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A Cohort Analysis of Changes in the Distribution of Wealth

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THE THEME of this paper is the application of a well-known demographic technique, cohort analysis, to the study of the financial affairs of consumers. The basic strategy used in this paper is to define cohorts of spending units,[1] and to trace the history of these cohorts by identifying their members in successive national cross-sections. Cohorts are identified by date of birth, race, and level of formal education, as will be described in detail below. After some introductory discussion the body of the paper is divided into four principal sections—Problems in the specification of cohorts; Net worth in early 1953 and early 1962; Further investigation of selected assets: Home ownership and automobile ownership, 1950–1965; and, Factors which may account for change in wealth: Trends in income and inheritances. There follows a brief statement of conclusions.

The reasons for the economist's interest in the history of cohorts of households hardly need elaborate exposition. Theories of consumer behavior are centrally concerned with the income and patterns of consumption of households over periods of time as long as their lifetimes. The description of how different groups in the population have fared over the years is of interest to those concerned with the economic welfare of the population. Cohort analysis may make some contribution to such descriptions.

While these reasons for interest in the subject have existed for years, only recently have economic data been accumulated which can support this type of analysis. The demands which cohort analysis makes on a body of data are severe. The essential requirement is that the methods

[1] A spending unit is a group of people related by blood, marriage or adoption who live in the same dwelling unit and pool their incomes.

used must be comparable over a long period. The more years in the period, the better. Comparable questions must have been asked repeatedly: improvements in the questions weaken the comparability. The sampling procedures must have been similar: improvements in coverage weaken the comparability. The same definition of the basic unit of interviewing must have been used: any changes in definition also weaken the comparability. It is also worth mentioning that while changes in the methods of data processing in recent years do not prevent cohort analysis, they do make time-consuming and expensive the analysis of data from successive surveys each of which was adjusted to the type of data processing available at the time it was carried out.

This paper represents a preliminary effort to apply the analysis of cohort data to the Surveys of Consumer Finances conducted by the Survey Research Center of the University of Michigan. There have been some changes in the methods of these surveys over the years, but they are sufficiently comparable to justify experimentation with this approach. More could be done than has been attempted in this paper. How much more effort would be justified may be considered in the light of the results presented here.

For some purposes the cohort approach is an alternative to the use of panels. In evaluating the method it may be useful to keep that alternative in mind. A complete review of the uses and limitations of panels is beyond the scope of this paper. It is well known that panels have important advantages, such as the gain in analytic power which they provide, and also important disadvantages, such as the difficulty and expense of following people who move. Panels which cover periods of, say, a decade or more are so difficult to handle as to be virtually impossible to use except for samples drawn from special populations, such as members of the graduating class of a college or university. Furthermore, whatever might be possible theoretically, there are now in existence no panels which can provide reinterview data on wealth to cover the period since, say, 1950, for a cross-section of the population. For analysis of trends since World War II successive cross-sections and cohort analysis will have to suffice.

Problems in the Specification of Cohorts

The central idea of cohort analysis is that it is possible to identify members of the same subdivision of the population in successive cross-section surveys. The logic of the method thus requires stability over time both in the sense that the units themselves persist, and in the sense that the classification of the units does not change. If both conditions were met, it would be possible to make statements asserting that a specified group of units was in a certain financial position in year A, and that the same units were in a certain other financial position in year B.

Three characteristics of spending units have been selected in this project because they are reasonably stable. Year of birth, of course, is stable for any head of a spending unit. The only difficulty in classification arises from inaccurate reporting of age, e.g., a tendency to round to the nearest five years, but the error from this source seems tolerable. Race is stable enough—"passing" seems to be so infrequent as to be trivial for present purposes. The education of the head of a unit is a little less stable: adult education is a possibility. However, it is assumed that few adults shift out of the three broad educational groups: 0–8 years, 9–12 years, and attended college. This classification would not be changed by the usual forms of special, nonacademic training. Nevertheless, it is not possible to rule out the idea of some upward shift in the years of academic training resulting from adult education, especially for those aged under 30.

From the present point of view most other familiar socioeconomic classifications are not likely to be useful. Shifts among occupations, for example, are common. Place of residence is frequently shifted. Place of birth is stable enough, but information on the point is not generally available in the earlier surveys.

The persistence of spending units over time is different from the persistence of individuals. There are a number of ways in which a spending unit may be created or destroyed. The destruction of a spending unit normally requires either the death or the withdrawal to living quarters other than their own dwelling unit of *two* individuals. Entry into the spending unit population may be a matter either of achieving financial independence from parents or of leaving the institutional population.

The latter may occur by leaving college or by leaving the armed forces. These events occur at different ages for different people.

In spite of such complexities, it seems reasonable to suppose that the number of spending units in any given cohort should first increase as people "come of age" economically and then decline, at first slowly, but eventually at a rapid rate, with the passage of time. A first step in this investigation has been to check to see whether these expectations are met by the data. Table 1 shows the estimated number of spending units in different cohorts in the population in early 1950.[2] The estimates are based essentially on a total estimated from census data of the total number of occupied dwelling units in early 1950. This estimate was adjusted by an estimate from the survey of the number of spending units per occupied dwelling unit.[3] The resulting estimate, 52.6 million spending units, was allocated to cohorts simply on the basis of the percentage of all spending units in the sample falling in each cohort. The estimates of the number in each cohort, therefore, are subject to sampling error (as well as other errors) and should be regarded only as approximations.

The second column of Table 2 presents estimates for 1965 based on similar calculations from data collected in early 1966. Comparison of the two years is of some interest. The most noticeable difference is the shift toward higher education levels. For example, in 1950 in the age group 45–54 for whites, there were about 4.6 million units headed by someone with a grammar school education and only 1.3 million headed by someone who had been to college. In 1965 the white age group 45–54 (a different cohort of people) had about 2.9 million units headed by people with grammar school educations and, also, about 2.9 with a college education.

From the data in Table 1 a projection was made to 1965 of the number of units there would have been in each cohort, assuming that the 1950 count was correct and that there was no mortality of units. This

[2] The number of interviews taken with spending units in each cohort in each survey included in this paper is shown in Table 12. Note that the years shown in the column heads in Table 12 refer to the years in which income was received, which are prior to the year of interview. For example, 1949 income was reported in the 1950 survey.

[3] The estimated number of occupied dwelling units is 43.4 million as of early 1950. By definition, there were also 43.4 million "primary" spending units. The survey estimate is that there were an additional 9.2 million secondary spending units each of which shared a dwelling with a primary unit.

TABLE 1

ESTIMATED NUMBER OF SPENDING UNITS BY COHORT, 1950

Cohort Definition [a]	Number of Spending Units	
	White	Negro
18–24		
Grammar school	749,000	52,000
High school	3,614,000	99,000
College	963,000	35,000
25–34		
Grammar school	2,622,000	653,000
High school	5,826,000	279,000
College	2,869,000	12,000
35–44		
Grammar school	3,941,000	674,000
High school	4,712,000	169,000
College	2,129,000	21,000
45–54		
Grammar school	4,566,000	596,000
High school	3,248,000	95,000
College	1,334,000	46,000
55–64		
Grammar school	4,380,000	380,000
High school	1,605,000	42,000
College	750,000	[b]
65+		
Grammar school	4,002,000	417,000
High school	1,057,000	[b]
College	663,000	[b]
Total	49,030,000	3,570,000
Total number of units	52,600,000	

[a] Cohorts are defined on the basis of the race, age, and education of the head of the spending unit in 1950.

[b] None in the sample.

TABLE 2

NUMBER OF SPENDING UNITS BY COHORT, 1965, BASED ON PROJECTIONS FROM 1950 AND 1965 SURVEY, SHOWING IMPLIED SURVIVAL RATE

Cohort Definition	Projected Number of Spending Units Based on 1950 Survey Assuming No Mortality	Number of Spending Units, 1965 Estimate	Implied Survival Rate
White			
18–24			
Grammar school	–	163,000	–
High school	–	1,712,000	–
College	–	2,201,000	–
25–34			
Grammar school	–	1,168,000	–
High school	–	5,733,000	–
College	–	3,831,000	–
35–44			
Grammar school	1,846,000	2,092,000	113
High school	5,494,000	5,787,000	105
College	2,122,000	3,695,000	174
45–54			
Grammar school	3,282,000	2,880,000	87
High school	5,269,000	5,977,000	113
College	2,499,000	2,880,000	115
55–64			
Grammar school	4,253,000	4,130,000	97
High school	3,980,000	4,293,000	107
College	1,731,000	2,092,000	120
65+			
Grammar school	10,665,000	6,358,000	59
High school	4,286,000	3,315,000	77
College	2,080,000	1,630,000	78
Negro			
18–24			
Grammar school	–	82,000	
High school	–	217,000	
College	–	163,000	
		462,000	

(continued)

TABLE 2 (concluded)

Cohort Definition	Projected Number of Spending Units Based on 1950 Survey Assuming No Mortality	Number of Spending Units, 1965 Estimate	Implied Survival Rate
Negro (cont.)			
25–34			
Grammar school	—	245,000	
High school	—	598,000	
College	—	217,000	
		1,060,000	
35–44			
Grammar school	[a]	190,000	
High school	[a]	516,000	
College	[a]	190,000	
	605,000	896,000	148
45–54			
Grammar school	[a]	734,000	
High school	[a]	408,000	
College	[a]	[b]	
	904,000	1,142,000	126
55–64			
Grammar school	[a]	82,000	
High school	[a]	652,000	
College	[a]	136,000	
	800,000	870,000	108
65+			
Grammar school	[a]	81,000	
High school	[a]	543,000	
College	[a]	109,000	
	1,208,000	733,000	60
Total		65,100,000	

[a] Too few cases to show detail.
[b] None in the sample.

method yields projections for 1965 which are shown in column 1 of Table 2. (Simple interpolations were made as necessary. For example, those 35–44 in 1950 would have become 50–59 in 1965. In making the projection they were evenly divided between the group 45–54 and the group 55–64.) Comparison of columns 1 and 2 of Table 2, if both estimates were precise, would yield a survival rate for each cohort. These implied rates appear in column 3. If units are appearing, the rate will exceed 100, if they are disappearing, the rate will be below 100. For example, the projection from 1950 is that, assuming no mortality, there should have been 10,665,000 white units aged 65 or above with head having 0–8 years education in 1965. Only 6,358,000 were found. The implication is that only 59 per cent survived.

Some of the "implied survival rates" exceed 100, especially that for those 35–44 with a college education. A rate of 174 for this group seems high, but it is more reasonable than may appear at first glance. It implies that fifteen years earlier when these people were 20–29 many were still in school or in the armed forces. It is also reasonable that the rates are close to 100 for those with less education—they may have been in the army but were probably not in school at age 20–29. Implied survival rates for the age groups 45–54 and 55–64 in 1965 seem definitely too high. The total number of *people* in these age groups must certainly have declined, and it seems very likely that the number of spending units also fell. (The only logical alternative explanation seems to be that many people were divorced or separated *and* did not remarry.) The decline in the number of units in the 65 or older group must reflect the normal mortality of those in the oldest age groups.

In order to obtain some indication of the stability of these comparisons a set of calculations was carried out for 1962 similar to that for 1965, with results shown in Table 3. The implied survival rates for 1962 are much lower than for 1965. The variations among cohorts, however, are more or less the same. Thus, as before the highest implied survival rate for whites is for the whites 35–44 with a college education. Again implied survival rates for grammar school are consistently lower than for the high school and college groups.

These results raise a question as to the quality of the estimates of the *total* number of units from year to year. It may be that the total count is too high for 1965, or too low for 1962, or in error for 1950. The

TABLE 3

NUMBER OF SPENDING UNITS BY COHORT, 1962, BASED ON PROJECTIONS FROM 1950 AND ON 1962 SURVEY, SHOWING IMPLIED SURVIVAL RATES

Cohort Definition	Projected Number of Spending Units Based on 1950 Survey Assuming No Mortality	Number of Spending Units, 1962 Estimate	Implied Survival Rate
White			
25–34			
Grammar school	–	1,390,032	–
High school	–	4,782,792	–
College	–	4,310,040	–
35–44			
Grammar school	3,105,187	2,393,160	77
High school	5,693,286	6,121,080	107
College	2,569,845	3,526,824	137
45–54			
Grammar school	3,677,313	3,054,072	83
High school	4,935,154	4,482,912	91
College	2,276,827	2,462,544	108
55–64			
Grammar school	4,440,960	3,037,608	68
High school	3,540,702	2,179,128	62
College	1,492,817	1,211,280	81
65+			
Grammar school	9,295,204	4,846,296	52
High school	3,311,220	2,461,368	74
College	1,679,743	1,255,968	75
Negro			
25–34	–	1,378,272	–
35–44	808,988	1,619,352	200
45–54	879,788	947,856	108
55–64	762,246	606,816	78
65+	986,664	805,560	82

estimated number of spending units in the population increased slowly from 1950 to about 1960 and then rapidly, as follows:

Year	Number of Spending Units (*millions*)
1950	52.6
1958	56.9
1960	57.1
1962	58.8
1964	61.1
1965	64.1
1966	65.1

The actual increase in the last few years may well have been less rapid. Pursuit of this question will not be attempted in this paper.

More importantly for present purposes, the findings in Tables 2 and 3 suggest that the classification of cohorts by education groups has been only approximately successful in defining a stable group of people. There seems to have been some drift upwards to the higher education groups —whether by actual adult education or a tendency to exaggerate the number of years one went to school several decades ago. This drift will influence results, presumably by making the trends in income and assets within each group rise too little.

It is also noteworthy that the implied survival rates for Negroes are very high both in 1962 and 1965. These results suggest incomplete coverage of Negroes in the younger age groups in the 1950 survey—and perhaps in other surveys. If the individuals who were missed were of low economic status compared to those not missed, the effect of the bias seems likely to be to understate upward trends in the financial position of the group as a whole.

Net Worth in Early 1953 and Early 1962

There have been three Surveys of Consumer Finances which have included reasonably complete balance sheet information, the surveys taken in January and February of the years 1950, 1953, and 1962. Of the three only the latter two included questions about the exact dollar values of each item in contrast to information about approximate holdings in class intervals only. (Exact estimates were made in 1950 for some items

but not for all.) In this section of this paper attention will be focussed on the 1953 and 1962 estimates.

The surveys in the two years did not include identical questions. In 1953 a question was asked about "money loaned out" but no specific question on this item was asked in 1962. In 1963 information was asked specifically about holdings of state and local and corporate bonds, but not in 1953. Some financial magnitudes are omitted from both surveys, especially the following: currency, cash surrender value of insurance policies, value of household furnishings, interests in pension funds, and interests in trust funds and annuities. Another important omission is human wealth: no entry appears in either survey for the value of peoples' educations. The items which are included are indicated below in Table 5.

It is by now widely recognized that survey estimates seriously understate the value of some financial assets and liabilities. The literature on this subject has been reviewed recently by Ferber.[4] Recent estimates of the degree of understatement in a financial survey have also been supplied by Projector and Weiss.[5] In addition to the problems of response error there are problems of sampling error in estimates of means, especially when the proportion of the population who own an asset or owe a certain type of debt is small and when the distribution of the items in the population is very highly skewed.

In consideration of the results in this paper attention should be centered on trends, which may be indicative when measurements are made repeatedly using similar though imperfect techniques. Attention also should be centered primarily on the groups in the population for which the measurement problems are not as great, that is, the lower socioeconomic groups. It should also be recognized that the measurement problems are not serious for some assets and liabilities, especially homes (including mortgage debt) and cars.

COMPARISON WITH FEDERAL RESERVE DATA

It happens that the Federal Reserve Board's recent Survey of Financial Characteristics was taken only about one year later than the 1962 Survey of Consumer Finances. The distributions of net worth for the

[4] Robert Ferber, *The Reliability of Consumer Reports of Financial Assets and Debts*, Studies in Consumer Savings, No. 6, Urbana, Ill., 1966, Ch. 2.

[5] Dorothy S. Projector and Gertrude S. Weiss, *Survey of Financial Characteristics of Consumers*, Federal Reserve Board, Washington, D. C., 1966, p. 61.

TABLE 4

COMPARISONS OF NET WORTH DISTRIBUTIONS, SRC AND FRB
(*percentage distribution*)

	Survey of Consumer Finances, Early 1962 (Survey Research Center)	Federal Reserve Board, Survey of Financial Characteristics, as of December 31, 1962
Negative	11	11
Zero	6 } 30	5 } 28
$1–999	13	12
$1,000–4,999	21	17
$5,000–9,999	15	15
$10,000–24,999	20	23
$25,000 +	14	17
Total	100	100
Mean	$14,600	$17,148

Ratio of means: FRB/SCF = 117

whole population from the two sources are shown in Table 4. There are a number of differences between the surveys: the most important differences are that the FRB heavily oversampled the highest income groups and used a very detailed questionnaire which asked for the value of a long list of assets and liabilities. It is also of some importance that the FRB survey is on a consumer unit basis, that is, a family unit basis by SRC definitions. The SRC distribution is on a spending unit basis. It is remarkable that in these circumstances mean net worth per unit was only 17 per cent higher according to the FRB estimate. Allowing for the difference between the family unit and spending unit basis reduces the discrepancy to 10 per cent. Allowance should also be made for an increase in net worth during 1962.

TRENDS BY COHORT

The basic estimates of the means of balance sheet items for constant cohorts in early 1953 and early 1962 for white spending units only are shown in Table 5.

TABLE 5

MEANS OF BALANCE SHEET ITEMS FOR CONSTANT COHORTS, EARLY 1953 AND EARLY 1962, WHITE SPENDING UNITS ONLY
(*in constant dollars*)

	Grammar School		High School		College	
	1953	1962	1953	1962	1953	1962
Cohort of 1929						
Assets						
Liquid assets	300	200	500	900	1,100	2,400
Automobile(s)	500	600	600	900	1,000	1,100
Owner-occupied home or farm	2,500	4,500	2,400	7,400	2,900	8,900
Other real estate	200	600	300	800	400	2,600
Business interest	[a]	[a]	[a]	1,600	700	3,800
Corporate stock	300	100	[a]	300	400	2,800
Other assets [b]	[a]	100	700	600	100	[a]
Total assets	3,800	6,100	4,500	12,500	6,600	21,600
Liabilities						
Mortgage debt	700	2,400	900	3,400	1,100	5,100
Nonmortgage debt	500	1,000	300	1,200	300	2,300
Total liabilities	1,200	3,400	1,200	4,600	1,400	7,400
Cohort of 1920						
Assets						
Liquid assets	600	600	1,100	1,500	2,200	3,000
Automobile(s)	500	600	900	1,000	1,400	1,300
Owner-occupied home or farm	4,900	7,400	5,600	11,800	6,700	14,200
Other real estate	200	1,800	1,200	1,800	1,400	4,000
Business interest	[a]	1,200	1,000	3,000	2,800	4,500
Corporate stock	[a]	200	100	1,100	800	6,600
Other assets	500	100	400	200	300	300
Total assets	6,700	11,900	10,300	20,400	15,600	33,900

(continued)

TABLE 5 (continued)

	Grammar School		High School		College	
	1953	1962	1953	1962	1953	1962
Cohort of 1920 (cont.)						
Liabilities						
Mortgage debt	1,100	3,000	1,700	3,700	2,400	6,600
Nonmortgage debt	400	1,400	700	1,300	800	3,500
Total liabilities	1,500	4,400	2,400	5,000	3,200	10,100
Cohort of 1910						
Assets						
Liquid assets	1,100	1,500	2,100	2,500	3,800	5,400
Automobile(s)	600	600	1,000	1,000	1,500	1,500
Owner-occupied home or farm	6,400	8,300	8,400	12,200	11,000	15,700
Other real estate	900	2,100	2,100	2,700	2,400	5,400
Business interest	100	3,700	2,200	4,000	5,100	3,900
Corporate stock	[a]	400	500	2,900	1,300	11,400
Other assets	800	300	700	300	1,000	600
Total assets	9,900	16,900	17,000	25,600	26,100	43,900
Liabilities						
Mortgage debt	1,100	1,700	1,700	2,700	2,900	4,200
Nonmortgage debt	400	1,100	500	1,700	800	3,900
Total liabilities	1,500	2,800	2,200	4,400	3,700	8,100
Cohort of 1900						
Assets						
Liquid assets	1,500	2,000	3,500	3,600	5,500	5,600
Automobile(s)	600	500	1,000	800	1,400	1,000
Owner-occupied home or farm	7,800	8,700	9,300	11,300	13,100	10,600
Other real estate	1,700	1,900	3,100	2,200	4,500	6,000
Business interest	1,100	1,300	4,700	4,900	7,200	4,200
Corporate stock	100	800	1,500	3,600	3,300	7,900
Other assets	1,000	800	100	600	1,500	600
Total assets	13,800	16,000	23,200	27,000	36,500	35,900

(continued)

TABLE 5 (concluded)

	Grammar School		High School		College	
	1953	1962	1953	1962	1953	1962
Cohort of 1900 (cont.)						
Liabilities						
Mortgage debt	900	1,200	1,000	1,900	2,000	1,700
Nonmortgage debt	400	800	500	1,400	800	1,000
Total liabilities	1,300	2,000	1,500	3,300	2,800	2,700
Cohort of 1890						
Assets						
Liquid assets	2,500	3,100	4,400	6,600	7,500	6,300
Automobile(s)	400	200	800	500	1,300	700
Owner-occupied home or farm	7,900	5,000	9,300	9,300	14,300	12,900
Other real estate	1,900	2,100	4,200	2,000	6,000	14,800
Business interest	900	300	4,800	100	9,500	12,100
Corporate stock	200	400	1,500	1,800	3,700	17,400
Other assets	700	800	1,000	[a]	4,700	600
Total assets	14,500	11,900	26,000	20,300	47,000	64,800
Liabilities						
Mortgage debt	500	400	900	200	1,300	300
Nonmortgage debt	400	100	900	300	500	3,300
Total liabilities	900	500	1,800	500	1,800	3,600

[a] Mean is less than fifty dollars.

[b] For 1953 "other assets" includes "money loaned out" which is not included in 1962 assets, and any statistical discrepancy. For 1962 the other assets category includes holdings of state and local and corporate bonds, which are not included in 1953 assets, and any statistical discrepancy.

The method by which this table was constructed requires a word of explanation. In order to prepare estimates for identical cohorts at a nine year interval, interpolation was necessary. The method was to plot the data for each magnitude by age within each survey and interpolate to estimate the magnitude for the exact age required. (The method

assumes that it is correct to connect midpoints for age groups by straight lines.) The "other assets" item is a balancing entry and contains the statistical discrepancy as well as the assets referred to earlier about which different questions were asked in the different years ("money loaned out" and "state, local and corporate bonds"). All items have been deflated by the Consumer Price Index, 1957–1959 = 100. In effect, then, the table shows dollars of constant purchasing power.

Inspection of the table shows the importance of owner-occupied homes, especially for the grammar school and high school groups and the younger age groups. Corporate stock, on the other hand, becomes important for the college group, especially for the older ages.

Total assets increased over the nine years for all of the younger cohorts. As one might expect, the increases are largest for the college group. Note, for example, the increase for the college educated members of the cohort of 1929 from total assets of $6,600 to total assets of $21,600.

The total assets of the cohort of 1900 remained about constant over the period. This statement applies to all three education groups. Total assets of the cohort of 1890 show a decline for the grammar school and high school groups, but not for the college group. The apparent increase for the college group appears to have resulted primarily from asset appreciation, especially increases in the value of common stock holdings. In view of the highly skewed character of the distribution of common stock holdings by spending units, this increase may be the result of sampling error.

Table 6 (page 48) shows the per cent of units owning each type of asset or owing each type of debt in 1962.

Estimates of total assets and liabilities for 1953 and 1962 imply estimates of net worth and change in net worth. These implied estimates are made explicit in Table 7 (page 50). It should be kept in mind that these estimates are approximations and that they are subject to a variety of errors. The sampling errors are not easy to estimate, but are undoubtedly substantial.

The interpretation, for example, of the estimate of $100 for the cohort of 1929 with a grammar school education, is that, over the nine year period, spending units headed by people aged 24 at the beginning

of the period and aged 33 at the end increased their savings, on the average, by only $100, or $11 a year. This particular estimate seems very low. In general, however, the array of means in Part B of Table 7 makes some sense. The implied average savings are generally higher for those units with more education, which is consistent with their higher incomes. The rates of saving are highest for the cohort of 1910, i.e., those who went from age 43 to 52. The negative rate of saving for the cohort of 1900 with a college education and positive rate for the cohort of 1890 with a college education do not seem plausible. The explanation may be the chance inclusion or exclusion of a few people with large common stock holdings in the 1962 survey (compare the detail of Table 5). It will be recalled that in the preceding section some reason was found to suspect that the rates of saving indicated here are too low owing to problems in the identification of constant cohorts.

Means of balance sheet items for Negro spending units are shown in Table 8. The number of observations is too small to permit a breakdown by education but a breakdown by year of birth is shown. It will be recalled that there is reason to believe that the coverage of Negro spending units improved over the period, and that, therefore, the increase in total assets (and in net worth) is understated. As one might expect, the estimates for Negroes are small. It is more of a surprise to find that both total assets and implied savings are lower for Negroes as a whole than they are even for the grammar school group of white spending units. For example, total assets of Negroes of the cohort of 1929 in 1962 were $3,000 compared to $6,100 for white members of the cohort of 1929 with a grammar school education.

CHANGES IN THE CONCENTRATION OF WEALTH

An examination of changes in the concentration of wealth in three cohorts was made. Lorenz curves were plotted using net worth as the measure of wealth. There are no substantial differences between cohorts, between age groups, or between years. The Gini coefficients [6] ranged

[6] For an extended discussion of the use of Lorenz curves, see G. B. Hainsworth, "The Lorenz Curve as a General Tool of Economic Analysis," *The Economic Record,* September 1964, 426–41.

TABLE 6

PER CENT OF SPENDING UNITS OWNING BALANCE SHEET ITEMS IN EARLY 1962 FOR CONSTANT COHORTS

	White Spending Units			Negro Spending Units
	Grammar School	High School	College	
Cohort of 1929				
Liquid assets	50	78	95	28
Automobile(s)	75	87	87	44
Owner-occupied house or farm	42	54	52	23
Other real estate	7	14	16	7
Business interest	[a]	8	10	4
Corporate stock	5	8	32	[a]
Mortgage debt	35	45	48	15
Any liabilities	87	85	81	74
Cohort of 1920				
Liquid assets	50	84	98	25
Automobile(s)	76	87	91	56
Owner-occupied house or farm	60	72	71	30
Other real estate	12	15	21	6
Business interest	7	12	10	10
Corporate stock	7	17	39	1
Mortgage debt	44	55	62	22
Any liabilities	81	82	87	67
Cohort of 1910				
Liquid assets	62	90	99	30
Automobile(s)	68	85	90	50
Owner-occupied house or farm	62	73	69	42
Other real estate	18	16	28	15
Business interest	9	12	10	5
Corporate stock	11	21	47	5
Mortgage debt	34	40	46	20
Any liabilities	65	69	72	66

(continued)

TABLE 6 (concluded)

	White Spending Units			Negro Spending Units
	Grammar School	High School	College	
Cohort of 1900				
Liquid assets	70	92	96	35
Automobile(s)	57	75	78	27
Owner-occupied house or farm	63	75	61	57
Other real estate	15	22	28	12
Business interest	2	8	5	7
Corporate stock	7	22	26	2
Mortgage debt	20	29	30	29
Any liabilities	46	45	57	70
Cohort of 1890				
Liquid assets	63	89	90	10
Automobile(s)	40	57	55	23
Owner-occupied house or farm	57	56	69	57
Other real estate	14	17	35	8
Business interest	3	2	12	[a]
Corporate stock	6	18	31	[a]
Mortgage debt	9	5	6	23
Any liabilities	29	25	35	42

[a] Less than one-half of 1 per cent.

TABLE 7

MEAN NET WORTH [a]

Part A. Estimated Mean Net Worth, Constant Dollars, 1953 and 1962

	Grammar School		High School		College	
	1953	1962	1953	1962	1953	1962
1929	$ 2,600	$ 2,700	$ 3,300	$ 7,900	$ 5,200	$14,200
1920	5,200	7,500	7,900	15,400	12,400	23,800
1910	8,400	14,100	14,800	21,200	22,400	35,800
1900	12,500	14,000	21,700	23,700	33,700	33,200
1890	13,600	11,400	24,200	19,800	45,200	61,200

Part B. Increase in Mean Net Worth, 1953 to 1962

	Grammar School	High School	College
1929	$ 100	$4,600	$ 9,000
1920	2,300	7,500	11,400
1910	5,700	6,400	13,400
1900	1,500	2,000	−500
1890	−2,200	−4,400	+16,000

[a] Derived from Table 5.

from .69 for the group aged 25 to 34 in 1953, to .62 for those aged 55 to 64 in 1962.

The coefficient for each cohort dropped about two points during the ten year interval, an insignificant amount. For example, the coefficient for those aged 25 to 34 in 1953 was .69 and for those aged 35 to 44 in 1962 (approximately the same cohort) the coefficient was .67. The set of coefficients calculated is as follows:

Age in 1953	Gini Coefficients in 1953	Age in 1962	Gini Coefficients in 1962
25–34	.69	35–44	.67
35–44	.67	45–54	.64
45–54	.64	55–64	.62

It can be concluded that the distribution of wealth remained stable for these age groups during the period.

TABLE 8

MEANS OF BALANCE SHEET ITEMS FOR CONSTANT COHORTS, EARLY 1953 AND EARLY 1962, NEGRO SPENDING UNITS ONLY
(*in constant dollars*)

	1953	1962
Cohort of 1929		
Assets		
Liquid assets	100	100
Automobile(s)	300	300
Owner-occupied home or farm	500	1,300
Other real estate	100	700
Business interest	[a]	600
Corporate stock	[a]	[a]
Other assets [b]	[a]	[a]
Total assets	1,000	3,000
Liabilities		
Mortgage debt	300	600
Nonmortgage debt	100	500
Total liabilities	400	1,100
Cohort of 1920		
Assets		
Liquid assets	100	100
Automobile(s)	300	300
Owner-occupied home or farm	1,300	2,200
Other real estate	100	300
Business interest	500	1,600
Corporate stock	[a]	[a]
Other assets	100	200
Total assets	2,400	4,700
Liabilities		
Mortgage debt	500	1,000
Nonmortgage debt	200	200
Total liabilities	700	1,200

(continued)

TABLE 8 (continued)

	1953	1962
Cohort of 1910		
Assets		
Liquid assets	200	200
Automobile(s)	300	300
Owner-occupied home or farm	1,700	3,100
Other real estate	300	700
Business interest	1,300	200
Corporate stock	[a]	100
Other assets	[a]	100
Total assets	3,800	4,700
Liabilities		
Mortgage debt	400	600
Nonmortgage debt	300	300
Total liabilities	700	900
Cohort of 1900		
Assets		
Liquid assets	300	400
Automobile(s)	200	200
Owner-occupied home or farm	3,100	3,800
Other real estate	1,000	900
Business interest	100	300
Corporate stock	[a]	[a]
Other assets	100	[a]
Total assets	4,800	5,600
Liabilities		
Mortgage debt	600	1,100
Nonmortgage debt	300	400
Total liabilities	900	1,500

(continued)

TABLE 8 (concluded)

	1953	1962
Cohort of 1890		
Assets		
Liquid assets	300	[a]
Automobile(s)	100	[a]
Owner-occupied home or farm	4,900	3,500
Other real estate	900	400
Business interest	[a]	[a]
Corporate stock	[a]	[a]
Other assets	200	200
Total assets	6,400	4,100
Liabilities		
Mortgage debt	1,200	700
Nonmortgage debt	300	[a]
Total liabilities	1,500	700

[a] Mean is less than fifty dollars.
[b] See Table 5 footnote b for the definition of this category.

Further Investigation of Selected Assets: Home Ownership and Automobile Ownership, 1950–65

It is possible to use the Surveys of Consumer Finances to estimate home ownership and car ownership in every year in which a survey has been taken, i.e., for the entire period since about 1948. These assets are of interest because they are widely held; for many people their home is their most important asset. Problems of response bias in estimating the value of homes and cars are comparatively small.

HOME OWNERSHIP

The percentage of spending units owning their own home in each of a series of cohorts by year is shown in Table 9. Two features of this table are especially interesting. First, only the cohort of 1890 shows any evidence of a decline in the percentage of home owners. For that

TABLE 9

PERCENTAGE OF WHITE HOME OWNERS BY COHORT
(*percentage owning their home at date*)

Age	Year	Grammar School	High School	College
Cohort of 1929				
21	1950	6	9	4
24	1953	30	20	21
33	1962	42	54	52
37	1966	58	71	67
Cohort of 1920				
30	1950	23	29	25
33	1953	49	46	43
42	1962	60	72	71
46	1966	71	78	81
Cohort of 1910				
40	1950	44	52	48
43	1953	57	61	60
52	1962	62	73	69
56	1966	73	80	78
Cohort of 1900				
50	1950	59	57	47
53	1953	63	67	63
62	1962	63	75	61
66	1966	69	75	72
Cohort of 1895				
55	1950	62	59	55
58	1953	63	69	69
67	1962	58	65	65
71	1966	67	71	72
Cohort of 1890				
60	1950	64	61	64
63	1953	63	70	70
72	1962	57	56	69

cohort there seem to have been small declines for all three education groups from age 63 to age 72, that is, from 1953 to 1962. (No estimate has been made of trends since 1962 for these groups.) The estimated decline of only a single percentage point for the college group is small enough so that it is not possible to be confident that any real decline in the percentage of home owners actually took place. This result is consistent with other evidence that people give up their homes only with reluctance.

Second, the younger cohorts have been acquiring their homes at much earlier ages than their forerunners. For example, the cohort of 1929 with grammar school education had reached 58 per cent ownership at the age of 37, or about the same level as the cohort of 1900 with grammar school education at age 50. Similarly, the cohort of 1929 with college education reached 67 per cent owners by age 37, a level reached by the cohort of 1900 only at about age 65.

It is also apparent from a study of Table 9 that a comparison of home ownership by age groups at a given date has little to do with the history of any cohort. One cannot infer from the fact that 59 per cent of those aged 50 in 1950 with a grammar school education owned their homes, that 59 per cent of the cohort of 1929 will own their homes when *they* reach 50 in 1979. On the contrary, 58 per cent already owned in 1966, and from 1962 to 1966 the percentage of owners had risen 16 percentage points, or 4 per cent per year. It would be ridiculous to extrapolate that trend 13 years to 1979 and estimate that it would reach only 59 per cent.

How high the percentage of home owners *will* rise is a more interesting question. Some of the cohorts shown in Table 9 are in the neighborhood of 80 per cent owners, notably two of the three groups of the cohort of 1920 in 1966. There does not seem to be much indication that the rates of increase in ownership for these cohorts have levelled off yet. In other words the upper asymptote of the trend in home ownership by age for this cohort seems likely to be well over 80 per cent.

AUTO OWNERSHIP

The percentage in each cohort who own one or more automobiles is shown in Table 10 while the percentage owning two or more cars is shown in Table 11. The younger cohorts of college educated people

TABLE 10

PERCENTAGE OF WHITE AUTO OWNERS BY COHORT
(*percentage owning one or more cars at date*)

Age	Year	Grammar School	High School	College
Cohort of 1929				
21	1950	54	47	44
24	1953	60	60	67
33	1962	75	87	87
37	1966	82	92	96
Cohort of 1920				
30	1950	65	64	70
33	1953	65	78	82
42	1962	76	87	91
46	1966	81	90	97
Cohort of 1910				
40	1950	56	70	70
43	1953	63	78	80
52	1962	68	85	90
56	1966	74	86	91
Cohort of 1900				
50	1950	55	72	70
53	1953	59	72	77
62	1962	57	75	78
66	1966	57	70	83
Cohort of 1895				
55	1950	54	67	71
58	1953	55	73	81
67	1962	49	66	66
71	1966	45	57	81
Cohort of 1890				
60	1950	53	61	71
63	1953	47	65	77
72	1962	40	57	55

TABLE 11

PERCENTAGE OF WHITE, MULTIPLE CAR OWNERS BY COHORT
(*percentage owning two or more cars at date*)

Age	Year	Grammar School	High School	College
Cohort of 1929				
21	1950	[a]	3	1
24	1953	3	2	6
33	1962	15	16	17
37	1966	26	30	38
Cohort of 1920				
30	1950	3	2	5
33	1953	4	6	11
42	1962	13	20	29
46	1966	27	33	47
Cohort of 1910				
40	1950	4	4	6
43	1953	4	9	16
52	1962	14	25	40
56	1966	18	26	41
Cohort of 1900				
50	1950	5	7	11
53	1953	4	6	20
62	1962	10	14	19
66	1966	8	15	21
Cohort of 1895				
55	1950	5	6	10
58	1953	4	4	21
67	1962	11	10	9
71	1966	3	8	10
Cohort of 1890				
60	1950	4	7	8
63	1953	2	6	18
72	1962	6	4	3

[a] Less than one-half of 1 per cent.

show a rapid increase to well over 90 per cent of auto owners. For the grammar school group the cohort of 1929 shows a slightly higher percentage of owners at age 21 and a slightly lower percentage at age 37 than for those with more education.

At the other end of the age range the proportion who ever owned a car in the cohort of 1890 reached a peak of only about 77 per cent near age 63 for those who had been to college, with lower peak levels for the high school and grammar school group, about 65 per cent and 53 per cent, respectively. All education groups of the cohort of 1890 showed a decline in ownership from age 63 to age 72. This definite decline even for the college group is more pronounced than the tendency of the people in this cohort to give up their homes.

Thus, there is evidence of a tendency for people in the younger cohorts to become owners of automobiles at earlier ages just as there is evidence that they become home owners earlier in their lives.

Ownership of more than one car is more common among the upper education groups in every cohort. There are pronounced differences among cohorts, however, in multiple ownership. The cohort of 1920 shows a rapid increase in multiple ownership from 1950 to 1966, as its members progressed from age 30 to age 46. The cohort of 1900 had a higher level of multiple ownership in 1950 than any other, but over the next decade and a half only a comparatively few of the cohort of 1900 became multiple owners. Evidently comparatively few married women aged 50 in 1950 who did not then have a separate car of their own acquired one in the next 16 years—or ever will acquire one. On the other hand if 47 per cent of the college educated cohort of 1920 had two cars by 1966, it seems likely that later cohorts will reach or exceed this level. It also seems likely that the cohort of 1920 will continue to be characterized by a high level of multiple ownership for some years to come—say, until its members reach age 65 in 1985.

Factors Which May Account for Changes in Wealth: Trends in Income and Inheritances

Simple extrapolation of trends by a cohort group of the type presented in the last section can be useful. Yet economists will wish to analyze the reasons for these developments. There are essentially three possible ways in which changes in the net worth of the members of a cohort

may occur: saving from current income (which may be positive or negative); capital gains or losses; and capital transfers to and from other cohorts, especially inheritances received and capital outlays for the education of children. Observed balance sheets by cohorts will also be influenced by problems of measurement and by changes in the composition of the cohort. In this paper it will be possible only to provide some limited information about the income history of different cohorts and even scantier information about inheritances received.

INCOME BY COHORTS

There have been efforts to develop estimates of income trends for constant cohorts based on data from the decennial *Census of Population* and from the *Current Population Reports* on annual income. The discussion in Chapter VI of the recent monograph by Herman P. Miller is especially interesting.[7] Miller works primarily with individual income data for adult males in his analysis. To the authors' knowledge none of the calculations to date on a cohort basis have been made both using family income and taking education level into account. For the analysis of changes in wealth, total family income is more directly relevant than the income of individual earners.

Unadjusted and undeflated estimates of median income by age for four years are shown in Table 12. (Note that this table is not on a cohort basis. It shows simply median income by age.) Two of the years shown are the years for which income was reported in the same survey in which net worth was estimated, i.e., income for 1952 reported in early 1953 and income for 1961 reported in early 1962.

Income estimates for 1949 and 1965 are also shown. For the three earlier years the income shown is spending unit income. For 1965 spending unit income is not readily available and the estimates shown are for family income. Hence, 1965 incomes are biased upward com-

[7] See Herman P. Miller, *Income Distribution in the United States*, U. S. Department of Commerce, Bureau of the Census, Washington, D. C., 1966. For another recent discussion of the subject see the report prepared by T. Paul Schultz, "Statistics on the Size Distribution of Personal Income in the United States," *The Distribution of Personal Income, A Study on the Size Distribution of Personal Income in the United States*, prepared for the use of the Subcommittee on Economic Statistics of the Joint Economic Committee of the United States, 88th Congress, 2d Session, Joint Committee Print, Washington, D. C., 1965, especially pp. 13–23.

TABLE 12

MEDIAN INCOME BY AGE AND CALENDAR YEAR, NOT DEFLATED, SHOWING AGE GROUPS AS DEFINED IN EACH SURVEY [a]

	1949		1952		1961		1965	
	Median Income	Number of Cases	Median Income	Number of Cases	Median Income	Number of Cases	Median Income	Number of Cases
White, 0–8 grades								
18–24	$1,740	45	$2,800	32	$ 1,610	9	$ 3,070	6
25–34	2,490	160	3,410	121	4,140	47	5,190	43
35–44	2,680	232	3,290	171	4,610	79	6,750	77
45–54	2,920	281	3,340	224	3,710	107	5,880	106
55–64	2,430	279	2,870	212	3,790	109	5,310	152
65+	1,190	253	1,330	245	1,790	166	2,530	234
White, 9–12 grades								
18–24	$1,990	217	$2,660	154	$ 3,820	96	$ 5,280	63
25–34	3,200	351	4,050	324	5,740	175	7,410	211
35–44	3,630	321	4,510	299	6,480	227	8,650	213
45–54	3,710	226	4,680	206	6,570	173	8,850	220
55–64	3,280	118	3,870	108	5,720	96	6,970	158
65+	1,630	84	1,980	91	1,670	89	3,520	122
White, college								
18–24	$2,020	67	$2,900	70	$ 3,840	70	$ 3,710	81
25–34	3,830	213	5,330	187	7,720	145	8,240	141
35–44	4,860	172	6,280	150	9,110	137	12,330	136
45–54	4,890	120	6,010	122	11,850	94	13,290	106
55–64	4,040	65	6,230	73	6,720	46	10,630	77
65+	2,650	54	3,370	61	2,560	38	6,860	60
Negro								
18–24	$2,080	11	$1,600	25	$ 1,950	17	$ 2,640	17
25–34	1,860	46	2,320	71	3,250	46	5,500	39
35–44	1,710	45	2,030	55	3,780	52	4,640	33
45–54	2,130	37	2,170	42	3,170	39	5,500	42
55–64	1,020	23	1,740	27	2,500	30	2,250	32
65+	600	20	910	27	1,590	30	2,130	27

[a] Incomes shown are on a spending unit basis for 1949, 1952, and 1961 but on a family unit basis for 1965.

pared ... incomes in the earlier years on a spending unit basis. The approximate amount of the bias may be inferred from the fact that in early 1966, 9.3 per cent of all spending units were related secondary spending units. For this reason the 1965 incomes should be regarded as only approximate indicators, and the principal comparison should be among the years 1949, 1952 and 1961.

The number of interviews on which each median is based is shown. Estimates based on less than thirty interviews should be regarded as very tentative. For example, the estimated income for 1961 for whites with a grammar school education aged 18–24 in early 1962 is based on only nine interviews. There were few such individuals in the population.

The results shown in Table 12 fit a familiar pattern. Incomes are highest for the units about 50 years of age. Incomes are consistently higher for those in the upper education groups. And incomes in current dollars have been rising rapidly since 1949.

The next step in the analysis was to deflate the medians in Table 12 by the Consumer Price Index. The results were plotted to show curves relating income and age in each survey year for each cohort. Using these graphs estimates could be interpolated to yield estimated income at any age within the range studied. Table 13 shows the required ages to follow the cohorts specified based on age in 1950. The resulting estimates for these cohorts appear in Table 14. It will be apparent that

TABLE 13

COHORTS USED IN ANALYSIS OF TRENDS IN INCOME

Cohort Definition, Age in Early 1950		Age at Later Dates		
Range	Midpoint	Early 1953	Early 1962	Early 1966
18–24	21 (1929)	24	33	36
25–34	30 (1920)	33	42	45
35–44	40 (1910)	43	52	55
45–54	50 (1900)	53	62	65
55–64	60 (1890)	63	72	75
65+	72 (1878)	75	84	87

the estimates of Table 14 are subject to some error from the linear interpolation, and, more importantly, to error arising from errors in the original estimates in Table 12.

What do the data of Table 14 suggest has been the income history of the different cohorts of white spending units? Perhaps the most remarkable history is that of the cohort of 1900. Over the years studied,

TABLE 14

MEDIAN INCOME BY YEAR, WHITE COHORTS DEFINED BY AGE OF HEAD OF SPENDING UNIT IN 1950

Cohort Definition (Based on age in early 1950)	Median Income, Constant Dollars [a]			
	1949	1952	1961	1965
0–8 grades				
18–24 (1929)	$2,100	$2,600	$ 4,100	$ 5,600
25–34 (1920)	3,000	3,600	4,200	5,700
35–44 (1910)	3,200	3,600	3,600	5,100
45–54 (1900)	3,500	3,500	3,300	3,700
55–64 (1890)	2,900	2,700	1,700	–
65+ (1878)	1,400	–	–	–
9–12 grades				
18–24 (1929)	$2,400	$3,400	$ 5,700	$ 7,400
25–34 (1920)	3,900	4,500	6,200	7,900
35–44 (1910)	4,400	4,900	6,100	7,200
45–54 (1900)	4,500	4,800	4,800	4,800
55–64 (1890)	4,000	3,600	1,600	–
65+ (1878)	2,000	–	–	–
College				
18–24 (1929)	$2,400	$4,000	$ 8,000	$ 9,800
25–34 (1920)	4,600	6,100	9,900	11,700
35–44 (1910)	5,900	6,700	10,400	10,800
45–54 (1900)	5,900	6,600	5,800	8,200
55–64 (1890)	4,900	5,900	2,500	–
65+ (1878)	3,200	–	–	–

[a] Incomes shown are on a spending unit basis for 1949, 1952, and 1961 but on a family unit basis for 1965.

as this cohort advanced in age from 50 to 66, the median income of its members remained remarkably constant. For the 0–8 grade education level, median income is estimated at $3,500 at age 50, $3,500 at age 53, $3,300 at age 62, and $3,700 (on a family unit basis) at age 65. For the 9–12 grade education level, median income is estimated at $4,500 at age 50 and $4,800 at each of the other three ages. For the college group, the estimates are $5,900, $6,600, $5,800 and $8,200. No doubt there is some sampling error in these estimates (e.g., the $5,800 seems very low for college educated people aged 62 in 1961). But on the whole in a period of rising real incomes the cohort of 1900 seems to have done poorly. It will be recalled that the cohort of 1900 shows little evidence of having increased its net worth substantially (see Table 7).

The older cohort of 1890 experienced a sharp decline in real income from age 63 to age 72. This decline, however, occurred at the age of retirement, when a decline in real income is to be expected. The decline may also reflect a change in the composition of the cohort: by 1961 some of the units must have been headed by widows who had pensions smaller than the unit would have received during the lifetime of the husband.

The earlier cohorts show steep increases in income over the period. The increases were especially rapid for the higher education groups. For example, the cohort of 1920 of whites with college education shows an estimated increase from a median income of $4,600 at age 30 to $6,100 at 33, $9,900 at 42, and $11,700 (on a family unit basis) at 45. These results are broadly consistent with those reported by Miller. He found that the young have tended to benefit from economic growth more than the older people.[8] It does not appear that such groups as the cohort of 1900 have been able to improve their position by the entry of extra family members into the labor market beyond what might have been expected from the income history of adult males.

It would be possible to carry this type of analysis much farther with existing data. For such purposes as the construction of estimates of lifetime earnings by cohort a more substantial foundation of basic estimates of median incomes by age clearly would be desirable.

[8] *Income Distribution in the United States,* page 129.

INHERITANCES

The estimation of the amount of inheritances by sample surveys is inherently difficult for several reasons. The frequency of receiving inheritances is low with very few people inheriting anything in any single year. The distribution of amounts inherited is highly skewed. The subject is likely to be a sensitive one about which to ask questions, especially at a time close to the death of the person leaving the bequest. As the event fades into the past, memory error in reports may be expected to increase.

Some information on the subject has been collected by the Survey Research Center, however. Estimates of the relation between age and

TABLE 15

AMOUNT INHERITED BY AGE OF HEAD OF SPENDING UNIT
(*percentage distribution of spending units, March 1960*)

Amount of Inheritance	Age							
	All	18–24	25–34	35–44	45–54	55–64	65–74	75+
None	80.4	92.4	92.7	85.0	77.3	70.4	66.8	59.5
$1–499	2.5	2.4	1.9	2.1	1.5	3.9	2.3	6.9
$450–949	1.6	1.2	0.5	1.5	2.8	1.2	1.4	3.1
$950–4,949	6.8	2.4	2.3	4.8	7.9	9.8	13.3	14.8
$4,950–9,949	3.4	0.8	0.7	2.6	4.7	5.3	7.0	3.9
$9,950–24,949	2.3	0.4	0.8	2.2	2.9	4.2	3.1	3.2
$24,950+	1.0	0.4	0.2	0.7	0.7	2.6	1.8	0.7
Not ascertained	2.0	0.0	1.0	1.0	2.2	2.6	4.2	7.9
Total	100.0	100.0	100.1	99.9	100.0	100.0	99.9	100.0
Number of cases	2,418	264	586	672	594	484	269	128
Per cent of spending units		8.9	19.5	22.5	19.2	15.3	9.9	4.7

SOURCE: Survey conducted by the Survey Research Center in March 1960 reported in James N. Morgan, Martin H. David, Wilbur J. Cohen, and Harvey E. Brazer, *Income and Welfare in the United States*, New York, 1962.

The questions were: "Have you ever inherited any money or property? (If yes) When was that? What was it worth?"

TABLE 16

ESTIMATED AGE OF INHERITANCE BASED ON TABLE 15

Age in 1960	Midpoint	Cohort	Per Cent Who Have Inherited	Implied Increase in Per Cent Who Have Inherited [a]
18–24	21	1939	7.6	–
25–34	30	1930	7.3	–
35–44	40	1920	15.0	7.7
45–54	50	1910	22.7	7.7
55–64	60	1900	29.6	6.9
65–74	70	1890	33.2	3.6
75+	75?	1885?	40.5	7.3

[a] Assumes that there is no systematic difference in the age at which different cohorts receive their inheritances. This assumption, of course, is at best a rough approximation. Very likely as people have their children earlier in life and then live longer the age at which their children inherit is gradually becoming later.

amounts inherited are shown in Tables 15 and 17 based on two national cross-sections.[9] For the present purposes the question is one of the extent to which inheritances can help to explain changes in net worth. For this purpose Table 16 has been prepared based on Table 15. In preparing Table 16 it has been assumed that the ages at which people receive inheritances will not vary from cohort to cohort. On this assumption the per cent who inherited some amount can be estimated for each cohort for each decade. It turns out that over the middle years (ages 40 to 60) about 7 to 8 per cent of a cohort inherit some amount in a decade—say, 0.7 per cent receive an inheritance in a year. More precisely, 0.7 per cent receive their first inheritance—the data do not permit separation of several inheritances.

How much do they receive? It is possible to make a rough estimate from Table 15. The median received for all who have inherited at any age (based on the first column of Table 15) is about $3,500. The mean can be estimated only by assigning an arbitrary class mark to the top bracket (i.e., to the category $25,000 and up). If one uses $50,000,

[9] The subject also has been investigated for high income people. See Robin Barlow, Harvey E. Brazer, and James N. Morgan, *Economic Behavior of the Affluent,* Brookings Institution, 1966, especially Chapter VII, "Inheritances and Gifts Received," pp. 86–96.

TABLE 17

WHETHER ANY INHERITANCE WAS EVER RECEIVED WITHIN AGE GROUPS
(*percentage distribution of spending units, early 1963*)

	Age of Spending Unit Head						
	All	–25	25–34	35–44	45–54	55–64	65+
Whether any inheritance was ever received							
Yes	19	6	7	14	24	25	34
No	81	94	93	86	76	75	66
Total	100	100	100	100	100	100	100
Amount of inheritance [a]							
Less than $500	[b]	[b]	[b]	[b]	1	1	[b]
$500–2,499	2	1	2	[b]	2	1	4
$2,500–4,999	1	[b]	[b]	1	1	2	2
$5,000–9,999	2	[b]	[b]	1	3	2	3
$10,000–24,999	1	[b]	1	1	2	1	1
$25,000–99,999	1	1	[b]	2	1	2	1
$100,000+	[b]	[b]	[b]	[b]	1	1	[b]
Don't know	1	[b]	[b]	[b]	[b]	1	2
Not ascertained	2	1	1	1	2	3	5
Inappropriate	90	97	96	94	87	86	82
Total	100	100	100	100	100	100	100
Number of interviews	2,036	221	358	421	379	334	323

SOURCE: 1963 Survey of Consumer Finances.

The questions were: "Did you people ever receive any inheritance? Did you receive money from any life insurance policies or relatives who died? (If yes to either) Among your current assets, would you say you inherited most of it, or saved from income, or what? (If most or some of it inherited) About how much have you inherited?"

[a] Asked only of spending units who reported that most or some of their current assets were inherited.

[b] Less than one-half of 1 per cent.

the over-all mean is about $7,500. Perhaps it would be reasonable to take $7,500 as a crude estimate of the mean of a truncated distribution which omits the very wealthy.

If the mean for those in a cohort who did inherit were $7,500, and if 7 or 8 per cent of the cohort were to inherit over a decade, the mean for the cohort as a whole would be of the order of $550. With that amount in mind we may look again at the estimates of change in net worth over a nine-year period in Part B of Table 7. For most of the cohorts $550 is small relative to the change in the mean. That is, even if the full amount inherited is assumed to have been saved, other factors seem to account for most of the changes in mean net worth.

Conclusions

Selected statistical findings from this investigation are summarized in Table 18. As might be expected, large annual increases in income are associated with large increases in net worth. For the cohort of 1900, for which the increases in income are very small, there are also small increases in net worth. Large increases in the percentage holding individual assets tend to be associated with large increases in net worth. Decreases in income are associated with decreases in net worth except for the college educated members of the cohort of 1890, some of whom seem to have enjoyed substantial capital gains.

The main results of this investigation may be summarized as follows:

1. With the accumulation of cross-section data in the postwar period, cohort analysis of trends in income and wealth is becoming increasingly possible.

2. Cohort analysis makes severe demands on the data in terms of continuity of method. Coverage problems are especially troublesome. One of these seems to be undercoverage of young Negro spending units, especially in the earlier years.

3. Changes in average net worth have been estimated from 1953 to 1962 for white cohorts defined by age and broad education group. The estimates seem generally reasonable. The highest rates of increase are estimated for the cohorts of 1910. The cohorts of 1900 show no increases or a small increase.

4. A special analysis of home ownership by cohort has been carried out for the period 1950 to early 1966. The results show a major shift

TABLE 18

SUMMARY OF CHANGES IN ASSET OWNERSHIP AND INCOME FOR CONSTANT COHORTS, WHITE SPENDING UNITS ONLY

Part A. Home Ownership

	Average Annual Increase in Median Income, Mid 1950–1963 [a]	Total Increase in Mean Net Worth from 1953 to 1962	Per Cent Owning Homes in 1966 Minus Per Cent Owning in 1950
Cohort of 1929			
Grammar school	$185	$ 100	52
High school	270	4,600	62
College	422	9,000	63
Cohort of 1920			
Grammar school	122	2,300	48
High school	211	7,500	49
College	404	11,400	56
Cohort of 1910			
Grammar school	70	5,700	29
High school	148	6,400	28
College	318	13,400	30
Cohort of 1900			
Grammar school	–	1,500	10
High school	11	2,000	18
College	18	−500	25
Cohort of 1890			
Grammar school	−96	−2,200	−7 [b]
High school	−191	−4,400	−5 [b]
College	−252	16,000	5 [b]

(continued)

TABLE 18 (concluded)

Part B. Car Ownership

	Per Cent Owning a Car in 1966 Minus Per Cent Owning in 1950	Per Cent Owning More Than One Car in 1966 Minus Per Cent in 1950
Cohort of 1929		
Grammar school	28	26
High school	45	27
College	52	37
Cohort of 1920		
Grammar school	16	24
High school	26	31
College	27	42
Cohort of 1910		
Grammar school	18	14
High school	16	22
College	21	35
Cohort of 1900		
Grammar school	2	3
High school	−2	8
College	13	10
Cohort of 1890		
Grammar school	−13 [b]	2 [b]
High school	−4 [b]	−3 [b]
College	−16 [b]	−5 [b]

[a] The average annual increase in median income for each cohort was calculated by subtracting the average of the median incomes for 1949 and 1952 from the average of the median incomes for 1961 and 1965 and dividing by 13.5 years. For the cohorts of 1890 the average of the 1949 and 1952 median incomes was subtracted from the median income in 1961 and divided by 11.5 years.

[b] For the cohort of 1890 the difference in percentage owning the specified assets was estimated between 1950 and 1962.

toward spending units acquiring homes at earlier ages. The peak level of the percentage of home owners by cohort is rising, and seems likely to reach levels well over 80 per cent.

5. A special analysis of auto ownership by cohort also has been carried out for the period 1950 to early 1966. There is evidence of a shift toward multiple ownership among the younger cohorts, especially in the upper education group. The percentage of multiple owners had reached 47 for the college educated cohort of 1920 by 1966. It seems reasonable to project some further increase in the percentage of owners in this group. Multiple ownership does not seem to decline prior to retirement.

6. Estimates have been prepared of income by cohort for the period 1949 to 1965. The results can and should be improved by including data from more surveys to reduce sampling error. Other refinements are also possible. The findings show rapid increases in real income over the period for the younger and better educated cohorts but little increase in real income for the cohorts of 1910.

7. Rough estimates of the amount of inheritances suggest that the average savings of a cohort as a whole is primarily determined by other factors. (In this analysis the very wealthy are effectively excluded by the nature of the methods used.) Less than 1 per cent of the members of a cohort become heirs in any single year. The median amount inherited to date by heirs (of all ages) is estimated at roughly $3,500.

COMMENT

E. Scott Maynes, University of Minnesota

For too long economists seeking to test theories of *long-run* consumption behavior have had to make-do with short-run data. Application of a high order of statistical and econometric ingenuity has not prevented the long-run effects we wished to observe and to understand from being obscured in part, at least, by short-run influences in which we had less interest. Lansing and Sonquist in their paper show how cohort analysis can provide the long-run data needed to test long-run theories.

Cohort analysis deals with groups whose characteristics remain con-

stant over time despite the fact that their constituent members are frequently changed through fresh sampling. The advantages of the cohort approach are substantial. Being forced to base our analysis on group rather than individual observations, we free ourselves from the aberrations and noise associated with individual observations. By dealing with groups over longish periods of time, we are better entitled to assume that transitory effects, peculiar to particular short periods, have averaged out, leaving us with observations which conform tolerably well to long-run theoretical concepts.

Cohort analysis extracts its costs, however. We must confine ourselves to bodies of data collected under presumably constant techniques, or face up to uncertainty-introducing attempts to "adjust" data for changes in technique. In defining cohorts, we must confine ourselves to stationary variables (e.g., race), quasi-stationary variables (e.g., age), or brave the unknown biases introduced by nonstationary variables (e.g., occupation). And then analysis of group means forces upon us a harsh economy with respect to the number of independent variables that can be tested.

In large part the Lansing-Sonquist paper serves to whet the economic appetite. They present data describing what has happened in various age-education-race cohorts over 1950–65 or 1953–62 for such dependent variables as net worth, income, single- and multiple-car ownership, receipt of inheritances, ownership (per cent owning and mean amount) of major components of net worth. In the case of "saving" ($\simeq$ 1962 cohort net worth minus 1953 net worth) [1] the authors show that relatively little of the observed cohort "saving" is accounted for by transfer through inheritances. They demonstrate how 1953–62 cohort income could be estimated and then, loosely, how it could be related to long-run saving. The Lansing-Sonquist paper will serve its main purpose if other students find many of the 1950–65 developments as fascinating as I did, and then seek analytically to explain them.

In the area of long-run saving this has already occurred. Unbeknownst to the Survey Research Center authors, Eugene Melander of Pennsyl-

[1] Margaret Reid pointed out that the omission of changes in life insurance and pension plan cash reserves makes this a poor approximation to personal saving. These components constitute about 40 per cent of personal saving. By happy chance, however, these represent the least variable of saving components.

vania State University has undertaken a careful and sophisticated analysis of saving, mining the same SRC data that the Lansing-Sonquist paper is based on. I am not hesitant about reporting some of Melander's results since he was my Ph.D. advisee and I suggested the cohort approach to him. Nonetheless, the work and credit should accrue to him.

Melander defined 360 cohorts (and obtained complete data for 212 cohorts) on the basis of the following variables: Age (five groups); Education (three groups); Race (two groups); Income quartile (four groups) based on 1952–61 cohort income; Occupation—1. Clerical and sales, skilled and semi-skilled, 2. Professional, self-employed, managers, officials, and 3. Farm operators, all others. In arriving at this classification Melander sought classes among which movements would be minimal over the nine-year period. Then, confining his choice to two sets, he chose that classification for which the between-group variance of income (and also, by chance, net worth and saving) was maximal.

Melander tested models which differed with respect to the inclusion or exclusion of beginning net worth, and the inclusion of alternative measures of expected income. For any given model, parameter estimates were moderately sensitive for such factors as weighting, estimation in a ratio form, and suppression of the constant term. The following results are representative:

Type of Estimate [2]		
Weighted	$S = 0.30\,Y - 0.66\,A - 3{,}717$ (0.02) (0.03)	$R^2 = 0.21$
Unweighted	$S = 0.46\,Y - 0.94\,A - 7{,}197$ (0.06) (0.09) (3,030)	$R^2 = 0.37$
Unweighted, constant suppressed	$S = 0.36\,Y - 0.90\,A$ (0.04) (0.09)	$R^2 = 0.35$

where S = Long-run saving = mean 1962 cohort net worth minus 1953 net worth. (The principal exclusions from net worth, and hence from saving, are life insurance and pension plan cash reserves.)

Y = Long-run income = sum of mean cohort income, 1952–61.

A = Beginning net worth (cohort mean).

[2] Source: Eugene R. Melander, "Longer-Term Household Saving: Some Models and Their Empirical Evaluation," Ph.D. thesis, University of Minnesota 1966, Table V-2.

"Unweighted" estimates assign a weight of 1 to each cohort while weighted estimates take as weights the number of households in each cohort.

Several points are noteworthy:

1. This is the first cross-section analysis—except Lansing-Sonquist—to use the cohort approach, and explicitly long-run data.

2. These are the first cross-section results to yield an emphatically significant net worth term with a negative sign corresponding to the often-discussed Pigou effect.

3. This is one of the few cross-section savings function studies whose results are reasonably congruent with time series results, in this case those of Ando and Modigliani.[3] Upon adjusting Melander's estimates to a one-year basis, we get the following comparison.

Ando-Modigliani, First Difference	$\Delta S = 0.45\Delta Y - 0.08\Delta A$	No detectable autocorrelation
Melander, Weighted	$S = 0.30\,Y - 0.07\,A - 413$	
Melander, Unweighted	$S = 0.46\,Y - 0.10\,A - 800$	
Melander, Unweighted, Constant Suppressed	$S = 0.36\,Y - 0.10\,A$	

It should be acknowledged at once that Ando-Modigliani utilized labor income and not the total household income used by Melander.

Despite any skepticism we may have regarding either set of estimates, it is comforting to find formulations and data which appear to confirm the same general type of main effects.[4]

One final comment. Repeatedly at this Conference discussion has focused on period-to-period changes in some measure of concentration. Lansing-Sonquist's contribution to this discussion consists of measuring Gini coefficients of net worth for identical age cohorts in 1953 and again in 1962 and then concluding that the "distribution of wealth remained stable for these age groups during the (1953–62) period."

This citation—and, indeed, all other such citations of concentration measures at this Conference—lacks either sampling error calculations or references thereto. In this instance the Gini coefficients will be calculated from cells containing from 250 to 600 observations. But the

[3] Albert Ando and Franco Modigliani, "The Life Cycle Hypothesis of Saving: A Correction," *American Economic Review,* March 1964, equation 6, p. 112.

[4] Readers interested in a more detailed presentation of these results will find it in a paper presented at the December 1967 Meetings of the Econometric Society: Eugene R. Melander and E. Scott Maynes, "A Cohort Analysis of the Long-Term Saving Function." A revised version of this paper has been submitted to the *Economic Journal* under the title, "Cohort Evidence on a Wealth-Offset Hypothesis of Saving."

considerable concentration of net worth worsens this situation from a sampling viewpoint. The same SRC data show that the uppermost 14 per cent of households when classified by net worth account for 68 per cent of the aggregate (almost certainly an underestimate). Thus, the estimates of over-all means—and hence, Gini coefficients—will be dominated by the thirty-five to eighty cases in each group with net worth of $25,000 or more. I submit that in the absence of appropriate sampling error calculations this sophisticated group must be much more careful than it has been in making statements about changes in concentration.