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MODELING HOME EQUITY CONVERSION MORTGAGES

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ABSTRACT

Many older Americans who own houses have most of their wealth in their houses. Some may not have sufficient wealth to pay for (1) medical bills resulting from sudden medical problems, (2) major repairs to their houses, and/or (3) everyday expenses for food, clothing, and so on. Home Equity Conversion Mortgages (HECMs) are designed to allow older people to borrow money (for example, a level-payment monthly annuity) by using the equity in their houses as collateral, without being forced to move out of their homes. Private companies (for example, Providential Home Income Plan and Capital Holding Corporation) as well as the Federal Housing Administration (FHA) currently offer HECMs. We describe here a stochastic simulation approach used to estimate the amount of a level-payment annuity payable as long as the older person is alive and living in his/her house.

1. INTRODUCTION

Many older Americans who own their own homes have most of their wealth in their houses. Some may not otherwise have sufficient wealth to pay for (1) medical bills resulting from sudden medical problems, (2) major repairs to their houses, and/or (3) everyday expenses for food, clothing, and so on. Home Equity Conversion Mortgages (HECMs) are designed to allow older people to borrow money by using the equity in their homes as collateral, without being forced to move out of their homes. The amounts borrowed accumulate with interest until the mortgage's due date, at which point the lender is repaid the entire debt.

There are three principal types of HECMs: term, split-term, and tenure. In a term HECM, equal monthly payments are made to the older homeowner for a certain number of months, for example, 180 months or 15 years. At the end of the term, the loan is due and payable. Term HECMs are not popular with older people who fear they will not be able to repay the loan at the end of the term and will then be forced out of their homes.

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DISCUSSION OF PRECEDING PAPER

GERTRUDE FISH*:

I find the assumptions and estimates in the article reasonable and would like to see them applied at the policy level by the Department of Housing and Urban Development (HUD).

When one reflects on the long-run consequences of the program, there are additional pitfalls to be considered. For instance, not only do older people have houses of lower appraised value than younger people, but also, now that the FHA is insuring HECM loans, one might expect a less careful appraisal by lenders at the origination of a HECM loan.

Further, Ms. Jones (Appendix A) probably will not spend the monthly payment of $370.00 on the maintenance and repair of the house. By the time the lender acquires the property, it may be in substandard condition and decreased in value rather than appreciated in value. After all, the U.S. Census shows that many more people are living to age 85 and beyond. One result of the HECM program could be the deterioration of whole neighborhoods of houses as the residents age in place.

The houses most apt to be in the HECM program are houses that are affordable to young, first-time home buyers. The HECM program will remove those houses from the market.

Example 2 in Appendix A represents a likely outcome, and the FHA should administer its program using these assumptions. The loss reserve fund should be large enough to sustain the losses expected under Example 2's conditions. The program's actual strengths and weaknesses will not become apparent until currently originated loans reach maturity. Are the data for an analysis of the program being carefully recorded? HUD has a responsibility to evaluate the program from its inception and in careful detail.

TAPEN SINHA†:

Ms. DiVenti and Dr. Herzog provide some interesting stochastic simulation results about tenure HECMs. The model needs assumptions about (1) appreciation of home values in nominal terms, (2) mortality rates, (3) move-out rates, (4) various transactions costs, and (5) interest rates.

*Dr. Fish, not a member of the Society, recently retired from the Department of Housing and Urban Development.

†Dr. Sinha, not a member of the Society, is Associate Professor of Finance, School of Business, Bond University, Gold Coast, Queensland, Australia.

The model is quite useful. Therefore it needs further exploration. I suggest the following three items be given a closer look: (1) appreciation of home values, (2) mortality rates, and indirectly, (3) inflation rates. I discuss them in turn.

Appreciation of Home Values

From Table 4, it is clear that the rate of appreciation of home values affects the results of the simulations drastically. For example, for a discount rate of 8.5 percent, the annuity is $379 for 4.258 percent appreciation per annum and $199 for 0 percent appreciation per annum. Would the appreciation in the values of American homes in the next 30 years be anywhere near the experience of the past 30 years? The answer from the economists seems to be negative. For example, Mankiw and Weil [1] argue that the appreciation of American housing costs in the past 30 years has been driven by the baby boom and the relocation of population (mainly from the Northeast to the South and Southwest). It seems unlikely that these events will ever be repeated. Thus, except for a few spots in the South and Southeast, prices are likely to *go down*. Mankiw and Weil predict a general decline in home values to the tune of 50 percent over the next 30 to 40 years. Thus, for older people who do not benefit from the deductibility of interest payment (because their homes are already paid off) it might be more desirable to sell their homes right after retirement. Therefore, at the very least, we should extend the simulations to falling home prices as well.

Mortality Rates

The authors recognize the clear problem of adverse selection at work here. To obtain a more conservative estimate of the death rates, we could use the following method. First, calculate the age-specific mortality rate differential between annuity buyers and the general population. Next, apply the differential in the model of the authors. Standard errors can also be estimated similarly. The process that leads to lower mortality rates among annuity buyers will also be operating here in similar magnitude.

Inflation

The authors get estimates and standard errors of *level* annuities. However, if the purpose of the annuities is for (1) major medical bills, (2) major home repairs, and (3) recurrent expenses, it is unlikely that they will stay the same

over the coming decades. A more useful approach would be to build an (or several possible) inflation factor into the annuity payments.

REFERENCE

1. MANKIW, N.G. AND WEIL, D. "The Baby Boom, the Baby Bust, and the Housing Market," *Regional Science and Urban Economics* (1989): 235–258.

(AUTHORS' REVIEW OF DISCUSSION)

THERESA R. DIVENTI AND THOMAS N. HERZOG:

The discussions of both Dr. Sinha and Dr. Fish expand the ideas of our paper. Dr. Sinha's suggestion of building an inflation factor into the annuity payments is a good one, although it could make the model more complex. We also wonder whether potential mortgagors would find this feature attractive because it would reduce the monthly payments during the early years of the mortgage.

Let us hope that the economists whose work Dr. Sinha cites are overly pessimistic about general appreciation in the values of single-family homes in the U.S. in the next 30 years. Some of HUD's staff economists are much more optimistic. Nevertheless, we share Dr. Sinha's and Dr. Fish's pessimism about the future appreciation of single-family homes owned by elderly HECM mortgagors. As Dr. Fish states in her discussion, such mortgagors are unlikely to be able to maintain and repair their homes themselves or to use their limited financial resources to hire others to do so.

We thank both discussants for their thoughtful comments.