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**Household Financial Behavior:
Implications For Consumer Spending**

HOUSEHOLD FINANCIAL BEHAVIOR: IMPLICATIONS FOR CONSUMER SPENDING

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Abstract

Consumer credit expanded rapidly during 1977-78, generating widespread concern that households were building a debt repayment obligation heavy enough to trigger a recessionary decline in consumption expenditure. Prospects of sharp increases in loan delinquencies and losses on the enlarged consumer debt carried worrisome implications both for consumer spending and finance industry profitability.

This working paper is divided into two sections: the first investigates, from the evidence of aggregate economic data, the extent to which households may have become overextended between 1977 and 1979; the second section uses household survey data to examine borrowing behavior from a micro economic perspective, and particularly to explore how the major expenditures of individual households are affected by large preexisting debt obligations.

Based upon U.S. aggregate data on installment credit growth rates, debt payment obligations relative to income, and trends in household net worth, "nondiscretionary" spending, and loan delinquency rates, it is suggested that the financial condition of households had not deviated greatly from earlier experience during periods of economic expansion.

The household survey data (from surveys conducted in 1970, 1977 and 1978) provide a variety of insights into household financial developments. It was found, for instance, that between 1970 and 1977 the proportion of households in debt had increased most sharply for the lowest and highest income segments of those surveyed; that the lowest-income debtors experienced the largest increase in annual debt repayments relative to income, but that the highest-income group accounted for the largest share by far of the increase in outstanding debt. It was also concluded that population shifts between 1970 and 1977 have had almost no perceptible influence on the proportion of all households having some installment debt or in the average amount of debt outstanding per household. Finally, analysis of spending on major durable goods revealed little evidence that initial levels of debt payments relative to income retard such spending.

HOUSEHOLD BORROWING BEHAVIOR: IMPLICATIONS FOR CONSUMER SPENDING

While consumer credit was growing rapidly from early 1977 well into 1979, much attention was focused upon the debt burden of households and its implications for the future course of consumer spending. Aggregate debt burden measures--such as debt outstanding or the volume of repayments relative to disposable personal income--were rising steadily. Concern arose that excessive debt expansion could lead to a marked weakening of consumption, as the burden of heavy debt repayments exerted a larger and larger claim upon current income.

Some of the evidence on borrowing behavior available from economic aggregates is examined in Part I, but proper interpretation of these broad measures may depend crucially upon the behavior of various factors, not readily measurable, which underly their movement. Part II of this paper provides a microeconomic perspective on some of the issues surrounding aggregate credit developments, through exploration of household survey data on debt use. These microeconomic data were collected by the University of Michigan's Survey

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Research Center in its 1970 Survey of Consumer Finances and in two more recent surveys: an August 1977 canvass of 2500 households and an August 1978 reinterview of about half of the original 1977 panel.¹

I. AGGREGATE ECONOMIC INDICATORS

A. Growth in Credit

Part of the concern that arose regarding the rapid growth of consumer credit may reflect some degree of "money illusion"--an easy trap to fall into in the present inflationary environment. Consumer credit expanded by \$35 billion in 1977 and by \$45 billion in 1978, an amount double the amount of expansion in any year before 1977 (see Exhibit 1). Nevertheless, when this large volume of credit is converted to an annualized percentage rate of growth, it becomes apparent that the rate of expansion in 1977-78 was not greatly out of line with previous periods of growth. If installment debt outstanding is deflated by a general price index and the growth rate recomputed, the 1977-78 credit expansion appears almost indistinguishable from previous expansions (Exhibit 2).

B. Debt Relative to Income

To measure the degree of household debt burden, observers have frequently focused upon ratios of aggregate debt relative to disposable income--either debt repayment, debt outstanding or occasionally the net expansion in consumer debt. The last measure, however, is a better guide to current borrowing activity than to cumulative debt burden.² More often cited as an index of debt burden is the ratio of debt repayments to disposable income. This ratio is presented in Exhibits 3 (table) and 4 (chart), for consumer installment credit only and for consumer plus mortgage debt. These ratios have reached new high ground, but the small margin seems a rather slim basis on which to conclude that consumers have seriously over borrowed. Such a conclusion would be particularly tenuous in light of various difficulties in interpreting aggregate data, some of which are outlined below.

1. The aggregate data provide no indication of the underlying distribution of debt. If debt rises relative to income, is it because a greater proportion of people are borrowing? Or, might a constant or declining proportion be borrowing more heavily? Who is responsible for most of the increase--poor people with limited ability to service debt, or relatively well-off people who simply find it advantageous to borrow? Some of these questions are explored in Part II.

2. The content of the data on installment debt has changed over time. In particular, the inclusion of the fast growing revolving credit segment has complicated interpretation of installment debt repayments. Many individuals use credit cards simply as a convenient substitute for cash or check transactions, rather than as a means to "borrow." In the 1977 Survey, about half the cardholding respondents claimed to almost always pay revolving accounts in full within one billing period. Yet, with no means to exclude such convenience credit, the Federal Reserve includes it in its published consumer credit statistics, thereby imparting an upward bias to measures of installment debt burden.

¹ The August 1977 survey was cosponsored by the Federal Reserve Board, the Comptroller of the Currency and the Federal Deposit Insurance Corporation. Basic results of the survey are presented in the Federal Reserve's 1977 Consumer Credit Survey, authored by Thomas A. Durkin and Gregory . C. Elliehausen. Part of the 1977 panel was reinterviewed in August 1978 in connection with the Survey Research Center's regular quarterly survey on consumer attitudes.

² One rule of thumb was that whenever the annual rate of credit expansion went above 2 percent of disposable income, a curtailment of spending was imminent. During the upswing following the 1973-75 recession, this particular ratio first crossed 2 percent in the fourth quarter of 1976, yet no significant slowdown in consumer spending emerged for at least the next eight quarters.

3. Shifts in maturity structure affect the levels of debt repayments and outstandings. In the short-run, a lengthening of maturities in the late 1970's tended to hold down repayments and raise the level of outstandings. For the long-run, a stretch out of the repayment schedule tends to make the repayments series more stable, and less capable of dropping to "safer" levels during periods of economic slowdown.³

C. Household Balance Sheet

Beyond the various aggregation and measurement problems, it may be argued that the debt-to-income ratios represent a seriously incomplete picture of household capacity to handle debt and to maintain a high level of expenditure. Balance sheet considerations may provide a more fundamental perspective from which to view the impact of debt on household behavior. It is certainly true that income constitutes only one source of funds for servicing debt or for supporting outlays on goods and services in the face of high debt payments. Assets should also be taken into account. Exhibit 5 graphs movements for the last several years in financial assets and liabilities of the household sector taken from the Federal Reserve's Flow-of-Funds accounts. Financial net worth is shown in the lower panel. Clearly, current dollar asset growth has kept pace with the rapid growth in household debt during recent years, and financial net worth has climbed fairly sharply.

One criticism of Exhibit 5 is that the current-dollar denominations distort the true financial status of households--constant dollar financial net worth would likely bear more directly upon consumer behavior. It would also seem appropriate to adjust for population growth in tracking wealth changes over time. Reflecting these considerations, the top panel of Exhibit 6 shows financial net worth per capita in constant dollars. In this light, the household sector's balance sheet position by 1979 appeared less sanguine than in the context of current dollar net worth, at least on the surface. In real terms, per capita financial net worth in mid-1979 was considerably below levels reached in 1968 and 1972. Although real net worth was above the lows during the 1974-75 recession, the gain had been quite modest for a period of economic expansion, and even a slight decline was observable during the most recently plotted 8 to 10 quarters.

While one might interpret the sluggishness of real financial net worth as a condition of impaired liquidity that was reducing the capacity to spend, this development might better reflect a conscious and rational shift of households from financial towards tangible assets during a time of rapid inflation. In part because of regulatory restraints, yields on interest-bearing assets most commonly owned by households may not have fully reflected expected inflation rates, and the differing tax treatment of interest income and capital gains creates additional incentives to invest in tangible assets in an inflationary environment. When tangible assets are included in a calculation of household net worth, as in the bottom panel of Exhibit 6, the sector's balance sheet appears much stronger.⁴ The principal ingredient in the growth of tangible assets, of course, has been the sharply inflated values of homes in recent years. But it is reasonable to believe that many households take into consideration their home equity in planning expenditures, and in fact, liquefaction of this equity has been an important source of funds to the household sector.⁴

One is thus left with several measures of household asset positions, each appearing to tell a somewhat different story. Which is the most relevant may depend upon the nuance of the question asked. On the one hand, if one were concerned with the independent effect of the balance sheet position on consumer spending, there may have been little reason to fear a retrenchment due to over-indebtedness. Net worth including tangible assets

³ By stretching out the period of repayment, repayments in a particular month per dollar loaned are smaller. With smaller repayments, the net flow of credit becomes larger relative to any given volume of extensions. The larger is the net flow relative to the gross extensions flow, the smaller will be the impact that a given percentage change in extensions has on percentage change in net flow. Hence the growth rate of outstandings becomes less responsive to changes in extensions as maturities lengthen.

⁴ For a discussion of the extent of this activity see, David F. Seiders, Working Paper No. 25: Junior Mortgage Financing and Other Borrowing Against Inflated Housing Equity, Credit Research Center, Purdue University, 1978.

had been well maintained in real terms in the 1977-79 period. Household liquidity may have fallen, but to the extent that diminished liquidity represented a preferred position in an inflationary environment, little slowdown of spending need have been implied. On the other hand, the less liquid character of household finances might have implied greater vulnerability to any economic slowdown initiated through other causes. That is to say, while it may not have seemed likely that consumers would lead the way into recession because of their debt load, they might be thought more vulnerable than usual to any recession that might develop.

Generally speaking, few empirical studies of the impact of debt burden on consumer spending have been done.⁵ One problem, perhaps, is that, despite the analytical superiority many economists find in the portfolio adjustment approach to the question, aggregate balance sheet data are afflicted with many of the same problems as the debt-to-income measures discussed above, such as suppression of all information on the distribution of assets and debts among households.

D. Discretionary Spending

There are several other aggregate indicators of personal finances which can be used to evaluate the probable course of consumer spending. Among these are measures of nondiscretionary spending relative to income, and nondiscretionary spending plus debt repayments relative to income, presented in Exhibit 7. From a lengthy historical perspective, it is clear that consumers have gradually improved their living standards by being able to spend less on "essentials," leaving more for discretionary spending or saving, as the top panel shows. In the more recent period, however, there has been little further net improvement in the consumer's discretionary income situation. Inclusion of debt repayments as a nondiscretionary outlay has pushed the ratio upward since 1975; nevertheless, debt payments do not seem to have made the sort of inroads into discretionary uses of income that would be expected of a population that was too heavily burdened by debt.

E. Delinquency Experience

Another relevant type of aggregate data includes direct measures of payment difficulties, such as mortgage and consumer loan delinquency rates, some of which are shown in Exhibit 8. On balance, these figures provide little indication of a worsening debt burden problem during the 1977-78 period of rapid debt growth. Mortgage delinquencies at savings and loan associations, in fact, were apparently at a 5-year low as recently as the fourth quarter of 1979. Only the series on bank-card delinquencies rose significantly within the 1977-78 period. Consumer loan delinquencies increased during the second half of 1979, but remained measurably below earlier highs.

⁵ Perhaps the most rigorous econometric study of the role of debt in expenditure decisions has been that of Frederic Mishkin in a series of articles appearing in various journals around 1975-77. Mishkin's main premise was that because consumers are averse to being illiquid, debt buildup and concentration of assets in durable goods tends to discourage further spending and encourage saving. In his basic model, Mishkin included the outstanding level of consumer installment debt as an independent variable in equations to explain durable goods expenditure and total consumer spending. Estimating these equations in first difference form, Mishkin found that the debt variable did indeed take on the expected negative sign with statistical significance. One interesting finding was that the debt variable begins to stimulate spending fairly early in a recession. In the 1973-75 recession the rate of consumer credit growth slowed quickly and began to spur consumption by the second quarter of 1974. See, for example, Frederic S. Mishkin, "What Depressed the Consumer? The Household Balance Sheet and the 1973-75 Recession Brookings Papers on Economic Activity, 1:1977, pp. 123-164.

II. HOUSEHOLD SURVEY DATA

This section presents some findings of research on debt burden using financial data for individual households collected in the three surveys: University of Michigan's 1970 Survey of Consumer Finances, the Federal Reserve sponsored 1977 Consumer Credit Survey, and a reinterview of part of the 1977 panel.

A. Major Questions

Several questions regarding household debt use, which are principally or exclusively answerable with micro data, are dealt with here. In broad terms, the focus of these questions is whether the strong expansion of consumer credit in 1977-79, and the associated rise of the aggregate debt-to-income ratios to new highs, warranted serious concern or could be viewed with equanimity. Specifically:

1. Do the aggregate borrowing figures mask important shifts in the distribution of debt among households? For instance, did debt become more--or less--concentrated in recent years? Was a greater or lesser proportion of debt owed by lower-income families than before?

2. Were there changes in the makeup of the population that provided a "benign" explanation for the increasing aggregate debt ratios? For instance, might a greater proportion of households in the family formation stage of the life cycle have accounted for higher overall debt use, without implying abuse of credit?

3. Given the concern that higher aggregate debt burden might have lead to a curtailment of consumer spending, is there any evidence from the micro data that high debt relative to income tends to discourage consumption?

B. Distribution of Debt

In both 1970 and 1977, the proportion of households in debt was a generally increasing function of gross family income, while the ratios of debt outstanding or repaid per year relative to income were inversely related to income levels.

For consumer installment debt, the overall proportion of surveyed households in debt rose slightly between 1970 and 1977. The greatest increases occurred within, the highest and lowest income quintiles. The largest gains in the average ratios of debt to income occurred in the low-income category. Nevertheless, as Exhibit 11 shows, the lowest income group experienced only a slight rise in its still small share of outstanding installment debt (4.4 percent in 1977 from 3.8 percent in 1970). The highest income quintile accounted for a sharply higher share of outstanding installment debt in 1977 (37 percent vs. 25 percent in the 1970 survey). Each middle-income group accounted for smaller shares in 1977 than in 1970.

Findings for mortgage debt roughly parallel those for installment debt. However, the overall proportion of households in debt advanced more strongly for mortgage than for installment debt, and the increases were spread more evenly among income groups.

1. Installment Debt Use by Income Class. Exhibit 9 presents data on the proportion of families with consumer installment debt (excluding credit card debt) for each of five income groups, as well as average debt-to-income ratios for the debtor subgroup within each income class. To facilitate comparison between 1970 and 1977, respondents for each year were grouped into approximate income quintiles. In this way, the top

one-fifth of the income distribution for the two years could be compared, regardless of what specific dollar boundaries would be dictated for the income classes.⁶

a. Proportion in Debt. The proportion of low-income families with installment debt rose considerably between the two surveys--from 23 percent to almost 31 percent--although the in-debt proportion was still considerably below that for any other income class. The proportions in debt increased only moderately (or fell slightly) from the 1970 figure in the next three higher income groups, then rose sharply--from 47 to 58 percent--for the highest income quintile. In the 1977 survey, the proportion was greatest (66 percent) in the next-to-highest income group, but the disparity from other income groups had narrowed considerably from the 1970 distribution.

Reasons for the larger gains in debt use among the highest and lowest income households are subject to debate. For high-income groups, supply constraint is presumably a negligible factor in determining debt use. Such demand-related factors as inflation, which encourages advance buying of durable goods and permits repayment in "cheaper dollars," could stimulate higher income families to use credit more intensively. The relative stability of consumer finance rates in the face of rapid inflation reduces the real cost of credit, which encourages borrowing. More favorable tax treatment of interest costs as inflation promotes families into higher nominal income brackets adds to the inducement to borrow.

For the lower income groups, some relaxation of supply constraint may have taken place between 1970 and 1977, as lenders have competed more vigorously for consumer business. Some of the difference (for both income groups) might also be attributed to the fact that the 1970 Survey occurred during a recession while the 1977 Survey came in the midst of a strong economic expansion. Possible changes in demographic characteristics within income groups may also have affected the proportions of respondents in debt. Some of these factors are examined for the low-income group in a later section of this paper.

b. Debt/Income Ratios. Among families with some installment debt, low-income debtors have experienced the greatest increase from 1970 in debt outstanding or repaid relative to their gross family income.⁷ In 1977, outstanding installment debt for the lowest income quintile equaled 30 percent of gross family income on average, up from 22 percent in 1970. Other income groups experienced smaller increases from 1970, a result perhaps partly explained by their more ready access to bank and other credit card accounts, as illustrated in Exhibit 10. Credit card debt, as mentioned, is not included in the debt totals underlying the measures in Exhibit 9.

The ratio of scheduled repayments to family income rose significantly for the lowest income group between 1970 and 1977, but was little changed for other income groups, and even declined for the highest income class. The generally smaller increases in the repayments ratio compared with the outstandings ratio, particularly for the higher income groups, no doubt reflect the lengthening of maturities on consumer loans in recent years. Longer maturities may be most widely available for persons in higher income brackets likely to be considered good credit risks.

⁶ Exact quintiles could not be created because only ranges of income--not specific dollar figures--were available from the 1977 Survey. The class limits were chosen to approach quintiles as closely as possible for 1977; because precise dollar-income estimates were available for 1970, groupings for that year could be established which would be precisely the same proportion of the income distribution as for the corresponding 1977 respondents. As an example, the five lowest income classes in the 1977 survey contained 20.6 percent of the respondents, forming an income "quintile" of \$0-5,999. For 1970, exactly 20.6 percent of the respondents could be grouped together, with the upper class boundary equal to the highest income level within the group. This boundary happened to be \$4,000.

⁷ Income here is gross family income rather than disposable personal income generally used in similar ratios calculated from economic aggregates. No adjustments were made for tax liabilities.

Exhibit 11 shows the proportion of total installment debt covered in the survey attributable to each income group. The columns on the far right adjust for the slightly unequal distribution of respondents into the five approximated quintiles. The low-income group accounted for a relatively small share of total debt, despite the higher average outstanding-debt-to income ratio for low-income families with debt observed in Exhibit 9. The small share of total debt attributable to low-income families reflected their comparatively lower level of consumption expenditure and lower average propensity to be in debt at all. Compared with 1970, the highest-income group experienced the greatest expansion in share of total installment debt, rising 12 percentage points to a 37 percent share. The share for low-income families also increased, but remained at less than 5 percent of the total.

2. Mortgage Debt Use by Income Class. Exhibit 12 presents data for home mortgage debt analogous to the consumer installment debt figures of Exhibit 9. As generally true with installment debt, the proportion of families with mortgage debt was higher for higher income classes, while the ratios of debt to income were lower the higher the income class. All income groups showed an increase in the proportion with mortgage debt between 1970 and 1977, but unlike the installment debt situation, the increase for the lower income group was not out of line with increases in other groups. However, the low-income group did show substantial gains in the average ratios of outstanding mortgage debt and mortgage payments relative to family income. Increases in debt relative to income were much smaller (and sometimes negative) for each of the other income classes. On average, in the 1977 survey, low income families had total mortgage obligations of about 3-1/2 times the size of their annual incomes, while scheduled monthly payments of interest and principal took 49 percent of their income each month, up from 31 percent in, 1970.

It appears from Exhibits 9 and 12 that the proportion of mortgage debtors in the population has grown faster than the proportion of installment debtors between 1970 and 1977, whether all survey respondents are considered or just those for whom income was known. For the full sample, the proportion of mortgage debtors rose from 36 to 40 percent, while the proportion of 12 installment borrowers was virtually unchanged, rising only from 49 to 50 percent. For the sub sample with known incomes, the increase in mortgage borrowers was from 36 to 42 percent, and for installment borrowers, 49 to 53 percent.

3. Total Mortgage Plus Installment Debt by Income Class. Exhibit 13 presents statistics of debt use for mortgage and installment debt combined. This table necessarily portrays patterns similar to those in Exhibits 9 and 12. Approximately two-thirds of all families in the 1977 Survey had at least one of the two broad types of debt under consideration, a moderately higher percentage than in 1970. It might be noted that the average debt-to-income ratios for the low--income group were smaller for total debt than for mortgage debt alone. This, of course, reflects inclusion in the total debt figure of many families which had installment debt but no mortgage.

C. Demographic Influences on Household Borrowing.

Analysts have pointed to several demographic developments as likely contributors to the strength of consumer credit growth. Some of these influences would generally be regarded as benign, and serve to lessen concern over the possible extent of "over borrowing." For instance, a shift in population mix toward a greater proportion of persons in the "family formation" years might imply a normal and defensible increase in aggregate debt relative to aggregate income. However, as discussed below, such a change in population characteristics seems to have had little appreciable effect on aggregate debt use.

1. Population Shifts. The impact of changing age structure of the population on household indebtedness is examined in Exhibit 14, using Census Bureau population statistics for 1970 and 1977, and data on household borrowing by age group from the 1977 Survey. According to the table, the changes in age structure have

probably had little net effect on the proportion of households in debt or on the mean amount of debt outstanding. In 1977, there was a greater proportion of families than in 1970 headed by a person aged 25 to 34 years old, which was also the age group with the highest propensity to be in debt (67.5 percent of such families). Families headed by persons under 25 also increased between 1970 and 1977, according to Census Bureau statistics. However, increases in these two age groups were partially offset by declines in the proportion of families headed by persons aged 35 to 54, and these families were also relatively heavy debt users. Moreover, they borrowed larger average amounts than the youngest family group, as indicated in column 5, which shows the mean debt outstanding for all families (including non-debtors) in each age category. On balance, the age shifts have simply not been striking enough, nor the differences in debt propensities large enough among the crucial age groups, to have much impact on aggregate debt measures.

The last 4 columns of Exhibit 14 show the derivation of comparative in-debt proportions and average debt amount for all families, when such measures are held constant for each age group (at 1977 values) and weighted alternatively by the 1970 and 1977 population distributions. For the proportion in debt, the direction of impact is positive, but quite small, as shown on the "all age group" line under columns 6 and 7. Given 1977 propensities to be in debt, the 1970 overall in-debt proportion would have been 49.5 percent and the 1977 proportion 49.7 percent. When amounts of debt are considered in columns 8 and 9, the age shift implies a slight drop in aggregate indebtedness, from \$1258 to \$1246 per family, reflecting the generally smaller size of debt balances for the youngest families compared to the middle-aged groups.

2. Debt Use Within the Low-Income Group. Since the in-debt proportion and debt-to-income ratios had risen sharply for low-income households between 1970 and 1977, this group was singled out for more intensive study of demographic influences on debt use. Objectives were to determine whether debt increases might be concentrated in specific subgroups of low-income families, and whether changes in demographic characteristic of the low-income group might be associated with increasing debt use. Preliminary results suggest that differing composition by sex or marital status of family head have had little effect on borrowing patterns for the group. Education level also appears to have had little bearing on low-income family borrowing, while number of dependents appears to have contributed marginally to overall higher debt use. Households with minor dependents were somewhat more likely to be in debt than other households, and the proportion of low-income households with minor dependents was higher in 1977 than in 1970. Also, while low-income households were more apt to be in debt in 1977, regardless of whether they had minor dependents or not, the debt-to-income ratios increased markedly only for those with dependents.

One noteworthy difference between 1970 and 1977 was a sharp increase in the number of low-income households surveyed having substantial assets. An important source of the larger asset holdings was home values. Financial asset distributions were not greatly different between the two years, although there was a significantly higher proportion of low-income households with non-zero financial assets in 1977. Exhibits 15 and 16 present in-debt proportions and installment credit repayment-to-income ratios for the low-income quintile according to asset holdings for both 1970 and 1977. The proportion of low-income households belonging to each asset group is also shown in Exhibit 15. As can be seen, the proportion of the low-income households in the three highest asset categories increased sharply between Survey periods and the proportion with no reported assets declined markedly. In both years, the proportion in debt generally was smaller in the higher asset categories, but the pattern was less pronounced in 1977. As a result, households in the higher asset categories were much more likely to be in debt in 1977 than in 1970. Repayment-to-income ratios were higher in 1977 for all but one asset category of the low-income quintile, but differences appeared to be greatest in the high-asset categories.⁸

⁸ The small number of observations in 1970 for higher asset categories tempers this conclusion to some extent.

On balance) it appears that greater asset holdings in 1977 were significantly associated with the higher borrowing propensities observed for lower income households in that year. There were more low-income families who owned substantial assets and such families were additionally more inclined to be in debt and for larger amounts relative to income, than their 1970 counterparts.

D. Purchase Activity Between Surveys

A question of broad current interest concerns the extent to which consumer expenditure decisions may be affected by large debt obligations. Should a large buildup of debt be expected to induce a marked slowdown in consumer spending? In Part I, the macroeconomic evidence was seen to be not fully conclusive. This section seeks to provide some microeconomic insights by examining the incidence of major consumption expenditures made by reinterviewed respondents during the approximate one-year period between surveys in 1977 and 1978. A major objective was to determine the extent to which the debt burden of households at the beginning of a period affected subsequent purchases of major consumer durables (here including expenditures on home improvement services).

To measure the influence of debt burden on major expenditures of individuals, a function was estimated in which the occurrence of one or more major expenditures (during the period between surveys) was dependent upon such "life cycle" characteristics as age of household head and number of dependents, along with income, asset holdings, and attitudinal variables, such as perception of price increases, that might influence buying decisions. The role of "debt burden" was represented by a ratio relating a household's beginning-of-period scheduled installment debt repayments to its gross (pretax) family income. If the hypothesis is correct that, other things equal, higher levels of debt discourage expenditures by imposing a sizable alternative claim on income, then the debt -burden measure should be negatively associated with incidents of major purchases, once the influence of other determinants have been properly accounted for.

The primary analysis was carried out using multiple classification analysis (MCA), an adaptation of ordinary least squares regression for use with dummy variables, which was developed in the early 1960s at the University of Michigan. Unlike many simpler multivariate methods, which require linear or other restricted relationships among variables, MCA can handle relationships of various forms among predictors or between a predictor and the dependent variable, and can accept predictors with nominal measurement (such as race or marital status) as well as numerical data. Subcategories of predictor variables are transformed into dichotomous "0-1" dummy variables and related to a dependent variable which may also be dichotomous or measured on an interval scale. Coefficients of predictors in MCA are expressed as adjustments to the overall mean of the dependent variable, not deviations from the single class which must be excluded from each set when dummy variables are used.

The principal output of an MCA program includes the overall full sample mean of the dependent variable (between 0 and 1 where a dichotomous dependent variable is used), along with the subsidiary means of the dependent variable calculated for each subcategory of the predictors. Also printed is an R^2 statistic, analogous to the R^2 of ordinary least squares regression, a measure of the joint explanatory power of the predictors. A statistic labeled specifies the relative importance of each predictor's contribution to movement in the dependent variable with all other predictors held constant. It measures the number of standard deviation units the dependent variable moves when the explanatory variable changes by one standard deviation.⁹

⁹ The β -statistic is equivalent to the standardized regression coefficient, i.e., the regression coefficient multiplied by the standard deviation of the predictor and divided by the standard deviation of the dependent variable.

In the present study, 1978 reinterview data on major expenditures made between surveys was formed into a variable indicating "no purchase" or "1 or more purchases" (one or more).¹⁰ This variable was given the values "0" or "1" and correlated with selected economic, demographic and attitudinal variables, as indicated above. A beginning-of-period ratio of scheduled installment debt repayments divided by family income was calculated from data in the original 1977 survey, and was used as one of the several predictors.

Exhibit 17 presents the "mean purchase frequency"--the proportion of respondents who made one or more major purchase--for each subcategory of each predictor, both unadjusted and adjusted for the effects of the other predictors. The "grand mean" on the top line of Exhibit 17 indicates that approximately 50 per cent of the reinterviewed households had made one major purchase or more since the original interview a year earlier.

1. Impact of Repayments Burden. The ratio of debt-repayments-to family-income predictor was subcategorized into those households which had debt repayment ratios of 10 percent or less, 11 to 20 percent, greater than 20 percent, or which had no debt at all. The results from the MCA analysis indicate that the category of respondents having the highest initial ratios of installment debt repayment-, to family income also exhibited a somewhat greater tendency to make a major purchase in subsequent months than those with no initial debt or a low repayment ratio. This pattern was moderated when adjustment was made for intercorrelation among the predictor variables, but the positive relationship between the repayments ratio and a subsequent major expenditure remained.

The results for the debt burden variable are shown in the first bank of data in Exhibit 17. The calculations show that, before adjusting for the simultaneous impact of other predictors, roughly 41 percent of the nondebtors made a major purchase, compared with nearly 60 percent for those with the heaviest repayment load relative to income.

The moderating influence of the other predictors is reflected in the "adjusted" purchase frequency column. For instance, for nondebtors, the frequency of purchase is recalculated to 49 percent when the influence of the other nine predictors is screened out, compared with the unadjusted figure of 41 percent. Adjustment worked in the opposite direction for households most heavily in debt. The proportion of households making a purchase while facing heavy repayments dropped to approximately 55 percent after adjustment, from 60 percent unadjusted. Nevertheless, only for households heavily in debt did the adjusted proportion of respondents making a purchase appear significantly above the overall average. This result thus runs directly contrary to the hypothesis that, other things equal, a high debt obligation relative to income discourages spending.

The positive correlation between debt position and large purchases, it should be noted, was a relatively weak one, as indicated in Exhibit 18. This exhibit presents for each variable the rank order of the statistics, which indicates the relative importance of each predictor in explaining the dependent variable, with all other predictors held constant. For the repayments-to-income ratio, the low value of 0 (.027) and low rank (9th of 10) indicates that this measure was simply a poor predictor of future expenditures on major items, at least in the economic environment in the period prevailing between surveys. The predictor "age of family head" possessed the greatest ability to explain variation in the dependent variable, after adjusting for the effects of all other predictors. Other important predictors, discussed below, turned out to be the number of minor dependents in the household and the household's income bracket.

2. The Impact of Other Predictors. The demographic variables "age of household head" and "number of minor dependents" exerted a strong influence on major consumer expenditures. The income quintile to which

¹⁰ Major expenditures include automobile purchases and a variety of other outlays principally for durable consumer goods.

the family belonged was also an important determinant, while household asset holdings (including value of real property) ranked last in explanatory power, slightly below the debt burden measure.

The pattern of estimated values for the dependent variable appears quite reasonable for the categories of age and income. Households headed by younger individuals--typically those in the "family formation" stage of the life cycle--exhibited the highest incidence of major purchase, while households with older heads were less likely to make a major purchase. By income level, purchase of an auto or major durable occurred least frequently within the low income group, and increased with each successively higher income class. This pattern was particularly pronounced in the unadjusted relationship; allowance for other predictors substantially moderated the apparent strength of the income expenditure linkage.

As shown in Exhibit 17, the presence of several minor dependents in the household (3 or more) tended to be associated with a low incidence of "big-ticket" purchases, once the influence of other variables was accounted for. This relationship might reflect higher than average commitment of income to spending on food and clothing in such households; or perhaps families with 3 or more dependents often have already amassed most of the household capital goods that dominate the "major expenditure" category. The highest (adjusted) incidence of major purchase was among 1-dependent households, but purchase propensities for the 0- and 2-dependent categories were not much different.

The "age of auto" variables were included in the MCA analysis to represent the "need" to buy an auto. For instance, a household which already owned a car of recent model-year would presumably feel less compelled to purchase a car during the period covered in the reinterview than would a household with an older car. Since ownership of a relatively new car would probably relate positively to debt repayments, leaving age-of-auto variables out of the list of predictors might have obscured the influence of the debt burden measure. In fact, however, the adjusted mean purchase frequencies for the debt burden categories were little affected by the presence of the car age variables, although the car age variables themselves were modestly related to major purchases.¹¹

Variables reflecting consumer perceptions of their personal financial situation (better off/worse off) and their perceptions of the rate of price increases ranked relatively low in explanatory power. On an unadjusted basis, the group that felt better off financially had an above-average rate of major purchase, while the "worse off" group was below average in purchase frequency. Adjustment for the influence of other predictors reversed this pattern, however, suggesting that perception of financial status added little to what could be inferred from the more objective variables. No particularly clear pattern of expenditure frequency emerged for the price perception variable: respondents with extreme views of price changes--whether too low or too high--appeared to belong to households with lower rates of purchase, but this result was fairly irregular.

3. Alternative MCA tests. The finding that the size of scheduled debt repayments relative to income has little effect on subsequent expenditures is still subject to question on at least two general bases. It may be argued that an unresolved simultaneity problem biases the measured relationship between debt burden and instances of major expenditure. It may also be posited that the particular measure of debt repayment burden and/or expenditure was inappropriate--that outstanding debt should have been used, that other forms of household debt should have been included, or that dollar amounts of expenditure rather than instances of spending should have been studied. These broad issues are commented upon below.

¹¹ Had only auto purchases been incorporated in the dependent variable, the relationship with age of auto would likely have been stronger than shown in Table 1. In any case, it appears that households owning 3-year old cars in the fall of 1977 were more likely to have made a major purchase of some type during the next 12 months.

a. Simultaneity problem. As discussed earlier, the "life cycle" variables of age, family size, and so forth, were found to be important determinants of major expenditure. Of course, insofar as major expenditures are frequently financed by consumer installment debt, the life cycle variables are also strongly associated with debt payments. Moreover, since the life cycle characteristics of a household change only gradually over time, households engaging in major purchases in one period have a relatively high likelihood of making a major purchase during the following year. Thus debt at a given point can be expected to correlate with major purchases in the period to follow if only because both initial debt and later expenditures are reacting to essentially the same life cycle variables. As discussed earlier, the MCA test to explain major purchases included several current period life cycle predictors, but this specification may not have been adequate to neutralize the simultaneous relationship of the life cycle variables with the dependent variable and debt burden predictor. It left unaddressed the problem of correlation between the debt variable and the error term.

An alternative, two-stage, estimation procedure was employed to deal with the simultaneity problem. In the first stage, debt formation was explained by an equation that contained income class and various demographic and life cycle variables. This provided a predicted or explained portion of debt and a residual unexplained portion of debt. That portion of debt accounted for by the first-stage equation might be expected to relate positively with subsequent expenditures owing to the simultaneous relationship with life cycle characteristics. The unexplained elements of debt might then be more likely to reveal whatever damping effect high debt in itself might exert on decisions to make major purchases.

The second stage of the process was to reestimate the original equation for purchase activity, with one modification. The predicted and are residual repayments-to-income variables, categorized into approximate quintiles, replaced the observed original value of that ratio. In the new equation, the variable for predicted debt-to-income ratio ranked third in -value, while the residual (unexplained) aspect of debt burden ranked next to last. The quintile representing the highest predicted debt burden was associated with a considerable higher-than-average rate of purchase, but no uniform pattern pertained among the quintiles. The fourth quintile--those with above average predicted debt-to-income ratios--had a relatively low incidence of major purchase. Neither was any pattern apparent in the coefficients of the residual debt burden quintiles. The fifth quintile (representing households with the largest positive deviation from predicted debt burden) was somewhat above average in purchase activity, but so was the second quintile of households. The other three quintiles were slightly below average in incidence of major purchase. On balance the results offered little evidence that debt burdens higher than explicable by stage of life cycle would deter major expenditures.

The basic equation was reestimated with the predicted and residual debt burden variables appearing separately rather than together. Each performed alone about as it had when both variables were used in the equation.

b. Other forms of variables. Analyses of several variants of the debt-income variable and alternative models are summarized below. These variants were tested only in the single-equation MCA model, not in the two-stage alternative.

In the original model, debt repayments were confined to closed-end installment debt. Revolving credit and mortgage debt were both excluded from the calculation. Data on revolving credit repayments were not available from the 1977 survey, although respondents did provide an estimate of the total income owed on credit card accounts. In one alternative MCA test the estimated amount of total credit card debt owed was included as a separate explanatory variable. It ranked relatively high among the predictors of expenditures in the following 12 months. Households with no credit cards exhibited the highest frequency of purchase, and those with credit cards but with no outstanding card debt were slightly above average in purchases. For households with some card debt outstanding, those with large balances averaged a greater tendency to purchase than those

with smaller balances. The estimated purchase frequencies calculated for subcategories of the installment debt repayments-to-income variable were largely unaffected by the presence of the card debt variable.

A separate test was also made in which mortgage debt repayments were added to installment debt repayments to form a new repayments-to-income ratio. This formulation tended to accentuate the positive relationship between debt obligations and major purchase activity, but only marginally, and the variable again ranked quite low in -value.

Outstanding installment debt relative to income was substituted for the repayments ratio in another version. The previously observed greater likelihood of the heavily indebted households to make major purchases (compared to nondebtors) was even more pronounced when outstanding debt was considered. The -rank of the debt-to-income predictor improved somewhat when outstandings were substituted for repayments in constructing the variable.

For most respondents, dollar amounts of purchase were ascertained in the reinterview survey. It was possible, therefore, to substitute amount of expenditures for the "purchase-no purchase" dependent variable. In this case, mean values of the dependent variable for each subcategory of predictor represented the average amount spent on major purchases by households within the subcategory. The overall explanatory power of this alternative equation was relatively low, and the debt-repayments-to-income ratio remained a low ranking predictor. The pattern of relationship was somewhat different, however, in that dollar amounts of purchase for households with no initial installment debt were on average larger than the overall mean. On the other hand, for those with some debt, amount of average expenditure increased as the size of debt burden increased.¹²

Finally, households which had made more than one major purchase were studied in comparison to single purchasers and nonpurchasers combined. There were some shifts in importance among the predictors. A recent change of residence, for example, turned out to be strongly associated with "multiple purchase" households. The results for debt repayments-to-income, however, were virtually unchanged from the basic MCA results presented in Exhibit 17.

As regards the focal issue of the MCA analysis--the impact of debt burden on subsequent spending--none of the alternative tests gave much support to the notion that heavy debt deters spending.

¹² Average amount of purchase for a given category of households includes the effect of those which made no purchases. Thus the higher average outlay for the high debt burden group partially reflects their previously discussed higher frequency of purchase.

Exhibit 1
Consumer Installment Credit Annual and Quarterly Data, Selected Years
(Billions of Dollars)

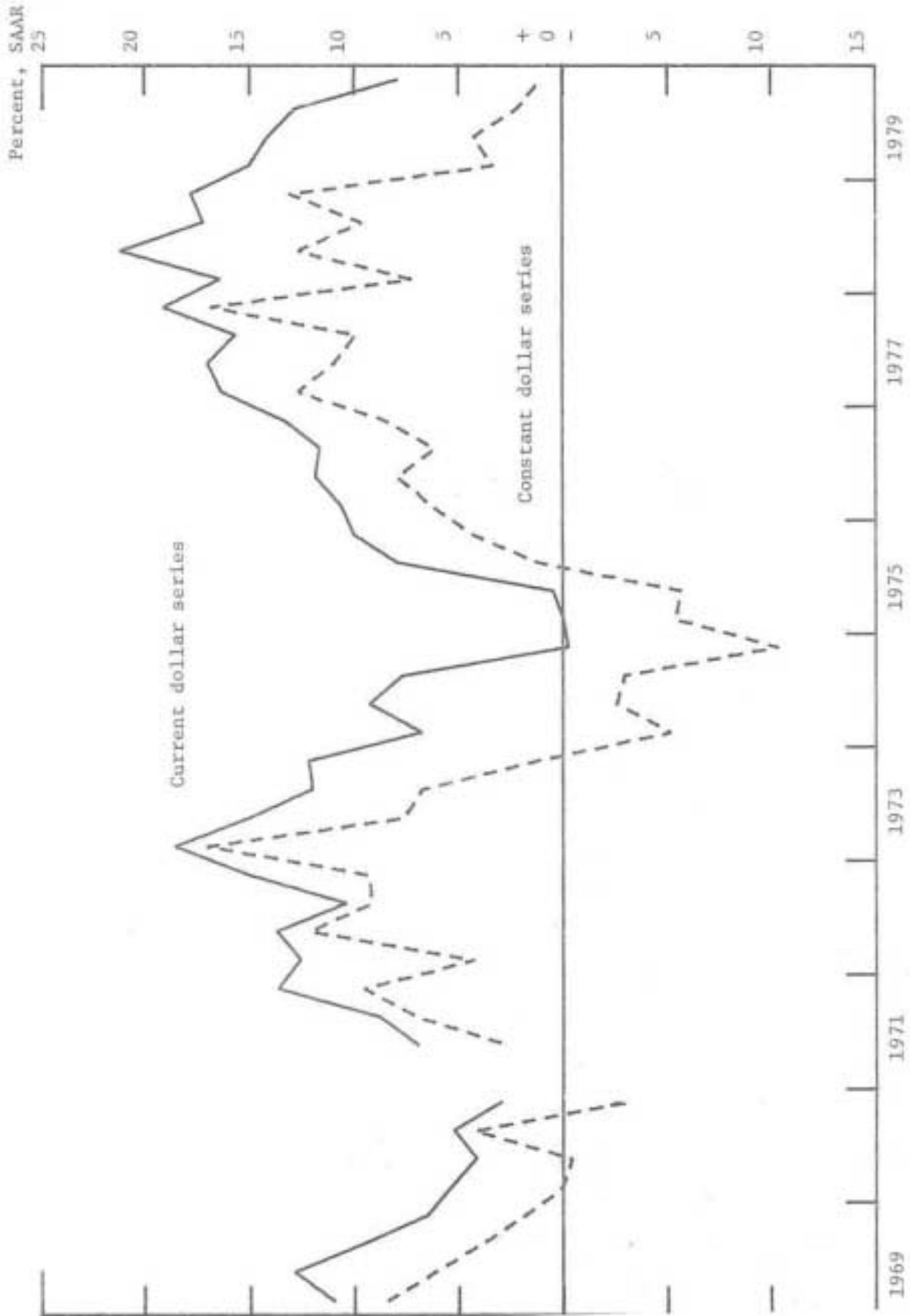
Seasonally adjusted annual rate (SAAR)

Period	Extended	Liquidated	Net Change	End of period Outstanding	Percent (SAAR) Growth Rate
1955	40.3	34.9	5.3	30.3	19.9
1960	50.9	47.0	3.8	45.0	9.2
1965	79.9	71.6	9.3	73.9	12.0
1970	115.0	110.4	4.6	105.5	4.4
1975	180.4	172.7	7.8	177.4	4.6
1976	211.0	189.4	21.6	194.0	11.9
1977	254.1	218.8	35.3	230.8	17.1
1978	298.6	253.5	45.1	275.6	18.3
1973-Q1	172.1	147.7	24.4	136.6	18.6
Q2	172.0	151.1	20.8	143.9	15.0
Q3	172.4	155.1	17.2	1.49.8	12.0
Q4	175.2	157.1	18.1	155.1	12.2
1974-Q1	171.4	161.0	10.3	153.2	6.8
Q2	177.5	163.1	14.4	153.6	9.3
Q3	176.8	164.7	12.1	163.6	7.6
Q4	163.9	164.3	-0.4	164.5	-0.2
1975-Q1	166.7	166.8	-0.0	160.0	-0.0
Q2	171.2	170.3	0.8	161.9	0.9
Q3	186.9	174.0	12.9	167.3	7.9
Q4	195.8	179.1	16.6	172.3	10.0
1976-Q1	202.6	184.5	19.0	171.6	10.7
Q2	204.2	183.6	20.6	179.1.	11.9
Q3	211.0	190.2	20.9	186.7	11.6
Q4	221.8	197.1	24.6	193.9	13.4
1977-Q1	240.4	209.0	31.3	197.5	16.4
Q2	250.8	216.6	34.2	208.9	17.1
Q3	254.9	222.1	32.7	219.6	15.7
Q4	270.3	228.8	41.5	230.8	19.2
1978-Q1	274.6	237.1	37.5	233.8	16.4
Q2	301.4	251.0	50.3	249.8	21.2
Q3	304.9	261.3	43.1	263.3	17.3
Q4	313.0	266.6	46.4	275.6	17.8
1979-Q1	314.1	273.1	41.0	279.5	15.0
Q2	324.2	284.3	39.9	291.9	14.1
Q3	332.3	294.9	37.3	305.2	12.8
Q4	319.3	295.6	23.8	311.1	7.9

Amounts extended are new credit granted during the period. Amounts liquidated are primarily repayments on existing debt, but also include charge-offs, merchandise returns and other subtractions from balances owed. Net change is the difference between extensions liquidations, that is, the net addition to the stock of debt outstanding. Note: Figures include gasoline company credit card data after 1970.

EXHIBIT 2

CONSUMER INSTALLMENT CREDIT GROWTH RATES



Break in series due to including gasoline companies after 1970. Constant dollar series reflects deflation by personal consumption expenditure deflator.

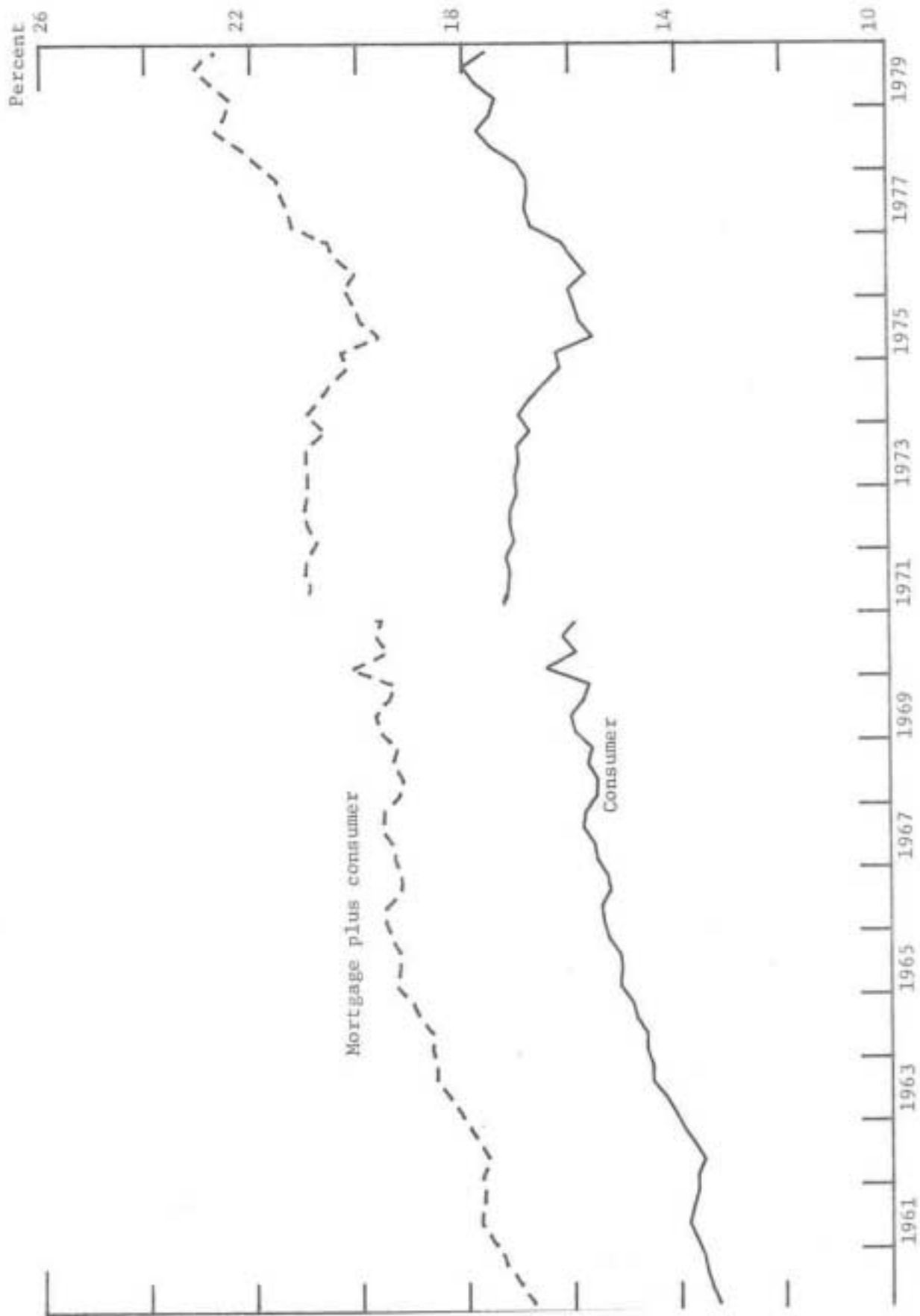
EXHIBIT 3
HOUSEHOLD DEBT REPAYMENTS AND RATIOS TO DISPOSABLE PERSONAL INCOME

Period	Consumer installment	Total (incl. mortgage)	Consumer installment	Total (incl. mortgage)
1960	46.9	59.6	13.4	17.1
1965	71.6	91.2	15.2	19.3
1970	110.4	135.2	16.1	19.7
1975	172.6	216.9	15.9	20.0
1976	188.9	239.5	15.9	20.2
1977	219.2	278.3	16.8	21.4
1978	254.1	326.1	17.4	22.3
1979	287.0	367.7	17.7	22.7
1973-Q1	147.8	181.6	17.1	21.0
Q2	151.2	186.6	17.0	20.9
Q3	155.1	191.1	17.0	21.0
Q4	157.1	192.8	16.8	20.6
1974-Q1	161.1	199.1	17.0	21.0
Q2	163.1	201.2	16.8	20.7
Q3	164.7	204.6	16.5	20.5
Q4	164.4	204.8	16.2	20.2
1975-Q1	166.8	208.4	16.3	20.3
Q2	170.4	214.5	15.6	19.6
Q3	174.0	218.9	15.8	19.9
Q4	179.2	225.8	15.9	20.1
1976-Q1	184.6	232.3	16.0	20.2
Q2	183.6	232.9	15.7	19.9
Q3	190.2	242.6	15.9	20.3
Q4	197.2	250.1	16.1	20.5
1977-Q1	209.1	264.5	16.7	21.2
Q2	216.6	273.4	16.8	21.3
Q3	222.2	282.9	16.8	21.4
Q4	228.8	292.2	16.8	21.5
1978-Q1	237.2	304.3	17.0	21.8
Q2	251.0	318.5	17.5	22.2
Q3	261.8	333.9	17.7	22.6
Q4	266.5	342.2	17.5	22.4
1979-Q1	273.4	350.8	17.4	22.3
Q2	284.3	363.6	17.8	22.7
Q3	294.9	376.7	18.0	23.0
Q4	295.3	379.8	17.6	22.6

Note: After 1970 repayments series includes gasoline company credit card data. This caused a slight discontinuity in the ratios to income of approximately 0.8 percentage points between 1970 and later periods.

Mortgage repayments, included with installment credit in total repayments, are staff estimates of scheduled payments of principal and interest (prepayments excluded).

HOUSEHOLD DEBT BURDEN
DEBT REPAYMENTS RELATIVE TO DISPOSABLE PERSONAL INCOME



Break in series due to including gasoline companies after 1970.

EXHIBIT 5

HOUSEHOLD SECTOR FINANCIAL POSITION

Financial Assets and Liabilities



Financial Net Worth



REAL FINANCIAL NET WORTH PER CAPITA



REAL TOTAL NET WORTH PER CAPITA

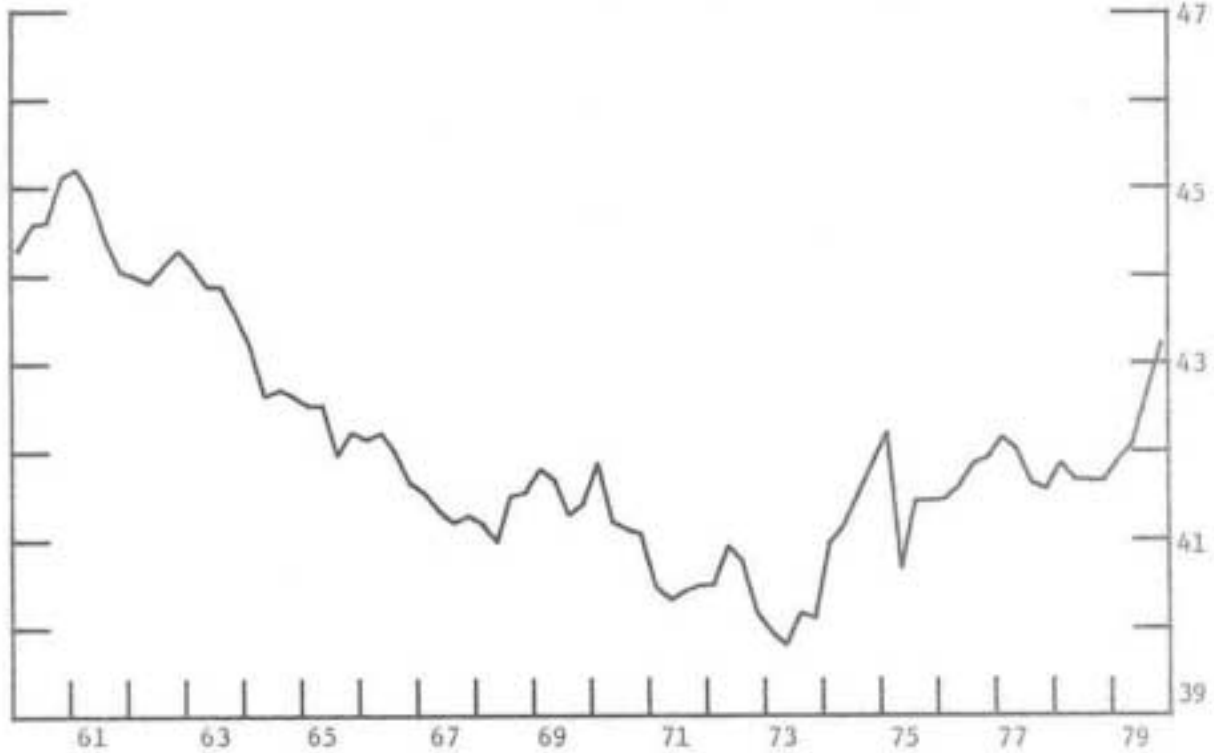


EXHIBIT 7

NONDISCRETIONARY HOUSEHOLD OUTLAYS

Expenditures Relative To Disposable Income

Percent



Nondiscretionary expenditure is an estimate based on Commerce Department data for outlays on food, fuel oil and coal, housing services and fractions of household operating costs, gasoline and oil, and "other" services. In the chart to the right, debt includes repayments on both mortgage and consumer installment debt.

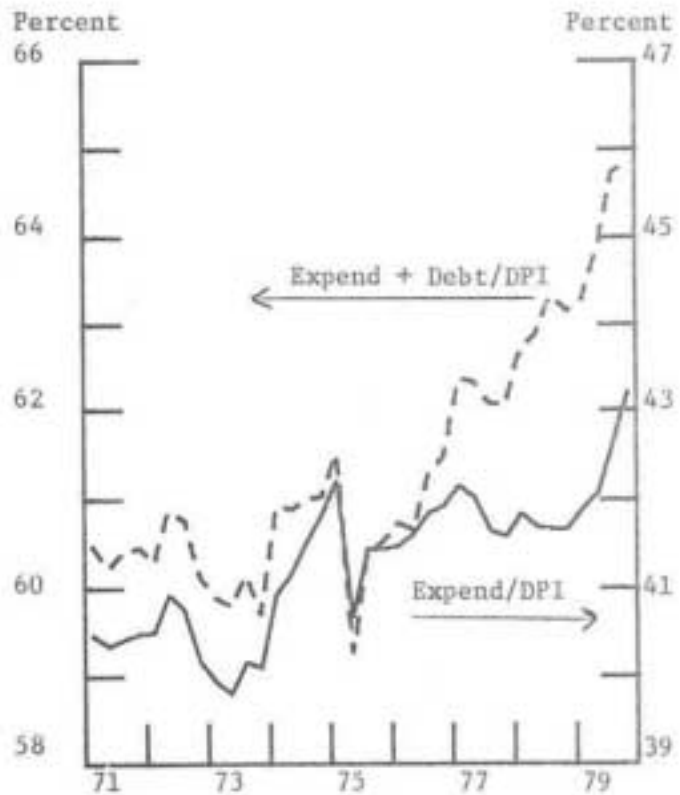


EXHIBIT 8

Consumer and Mortgage Loan Delinquency Rates (Number Delinquent as Percent of Total Number Outstanding) All Series Seasonally Adjusted

	Installment Loans 30 days or more delinquent			Mortgage Loans 60 days or more delinquent	
	Commercial Banks Closed-end	Commercial Banks Bank-card	Auto Fin. Co.	MBA Series	S&Ls
1970	1.85	NA	2.46	0.84	n. a.
1971	1.78	NA	2.27	1.01	n. a.
1972	1.87	NA	2.11	1.04	n.a.
1973	2.07	NA	2.31	1.17	0.92
1974	2.64	2.58	2.61	1.20	1.07
1975	2.60	2.60	2.39	1.29	1.46
1976	2.39	2.26	2.01	1.32	1.43
1977	2.37	1.73	2.07	1.30	1.14
1978	2.41	2.15	2.23	1.28	0.96
1979	2.43	2.38	2.26	1.24	0.89
1976 - Q1	2.47	2.33	1.90	1.21	1.50
Q2	2.38	2.42	1.97	1.37	1.46
Q3	2.38	2.25	2.00	1.34	1.39
Q4	2.37	2.04	2.11	1.34	1.31
1977 - Q1	2.37	1.7	2.01	1.29	1.24
Q2	2.40	1.64	2.08	1.34	1.17
Q3	2.37	1.72	2.07	1.20	1.12
Q4	2.34	1.75	2.12	1.26	1.06
1978 - Q1	2.47	1.83	2.23	1.29	1.00
Q2	2.39	1.96	2.18	1.28	0.97
Q3	2.40	2.30	2.23	1.29	0.95
Q4	2.38	2.48	2.26	1.25	0.91
1979 - Q1	2.25	1.97	2.11	1.18	0.89
Q2	2.42	2.38	2.25	1.21	0.89
Q3	2.50	2.55	2.21	1.26	0.87
Q4	2.53	2.61	2.46	1.29	0.89

Sources: American Bankers Association, Federal Reserve Board, Mortgage Bankers Association, Federal Home Loan Bank Board.

EXHIBIT 9

PROPORTION OF HOUSEHOLDS¹ WITH INSTALLMENT DEBT AND DEBT/INCOME RATIOS

Approximate Income Quintiles

For Households with Installment Debt
Debt as a Percent of Gross Household
Income (means of individual ratios)³

Dollar Amount 1970	Dollar Amount 1977	Percent Distribution	Percent Having Debt ² 1970	Percent Having Debt ² 1977	Outstandings 1970	Outstandings 1977	Repayments 1970	Repayments 1977
0	0	20.6	22.9	30.7	21.8	29.9	18.7	24.5
-4000	-5999							
4001	6000	19.4	46.6	48.6	18.4	17.9	12.5	13.7
-7300	-10999							
7301	11000							
-11076	-17499	24.3	60.9	63.8	15.5	16.3	0.5	11.1
11077	17500							
-15350	-25000	18.3	67.4	66.3	11.3	13.1	8.2	8.3
Over 15350	Over 25000	17.3	47.2	58.3	9.6	10.6	6.7	6.0
All Households		100.0	49.1	53.5	14.6	16.5	10.5	11.5

Sources: University of Michigan, 1970 Survey of Consumer Finances data tape; Federal Reserve Board, 1977 Consumer Credit Survey tape.

1. "All Households" is defined as those households in the survey for whom the amount of income and amount of debt were available. In the 1970 survey, the University of Michigan estimated these magnitudes for households not reporting them. In the 1977 survey, missing income and debt amounts were not estimated. This resulted in dropping from 350-450 households (out of 2563) from the 1977 computations.

2. The proportion of survey respondents in debt is based on the 2225 households for whom income magnitudes were known. When all survey respondents are included, the 1977 proportion in debt is 50.2 percent instead of 53.5.

3. Individual debt to income ratios were computed, and the mean of these taken for each quintile and for all households. When debts are summed for all households with debt and divided by the sum of all incomes, the ratios are as follows:

	Outstandings		Repayments	
	1970	1977	1970	1977
Ratio to income:	13.6	15.0	1.03	9.4

EXHIBIT 10

PERCENTAGES OF HOUSEHOLDS HOLDING CREDIT CARDS

Income Class (dollars)	Any ¹ Card	Bank Card	Store Card
0-5,999	26.6	7.8	21.4
6,000 - 10,999	51.4	23.6	41.7
11,000 - 17,449	71.2	38.3	60.8
17,500 - 24,999	81.3	57.0	73.5
25,000 and Over	92.7	72.8	83.2
All Classes ²	62.8	37.6	53.7

Source: 1977 Consumer Credit Survey.

1. Includes gasoline credit cards, "travel and entertainment" cards and others not shown separately.

2. Includes cases where income not ascertained.

EXHIBIT 11
SHARES OF TOTAL INSTALLMENT DEBT OUTSTANDING BY INCOME GROUP
1970 AND 1977 SURVEY DATA

Dollar Amounts		Percent Distribution	Households in debt		All Household		Total debt		Percent share of debt		Adjusted Share of debt ¹	
1970	1977		1970	1977	1970	1977	1970	1977	1970	1977	1970	1977
0	0	20.6	595	1,141	137	315	72.6	138.1	3.9	4.6	3.8	4.4
-4000	-5999											
4001	6000	19.4	1,228	1,681	572	778	286.2	321.2	15.2	10.7	15.5	10.9
-7300	-10999											
7301	11000		1,542	2,369	939	1,457	590.5	741.6	31.4	24.7	25.6	19.6
-11076	-17499	24.3										
11077	17500			3,082	1,110	2,021	524.1	798.2	27.9	26.6	30.2	28.1
-15350	-25000	18.3										
Over	Over		1,950	4,779	919	2,700	407.5	998.1	21.7	33.3	24.9	37.0
15350	25000	17.3										
All	Families ¹	100.0	1,488	2,720	729	1,407	1,880.9	2,997.9	100.0	100.0	100.0	100.0

Sources: University of Michigan, 1970 Survey of Consumer Finances data tape; Federal Reserve Board 1977 Consumer Credit Survey-tape.

1. The proportions of debt attributable to each income group are adjusted in these 2 columns to compensate for the deviation of the "quintile" size from 20 percent. Shares for each group were multiplied by 20/N, where N is the percent of respondents in the group. Adjusted shares were forced to total 100.0.

EXHIBIT 12
PROPORTION OF HOUSEHOLDS¹ WITH HOME MORTGAGE
DEBT AND DEBT/INCOME RATIOS

Approximate Income Quintiles

For Households with Installment Debt
Debt as a Percent of Gross Household
Income (means of individual ratios)³

Dollar Amount 1970	Dollar Amount 1977	Percent Distribution	Percent Having Debt ² 1970	Percent Having Debt ² 1977	Outstandings 1970	Outstandings 1977	Repayments ⁴ 1970	Repayments ⁴ 1977
0	0	20.6	7.9	12.9	217.9	342.5	31.2	49.7
-4000	-5999							
4001	6000	19.4	19.6	27.1	109.9	127.9	15.4	18.7
-7300	-10999							
7301	11000		39.4	43.4	94.3	105.6	11.9	14.2
-11076	-17499	24.3						
11077	17500		58.1	63.9	85.5	84.1	10.9	11.3
-15350	-25000	18.3						
Over	Over		60.7	70.5	61.7	62.3	8.1	8.3
15350	25000	17.3						
All	Households ^{1/3}	100.0	36.1	42.3	89.5	103.7	11.6	14.4

Sources: University of Michigan, 1970 Survey of Consumer Finances data tape; Federal Reserve Board, 1977 Consumer Credit Survey tape.

1. See Table 1, fn 1.

2. See Table 1, fn 2. When all survey respondents are included in 1977 computations, the "all households" proportion in debt for that year is 40.4, instead of 42.3 per cent.

3. See Table 1, fn 3. When debts are summed for all households having debt, and divided by the sum of incomes, the ratios are as follows:

	Outstandings		Repayments	
	1970	1977	1970	1977
Ratio to Income:	74.0	79.0	10.0	11.3

4. Repayments include scheduled payments of principal and interest and also property taxes where included in the monthly mortgage payment. About 95 percent of the respondents with mortgages included these latter items in repayment amount.

EXHIBIT 13
PROPORTION OF HOUSEHOLDS¹ WITH DEBT (MORTGAGE OR CONSUMER)
AND DEBT/INCOME RATIOS

Approximate Income Quintiles

For Households with Installment Debt
 Debt as a Percent of Gross Household
 Income (means of individual ratios)³

Dollar Amount 1970	Dollar Amount 1977	Percent Distribution	Percent Having Debt ² 1970	Percent Having Debt ² 1977	Outstandings 1970	Outstandings 1977	Repayments ⁴ 1970	Repayments ⁴ 1977
0	0	20.6	27.8	37.0	70.4	109.2	24.1	39.4
-4000	-5999							
4001	6000	19.4	55.0	58.8	51.8	71.3	16.2	19.9
-7300	-10999							
7301	11000		72.8	74.5	64.8	75.5	15.6	17.8
-11076	-17499	24.3						
11077	17500		81.8	83.3	71.0	76.1	14.4	15.7
-15350	-25000	18.3						
Over 15350	Over 25000	17.3	74.3	81.1	56.7	63.0	11.1	11.8
All Households ^{1/3}		100.0	62.0	66.5	62.9	75.8	15.3	18.8

Sources: University of Michigan, 1970 Survey of Consumer Finances data tape; Federal Reserve Board, 1977 Consumer Credit Survey tape.

1. See Table 1, fn 1.

2. See Table 1, fn 2.

3. See Table 1, fn 3. When debts are summed for all households having debt and divided by the sum of these households' incomes, the ratios are as follows:

	Outstandings		Repayments	
	1970	1977	1970	1977
Ration to income:	61.1	70.3	14.0	17.1

EXHIBIT 14
ESTIMATED EFFECT OF AGE DISTRIBUTION ON CONSUMER
INSTALLMENT DEBT MEASURES

Age, head of household (1)	Percentage distribution		U.S. population Population-Weighted Variables					
	1970 (2)	1977 (3)	1977 Survey data Percent in Debt (4)	1977 Survey data Debt amount ¹ (mean) (5)	Percent in debt 1970 (6) (Col 4x2)	Percent in debt 1977 (7) (Col 40)	Debt amount 1970 (8) (Col 5x2)	Debt amount 1977 (9) (Col 50)
Under 25	6.8	8.6	63.1	\$ 1254	4.3	5.4	85	108
25-34	18.5	22.2	67.5	1614	12.5	15.0	299	358
35-44	18.6	16.7	65.9	1978	12.2	11.0	368	330
45-54	19.5	16.7	56.3	1548	11.0	9.4	302	259
55-64	17.1	15.7	41.3	989	7.1	6.5	169	155
65-74	12.2	12.6	16.2	223	2.0	2.0	27	28
75 and over	7.3	7.5	5.5	111	0.4	0.4	8	8
All age groups ²	100.0	100.0	50.3	1266	49.5	49.7	1258	1246

Sources: Federal Reserve Board, 1977 Consumer Credit Survey data tape; U.S. Department of Commerce, Bureau of the Census, Current Population Reports (P-20 series), various issues.

1. Mean calculated including families with no debt.

2. For all age groups, columns 6 through 10 represent summations of figures shown for individual age groups. The "all age group" line for columns 4 and 5 is calculated directly from data for individual survey respondents.

EXHIBIT 15
PROPORTION OF LOW-INCOME HOUSEHOLDS¹
WITH INSTALLMENT DEBT BY AMOUNT OF TOTAL ASSETS²

Asset Value Category (Dollars)	Proportion of Households In Asset Category		Proportion of Asset I Category with Some Installment Debt		Difference 1977 vs. 1970 (percentage points)
	1970	1977	1970	1977	
No Assets Reported	28.9	21.1	31.2	34.0	2.8
1 - 1,000	14.7	25.1	28.2	35.7	7.5
1,001 - 5,000	14.5	10.7	22.1	26.5	4.4
5,001 - 10,000	10.0	6.5	22.6	30.0	7.4
10,001 - 35,000	24.6	22.2	15.3	27.5	12.2
35,001 - 50,000	3.0	6.5	12.5	23.3	10.8
50,001 - 100,000	3.2	4.4	5.9	20.0	14.1
Over 100,000	1.1	3.5	0.0	37.5	37.5
All low-income Households ³	100.0	100.0	22.9	30.7	7.8

1. Low-income households consist of the first quintile of the income distribution in each year. In 1970 the low-income quintile included respondents with 1969 gross family incomes of \$4,000 or below; in 1977 the quintile included all those with 1976 incomes of \$6,000 or below. Respondents for which no asset information was available were excluded.

2. Total assets cover both financial and physical assets, and include savings accounts, federal and state government securities, corporate stocks and bonds, mutual funds, certificates of deposit, residences and other real estate.

EXHIBIT 16
AVERAGE INSTALLMENT REPAYMENTS-TO-INCOME RATIO
FOR LOW-INCOME HOUSEHOLDS¹ WITH SOME INSTALLMENT DEBT
BY AMOUNT OF TOTAL ASSETS²

Asset Value Category (Dollars)	Proportion of Low-Income In Asset Category		Repayment/Income Ratio		Difference 1977 vs. 1970 (percentage points)
	1970	1977	1970	1977	
No Assets Reported	39.8	25.0	18.3	23.7	5.4
1 - 1,000	18.6	30.6	23.6	25.4	1.8
1,001 - 5,000	13.6	10.5	23.3	26.7	3.4
5,001 - 10,000	9.3	7.3	27.9	13.0	-14.9
10,001 - 35,000	16.1	12.9	14.9	22.3	7.4
35,001 - 50,000	1.7	5.6	12.5	27.7	15.2
50,001 - 100,000	0.8	3.2	2.0	43.3	41.3
Over 100,000	--	4.8	--	38.5	--
All low-income Debtors ³	100.0	100.0	20.1	25.1	5.0

1. Low-income households consist of the first quintile of the low-income distribution in each year. In 1970 the low-income quintile included respondents with 1969 gross family incomes of \$4,000 or below; in 1977 the quintile included all those with 1976 incomes of \$6,000 or below. Respondents for whom no asset information was available, or for whom a repayments-to-income ratio could not be calculated, were excluded.

2. Total assets cover both financial and physical assets, and include savings accounts, federal and state government securities, corporate stocks and bonds, Mutual funds certificates of deposit, residence and other real estate.

3. In 1970, 118 low-income households with debt were used in constructing the table; the number of such households for 1977 was 124.

EXHIBIT 17

MULTIPLE CLASSIFICATION ANALYSIS OF
MAJOR HOUSEHOLD EXPENDITURES

Household Characteristics		Mean Purchase Frequency ¹		Household Characteristics		Mean Purchase Frequency ¹	
Category	Size of category	Unadjusted	Adjusted	Category	Size of category	Unadjusted	Adjusted
ALL RESPONDENTS		718	49.6				
<u>Ratio of Installment Payments to Family Income (percent) (1977 Survey)</u>				<u>Age of Family Head (Years) (1977 Survey)</u>			
No debt	320	40.6	48.9	Under 25	44	72.7	79.1
0 - 10	225	56.5	49.3	25-34	173	68.2	67.1
11 - 20	90	56.7	50.5	35-44	133	55.6	55.4
Over 20	42	59.5	54.7	45-54	138	50.0	46.4
				55-64	117	30.8	28.7
				65-74	80	30.0	33.7
				Over 74	33	9.1	19.0
<u>Income Categories (Dollars) (1977 Survey)</u>				<u>Inflation Perception (1978 Survey) (Percentage price increase last 12 months)</u>			
0 - 5,999	378	29.8	37.4	0 - 1	26	42.3	42.9
6,000-10,999	125	42.8	46.1	2 - 5	112	50.0	47.0
11,000-17,499	101	52.4	50.8	6 - 9	144	57.0	52.5
17,500-25,000	68	56.1	51.1	10	141	51.8	50.8
Over 25,000	44	57.0	54.6	11 - 14	67	56.7	55.4
				15 - 25	104	46.2	46.5
				Over 25	51	47.1	52.6
<u>Changed Residence Within Past 12 Months (1978 Survey)</u>				<u>Better/worse Now Than Year Ago (1978 Survey)</u>			
No	506	49.6	51.2	Better	291	54.7	50.1
Yes	19	64.1	53.0	Same	212	40.6	47.7
				Worse	209	48.8	51.0
<u>Total Assets (Dollars) (1977 Survey)</u>				<u>Model Year of First Vehicle (1977 Survey)</u>			
0 - 5,000	141	49.7	48.6	No car	57	22.8	45.7
5,001-29,999	136	43.4	48.9	1977	73	50.7	48.2
30,000-49,999	155	51.6	51.3	1976	73	52.1	46.8
50,000-99,999	170	51.8	48.3	1975	68	67.7	59.1
Over 99,999	116	50.9	51.2	Older than 1975	447	49.7	49.5
<u>Number of Minor Dependents (1977 Survey)</u>				<u>Model Year of Second Vehicle (1977 Survey)</u>			
None	378	42.9	51.7	No second car	307	42.4	49.4
1	125	58.4	51.8	1977	29	62.1	55.3
2	101	62.4	51.5	1976	39	66.7	55.9
3	68	48.5	35.7	1975	27	70.4	64.8
Over 3	44	52.3	41.5	Older than 1975	315	51.5	47.0

1. Mean purchase frequency results are not shown for those "not ascertained" or "don't know" categories of the predictors.

EXHIBIT 18

STATISTICAL MEASURES OF EXPLANATORY POWER FOR MCA TEST OF EXHIBIT 17

Unadjusted R ²	.171
Adjusted R ²	.116
β -Values for:	
Age of family head	.334
Income	.110
Number of dependents	.108
Model year of second vehicle mentioned	.84
Price perception	.070
Model year of first vehicle mentioned	.070
Move - 12 months	.063
Better or worse off now	.057
Repayments/income	.027
Total assets	.026

Unadjusted R² - This multiple correlation coefficient indicates the proportion of variance in the dependent variables explained jointly by 10 predictors.

Adjusted R² - This coefficient estimates the proportion of variance in the dependent variable jointly explained by the predictors, adjusted for the degrees of freedom lost in the estimation process.

β - Provides a measure of the ability of the predictor to explain variation in the dependent variable after adjusting for the effects of all other predictors. This is not in terms of percent of variance explained, but is a measure of the number of standard deviation units the dependent variable moves when the explanatory variable changes by one standard deviation. Higher β values indicate better predictors.