10	.9	1.1	1.4
5	.7	.8	1.0
1	.3	.4	.5

1. 1.96 standard errors.

2. For estimates based on the full samples of each survey.

the sample differs from the general population, to errors arising during the interview, and to errors derived from incomplete responses.

First, all estimates based on the survey data are subject to sampling error, which is a measure of the random deviation of the survey findings resulting from the selection of a particular sample. Table A.2 contains the approximate sampling errors associated with the percentage estimates made with various sample sizes, assuming a confidence interval of 95 percent.⁴ The odds are 95 in 100 that the estimated percentages reported lie within a range—the confidence interval—equal to the reported percentages plus or minus the sampling error. For example, for estimates based on the entire 1986 survey sample, the 95 percent confidence interval for an estimated value of 20 percent is approximately 18.6 to 21.4 percent.

Second, because undoubtedly some respondents misunderstood the questions, lacked interest in the survey, or falsified responses, the survey estimates are subject to reporting errors. Such errors likely arose also because interviewers misinterpreted responses or asked questions in an inconsistent manner. For these surveys, training interviewers carefully and motivating

4. For the approximate sampling errors associated with other sample sizes and reported percentages from a survey, assuming a confidence interval of 95 percent, see Katona, Mandell, and Schmeideskamp, *1970 Survey*, table 14-2, p. 251. This source also provides a table of approximate sampling errors for differences in percentages.

respondents to report accurately helped to minimize response errors. The data were also carefully checked for inconsistencies in coding and editing to eliminate such errors to the extent feasible.

Third, because some families selected for participation in the survey could not be interviewed, the survey estimates are subject to nonresponse errors. If nonresponse arose randomly in the sample, it should have caused no bias in estimates of population statistics. Making such a judgment is difficult in large multipurpose surveys such as the Survey of Consumer Finances. One can, however, partially correct for nonresponse errors by observing how the sample interviewed differs from the population in the distribution of certain characteristics as a result of both sampling and nonresponse errors. To the degree that these deviations result from systematic tendencies in the population, the sampling weights used in all calculations in this article compensate for biases in sampling and nonresponse.

Finally, observations with missing values for some of the variables are another source of error in the survey estimates, similar to that arising from failure to secure an interview. Statistical methods were used to estimate missing values based on other information reported by respondents. All missing values were imputed in the data used to prepare this article.⁵

Sampling Weights

The final samples in the 1983 and 1986 Surveys of Consumer Finances differ from a purely random sample of U.S. households in two principal ways. First, the surveys were designed to sample wealthy households at a higher rate than the rest of the population. Second, sampling errors in the 1983 sample and nonresponse during the first or second interview could have caused the final samples to differ from the population. One means

5. See Graham Kalton, *Compensating for Missing Survey Data* (Institute for Social Research, 1983), for a discussion of the benefits of imputation. See Avery, Elliehausen, and Kennickell, "Measuring Wealth," for a discussion of missing values and imputation in the 1983 Survey of Consumer Finances.

of making formal correction for deviations of the final sample from the population was to use sampling weights in the calculation of the statistics.⁶

The weight for the 1983 survey is a revised version of the weight used in the article on the 1983 Survey of Consumer Finances in the March 1986 issue of the *FEDERAL RESERVE BULLETIN*.⁷ The revised weight was designed to provide a better mesh of the area probability and high-income samples. Weights were adjusted so that the weighted number of high-income families was the same as an estimate obtained from the Internal Revenue Service tax file model for 1982.⁸

Weights for the 1986 survey were designed to compensate for the possibility that respondents to a 1983 survey who could be reached three years later might not be fully representative of the 1986 population. This situation might occur both because attrition is not random, as suggested by the large differences in response rates for the demographic groups in table A.1, and because the distribution of families changes as a result of aging, marriage, divorce, and immigration. The initial 1986 weight was computed by adjusting the 1983 weight for sample attrition (measured separately for a number of sample subgroups). This weight was further adjusted to bring estimated population totals for various groups defined by age and marital status into line with estimates obtained from the March 1986 Current Population Survey.⁹

6. See D.G. Horwitz and D.J. Thompson, "A Generalization of Sampling without Replacement from a Finite Universe," *Journal of the American Statistical Association*, vol. 48 (December 1952), pp. 396-404.

7. Robert B. Avery and Gregory E. Elliehausen, "Financial Characteristics of High-Income Families," *FEDERAL RESERVE BULLETIN*, vol. 72 (March 1986), pp. 163-77.

8. For technical details, see Robert B. Avery, Gregory E. Elliehausen, and Arthur B. Kennickell, "Reconciling Flow-of-Funds and Survey-Based Measures of Household Wealth" (paper presented at the annual meeting of the American Statistical Association, San Francisco, August 18, 1987).

9. Not all bias in the 1986 sample can be fully corrected by weights. For example, some of the respondents to the 1983 survey—such as divorced people who lived with their parents—would not have been selected as respondents in a 1986 cross-section survey because they were no longer family heads or spouses of family heads. Thus the weighted 1986 sample slightly distorts homeownership and other age-related variables. Most of the other distortions are believed to be minor.

Preparation of Debt Variables

Respondents to the 1983 survey were asked to report the purpose, the amount borrowed, the origination date, the interest rate, the size and frequency of payment, and the scheduled number of payments for each consumer loan and mortgage. These data were sufficient to compute the family's debt outstanding at the time of the interview, as well as its scheduled payments. Also, respondents were asked to report financed balances on all lines of credit; on loans without scheduled payments; and on credit cards after they had made their previous payments.

In 1986, respondents were asked similar questions about their mortgages and financed balances on credit cards; but, because of time constraints, they were asked to report only the size and frequency of payments for regular-payment consumer loans. Therefore, the precise amount outstanding could be computed only for mortgages, credit cards, and loans without regular payments. Total outstanding 1986 balances on installment loans were estimated for each family using ratios based on typical terms prevailing during 1983-86 and the reported debt payments. These are rough estimates, however, and were used only to estimate the collateralization of consumer debt by home equity and financial assets reported in text tables 6 and 14.

The figures for monthly payments reported in this article include only scheduled payments on certain loans and 5 percent of the reported unpaid credit card balances, which is the typical minimum monthly payment required for a credit card account with no new charges. All mortgage, property, and business loans were excluded. Loans without regularly scheduled payments and payments on open-ended lines of credit also were excluded. The payment variable is an estimate of the monthly payment obligation and may not reflect the actual payments made by families.

Loan payments were constructed in this manner to correspond as closely as possible to payments that would be made on aggregate consumer installment debt. Nevertheless, loan estimates from the survey are still likely to differ from aggregate totals because of unavoidable accounting differences. For example, aggregate consumer debt totals cover all credit card debt, includ-

ing current charges and financed balances. Aggregate debt totals reported by many finance companies include prepaid interest payments and thus overstate the amount outstanding. Personal borrowing for business purposes is included in the aggregate consumer credit statistics, but it is excluded from survey estimates. Reconciliation of these factors can align survey and

aggregate estimates more closely than may appear possible at first glance.¹⁰ Caution should nevertheless be used in drawing exact comparisons.

10. Avery, Elliehausen, and Kennickell, "Reconciling Flow-of-Funds and Survey-Based Measures."