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TAKE THE MONEY AND SUN: ELDERLY MIGRATION AS A CONSEQUENCE OF GAINS IN UNAFFORDABLE HOUSING MARKETS

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I. Introduction

Housing affordability, which declines when increases in housing prices and/or interest rates outpace income growth, has become both a national and local concern. Manifestations of the problem are varied, including homelessness and the decline in home ownership among younger families. While high interest rates created a national affordability problem in the early 1980's, interest rate changes have been a diminishing part of the affordability problem. In fact, national affordability, as measured by the National Association of Realtors, has been relatively stable in recent years.

The more troubling aspect of affordability has become the disparities between different regional markets (cities/states). This reflects primarily the growing regional differences in home prices rather than income growth differentials. As a result, in many markets prices far exceed the ability, as measured by income, of the local population to pay for housing. This has been recognized and policies, both public and private, have been proposed to alleviate the situation. For the most part, these policies are designed to benefit, or subsidize, those who are unable to enter these housing markets rather than to tax those who have gained from price inflation.

Given the losers in unaffordable markets have been identified as generally the younger and poorer families, it follows that the winners have tended to be older and richer. And while the consequences for losers (e.g., the decline in home ownership)

have been noted, less is known about the disposition of housing gains in these markets. In this paper models will be presented suggesting that the elderly, who are no longer bound by work to a region of high home prices, may choose to "spend" their gains in housing by migrating to the Sunbelt, either permanently or seasonally. Permanent migration involves the actual recognition of housing gains in the present unaffordable area and reallocation to a more affordable market. Less obvious is the rationale whereby elderly with unrealized gains may, nonetheless, "spend" them by engaging in seasonal migration (i.e., living part of the year in a Sunbelt state).

While the models may be seen as representing the demand for a good (permanent or seasonal elderly migration) which is influenced by prices (of housing and distance) and amenities (climate), the treatment of income will be unique. That is, according to demand theory if migration is a normal good then richer elderly should be more likely to migrate, and this has been generally found to be true in the elderly migration literature. If, however, one considers income and home price together, then an alternative hypothesis regarding income can be considered. That is, in this paper it is argued that in areas of unaffordability where home prices have risen, relative to incomes, the elderly will be more inclined to migrate because the value of their home is out of balance, or equilibrium, with their income. Put another way, if two families both live in a $200,000 house it is hypothesized that the one with the lower income

(i.e., the one in the less affordable area) will be more inclined to migrate. Or, the family with the higher income would not view their house value as reflecting a gain which they can spend on migration.

By permanently migrating to a more affordable area the migrants convert some home value (equity) into income, which is consistent with the life-cycle theory of consumption. For seasonal migrants, it is hypothesized that the excess house value (relative to income) is "spent" on a new good (seasonal migration) even though the housing gain is not actually recognized as in the case of permanent migration. Being willing to spend unrecognized gains is rational if the owners view the house equity built up in the unaffordable market as an investment which they wish to keep. Also, the behavior is consistent with mobility studies that show a reluctance on the part of the elderly to move and realize housing gains.

The models of permanent and seasonal elderly migration developed are estimated using 1980 Census interstate migration data. Standard migration model variables like climate and distance are incorporated in addition to the measures of housing affordability (in the origin state). As expected, states with high home values send more migrants, both permanent and seasonal. More important, the income variables used are consistently negative and most significant for seasonal migration. This confirms the main point of the paper, which is that in areas where housing has become unaffordable the elderly population has

chosen to "spend" their gains, whether realized or not, in such housing markets by demanding more Sunbelt migration, particularly seasonal.

II. Alternative Elderly Migration Models.

Elderly migration has been studied by many disciplines using varying sources of data. As will be shown, the models developed to explain migration either are estimated using individual (micro) or aggregated (ecological) data. Much of the work, including this paper, is based upon Census information regarding migration. Our approach will be unique in that it explicitly models the role of housing affordability (in the origin market/state) as a determinant of elderly migration and it does so for both permanent and seasonal migration. Before proceeding to our approach and its relation to previous elderly migration studies, it will be useful to distinguish between permanent and seasonal migration.

Seasonal vs. Permanent Migration

As is well known, elderly in the United States have shown an increasing propensity to move in recent years and often, the mobility of the elderly population has been directed toward the Sunbelt with its desirable climate. While some elderly choose to travel extensively and may focus on the South during the winter[1], there are others who make a more permanent commitment to a specific location for an extended period.

At the extreme would be those elderly who permanently migrate to the Sunbelt and give up residence in the North. Others may

decide to maintain ties to two locations, one North and one South, during the year and we will refer to these elderly as seasonal migrants. Though such seasonal migrants may own or rent at either location, where they spent the most time has been used to define their primary, or permanent, residence (Behr and Gober, 1982 and Sullivan, 1985). While existing studies of seasonal migration, including this paper, concentrate on "Snowbirds" (i.e. Northern State residents who spend part of the winter in the Sunbelt) it should be noted that some Southern residents may spend part of the summer at a Northern residence, either owned or rented. However, such "Sunbirds" have not been identified in the seasonal migration studies based on "Snowbird" surveys conducted at a Sunbelt destination (Anderson, 1989; Happel et al., 1983; Hoyt, 1954; Martin et al., 1987; Monahan and Greene, 1982; Rush, 1985; Sullivan, 1985; and Sullivan and Stevens, 1982) or among the elderly residents of a Northern origin state (Krout, 1983).

For the Sunbelt states, both the permanent and seasonal elderly migrants provide a positive economic impact (see, for example, Biggar et al., 1980, Longino and Biggar, 1981, and Happel et al., 1983) in that they are not working but are spending. Thus, they may be viewed, like tourism (see Lichty and Steinnes, 1982), as an "export" component of the regional economy. Also, the seasonal migrants have been found to have only a minimal impact on Service Delivery Systems (Monahan and Greene, 1982). On the other hand, for Northern states these migration flows, along with the tendency of reverse migration

(North) among the very old (Longino, 1979 and Serow, 1978), may be causes of concern and a net loss to their economies.

Of the two types of elderly migration to the Sunbelt, much more is known about the permanent moves than the seasonal flows. The U.S. Census has provided aggregate or ecological (macro) measures of permanent migration flows for various years, along with individual household (micro) data via the Public Use Samples. Both have been used by researchers to profile interstate migrants, local movers and non-movers and to develop and estimate various models explaining migration behavior. In addition, surveys of permanent migrants have been conducted and other sources of data have been used (e.g. the Panel Study of Income Dynamics by Henretta, 1986) or identified (e.g. the Social Security Master Beneficiary Record System by Kestenbaum, 1986).

On the other hand, comparable seasonal migration information has not been available from the Census, and so most studies have relied on various "Snowbird" surveys conducted in the Sunbelt. However, the 1980 Census, for the first time, defined non-permanent residents as those who were located on Census day in other than their permanent residence. Though problems exist with this definition (see Hogan, 1987 and Smith, 1989), it can be taken as a measure of elderly seasonal migration into the Sunbelt states and has been the basis of a few studies (Gobes and Mings, 1984, Hogan, 1987, and Hogan and Steinnes, 1989). As seen in Tables 1 and 2, there are differences between these seasonal migration rates and the comparable (from the same origin state)

permanent migration rates for one Sunbelt (destination) state, Arizona. In a previous study (Hogan and Steinnes, 1989), the authors analyzed these seasonal and permanent migration rates and concluded, statistically, that the two forms of elderly migration have different determinants.

These determinants, or explanatory variables, were based, in part, on the various "Snowbird" surveys which have shown that seasonal and permanent migrants to the Sunbelt states both tend to be white, married and retired (Hogan, 1987). Also, the seasonal migrants are more educated, healthier and have higher incomes than non-movers[2] among the elderly population (Krout, 1983; Monahan and Greene, 1962; Sullivan and Stevens, 1982; Happel et al., 1983; and Sullivan, 1985.) When questioned about the reasons for migrating, however, permanent (Long and Hanson, 1979) and seasonal (Sullivan and Stephens, 1982; Happel et al., 1983) migrants have provided varying answers.

Aside from the question of what factors influence the decision to seasonally or permanently migrate, the issue can be raised as to whether there is a transition from one type of migration to another or if past migration decisions might not influence the current migration decision. To explore whether there is a transition, or linkage, would require knowing the state of households in the past (t-i) in order to determine if the choice in year t is influenced by past choices (states). When such seasonal migration data are available, analysis of these transitions could prove to be illuminating. For example,

the question of whether seasonal migration might not lead to permanent migration has been raised (Sullivan, 1985 and McHugh, 1989), but a definitive answer has not been provided. The opposite question, of whether past permanent migration might not influence current seasonal migration, has not been raised or answered in the context of elderly migration. By contrast, past permanent migration is known to influence current elderly permanent migration (Chevan and Fischer, 1979).

This finding, as most previous research on permanent elderly migration, has been based on Census information. For example, using these permanent migration data for various census years, researchers have studied patterns of migration (Biggar, 1979; Biggar et al., 1984; Flynn, 1980) the characteristics of movers (Biggar, 1979; Biggar, 1980), and the impacts of the flows on both origin and destination (Biggar et al., 1980; Rives and Serow, 1981; Longino and Biggar, 1982; Biggar, 1984). Some have compared elderly and general population migration using the same Census information (Flynn, 1980), while others have considered the economic basis of the permanent migration decision (Fournier et al., 1986, Fournier et al., 1987, McLeod et al., 1984, and Serow et al., 1986).

Micro vs. Aggregated Models

While the analysis in this paper will be based on the aforementioned 1980 Census data on elderly permanent and seasonal migration, it is useful to briefly explain how the analysis relates to individual migration decisions. By considering models

of the individual decision process and the data which are necessary to test such models, it will be easier to understand the limitations of the aggregate (ecological) testing which will be conducted with the available Census data.

Economic based models of individual choice are usually specified with a binary dependent variable and estimated using appropriate statistical procedures. For example, many studies have been done for elderly choices concerning tenure and/or mobility (Ioannides (1987), Venti and Wise (1989), Feinstein and McFadden (1989), and Henderson and Ioannides (1983)) but fewer have considered migration (Henretta (1986). These studies rely on histories of individuals (Panel Study of Income Dynamics (PSID)) which provide information not available from Census data. However, the PSID data file tends to lose people over time if they migrate and so it has not been considered a very viable source for modeling migration. For example, Henretta (1986) only tried to explain if an elderly move was intra or interstate, which is not a definitive specification of migration behavior.

On the other hand, most aggregated models of elderly migration have focused on the choice of destination using interstate flow data. Some have considered total in/out migration (Rives, et al. (1983)) but most work has been done for state-to-state flows for one or more origin/destination states. The majority of these efforts, however, have been directed toward the permanent migration decision and only a few have considered seasonal migration (Hogan (1987) and Hogan and Steinnes (1989)).

The individual/micro models, which are usually estimated using a logit or probit regression approach, are related to the aggregated (state) data available from the Census. Specifically, the micro models relate to decisions of the elderly living in an origin (relative to migration) state (i.e., if micro estimation were to be performed, data for each origin (state) elderly household on, income, age, etc. would need to be collected). However, when aggregated data are used a sample of different origin states must be used in order to have sufficient variation in the independent variables and the (origin) state averages (for those in origin state who did not migrate) of the independent variables must be used. As a result, the independent variables are not the exact counterparts of the micro models. Moreover, as explained in Hogan and Steinnes (1989), the migration rates (dependent variable) do not correspond exactly with the micro binary decision variables. Nonetheless, this study, as have others, will use the aggregated Census data in an attempt to find the determinants of the decision to migrate. More specifically, the data used will be for one Sunbelt state (Arizona) and so the analysis will focus not on choices among destinations but on variations in the origin state.

Many studies have used various origin and/or destination independent variables to explain variations in migration rates. These include both geographic (climate and distance) and demographic (age and marital status) characteristics of the origin and/or destination state. Given our analysis is for a

single destination (Arizona), we are only interested in differences between origin states. In a previous study we (Hogan and Steinnes (1989)) developed a set of these variables which will be specified and used in the estimation which follows. While in the previous study we used (origin) income as what might be considered an economic independent variable, our intent in this paper is to also consider (origin) house values and, in particular, the impact of (origin) housing affordability on propensities to migrate, either permanently or seasonally.

III. Income, Housing Prices and Elderly Migration

Though several studies have considered the economic basis of elderly permanent migration, most such efforts have met with only limited success. That is, the economic independent variables have added little to the explanation provided by the type of geographic/demographic variables just mentioned. As will be seen in the next section, in this paper, too, the economic variables offered are only minor determinants of permanent migration. However, these variables prove to be more successful in explaining seasonal migration for reasons that will be provided.

The use of economic variables in elderly migration models has been fairly limited both conceptually and empirically. Two variables, income and house values, have been used in several studies though the rationale and hypothesized signs have not been consistent. Likewise, the estimation results have been less than dramatic, as noted, and the signs for these variables have not always agreed with the provided hypotheses.

We will proceed to first discuss results for income and housing prices that have been found by those using micro data to study elderly mobility. These findings will later be related to the link between housing affordability and elderly migration we are proposing in this paper. Then, more importantly, we will discuss the use of income and housing price variables in the models of permanent elderly migration based on aggregated (state) Census data. In so doing we will only concentrate on how the previous studies have used the origin state income and housing price variables since our estimation will be for a single destination (Arizona).

In general, these previous studies have considered income and housing prices to be separate explanatory variables whereas we will view them as interrelated through the concept of housing market affordability.

Individual Housing Decisions of the Elderly

Though the PSID panel data has proven to be of limited use for studying elderly migration decisions, for reasons noted earlier, it has been employed extensively to analyze individual (micro) housing decisions (e.g., mobility and tenure choice). In so doing, both income and housing prices have been considered as explanatory variables, though the rationale has varied and, of the two, income has been used most often.

Indicative of these efforts are recent studies by Feinstein and McFadden (1989) and Venti and Wise (1989). They both studied mobility and tenure decisions, but not migration. In both cases

the results support the life-cycle theory of consumption in that wealth, more than income, was an important determinant of housing decisions. However, the elderly were not found to move in order to reduce housing wealth and increase consumption. Moreover, when they did move the elderly were found to be equally likely to increase as decrease housing equity. Among other implications, these latter results call into question the viability of policies like reverse mortgages (see also Merrill, 1984).

When commenting on the Feinstein and McFadden (1989) results, Ioannides (1989) notes that the amount of housing owned by households may be reflecting investment motives while also providing housing services. He also speculates that the performance of housing as an inflation hedge, or investment, may have substantial geographic variation that is important to elderly decisions. In earlier work, in fact, Ioannides (1987) showed such variation to be important for the general population using housing price data for a sample of SMSAs and the same PSID panel data. Later, when we discuss the relationship between housing affordability and elderly migration we, too, will argue that housing is viewed by the elderly as an investment, especially in unaffordable markets where past inflation has raised expectations as to the future performance of housing as an inflation hedge.

The use of income in explaining housing mobility was found in these studies, and others, to be positive but not very significant, as the life-cycle theory would suggest if decisions

are based more on wealth than income. Other studies of mobility, for the general population, have considered not only the level of income but changes in income. For example, Harmon and Potepan (1988) find moving to be based on income (+) and changes in income (+), up or down, with the changes creating a disequilibrium (between income and house value) that requires adjustment (moving) and changing the dollar amount of housing services. While income has been also used to explain tenure choice in most of the studies just reviewed, we will not discuss these results since tenure is further removed from the migration decision than is the decision to move (mobility).

Considering the role of housing prices has proved more difficult for those using the PSID data. For example, Feinstein and McFadden (1989) contend the file does not contain adequate information to construct housing prices, in part because they are valuations provided by the panel households themselves. Nonetheless, others have used the PSID house values with varied success. Venti and Wise (1989) found high home values to positively influence elderly moves but Harmon and Potepan (1988) found them to be negatively related to general population mobility.

Given the problems with using PSID home values, Henderson and Ioannides (1986) and Ioannides (1987) use Annual Housing Survey data to calculate housing prices, for both owners and renters, in a sample of SMSAs. These are then used to explain both mobility and tenure choice. The hypotheses regarding the house price

variables (for each mode) are not definitive and the results are sometimes significant but inconsistent with the hypotheses offered. For example, Ioannides (1987, p. 273), states, "Regarding prices, we are at a loss as to what to expect. Modal prices at the time of a move also condition individuals' expectations about the future course of those prices. Yet, the higher the price in a particular mode the shorter we expect a household with given characteristics to stay in a particular mode." The former (expectations) logic would suggest that high prices and mobility are inversely related (at least for owners) while the latter (demand) rationale would suggest they should be positively related. Ioannides' (1986) statistical results are not definitive, or consistent, either as to which rationale (expectations or demand) dominates mobility and the choice of housing tenure.

Nonetheless, the use of SMSA market data is somewhat unique in that it is not seen, necessarily, as a proxy of the corresponding individual variable. That is, the approach allows for individual expectations of future housing prices to be formed more on the basis of trends in market prices than on the basis of the trend of the value of the individual's home value. Later we will represent a similar argument that permanent migration may be less likely, and seasonal migration more likely, in (origin) markets where price expectations are high, as measured by (origin) market house prices and changes in prices.

Aggregated Migration Decisions of the Elderly

Just as those using the PSID panel data have used two economic variables, income and housing prices, in a variety of ways, so, too, have those working with aggregated (state) Census elderly migration data. However, the use of these variables (income and housing prices) has been confined to the analysis of permanent migration and the results, statistically, have been weaker than for the geographic or demographic/social variables. In this paper we get similar weak results for permanent migration but these variables prove to be much more valuable in explaining seasonal migration. The rationale for the asymmetry in the performance of the variables can be provided, we will argue, by considering the housing affordability of the origin (state) housing market. Before considering affordability, however, we will briefly review the use of these variables by those studying permanent elderly migration.

If we first consider income it should be noted that general population migration models are labor market based and so they suggest workers will not migrate from high income origins (states). Therefore, these studies hypothesize origin income to be negatively related to migration and the statistical verification of this hypothesis has been strong. For the elderly, on the other hand, the labor market analysis is not appropriate (see, for example, Graves (1979) and Graves and Knapp (1988)) and so, as expected, income has not proven to be a very significant explanatory variable.

Most studies view elderly migration not as a labor market decision but more as a consumption decision. That is, the elderly migrate to consume a new good (destination state) which will give them higher utility than the old good (origin state). Thus, their demand for change is influenced by the characteristics of the competing goods (states) as well as by the characteristics of the individual. Within this context, the most straightforward hypothesis for origin income is that it should have a positive influence on migration, unless migration is an inferior good, which seems unlikely. We would argue, furthermore, that seasonal migration, given its temporary nature, represents the consumption of a service whereas permanent migration involves the consumption of a more durable good, which may also represent, in part, an investment (in housing). While we would, therefore, hypothesize that origin income should have a positive influence on both types of migration, this is without consideration of the other key variable we will be discussing, origin state house values. When this variable is included it will modify our hypothesis regarding origin income.

A more common hypothesis for origin income is that it should be positive because it is a proxy for origin cost-of-living. That is, the elderly are seen as moving in order to lower their cost-of-living much the same as general migrants are seen as moving to raise their income. Examples of this approach would be Rives, et al. (1983), McLeod, et al. (1984) and Serow, et al. (1986). In each study a cost-of-living rationale underlies the

analysis. However, the results, statistically, are often contrary to expectations with regard to origin income. Also, in one of the studies (McLeod, et al. (1984)) the hypothesis with regard to origin income is negative while it is positive in the other two studies. The conclusion of the later paper (Serow, et al. (1986)) is that a cost-of-living index developed in the paper serves as a better proxy for cost-of-living. In subsequent studies (Fournier, Rasmussen and Serow (1986) and Fournier, Rasmussen and Serow (1988)) the approach has been to use the cost-of-living index rather than income and the results, generally, have been more consistent and significant than when income was used earlier.

Also, these same earlier studies had used origin housing prices, again as a proxy for the origin cost-of-living. The origin housing price variable, too, met with limited success, statistically, and did not always agree with the hypothesized sign (positive). It also was later dropped in the subsequent studies in favor of the cost-of-living index developed.

Housing Affordability and Elderly Migration

While the wrong sign (negative) for origin income obtained when origin housing price was also used troubled those who saw each variable as a proxy, or component, for the origin cost-of-living, we would suggest that this combination of results does, in fact, have a rational economic explanation. Furthermore, we would argue that this combination of results (income negative and housing prices positive) is even more likely to occur for

seasonal migration. Put simply, these two variables, when used together in a regression analysis, are measuring the affordability of the origin housing market.

Housing affordability, for a given market, measures, in essence, if housing prices are high relative to, or given, income. There are indices which reflect differences (over time or between markets) in incomes, house prices, and terms (interest rates or qualification factors). Since studies of interstate migration are cross-sectional, the variation in affordabilities, between states, would be mainly reflective of differences in prices and incomes. Moreover, we would suggest that if prices are higher compared to income (as measured by the ratio (price/income) or by using each as an independent variable in a regression analysis) in one state than another, then the former state is less affordable. It follows that when income is negative and house price is positive in a migration regression model it means that migration is greater from unaffordable origin markets.

In this paper we intend to test to see if elderly migration, whether permanent or seasonal, is, in fact, greater from unaffordable origin housing markets (states). The results will show this is unclear with respect to permanent migration but significant with respect to seasonal migration. While empirically important, there is also a need to provide some economic rationale as to why migration should be greater from unaffordable housing markets.

This rationale lies, we believe, in the fact that housing

represents an investment in addition to providing housing services. In housing markets which are unaffordable it is more likely, we believe, that housing gains have been made by the elderly. Therefore, they have the wealth to increase consumption either in the form of permanent or seasonal migration.

However, if past gains form expectations of future gains, as others have suggested, then it may be that the elderly will be reluctant to permanently migrate and give up their housing investment in the unaffordable origin housing market. On the other hand, seasonal migration allows them to retain the origin housing investment and yet spend the unrecognized housing gains on seasonal migration. Therefore, we hypothesize that if the elderly view their origin housing as an investment we will find origin affordability a significant determinant of seasonal, but not permanent, migration. Furthermore, the dual hypotheses suggest that the elderly consume seasonal migration on the basis of housing gains (wealth), even though unrecognized, rather than on the basis of income, which is consistent with the life-cycle theory of consumption.

Finally, it might be noted that by testing both permanent and seasonal migration we will, indirectly, test if our investment/affordability explanation is better than the cost-of-living rationale noted earlier with regard to the origin income and housing price variables. That is, the cost-of-living argument applies to permanent more than seasonal migration and so, if viable, these variables should explain more of permanent

than seasonal migration. On the other hand, our hypotheses suggest that these same origin variables might be more important determinants of seasonal than of permanent migration if the elderly view housing as an investment which permanent migration would require them to sell. As explained, reluctance to sell (migrate) is more likely in unaffordable origin housing markets if expectations are formed on the basis of past increases in housing prices. The empirical results which follow will, in fact, support the positions we have advocated in this section.

IV. Estimation Results

As indicated, previous studies of elderly migration have used different specifications of the dependent variable and a variety of explanatory variables. This study will consider both seasonal and permanent migration using the same set of independent variables and while some of these variables, like distance and climate, have been used in almost all previous elderly migration models, the real interest is in the variables which measure housing affordability, income and house value. The specification and hypothesized sign for each variable will now be provided.

Dependent Variables

Rates of permanent elderly migration (PMR) to Arizona are based upon the conventional census migration data -- the ratio of (a) the number of persons 65 or above residing in Arizona in 1980 who resided in each other state in 1975 to (b) the 1980 population 65 and over in each state. The seasonal migration rates (SMR) are based upon the 1980 Census data on nonpermanent

residents in Arizona -- the ratio of the number of nonpermanent residents in Arizona from each state divided by the states' 1980 65 and over population. Given the difference in scale of these two sets of migration rates, each series was converted to an index with a mean of 100 (see Table 2) through division by the U.S. average value.

Independent Variables: Geographic

Adjacent state (ADJ): A binary variable designating the five states adjacent to Arizona (California, Colorado, New Mexico, Nevada, and Utah) was defined as one explanatory measure. Differential effects are hypothesized between this variable and seasonal versus permanent migration. A negative association is hypothesized between adjacency and seasonal migration given the reduced differences in climate and other environmental characteristics. For permanent migration, on the other hand, a positive link is hypothesized. The migration literature has shown many retirement moves to be return migration associated with previous employment-related moves.

Distance (DIST): Migration research has generally hypothesized a negative relationship between the distance of the move and the size of the migration flow. To test this relationship, the distance in miles between the largest metropolitan area in each state and Phoenix has been utilized. Since seasonal migration involves annual relocation costs, it is further hypothesized that seasonal migration will be more affected by distance than permanent migration.

Temperature difference (TEMPDIFF): The importance of climatic factors in the migration decision of older persons has been widely documented. The difference in average January temperature between each origin state and Phoenix has been employed as the climate variable, and a strong positive association is hypothesized. Since seasonal migrants move each winter to a warm Sunbelt location to avoid the colder weather of their origin state, a differential positive relationship between climate and seasonal versus permanent migration is hypothesized.

Independent Variables: Demographic/Social

Previous analyses of elderly mobility have identified differences by race, age, and other characteristics. Surveys undertaken in Arizona (and other Sunbelt areas) also show that a very high proportion of seasonal migrants to Arizona are white, retired or semiretired but relatively young, and married. Four separate variables related to the demographic characteristics of the origin states' elderly population have been included in the analysis.

Proportion white (PWH65): A positive relationship between the proportion of the origin state's elderly population that is white and migration is hypothesized.

Proportion of the elderly population less than 75 (PLE74): A positive relationship is hypothesized between the relative number of younger elderly and migration.

Proportion married (PMAR65): A positive relationship between the proportion married and migration is hypothesized.

A positive differential effect of proportion less than 75 and proportion married vis-a-vis seasonal migration is further hypothesized. These expectations are consistent with both the previously mentioned survey data and the idea that seasonal migration is a transitional phase prior to permanent relocation.

Proportion rural (PRUR65): While the majority of the U. S. population lives in urban areas, a relatively high proportion of seasonal migrants to Arizona reside in non-urban areas of their origin states; thus a positive relationship is hypothesized between rural residence and seasonal migration, while a negative link is hypothesized with respect to permanent migration.

Independent Variables: Economic

We consider two variables, income and housing price, which have been used in previous studies of permanent migration as proxies for the origin state cost-of-living. While these studies hypothesized both proxies should have a positive influence on migration, our contention, as outlined in the last section, is that house price should be positive and income negative if migration is greater from unaffordable origins.

Housing value (HOMVALUE): A positive relation between housing value and migration is hypothesized for both permanent and seasonal migration but a stronger association is expected for seasonal migration.

Income (INC): The median income of the general population of the origin state. We hypothesize a negative relation, and strongest for seasonal migration, between income and migration

since when used in the same equation this is, in effect, assuming migration is greater from origin states which are unaffordable.

For both income and housing, 1970 Census information was also collected in order to measure changes in these variables, CHINC and CHHOMVAL. As seen in Table 2, these changes were substantial, on average, as were the variations in the changes across states. We would hypothesize that these changes are less likely to be important sources of housing gains for the elderly than are the 1980 measures of affordability. In fact, the change in income (CHINC) is less likely to be tied to affordability than 1980 income (INC) and so we hypothesize it (CHINC) may be positive if migration is a normal good.

The descriptive statistics for each variable (using abbreviated names) can be found in Table 2 and the simple correlations between the independent variables are provided in Table 3. The latter table gives one indication of the potential for multicollinearity in the estimated regression equations. While few cases of severe multicollinearity are indicated by Table 3, some correlations may restrict the significance (as measured by t-values) of the independent variables in the regression results. We have not, however, tried to reduce the number of non-economic independent variables since we are primarily interested in the explanatory power of the economic variables. By leaving in all non-economic variables we are more assured that the affordability variables achieve significance for economic reasons not because they are acting as proxies for

excluded non-economic variables.

Regression results are presented in Table 5 for seasonal (SMR) and in Table 4 for permanent (PMR) migration. The first columns of these tables provide evidence that, in fact, seasonal and permanent elderly migration are not influenced in the same ways by the set of non-economic explanatory variables considered. Two variables, ADJ and PRUR65, have opposite signs, as was hypothesized. While the other variables have the same sign, the coefficients differ for SMR and PMR. As expected, SMR is more affected than PMR by each of the remaining variables. All the variables have the signs hypothesized with the exception of PWH65. Its negative sign might be indicating a preference for migration among the population for more integrated states. This would be consistent with patterns of intraurban population location, or suburbanization, which have been explained on the basis of the racial composition of the central city (e.g., the "tipping point theory"). A more formal statistical analysis of the difference between the PMR and SMR results in column 1 (of Tables 4 and 5) is provided in an earlier study (Hogan and Steinnes, 1989).

While the F-values are significant for both the PMR and SMR equation in column 1 of Tables 4 and 5, more explanation is provided for PMR. This would indicate that less is known about the determinants of seasonal migration than of permanent migration. We will see that, in fact, the affordability variables (columns 2-6) provide much of the "missing" explanation

and when they are included for PMR (Table 4) and SMR (Table 5) each type of elderly migration is explained about equally well (column 6). Since, as will be discussed below, the signs are consistent with our affordability explanation of migration, the better results for SMR suggest that those with gains in unaffordable markets are likely not to sell (PMR) but to spend (on SMR) the recognized gain. Finally, the failure of the economic variables to explain PMR provides little credibility that these variables serve as effective measures of the origin cost-of-living.

More important than the explanatory power are the signs of the economic variables. When either (INC or HOMEVAL) is used alone (columns 2 and 3), a positive sign is obtained which is consistent with the cost-of-living explanation reviewed earlier. However, the results for income (column 3) are weaker than for home value (column 2). Also, the home value variable is consistently more significant for SMR than PMR which suggests that elderly view origin housing as an investment they do not want to sell in order to permanently migrate.

This view is fortified by the results when INC and HOMEVAL (column 4) are used together. As we argued in the last section, when used together these variables can measure affordability and we hypothesized a negative sign for income if elderly migrate from unaffordable origins. This appears to be the case looking at the result in column 4. However, the results, for INC and HOMEVAL, are much more significant for SMR than PMR. This

indicates the elderly are more inclined to seasonally migrate than permanently migrate from an unaffordable origin (state).

It will be recalled that we hypothesized this would occur if the elderly view housing in such markets as a good investment. Our empirical results substantiate this position and, moreover, do not uphold the alternative cost-of-living rationale for these variables considered earlier.

Having verified our position that affordability is an important determinant of seasonal elderly migration (column 4 of Table 5), we also considered the recent changes (1980-1970) in these same variables (CHINC, CHHOMVAL). As was the case for the original variables, the changes offer little explanation of PMR (columns 5-6 of Table 4). On the other hand, these variables are significant when used to explain SMR (columns 5-6 of Table 5).

In column 5 of Table 5 we find that both variables are positive and home value is more significant. A major difference from column 4 of Table 5 is that income has a positive sign. We would suggest that the change variables are less likely to be measuring affordability than the original variables (column 4) since the latter variables represent gains achieved not just in the most recent decade. For the elderly, especially, it may be that their decisions to migrate are based on all past gains. Therefore, the current changes may be considered increases in wealth (CCHOMVAL) and income (CHINC) respectively. If so, the positive signs are consistent, as is the greater significance of wealth, with the life-cycle theory of consumption.

The explanation of column 5 just offered is reinforced in column 6 of Table 5 when the original and change variables are used together. Here INC is negative and significant while CHINC is positive and significant. This suggests the former measures affordability (provided HOMEVAL is used in the equation as explained earlier) while the latter measures an increase in income that is used to seasonally migrate. A final note on column 6 is that HOMEVAL and CHHOMVAL are both insignificant because they are highly collinear (.97 as seen in Table 3).

V. Conclusion

In this paper we have shown, both conceptually and statistically, that permanent and seasonal migration are separate phenomena, but our primary objective has been to investigate the economic rationale underlying the elderly migration decision. In particular we considered two variables, income and house values, which have been used previously as proxies for the origin cost-of-living. We demonstrated that these variables measure affordability and explain elderly migration, especially seasonal.

The implication is that the elderly in unaffordable markets who have gains are more inclined to spend them on seasonal, rather than permanent, migration. Also, this is what would be expected if the elderly consider their house in such markets to be a good investment. While our results are suggestive, they are not definitive given the aggregate nature of the approach. If, and when, appropriate micro data were to be available, particularly for seasonal migration, it would be possible to more

fully determine the relationship between affordability and migration that we are proposing in the paper.

Notes

1. For example, Jobes (1984) and Mings (1985) study elderly recreational vehicle owners who move from site to site, sometimes year-round.

2. However, most comparisons between seasonal migrants and non-movers have been conducted at a Sunbelt location and many of the non-movers may have been recent permanent migrants. A better comparison would be with non-movers from the same Northern state (origin). The one study which does this (Krout, 1983) is limited to a single non-metropolitan county of New York. Moreover, the findings have been questioned by Martin et al., (1987) because the data were collected for other purposes and the study may have used a flawed definition of seasonal migrant.

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Table 1

Seasonal and Permanent Migration to Arizona
By State of Origin (Selected[2] States)

State	Seasonal		Permanent
	Rate[1] (1)	Rank[3] (2)	Rate (3)
Wyoming	19.6	1	4.4
N. Dakota	19.4	2	6.4
Alaska	14.3	3	10.6
Montana	12.2	4	8.0
S. Dakota	11.1	5	4.9
Minnesota	9.3	6	4.8
Idaho	9.2	7	4.9
Colorado	7.9	8	8.4
Iowa	6.5	9	4.6
Washington	5.2	10	4.4
Oregon	4.4	11	4.6
Nebraska	4.3	12	3.0
Michigan	4.2	13	4.4
Utah	4.2	14	5.2
Wisconsin	3.4	15	4.2
Nevada	3.3	16	7.2
Kansas	2.4	17	2.7
New Mexico	2.3	18	8.1
Illinois	2.2	19	6.1
Indiana	1.6	20	2.6
Missouri	1.2	21	2.4
Ohio	1.2	22	2.9
California	.9	23	4.5
New York	.7	24	1.8
Connecticut	.6	25	1.8
Oklahoma	.5	26	1.4
Penn.	.5	27	1.2
New Jersey	.4	28	1.4
Mass.	.3	29	1.1
Texas	.3	30	1.0
Maryland	.2	31	1.1
Florida	.1	32	.9
U.S. TOTAL	1.5		2.4

[1] Migrants per 1,000 people 65 years or older.
[2] States with highest seasonal migration rates (over 0.1).
[3] Rank among 32 states considered.

SOURCE: U.S. Bureau of the Census, Census of Population, 1980: County to County Migration Flows (machine-readable data file), 1984; and "Nonpermanent Residents by States and Selected Counties and Incorporated Places: 1980," Census of Population, 1980, Supplementary Report PC80-51-6, April 1982.

TABLE 2

DESCRIPTIVE STATISTICS

VARIABLE	MEAN	STD DEVIATION
ADJ	.11	.31
DIST	1665.55	652.01
TEMPDIFF	20.27	10.26
PWH65	.90	.11
PLE74	.61	.03
PRUR65	.33	.04
PMAR65	.52	.04
HOMEVAL	46478.72	11831.69
CHHOMVAL	30667.66	9112.13
INC	16446.98	1951.19
CHINC	7332.87	910.27
SMR	100.00	149.81
PMR	100.00	87.58

TABLE 3

CORRELATION COEFFICIENTS FOR INDEPENDENT VARIABLES

	DIST	TEMPDIFF	PWH65	PLE74	PRUR65	PMAR65	HOMEVAL	CHHOMVAL	INC	CHINC
ADJ	-.61	-.13	.06	.34	-.38	.38	.53	.59	.18	.18
DIST	1.00	.21	-.08	-.18	.11	-.66	-.19	-.34	.07	-.23
TEMPDIFF		1.00	.63	-.63	.16	.14	.04	-.00	.26	.04
PWH65			1.00	-.47	.20	.59	.03	.03	.25	.12
PLE74				1.00	-.17	-.02	.16	.16	.01	.15
PRUR65					1.00	.26	-.66	-.56	-.63	-.27
PMAR65						1.00	-.02	.10	-.03	.22
HOMEVAL							1.00	.97	.70	.44
CHHOMEVAL								1.00	.60	.47
INC									1.00	.72
CHINC										

TABLE 4

ESTIMATED PERMANENT (PMR) MIGRATION EQUATIONS

Equation:	(1)	(2)	(3)	(4)	(5)	(6)
Independent Variables:	Regression Coefficients (t-values in parentheses)					
DIST	-.07 (-4.00)	-.07 (-4.07)	- .07 (-3 .97)	-.06 (-3.82)	-.07 (-3.92)	-.07 (-3.59)
ADJ	50.85 (1.75)	37.57 (1.24)	50.01 (1 .70)	33.41 (1.06)	31.88 (.99)	39.02 (1.17)
TEMPDIFF	6.25 (7.00)	6.01 (6.67)	6 .02 (5.86)	6.31 (6.08)	6.14 (6.76)	5.94 (6.04)
PWH65	-59.30 (-.56)	-67.10 (-.64)	-60 .76 (-.56)	-67.92 (-.64)	-59.28 (-.56)	-110.45 (-.92)
PLE74	503.31 (1.57)	451.24 (1.41)	477 .70 (1.45)	472.30 (1.45)	522.23 (1.58)	495.64 (1.38)
PRUR65	-91.29 (-1.84)	-45.92 (-.77)	-61 .59 (-.77)	-76.64 (-.97)	-63.71 (-1.14)	-13.67 (-.15)
PMAR65	309.09 (.92)	319.85 (.96)	325 .08 (.95)	297.60 (.88)	337.17 (.99)	328.63 (.95)
HOMEVAL		.0010 (1.35)		.001 (1.38)		-.0033 (-.66)
CHHOMVAL					.0015 (1.45)	.0048 (.84)
INC			.003 (.48)	-.005 (-.59)		.014 (1.06)
CHINC					-.004 (-.54)	-.022 (-1.19)
R^2	.82	.83	.82	.83	.83	.83
R^2 (adj)	.79	.79	.78	.79	.79	.78
F	25.02	22.58	21.49	19.76	19.75	15.88

TABLE 5

ESTIMATED SEASONAL (SMR) MIGRATION EQUATIONS

Equation:	(1)	(2)	(3)	(4)	(5)	(6)
Independent Variables:	Regression Coefficients (t-values in parentheses)					
DIST	-.13 (-3.08)	-.14 (-3.51)	- .14 (-3 .09)	-.12 (-3.14)	-.12 (-3.22)	-.08 (-2.12)
ADJ	-135.7 (-1.91)	-204.6 (-3.01)	-137.8 (-1 .92)	-238.98 (-3.63)	-170.44 (-2.55)	-211.13 (-3.45)
TEMPDIFF	12.08 (5.52)	10.84 (5.38)	11.50 (4.57)	13.29 (6.11)	10.63 (5.65)	12.39 (6.89)
PWH65	-237.5 (-.91)	-277.9 (-1.18)	-241.08 (-.91)	-284.70 (-1.27)	-262.49 (-1.19)	67.40 (.31)
PLE74	880.3 (1.12)	610.5 (.85)	817 .66 (1.02)	784.76 (1.15)	433.02 (.63)	871.4 (1.33)
PRUR65	52.3 (.43)	287.4 (2.16)	124 .99 (.64)	33.30 (.20)	276.68 (2.38)	-117.23 (-.70)
PMAR65	591.0 (.72)	646.8 (.87)	630 .18 (.75)	462.75 (.65)	416.80 (.59)	412.01 (.65)
HOMEVAL		.0053 (3.12)		.0089 (4.00)		.0085 (.94)
CHHOMVAL					.0054 (2.58)	-.0018 (-.18)
INC			.008 (.48)	-.04 (-2.34)		-.08 (-3.13)
CHINC					.033 (1.97)	.12 (3.68)
R^2	.63	.70	.63	.74	.75	.81
R^2 (adj)	.56	.64	.55	.69	.69	.75
F	9.37	11.26	8 .07	11.79	12.17	13.48