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3 Housing Patterns and Mobility of the Aged: The United States and West Germany

Konrad Stahl

3.1 Introduction

Most industrialized nations have experienced steep increases in household expenditures on housing and on the consumption of housing services as measured, for example, in floor space or in complementary land. While the better portion of this increase is undoubtedly attributable to secular increases in real income, leading to both increases in housing consumption per household of given size and to increased household formation, there appears to be a somewhat less obvious cause embedded in the changing demographic structure of these nations' populations. Particularly in the United States and West Germany (F.R.G.), we observe an increasing elderly population, and concomitant to this is an apparent "ratchet effect" in housing consumption: income decreases due to the retirement of the primary wage earner or due to his (or her) death often do not result in a decrease in the related household's housing consumption. Rather, the established household consumption pattern is sustained, despite the decrease in income. If elderly households would like to decrease their housing consumption but face impediments to mobility, there may be an "overconsumption" of housing services.

In addressing this issue, the following research questions ought to be attacked: First, is there indeed an "overconsumption" of housing services among the aged? Does the "ratchet effect" possibly result

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from the elderly's inability to adjust housing consumption to their current preferences, typically via a move? What are the causes of, or impediments to, their mobility? In particular, to what extent are their moving decisions conditioned on events such as the retirement or death of the primary wage earner?

Studying these questions within an internationally comparative context, such as the U.S. vis-à-vis the F.R.G., may be helpful for several reasons. First, the age distribution of the West German population today has a high share of aged very similar to that predicted for the U.S. population around the year 2,000, so an analysis of the present situation in the F.R.G. may yield predictions of what will happen in the U.S. in the future. Second, the two nations' housing policies, while broadly similar, differ in substantive details (McGuire 1981).

Earlier research collected in Stahl and Struyk (1985) suggests that there are unexpectedly large cross-country differences in key housing market indicators, such as housing costs, quantity of housing consumed, or ownership and mobility rates, some of which may be related to behavioral differences rather than differences in policy. While broadly comparable, the micro databases presently at hand lack the sensitivity needed to separate out these differences. To be more specific, two comparable sets of microdata are currently available. The first, the Annual Housing Survey of 1978 (AHS) for the U.S. and the One Percent Housing Sample of 1978 (WS) for the F.R.G., consists of cross-sectional data. While comparable in some key variables, difficulties arise from cross-nationally incompatible definitions of other variables, or from the lack of records on some important housing market features in one or the other of the data sets.¹

The second set of data bases consists of the Panel Survey on Income Dynamics (PSID) for the U.S. and the Socio-Economic Panel (SÖP) for the F.R.G. Here comparability is virtually not an issue since the SÖP is a close to perfect copy of the PSID. However, only the first wave (1983) of the SÖP was available to us for analysis. While this first wave contains a large number of retrospective questions, questions important to an analysis of the problems at hand date back not more than one year; so we are left with subsamples of households experiencing the relevant events that are too small for our analysis.²

Given the present limitations of the data bases, our approach is more or less descriptive rather than structural. A discussion of the data base is presented in section 3.2. In section 3.3 we pursue some descriptive statistical work on these data by comparing the structure of elderly households, their housing consumption patterns, and their adjustment. In section 3.4 we discuss the results of a series of simple binomial logit and ordinary least-squares estimates relating mobility and movers' and stayers' housing consumption to household and housing characteris-

tics. Section 3.5 contains a summary of the results and some conclusions for further analysis.

3.2 Data, Samples, and Variables

The first pair of data bases used here, the AHS for the U.S. and the WS for the F.R.G., are broadly described and compared in Schneider, Stahl, and Struyk (1985). A description of the PSID up to wave 14 can be found in Institute for Social Research (1982), while the SÖP (wave 1983) is described in Infratest (1985). Since only circumstantial information is extracted from the PSID and the SÖP, this section concentrates on our use of the AHS and WS.

We selected from both the AHS and the WS the observations containing original³ information for the variables used. To be selected, an observation had to include the following information:

1. *Household type*, consisting of a composite of the number of adults, their marital relationship, the number of children, and, in single adult households, this person's sex.
2. *Age of the head of household*.
3. *Household income*⁴.
4. *Work/retirement status* of the head of household.
5. *Date of move* into the presently occupied unit.
6. *Pre-move tenure status* of the household.
7. *Post-move tenure status* of the household. Subletting persons were excluded.
8. *Type of living quarters*. Only households living in permanent units were included, not those living in mobile homes, transient hotels, second dwelling units, or institutions.⁵
9. *Subsidized housing units*. To avoid the effects of subsidies on housing consumption and in particular on mobility rates, we excluded U.S. households residing in public housing or receiving rent subsidies, as well as the sizeable portion of their West German counterparts living in subsidized social housing and/or receiving housing allowances.
10. *Location type*. Only urban and rural locations were distinguished.

After excluding unusable observations, we were left with an AHS file containing 18,433 out of an original 66,000 cases weighed for national representativity, and a WS file with 57,727 out of over 245,000 unweighted cases (see table 3.1). Both files should be representative for the "free market," "immobile housing" portions of the two nations' housing sectors. The households contained in this set were stratified by (at most) seven attributes, namely, household type, age of head of household, household income, work/retirement status, pre- or

Table 3.1 Comparison of Data and Samples

Sample Attributes	U. S.	F. R. G.
Data source	Annual Housing Survey (National), 1978 U. S. Department of Commerce, Bureau of the Census	One-percent Dwelling Sample, 1978 Statistisches Bundesamt
Dates of interviews	From October 1978 to January 1979	From April to May 1978
Number of original interviews	66,472	245,422
Exposure rate	Urban 0.07 (1/1,472) Rural 0.14 (1/736)	1.0
Number of cases remaining after selection procedure	18,433 (244,046) ^a	57,727
Number of strata	320	320

^aWeighted sum to correct for sample stratification. The sum represents 1 percent of the U. S. population.

post-move tenure status, and location type. Table 3.1 summarizes the file characteristics. The details for the stratification are summarized in table 3.2.

3.3 Descriptive Statistics

This section provides preliminary answers to the questions raised in section 3.1. We will first compare the household structure of the aged cross-nationally to control for behavioral differences due to differences in this structure. We then examine the levels of housing consumption of the aged and the extent possible overconsumption is reduced by voluntary moves. In passing, we look finally at event histories linking retirement and mobility. The data referred to are summarized from the AHS and the WS.

As mentioned before, on average the German population is much older than the American one. In 1978 the share of U.S. households with the head of household aged 55 years or older was 35.6 percent, while in the F.R.G. it was 42.2 percent. Table 3.3 provides information on the elderly's attributes in the two countries. It also singles out information on the portion of households with a retired head.

Let us begin by considering the aged households in toto. Several features are striking. First, 75 percent of the aged West German households have a retired head, as compared to only 62.5 percent in the U.S. Second, ownership rates differ widely: 75 percent of the elderly American households are owners compared to only 52 percent of the West German ones. While the West German aged heads of household are still somewhat older on average, the age distributions of household

Table 3.2 Comparison of Variables

Variable Categories	U. S.	F. R. G.
Type of household	single male, single female, 2+ Persons (married), 2+ Persons (unmarried), 3+ Persons (including married couple)	2+ Persons (married), 2+ Persons (unmarried), 3+ Persons (including married couple)
Age of head of household	55-59, 60-64, 65-69, 70-74, 75-79, 80+ years	
Work/retirement status of head of household ^a	partially or fully employed/retired	
Pre-move tenure status	partially imputed pre-move-percent of owner ^b	
Post-move tenure status		owner/renter
Household income ^c quartiles	(monthly gross)	(monthly net)
Lowest	Below \$230	Below DM 698
Second	\$230-\$382	DM 699-DM 942
Third	\$383-\$673	DM 943-DM 1,297
Highest	\$674-	DM 1,298-
Location		
Urban	Inside SMSA or place with 20,000 or more inhabitants	Place with 100,000 or more inhabitants or inside suburban area of high population density
Rural	All other areas	All other areas
Mover	Household moved between September 1976 and August 1978	Household moved in 1976 or 1977

^aWhile in the WS this status is well defined, there is no clearly distinguishable retirement status in the AHS. We defined as "retired" all heads of households with age 55+ years and no salary income.

^bOnly 70 percent of the West German and 57 percent of the American movers reported on their pre-move housing status. In order to keep the nonreporting households' records in the analysis, we imputed their pre-move status from the reported cases in the same stratum.

^cSince the aged are the focus of our analysis, the quartiles were formed on the basis of incomes of households with heads 55+ years old. The table gives quartiles for single person households' monthly income, standardized by the West German minimum guaranteed income index. For the U. S. population that index was converted using the mean 1977 exchange rate of 2.186 DM = \$1.

heads do not differ much. By contrast, there are sharper differences in household types: the share of single female households is much larger in the F.R.G. than in the U.S.

Turning to the *retired* among these households, we observe that relative to the income distribution of all the aged, a higher share of American households with retired heads belongs to the lower income quartiles. Observe also that in contrast to the overall figures on

Table 3.3 Characteristics of American and West German Households

	All Households with Age of Head 55 +			
	All Households = 100 %		Households with Retired Head = 100 %	
	U.S.	F.R.G.	U.S.	F.R.G.
Income quartile				
Lowest	24.2	25.9	31.1	28.4
Second	25.2	23.4	30.4	24.8
Third	25.1	27.5	23.4	28.0
Highest	25.5	23.2	15.1	18.8
Work/retirement status of Head				
Working	37.4	24.9		
Retirement	62.6	75.1		
Age of head				
55-59 years	23.0	19.8	10.1	6.2
60-64 years	20.6	16.7	14.5	15.1
65-69 years	19.6	22.8	22.6	27.8
70-74 years	15.4	19.2	20.9	24.0
75-79 years	11.0	13.1	16.0	16.4
80+ years	10.4	8.3	15.8	10.5
Household type				
Single male	7.9	6.4	8.8	7.0
Single female	27.2	35.6	33.2	41.2
2 Persons (married)	36.5	34.1	34.7	33.7
2+ persons (unmarried)	11.7	8.5	12.5	9.0
3+ persons (married)	16.8	15.4	10.8	9.0
Tenure				
Owner	74.9	52.2	72.2	48.9
Renter	25.1	47.8	27.8	51.1

Source: AHS 1978 (U.S.), WS 1978 (F.R.G.).

retirement, the share of early retired household heads is higher in the U.S. than in the F.R.G. Figure 3.1 shows that some 25 percent of U.S. male heads of households aged 55-59 are retired, as compared to only 15 percent of their West German counterparts. In the higher age brackets, however, male retirement in the F.R.G. exceeds that in the U.S. The likely cause of this pattern is that the retirement behavior, at least of the male population, is more strongly influenced by institutional factors in the F.R.G. than in the U.S.

Table 3.4 highlights cross-national differences in the income distributions of owners and renters. Observe in particular that American renters among the elderly are substantially poorer than West German

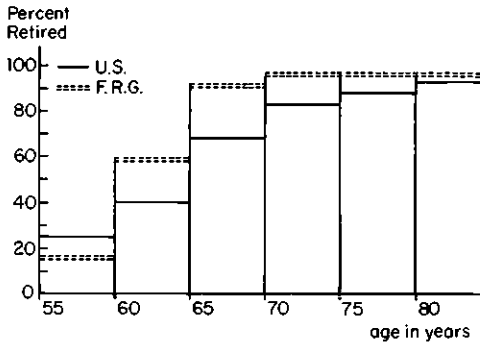


Fig. 3.1 Percentage retired of American and West German households. All households with male head aged 55+. *Source:* AHS 1978 (U.S.), WS 1978 (F.R.G.).

Table 3.4 Characteristics of American and West German Households

	All Households with Age of Head 55+*			
	Homeowners		Renters	
	U.S.	F.R.G.	U.S.	F.R.G.
Income quartile				
Lowest	22.0	27.1	30.8	24.5
Second	23.6	23.4	29.7	23.4
Third	26.4	26.0	21.2	29.0
Highest	27.9	23.4	18.2	23.0

Source: AHS 1978 (U.S.), WS 1978 (F.R.G.).

*All households = 100%

ones. In part, this may reflect the greater share of West German households who rent, but it may also be due to the preferential tax treatment given to U.S. homeowners which encourages high-income Americans to become owner-occupants.

In summary, we observe substantive cross-country differences in the share of the aged, their retirement status, their tenure status, and their income distributions. All these differences should affect housing consumption and its adjustment over time. In particular, we expect that because of the lower ownership rate and the higher proportion of retired heads in virtually each age stratum, the older West German population is much more prone to an adjustment in its housing consumption pattern than the American one.

Before we address this hypothesis, let us now turn to the question of housing “overconsumption” by the aged. As of now, data revealing the preferences of aged households for alternative housing bundles are

not yet available for Germany. Such data are necessary to determine whether or not the aged are inhibited by the transactions costs of moving from adjusting (downward) the quantity of housing services consumed to their current preferences and incomes. Currently only indirect indicators are available to shed light on this question. One such indicator may be derived by comparing per capita housing consumption of the aged with that of the younger population; another, by looking at the relative burdens of housing costs born by these two population strata; and a third, by finding out whether the recent movers' housing consumption is lower than that of the stayers. In all these cases we have to account for possible cohort effects.

Tables 3.5A and 3.5B compare housing consumption patterns of households by age for owners and renters, respectively. Turning to the owners first, we observe in both countries a higher consumption of housing among older households as measured in rooms per head. Earlier research suggests that cohort effects emphasize this pattern. Föhn-

Table 3.5A Owners' Consumption (rooms per head)

	U.S.		F.R.G.	
	Head of Household with Age		Head of Household with Age	
	below 55	55+	below 55	55+
Income quartile				
Lowest	1.4	2.7	1.4	2.8
Second	1.7	3.2	1.7	2.6
Third	2.1	3.3	1.9	2.8
Highest	3.3	3.6	2.4	3.0
Age of head of household				
-54 years	2.0		1.8	
55-59 years		2.7		2.4
60-64 years		3.0		2.7
65-69 years		3.3		2.8
70-74 years		3.5		3.0
75-79 years		3.7		3.1
80+ years		3.8		3.3
Household type				
Single male	5.1	5.0	4.2	4.3
Single female	5.1	5.2	4.2	4.2
2 persons (married)	2.9	2.8	2.5	2.4
2+ persons (unmarried)	2.1	2.4	2.2	2.4
3+ persons (married)	1.6	1.8	1.5	1.7
Location				
Urban	2.1	3.2	1.8	2.8
Rural	1.9	3.3	1.8	2.8

Source: AHS 1978 (U.S.), WS 1978 (F.R.G.).

Table 3.5B Renters' Consumption (rooms per head)

	U.S.		F.R.G.	
	Head of Household with Age		Head of Household with Age	
	below 55	55+	below 55	55+
Income quartile				
Lowest	1.4	2.4	1.4	2.6
Second	1.8	2.6	1.6	2.6
Third	2.3	2.8	2.0	2.7
Highest	2.8	3.0	2.3	2.8
Age of head of household				
-54 years	2.0		1.9	
55-59 years		2.5		2.4
60-64 years		2.6		2.6
65-69 years		2.7		2.7
70-74 years		2.7		2.7
75-79 years		2.8		2.8
80+ years		2.8		2.8
Household type				
Single male	3.1	2.8	2.9	3.3
Single female	3.3	3.4	3.0	3.3
2 persons (married)	2.0	2.0	2.0	2.0
2+ persons (unmarried)	1.6	1.9	1.7	1.9
3+ persons (married)	1.2	1.3	1.3	1.4
Location				
Urban	2.2	2.6	1.9	2.7
Rural	2.0	2.9	1.8	2.7

Source: AHS 1978 (U.S.), WS 1978 (F.R.G.).

rich, Gabriel, and Stahl (1988) show that life-cycle housing consumption patterns are strongly influenced by time-dependent increases in housing consumption. Comparing housing consumption cross-sectionally, differentiated by age of head of household, we observe a relatively lower consumption of the now aged, having started their housing consumption career earlier in real time.

At any rate, the difference in housing consumption of young and elderly households is more dramatic in the U.S., and, compared to the F.R.G., there is a greater narrowing of the difference as income rises. This may be due to cross-national differences in retirement schemes, worth further research, that lead to income decreases at retirement that are sharper in the U.S. than in the F.R.G.

Table 3.5A also reveals that, in contrast to the younger households, the elderly owners' housing consumption per head is nearly independent of (household-size adjusted) income. It follows that the difference between the younger and the older households' consumption tends to

decrease with income. Differentiating further by age of the elderly, we observe, as expected, that this difference increases with the increasing age of the households' heads. Between owners younger than 55 and older than 80, we find a difference in consumption per head of more than 1.5 rooms. As expected, consumption per head is maximal among the single-person household strata. Surprisingly, we observe in both countries virtually no urban-rural differences in consumption per head.

Table 3.5B, comparing renters' consumption by age, reveals the same general patterns detected for the owners but the difference between old and young is not nearly as large as in the owners' case. The same holds for increases in consumption with increasing age. Observe finally that the aged renters' housing consumption is nearly independent of (household-size adjusted) purchasing power.

Comparing owners' and renters' consumption patterns, we observe that in both countries there is virtually no difference between these two groups' consumption in the age bracket 55–59, but that this difference grows quite drastically for owners with increasing age of the household head. While among the household types, the single female renter households' consumption is again largest, it is also dominated by the owners' consumption in this stratum. Observe finally again that the urban-rural differences are quite marginal.

How do these large differences in housing consumption between the young and the aged relate to differences in housing costs? Unfortunately, the West German survey did not record the costs of owning a home in enough detail to allow a cross-national comparison.⁶ In relating the renters' costs to income, we faced the additional problem that income data from the two countries are incompatible. Nevertheless, the figures on the rent-to-income ratios provided in table 3.6, should be indicative. After controlling for household-size effects through household-size-specific income weights, we observe that the rent-to-income ratios are perceivably larger for the aged only among the high-income retired renters in the U.S. and among the low-income nonretired in the F.R.G.

Summarizing our comparisons of younger and older households' consumption patterns, we find that especially the older lower-income owners do consume substantially more housing services per head. While this also holds to a lesser degree for the renters, it is by no means reflected in the renters' expenditures as a proportion of income. These tend to be lower for the aged, especially in the lower-income strata.

Let us turn finally to the questions of whether mobility of the aged, in particular of the retired, results in decreases in the quantity of housing services consumed, and if so, to what events mobility is related. Again, we have no cross-nationally comparable evidence on the direct consumption effects of housing mobility, so we resort to a comparison

Table 3.6 Rent-to-Income Ratios by Income Quartile

	Not Retired		Retired	
	Head of Household with Age		Head of Household with Age	
	below 55	55 +	below 55	55 +
U.S.*				
Lowest	27.1	25.6	38.1	34.1
Second	22.6	21.5	33.7	34.5
Third	21.8	21.5	26.3	29.0
Highest	15.8	15.0	14.0	20.3
F.R.G.**				
Lowest	22.2	26.3	26.0	25.6
Second	16.9	17.7	17.4	19.0
Third	15.8	15.7	15.7	16.6
Highest	13.3	13.2	14.1	14.0

*Source: AHS 1978 (U.S.); the ratio of annual rent net of utilities to household gross annual income is reported.

**Source: WS 1978 (F.R.G.); the ratio of annual rent net of utilities to household annual income net of taxes is reported.

of the aged stayers' versus the movers' housing consumption patterns. While this comparison is problematic due to unobserved heterogeneity, it is the best we can perform with the data currently available. Additionally, we can report on the tenure status adjustments made with a move.

Table 3.7 gives stayers' and movers' room consumption per head. We observe that, on average, the recent movers among the aged consume less housing services. The reduction is larger for the American than the West German households, especially for those with retired heads. In both countries, the difference increases with increasing age of head, but again more strongly so in the U.S. than in the F.R.G.⁷

However, less consumption of housing services measured in rooms per head is not accompanied by a decrease in the rent-to-income ratio, as shown in table 3.8. In both countries this ratio is substantially higher for recent movers. The increase is higher in the F.R.G. across all income groups, possibly due to higher tenure discounts as a result of regulatory intervention in the housing market.⁸ The stratification by age shows that the burden of rent relative to income increases across all household age strata.⁹

What are the proportions of households with elderly heads venturing such a move? Table 3.9 reveals dramatic cross-country differences in mobility rates that run counter to the expectations raised earlier. American elderly households are more mobile on average by several orders

Table 3.7 Housing Consumption of Stayers and Movers (rooms per head)

	All Households with Age of Head 55 +			
	U.S.		F.R.G.	
	Stayer	Mover	Stayer	Mover
Income quartile				
Lowest	2.6	2.3	2.7	2.6
Second	3.1	2.5	2.6	2.5
Third	3.2	2.8	2.7	2.6
Highest	3.6	3.1	2.9	2.7
Work/retirement status				
Working	2.9	2.7	2.4	2.3
Retired	3.3	2.7	2.8	2.7
Age of head of household				
55-59 years	2.7	2.6	2.4	2.4
60-64 years	3.0	2.6	2.7	2.6
65-69 years	3.2	2.8	2.8	2.6
70-74 years	3.3	2.7	2.9	2.7
75-79 years	3.5	2.7	2.9	2.7
80+ years	3.6	2.8	3.0	2.8

Source: AHS 1978 (U.S.), WS 1978 (F.R.G.).

Table 3.8 Rent-to-Income Ratios of Stayers and Movers

	All Renters with Age of Head 55 +			
	U.S.*		F.R.G.**	
	Stayer	Mover	Stayer	Mover
Income quartile				
Lowest	31.9	35.1	25.2	30.3
Second	31.7	33.8	18.4	22.8
Third	25.1	27.6	16.1	20.0
Highest	16.2	18.9	13.5	17.1
Age of head of household				
55-59 years	22.1	27.1	16.2	20.7
60-64 years	23.1	27.5	17.7	22.7
65-69 years	27.3	31.3	18.3	23.1
70-74 years	29.2	31.2	19.0	23.4
75-79 years	30.8	32.5	18.9	24.0
80+ years	32.0	38.3	18.7	22.8

*Source: AHS 1978 (U.S.); the ratio of annual rent net of utilities to household gross annual income is reported.

**Source: WS 1978 (F.R.G.); the ratio of annual rent net of utilities to household annual income net of taxes is reported.

Table 3.9 Mobility Rates^a of American and West German Households

	All Households with Age of Head 55 +			
	Homeowners		Renters	
	U.S.	F.R.G.	U.S.	F.R.G.
All households	6.5	2.5	27.3	8.9
Retired only	6.3	2.2	26.1	8.8
Age of head				
55-59 years	8.6	3.2	35.5	10.8
60-64 years	7.5	3.0	32.0	11.7
65-69 years	6.9	3.0	28.5	10.4
70-74 years	5.1	1.7	25.2	8.1
75-79 years	4.0	1.1	21.0	6.2
80+ years	2.9	1.1	16.1	4.7

Source: AHS 1978 (U.S.), WS 1978 (F.R.G.).

^aMovers in the two-year period 1976 and 1977.

of magnitude. The differences are especially dramatic in absolute terms among the renters. While, as expected, the mobility rates decline with increasing age of the household head, the differences in mobility rates decline only in absolute rather than in relative terms. Note in passing that the aged owners' mobility rates tend to increase, and those of the renters to decrease, with income.

The tenure status adjustments associated with the elderly's moves are recorded in table 3.10. Most of them, namely 77.5 percent in the

Table 3.10 Tenure Status Changes of Movers, by Income Quartile (percent)

		All Movers with Age of Head 55 +			
		O-O ^a	O-R	R-O	R-R
U.S.					
Lowest		13.4	16.0	23.3	35.6
Second		19.4	26.7	23.0	31.3
Third		22.8	26.4	25.8	15.4
Highest		44.4	30.9	27.9	17.6
Overall	100 % =	34.3	+ 14.6	+ 8.0	+ 43.1
F.R.G.					
Lowest		24.0	28.6	14.6	25.3
Second		18.8	19.6	15.2	24.4
Third		28.8	29.2	29.5	27.8
Highest		28.4	22.6	40.7	22.5
Overall	100 % =	7.9	+ 6.4	+ 12.6	+ 73.1

Source: AHS 1978 (U.S.), WS 1978 (F.R.G.).

^a"O" stands for Owner, "R" stands for Renter.

U.S. and 81 percent in the F.R.G., are status preserving. However, while in the U.S. some 34 percent (43 percent) of the movers preserve the owner (renter) status, respectively, renter status preservation outweighs with 73 percent all other status adjustments in the F.R.G. Furthermore, owner status preservation in the U.S. is concentrated more in the higher income strata, and renter status preservation in the lower income strata.¹⁰

The status change from owning to renting is most interesting. With 14.6 percent of all moves (63 percent of which are exercised by the retired), it occurs in the U.S. more than twice as often than in West Germany. Almost the converse is true for the reverse status change. While still 12.6 percent of all elderly movers in West Germany change from renting to owning, only 8 percent of the corresponding U.S. population do so. Observe finally that the status adjustment patterns are clearly income dependent in the expected way, but much more so in the U.S. than in the F.R.G.

Let us summarize the evidence presented so far. First, we have seen that the aged consume more housing services per head than their younger counterparts, if measured in rooms per head; this result prevails especially among the homeowners, in the single-person household strata, among the very old, and somewhat surprisingly in the groups with lower household-size-adjusted income. However, this high level of consumption was associated with an increase in the housing cost burden only for the high-income retired in the U.S., and for the low-income nonretired in the F.R.G. Unfortunately, we have no comparative evidence for the owners' cost burden. The fact that high levels of housing consumption is concentrated among the low-income, single-person households may result from relatively low out-of-pocket costs and an underestimation of the opportunity costs of holding that large a housing bundle.

Second, we showed that moves among the aged lead to a reduction in housing consumption per head. Again, this reduction is on average accompanied by an increase in the rent-to-income ratio. While most of these moves are tenure-status preserving, there is a not unsubstantial portion of moves from owner to renter status.

However, these moves take place at rates that dramatically differ across the two countries. Overall, the U.S. aged are more mobile by several orders of magnitude. The cross-country difference in mobility rates is especially evident among renters. Clearly, all this evidence is taken from cross-sectional data and is therefore partial. In particular, it is only partially controlled for heterogeneity.

Of immediate concern now would be an analysis of the causes and impediments of the elderly's mobility. From the one wave of the SÖP available to us so far, we could only extract the comparative event history diagrams contained in figures 3.2 and 3.3 that relate the house-

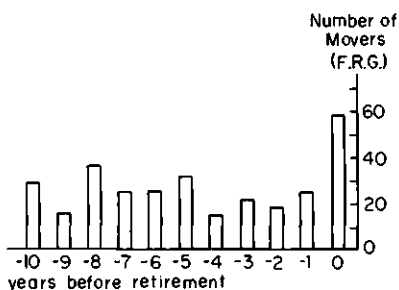
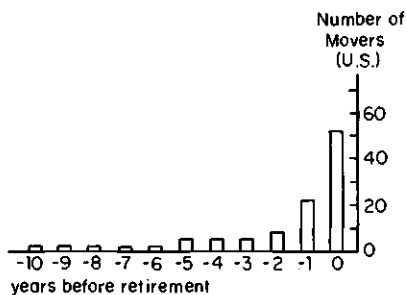


Fig. 3.2

Retirement of head of household and decision to move. All households with retired head. *Source:* PSID Wave 14 (U.S.), SÖP Wave 1 (F.R.G.).

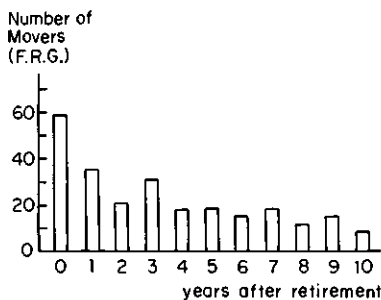
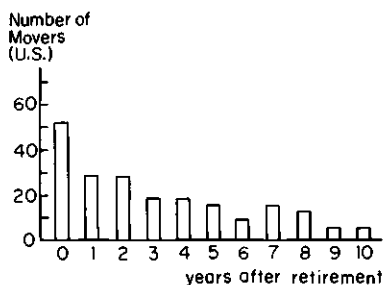


Fig. 3.3

Retirement of head of household and decision to move. All households with retired head. *Source:* PSID Wave 14 (U.S.), SÖP Wave 1 (F.R.G.).

hold's last move to the head of household's retirement. In both West Germany and the United States, households are more likely to move in the year of retirement than in the years before or after retirement. While post-retirement mobility rates in West Germany return to their pre-retirement levels, mobility rates in the United States remain higher in the years after retirement than in the years before retirement.

3.4 Multivariate Analysis

We now present the results of simple ordinary least squares (OLS) estimates and binary logit estimates. The first set consisting of OLS estimates serves to determine the simultaneous impact of household and tenure characteristics, location, and mobility on housing consumption. The second set consisting of binary logit estimates determines the individual household's decision to move as a function of the very same household, location, and tenure characteristics. Both sets of estimates are performed on choice-based samples of recent movers and stayers sampled in nearly equal proportions and presented in a form pooled for owners and renters, and stratified by mode of tenure. Because of the limitations in exactly comparable data, the models are quite simple and provide only a summary description of the mobility process rather than a structural analysis of the aged's housing consumption and mobility.

In the first set of estimates we relate housing consumption as measured in rooms per head to a set of dummy variables, referring to the household characteristics, household type, age of head of household, household-size-adjusted income, tenure status (in the pooled model), location, and finally to the event of a move during the last two years. The omitted category for the dummies is the married couple without children, age of head 65–69, income in the lowest quartile, living in an urban area, who did not move during the two years preceding the survey.

The estimates are presented in table 3.11. Three pairs of estimates are shown, with each pair containing the results of the same model for the U.S. and the F.R.G. The overall performance of the models is substantially better for the U.S. than for the F.R.G. Mean consumption of the elderly is roughly comparable across countries, with a somewhat smaller difference in owners' and renters' consumption in the F.R.G. than in the U.S. As to the individual variables, the coefficient on home-ownership turns out highly significant in the pooled model and carries the expected sign. By contrast, in none of the models does the retirement status per se have an effect on housing consumption. The effect of the adjusted incomes on consumption per head is generally as expected. It is typically (throughout) significant for the higher (highest) income quartiles.¹¹

Table 3.11

OLS Estimates* on Room Consumption per Head

Independent ^b Variables	All Households with Age of Head 55+					
	Pooled		Homeowners		Renters	
	U.S.	F.R.G.	U.S.	F.R.G.	U.S.	F.R.G.
Percentage of homeowners	0.82 (12.04)	0.56 (8.31)				
Percentage of retired	0.06 (0.87)	-0.12 (-1.28)	0.12 (1.51)	-0.06 (-0.45)	-0.03 (-0.25)	-0.17 (-1.38)
Percentage of movers	-0.26 (-4.28)	-0.12 (-1.85)	-0.23 (-3.41)	-0.19 (-1.71)	-0.12 (-1.20)	-0.04 (-0.49)
Income Quartile						
Second	0.04 (0.50)	0.17 (1.93)	0.17 (1.89)	0.11 (0.84)	-0.04 (-0.29)	0.17 (1.47)
Third	0.20 (2.42)	0.19 (1.94)	0.40 (4.07)	0.19 (1.37)	-0.05 (-0.34)	0.15 (1.13)
Highest	0.64 (7.01)	0.52 (5.68)	0.85 (8.29)	0.58 (4.32)	0.27 (1.68)	0.46 (3.65)
Age of head of household						
55-59 years	-0.01 (-0.14)	-0.13 (-1.22)	0.00 (0.04)	-0.05 (-0.32)	0.09 (0.62)	-0.18 (-1.22)
60-64 years	-0.05 (-0.52)	-0.05 (-0.51)	0.00 (-0.02)	0.08 (0.62)	0.06 (0.41)	-0.17 (-1.43)
70-74 years	-0.08 (-0.84)	-0.05 (-0.56)	-0.04 (-0.35)	-0.11 (-0.71)	-0.07 (-0.45)	-0.05 (-0.39)
75-79 years	-0.08 (-0.73)	2.64 (0.26)	0.04 (0.30)	-0.30 (-1.78)	-0.16 (-0.98)	0.18 (1.47)
80+ years	0.17 (1.40)	-0.09 (-0.67)	0.26 (1.88)	-0.09 (-0.47)	-0.05 (-0.26)	-0.03 (-0.16)
Household type						
Single male	1.40 (13.48)	1.16 (9.21)	2.26 (16.50)	2.19 (9.82)	0.51 (3.42)	0.74 (4.81)
Single female	1.87 (24.90)	1.43 (19.40)	2.24 (24.93)	1.55 (12.84)	1.35 (11.34)	1.31 (14.08)
2+ persons (unmarried)	-1.34 (-12.92)	-0.10 (-0.91)	-1.55 (-12.78)	-0.16 (-1.03)	-1.32 (-7.82)	-0.08 (-0.49)
3+ persons (married)	-1.75 (-19.69)	-0.65 (-6.53)	-1.77 (-19.13)	-0.73 (-5.79)	-1.51 (-8.08)	-0.50 (-3.20)
Location						
Rural	0.20 (3.36)	0.10 (1.58)	0.10 (1.50)	0.01 (0.07)	0.46 (4.31)	0.17 (2.11)
Intercept	1.72 (13.80)	1.82 (13.53)	2.27 (16.77)	2.35 (12.69)	2.05 (10.11)	1.90 (10.68)
Number of observations	1,190	1,070	764	428	426	642
Corrected R-square	0.68	0.41	0.77	0.50	0.57	0.37
Standard error of regression	0.94	0.96	0.85	0.92	0.91	0.95
Dependent variable mean	2.60	2.69	2.71	2.74	2.41	2.66

Source: AHS 1978 (U.S.), WS 1978 (F.R.G.).

*The entries in the table are the regression coefficients. The numbers in parentheses are the values of the *t*-statistics for the coefficients. The base group (or omitted category) for the dummy variables is a married couple without children, with age of head of household 65-69 years, within the lowest income quartile, and living in an urban area.

^bThe dependent variable is the number of rooms per head.

One may be surprised that after controlling for other household characteristics, the household head's age is hardly of impact on the per capita consumption of housing. Apparently most of the age effect is absorbed by household type as a covariate. This comes up quite well in all estimates, and, as expected, with a positive sign for the single person, and a negative one for the large households. Location has also the expected effect, with increased consumption in non-urban regions within both the pooled and the renter models. The effect is insignificant in both countries' owner models. It is finally interesting to observe that in both countries mobility has a sizeable negative impact on per capita housing consumption in the pooled and owner-occupant models. Its impact has the correct sign, but it is smaller and insignificant in the renter models. This lends some support to the conclusion drawn earlier that especially the owners among the movers on average downscale their housing consumption.

The second and final set of estimates relates the household and tenure characteristics used heretofore to the individual household's moving decisions. We again used for each country a model pooling by mode of tenure, and then two models separately for owners and renters. The results are presented in table 3.12. In both countries ownership contributes, as expected, strongly negatively to mobility, an effect due to the large differences in the transactions costs of moving. In fact, the effect dominates all other influences by several orders of magnitude. Yet it is surprisingly much smaller in the F.R.G., possibly reflecting renters' transactions costs of moving that in the F.R.G. are closer to those of the owners because of institutional and market rigidities.

The cross-country differences extend to the influence of retirement on mobility. In the U.S., it is strongly and significantly positive in both

Table 3.12 Binary Logit Estimates^a of Household Mobility

Independent ^b Variables	All Households with Age of Head 55 +					
	Pooled		Homeowners		Renters	
	U.S.	F.R.G.	U.S.	F.R.G.	U.S.	F.R.G.
Percentage of homeowners	-1.83 (-11.82)	-1.20 (-7.68)				
Percentage of retired	0.59 (3.53)	-0.42 (-2.05)	0.91 (4.47)	-0.33 (-0.98)	-0.29 (-0.93)	-0.35 (-1.34)
Income Quartile						
Second	0.45 (2.50)	-0.10 (-0.46)	0.31 (1.30)	0.12 (0.31)	0.58 (1.93)	-0.30 (-1.14)

Table 3.12 (continued)

Independent ^b Variables	All Households with Age of Head 55+					
	Pooled		Homeowners		Renters	
	U.S.	F.R.G.	U.S.	F.R.G.	U.S.	F.R.G.
Third	0.34 (1.70)	0.09 (0.41)	0.43 (1.68)	0.64 (1.64)	-0.03 (-0.09)	-0.20 (-0.71)
Highest	0.51 (2.41)	0.17 (0.81)	0.71 (2.64)	1.07 (2.88)	-0.19 (-0.51)	-0.29 (-1.07)
Age of head of household						
55-59 years	0.83 (3.88)	-0.09 (-0.36)	0.91 (3.44)	-0.20 (-0.50)	0.52 (1.43)	-0.03 (-0.10)
60-64 years	0.37 (1.78)	-0.31 (-1.51)	0.42 (1.62)	-0.97 (-2.60)	0.19 (0.55)	0.03 (0.11)
70-74 years	-0.11 (-0.51)	-0.58 (-2.75)	-0.33 (-1.09)	-0.71 (-1.64)	0.35 (0.92)	-0.55 (-2.20)
75-79 years	-0.46 (-1.76)	-0.67 (-2.91)	-0.73 (-1.86)	-0.43 (-0.89)	-0.11 (-0.28)	-0.66 (-2.45)
80+ years	-0.53 (-1.86)	-0.81 (-2.66)	-0.51 (-1.32)	-0.73 (-1.22)	-0.31 (-0.71)	-0.85 (-2.40)
Household type						
Single male	-0.20 (-0.81)	0.29 (1.04)	-1.14 (-2.46)	-1.80 (-1.70)	0.58 (1.51)	0.75 (2.27)
Single female	-0.24 (-1.37)	0.05 (0.32)	-0.40 (-1.64)	-0.17 (-0.50)	0.05 (0.18)	0.16 (0.82)
2+ persons (unmarried)	0.27 (1.09)	-0.15 (-0.57)	0.48 (1.58)	0.10 (0.24)	0.21 (0.49)	-0.24 (-0.70)
3+ persons (married)	-0.11 (-0.56)	-0.05 (-0.21)	0.01 (0.06)	0.17 (0.52)	-0.51 (-1.15)	-0.19 (-0.58)
Location						
Rural	0.12 (0.86)	0.19 (1.32)	0.14 (0.86)	0.05 (0.20)	-0.03 (-0.10)	0.27 (1.56)
Intercept	0.20 (0.70)	0.31 (1.06)	-1.86 (-5.14)	-1.16 (-2.32)	0.75 (1.59)	0.36 (0.96)
Number of observations	1,190	1,070	764	428	426	642
Mover	558	381	256	93	124	288
Non-mover	632	689	508	335	302	354
Percent correctly predicted	69.50	66.26	69.11	78.74	70.66	59.03
Log likelihood						
Initial	-824.85	-741.67	-529.56	-296.67	-295.28	-445.00
At convergence	-717.85	-648.24	-454.63	-208.92	-248.34	-426.60

Source: AHS 1978 (U.S.), WS 1978 (F.R.G.).

^aThe entries in the table are the regression coefficients. The numbers in parentheses are the values of the *t*-statistics for the coefficients. The base group (or omitted category) for the dummy variables is a married couple without children, with age of head of household 65-69 years, within the lowest income quartile, and living in an urban area.

^bThe dependent variable indicates whether the household has moved or not (1 resp. 0).

the pooled and the owner models, but significant and strongly negative in the pooled model for West Germany, and also negative (but insignificant) in the other models.¹² The effect of income on mobility is also quite different in the pooled models. In the U.S. model, increasing incomes have a generally positive effect on mobility. This is not the case in the F.R.G. model where that influence is ineffective. By contrast, increasing income tends to exercise a positive influence on owners' mobility in both countries, which lends additional, if only partial, support to the argument presented by Feinstein and McFadden (ch. 2, in this volume) and Venti and Wise (ch. 1, in this volume) that owners' moves tend not to be influenced by liquidity constraints.

The household head's age should influence mobility in two ways. On the one hand, one expects a decreasing tendency to move with increasing age; on the other hand, moves may be conditioned on the retirement decision, resulting in higher mobility of the reference household relative to its younger peers. Indeed, the pattern of influence is quite unclear for the age groups younger than the reference age. By contrast, for the age groups above that age we generally observe a negative impact on mobility.

After controlling for other household characteristics, the influence of household type on mobility is very weak in both countries. This is not surprising, given that mobility differentials are absorbed by age as a covariate to household type.

3.5 Summary and Conclusions

While our analysis herein is largely descriptive, it nevertheless develops some fairly clear patterns extending across both countries. First, in both countries the aged consume more housing services per head (according to our rough measure) than their younger counterparts. The difference is largest for small households with low incomes in the U.S. It is generally not accompanied by a comparable difference in the (renters') housing costs burden, which for most household strata decreases rather than increases with age.

Second, the aged movers consume less housing services than the stayers. This is especially the case for the (former) owners. In the rental sector, however, the reduction in the quantity of housing services consumed by the movers is almost never matched by a decrease in rent relative to income spent after a move. On average, the increase in the cost burden is sharper for the West German than for the American households.

This may be one clue to the lower mobility rates of West German aged renters relative to their American counterparts. It is most likely that tenure discounts—which in West Germany are to some extent

enforced by a national tenants' protection legislation—are responsible for large differences in rent levels between occupied and vacant stock, and they thereby impede especially the elderly's mobility. Although smaller, there are also perceivable differences between the elderly stayers' and movers' rent-to-income ratios in the U.S. Any reduction in this difference should be of positive effect on the aged's mobility, and thereby on the downward adjustment of housing services consumed. This effect should directly extend to owners contemplating a status change backward to renting. The low mobility of elderly owners in both countries may be largely due to the relatively low out-of-pocket costs of owning and the low perceived opportunity costs of holding their property. If this is true, then a decrease in the costs of renting should decrease the opportunity costs of moving.

The most notable difference arising from our cross-country comparison of the housing market participation by the elderly is that despite a lower ownership rate and a higher proportion of retired heads, the West German elderly are decidedly less mobile overall than the American ones. The causes and consequences of this difference should be worth further analysis as comparable panel data become available. Of particular interest should be the determination of whether these differences are largely behavioral or due to cross-country policy differentials.

Moves are only one form of adjustment in housing consumption. Of equal interest are adjustments-in-place via unit subdivision or subletting, or the intrafamily, in-place formation of new households. These more subtle changes are unobserved in the present data set, but they can be discerned and related to behavioral and policy descriptors within successive waves of the PSID and the SÖP. Their analysis should increase our understanding of the elderly's housing market behavior.

Notes

1. Examples in point are the incompatible recordings of household income, housing quality characteristics, and premove housing conditions.

2. We should emphasize, however, that there will be room for interesting cross-country analyses as successive waves of the SÖP are made available.

3. All cases containing adjusted or imputed data were deleted. The exception was information on item 6, below.

4. As mentioned before, household incomes are incompatibly defined in the two surveys. In the AHS, household members' gross annual incomes from different sources are reported in detail, while the WS reports household income net of taxes. Using income quartiles, we chose to emphasize the households' relative position within the national personal income distribution, and this way established cross-national comparability. To obtain comparability across house-

hold sizes, we weighted incomes by a household-size-specific index of minimum guaranteed income (*Sozialhilfesatz*) constructed for West Germany.

5. Unfortunately, neither survey includes information on individuals living in retirement homes, which would have been most interesting for our analysis.

6. Using panel data, Feinstein and McFadden (ch. 2, in this volume) and Venti and Wise (ch. 1, in this volume) analyze in detail the relationship between the owners' housing consumption adjustment and adjustment in out-of-pocket costs as well as in income and wealth.

7. For the U.S., several authors give direct evidence on mobility-related housing consumption adjustments of the elderly. While tabulations from different data sets arranged by Struyk (1980) and Pollakowski (1985) reveal that among the elderly some smaller share also moves into larger units, Struyk's multivariate analysis shows that both tenure groups downsize their housing consumption with a move (see also Struyk 1986). Börsch-Supan and Pollakowski (1988) also infer from a longitudinal discrete choice model of housing tenure and size that older age and retirement have a significant effect on the choice of small dwellings. Thus, while cohort effects might have an influence on the magnitude of downsizing as reported in table 3.7, accounting for them should not turn around the size effect of moving. See also the multivariate analysis in section 3.4, below.

8. Throughout the F.R.G., tenants' protection legislation constrains the upward adjustment of rents in occupied units.

9. In contrast to this picture, Struyk's (1980) multivariate analysis of panel data suggests that, on relocation, the elderly renters adjust their expense-to-income ratio downward. Furthermore, this adjustment increases with income. For homeowners, the change in this ratio increases with base year income for annual (1973) incomes up to \$5,600, and decreases thereafter.

10. Controlling for moves into dependent status in Feinstein and McFadden (ch. 2, this volume) and Venti and Wise (ch. 1, this volume), respectively, the rate of status preserving moves reported here for the owners is higher by 3 percent surprisingly lower by 13.5 percent, respectively; for the renters, lower by 5 percent and higher by 4 percent, respectively. Evidence communicated by James Poterba suggests that the share of owners'-status-preserving moves is too high in Venti and Wise.

11. Earlier estimates on the basis of unadjusted household incomes yielded insignificant parameters, as is typical of the literature.

12. The same cross-country difference was found in earlier, technically quite different estimates.

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Comment Henry O. Pollakowski

Konrad Stahl has provided us with a thorough examination of comparative U.S. and West German housing consumption and mobility among the elderly. Drawing on two large cross-sectional data bases—the U.S. Annual Housing Survey and the West German One Percent Housing Sample—he has provided us with a wealth of comparable information not previously available. He also wisely points out numerous limitations of the analysis, including comparability of data, institutional differences, possible underlying behavioral differences, and the lack of panel data.

Stahl points out that an important reason for such a comparative study is the possibility of identification of policy effects that are not otherwise identifiable. There are some important differences in the two countries' housing policies, and the hope is that a careful comparative analysis would allow for identification of policy effects. As is pointed out by Stahl, however, large differences in key housing market indicators exist between the United States and West Germany, and some of these differences may be related to behavioral differences instead of policy differences.

This point is worth pursuing further, since a primary justification for further work of this type is the possible identification of policy impacts. Use of this type of analysis for policy purposes requires the assumption of fundamentally similar behavior. It is thus useful to review the differences in housing market settings and outcomes between the two countries.

As summarized in Stahl and Struyk (1985), a number of factors lead to more sluggish housing market behavior in general in West Germany. The price of newly constructed dwelling units is much higher in West Germany, financing is more difficult, and, not surprisingly, the home-ownership rate is lower. The most important indicator of the greater sluggishness of the West German housing market, of course, is the much lower mobility rate.

Stahl finds that the mobility rate among the West German elderly is much lower than that for the U.S. elderly. This reflects the difference in mobility rates between the two countries for households of all ages. It is interesting to note that this difference in elderly mobility rates persists even though a presumably important factor in explaining the difference—job mobility—is of much less importance for the elderly.

What other considerations, then, should we look to to explain the large difference in elderly mobility behavior between the two countries? Again, as summarized in Stahl and Struyk (1985), several matters should be noted. Among renters, the possible effect of extensive eviction controls in West Germany must be considered. Among owners, the effect of the West German system of housing finance should be examined. The favorable terms obtained from thrift institutions in West Germany, which include long-term savings contracts, are typically lost when a household moves. (A larger proportion of the elderly than of the entire population of homeowners, however, have no mortgage debt.) In addition, most West German homeowners have designed and built their own houses. This consideration would seem to operate more strongly in the case of the elderly, since on average they have been in their homes for a longer time than younger individuals, increasing the degree of attachment. Transaction costs are much higher in West Germany than in the U.S., and this would appear to affect the elderly more than the nonelderly. Search costs are higher, since the lower turnover rate leads to fewer vacancies at any given point in time. Also, actual relocation costs are higher because units in West Germany are usually exchanged without kitchen appliances and closets.

Sufficient panel data for West Germany were not available at the time this work was done, and Stahl points out numerous advantages of using panel data for this type of analysis. It should be added that important leads and lags exist in the process of housing consumption adjustment, and panel data are well suited for dealing with these. When comparing the housing of different age groups, the possibility that cohort effects are confounding the results must be considered. For his measure of housing consumption—rooms per head—he argues persuasively, however, that if cohort effects were properly accounted for, the result of the elderly consuming more housing would be even stronger.

Stahl finds that the elderly, especially elderly owners, consume more housing as measured in rooms per head, and that some striking differences exist between the elderly populations in terms of this measure. It is important to point out that to an important degree this result rests on the different distributions of the nonelderly and elderly populations by household type. Within each household type, consumption in terms of rooms per head is broadly similar for the nonelderly and the elderly. The elderly, however, are considerably more likely to be found in smaller households. This brings us back to evaluating the policy issue involving "overconsumption." Are younger single-person owner households "overconsuming"? The issue is an important one: Stahl does present results consistent with elderly movers choosing smaller dwellings. However, this similarity of the nonelderly and the elderly in terms of consumption by household type should be borne in mind in discussing how far the downsizing process can reasonably be expected to go.

The regression results are carefully done and provide several useful findings. Microdata are employed, and choice-based sampling is employed to make most economical use of the data.

The regression results explaining room consumption per head are interesting. Note that, especially for the pooled sample, the effects of income are remarkably similar in the U.S. and West Germany. Not surprisingly, some of the most pronounced results are obtained for the effect of household type on housing consumption. In particular, the one-person household dummies have a strong positive effect on consumption.

Turning to the logit estimates of household mobility, we note that homeownership has a greater negative effect on mobility in the U.S. than in West Germany. This is at least consistent with the West German financial disincentives to mobility being less important for the elderly. A further striking result is that percentage retired has opposite and significant effects in the two countries. In the U.S., mobility is enhanced by being retired (although only for homeowners), while in West Germany it is retarded (although here the result is strongest for renters). There is a positive effect of income on mobility for the elderly in the U.S., but not for West Germany. Once past the age of 70, the (negative) effects of age are quite similar for the pooled samples.

Residential mobility should be viewed as the most extreme manner in which an elderly household can adjust its housing consumption. Given the high transaction costs of moving, an elderly household may instead choose to sublet part of its dwelling. An elderly household may also alter its dwelling to make it more convenient, although this adjustment will probably not have a negative effect on its housing consumption. Assessment of data required for further work in this area should take into consideration these other possible adjustments.

In assessing the issue of the elderly making housing available for younger households, the fact that the housing of the elderly is locationally fixed should be borne in mind. The value of housing freed up by the elderly depends on its location. In the U.S., for example, substantial amounts of housing in older northeastern cities are occupied by elderly persons, while substantial demand by younger households with children occurs in more suburban locations in the South or West.

Reference

Stahl, Konrad, and Ray Struyk, eds. 1985. *U.S. and West German housing markets: Comparative economic analysis*. Washington, D.C.: The Urban Institute Press.