AGE-RELATED CHANGES IN EXPENDITURE PATTERNS

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This study examined expenditure patterns of the elderly using data from the 1986 Consumer Expenditure Survey. Multiple regression results indicate that age is a significant factor in expenditures. Compared with younger households, elderly households spent more on utilities, health care, and domestic services and less on clothing and services, shelter, and entertainment. No difference was found in expenditures on food at home and food away from home between elderly and younger households.

INTRODUCTION

The effect of population aging on consumption is becoming an increasingly important area of concern to economists and public policy makers. The elderly population is increasing not only in absolute numbers, but as a share of the total population in the United States. From 1980 to 1985 the number of households with reference person age 65 and over increased by 27 percent, more than three times the rate of increase in the population as a whole. By 2000, there are expected to be over 22 million such households, over 23 percent of the total population (Bureau of Census, 1986).

The income distribution in the United States is changing, and some of the changes have favored the elderly, who have, as a result, experienced a higher rate of increase in real household income, adjusted for family size, than other age groups; thus the elderly today are, on average, at least as well off as other age groups and will continue to be so during the next several decades (Hurd, 1989a). Therefore, if expenditure patterns of the elderly differ from those of the young and their resources do not decline relative to those of other age groups, the shift in the age distribution of the population is likely to result in a significant change in expenditure patterns of the United States population as a whole. The relative share of expenditure by elderly consumers will also increase due to the fact that the proportion of elderly consumers is rapidly increasing.

Although the elderly have on average experienced economic gains, substantial numbers have inadequate resources. Hurd (1989a; 1989b) identified two groups of elderly that should be

objects of concern: the many "near-poor", whose incomes are just high enough to disqualify them for social programs but not high enough to cover high-expenditure health-care needs, and elderly widows, who have an especially high rate of poverty.

It is important for us to recognize differences between expenditures of the elderly and the young in order to establish appropriate public policies to help elderly consumers. If changes occur without being predicted and thus without appropriate public policies, shortages of goods and services needed by the elderly may occur and their prices rise to a point that needed commodities are unaffordable to many. The welfare of the young consumer as well as the elderly consumer may decline. The purpose of this study was to compare consumption expenditure patterns of elderly (65 or older) and younger households (under 65), taking into account other socio-economic factors associated consumer behavior.

PREVIOUS RESEARCH

One interesting hypothesis concerning consumer behavior of the elderly and young was stated by Drucker (1979). He argued that elderly consumers would have a higher average propensity to consume than younger consumers and thus the income transfer payments from young workers to older retired workers under the social security program would increase aggregate consumption and would cause demand-pull inflation.

To test above hypothesis, Fareed and Riggs (1982) used the 1972-73 Consumer Expenditure Survey data, and calculated consumption functions for an elderly group (65 years and older) and a younger group (less than 65 years old). They found that average propensity to consume was almost the same for the two groups and concluded that income transfer policies under the social security program are not inflationary. They also calculated consumption functions for food, shelter, clothing, transportation, and medical care. For food, clothing, and medical care, marginal propensity to consume (MPC) was higher for the younger consumer group. For shelter and transportation, MPC was higher for the older group.

Chen and Chu (1982) investigated consumer spending patterns among different age groups, using the 1973 sample of the Survey of Consumer Expenditure. Age differences in consumption patterns existed for most items, even when family income was held constant. The aged spent more on utilities and medical care and less on clothing, house furnishings and equipment, automobile purchases and operations, and

recreation than nonaged households. In most income classes, the aged spent proportionately less on food than younger aged groups. They concluded that the high budget share of food among the aged simply reflects their low income.

Heslop (1986) tested the effects on expenditures of the elderly and near elderly of age vs. cohort vs. period in which the expenditures were made. Heslop found that period and cohort effects were more important and age less important than might be expected.

Sexauer (1979) examined the effect of demographic shifts on food away from home expenditure using two different sets of cross sectional data: the 1960-61 Bureau of Labor Statistics (BLS) and U. S. Department of Agriculture Survey of Consumer Expenditure and Incomes and the 1972-73 Consumer Expenditure Survey data by the BLS. Age (under 65 vs. 65 and over), family size, and urbanization were found to be negatively related to food away from home expenditure, but income, education, having a working wife, and sex were positively related. Sexauer concluded that demographic shifts have a significant effect on long-run changes in consumer demand.

Blaylock and Smallwood (1986) tested the relationship of income and other household characteristics to changes in the level of expenditure. Data were taken from the 1980 Consumer Expenditure Survey. They found that age and income were the most significant determinants of food expenditure. Elderly households spent more on many food items than young households, except for spending on food away from home. Other studies of food expenditure also found relationships to age (Axelson and Penfield, 1983).

Using data from the 1972-73 Consumer Expenditure Survey, Dardis, Derrick, and Lehfeld (1981) tested the determinants of clothing expenditure. They found that clothing expenditure was positively related to income, education, and family size. Households headed by non-blacks spent more than households headed by blacks. Expenditure on clothing was negatively related to age. Norum (1989), who analyzed 1980-81 data, found that clothing expenditure of elderly households was lower than those of other age groups.

Junk, Jones, and Kessel (1988) examined home energy costs for two different groups of elderly people who were living in Idaho and Utah. One group of the elderly was sampled in 1983, and the other group of the elderly was sampled in 1986. The latter group of the elderly were predominantly females with incomes below the poverty level, and were regarded as a low income group. They found that the low income group averaged higher expenditures on home utilities and fewer energy-savings features than the 1983 group. Also, the low income group averaged a higher percentage of income for home energy. They concluded that those at the lower income level of the elderly were likely to suffer more from high utility costs than do others. Elderly

people who were living in newer homes had lower home energy costs than elderly people who were living in older homes.

All of the studies reviewed found that age is one of the most important determinants of consumer expenditures. A conclusion of the researchers was that population aging will have significant implications for future consumption patterns for the economy as a whole.

THE DATA

The data were taken from the 1986 Consumer Expenditure Survey, conducted by the Bureau of Census under contract to BLS. The Consumer Expenditure Surveys utilize national probability samples of households, designed to be representative of the United States population. The study design provides for a rotating panel survey with quarterly interviews in which each sample household is interviewed once per quarter for five consecutive quarters, with the first interview being used only for bounding purposes. One-fifth of the households are replaced each quarter in the sample.

The 1986 interview survey data tape contains the reports of 4,007, 5,814, 5,774, 5,869, and 5,905 sample households for each of five consecutive quarters from the first quarter of 1986 through the first quarter of 1987, respectively. The sample used in this study consisted of households who were interviewed for four quarters during this period and for whom, therefore, total annual expenditure could be reconstructed by summing their expenditure over the four quarters. After the adjustment, the sample consisted of 1,717 households.

VARIABLES

The unit of analysis was the household. The household can be operationally defined on the basis of shared tasks of production and consumption, and whether or not members of the group are linked by kinship or marriage, or are coresident. The BLS uses consumer unit (defined as a group of persons living together who are related or who pool expenses) as the unit of analysis (BLS, 1989). The term "household" will be used to mean consumer unit. A reference person, defined by BLS as the first member mentioned by the respondent when asked who owned or rented the home, was identified in each household. It is with respect to this person that the relationship of other household members was determined.

The dependent variables were the total amount spent in the survey year on food at home, food away from home, clothing and clothing services, shelter, utilities, house furnishings and equipment, health care, transportation, entertainment, and domestic services. There were no zero expenditure households in this study.

It should be noted that expenditure may be defined, operationally, in two different ways: as amount obligated or as cash outlay. The BLS defined expenditure as amount obligated, i.e., initial purchase price, regardless of portion of the purchase price financed or loan status. Payments for previous credit purchases were not included. For the purpose of this study, cash outlay was needed. The BLS definition of expenditure was not appropriate, especially for vehicle expenditure because purchase price of vehicles greatly exceeds cash outlay in the survey period in most cases. Therefore an estimate of cash outlay for transportation was substituted for the BLS figure. Expenditure for vehicle purchase was recomputed to include: (1) purchase price of vehicles purchased for cash in current year, (2) downpayment for vehicles purchased on credit in current year, and (3) installment payments made on vehicles that had been purchased on credit. Estimated mean transportation expenditure under the two definitions are:

Reference person	Amount obligated	Cash outlay
Total sample	$4,831	$4,065
Younger households	5,824	4,893
Elderly households	2,450	2,248

Socio-economic variables are essential to the study of consumption because they serve as proxies for tastes and preferences of consumers. For example, consumers may spend more for health-care services and less for clothing as they age, not because the prices of these items vary with the age of the consumer, but because the consumer's needs and preferences change with age. The following socio-economic factors were used as explanatory variables in this study: age, education, sex, marital status, race, employment status, and household size. Total expenditures was also included as proxy for permanent income in the model. Table 1 provides a detailed description of the independent variables.

ANALYSIS

Multiple regression analysis was used to estimate the relationship between consumption expenditure and socio-economic variables. The model was as follows:

$$E_i = c_0 + c_1X_1 + c_2X_2 + c_3X_3 + \ldots + c_8X_8 + e$$

where E_i was consumption expenditure for ith category and X_1 to X_8 were independent variables pertaining to household i.

If the coefficient of age was significant, consumption expenditures were regarded as varying with age. One comment conclude that such differences are the result of the aging process. Heslop (1986) found that period of birth and period in which the expenditures were made had a impact on expenditures than did age. The F-value was used to determine the significance of the R^2.

RESULTS

Household Characteristics

Compared with younger households, elderly households had a lower mean total expenditures. Younger households averaged more members than elderly households, i.e., three persons for young households compared with about two persons for elderly households. Compared with younger households, elderly households had a lower educational level. Twenty six percent of young reference persons had a college degree or more compared with about 10 percent of elderly ones. Young households were less likely than elderly ones to be female-headed.

TABLE 1. Sample Characteristics

Variables	Mean or Percentage		
	Young (n=1328)	Elderly (n=389)	Total (n=1717)
Age	77	23	100
Total expenditure	$22,700	$14,120	20,756
Household size	3.0	1.9	2.7
Education:			
Less than college	73.7	90.5	77.5
College or more	26.3	9.5	22.5
Sex:			
Male	72.6	59.1	65.9
Female	27.4	40.9	30.5
Marital status			
Unmarried	33.7	49.6	37.3
Married	66.3	50.4	62.7
Race:			
Non-white	14.5	11.8	13.9
White	85.5	88.2	86.1
Employment status			
Not-working	13.9	82.8	28.7
Working	86.1	17.2	71.3

Thirty-four percent of young reference persons were unmarried, which included divorced, separated, widowed, and never married, compared with half of elderly ones. Nearly nine-tenths of the elderly were of the white race. This was also true of young households. In most elderly households, the reference person was not-working, either because not currently employed (14 percent) or retired (69 percent), while 86 percent of young reference persons were employed.

The annual mean expenditures of elderly and younger households are summarized in the table:

Variables	Young	Elderly	Total
Food at home	$1,260	$1,954	$2,527
Food away from home	1,260	640	1,119
Clothing & services	1,397	591	1,215
Shelter	4,770	2,338	4,219
Utilities	1,850	1,562	1,785
Health care	1,019	1,783	1,192
Domestic services	411	348	397
House furnishings and equipment	947	556	858
Transportation	4,893	2,422	4,333
Entertainment	1,324	486	1,134

Except for expenditures on food at home and health care, young households averaged higher in each consumption category than did elderly households. Expenditures on clothing and services and entertainment of young households were nearly triple that of elderly households.

Results of Regression Analysis

Food at home and food away from home. The results of regression analysis are presented in Table 2. Age over 65 was not significantly related to expenditures on food at home and food away from home. Food at home and away expenditures were positively related to total expenditures. Household size and being married were positively related to food at home expenditure, but negatively related to food away from home expenditure. Being employed was negatively and being a member of the white race was positively related to food at home expenditure, but employment status and race were not significantly related to food away from home expenditure.

Clothing and services. Age over 65 was negatively related to expenditure on clothing and services, indicating that elderly households spent less than younger households. Expenditure increased with total expenditures and were higher if the reference person was female.

Household utilities. Elderly households spent more on utilities than did younger households. Expenditure increased with total expenditures and household size, and were higher if the reference person was married, unemployed, and female. Race and education were not significant.

Shelter. Age was negatively related to shelter expenditure, indicating that, when other factors were held constant, young households spent more than did elderly households. Total expenditures, education, and sex were positively, and household size and race were negatively related to shelter expenditure. Marital status and employment status were not significant.

House furnishings and equipment. Age was not significant. There was a significant and positive relationship between total expenditures and expenditure on household furnishings and equipment. Household size, education, and sex were also significant. Marital status, employment status, and race were not significant.

Health care. Compared with young households, elderly households averaged higher expenditures for health care. Total expenditures was positively related to health care expenditure. Except for age and total expenditures, all other variables were not significant.

Transportation. Age was not significant, suggesting that elderly households spent as much on transportation as did younger households. Total expenditures and being employed were positively related to transportation expenditure. Marital status had a negative sign, indicating that married households averaged lower transportation expenditure compared with unmarried households. Education and sex were significant and negative.

Entertainment. Age was negatively and total expenditures was positively related to expenditure on entertainment. Other variables were not significant. This implies that age and total expenditures were the primary factors determining expenditure on entertainment.

Domestic services. Age was positively related to expenditure on domestic services, indicating that elderly households spent more on domestic services than did younger households. Total expenditures, education, and sex were positively related to expenditure on domestic services. Household size, marital status, employment status, and race were not significant.

DISCUSSION

Whether or not the consumer was age 65 or over was found to be a significant factor in determining consumption expenditures of the households surveyed in 1986. The impact of age varied with type of expenditure.

Previous studies found that age was positively related to expenditure for food at home but negatively related to expenditure for food away from home (Sexauer, 1979; Axelson and Penfield, 1983; Blaylock and Smallwood, 1986). This study found no difference in food at home and food away from home expenditure between elderly and younger households after total expenditures, household size, and other factors were taken into account. This may be due to the fact that

TABLE 2. Regression Results on Expenditures for 1,717 Consumers

Independent Variables	Food at Home	Food Away From Home	Clothing/ Services	Utilities	Shelter
Age over 65	59.71 (0.77)	-131.91 (-1.59)	-166.40** (-2.15)	98.21* (1.66)	-777.90*** (-3.54)
Total expenditure	46.90*** (22.21)	69.28*** (30.86)	75.04*** (35.87)	35.53*** (22.25)	214.84*** (36.14)
Household size	475.33*** (25.14)	-105.52*** (-5.25)	-8.37 (-0.45)	115.81*** (8.10)	-227.49*** (-4.27)
Married	182.64** (2.54)	-190.99** (-2.50)	-79.34 (-1.12)	268.32*** (4.94)	-52.35 (-0.26)
Employed	-184.43** (-2.52)	-2.07 (-0.03)	46.55 (0.64)	-101.21* (-1.83)	14.04 (0.07)
White race	246.73*** (3.40)	49.38 (0.64)	-33.55 (-0.47)	59.54 (1.08)	-379.50* (-1.86)
Education	-52.51 (-0.84)	87.37 (1.32)	91.06 (1.47)	-13.85 (-0.29)	779.37*** (4.43)
Female-headed	61.13 (0.92)	-203.31*** (-2.87)	224.79*** (3.41)	100.95** (2.00)	602.43*** (3.21)
R² (adjusted)	0.57	0.44	0.52	0.40	0.53
F	280.67***	166.96***	234.29***	139.59***	244.67***

Independent Variables	Household Equipment	Health Care	Transpor-tation	Entertain-ment	Domestic Services
Age over 65	-19.55 (-0.20)	1116.43*** (7.70)	-339.22 (-1.40)	-225.90** (-2.32)	250.28*** (3.21)
Total expenditure	63.42*** (23.69)	50.70*** (12.92)	233.15*** (35.63)	72.12*** (27.37)	26.11*** (12.38)
Household size	-53.48** (-2.23)	-27.30 (-0.78)	-72.49 (-1.24)	-17.65 (-0.75)	10.80 (0.57)
Married	148.15 (1.63)	83.47 (0.63)	-458.92** (-2.06)	-10.11 (-0.11)	42.10 (0.59)
Employed	-110.95 (-1.20)	-71.66 (-0.53)	375.83* (1.66)	34.68 (0.38)	96.07 (1.32)
White Race	6.81 (0.07)	135.23 (1.00)	-118.82 (-0.53)	125.10 (1.38)	7.69 (0.11)
Education	-180.21** (-2.28)	-156.32 (-1.35)	-698.80*** (-3.61)	-73.89 (-0.95)	169.43*** (2.72)
Female-headed	220.54*** (2.61)	-105.32 (-0.85)	-999.36*** (-4.84)	-41.33 (-0.50)	184.56*** (2.78)
R² (adjusted)	0.30	0.14	0.52	0.40	0.13
F	90.37***	35.17***	234.75***	143.18***	31.36***

Figures in parentheses are t values
*Significant at 0.10 level
**Significant at 0.05 level
***Significant at 0.01 level

it used more recent data and thus sampled from a different cohort than the earlier studies. The discrepancy may also reflect changes in the availability and convenience of meals in community centers for the elderly.

Dardis et al. (1981), Chen and Chu (1982), and Norum (1989) found a negative relationship between clothing expenditure and age. According to the findings of this study, elderly households also spent less on clothing than did younger ones. One possible reason for lower clothing expenditure of the elderly are reduced mobility, retirement, change in leisure activities, and perhaps a reduced interest in clothing.

The relationship between shelter expenditure and age was tested in some previous studies, and researchers found the same result as in present study, i.e., younger households averaged higher expenditures for shelter than did elderly households (Chen and Chu, 1982; Fareed and Riggs, 1982; Brown, 1988). Younger households spend a large amount of their income on housing and many are renters because according to Brown (1988), housing costs have increased dramatically since 1974. Younger households were less able to purchase a home of given standards in 1987 than young households were of 15 or 20 years previously. Many elderly households owned their homes and were thereby insulated from the housing cost inflation of the later 1970s and early 1980s. Brown concluded that for these households, rising housing prices implied increased wealth in terms of equity in their homes.

Few studies have examined the relationship between age and utility expenditure. Those studies, as did the present study, found that elderly households spent relatively more on utilities than did younger households (Chen and Chu, 1982). Little attention has been given to the problems of poor elderly households with high utility costs. Some elderly people are being forced to reduce the amounts previously spent on other necessities in order to pay home utility costs (Junk et al., 1988).

Elderly households, especially those who own their house, spent more on utilities than younger households, perhaps because they spent more time at home both during the day and evening. In addition, elderly people are generally less able to endure extremes of temperature and have less mobility than young people, so their heating, air-conditioning, lighting, and cooking expenses should be larger. The high expenditure spent on utilities by elderly households may alternatively be attributable to the higher rate of home ownership among the elderly. Many renters have some utilities, such as water and electricity, provided as part of the rental agreement. Also, if the housing occupied by the elderly was larger or older and, therefore, less energy-efficient than the housing occupied by younger households, utility expenditure might be higher. In fact, more than half of elderly Americans live in dwellings constructed before 1939, and a significant number of poor elderly households live in substandard housing that has moderate or severe physical problems (Junk et al., 1988).

Like previous studies (Chen and Chu, 1982; Fareed and Riggs, 1982), the present study found that the elderly spent relatively more on health care than did the young. Physical health generally deteriorates with age; therefore, medical needs of elderly people are generally greater than those of young people.

In spite of the fact that most elderly are not employed and therefore would be expected to have more leisure time than younger consumers, elderly households were found to spend less on entertainment than the young. This may be due to changes in type of leisure activities, favoring home entertainment or low-cost group activities over more active forms, such as attendance at sports or cultural events or travel.

Elderly households spent more on domestic services than did younger households. The purchase of domestic services is affected not only by the need for the service but by the availability of resources to pay for the services. In a study of home services for the dependent elderly, Soldo (1985) found that almost all of the elderly strongly prefer to maintain independent households and they generally perceive nursing homes as a last resort. Those elderly who have enough resources to purchase home services are able to maintain their own independent households. This suggests the mitigating effects of income and the preference of the elderly for private support services when they possess the economic means to purchase them. However, if they are unable to do so and are chronically disabled, they may seek dependent support networks, such as nursing homes and informal support supplied by family or friends. Thus, both family composition and income are significant factors explaining the living arrangements of the elderly.

SUMMARY AND CONCLUSIONS

Of the expenditure examined, utilities, health care, and domestic services were positively related to being elderly. Expenditures on clothing and services, shelter, and entertainment were negatively related, while no significant relationships were found between membership in the elderly group and expenditure for food at home, food away from home, house furnishings and equipment, and transportation.

The findings of this study indicate that elderly consumers are different from young consumers. Population aging is likely to change aggregate consumption patterns and significantly affect the kinds and amounts of future consumer expenditure in the United States. The exact nature of the changes will depend on trends in income level and distribution and on trends in other demographic variables related to expenditure, as well as prices and market-availability of commodities needed by the elderly. Relationships of complementarity and substitution among commodities may also have an impact.

To establish appropriate consumer policies to promote the well-being of consumers, policy makers need knowledge based on empirical data concerning the differing patterns of consumption expenditure of elderly and young consumers, and the effects of socio-economic and demographic factors on consumption expenditure among the elderly and the young. The findings of this study suggest that welfare economic policies should not be uniform for elderly and young consumers, but should be diversified to accommodate the different consumption patterns of the elderly and the young.

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