A New Look at Reverse Mortgages: Potential Market and Institutional Constraints

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Most elderly hold a significant portion of their non-pension wealth in housing equity. Over 70 percent of households over age 62 own their home, and 80 percent of those homeowners have no remaining mortgage. The median elderly homeowner has $64,000 of housing equity and only $15,000 of liquid assets. For many elderly homeowners this concentration of wealth in housing presents a problem. Although they might prefer to use their housing equity to finance current consumption, to pay for an emergency, or to help out a relative in need, utilizing this wealth would force the sale of their home. Traditional home equity lines of credit require that principal and interest be paid back over a fixed time interval, yet many elderly want to avoid mortgage payments because they live on a limited income.

Reverse mortgages hold the promise of helping elderly homeowners out of this bind. In the simplest form, a reverse mortgage would allow homeowners to borrow against their housing equity and receive monthly payments, while still living in their home until they die or choose to move. After moving, the homeowner would sell the home and use the proceeds to pay off the balance of the reverse mortgage. The holder of the reverse mortgage would provide insurance guaranteeing that the homeowner would never owe more than the future value of the house.

Although reverse mortgages have been offered for more than a decade, the market has never gained significant size. Some critics have argued that elderly homeowners really do not want to use reverse mortgages because they intend to give their house to their children, or save the equity to pay for future expenses such as long-term care. Others suggest that previous reverse mortgage contracts have not met the needs of most elderly homeowners, requiring repayment within a fixed 5- or 10-year term, or loss of all equity in the house even if the homeowner dies the next year. Financial institutions claim that reverse mortgages are very risky and that the housing and interest rate risks are

not easily diversifiable. In addition, recent accounting changes require holders of reverse mortgages to report artificial losses until repayment. More recently, however, the U.S. Department of Housing and Urban Development (HUD) has begun a demonstration program to gauge elderly interest in reverse mortgages.

This article will explore the viability of the market for reverse mortgages. The first part will describe the various types of reverse mortgages. Next, the article will estimate the potential demand for reverse mortgages using data from the Survey of Income and Program Participation (SIPP). Assumptions about future increases in house prices and various interest rates are shown to have a considerable effect on the estimated market size. The results show a large potential market, whether measured in terms of the increased income available from a reverse mortgage or the addition to liquid wealth. Given the market potential, the article then discusses demand and supply explanations as to why the current number of reverse mortgages is so small. The article concludes by looking at policy changes that might stimulate the growth of reverse mortgages.

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I. Types of Reverse Mortgages

A reverse mortgage is one specific type of a more general class of home equity conversion loans, that is, loans that allow homeowners to borrow against equity in their homes. The chief characteristic of such loans, setting them apart from conventional mortgages and home equity lines of credit, is that the borrower does not need to make periodic interest or principal payments during the life of the loan. Borrowers can receive regular monthly payments, a lump sum, or a line of credit. The interest and principal due keep accruing until the loan is repaid in a lump sum when the house is sold, which usually happens when the borrower moves out of the house or dies. Because of their repayment characteristics, eligibility for home equity conversion programs, including reverse mortgages, is usually limited to elderly homeowners.

Perhaps the most common type of home equity conversion plan is a property tax deferral program, which a number of state and local governments administer. Under these programs, the government places a lien on the property in return for the deferral of the property tax. The tax is paid, with accumulated interest, when the house is sold. The interest rate is set by law, and is usually between 6 and 8 percent per year. In New England, these programs are available on a local basis in Connecticut, Massachusetts, and New Hampshire. Most programs have eligibility requirements that place limits on income or assets of participants.

Local government agencies sometimes make loans on a similar basis, known as deferred payment loans, to the elderly with limited means. Such loans are made for a specific purpose, most often home repair, at a fixed, usually below-market interest rate. A typical loan would be made for replacing or repairing a roof, plumbing, electrical wiring, or heating.[1]

Fixed-Term Reverse Mortgage

The simplest type of a reverse mortgage is extended for a fixed term and becomes due on a specific date. In New England, such mortgages are available in Connecticut and Massachusetts. They are offered through nonprofit counseling agencies, which serve as initial points of contact between the lender and the prospective borrower. Since the lender might have to foreclose on the loan unless the borrower sells the house and moves or has other funds for repayment, the major function of the counseling agency is to make sure that the borrower has made adequate plans and living arrangements when repayment is due.

Some counseling agencies see their mission as much broader. For instance, H.O.M.E. (Home Options for Massachusetts Elders), the agency that serves as the referral point for all fixed-term reverse mortgages in Massachusetts, helps prospective borrowers identify options other than a reverse mortgage, such as government programs for which they may be eligible. Indeed, the agency considers this to be its priority and regards a reverse mortgage to be a "last resort" when no alternative sources of income are available to the client. Because of their nonprofit

[1] Redecorating the house or making other cosmetic changes is normally not permitted under such programs.

status and emphasis on serving the elderly in need, independent counseling agencies usually impose income ceilings and other eligibility limits on their clients. Moreover, since the volume of fixed-term reverse mortgages is small, banks and thrifts that make them usually regard making such loans as "good corporate citizenship" rather than a line of business worth developing for its profit potential.

Home Equity Conversion Mortgage Insurance Demonstration

In order to encourage the growth of the reverse mortgage market, in 1987 Congress authorized the Department of Housing and Urban Development (HUD) to administer a new reverse mortgage program, called the Home Equity Conversion Mortgage (HECM) Insurance Demonstration. The program allows borrowers to access equity in their single-family homes through a line of credit or regular monthly payments. The payments can continue as long as the borrower lives in the house, or for a fixed term. Even if the borrower elects to receive payments for a fixed term, the loan does not become due at the end of the term. Instead, interest accrues until the borrower moves out of the house or dies, when the house is sold and the loan is repaid. To insure lenders against the risk that the loan balance may, over time, grow larger than the value of the house, the Federal Housing Administration collects insurance premiums on all loans.

To guard against potential misuse of the program, HECM requires the borrower to undergo counseling from an independent, HUD-approved counseling agency. While the HECM program does not have income ceilings or other eligibility restrictions, it does impose limits on how much can be borrowed. Those limits vary by geographical area and currently range from $67,500 to $151,725 (AARP 1993). Even at the upper limit, however, the HECM-permitted loan amounts fall short of home values in some areas of the country, particularly in California and the Northeast, and thus do not allow many borrowers to take full advantage of their home equity.

Lender-Insured Reverse Mortgages

Currently, three lenders—Providential Home Income, Freedom Home Equity Partners, and Transamerica HomeFirst—offer self-insured reverse mortgage programs (AARP 1993). Unlike the HECM program, these lenders do not restrict the size of the loan, but instead vary the loan size in proportion to the amount of equity the borrower has in the house. This feature makes the programs particularly popular in California, where even the median house value exceeds the HECM limit in many metropolitan areas. The programs also allow borrowers the option of reserving some portion of their equity for their estate; this portion would not be accessible to lenders for the purpose of eventual loan repayment. The lender may also take an equity position in the property by claiming a share of the future price appreciation, in addition to repayment of the loan balance.

Insurance against the risk that the balance of the loan may eventually exceed the value of the house is financed through a risk premium charged on loans in addition to interest. Providential offers a reverse mortgage with three loan options: lump sum payments, lines of credit, and monthly payments for as long as the borrower lives in the house, while Freedom and Transamerica purchase an annuity for the borrower that pays monthly installments for life, regardless of whether the borrower continues to live in the house.

II. The Sample Data

The data used in this study come from the Survey of Income and Program Participation (SIPP), a survey of about 20,000 households collected from a stratified random sample of all U.S. households by the U.S. Bureau of the Census. This data set is particularly appropriate for estimating potential demand for reverse mortgages because it provides detailed information on household income and balance sheets—including housing equity, other assets, and debt—as well as demographic data on the household.

This study uses the fourth wave of the 1984 and 1990 panels of the SIPP, which were conducted from January through April of the subsequent year.[2] The sample for this study includes only households consisting of single persons aged 62 or older or couples with both spouses aged 62 or older. The 1984 and the 1990 panels have 4,114 and 4,840 such households, respectively. Sixty-eight percent of the sample were homeowners in 1984; the homeownership rate increased to 70 percent in 1990.

Table 1 reports median values of the variables used in the analysis by homeownership status for the

[2] For example, respondents in the fourth wave of the 1984 SIPP were surveyed between January 1985 and April 1985.

Table 1
Descriptive Statistics for All Elderly Households in the Sample (Age 62 and Over)

	Total Sample		Homeowners		Non-Homeowners	
Item	1984	1990	1984	1990	1984	1990
Sample Size	4,114	4,840	2,786	3,405	1,328	1,435
Median:						
Age (years)	72	72	71	71	73	73
Monthly Income ($)	1,274	1,401	1,514	1,663	887	916
Monthly Income, after Debt Payments ($)	1,259	1,340	1,488	1,570	872	906
Home Equity ($)	36,452	39,347	57,108	61,420	0	0
Pension Wealth ($)	92,377	98,994	106,860	113,661	70,889	73,179
Liquid Wealth ($)	11,908	9,093	18,193	14,395	1,823	1,391
Total Wealth ($)	176,305	191,322	225,424	246,064	90,030	91,146
Percent under Poverty Line	22.8	11.8	16.0	8.0	37.0	20.8
Percent with Total Debt Payments Greater than 25 Percent of Monthly Income	.5	3.8	.5	5.1	.5	.6

Note: Income and wealth data in 1990 dollars, deflated by the CPI.
Source: U.S. Bureau of the Census, Survey of Income and Program Participation, 1984 and 1990.

1984 and 1990 surveys. Two things are apparent from the table: First, elderly homeowners are much wealthier than non-homeowners: in 1990, total wealth of homeowners was almost three times that of non-homeowners, and their monthly income was almost twice as large. Second, both homeowners and non-homeowners in the 1990 sample are wealthier in real terms than those in the 1984 sample. Between 1984 and 1990, both monthly income and total wealth increased more than 9 percent in real terms for homeowners, while increasing only 3 percent or less for non-homeowners.

Despite their relatively high median income, however, 8 percent of homeowners had incomes below the poverty line in 1990, and 5 percent had debt burdens in excess of one-quarter of their monthly incomes. It is likely that members of either group could benefit from the income-enhancing features of a reverse mortgage.

III. The Reverse Mortgage Model

This section simulates the effect of taking out a reverse mortgage on available income and liquid wealth for a sample of elderly households. Using assumptions about reverse mortgage contracts that closely mirror terms for contracts offered by private institutions, the simulations show that a significant number of households can substantially benefit from a reverse mortgage. This section also tests the importance of some of these assumptions by varying the interest rates used in the analysis.

The monthly payment of a reverse mortgage depends on the prospective borrower's age, sex, and marital status and the amount of equity in the house—all information available directly from SIPP. In addition, loan payments vary according to the mortgage interest rate, the ratio of the loan amount to the home's value, the origination cost, and the projected rate of appreciation in the home's value.[3]

The simulations assume that a household's maximum loan-to-value ratio, including the reverse mortgage balance plus any existing mortgage debt, is 75 percent. Banks often use this ratio to limit the maximum amount of funds that a homeowner can obtain in a home equity loan, or a "cash-out" refinancing. The origination cost of the loan, set at 3 percent of the principal amount, is financed from the proceeds of the loan and is similar in amount to the closing costs and points paid on a conventional mortgage. Furthermore, the model assumes that borrowers receive reverse mortgage payments for life even if they move out of the house. Thus, the length of time the loan

[3] The model assumes that the lender has no equity stake in the house. The rate of home price appreciation is still important for the calculations, however, because the lender wants to make sure that the loan amount does not exceed the value of the house when the house is sold.

Computing the Reverse Mortgage Payment

The lump sum reverse mortgage payment (LS) for a single borrower[4] is calculated as a sum, from the borrower's current age (a) to the maximum allowable age in the model (110), of the initial house equity (HEQ) compounded yearly at the house price appreciation rate (RG) discounted by the mortgage rate (RM) and weighted by the probability that the borrower dies in each year (p_t).

$$LS = \sum_{t=a}^{110} \left[(HEQ) * \frac{(1 + RG)^{(t-a)}}{(1 + RM)^{(t-a)}} * p_t \right].$$

If the borrower used the proceeds from the lump sum payment (LS) to purchase an annuity, the annuity payment (PMT) is computed such that the lump sum payment equals the present discounted value of the stream of annuity payments (discounted at the annuity rate, RA) multiplied by the probability that the borrower is still alive.

$$LS = \sum_{t=a}^{110} [(PMT) * (1 + RA)^{(t-a)} * (1 - p_t)].$$

Solving the above equation for the annual annuity payment (PMT) gives:

$$PMT = \frac{LS}{\sum_{t=a}^{110} [(1 + RA)^{(t-a)} * (1 - p_t)]}.$$

[4] In the case of married couples, the formula is modified to account for the combined probability of survival where the spouse continues to receive the benefit.

payments are expected to continue depends only on the borrower's life expectancy, and not on the length of time the borrower can be expected to stay in the house before moving, for example, to a nursing home.

Because women have longer life expectancy than men, they receive lower reverse mortgage payments in this model. Life expectancies were taken from the *Vital Statistics of the United States*.[5] Couples receive lower payments than single borrowers of either sex, because the joint life expectancy of the household exceeds the individual life expectancies of each person in the household.

The simulation computes monthly reverse mortgage payments in two steps: First, the maximum amount that the elderly homeowner could borrow in a lump sum is determined on the basis of the amount of equity in the house, the borrower's life expectancy, the projected rate of house price appreciation, and the mortgage interest rate. Second, the lump sum determined in the first step is converted to an immediate lifetime annuity with monthly payments for the borrower. The size of the monthly payments from the annuity depends on the annuity interest rate. Calculation of monthly payments is also sensitive to assumptions regarding the rate of house price appreciation as well as the difference (if any) between the mortgage and annuity interest rates. Specifically, the monthly payment increases with the assumed rate of house price appreciation, and decreases with the difference between the mortgage and annuity interest rates. (See the Box for a more detailed explanation of how the reverse mortgage payments are computed.) The model assumes that the mortgage, annuity, and house appreciation rates remain fixed for the life of the loan.[6]

In order to gauge the sensitivity of the model to these assumptions, and to identify a reasonable range of possible monthly payments, calculations were made using nine different combinations of the mortgage, annuity, and house price appreciation rates. Figure 1 shows the resulting monthly payments for a single female 71 years of age with $64,000 in home equity (the median age and equity for the homeowners in the sample in 1990). The calculations assume that the mortgage interest rate is 7 percent in all cases, while the annuity rate takes the values of 7, 5,

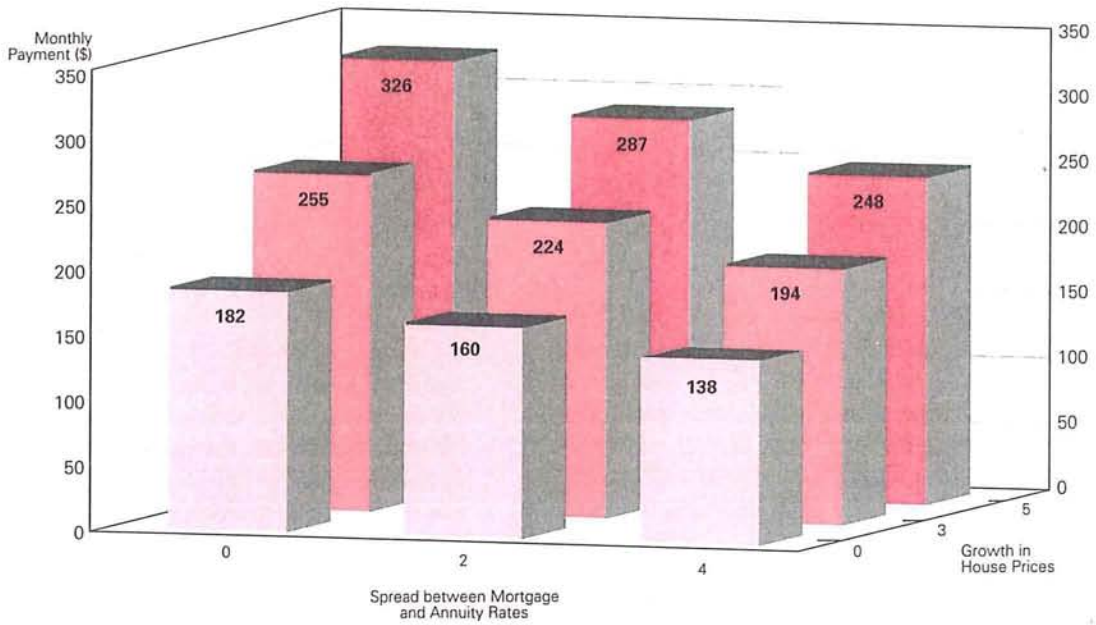
[5] No attempt was made in this study to correct for any self-selection that may cause the life expectancy of reverse mortgage borrowers to differ from that of the general population. The direction of such bias is not obvious. On the one hand, the annuity feature should attract people with longer than average life expectancies. On the other hand, if borrowers use reverse mortgages to help pay for unusually high medical expenses or long-term care, then they may be in poorer health and have lower life expectancy than the general population.

[6] As discussed in Section V, these fixed assumptions expose the lender to some risk. In particular, if an elderly homeowner lives longer than expected and the house appreciates more slowly, the lender may find that the loan balance exceeds the available collateral—the house. For this reason, lenders may be conservative in assuming housing appreciation rates and attempt to hedge this risk.

Figure 1

Income from a Reverse Mortgage

Single Female, Age 71, $64,000 Equity in Home



and 3 percent, resulting in spreads between the mortgage and annuity rates of 0, 2, and 4 percent, respectively. The spread is shown on the horizontal axis in Figure 1, while the house price appreciation rates of 0, 3, and 5 percent are shown on the axis running from the front of the chart to the back.

The figure shows that the most "optimistic" assumption (from the perspective of the borrower) of a zero spread between the mortgage and annuity rates and a 5 percent house appreciation rate results in a monthly payment of $326 for the median borrower. The most "pessimistic" assumption of a 4 percent spread between the mortgage and annuity rates and zero growth in housing prices results in a monthly payment of only $138. More realistically, the "neutral" assumption of a 2 percent spread between the mortgage and the annuity rates and a 3 percent rate of growth in house prices results in a monthly payment of $224.[7] The figure also shows that the monthly payment is more sensitive to the assumed rate of house price appreciation than to the spread between the mortgage and the annuity rates.

Table 2 further illustrates the sensitivity of the reverse mortgage monthly payments to the interest rate and growth rate assumptions, by the age of the borrower. It shows that the reverse mortgage payment is much more sensitive to interest and growth rate assumptions for younger borrowers than for older ones. For example, a 65-year-old receives monthly payments that are almost three times greater under the most optimistic assumptions than under the pessimistic ones. By contrast, for an 85-year-old, the most optimistic assumptions produce monthly payments only one and one-half times greater than the most pessimistic assumptions, although the dollar difference is greater for the older households than their younger counterparts.

[7] In practice, private programs assume that house price appreciation is equal to expected inflation. A previous study of annuities (Friedman and Warshawsky 1985) found that the spread between investments and payouts averaged 2.5 to 4.5 percent. The spread in that study, however, is probably high compared to what would result from a competitive market in reverse mortgages.

Table 2
Monthly Reverse Mortgage Payment to a Single Female with $64,000 Equity
Dollars

	Assumptions[a]		
Age	Pessimistic	Neutral	Optimistic
65	90	164	263
75	187	280	383
85	420	529	633

[a]Mortgage Rate = 7%.
Pessimistic: Annuity Rate = 3%, House Appreciation Rate = 0%.
Neutral: Annuity Rate = 5%, House Appreciation Rate = 3%.
Optimistic: Annuity Rate = 7%, House Appreciation Rate = 5%.
Source: Authors' calculations.

Table 4
Ratio of Monthly Reverse Mortgage Payments to Monthly Income, 1990
Percentage Distribution for All Elderly Homeowners

	Assumptions[a]		
Ratio	Pessimistic	Neutral	Optimistic
Under .1	72	61	51
.1 to .19	13	16	16
.2 to .29	5	7	11
.3 to .39	3	5	6
.4 to .5	2	3	4
Over .5	5	8	12
	100	100	100

[a] See Table 2.
Source: Authors' calculations based on Survey of Income and Program Participation, 1990.

IV. Benefits of the Reverse Mortgage

One way to assess the potential importance of reverse mortgages is to compare the size of the lump sum payment available to an elderly homeowner to the size of the homeowner's liquid wealth, using the current sample. A lump sum disbursement provides a cushion of liquidity that allows the homeowner to deal with financial emergencies such as medical bills or major house repairs. It also allows consolidation of all the homeowner's outstanding debts. Table 3 shows the distribution of the ratio of lump sum mortgage payment to liquid wealth under the three sets of assumptions discussed in the previous section. Note that even under the most pessimistic assumptions, the lump sum mortgage payment is equal to about half of liquid wealth for the median homeowner. Moreover, using neutral assumptions, 14 percent of the elderly homeowners in the sample would receive a lump sum that is at least 10 times greater than their liquid wealth.

Table 3
Ratio of Reverse Mortgage Lump-Sum Payment to Liquid Wealth, 1990
Percentage Distribution for All Elderly Homeowners

	Assumptions[a]		
Ratio	Pessimistic	Neutral	Optimistic
Under .5	50	43	38
.5 to .9	12	13	13
1.0 to 1.9	11	12	13
2.0 to 4.9	10	11	13
5.0 to 10	6	7	7
Over 10	12	14	17
	100	100	100

[a] See Table 2.
Note: Columns may not sum to 100 because of rounding.
Source: Authors' calculations based on U.S. Bureau of the Census, Survey of Income and Program Participation, 1990.

Table 4 reports a second measure of the importance of reverse mortgages, the ratio of reverse mortgage monthly payments to monthly income. Clearly, the reverse mortgage taken in monthly payments has, on average, a smaller effect on the borrower's monthly income than a lump sum disbursement has on liquid wealth. Even under the most optimistic assumption, slightly more than one-half of all borrowers have a reverse mortgage payment that is less than 10 percent of their monthly income. However, a significant minority can boost their incomes by a relatively large amount: under the neutral assumption, 23 percent of reverse mortgage borrowers could boost their monthly incomes by more than 20 percent, while 8 percent of borrowers could boost their incomes by 50 percent or more.

The Reverse Mortgage Group

Table 5 examines in more detail the characteristics of those who are most likely to benefit from a reverse mortgage. "The Reverse Mortgage Group" is defined here to include those homeowners aged 62 and older whose simulated monthly reverse mortgage payments, using the "neutral" assumption, equal 25 percent or more of their monthly income.

Table 5
Comparison of Reverse Mortgage Group[a] to All Elderly Homeowners, 1990

Item	Reverse Mortgage Group[a]	All Elderly Homeowners
Number in Sample	893	3,405
Median:		
Age (years)	77	71
Monthly Income ($)	914	1,733
Home Equity ($)	90,000	64,000
Liquid Wealth ($)	10,248	15,000
Total Wealth ($)	198,999	256,398
Monthly Reverse Mortgage Payment ($)	464	211
Remaining Life Expectancy (years)	10	13
Percent:		
No Children	27	21
Liquid Wealth under $5,000	41	37
Incomes below:		
33rd Percentile of All Incomes	55	25
Poverty Line	20	8
Poverty Line after Reverse Mortgage	5	3
Geographic Profile:		
Northeast	27	22
Midwest	22	27
South	30	35
West	22	16
Marital Status:		
Married	16	46
Single Male	20	12
Single Female	64	42

[a]The Reverse Mortgage Group includes all elderly homeowning households whose simulated reverse mortgage monthly payments would augment their monthly incomes by 25 percent or more as calculated under the "neutral" assumption of a 2 percent spread between mortgage and annuity rates and a 3 percent rate of growth in house prices.

Source: U.S. Bureau of the Census, Survey of Income and Program Participation, 1990; U.S. Department of Health and Human Services, *Vital Statistics of the United States*, 1988, Volume II, Part A, Table 6–3.

This definition is not meant to imply that all such households would necessarily be interested in a reverse mortgage, but rather to investigate the characteristics of those most likely to benefit from it.

Table 5 shows that the reverse mortgage group comprises about one-quarter of all elderly homeowning households. Single women represent almost two-thirds of the reverse mortgage group, married couples only 16 percent. Members of the reverse mortgage group can be found in all regions of the country in roughly similar proportions. The largest concentration (30 percent) is in the South, followed by the Northeast (27 percent).

Persons in the reverse mortgage group typically are older than other elderly homeowners. Their greater age implies shorter life expectancies, so they receive higher monthly reverse mortgage payments than all elderly homeowners. The median monthly income, liquid wealth, and total wealth of the reverse mortgage group are all significantly lower than those of all elderly homeowners; nonetheless, their home equity is greater. The median monthly reverse mortgage payment in the reverse mortgage group is $464, which would increase median monthly income ($914) by over 50 percent.

Reverse mortgages can be particularly helpful to low-income elderly. Twenty percent of the reverse mortgage group are below the poverty line; income from a reverse mortgage would reduce the poverty rate in this group by three-quarters (to 5 percent).

More than one-third of all elderly homeowners and 41 percent of the reverse mortgage group have liquid wealth below $5,000. Without a cushion of liquid assets, these households are at risk of being forced to sell their homes when they incur unforeseen expenses. A reverse mortgage in the form of a lump sum payment or a line of credit can help an elderly homeowner through a financial emergency.

V. Difficulties in Developing the Reverse Mortgage Market

Although reverse mortgages may at first seem to be a logical financial product for many elderly persons, questions remain as to the number of consumers who would actually purchase the product if it were available. A number of barriers also limit the willingness of lenders to offer reverse mortgages.

Limits on the Demand for Reverse Mortgages

Barriers to consumer acceptance of reverse mortgages include product design, information availability, bequest motives, and the view of home equity as "savings of last resort" (precautionary savings). Possibly for the above reasons, Venti and Wise (1989, 1990) argue that most elderly really do not want to use the savings in their home to finance current consumption. In support of their view, Venti and Wise present evidence that elderly who had moved recently did not decrease the amount of home equity, despite the opportunity to do so at relatively little cost.

The difficulty with such evidence is that it confuses housing consumption with housing equity. Many elderly movers might prefer not to reduce overall housing consumption, but instead to substitute different types of housing. For example, a couple might choose a Florida condominium overlooking the ocean instead of their four-bedroom family home in New England, even though both cost the same amount of money. They might also prefer to cash out some of their housing equity, while maintaining the same level of housing consumption. Such households would be prime candidates for a reverse mortgage, which would allow them to maintain their level of housing consumption, while providing a fixed monthly payment.

Questions remain as to the number of consumers who would actually purchase a reverse mortgage, and barriers limit the willingness of lenders to offer them.

Product Design. Most reverse mortgage products offered to date have not been very flexible. The features that can make them unattractive to many borrowers include the low equity caps of the HECM program and the requirement of some private programs that the proceeds of the reverse mortgage be placed in an annuity without the option of a lump sum or credit line.

In this regard, private reverse mortgages could copy the myriad of different annuities and life insurance plans available in the private market. Like the HECM plan, consumers could have the option of having any combination of a credit line, a lump sum payment, and a regular monthly payment (a fixed annuity). Unlike the HECM plan, however, many potential purchasers may want a reverse mortgage that pledges more than $151,000 in equity. (The median price of a single-family house sold in the Boston area, for example, is over $170,000.) Some consumers may find it attractive to get a higher reverse mortgage payment in return for sharing the gains from possible future house price appreciation.[8]

Bequest Motives. Even with flexible programs, many elderly homeowners still might not use a reverse mortgage because they intend to give their housing wealth as a bequest. Over three-quarters of all HECM borrowers have no children, compared with 21 percent of all elderly homeowners sampled in the 1990 SIPP (HUD 1992). Kotlikoff and Summers (1981) estimate that about 80 percent of household wealth is inherited, indicating that bequests are an important component in aggregate wealth accumulation.

Further evidence regarding bequests comes from several studies (Auerbach and Kotlikoff 1987; Hubbard, Skinner and Zeldes 1993) that argue that elderly households dissave "too slowly" relative to dissaving that is predicted by standard life-cycle models. Other papers (Mirer 1979; Menchick and David 1983) show that elderly wealth accumulation continues after retirement, when households should be reducing their savings. The conclusion from much of this literature, that the elderly have "too much" savings, is attributed to the desire of the elderly to leave bequests.

Several papers dispute the conclusion that elderly households have significant bequest motives that can explain their savings patterns. Using panel data, Hurd (1990) shows that changes in wealth (net saving) over time are similar for individual elderly households, both with and without children, and thus he rejects the bequest hypothesis. More recently, several researchers have argued that the standard life-cycle model's inability to predict individual and aggregate savings patterns can be explained by its failure to account for uncertainty regarding length of life, earnings, out-of-pocket medical expenditures, and imperfect insurance and lending markets (Skinner 1988; Zeldes 1989; Hubbard and Judd 1987). Hubbard, Skinner and Zeldes (1993) develop a model that incorporates all of these uncertainties and show that this model explains many of the empirical findings showing that the elderly save "too much."

Regardless of the appropriate level of saving by the elderly, the bequest motive is a peculiar explanation of the fact that most elderly households have a large concentration of wealth in housing relative to other assets. The Kotlikoff and Summers estimates regarding aggregate wealth transfers might not reflect the desired behavior of most elderly, because of the skewed distribution of wealth and unintended bequests due to early death. If elderly households were truly unconstrained by current housing finance requirements, one might expect older households to

[8] See Scholen (1993) for more detail about the appeal of reverse mortgages to consumers.

hold a more diversified portfolio to give to their heirs. Also, if wealthy households wanted to maintain high housing consumption, they could reduce their total taxes by slowly liquidating their wealth and giving their heirs a constant sum of money each year with a reverse mortgage.[9]

Precautionary Savings. Many elderly households look at their house as insurance in case of an emergency such as a serious accident to themselves or a relative or the need to purchase long-term care. Without a reverse mortgage, however, the house must be sold or a mortgage obtained in order to tap into existing home equity. Reverse mortgages would also make it easier for households to address emergency problems when two or more people live in the same house. A clear example is that of a household whose car breaks down, or a person who needs assisted care, but whose spouse would prefer to remain in their lifelong home. Given the asset distribution presented earlier, many couples would not have enough liquid wealth to pay for a new car or specialized care without selling their house or going on public assistance. Yet a reverse mortgage would provide an intermediate solution.

Overall, none of the demand issues mentioned above seem to provide significant deterrents to consumer acceptance of reverse mortgages. If anything, the growth of such a market will likely depend on consumer perceptions and the availability of good information about types of reverse mortgages, to convince the elderly that these instruments are both viable and safe. Some senior advocates oppose reverse mortgages out of the fear that households might be persuaded to spend the proceeds unwisely, with many elderly eventually being forced out of their homes. The problem of fraud perpetrated against the elderly applies to all financial assets, not just reverse mortgages, and is mitigated by terms in most reverse mortgage contracts that allow borrowers to remain in their house as long as they live.

Real Housing Equity and the Aging Population. Recently, some economists have argued that the aging of the baby boomers will lead to declining real house prices. Therefore, future generations may have less real equity than this study suggests. Two offsetting factors affect the future stock of real housing equity and, thus, the future demand for reverse mortgages: (1) a tendency for housing demand to fall with age, combined with the fact that the baby-boom generation will pass the age of peak housing consumption within a decade or two; (2) the tendency for housing consumption to rise with wealth, combined with a pattern of increasing wealth of successive cohorts.

Demand for housing generally declines with age. Mankiw and Weil (1989) used a model of age-specific housing demand to show that housing demand declines after age 40. They concluded that aging of the baby-boom population bulge would lead to a future decline in demand for housing in the United States. Their finding implies that housing prices will fall in the future and that the market for reverse mortgages might be smaller than estimated earlier in this study.

On the other hand, each succeeding generation reportedly has been wealthier than its predecessor. If so, the wealthier succeeding generations will want to consume more housing (along with everything else) and thus future levels of real housing equity will increase over time. This implies that the future demand for reverse mortgages might be greater than estimated earlier in this study. Pitkin and Myers (1992) argue that housing demand declines with age at any particular time only because older generations are poorer than their younger cohorts. Using Census data, they follow several cohorts through 60 years, showing that homeownership rates for each cohort actually increase up to age 70 to 74. (In individual Census years' cross-sections, however, homeownership rates peak between ages 45 and 60.)

On balance, evidence is mixed as to whether estimates based on current demographics underestimate or overestimate the future stock of real housing equity and, thus, potential demand for reverse mortgages. Furthermore, whether any projected decline in housing demand as the population ages will lead to a decline in real housing prices is open to debate. In particular, the response of house prices will depend on potential changes in the supply of housing. On net, most economists are still skeptical of the prediction that real housing prices will fall substantially as a result of changes in demographics.

Moreover, if reverse mortgages become widely available in the future, this in itself could change desired housing consumption. Specifically, some elderly consumers would no longer be forced to sell their homes and move into smaller quarters because of lack of liquidity. They could, instead, continue to live in their original (larger) house for a longer time. If so, demand by the elderly for housing would increase

[9] Under current federal tax laws, an adult can receive up to $10,000 per year from each giver without paying income taxes. These gifts reduce future estate taxes for wealthy givers whose estate exceeds $600,000.

relative to the current situation, in which reverse mortgages are not widely available. Greater demand would cause an increase in real housing prices and this, in turn, could make reverse mortgages even more attractive.

Limits on the Supply of Reverse Mortgages

Reverse mortgages face a number of accounting and regulatory uncertainties, as well as risks that are difficult to manage in the early stages of a reverse mortgage program. Until recently, lenders reported accrued interest as income during the term of the loan. The Securities and Exchange Commission (SEC) ruled in July 1992, however, that lenders must either report interest only when it is received (that is, when the house is sold and the loan is repaid) or assume no price appreciation on the house.[10] Because reverse mortgages are new and few of them are currently being paid off, both of these accounting methods result in lenders reporting artificial losses until the reverse mortgages start to be repaid in significant numbers. While SEC rulings apply only to publicly traded companies, auditors are expected to adopt the same standard for privately held firms, discouraging the development of the reverse mortgage market.

Lenders may have difficulty achieving adequate diversification in their reverse mortgage portfolio if initial demand is low. Specifically, tenure risk, or risk that certain borrowers would live in their homes and receive payments for longer than the lender assumed in its pricing model, can be reduced only through a large portfolio, so that long-lived loans are balanced by short-lived ones.

Lenders also face the possibility that when the house is sold, the price will not be high enough to pay off the loan balance. The risk of adverse regional shocks in the real estate market could be mitigated through geographic diversification. However, such diversification can be difficult to achieve for a lender with limited geographical presence and without a sufficiently high volume of loan origination.

Conversations with lenders reveal that originating reverse mortgages is at present an expensive and very time-consuming process. The application process is long because consumers require extensive education about the complex features of reverse mortgage products. In one lender's experience, as many as half of the original applicants change their minds and withdraw their applications before the loans are originated, often at the last moment. In addition, houses often require extensive maintenance and repair work before the loan can be granted, which necessitates multiple appraisals. One lender estimates that originating reverse mortgages now costs $6,000 to $8,000 per loan, though the high cost would presumably be reduced to more acceptable levels with a higher volume of originations.

Among financial institutions, life insurance companies should find issuing reverse mortgages most attractive. The characteristic cash flows of the tenure reverse mortgage—fixed monthly outlays by the lender followed by a lump-sum repayment at an uncertain future date—are difficult for banks and thrifts to hedge. Life insurance policies, however, have cash flows that closely mirror the reverse mortgage, with regular premium payments that are followed by the death benefit payout. This complementarity makes reverse mortgages more suitable for life insurance companies than for banks and thrifts, which do not have a matching liability. In addition, life insurance companies are well-suited for the actuarial work involved in issuing and pricing a reverse mortgage.

Banks and thrifts might prefer to sell off their reverse mortgages, but the cash flow pattern makes the instrument difficult to securitize. If reverse mortgages were pooled and sold to investors, those investors would be obliged to make monthly payments into the pool until the mortgages paid off. The necessity of conducting credit evaluations of the investors and difficulty in administering and servicing such pools would probably make securitization impractical or prohibitively expensive, unless these pools were sold directly to a large institution such as an insurance company.

The problem of credit risk can be avoided if the reverse mortgage is coupled with an annuity, as in the model presented here and as two lenders currently do. In this case, the lender makes a one-time disbursement of the full loan balance which is used to purchase an annuity for the borrower. The loan balance will be repaid with interest when the house is sold or the borrower dies. Since there are no periodic payments for the lender to make, the loan balances could be pooled and resold to investors. These pools would have the cash flow characteristics of a pool of zero-coupon bonds with an uncertain repayment date.

Participation of government-sponsored mortgage agencies would greatly facilitate the develop-

[10] Reported in *The Wall Street Journal*, page B1, August 21, 1992. Industry sources confirm that current accounting rules provide a significant disincentive to offering reverse mortgages.

ment of a secondary market for reverse mortgages. At present, the Federal National Mortgage Association (Fannie Mae) is working on the development of a standardized conventional reverse mortgage that it would purchase.

VI. Conclusion

In 1990, an estimated one-quarter of all elderly households who owned their homes could have increased their income at least 25 percent from a reverse mortgage, making the potential market very large. And the number of elderly can only increase over time. Over 37 million persons are elderly today. According to the Census Bureau, that number is expected to increase to 41 million by the year 2000, and to almost 66 million by the year 2020. The availability of reverse mortgages may also increase demand for housing among the elderly, because fewer elderly homeowners will need to sell their homes to get access to housing equity to finance other consumption. This might offset some of the effects foreseen by the Mankiw and Weil hypothesis that aggregate demand for housing will fall over time.

Difficulties on the supply side must first be addressed, however. Regulatory and accounting uncertainties would have to be resolved. If properly structured, reverse mortgage loans could be packaged and securitized, giving rise to a secondary market. This would result in reduced risk and greater liquidity for lenders.

The widespread use of reverse mortgages by elderly homeowners could have important consequences for the future magnitudes of intergenerational transfers, though the net effect on such transfers is not obvious. On the one hand, consumption by some elderly households could increase, while the future consumption of those among the younger generation who would have otherwise received larger bequests could be reduced. At the same time, widespread use of reverse mortgages could reduce the pressure on the welfare system, thereby reducing transfers from the younger to the older generation and at least partially offsetting the first effect. Whether intergenerational transfers ultimately rise or fall, however, reverse mortgages will improve the welfare of elderly households that are now unable to gain access to most of their wealth without selling their home.

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