# Consumer Expenditures and The Capital Account

by

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This article is based on research undertaken in connection with a broad Study of Consumer Expenditures, Incomes and Savings at the Wharton School of Finance and Commerce of the University of Pennsylvania. The Study is based largely on the 1950 survey of the Bureau of Labor Statistics of 12,500 families in 91 representative cities. It is financed by a grant from the Ford Foundation.

The authors wish to thank the Yale University Computing Center for its support of the lengthy computational work. Thanks are also due to Sylvester Berki, Donald Hester, John Nagle and Alvin Puryear for their assistance in performing the calculations. The helpful comments of Arthur M. Okun and Robert Summers of the Cowles Foundation are gratefully acknowledged.

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## Introduction

Like a business firm, a household may be imagined to have two related accounts, an income account and a capital account. The income account comprises flows over a period of time; the items in the capital account are stocks at a moment of time. The shape of the household income account is determined by decisions concerning work and leisure; consumption and saving; food, shelter, recreation, and other categories of consumption; insurance premiums, mortgage payments, and other forms of saving. A second set of decisions determine the shape of the household balance sheet: amounts of various kinds of indebtedness; proportions of wealth held in securities, life insurance, cash, business or professional assets of self-employed, residence, automobiles, household appliances, and so on. Traditionally both theoretical and statistical analyses of household economic behavior have concentrated on the income account and on the corresponding decisions regarding flows. The present paper, following a less common but growing practice, emphasizes the capital account and investment decisions of the household.

The bridges between the two accounts are of two kinds: accounting and behavioral. By an elementary accounting identity, the increase in net worth of the household over a period must--apart from capital gains and losses--equal net saving during the period. More important are the connections in economic behavior. The over-all division of income between saving and consumption is conditioned by the household's current net worth viewed in relation to its goals of accumulation--next summer's vacation, children's college educations, retirement, legacies. Furthermore, the

composition of current savings and investment depends on the structure of the capital account, as well as on net worth, and on the pattern, as well as the magnitude, of future consumption plans and aspirations. Many items of consumption, and many occupational pursuits as well, are either wholly inaccessible or available only at considerable extra expense to households who have not acquired specific assets. Accordingly many assets in the household's capital account--both durable consumption goods and business or professional capital--serve a dual purpose; they facilitate the desired pattern of consumption and work, and they help to meet at least some of the goals of wealth accumulation.

In perfect markets, it is worth noticing, only the over-all bridge between saving and net worth would be necessary. The household's decision problem would be less complex, and the analytic task of the interested econometrician would be easier. Decisions regarding the pattern of consumption could be taken without regard for the structure of asset holdings. By the same token, investment decisions could be reached with sole regard for capital appreciation, unconstrained by the household's consumption, or occupational, preferences. Thus the owner of a car and a washing machine would be able to consume the yields of these investments even if he chose, perhaps only temporarily, neither to ride nor to wash clothes--either by renting them out or by selling them, perhaps for later repurchase, and investing the proceeds in assets of liquid yield. Similarly the household wishing to include car mileage and washing-machine-service hours in its consumption program would not need to include the equipment in its asset portfolio but could buy the desired services. But in fact markets for rental and sale of durable goods are

imperfect, so that it is both difficult to realize their value as an investment except by consuming their services directly and expensive to consume the services without owning the goods. The rent a car-owner can command by letting his car to someone else is much lower than what he would have to pay to hire the same service, from taxi or drive-yourself companies. Likewise, the price he could realize by selling his car is smaller than what he would have to pay a dealer for a car of the same age and quality. There are similar discrepancies--less for houses, more for smaller goods--between the buying and selling prices and rents of all consumers' durables, and indeed of business and professional equipment as well. These imperfections complicate the investment and consumption decisions of households, connecting the structures, as well as the net totals, of wealth and consumption.

They also complicate the accounting itself. In principle, no matter when a durable good was bought, the use of its services during a period--nothing more nor less--ought to be reckoned as consumption. The same services enter the other side of the account as income, offset to the extent perhaps of 100% or more by the decline in the value of the good due to age and use. The capital account would carry the value of the good; purchase of a new good would be an item of saving and investment rather than a consumption outlay. Were there perfect rental and sale markets, there would be unambiguous money values to assign to the consumption, net income, and capital values of durable goods. An approximation to this principle is attempted, both at a household level in budget studies and at an aggregative level in national income accounts, for houses, where rental and sales markets, though far from perfect, are better

developed than for lesser consumers' durables. By and large, the margins of indeterminacy between buyers' and sellers' prices and rents are too great to permit the application of these principles of valuation and accounting. It is not, as often thought, simply the difficulty of collecting the necessary information about use and depreciation that is responsible for the unsatisfactory handling of durable goods in household budgets and national accounts. The essential imperfections of their markets make it impossible to express and to aggregate all items on balance sheets and income accounts in terms of a single homogeneous unit of value.

As a result, there are two approaches, both valid and both incomplete, to analysis of the demand for durable goods. From the standpoint of the income account, expenditures on consumers' durables, which provide for consumption of the related services sooner or later, compete with consumption outlays for food, recreation, services, etc. From the standpoint of the capital account, ownership of durables competes with the holding of cash or other financial assets, or with freedom from debt. On both counts, there are reasons to expect households to maintain some balance between their investments in durable goods and other forms of holding wealth. Consumption of the services of durable goods competes with more distant consumption objectives, which are better provided for by financial assets--securities, insurance, retirement programs. As investments, durable goods share the advantages and risks, with respect to changes in price level and relative prices, of business equities; but they are less liquid and offer less scope for reduction of risk bydiversification. A prudent household will wish to balance a position in durable goods by ownership of assets of assured stability of money yield and money value. This motive will be

the stronger if the durable goods position is financed by mortgage or installment debt.

A rational household will not persistently hold cash and short-term liquid assets beyond transactions requirements when these could be used to reduce outstanding indebtedness. Simultaneous holding of liquid assets of low yield and debt of high interest cost can be explained by the fear that the opportunity to borrow might not be available later if and when funds were needed, and by restrictions imposed by lenders on the speed of debt repayment. And it is, of course, rational to balance against debt investments of relatively fixed money value if they promise a higher rate of return or if they are, like life insurance and pension rights, imperfectly liquid means of meeting future goals of accumulation.

The basic hypothesis underlying the calculations to be reported in this paper is that households endeavor to maintain a certain equilibrium or balance among the various items of capital account: goods, cash and liquid assets, long-term financial assets, debts. The desired structure of assets and debts will be different for different households, depending, among other things, on (a) their requirements and tastes for the services of consumers' durable goods, (b) their needs for balances of cash and liquid assets to meet transactions and to provide for contingencies due to fluctuations of income and outlay, (c) the investment requirements of their occupations, (d) the nature and remoteness of future demands on wealth, for retirement and for children, (e) their ability to borrow, (f) the extent of their information about capital markets, their estimates of the prospects, in terms of purchasing power, of various available assets, and their attitudes towards the associated risks, (g) the difficulty and cost to them of making capital transactions. Since these

factors are not directly observed, their influence must be sought in terms of observed variables with which they are likely to be related. Thus the desired structure of assets and debts may be expected to be different for households differing in respect to age, education, family size and composition, occupation, and location. It will be different for households at different levels of income or of "living"; as a determinant of fairly durable patterns of consumption, current income seems less relevant than a longer-run standard of living or "permanent income." Further, the relative proportions of different assets and debts can be expected to vary, for any given income level, with the general level of household wealth. For most households, a major decision affecting the structure of the balance sheet is whether or not to own a home. This decision depends on the factors already enumerated and, in addition, such unobserved considerations as frequency of occupationally required moves, attitudes towards the risk and effort specific to home ownership. Once this major decision is made, many other features of the balance sheet follow, e.g. mortgage debt and home furnishings. Home ownership is thus another observed variable to which the structure of the capital account is related. There will, of course, be residual differences in circumstances and tastes that are not measured by any of these observed variables; accordingly there will be unsystematic and unexplained differences in asset-debt patterns.

One implication of the hypothesis is the possibility of an imbalance in the actual asset and debt structure of households--too much of some assets, too little of others. (Throughout this discussion debts should be regarded as negative assets, high in value when low in absolute amount.) The structure cannot be changed overnight, given the imperfection of asset markets and the illiquidity of many assets. But circumstances

and tastes can change so that a set of assets and debts that was once an equilibrium becomes a disequilibrium. Economists, at least until the vogue of The Affluent Society, have rightly been scornful of popular and journalistic notions of saturation and have emphasized that wants are unlimited and that households can never have too many durable goods, for example, in any absolute sense. But relative saturation there can be. Consumers can have too many durable goods, not in any absolute sense, but relative to their net holdings of financial assets. The opposite phenomenon, relative saturation with liquidity, no doubt characterized household balance sheets immediately after the war. Quite apart from dramatic shifts of circumstance or taste, the capital-account adjustments of a household are necessarily a continuing dynamic process; the appropriate amount and composition of wealth varies over the "life cycle." The adjustment process can be estimated by observing the relations of changes in assets and debts during the year to the levels of the same assets and debts at the beginning of the year. The hypothesis implies, generally speaking, that the change in each stock will be negatively related to the initial level of the stock itself but positively related to the initial level of other stocks.

The basic hypothesis suggests two sets of calculations, one in which stock levels are the variables to be explained, and a second in which changes in stocks, or flows, take this role. Each set of calculations consists in turn of two parts: regressions of the dependent variables on various combinations of explanatory variables; and calculations of the correlations, simple, partial, and multiple, among the dependent variables before and after the regressions. In the case of the regressions of the stock variables, the explanatory variables are those enumerated above--indicators of the biological, geographical, social and economic circumstances of the household.

The purpose is to measure the influence of each explanatory variable on asset and debt holdings, and to test their significance in explaining differences among households in these holdings. The hypothesis suggests not only that these variables will be significant explanatory factors for the stocks individually but also that much of the consistency in the structure of stocks will turn out to be due to their common dependence on these explanatory variables. This suggestion is the reason for the calculation of correlations among the stocks before and after the regressions; to the extent that the suggestion is correct, the correlations will be smaller after regression. The regressions and correlations computed for the flows are similar in purpose. However, the flow regressions have, in addition to the explanatory variables used in the stock regressions the initial values of the stocks themselves. Their inclusion is designed to test the implications of the hypothesis regarding adjustment of the capital account and to estimate the parameters of the adjustment process.

## The Observations and the Variables Used

Since the objectives of the study did not include exhaustive description of consumer behavior no attempt was made to use the entire 12,500 observations available. The hypotheses under consideration, while perhaps relevant to all kinds of consumers, can be fairly examined only by comparing behavior among relatively homogeneous households. Some categories of households were eliminated entirely, leaving several subsamples which meet the homogeneity requirement and at the same time are large enough to warrant the use of statistical analysis and inference.

The body of data used can be concisely described as a sample of households including an employed, male head between 25 and 74 years of age as well as one or more other persons for at least part of the year. All households not meeting those specifications were dropped from the sample. In addition households headed by a "professional" with less than 8 years of education and those headed by "unskilled" workers with more than 12 years of education were eliminated. Finally, a few households were removed because of missing information on a variable used in the analysis.

The remaining households were divided on the basis of tenure status at the end of 1950. Households owning homes at the end of the year comprised one category and all other households a second. These classes will be referred to subsequently as home owners and renters respectively. All calculations and analyses have been carried out separately for home owners and renters. There are two reasons for this. First, as has already been mentioned, ownership of a home has a large impact on a household's capital account and can be expected to influence the amount as well as the composition of expenditures and assets. Second, housing level is used as one of

the variables in the analysis and there is no clear solution to the problem of defining a measure of housing level which renders home owners and renters comparable.

Further sub-divisions of the sample by age and education were made at some points in the analysis. For this purpose 4 age classes and 3 education classes were recognized. In the case of age the end-points were 25-34, 35-44, 45-54, and 55-74. For education the classes were defined as less than 9 years, 9-12 years, and more than 12 years. The class frequencies by tenure, ages and education are shown in Table 2.1

Table 2.1

Sample Frequencies by Tenure, Age and Education Classes

Home owners

| Age / Education (yrs.) | 25-34 | 35-44 | 45-54 | 55-74 | all |
|---|---|---|---|---|---|
| 0-8 | 117 | 343 | 490 | 684 | 1,634 |
| 9-12 | 539 | 672 | 437 | 348 | 1,996 |
| 13 or more | 228 | 354 | 226 | 135 | 943 |
| all | 884 | 1,369 | 1,153 | 1,167 | 4,573 |

Renters

| Age / Education (yrs.) | 25-34 | 35-44 | 45-54 | 55-74 | all |
|---|---|---|---|---|---|
| 0-8 | 297 | 356 | 388 | 357 | 1,398 |
| 9-12 | 780 | 539 | 232 | 145 | 1,696 |
| 13 or more | 368 | 176 | 117 | 73 | 734 |
| all | 1,445 | 1,071 | 737 | 575 | 3,828 |

Ideally an analysis of household capital accounts would start with data showing an exhaustive enumeration of major balance sheet items for each household. Such complete information is not available in the Survey of Consumer Expenditures and probably will not be available in surveys of comparable size and coverage for some time to come. Although a complete

balance sheet is not available, an attempt has been made to glean as much of it as possible from the available data.

The information on inventories of durable goods has been used to build 8 of the stock variables used in this study. The inventory data show the ages of specific durable goods in 5 age classes. To form the new variables approximate values were assigned for each good owned by a household on the basis of its age, and the values thus obtained were combined under seven general headings. The seven variables are

$A_1$: Furniture,

$A_2$: Basic Kitchen Appliances (Range and Refrigerator),

$A_3$: Laundry Appliances (Washer, Ironer),

$A_4$: Deep Freeze,

$A_5$: Miscellaneous Appliances (Vacuum Cleaners, Sewing Machines),

$A_6$: Radios and Phonographs,

$A_7$: Television

An eighth variable, $A_8$, was formed by adding $A_1$ through $A_7$ together and, since this sum represents inventory value at the end of the year, the expenditures on durables during the year were deducted to arrive at a beginning of year value of durable goods. The schedule of values used in the assignment process are shown in Table 2.2. They were arrived at by applying "reasonable" depreciation rates to approximate prices of new goods in 1950 as shown in catalogs, Consumer Reports, etc.

Two dimensions of the automobile stock are given in the data: the age and the price-class. Here, again, an assigned value was placed on each possible combination of age and quality of automobile. The variable T is this assigned value minus the net cost of automobiles purchased during the

year to transform it to a beginning of year basis. The assignment schedule is shown in Table 2.3.

The variables cash in bank, C, and mortgage debt, M, were available directly in dollar amounts as of the beginning of the year. Installment debt, I , was punched in classes and was transformed into dollar amounts by assigning approximate "midpoint" values to the class codes. The "midpoints" used are shown in Table 2.4.

One other variable was, for all purposes, treated as a stock. Life insurance premiums can in some cases be interpreted as a proxy for the value of the policy -- a proper balance sheet item for all non-term insurance. For this reason the reported premiums on Personal Insurance, Z , was added to the list of variables to be analyzed.

As far as possible, flow variables were chosen and defined to correspond to stock variables. The reported expenditures on furnishings and equipment, $E_f$ , thus corresponds to the stock variable $A_f$ on total durable goods. Net cost of Automobile Purchases, $\Delta T$ ; Change in Mortgage Debt, $\Delta M$ ; Change in Installment Debt, $\Delta I$ , and Change in Cash Balances $\Delta C$ , similarly correspond to the Stocks T, M, I, and C , respectively. It must be admitted that the correspondence is less than perfect for some of the paired stocks and flows but it does not seem that the differences are great enough to seriously hamper the modest objectives of the investigation.

In addition to these flows, Change in Total Assets, $\Delta A$ , and Change in Total Debts, $\Delta D$ , have been added to the list; both variables were directly reported in the Survey. Also the difference between the two,

Table 2.2

Assignment Schedule for Valuation of Durable Goods

| | Year of Purchase | 1950-51 | 1946-49 | 1941-45 | Pre 1941 |
|---|---|---|---|---|---|
| $A_1$ | Living Room Suite | $300 | $250 | $200 | $100 |
| | Dining Room Suite | 300 | 250 | 200 | 100 |
| | Dinette Set | 100 | 80 | 60 | 20 |
| | Bedroom Suite | 300 | 250 | 200 | 100 |
| | Upholstered Chair | 100 | 80 | 60 | 20 |
| | Rugs & Carpets | 200 | 150 | 100 | 50 |
| | Pianos & Organs | 750 | 600 | 500 | 300 |
| $A_2$ | Range | 200 | 120 | 40 | 30 |
| | Refrigerator | 300 | 180 | 60 | 45 |
| $A_3$ | Automatic Washer | 250 | 150 | 50 | 38 |
| | Non-Automatic Washer | 150 | 90 | 30 | 22 |
| | Ironer | 175 | 105 | 35 | 26 |
| $A_4$ | Deep Freeze | 300 | 180 | 60 | 45 |
| $A_5$ | Sewing Machine | 200 | 120 | 40 | 30 |
| | Upright Cleaner | 75 | 45 | 15 | 11 |
| | Tank-Type Cleaner | 75 | 45 | 15 | 11 |
| $A_6$ | Phonograph | 75 | 45 | 15 | 11 |
| | Radio | 50 | 30 | 10 | 8 |
| | Radio-Phono. Comb. | 250 | 150 | 50 | 38 |
| $A_7$ | Television | 300 | 180 | 60 | 45 |
| | Television Comb. | 400 | 240 | 80 | 60 |

Table 2.3

Assignment Schedule for Value of Automobile

Note: Schedule value below multiplied by 1.5 in the case of Multi-Car Households.

| Price Class | Low | Medium | High | Not Ascertained* |
|---|---|---|---|---|
| Year of Purchase | | | | |
| 1950-51 | $1500 | $2000 | $2800 | $1700 |
| 1946-49 | 1000 | 1200 | 1600 | 1100 |
| Pre 1946 | 300 | 400 | 600 | 300 |
| Not Ascertained* | 500 | 600 | 800 | 500 |

*Pertains only to age or price class--not to whether household owns a car or not.

Table 2.4

"Mid points" for Installment Debt Classes used for assigning Dollar amounts to I.

| Classes | "Mid points" |
|---|---|
| $ 0 - 0 | 0 |
| 1 - 100 | $ 50 |
| 100 - 200 | 150 |
| 200 - 300 | 240 |
| 300 - 400 | 330 |
| 400 - 500 | 420 |
| 500 - 1000 | 600 |
| 1000 and over | 1200 |

$S(=\Delta A-\Delta D)$, has been used. Although this difference will be called saving it should be explicitly noted that it is different from the saving figure that would result from simply computing the difference between disposable income and consumption expenditures. It is difficult to say which measurement more closely approximates the "change in net worth" measure which would be ideal for the purposes of this study; there are considerations pointing in both directions. In any case, the nominal "net worth" measure was chosen here.

The group of variables upon which the stocks and flows are dependent according to the hypothesis, may be described as a set of indicators of social status, economic status and prospects, life-cycle standing, and environment. The independent or determining variables to be used in the analysis to follow are: age (A), education (E), occupation (O), family size (N), region (R), community size (L), disposable income (Y), and housing level (H). It is claimed that these variables, as a group, provide a reasonably good description of a household's location with respect to the relevant dimensions mentioned above. Unfortunately the observable variables are not related in any simple way to those dimensions. For example a variable such as education may be relevant because of its relation to social status or because of it effect on income prospects. This consideration will complicate matters later when an attempt is made to interpret the empirical findings.

The variables age and education have been introduced in two ways. At some points the sample was classified by age and education and separate regressions fitted within each subgroup. This procedure allows age and education to interact freely with each of the other variables

in the regression. When the two tenure groups were not subdivided, additive age and education effects were allowed for by introducing dichotomous dummy variables. Dummies A-2, A-3, and A-4 represent the older three of the four age classes, and E-2 and E-3 represent the two higher education classes. The coefficients of these variables must be interpreted as differential effects relative to the youngest age class or the lowest education class, as the case may be.

Occupation also has been represented through the dummy variable device. Six occupation classes have been formed from the nine employed classes recognized in the "original" occupation of head code used by the B.L.S. The salaried professional class (dummy O-1) is parallel to the first "original" class. The self-employed class (O-2) also is the same as the second "original" class; it includes self-employed professionals, businessmen, managers, and officials. The third and fourth "original" classes are combined in the clerical and sales class (O-3). The fifth "original" class has become the skilled worker class (O-4) and the sixth is now the semi-skilled worker class (O-5). Finally, the seventh, eighth, and ninth classes are combined in the unskilled worker category (O-6). As in the cases of age and education, one of the dummy variables is redundant and must be left out of regressions. O-4 has been chosen for this purpose; as a consequence the effects of the other occupation dummies will be relative to the skilled workers.

Family size (N) has been measured by the average number of persons in the household. N takes on fractional values when some persons are a part of the household for a part of the year.

The three regions and three community size classes are based on the city area code used in the Survey of Consumer Expenditures. The regions are: North (R-1), South (R-2), and West (R-3). The size classes are: large cities (L-1), suburbs of large cities (L-2), and small cities (L-3). For purposes of establishing dummy categories R-1 and L-1 were left out.

The last two independent variables, disposable income (Y) and housing level (H) are to be considered together as measures of the budget constraint on a household's decisions. In recognition of the deficiencies of current income as a measure of the theoretically relevant permanent or expected income, housing level has been introduced as a variable. The argument in favor of this practice is that a household's housing level is related to its permanent or expected income and is not likely to be freely adjusted to allow for short-run variations in income. Clearly a measure of housing level will not provide an exact measure of permanent income but to the extent that errors in the "housing" measure of permanent income are uncorrelated with the errors in the current income measure of permanent income (i.e. transitory income) the use of housing level can provide useful information. Disposable income and housing level can both be regarded as imperfect proxy variables for permanent income. They are both used because for present purposes two poor substitutes are better than one if they are partially independent of each other.

Disposable income was, of course, directly available in dollar amounts. Housing level was coded by classes; the measure being based on market value of home in the case of home owners and on annual rent for renters. The codes were transformed to dollar amounts according to the schedule of "midpoints" shown in table 2.5.

Table 2.5

"Midpoints" for Housing Level Classes
used for assigning Dollar Values to H

Home owners

| Classes | "Mid points" |
|---|---|
| $ 1 - 4,999 | $ 4,000 |
| 5,000 - 7,499 | 6,500 |
| 7,500 - 9,999 | 8,500 |
| 10,000 -12,499 | 11,250 |
| 12,500 -14,999 | 13,750 |
| 15,000 -17,499 | 16,250 |
| 17,500 -19,999 | 18,500 |
| 20,000 -24,999 | 22,000 |
| 25,000 - and over | 30,000 |

Renters

| Classes | "Mid points" |
|---|---|
| $ 0 - 249 | $ 200 |
| 250 - 499 | 400 |
| 500 - 749 | 650 |
| 740 - 999 | 825 |
| 1,000 - 1,249 | 1,125 |
| 1,250 - 1,499 | 1,375 |
| 1,500 - 1,999 | 1,750 |
| 2,000 - 2,999 | 2,250 |
| 3,000 - and over | 3,600 |

For convenience the variables will often be referred to by symbol. Table 2.6 lists the variables and the symbolic equivalents.

Table 2.6

List of variables used and their symbolic equivalents.

STOCKS

| | |
|---|---|
| Furniture | $A_1$ |
| Kitchen Appliances | $A_2$ |
| Laundry Appliances | $A_3$ |
| Deep Freeze | $A_4$ |
| Misc. Appliances | $A_5$ |
| Radio-Phonograph | $A_6$ |
| Television | $A_7$ |
| Total Durable Goods | $A_f$ |
| Automobile | T |
| Mortgage Debt | M |
| Installment Debt | I |
| Cash Balances | C |
| Insurance | Z |

FLOWS

| | |
|---|---|
| Durable Goods Purchases | E |
| Auto Purchase | $\Delta T$ |
| Change in Mortgate Debt | $\Delta M$ |
| Change in Installment Debt | $\Delta I$ |
| Change in Cash balances | $\Delta C$ |
| Change in Assets | $\Delta A$ |
| Change in Debts | $\Delta D$ |
| Saving | S |

INDEPENDENT VARIABLES

| | |
|---|---|
| Education | E |
| 0-8 years | E-1 |
| 9-12 years | E-2 |
| 13 or more years | E-3 |
| Age | A |
| 25-34 years | A-1 |
| 35-44 years | A-2 |
| 45-54 years | A-3 |
| 55-74 years | A-4 |
| Occupation | O |
| Salaried Professional | O-1 |
| Self-Employed | O-2 |
| Clerical and Sales | O-3 |
| Skilled Workers | O-4 |
| Semi-skilled Workers | O-5 |
| Unskilled Workers | O-6 |

Table 2.6 continued

| | |
|---|---|
| Family Size | F |
| Region | R |
| North | R-1 |
| South | R-2 |
| West | R-3 |
| Community Size | L |
| Large Cities | L-1 |
| Suburbs to Large Cities | L-2 |
| Small Cities | L-3 |
| Disposable Income | Y |
| Housing Level | H |
| Age, F, M, I, and C collectively as used in flow regressions | $\Sigma$ |

The Stock Calculations

Multiple linear regression functions were fitted for each of the stock variables on some or all of the independent variables. Table 3.1 shows F-Ratios for testing, by analysis of variance, the significance of selected groups of independent variables. Test (9) in Table 3.1.2 shows results of the analysis in which each of the two tenure classes were subdivided by age and education and separate regressions fitted to each class. In the other tests age and education are included, if at all, in simple dummy variable form, and the regressions are fitted to the whole tenure class. Table 3.2 shows, for two of the "pooled" regressions, regression coefficients, their respective estimated standard errors, the standard deviation of residuals, $S_u$ and $R^2$ (coefficient of multiple determination). One of the regressions (I) includes Y and H , and the other (II) omits them; both include Age, Education, Occupation, Family Size, Region, and Community Size.

Table 3.1 gives the impression that nearly everything is significantly related to everything else -- as any good general equilibrium model suggests. A word of deflation seems in order and for this it is probably sufficient to call attention to the $R^2$'s and $S_u$'s in Table 3.2. Only in the case of Insurance Premiums has as much as 20 per cent of the variation been explained. The explanation is that tests based upon large samples are quite powerful and variables which are statistically significant may have very little predictive ability.

Among the stocks, Deep Freeze ($A_4$) and Automobile (T) were least related to the set of independent variables. The reasons for the poor performance in the case of $A_4$ are obscure. Clearly it is not

**Table 3.1.1. "F"-Tests for Stock Variables**

| Variable | (1) Simple effect of occupation | | (2) Effect of N,R, and L when added to occupation | | (3) Effect of N,R,and L when added to A,E, and O | | (4) Effect of Y and H when added to O,N,R and L | | (5) Effect of Y and H when added to A,E,O,N,R, and L | |
|---|---|---|---|---|---|---|---|---|---|---|
| | owners | renters | owners | renters | owners | renters | owners | renters | owners | renters |
| Furniture ($A_1$) | 26.24** | 25.22** | 17.48** | 16.80** | 12.43** | 15.69** | 86.09** | 40.91** | 83.74** | 36.33** |
| Kitchen Appliances ($A_2$) | 1.75 | 3.39** | 7.38** | 11.45** | 7.29** | 9.09** | 17.59** | 4.15* | 20.24** | 1.95 |
| Laundry Appliances ($A_3$) | 13.09** | 7.10** | 21.23** | 27.04** | 11.80** | 21.27** | 45,36** | 68.84** | 49.12** | 2.79 |
| Deep Freeze ($A_4$) | 21.42** | 2.52* | 3.36** | 2.14 | 3.00* | 2.00 | 88.05** | 2.63 | 77.26** | 1.87 |
| Miscellaneous Appliances ($A_5$) | 11.54** | 18.51** | 12.66** | 14.60** | 9.12** | 12.40** | 6.80** | 13.94** | 14.20** | 13.09** |
| Radio-Phono.($A_6$) | 7.96** | 5.09** | 24.22** | 8.42** | 15.95** | 6.42** | 44.13** | 48.88** | 39.62** | 9.16** |
| Television ($A_7$) | 6.91** | 8.76** | 82.68** | 73.74** | 90.19** | 73.17** | 53.38** | 34.92** | 64.98** | 35.34** |
| Total Durables ($A_f$) | 4.70** | 10.63** | 3.96** | 25.20** | 2.80* | 23.62** | 74.89** | 7.40** | 70.97** | 6.80** |
| Automobile (T) | 9.34** | 9.54** | .87 | 1.47 | .032 | 1.52 | 13.87** | 9.19** | 11.89** | 7.19** |
| Mortgage Debt (M) | 35.40** | 1.62 | 22.60** | 3.74** | 13.99** | 3.74** | 158.92** | 13.61** | 185.94** | 13.32** |
| Installment Debt (I) | 6.03** | 4.99** | 9.99** | 3.92** | 6.50** | 3.06** | .82 | 1.54 | .67 | 2.12** |
| Cash in Bank (C) | 22.04** | 23.84** | 6.58** | 9.15** | 3.52** | 6.39** | 89.87** | 87.80** | 75.04** | 80.63** |
| Insurance Premiums (Z) | 51.5**[illegible] | 26.76** | 16.35** | 6.62** | 16.44** | 7.77** | 641.57** | 1965.00** | 525.25** | 1880.00** |
| Housing Level (H) | 187.21** | 99.36** | 28.63** | 7.45** | 25.88** | 6.42** | -0- | -0- | -0- | -0- |
| Degrees of Freedom: used/remaining | 5/4567 | 5/3822 | 5/4562 | 5/3817 | 5/4557 | 5/3812 | 2/4560 | 2/3815 | 2/4555 | 2/3810 |

**Note: ** denotes significance at .01 level * denotes significance at .05 level**

Table 3.1.2."F"-Tests for Stock Variables

| Variable | | (6) Additive effect of A and E when added to occupation | | (7) Additive effect of A and E when added to O,N,R,and L | | (8) Additive effect of A and E when added to O,N,R,L,Y, and H | | (9) Interaction of A and E with O,N,R,L,Y, and H minus additive effects of age and education | |
|---|---|---|---|---|---|---|---|---|---|
| | | owners | renters | owners | renters | owners | renters | owners | renters |
| Furniture | ($A_1$) | 30.45** | 7.28** | 25.30** | 6.19** | 24.00** | 4.40** | 1.83** | 2.23** |
| Kitchen Appliances | ($A_2$) | 58.83** | 16.47** | 58.68** | 14.74** | 59.78** | 13.96** | 1.12 | 1.48** |
| Laundry Appliances | ($A_3$) | 39.86** | 22.72** | 30.22** | 17.60** | 31.76** | 17.40** | 2.07** | 1.32** |
| Deep Freeze | ($A_4$) | 5.57** | 1.96 | 5.21** | 1.87 | 1.07 | 1.57 | 1.28* | 6.71** |
| Miscellaneous Appliances | ($A_5$) | 32.94** | 11.25** | 29.31** | 8.74** | 29.80** | 8.62** | 1.56** | 1.42** |
| Radio-Phonograph | ($A_6$) | 35.17** | 17.83** | 26.84** | 15.79** | 24.99** | 15.82** | 1.51** | 1.31** |
| Television | ($A_7$) | 8.70** | 6.24** | 8.11** | 5.71** | 12.71** | 5.89** | 2.13** | 1.52** |
| Total Durables | ($A_f$) | 14.59** | 7.39** | 13.41** | 5.34** | 11.90** | 5.14** | 2.57** | 1.87** |
| Automobile | (T) | 2.67* | 2.84* | 2.64* | 2.87* | 1.86 | 2.07 | 1.14 | 1.01 |
| Mortgage Debt | (M) | 86.06** | 1.36 | 76.79** | 1.36 | 139.96** | 1.25 | 2.14** | 1.41** |
| Installment Debt | (I) | 28.21** | 9.32** | 24.55** | 8.45** | 24.24** | 8.68** | 1.44** | 1.34** |
| Cash in Bank | (C) | 14.07** | 9.59** | 10.90** | 6.84** | 5.15** | 5.00** | 1.43** | 2.18** |
| Insurance Premiums | (Z) | 44.68** | 20.68** | 44.75** | 21.84** | 10.37** | 45.35** | 2.35** | 3.73** |
| Housing Level | (H) | 70.69** | 14.46** | 67.78** | 29.84** | -0- | -0- | -0- | -0- |
| Degrees of Freedom: used/remaining | | 5/4562 | 5/3817 | 5/4557 | 5/3812 | 5/4555 | 5/3810 | 130/4425 | 130/3680 |

Note: ** denotes significance at .01 level * denotes significance at .05 level

Table 3.2.1

Regression Coefficients for Furniture ($A_1$)

| Independent Variable | I | | II | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | 37.48 (11.24) | 25.06 (12.78) | 59.15 (11.31) | 39.55 (12.77) |
| E-3 | 36.08 (15.92) | 36.86 (18.42) | 93.42 (15.55) | 64.55 (18.30) |
| A-2 | -11.48 (13.31) | 25.25 (12.86) | 5.74 (13.48) | 34.75 (12.93) |
| A-3 | -77.91 (14.20) | -13.67 (14.89) | -46.52 (14.24) | 4.06 (14.88) |
| A-4 | -104.10 (15.02) | -30.57 (16.66) | -74.96 (15.11) | -19.16 (16.75) |
| O-1 | 27.34 (20.11) | 57.91 (23.20) | 43.95 (20.40) | 69.18 (23.37) |
| O-2 | 4.72 (13.77) | 23.21 (17.52) | 47.99 (13.59) | 46.64 (17.46) |
| O-3 | -5.16 (15.17) | 17.91 (17.47) | 2.29 (15.42) | 24.02 (17.60) |
| O-5 | -19.87 (14.14) | -16.04 (15.25) | -31.25 (14.35) | -20.94 (15.38) |
| O-6 | -41.55 (16.58) | -68.88 (16.78) | -60.98 (16.80) | -83.28 (16.85) |
| 1 | 552.17 (22.31) | 359.50 (23.73) | 608.40 (21.60) | 442.10 (21.74) |
| N | 6.49 ( 3.38) | 13.96 ( 3.81) | 9.80 ( 3.38) | 15.58 ( 3.84) |
| R-2 | -16.66 (11.86) | -72.61 (12.69) | -32.86 (12.00) | -80.87 (12.76) |
| R-3 | 60.08 (10.50) | -51.18 (12.70) | 55.73 (10.68) | -51.57 (12.81) |
| L-2 | -11.95 (10.75) | 37.94 (14.31) | -4.50 (10.92) | 40.50 (14.44) |
| L-3 | -4.00 (12.48) | -17.68 (14.60) | -17.52 (12.65) | -24.29 (14.71) |
| Y/1000 | 10.73 ( 1.70) | 6.25 ( 1.83) | --- | --- |
| H/1000 | 7.98 ( .97) | 131.18 (21.66) | --- | --- |
| $S_u$ | 303.63 | 312.58 | 309.03 | 315.46 |
| $R^2$ | .105 | .078 | .072 | .060 |

Note: All coefficients are in dollars.
Estimated errors in parentheses.

Table 3.2.2

Regression Coefficients for Kitchen Appliances ($A_2$)

| Independent Variable | I | | II | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | - 8.56 (4.51) | - 6.52 (6.06) | - 6.85 (4.48) | - 7.69 (6.00) |
| E-3 | 1.57 (6.39) | -16.34 (8.73) | 7.94 (6.16) | -17.92 (8.60) |
| A-2 | -61.47 (5.34) | -34.36 (6.10) | -59.78 (5.34) | -34.99 (6.08) |
| A-3 | -82.25 (5.70) | -49.73 (7.06) | -79.50 (5.64) | -50.71 (6.99) |
| A-4 | -91.21 (6.03) | -46.79 (7.90) | -89.12 (5.98) | -47.78 (7.87) |
| O-1 | 2.37 (8.07) | - 1.94 (11.00) | 1.83 (8.08) | - 3.18 (10.98) |
| O-2 | 9.40 (5.53) | -12.81 (8.31) | 12.86 (5.38) | -14.57 (8.20) |
| O-3 | 1.41 (6.09) | - 1.08 (8.28) | .89 (6.11) | - 1.96 (8.27) |
| O-5 | 9.68 (5.67) | 1.19 (7.23) | 9.58 (5.68) | 1.48 (7.23) |
| O-6 | 10.22 (6.65) | -15.51 (7.95) | 8.19 (6.65) | -14.60 (7.92) |
| 1 | 272.54 (8.96) | 188.48 (11.25) | 275.43 (8.55) | 182.00 (10.21) |
| N | - 5.17 (1.36) | 5.40 (1.81) | - 3.54 (1.34) | 5.36 (1.80) |
| R-2 | 12.16 (4.76) | 17.49 (6.01) | 10.68 (4.75) | 17.74 (5.99) |
| R-3 | 17.36 (4.22) | 13.04 (6.02) | 16.55 (4.23) | 12.77 (6.02) |
| L-2 | - 4.08 (4.32) | 11.61 (6.78) | - 4.28 (4.32) | 11.40 (6.78) |
| L-3 | 11.58 (5.01) | 23.98 (6.92) | 11.47 (5.01) | 24.25 (6.91) |
| Y/1000 | 4.33 ( .68) | .77 ( .87) | --- | --- |
| H/1000 | - .89 ( .39) | -18.35 (10.27) | --- | --- |
| $S_u$ | 121.86 | 148.17 | 122.37 | 148.19 |
| $R^2$ | .078 | .036 | .070 | .035 |

Table 3.2.3

Regression Coefficients for Laundry Appliances ($A_3$)

| Independent Variable | I | | II | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | 1.72 (3.10) | 2.80 (3.31) | 6.33 (3.10) | 3.86 (3.28) |
| E-3 | 7.96 (4.39) | 5.21 (4.78) | 20.12 (4.26) | 7.17 (4.70) |
| A-2 | -18.15 (3.67) | -10.96 (3.34) | -14.50 (3.69) | -10.27 (3.32) |
| A-3 | -33.71 (3.92) | -25.64 (3.86) | -27.04 (3.90) | -24.39 (3.83) |
| A-4 | -43.58 (4.14) | -31.08 (4.32) | -37.37 (4.14) | -30.24 (4.31) |
| O-1 | - 3.34 (5.54) | 4.85 (6.02) | .24 (5.58) | - 3.99 (6.01) |
| O-2 | 1.72 (3.80) | - .98 (4.54) | 10.93 (3.72) | .73 (4.49) |
| O-3 | .12 (4.18) | - 4.12 (4.53) | 1.74 (4.22) | - 3.63 (4.52) |
| O-5 | - 6.16 (3.90) | - 5.08 (3.96) | - 8.60 (3.93) | - 5.43 (3.95) |
| O-6 | - 6.71 (4.57) | -16.19 (4.35) | -10.83 (4.60) | -17.22 (4.33) |
| 1 | 67.26 (6.15) | 44.44 (6.15) | 85.07 (5.91) | 50.49 (5.59) |
| N | 5.61 ( .93) | 8.74 ( .99) | 6.28 ( .92) | 8.85 ( .99) |
| R-2 | .73 (3.27) | - 4.26 (3.29) | - 2.72 (3.29) | - 4.83 (3.28) |
| R-3 | 9.59 (2.90) | 7.56 (3.29) | 8.67 (2.92) | 7.57 (3.29) |
| L-2 | - 2.10 (2.97) | 12.28 (3.71) | - .49 (2.99) | 12.47 (3.71) |
| L-3 | 1.86 (3.44) | 4.82 (3.79) | - 1.04 (3.46) | 4.36 (3.78) |
| Y/1000 | 2.20 ( .47) | .32 ( .48) | --- | --- |
| H/1000 | 1.74 ( .27) | 10.47 (5.62) | --- | --- |
| $S_u$ | 83.72 | 81.05 | 84.60 | 81.09 |
| $R^2$ | .087 | .065 | .067 | .064 |

Table 3.2.4

Regression Coefficients for Deep Freeze ($A_4$)

| Independent Variable | I | | II | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | - .74 (1.93) | 1.44 (1.20) | 2.72 (1.94 | 1.65 (1.18) |
| E-3 | 1.69 (2.74) | 3.18 (1.72 | 11.19 (2.67) | 3.67 (1.70) |
| A-2 | 1.98 (2.29) | 2.13 (1.20) | 4.79 (2.32) | 2.29 (1.20) |
| A-3 | .80 (2.45) | 1.12 (1.39) | 5.86 (2.45) | 1.44 (1.38) |
| A-4 | - 2.47 (2.59) | 3.32 (1.56) | 2.14 (2.60) | 3.47 (1.55) |
| O-1 | - 6.02 (3.46) | .04 (2.17) | - 3.72 (3.51) | .16 (2.17) |
| O-2 | 6.39 (2.37) | 2.38 (1.64) | 13.30 (2.34) | 2.74 (1.62) |
| O-3 | - 1.39 (2.61) | 1.61 (1.63) | - .41 (2.65) | 1.64 (1.63) |
| O-5 | - 1.39 (2.43) | .26 (1.43) | - 3.05 (2.47) | .17 (1.43) |
| O-6 | - 3.92 (2.85) | - .65 (1.57 | - 7.11 (2.89) | - .89 (1.56) |
| 1 | -11.14 (3.84) | - 3.92 (2.22) | 1.44 (3.72) | - 2.71 (2.02) |
| N | - 1.06 ( .58) | .46 ( .36) | - .27 ( .58) | .50 ( .36) |
| R-2 | 4.74 (2.04) | .97 (1.19) | 2.11 (2.06) | .79 (1.18) |
| R-3 | 7.38 (1.81) | 3.40 (1.19) | 6.60 (1.84) | 3.35 (1.19) |
| L-2 | .93 (1.85) | .70 (1.34) | 1.97 (1.88) | .73 (1.34) |
| L-3 | 3.30 (2.15) | - .74 (1.37) | 1.32 (2.18) | - .87 (1.36) |
| Y/1000 | 2.37 ( .29) | .28 ( .17) | --- | --- |
| H/1000 | .99 ( .17) | .71 (2.03) | --- | --- |
| $S_u$ | 52.28 | 29.24 | 53.15 | 29.25 |
| $R^2$ | .064 | .009 | .032 | .008 |

Table 3.2.5

Regression Coefficients for Miscellaneous Appliances ($A_5$)

| Independent Variable | I | | II | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | 7.73 (2.26) | 5.36 (2.64) | 9.05 (2.24) | 7.04 (2.63) |
| E-3 | 9.47 (3.21) | 7.73 (3.81) | 13.00 (3.08) | 11.14 (3.76) |
| A-2 | -12.83 (2.68) | 2.06 (2.66) | -11.78 (2.67) | 3.20 (2.66) |
| A-3 | -23.30 (2.86) | -10.60 (3.08) | -21.38 (2.82) | - 8.41 (3.06) |
| A-4 | -26.26 (3.03) | -12.48 (3.45) | -24.48 (3.00) | -11.17 (3.44) |
| O-1 | .57 (4.05) | - .20 (4.80) | 1.55 (4.04) | 1.01 (4.80) |
| O-2 | 1.48 (2.78) | - 7.33 (3.63) | 4.12 (2.69) | - 4.58 (3.59) |
| O-3 | .05 (3.06) | - 3.53 (3.61) | .48 (3.06) | - 2.93 (3.62) |
| O-5 | 1.04 (2.85) | -14.41 (3.16) | .35 (2.85) | -15.01 (3.16) |
| O-6 | - 9.48 (3.34) | -17.74 (3.47) | -10.68 (3.33) | -19.48 (3.46) |
| 1 | 65.77 (4.50) | 37.94 (4.91) | 70.78 (4.28) | 47.58 (4.47) |
| N | .20 ( .68) | 2.67 ( .79) | .43 ( .67) | 2.88 ( .79) |
| R-2 | - 2.00 (2.39) | -13.27 (2.62) | - 2.99 (2.38) | -14.35 (2.62) |
| R-3 | 9.64 (2.12) | 3.85 (2.63) | 9.37 (2.12) | 3.72 (2.63) |
| L-2 | 8.74 (2.17) | 4.88 (2.96) | 9.18 (2.17) | 5.18 (2.97) |
| L-3 | 2.08 (2.52) | 6.03 (3.02) | 1.27 (2.51) | 5.19 (3.03) |
| Y/1000 | .72 ( .34) | 1.09 ( .38) | --- | --- |
| H/1000 | .46 ( .20) | 13.01 (4.48) | --- | --- |
| $S_u$ | 61.19 | 64.66 | 61.28 | 64.87 |
| $R^2$ | .060 | .060 | .056 | .053 |

Table 3.2.6

Regression Coefficients for Radio-Phonograph ($A_6$)

| Independent Variable | I | | II | |
|---|---|---|---|---|
| | Home owner | Renters | Home owners | Renters |
| E-2 | 2.01 (2.51) | .96 (2.74) | 4.92 (2.50) | 2.19 (2.73) |
| E-3 | 9.33 (3.56) | 10.00 (3.96) | 17.70 (3.44) | 12.73 (3.90) |
| A-2 | - 7.11 (2.98) | - 6.52 (2.76) | - 4.67 (2.99) | - 5.64 (2.76) |
| A-3 | -12.90 (3.17) | -16.21 (3.20) | - 8.58 (3.15) | -14.44 (3.18) |
| A-4 | -30.16 (3.36) | -25.23 (3.58) | -26.32 (3.35) | -24.30 (3.57) |
| O-1 | - .88 (4.49) | 4.20 (4.99) | .68 (4.52) | 4.97 (4.99) |
| O-2 | .45 (3.08) | 3.14 (3.77) | 6.28 (3.01) | 5.21 (3.73) |
| O-3 | 3.45 (3.39) | 3.10 (3.75) | 4.05 (3.42) | 3.39 (3.75) |
| O-5 | - 1.84 (3.16) | .05 (3.28) | - 3.08 (3.18) | - .42 (3.28) |
| O-6 | .91 (3.71) | .24 (3.61) | - 1.88 (3.72) | - 1.12 (3.60) |
| 1 | 37.78 (4.99) | 47.24 (5.10) | 47.61 (4.78) | 54.34 (4.64) |
| N | 2.43 ( .76) | 1.78 ( .82) | 3.38 ( .75) | 1.97 ( .82) |
| R-2 | 7.85 (2.65) | - 1.37 (2.73) | 5.60 (2.66) | - 2.31 (2.72) |
| R-3 | 12.76 (2.35) | 3.23 (2.73) | 12.00 (2.37) | 3.02 (2.73) |
| L-2 | - 2.03 (2.40) | - .81 (3.07) | - 1.32 (2.42) | - .60 (3.08) |
| L-3 | 14.07 (2.79) | 14.09 (3.14) | 12.60 (2.80) | 13.38 (3.14) |
| Y/1000 | 2.72 ( .38) | 1.29 ( .39) | --- | --- |
| H/1000 | .52 ( .22) | 6.55 (4.66) | --- | --- |
| $S_u$ | 67.87 | 67.17 | 68.45 | 67.31 |
| $R^2$ | .078 | .042 | .062 | .038 |

Table 3.2.7

Regression Coefficients for Television ($A_7$)

| Independent Variable | I | | II | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | - 4.83 (4.81) | 13.24 (5.15) | 2.91 (4.82) | 17.83 (5.15) |
| E-3 | -27.63 (6.81) | - 4.91 (7.43) | - 6.15 (6.63) | 5.21 (7.38) |
| A-2 | - 4.78 (5.69) | - 3.08 (5.19) | 1.55 (5.74) | .21 (5.22) |
| A-3 | -20.56 (6.07) | -10.17 (6.01) | - 9.19 (6.07) | - 3.61 (6.00) |
| A-4 | -40.50 (6.43) | -21.44 (6.72) | -30.19 (6.44) | -17.98 (6.76) |
| O-1 | -13.09 (8.60) | -13.11 (9.36) | - 8.13 (8.69) | -10.23 (9.42) |
| O-2 | - 5.19 (5.89) | 8.05 (7.07 | 10.31 (5.79) | 15.74 (7.04) |
| O-3 | - 4.60 (6.49) | - 9.93 (7.04) | - 2.52 (6.57) | - 8.82 (7.10) |
| O-5 | -11.79 (6.05) | - 2.33 (6.15) | -15.43 (6.12) | - 4.10 (6.20) |
| O-6 | -20.99 (7.09) | -21.78 (6.77) | -28.21 (7.16) | -26.85 (6.79) |
| 1 | 104.60 (9.54) | 76.83 (9.57) | 132.41 (9.20) | 103.32 (8.77) |
| N | 1.58 (1.45) | 3.37 (1.54) | 3.49 (1.44) | 4.08 (1.55) |
| R-2 | -28.01 (5.07) | -46.88 (5.12) | -33.91 (5.11) | -50.36 (5.15) |
| R-3 | -46.67 (4.49) | -50.03 (5.12) | -48.48 (4.55) | -50.77 (5.16) |
| L-2 | .70 (4.60) | - .10 (5.77) | 2.94 (4.65) | .70 (5.82) |
| L-3 | -77.40 (5.34) | -68.58 (5.89) | -81.73 (5.39) | -71.22 (5.93) |
| Y/1000 | 5.69 ( .73) | 4.68 ( .74) | --- | --- |
| H/1000 | 2.05 ( .42) | 25.16 (8.74) | --- | --- |
| $S_u$ | 129.85 | 126.09 | 131.67 | 127.22 |
| $R^2$ | .130 | .122 | .105 | .105 |

Table 3.2.8

Regression Coefficients for Total Durables ($A_f$)

| Independent Variable | I | | II | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | 53.32 (21.99) | 51.19 (19.25) | 36.01 (22.07) | 55.44 (19.11) |
| E-3 | 26.41 (31.15) | 41.02 (27.76) | -35.79 (30.35) | 44.05 (27.37) |
| A-2 | -80.74 (26.05) | 18.31 (19.39) | -97.46 (26.31) | 20.03 (19.34) |
| A-3 | -128.71 (27.79) | -54.75 (22.45) | -156.21 (27.79) | -53.10 (22.26) |
| A-4 | -171.52 (29.40) | -39.04 (25.11) | -193.02 (29.50) | -35.12 (25.06) |
| O-1 | 106.52 (39.34) | 18.91 (34.97) | 109.63 (39.81) | 24.80 (34.95) |
| O-2 | 48.36 (26.95) | 20.31 (26.41) | 13.32 (26.52) | 26.18 (26.11) |
| O-3 | 22.22 (29.69) | 14.83 (26.32) | 26.07 (30.10) | 19.72 (26.32) |
| O-5 | -29.39 (27.66) | -22.19 (22.99) | -27.40 (28.02) | -22.79 (23.01) |
| O-6 | -82.44 (32.44) | -108.49 (25.28) | -62.45 (32.80) | -110.81 (25.20) |
| 1 | 970.12 (43.66) | 537.61 (35.76) | 936.13 (42.16) | 560.63 (32.52) |
| N | 26.11 (6.61) | 42.57 (5.74) | 11.33 (6.59) | 42.30 (5.74) |
| R-2 | -30.36 (23.21) | -120.12 (19.12) | -15.64 (23.43) | -119.30 (19.08) |
| R-3 | 17.82 (20.55) | -70.90 (19.14) | 25.46 (20.85) | -68.66 (19.15) |
| L-2 | - 7.61 (21.04) | 79.92 (21.56) | - 6.58 (21.32) | 80.71 (21.59) |
| L-3 | -77.70 (24.42) | -28.23 (22.00) | -75.38 (24.68) | -28.12 (22.00) |
| Y/1000 | -39.55 (3.32) | - 8.34 (2.76) | --- | --- |
| H/1000 | 7.06 (1.90) | 100.18 (32.65) | --- | --- |
| $S_u$ | 594.12 | 471.08 | 603.18 | 471.80 |
| $R^2$ | .053 | .056 | .024 | .053 |

Table 3.2.9

Regression Coefficients for Automobile (T)

| Independent Variable | I | | II | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | 59.04 (32.12) | 11.58 (28.11) | 71.16 (31.83) | 25.98 (27.88) |
| E-3 | 118.51 (45.49) | 56.04 (40.51) | 140.05 (43.76) | 80.28 (39.94) |
| A-2 | 59.50 (38.05) | 79.89 (28.29) | 67.21 (37.95) | 88.65 (28.23) |
| A-3 | 40.71 (40.58) | 62.71 (32.76) | 56.72 (40.07) | 78.03 (32.49) |
| A-4 | 43.74 (42.94) | 62.82 (36.64) | 61.19 (42.53) | 74.54 (36.57) |
| O-1 | -54.47 (57.46) | 70.06 (51.04) | -34.65 (57.41) | 82.93 (51.01) |
| O-2 | 90.77 (39.36) | 144.41 (38.54) | 114.67 (38.25) | 167.05 (38.11) |
| O-3 | 97.70 (43.36) | 78.53 (38.41) | 108.18 (43.40) | 86.60 (38.41) |
| O-5 | -27.67 (40.40) | 3.09 (33.55) | -38.60 (40.40) | - 1.25 (33.58) |
| O-6 | -60.45 (47.38) | 16.41 (36.91) | -68.44 (47.30) | 3.33 (36.78) |
| 1 | -44.32 (63.76) | -77.36 (52.19) | 23.12 (60.80) | 3.95 (47.47) |
| N | 2.77 (9.66) | - 6.33 (8.37) | - 3.18 (9.50) | - 5.20 (8.38) |
| R-2 | - 4.72 (33.90) | -52.65 (27.90) | -12.64 (33.79) | -58.77 (27.86) |
| R-3 | 13.40 (30.01) | -21.26 (27.93) | 13.63 (30.07) | -20.13 (27.96) |
| L-2 | 19.71 (30.73) | 33.22 (31.47) | 28.37 (30.74) | 35.78 (31.51) |
| L-3 | 75.04 (35.67) | 51.61 (32.11) | 62.03 (35.59) | 46.35 (32.12) |
| Y/1000 | -13.91 (4.85) | - .35 (4.04) | --- | --- |
| H/1000 | 13.10 (2.78) | 170.20 (47.65) | --- | --- |
| $S_u$ | 867.72 | 687.48 | 869.79 | 688.61 |
| $R^2$ | .019 | .022 | .014 | .018 |

Table 3.2.10

Regression Coefficients for Mortgage Debt (M)

| Independent Variable | I | | II | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | 180.95 (93.24) | 36.58 (29.21) | 423.76 (95.85 | 52.34 (29.02) |
| E-3 | 382.65 (132.08) | -18.39 (42.10) | 953.26 (131.81) | 2.72 (41.57) |
| A-2 | -635.26 (110.46) | -33.02 (29.40) | -455.40 (114.27) | -24.56 (29.38) |
| A-3 | -1537.63 (117.82) | - .66 (34.04) | -1196.43 (120.68) | 12.35 (33.82) |
| A-4 | -2085.66 (124.65) | -44.79 (38.08) | -1751.13 (128.09) | -31.37 (38.06) |
| O-1 | 334.26 (166.82) | 30.02 (53.04) | 592.50 (172.89) | 46.84 (53.09) |
| O-2 | -146.33 (114.28) | 47.75 (40.04) | 336.52 (115.19 | 71.45 (39.67) |
| O-3 | 428.76 (125.87) | -16.64 (39.92) | 555.40 (130.70) | - 4.53 (39.98) |
| O-5 | 53.02 (117.30) | -11.81 (34.86) | -105.75 (121.66) | -15.67 (34.95) |
| O-6 | -116.26 (137.56) | - 6.12 (38.35) | -314.28 (142.44) | -18.41 (38.28) |
| 1 | 1042.97 (185.13) | -109.27 (54.24) | 2118.63 (183.09) | -21.58 (49.40) |
| N | 93.63 (28.03) | 10.76(8.71) | 77.37 (28.62) | 11.20 (8.72) |
| R-2 | -12.32 (98.42) | 11.70 (29.00) | -186.14 (101.75) | 8.45 (28.99) |
| R-3 | 127.23 (87.14) | 112.26 (29.02) | 96.67 (90.54) | 115.98 (29.10) |
| L-2 | 140.45 (89.22) | - .92 (32.70) | 254.69 (92.57) | 1.93 (32.80) |
| L-3 | -474.24 (103.55) | -21.25 (33.37) | -663.08 (107.19) | -24.83 (33.43) |
| Y/1000 | -15.96 (14.09) | -11.17 (4.19) | --- | --- |
| H/1000 | 148.52 (8.08) | 251.65 (49.52) | --- | --- |
| $S_u$ | 2519.11 | 714.44 | 2619.35 | 716.74 |
| $R^2$ | .199 | .015 | .133 | .009 |

Table 3.2.11

Regression Coefficients for Installment Debt (I)

| Independent Variable | I | | II | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | -12.10 (3.85) | - 3.38 (4.79) | -11.55 (3.80) | - 2.92 (4.75) |
| E-3 | -17.75 (5.45) | -10.76 (6.91( | -16.15 (5.23) | - 9.28 (6.80) |
| A-2 | -32.05 (4.56) | -21.40 (4.82) | -31.58 (4.53) | -20.97 (4.81) |
| A-3 | -43.82 (4.86) | -27.84 (5.58) | -43.00 (4.79) | -26.86 (5.53) |
| A-4 | -54.07 (5.14) | -32.52 (6.25) | -53.35 (5.08) | -32.23 (6.22) |
| O-1 | .27 (6.88) | -11.26 (8.70) | .53 (6.86) | -11.20 (8.68) |
| O-2 | -14.37 (4.71) | -15.13 (6.57) | -13.28 (4.57) | -14.26 (6.49) |
| O-3 | - 3.27 (5.19) | - 2.30 (6.55) | - 3.18 (5.18) | - 2.47 (6.54) |
| O-5 | 1.85 (4.84) | 5.84 (5.72) | 1.63 (4.83) | 5.58 (5.72) |
| O-6 | 1.43 (5.67) | - 8.65 (6.29) | .89 (5.65) | - 9.33 (6.26) |
| 1 | 58.78 (7.64) | 44.42 (8.90) | 60.56 (7.26) | 47.20 (8.08) |
| N | 2.42 (1.16) | 4.40 (1.43) | 2.63 (1.14) | 4.53 (1.43) |
| R-2 | 15.50 (4.06) | 10.23 (4.76) | 15.08 (4.04) | 9.59 (4.74) |
| R-3 | 16.57 (3.59) | .59 (4.76) | 16.42 (3.59) | .30 (4.76) |
| L-2 | 2.62 (3.68) | - 3.46 (5.36) | 2.74 (3.67) | - 3.38 (5.36) |
| L-3 | - 7.84 (4.27) | - 1.98 (5.47) | - 8.10 (4.25) | - 2.43 (5.47) |
| Y/1000 | .57 ( .58) | 1.39 ( .68) | --- | --- |
| H/1000 | .07 ( .33) | - 3.03 (8.12) | --- | --- |
| $S_u$ | 103.92 | 117.18 | 103.91 | 117.22 |
| $R^2$ | .043 | .023 | .043 | .022 |

Table 3.2.13

Regression Coefficients for Insurance Premiums (Z)

| Independent Variable | I | | II | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | 9.11 (8.79) | 12.30 (5.96) | 44.40 (9.64) | 39.67 (8.31) |
| E-3 | 77.67 (12.46) | 37.45 (8.59) | 181.12 (13.26) | 107.89 (11.91) |
| A-2 | 15.72 (10.42) | 9.90 (6.00) | 45.58 (11.49) | 31.64 (8.42) |
| A-3 | 28.09 (11.11) | 16.74 (6.94) | 80.70 (12.14) | 62.87 (9.69) |
| A-4 | 12.49 (11.75) | 16.61 (7.77) | 58.87 (12.88) | 36.14 (10.90) |
| O-1 | 27.14 (15.73) | 27.68 (10.82) | 44.16 (17.39) | 39.78 (15.21) |
| O-2 | 2.67 (10.78) | - 3.90 (8.17) | 73.44 (11.59) | 43.94 (11.36) |
| O-3 | 24.97 (11.87) | 16.83 (8.14) | 31.10 (13.15) | 17.37 (11.45) |
| O-5 | 1.84 (11.06) | 7.65 (7.11) | -12.35 (12.24) | - 4.56 (10.01) |
| O-6 | 5.32 (12.97) | 14.94 (7.82) | -29.05 (14.33) | -19.04 (10.97) |
| 1 | -54.42 (17.45) | -69.90 (11.06) | 61.22 (18.41) | 90.46 (14.15) |
| N | 8.59 (2.64) | 3.18 (1.78) | 21.41 (2.88) | 8.87 (2.50) |
| R-2 | 1.42 (9.28) | 14.67 (5.91) | -26.07 (10.23) | -12.47 (8.31) |
| R-3 | -27.28 (8.22) | -27.92 (5.92) | -36.91 (9.11) | -37.02 (8.34) |
| L-2 | - 9.19 (8.41) | 1.31 (6.67) | - 1.33 (9.31) | 6.01 (9.40) |
| L-3 | - 4.16 (9.76) | 6.79 (6.81) | -20.98 (10.78) | -12.97 (9.58) |
| Y/1000 | 36.45 (1.33) | 47.97 ( .85) | | |
| H/1000 | 4.76 ( .76) | 28.42 (10.10) | | |
| $S_u$ | 237.53 | 145.73 | 263.45 | 205.33 |
| $R^2$ | .280 | .531 | .114 | .069 |

simply because the deep freeze was a "new" product in 1950; the same was true for television. It may be that the purchase and use of a deep freeze requires a quite discontinuous change in habits and routine besides a heavy capital expenditure and that adaptability in that sense is poorly represented among the set of explanatory variables. Many other rationalizations are possible of course; a purely statistical one is that a relatively small proportion of the sample owned a deep freeze. Perhaps there are too few of them to warrant any general conclusion.*

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* This consideration really implies that a more appropriate model for analysis of deep freeze ownership would be the probit regression model. See Tobin: "Estimation of Relationships for Limited Dependent Variables" Econometrica, Vol. 26, No. 1, (Jan. 1958) pp. 24-36.

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For T the fault may well be a technical one rather than a basic weakness in the notion that the automobile is a prime symbol of status and hence explainable in terms of education, occupation, etc. The variable T was derived by imputing a value to the end of year inventory and deducting auto purchases made during the year. It has become apparent that either the values imputed to the inventory were too small or the purchases were exaggerated because mean values of T for many age x education x occupation classes are very small and some indeed are negative. Although a simple bias which leaves relative magnitudes unaltered should not erase the hypothesized relationships it is possible that some more complex error has done so.

On the subject of the low $R^2$'s generally for durable goods, it must be remembered that such goods are only durable relative to cottage cheese

and shoeshines. They do wear out or become obsolete and require replacement in a fairly regular cycle. Thus, even if it were possible to predict closely the rate and/or quality of consumption of services of durable goods, a large amount of variability would remain simply because of the inventory cycle. This phenomena will obviously be more important for specific items than for aggregates. The same principle can be applied to installment debt if households make time purchases and then generally wait until they are repaid before incurring more debt.

An examination of the coefficients of the education variables makes it clear that, in general, more education implies larger stocks of assets and correspondingly lower debt. The two exceptions are Mortgage Debt and Television. Since mortgage debt is usually directly offset by an asset of greater value and, unlike installment debt, has an "inventory cycle" closely related to the life cycle, the observed result is not really contrary.* The case of television is not so easily dismissed. The

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* In the whole sample of home owners the correlation between M and H is equal to .294, and probably much higher within age classes.

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result is, however, consistent with findings of an intensive study of television ownership by Dernburg. Using 1950 census tract statistics Dernburg found support for the hypothesis that television is an inferior good with respect to education.** Total Durables ($A_f$) shows a weak tendency

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** Thomas F. Dernberg, "Consumer Response to Innovation," Studies in Household Economic Behavior, Yale University Press (New Haven, 1958), pp. 28-31

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to level off at least for the highest education class; perhaps this is due to the influence of television on the total. The finding that durable inventories are positively related to education is consistent

with the notion that education enhances income prospects and that the education coefficients are really coefficients of expected income. This notion is, however, contradicted by the finding that C and minus I are also positively related to education; apparently high education implies higher saving inclusive of durables.

The coefficients of the age dummies seem to follow fairly regular patterns. Values of durable stocks decline with age excepting Deep Freeze ($A_4$) and Automobile (T). Older households, in other words, have older durable goods on the average. They also have less mortgage debt and installment debt; the former is attributable to the coincidence of the mortgage and life cycles; the latter is consistent, given the negative asset interpretation, with the additional pattern of increasing cash balances. The pseudo-stock, insurance premiums, appears to level off or even fall for the oldest age class, although the evidence is thin when Y and H are controlled. This may well be a result of the completion of the payment periods on terminal life and endowment policies. The general pattern of age coefficients meshes nicely with a life cycle interpretation augmented by expected income to explain the lower levels of durable consumption of older households. It is very hazardous, however, to generalize about life cycle patterns from cross section data in an expanding economy.

The pattern of coefficients of occupational variables is not nearly as consistent and regular as is the pattern for the age variables. If the occupations are ranked by mean income level, the order is O-2, O-1,

O-3, O-4, O-5, and O-6. In several of the regressions the coefficients follow the order an expected income hypothesis would suggest. Where there is significant divergence from this pattern, as in the cases of Automobile and Mortgage Debt, the status symbol character of atuomobile and house (or neighborhood) may be involved. Another kind of divergence is the low value of Insurance Premiums for self-employed -- perhaps businessmen seek security from business and other assets instead of from insurance. Within the household furnishings category, professional workers appear to be relatively more interested in furniture than in appliances, compared to self-employed and to the other groups. Skilled workers and self-employed are the biggest TV owners.

The family size coefficients are significant in most regressions. Surprisingly, in the television regressions the effect of N is weak. The results show most emphatically that larger households have less cash and more durables -- particularly laundry equipment.

The region coefficients are significant as a group in most of the household durable goods regressions but seem to add little in the T, M and C regressions. The general tendencies indicate that western home owners hold more durables, and southern and western renters less, than their northern counterparts. In addition there was definitely less television ownership in the south and west; presumably because of scarcity of stations in those areas in 1950. The renter difference noted above is perhaps partly a difference in custom regarding furnishings in rented dwellings and partly the result of some basic difference in the status value and permanence of rental arrangements between the regions. As for

the positive effect in the case of western home owners, it may also be attributable to differences in local custom and styles of living.

The community size variables similarly are of major value only for durables. Non-metropolitan renters appear to supply relatively more of their own durable goods. The Small Cities class, both owners and renters, have larger stocks of radios and phonographs and less TV than the other two classes -- again the result of differences in signal availability.

The preceding variables collectively account for a great deal, but by no means all, of the systematic variation among households in economic status. Even among households alike in age, education, occupation, family size, and location, there remain considerable differences. Two direct measures of economic status are used here: current income, and housing level. Both may be regarded as representing imperfectly the series of past and expected incomes that determine the level and structure of a household's present possessions. Probably housing level better reflects the economic status to which the household has in the past adjusted its holdings of durable goods and other assets. Since moving is a major and expensive decision, housing level will remain the same through temporary fluctuations of income and will be adjusted only for lasting changes. But housing level is probably slow to adjust to permanent changes, and thus for some households with steadily growing income it may be an outdated indicator of economic status. Because of short-term fluctuations, to which the household would not adjust its whole pattern of asset holdings, current

income is not a reliable indicator of future economic status. However, over a group of households, even when all the other variables including housing level are held constant, there is probably a correlation between current incomes and expected future incomes. The relative strength of Y in determining the demand for insurance suggests that Y contains some permanent elements that H does not. Indeed for some consumers, insurance and home investment may be substitute ways of providing security. For these reasons it would be an overstatement to identify H with variations in "permanent income" and Y , for given levels of H as variations in "temporary income." Moreover, both H and Y have relationships of complementarity with certain assets or debts, and these relationships confound their influences as measures of economic status. The strengths of the effects of H on furnishings, and of Y on cash holdings (for transactions purposes, presumably) are probably to be interpreted in this way.

Nevertheless, it is interesting to compute the effects on each stock of a change in income accompanied by the appropriate change in housing level; this represents a long-run income coefficient, which can be compared with the short-run coefficient of Y alone for given H . For this purpose a maximum adjustment of H is taken to be one which maintains the H/Y ratio constant. If the marginal propensity to consume housing is lower than the average propensity, then the long-run income coefficient will be correspondingly closer to the short-run coefficient. The average H/Y ratios used for computing the long-run coefficients were estimated as

the ratio of mean $H$ to mean $Y$ for the middle two age classes. For home owners the value was approximately 2.07; for renters it was .15. Table 3.3 shows the calculated long- and short-run income coefficients. The housing coefficient is multiplied by 2.07 or .15 to obtain "adjusted" housing coefficients which are commensurable with current (short-run) income coefficients. The current income coefficient is then added to the adjusted housing coefficient to obtain long-run income coefficients.

The negative current or short-run income coefficients in the $A_f$ and $T$ regressions seem to call for special comment. So far as $T$ is concerned it was noted earlier that the method of computing the variable is somewhat suspect. Here, if there is a tendency for a positive amount of automobile investment in years of positive transitory income, then households that purchased during the year will be likely to have understated beginning-of-the-year $T$. $A_f$ was also computed by deducting purchases from year-end stocks, and it is possible that the same kind of breakdown has distorted its relation to income.

Correlations among sets of stock variables are shown in Table 3.4. For a given set of $n$ stock variables, the correlations are shown in an $n \times n$ matrix. The $i$th diagonal element of the matrix shows the multiple correlation of the $i$th variable with the remaining $n-1$ variables. An above-diagonal element $(i,j)$, $i < j$, is the simple correlation between the $i$th and the $j$th variables. The corresponding below-diagonal element $(j,i)$, $j > i$, is the partial correlation between the same two variables, account having been taken of the remaining $n-2$ variables. The general

Table 3.3

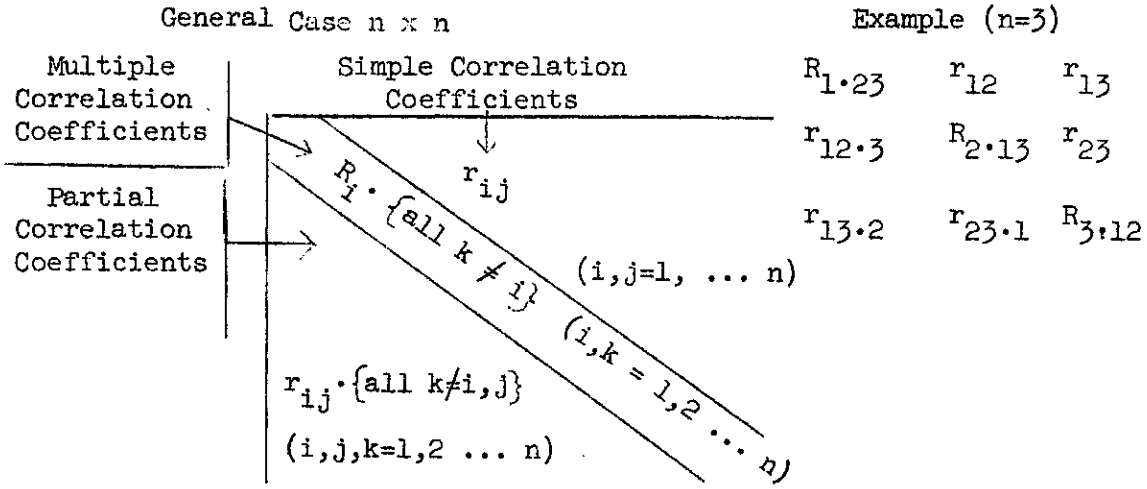
Computations of Long- and Short-Run Income Coefficients for Stocks

| Home owners | Housing Coefficient | "adjusted" Housing Coefficient | Short-Run Income Coefficient | Long-Run Income Coefficient |
|---|---|---|---|---|
| $A_1$ | 7.98 | 16.52 | 10.73 | 27.25 |
| $A_2$ | - .89 | - 1.84 | 4.34 | 2.50 |
| $A_3$ | 1.74 | 3.60 | 2.20 | 5.80 |
| $A_4$ | .99 | 2.05 | 2.37 | 4.42 |
| $A_5$ | .46 | .95 | .72 | 1.67 |
| $A_6$ | .52 | 1.08 | 2.72 | 3.80 |
| $A_7$ | 2.05 | 4.24 | 5.69 | 9.93 |
| $A_f$ | 7.06 | 14.61 | -39.55 | -24.94 |
| T | 13.10 | 27.12 | -13.91 | 13.21 |
| M | 148.52 | 297.44 | -15.96 | 281.48 |
| I | .07 | .14 | .57 | .71 |
| C | 31.13 | 64.44 | 131.91 | 196.35 |
| Z | 4.76 | 9.85 | 36.45 | 46.30 |
| Renters | | | | |
| $A_1$ | 131.18 | 19.68 | 6.25 | 25.93 |
| $A_2$ | -18.35 | - 2.75 | .79 | - 1.96 |
| $A_3$ | 10.47 | 1.57 | .32 | 1.89 |
| $A_4$ | .71 | 1.06 | .28 | 1.34 |
| $A_5$ | 13.01 | 1.95 | 1.09 | 3.04 |
| $A_6$ | 6.55 | .98 | 1.29 | 2.27 |
| $A_7$ | 25.16 | 3.77 | 4.68 | 8.45 |
| $A_f$ | 100.18 | 15.03 | - 8.34 | 6.69 |
| T | 170.20 | 25.53 | - .35 | 25.18 |
| M | 251.65 | 37.75 | -11.17 | 26.58 |
| I | - 3.03 | - .45 | 1.39 | .94 |
| C | 103.52 | 15.53 | 102.19 | 117.72 |
| Z | 28.42 | 4.26 | 47.97 | 52.23 |

schema of this correlation matrix is shown in Figure 1.

Figure 1

Format of Correlation Matrices




For each set of stock variables, two matrices are shown for home-owners and two for renters. One matrix of each pair represents the correlations of deviations from the over-all mean, the other represents the correlations of deviations from regressions of Type I as shown in Table 3.2. The purpose of presenting both matrices is to see in what way the common dependence of the stock variables on the demographic and economic explanatory variables alters their association with each other. The four matrices are presented for the following two sets of variables:

1. 12 stocks ($A_1$, $A_2$, $A_3$, $A_4$, $A_5$, $A_6$, $A_7$, T, M, I, C, Z) in Tables 3.4.1 and 3.4.2
2. 5 stocks ($A_f$, T, M, I, C) in Tables 3.4.3 and 3.4.4

Two general impressions, confirmatory of the basic hypothesis emerge from inspection of these correlation matrices:

1. In general, the correlations are positive between assets and negative between assets and debts. The exceptions have fairly obvious specific

Table 3.4.1. Home owners - Correlations Among Stocks

before regression

| | $A_1$ | $A_2$ | $A_3$ | $A_4$ | $A_5$ | $A_6$ | $A_7$ | T | M | I | C | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $A_1$ | 349 | 136 | 204 | 079 | 187 | 192 | 078 | 036* | 162 | 051 | 074 | 122 |
| $A_2$ | 076 | 238 | 150 | 034* | 139 | 123 | -0- | -0- | 077 | 072 | -0- | -0- |
| $A_3$ | 130 | 105 | 304 | 095 | 168 | 108 | 069 | -0- | 139 | 039 | -0- | 117 |
| $A_4$ | -0- | -0- | 058 | 192 | 061 | 088 | -0- | 034* | 029* | -0- | 057 | 147 |
| $A_5$ | 117 | 091 | 105 | -0- | 228 | 140 | 048 | -0- | 121 | 038* | -0- | 058 |
| $A_6$ | 140 | 076 | 040 | 057 | 088 | 279 | -061 | -0- | 066 | 071 | 039 | 099 |
| $A_7$ | 055 | -039 | 041 | -0- | 031* | -094 | 197 | 049 | 102 | 035* | -0- | 113 |
| T | -0- | -0- | -0- | -0- | -0- | -0- | 041 | 085 | 048 | -0- | -0- | -0- |
| M | 110 | 034* | 081 | -0- | 069 | -0- | 077 | 039 | 294 | 130 | -111 | 105 |
| I | -0- | 052 | -0- | -0- | -0- | 062 | 035* | -0- | 109 | 180 | -074 | -030* |
| C | 072 | -0- | -0- | 040 | -0- | -0- | -0- | -0- | -126 | -063 | 184 | 073 |
| Z | 061 | -0- | 069 | 122 | -0- | 071 | 096 | -0- | 080 | -048 | 062 | 257 |

after regression

| | $A_1$ | $A_2$ | $A_3$ | $A_4$ | $A_5$ | $A_6$ | $A_7$ | T | M | I | C | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $A_1$ | 235 | 106 | 130 | -0- | 134 | 130 | 040 | -0- | 049 | 041 | 032* | -0- |
| $A_2$ | 074 | 180 | 109 | -0- | 099 | 080 | -0- | -0- | -0- | 033* | -0- | -0- |
| $A_3$ | 103 | 089 | 196 | 051 | 117 | 038* | 032* | -0- | 031* | -0- | -0- | -0- |
| $A_4$ | -0- | -0- | 045 | 091 | 034* | 046 | -0- | -0- | -031* | -0- | -0- | 045 |
| $A_5$ | 101 | 072 | 089 | -0- | 204 | 097 | 031* | -0- | 040 | -0- | -0- | -0- |
| $A_6$ | 113 | 056 | -0- | 039 | 076 | 198 | -079* | -0- | -0- | 052 | -0- | -0- |
| $A_7$ | 043 | -0- | -0- | -0- | 031* | -087 | 126 | 052 | -0- | 031* | -0- | -0- |
| T | -0- | -0- | -0- | -0- | -0- | -0- | 052 | 063 | -0- | -0- | -0- | -0- |
| M | 044 | -0- | -0- | -033* | 032* | -0- | -0- | -0- | 202 | 106 | -156 | -0- |
| I | -0- | -0- | -0- | -0- | -0- | 051 | 034* | -0- | 097 | 135 | -049 | -0- |
| C | 036* | -0- | -0- | -0- | -0- | -0- | -0- | -0- | -154 | -037* | 174 | -045 |
| Z | -0- | -0- | -0- | 042 | -0- | -0- | -0- | -0- | -0- | -0- | -048 | 078 |

Note: In matrices above -0- has replaced correlations not significant at .05, asterisks denote non-significance at .01.

Table 5.4.2.. Renters - Correlations Among Stocks

before regression

| | $A_1$ | $A_2$ | $A_3$ | $A_4$ | $A_5$ | $A_6$ | $A_7$ | T | M | I | C | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $A_1$ | 406 | 250 | 196 | 100 | 213 | 180 | 173 | 047 | 066 | 097 | -0- | 136 |
| $A_2$ | 199 | 350 | 230 | 043 | 107 | 115 | -0- | -0- | -0- | 149 | -0- | -0- |
| $A_3$ | 087 | 188 | 329 | 060 | 199 | 107 | 091 | -0- | 046 | 081 | -0- | 052 |
| $A_4$ | 070 | -0- | 035* | 136 | -0- | 049 | 048 | 032* | 045 | -0- | 032* | 043 |
| $A_5$ | 137 | -0- | 145 | -0- | 295 | 133 | 093 | -0- | 061 | 037* | -0- | 101 |
| $A_6$ | 127 | 044 | 047 | 032* | 086 | 249 | -0- | 037* | -0- | 103 | -0- | 071 |
| $A_7$ | 153 | -082 | 067 | -0- | 049 | -068 | 246 | 057 | -0- | -0- | 040* | 128 |
| T | -0- | -0- | -0- | -0- | -0- | -0- | 048 | 104 | -0- | -0- | -0- | 060 |
| M | 042* | -0- | -0- | 037* | 042 | -0- | -0- | -0- | 098 | -0- | -0- | -0- |
| I | 045 | 115 | 034* | -042 | -0- | 079 | -0- | -0- | -0- | 199 | -062 | -0- |
| C | -0- | -0- | -0- | -0- | -0- | -0- | -0- | -0- | -0- | -059 | 192 | 174 |
| Z | 087 | -0- | -0- | -0- | 058 | 048 | 097 | 049 | -0- | -0- | 169 | 260 |

after regression

| | $A_1$ | $A_2$ | $A_3$ | $A_4$ | $A_5$ | $A_6$ | $A_7$ | T | M | I | C | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $A_1$ | 370 | 272 | 168 | 090 | 169 | 160 | 120 | -0- | 055 | 103 | -0- | 032* |
| $A_2$ | 224 | 346 | 218 | 048 | 101 | 098 | -0- | -0- | -0- | 129 | -0- | 048 |
| $A_3$ | 080 | 172 | 288 | 055 | 161 | 070 | 078 | -0- | 034* | 060 | -0- | 038* |
| $A_4$ | 067 | -0- | 034* | 125 | -0- | 044 | 049 | -0- | 040* | -0- | -0- | -0- |
| $A_5$ | 115 | -0- | 122 | -0- | 238 | 100 | 070 | -0- | 048 | 033* | -0- | 044 |
| $A_6$ | 122 | 037* | -0- | 032* | 070 | 209 | -0- | -0- | -0- | 093 | -0- | -0- |
| $A_7$ | 112 | -056 | 062 | 039* | 048 | -054 | 173 | 052 | -0- | -0- | -0- | -0- |
| T | -0- | -0- | -0- | -0- | -0- | -0- | 052 | 083 | -0- | -0- | -042 | -0- |
| M | 037* | -0- | -0- | 035* | 036* | -0- | -0- | -0- | 092 | -0- | -0- | 046 |
| I | 056 | 098 | -0- | -038 | -0- | 073 | -0- | -0- | -0- | 179 | -050 | -0- |
| C | -0- | -0- | -0- | -0- | -0- | -0- | -0- | -042 | -0- | -048 | 076 | -0- |
| Z | -0- | 036* | -0- | -0- | -0- | -0- | -0- | -0- | 042 | -0- | -0- | 088 |

Note: In matrices above -0- has replaced correlations not significant at .05, asterisks denote non-significance at .01.

Table 3.4.3. Home owners - Correlations Among Stocks

before regression

| | $A_f$ | T | M | I | C |
|---|---|---|---|---|---|
| $A_f$ | 169 | -0- | 149 | 078 | -073 |
| T | -0- | 057 | 048 | -0- | -0- |
| M | 133 | 048 | 216 | 130 | -111 |
| I | 057 | -0- | 115 | 155 | -074 |
| C | -054 | -0- | -094 | -057 | 157 |

after regression

| | $A_f$ | T | M | I | C |
|---|---|---|---|---|---|
| $A_f$ | 129 | -0- | 057 | 130 | -035* |
| T | -0- | 030 | -0- | -0- | -0- |
| M | 105 | -0- | 212 | 106 | -156 |
| I | 049 | -0- | 095 | 122 | -049 |
| C | -0- | -0- | -0- | -059 | 070 |

Table 3.4.4. Renteres - Correlations Among Stocks

before regression

| | $A_f$ | T | M | I | C |
|---|---|---|---|---|---|
| $A_f$ | 146 | -0- | 057 | 130 | -035* |
| T | -0- | 040 | -0- | -0- | -0- |
| M | 054 | -0- | 062 | -0- | -0- |
| I | 127 | -0- | -0- | 144 | -062 |
| C | -0- | -0- | -0- | -059 | 070 |

after regression

| | $A_f$ | T | M | I | C |
|---|---|---|---|---|---|
| $A_f$ | 140 | -0- | 049 | 128 | -034* |
| T | -0- | 046 | -0- | -0- | -042* |
| M | 046 | -0- | 053 | -0- | -0- |
| I | 126 | -0- | -0- | 137 | -050 |
| C | -0- | -041* | -0- | -046 | 070 |

Note: In matrices above -0- has replaced correlations not significant at .05, asterisks denote non-significance at .01.

explanations; for example, the negative correlation between radio-phonograph and television holdings indicates substitutability between these recreational goods. The general pattern is that those who have more have more of all assets -- households advance on all fronts together, keeping some balance among accumulations of different assets and reductions of debt. The same impression, with the same type exceptions, is given by the regressions themselves. As between demographic and socio-economic groups, as well as within groups, those who have more tend to have more quite generally.

2. Much, but by no means all, of the interdependence among stocks when expressed as deviations from over-all means turns out to be due to the common dependence of stocks on the explanatory variables of the regressions.

The flow calculations

The analysis of the flow variables is almost parallel to the stock analysis. The same types of calculations have been made except that the flows take the role of the stocks, and five stock variables ($A_f$ , T , M , I , C) are added to the list of independent or explanatory variables. The F-Ratios for five analysis of variance tests are shown in Table 4.1. The regression coefficients, standard errors, $S_U$ and $R^2$ for the "pooled" regression of each flow on the whole list of independent variables are shown in Table 4.2.

A cursory glance at Table 4.1 discloses many more non-significant relationships than were found for the stocks. In general the demographic dummy variables are of less importance for flows than for stocks, although there are several notable exceptions. It is worth pointing out that the factors represented by Age and Education, where those variables are significant, are not at all well represented among the other independent variables. A comparison of tests (3) and (4) shows that the significance of A and E is almost always enhanced by controlling Family Size, Region, Community Size, Income, Housing Level, and the five stock variables. Furthermore, test (5) shows that even where there is no significant additive effect of A and E, there is evidence of significant interaction with at least some of the other independent variables. The nature of such interaction has not been explored as yet however.

The $R^2$'s for flows in Table 4.2 are somewhat higher than those found for stocks. Values below .20 are almost the exception instead of the rule; some are as high as .70. Apparently flows are easier to predict than stocks. This is reasonable since stocks include a random component which can be viewed as the sum of deviations from cross-section flow relationships for past periods of time. It is elementary that the variance of a sum will in general be greater than that of its

Table 4.1. "F"-tests for Flow Regressions

| Variable | (1) Simple Effects of Occupation | | (2) Effects of N,R,L, Y,H, and Σ when added to occupation | | (3) Additive Effects of Age & Education when added to Occupation | | (4) Additive Effects of Age & Education when added to O,N,R,L,Y,H&Σ | | (5) Interaction of Age & Education with O,N, R,L,Y,H,Σ minus the Additive age, education effects | |
|---|---|---|---|---|---|---|---|---|---|---|
| | owners | renters | owners | renters | owners | renters | owners | renters | owners | renters |
| Durable Goods Purchases ($E_f$) | 14.33** | 10.65** | 479.61** | 571.57** | 20.58** | 11.64** | 64.43** | 17.93** | 2.95** | 2.79** |
| Auto Purchase ($\Delta T$) | 10.75** | 10.60** | 1057.30** | 598.10** | 1.58 | 8.11** | 6.12** | 15.83** | 1.29* | 2.93** |
| Mortgage Debt Change ($\Delta M$) | 2.81* | 1.99 | 36.10** | 850.56** | 24.70** | 1.18 | 81.51** | 1.39 | 3.03** | 2.60** |
| Installment Debt Change ($\Delta I$) | 1.04 | 1.25 | 126.41** | 191.06** | .51 | 1.67 | .43 | 1.98 | 2.18** | 1.69** |
| Change in Cash Balances ($\Delta C$) | .93 | .34 | 47.66** | 291.47** | 1.80 | 1.93 | 4.34** | 6.20** | 3.84** | 21.57** |
| Change in Assets ($\Delta A$) | 8.02** | 1.03 | 41.62** | 60.22** | 14.46** | 1.45 | 30.23** | 1.34 | 1.56** | 9.08** |
| Change in Debts ($\Delta D$) | 1.78** | 1.34 | 134.76** | 261.20** | 17.63** | .79 | 43.87** | 5.72** | 2.66** | 15.95** |
| Saving (S) | 11.50** | 1.22 | 151.60** | 503.91** | 6.14** | 2.10 | 2.71* | 5.95** | 3.58** | 4.71** |
| Degrees of Freedom: used | 5 | 5 | 12 | 12 | 5 | 5 | 5 | 5 | 185 | 185 |
| remaining | 4567 | 3822 | 4555 | 3810 | 4562 | 3817 | 4550 | 3805 | 4365 | 3620 |

Note: ** denotes significance at .01 level
* denotes significance at .05 level

Table 4.2.1

Flow Regression Coefficients for $E_f$ and $\Delta T$

| Independent Variable | Durable Good Purchase ($E_f$) | | Auto Purchase ($\Delta T$) | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | 14.62 (20.42) | 1.05 (13.09) | 39.24 (25.74) | 40.42 (22.30) |
| E-3 | 27.78 (28.95) | 10.31 (18.86) | 7.52 (36.49) | 82.52 (32.12) |
| A-2 | -81.15 (24.34) | -37.70 (13.22) | 10.16 (30.69) | - 8.47 (22.50) |
| A-3 | -198.18 (26.40) | -79.88 (15.31) | 6.34 (33.28) | -31.68 (26.07) |
| A-4 | -272.50 (28.32) | -131.55 (17.16) | -34.70 (35.70) | -101.72 (29.22) |
| O-1 | -35.30 (36.49) | 26.02 (23.76) | 25.83 (46.00) | 27.92 (40.46) |
| O-2 | - 1.37 (29.98 | - 1.80 (17.98) | 8.68 (37.79) | 47.50 (30.62) |
| O-3 | -13.41 (27.55) | - 9.86 (17.89) | -46.37 (34.72) | .68 (30.47) |
| O-5 | -17.36 (25.63) | -19.04 (15.61) | -61.73 (32.31) | -41.04 (26.58) |
| O-6 | -38.58 (30.07) | -52.91 (17.22) | -123.95 (37.91) | -84.44 (29.32) |
| 1 | 680.01 (42.79) | 322.28 (25.07) | 147.95 (53.94) | 159.61 (42.69) |
| N | 1.14 (6.15) | 2.99 (3.94) | -25.12 (7.76) | -25.23 (6.72) |
| R-2 | -10.67 (21.54) | -26.55 (13.06) | 35.39 (27.15) | .65 (22.25) |
| R-3 | 60.36 (19.08) | -15.83 (13.04) | 86.77 (24.06) | 90.14 (22.21) |
| L-2 | - 7.47 (19.50) | 3.16 (14.67) | 45.12 (24.58) | 64.26 (24.98) |
| L-3 | -19.77 (22.70) | -15.76 (14.95) | 40.58 (28.62) | 45.57 (25.45) |
| Y/1000 | 42.74 (3.16) | 20.41 (1.91) | 44.72 (3.98) | 21.55 (3.26) |
| H/1000 | 9.74 (1.84) | 82.76 (22.30) | 10.50 (2.32) | 87.42 (37.98) |
| $A_f$ | -.6143 (.0138) | -.2143 (.0111) | .0662 (.0174) | .0783 (.0189) |
| T | .0086 (.0094) | .0153 (.0075) | -.6591 (.0118) | -.6246 (.0128) |
| M | -.0004 (.0033) | .0172 (.0072) | -.0111 (.0042) | .0142 (.0124) |
| I | .1226 (.0790) | .1616 (.0446) | -.1256 (.0996) | -.0796 (.0760) |
| C | .0100 (.0033) | .0079 (.0035) | .0082 (.0042) | .0217 (.0059) |
| $S_u$ | 550.20 | 319.76 | 693.57 | 544.49 |
| $R^2$ | .602 | .184 | .740 | .665 |

Note: All coefficients are in dollars. Estimated errors in parentheses.

Table 4.2.2

Flow Regressions Coefficients for $\Delta M$ and $\Delta I$

| Independent Variable | Mortgage Debt Change ($\Delta M$) | | Installment Debt Change ($\Delta I$) | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | 90.61 (72.19) | 4.20 (29.71) | 5.72 (11.60) | 8.23 (12.26) |
| E-3 | 223.25 (102.32) | -39.49 (42.79) | 11.70 (16.44) | 34.34 (17.66) |
| A-2 | -649.60 (86.05) | -13.28 (29.98) | 4.01 (13.82) | 3.62 (12.37) |
| A-3 | -1250.19 (93.32) | 7.89 (34.74) | - 4.30 (14.99) | 7.68 (14.33) |
| A-4 | -1387.62 (100.11) | 8.20 (38.93) | - 6.60 (16.08) | -13.53 (16.06) |
| O-1 | 243.40 (128.98) | 38.66 (53.90) | -14.71 (20.72) | .98 (22.24) |
| O-2 | -12.83 (105.97) | .29 (40.80) | 40.09 (17.03) | 26.10 (16.84) |
| O-3 | -58.19 (97.37) | 20.31 (40.60) | 29.93 (15.64) | 22.55 (16.75) |
| O-5 | -33.00 (90.60) | 15.51 (35.42) | 22.07 (14.56) | 6.12 (14.61) |
| O-6 | -17.82 (106.31) | -11.63 (39.06) | .72 (17.08) | 6.80 (16.12) |
| 1 | 1588.21 (151.26) | 44.88 (56.87) | 22.53 (24.30) | 1.64 (23.47) |
| N | -15.61 (21.75) | - 1.00 (8.95) | - 3.16 (3.49) | - 7.45 (3.69) |
| R-2 | -16.48 (76.13) | - 2.76 (29.64) | 16.04 (12.23) | - 8.77 (12.23) |
| R-3 | 206.08 (67.45) | -12.25 (29.59) | 9.77 (10.84) | 14.84 (12.21) |
| L-2 | -30.16 (68.91) | 25.25 (33.28) | 10.82 (11.07) | - 7.70 (13.73) |
| L-3 | -187.88 (80.25) | -13.50 (33.91) | -11.43 (12.89) | 19.63 (13.99) |
| Y/1000 | -61.81 (11.15) | 3.30 (4.34) | - .25 (1.79) | .93 (1.79) |
| H/1000 | 60.10 (6.51) | -74.71 (50.59) | 1.55 (1.05) | 73.59 (20.88) |
| $A_f$ | -.4664 (.0489) | -.0193 (.0252) | .0093 (.0078 | .0094 (.0104) |
| T | .0443 (.0332) | -.0019 (.0171) | -.1787 (.0053) | -.2661 (.0071) |
| M | -.2174 (.0117) | -.8569 (.0165) | .0025 (.0019) | .0052 (.0068) |
| I | .6348 (.2794) | -.0009 (.1012) | .0317 (.0449) | .0115 (.0418) |
| C | .0500 (.0117) | -.0004 (.0079) | -.0019 (.0019) | -.0035 (.0032) |
| $S_u$ | 1944.89 | 725.41 | 312.47 | 299.34 |
| $R^2$ | .153 | .730 | .251 | .378 |

Table 4.2.3

Flow Regression Coefficients for $\Delta C$ and $\Delta A$

| Independent Variable | Change in Cash Balances ($\Delta C$) | | Change in Assets ($\Delta A$) | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | - .38 (69.45) | -148.06 (75.83) | 43.20 (119.92) | 16.52 (75.51) |
| E-3 | 45.72 (98.45) | -249.68 (109.24) | 168.81 (169.98) | 174.31 (108.77) |
| A-2 | 26.86 (82.79) | -149.39 (76.53) | -754.63 (142.95) | 102.11 (76.21) |
| A-3 | 271.29 (89.78) | -232.05 (88.68) | -1528.49 (155.02) | 69.05 (88.30) |
| A-4 | 294.70 (96.32) | 11.19 (99.38) | -1492.05 (166.32) | 131.56 (98.96) |
| O-1 | 2.84 (124.10) | -113.14 (137.60) | 410.42 (214.27) | 272.75 (137.01) |
| O-2 | -82.69 (101.96) | -295.61 (104.15) | 60.95 (176.05) | 93.66 (103.71) |
| O-3 | 54.51 (93.69) | 7.92 (103.63) | -17.74 (161.76) | 36.74 (103.19) |
| O-5 | - 4.18 (87.17) | 103.19 (90.41) | 122.61 (150.51) | -12.61 (90.03) |
| O-6 | -38.59 (102.29) | 249.94 (99.71) | 216.85 (176.61) | 81.96 (99.29) |
| 1 | -430.24 (145.54) | -966.32 (145.17) | 1127.21 (251.29) | 347.27 (144.56) |
| N | -51.51 (20.93) | -75.18 (22.84) | -139.29 (36.14) | - 2.88 (22.74) |
| R-2 | 86.86 (73.25) | 174.94 (75.67) | 64.49 (126.47) | -68.37 (75.35) |
| R-3 | - 2.01 (64.90) | 71.82 (75.53) | 279.26 (112.06) | 35.61 (75.21) |
| L-2 | -14.38 (66.30) | -29.08 (84.96) | -108.82 (114.48) | - 6.69 (84.60) |
| L-3 | 6.67 (77.22) | 157.10 (86.56) | -194.97 (133.32) | -98.87 (86.19) |
| Y/1000 | 117.32 (10.73) | 479.15 (11.09) | 282.34 (18.53) | -34.45 (11.04) |
| H/1000 | -31.48 (6.27) | -854.45 (129.15) | - .41 (10.82) | -671.64 (128.60) |
| $A_f$ | .2414 (.0471) | -.0252 (.0643) | -.2983 (.0813) | .1578 (.0640) |
| T | .1300 (.0320) | .1659 (.0437) | .3974 (.0552) | .1612 (.0435) |
| M | .0078 (.0113) | .1028 (.0421) | -.2176 (.0194) | -1.1485 (.0419) |
| I | -.2105 (.2688) | -.4377 (.2585) | .4619 (.4641) | .4094 (.2574) |
| C | -.2199 (.0113) | -.2020 (.0201) | .0563 (.0194) | -.0280 (.0200) |
| $S_u$ | 1871.29 | 1851.83 | 3231.01 | 1843.95 |
| $R^2$ | .116 | .523 | .135 | .227 |

Table 4.2.4

Flow Regression Coefficients for ΔD and S

| Independent Variable | Change in Debts (ΔD) | | Saving (S) | |
|---|---|---|---|---|
| | Home owners | Renters | Home owners | Renters |
| E-2 | 138.61 (98.30) | 171.15 (92.16) | -95.41 (73.80) | -154.63 (70.99) |
| E-3 | 306.59 (139.34) | 411.87 (132.76) | -137.78 (104.61) | -237.57 (102.27) |
| A-2 | -686.51 (117.18) | 183.80 (93.02) | -68.12 (87.98) | -81.70 (71.65) |
| A-3 | -1358.66 (127.08) | 269.20 (107.78) | -169.82 (95.41) | -200.15 (83.02) |
| A-4 | -1534.51 (136.33) | 115.09 (120.78) | 42.46 (102.36) | 16.46 (93.04) |
| O-1 | 278.69 (175.64) | 267.48 (167.23) | 131.73 (131.87) | 5.26 (128.82) |
| O-2 | 53.32 (144.31) | 299.60 (126.58) | 7.63 (108.35) | -205.94 (97.50) |
| O-3 | -32.21 (132.60) | 118.36 (125.95) | 14.47 (99.56) | -81.62 (97.02) |
| O-5 | -32.48 (123.38) | -61.50 (109.88) | 155.08 (92.63) | 48.89 (84.61) |
| O-6 | -22.37 (144.77) | 258.61 (121.18) | 239.22 (108.69) | 176.65 (93.35) |
| 1 | 1928.63 (206.00 | 1017.39 (176.44) | -801.42 (154.66) | -670.13 (135.91) |
| N | 46.92 (29.62) | 76.61 (27.76) | -186.21 (22.24) | -79.48 (21.38) |
| R-2 | -14.13 (103.67) | -153.14 (91.96) | 78.61 (77.84) | 84.77 (70.84) |
| R-3 | 246.04 (91.86) | 43.34 (91.80) | 33.22 (68.97) | - 7.73 (70.71) |
| L-2 | -85.80 (93.85) | 71.00 (103.25) | -95.02 (70.46) | -77.70 (79.53) |
| L-3 | -316.20 (109.29) | -211.48 (105.20) | 121.23 (82.05) | 112.62 (81.03) |
| Y/1000 | -83.89 (15.19) | -505.77 (13.48) | 366.23 (11.40) | 471.31 (10.38) |
| H/1000 | 63.80 (8.87) | 942.53 (156.97) | -64.21 (6.66) | -1614.17 (120.91) |
| $A_f$ | -.6903 (.0666) | .1573 (.0782) | .3921 (.0500) | .0005 (.0602) |
| T | -.1377 (.0452) | -.3701 (.0531) | .5351 (.0340) | .5313 (.0409) |
| M | -.2203 (.0159) | -.8968 (.0511) | .0027 (.0120) | -.2517 (.0394) |
| I | .2868 (.3805) | .1822 (.3141) | .1751 (.2857) | .2272 (.2420) |
| C | .0576 (.0159) | .0724 (.0244) | -.0013 (.0120) | -.1005 (.0188) |
| $S_u$ | 2648.55 | 2250.64 | 1988.50 | 1733.62 |
| $R^2$ | .073 | .485 | .326 | .617 |

components. The negative correlation of flow deviations through time arising from "inventory cycles" noted earlier tends to reduce this effect but will not eliminate it. Any positive correlation such as would result from persistent differences in tastes (personality correlations) will intensify it.

Turning to the regressions and examining the education coefficients, one notes a general increasing tendency to dissave by borrowing as education is increased. In the discussion of stocks it was proposed that the generally high levels of observed assets attributed to education was evidence of higher saving by the relatively highly educated. A possible reconciliation is that the saving measure adopted does not include purchases of durables and automobiles while the high asset position noted above included the stocks of such goods. Among renters there was a further significant tendency for the higher education classes to purchase more autos at the expense of $C$ and $-I$.

The main effect of Age on the flows is to diminish the rate of purchase of $I$ and $A_f$, entirely consistent with the smaller stock of these items noted in the preceding section. Older home owners seem to pay off mortgage debt more rapidly, as well as increase cash balances. No similar behavior is apparent for renters--perhaps their balances are nearer to an equilibrium. The only significant coefficients in the saving equations are the negative ones for the 45-54 age class. The reasons for the unusually high spending in that age class are obscure.

Among the Occupation coefficients there are few significant relationships. Between wage and salary groups (all but 0-2) there is some tendency for the blue-collar end of the scale to refrain from purchases of durables and to increase assets of other kinds, including cash, as evidenced by the saving coefficients.

Businessmen seem to raise funds by increasing debts and reducing cash. Since there seems to be no offsetting increase in the observed assets, it is possible that the funds were spent on business investment.

Most of the effects of Region and Community Size that were noted in the stock section are substantiated by the flow relations. Where smaller stocks were observed before, smaller flows tend to maintain stocks at a relatively low level. An exception to this appears for T in the case of suburban dwellers. They did not show significantly higher auto stocks than metropolitan households but they appear to be increasing at a faster rate.

The Income and Housing Level coefficients again are highly significant, accounting in large measure for the relatively high $R^2$'s . The only exception is for Change in Installment Debt--it appears to be as unrelated to Y and H as was the stock of installment debt The long- and short-run income coefficients have been computed for the flows exactly as they were for the stocks. The calculations are shown in Table 4.3. It is interesting to note the implication that for home owners short-run increases of income result in debt reduction while long-run changes result in debt expansion. For renters, both kinds of income change reduce debt but the effect of short-run changes of more marked. The negative income effect on asset change for renters may indicate some substitutability between present wealth and future income; in the case of home owners, the same effect may operate but, if so, it is offset by home investment. The differences between short- and long-run coefficients for saving are definitely in the direction predicted by the permanent income hypothesis.

Table 4.3

Computations of Long and Short-Run Income Coefficients for Flows

| Home owners | Housing Coefficient | "Adjusted" Housing Coefficient | Short-Run Income Coefficient | Long-Run Income Coefficient |
|---|---|---|---|---|
| $E_f$ | 9.74 | 20.16 | 42.74 | 62.90 |
| $\Delta T$ | 10.50 | 21.73 | 44.72 | 66.45 |
| $\Delta M$ | 60.10 | 124.40 | -61.80 | 62.60 |
| $\Delta I$ | 1.55 | 3.20 | - .25 | 2.95 |
| $\Delta C$ | -31.48 | -65.16 | 117.32 | 52.16 |
| $\Delta A$ | - .41 | - 8.48 | 283.34 | 282.49 |
| $\Delta D$ | 63.80 | 132.06 | -83.89 | 48.17 |
| S | -64.21 | -132.91 | 366.23 | 233.32 |
| Renters | | | | |
| $E_f$ | 82.76 | 12.41 | 20.41 | 32.82 |
| $\Delta T$ | 87.42 | 13.11 | 21.55 | 34.66 |
| $\Delta M$ | -74.71 | -11.20 | 3.30 | - 7.90 |
| $\Delta I$ | 73.59 | 11.03 | .93 | 11.96 |
| $\Delta C$ | -845.45 | -126.81 | 479.15 | 352.34 |
| $\Delta A$ | -671.54 | -100.73 | -34.45 | -135.18 |
| $\Delta D$ | 942.53 | 141.37 | -505.77 | -364.40 |
| S | -1614.17 | -242.12 | 471.17 | 229.05 |

Finally there are the five stock variables; $A_f$, T, M, I, and C, which were introduced in the flow regressions. The hypothesis was that there is a balance among stocks which households tend to maintain; that, in other words, when an asset is above its equilibrium level changes will tend to reduce it and/or increase other assets. Reduction of debt will [illegible]. This should show up in negative coefficients for an asset when it appears in "its own" flow regression and positive coefficients in other regressions. Making necessary allowances for the negative nature of debts, one can derive a pattern of signs for the five stock coefficients. The estimated coefficients show little statistically significant divergence from this pattern of signs. Indeed, for home owners there is only one exception to the pattern -- the positive effect of cash balances on mortgage debt change. For renters, there are three exceptions, but two of them relate to mortgage debt and the hypothesis really is barely applicable in this case. The third exception indicates a positive effect of installment debt on durable purchases.

Correlation matrices were computed as before; Table 4.4 shows a set for variables $E_f$, $\Delta T$, $\Delta M$, $\Delta I$, $\Delta C$, and S. The lower part of each table shows correlations between residuals from regressions listed in Table 4.2. In most cases the interrelationships among the flows have been substantially reduced by allowing for their common dependence on a set of independent variables. In the case of saving, however, the exclusion of $E_f$ and $\Delta T$ from the saving concept is strongly underlined by the negative correlations between S and both $E_f$ and $\Delta T$. This substitutability between purchases of durable goods and autos and other forms of investment is even more apparent when considering the correlation of residuals. Furthermore, after regression the partial correlation shows that $E_f$ and $\Delta T$ themselves are substitutes at least for the renters.

Table 4.4.1

Home owners - Correlations Among Flows

before regression

| | $E_f$ | ΔT | ΔM | ΔI | ΔC | S |
|---|---|---|---|---|---|---|
| $E_f$ | 255 | 078 | 222 | -0- | -121 | -0- |
| ΔT | 101 | 528 | -0- | 513 | -063 | -175 |
| ΔM | 206 | -048 | 300 | -0- | -217 | -103 |
| ΔI | -058 | 500 | -0- | 526 | -0- | -184 |
| ΔC | -077 | -036* | -176 | 052 | 355 | 288 |
| S | 034* | -085 | -052 | -119 | 272 | 352 |

after regression

| | $E_f$ | ΔT | ΔM | ΔI | ΔC | S |
|---|---|---|---|---|---|---|
| $E_f$ | 261 | 055 | 159 | -0- | -122 | -214 |
| ΔT | -0- | 308 | -0- | 238 | -037* | -216 |
| ΔM | 135 | -034* | 230 | -0- | -179 | -092 |
| ΔI | -030* | 222 | 032* | 250 | -0- | -105 |
| ΔC | -044 | -0- | -153 | 043 | 320 | 273 |
| S | -179 | -189 | -0- | -068 | 250 | 389 |

Table 4.4.2

Renters - Correlations Among Flows

before regression

| | $E_f$ | ΔT | ΔM | ΔI | ΔC | S |
|---|---|---|---|---|---|---|
| $E_f$ | 135 | 045 | -0- | -0- | 040* | -045 |
| ΔT | 062 | 624 | -0- | 611 | -064 | -224 |
| ΔM | -0- | -0- | 236 | -0- | -0- | 138 |
| ΔI | -075 | 586 | 035* | 622 | -0- | -186 |
| ΔC | 102 | 042 | -190 | 119 | 732 | 705 |
| S | -099 | -126 | 232 | -132 | 729 | 752 |

after regression

| | $E_f$ | ΔT | ΔM | ΔI | ΔC | S |
|---|---|---|---|---|---|---|
| $E_f$ | 370 | 057 | -0- | -0- | -180 | -354 |
| ΔT | -084 | 463 | -0- | 273 | -222 | -383 |
| ΔM | -0- | 039* | 117 | -0- | -047 | 067 |
| ΔI | -038* | 249 | -0- | 296 | -0- | -125 |
| ΔC | -050 | -109 | -077 | 108 | 420 | 392 |
| S | -328 | -316 | 104 | -070 | 313 | 580 |

Note: In matrices above -0- has replaced correlations not significant at .05, asterisks denote non-significance at .01.

Conclusion

The elementary hypotheses expressed at the outset have, on the whole, been sustained by the statistical results. There is evidence that households tend to maintain some sort of balance in their capital accounts both between assets yielding direct serivces and financial assets, and between liquid funds and liabilities. Furthermore, the precise nature of the preferred portfolio toward which adjustments are made seems to be related to the explanatory variables employed, and presumably therefore, to the more fundamental but unobserved measures of a household's social, economic, biological, and environmental characteristics. The flow regressions have also shown that adjustments in capital account items tend to eliminate rather than perpetuate deviations from a basic or preferred portfolio pattern.

Some of the specific results pertaining to automobile and durable goods stocks have been clouded by inadequacies of the method used for evaluating such stocks. Whether an attempt at direct measurement of the value of, say, a nine year old refrigerator would provide more conclusive results is at least problematical. Each of the variables for which dollar values were assigned on the basis of one-digit codes has, no doubt, added to the crudeness of the analysis.

The handicap of working with only a part of the household's balance sheet has lent some inconclusiveness to the findings. There is no way of assuring, for instance, that the separate relationships estimated for the several stocks and flows are consistent with each other in view of the accounting structure within which those relationships must operate. If complete or almost complete household balance sheets were

available, analytic techniques could be utilized which would make advantageous use of the structure imposed by accounting identities.

Almost by definition a one period cross-section analysis is drastically limited in its ability to provide generalizations about the dynamics of capital account changes in response to altered external or life-cycle situations. A panel study is much better for this purpose. The results obtained in this study must definitely be viewed as suggestive rather than conclusive in this regard.

To close on a more positive note, despite the obvious reservations the investigation has at least shown that analysis of household capital accounts is a promising source of insights about household economic behavior. It can provide insights relevant to the household sector's impact on the economy's flows via household investment in durable goods as well as to the household's impact on the various financial asset markets.