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HOUSING-ANNUITY PROGRAMS FOR THE ELDERLY:

A DISCUSSION PAPER

MINNESOTA HOUSING FINANCE AGENCY

MAY, 1977

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CONTENTS

	Page
Part 1: Introduction	1
Part 2: Concept and Rationale	2
Part 3: Types of Annuities	5
Part 4: Housing-Annuity Proposals	8
4.1 Standard Housing-Annuity	9
4.2 Split Equity Contracts	10
4.3 Nonrepayable Loans	12
4.4 Property Contract Annuities	13
4.5 Reverse Mortgages	15
Part 5: Issues Surrounding Program Development	17
5.1 Financial Risk	17
5.2 Opt-Outs and Final Reckoning	23
5.3 Interest Rate Considerations	23
5.4 Consumer Demand	24
5.5 Program Design	26
5.6 Administrative Organization	30
Part 6: Conclusion	32

Part 1: Introduction

This study is part of an ongoing research effort by the Minnesota Housing Finance Agency, funded by an April 1976 Legislative appropriation of \$150,000 to be used for the research, design, coordination, and marketing of alternative housing delivery systems for senior citizens. The initial phase of research identified several housing alternatives, both present and potential, that are available to the elderly. One of these options is a housing-annuity program. It is a relatively untried concept in the United States, but it is an alternative which addresses one of the basic housing problems faced by many senior citizens, lack of income.

Part 2: Concept and Rationale

Most elderly in Minnesota live on modest, relatively fixed incomes. The estimated median income of Minnesota elderly households was only \$4,848 in 1974 (\$3,992 excluding the Twin Cities area) compared with \$14,848 (\$12,410 excluding the Twin Cities area) for non-elderly households. It is revealing that an estimated 26.7% of all elderly households in the state had incomes below the HEW poverty line in 1974. Apparently, the average pension or insurance benefit received by a retiree or widow offers scant economic security.

Inflation often takes a heavy toll on the typical retirement income. The reason is that many elderly are either on fixed incomes, or find that their income increases slowly and erratically due to changes in legislation or administrative policy. In either case, the incomes of most senior citizens lag significantly behind the inflation rate.

Despite relatively low incomes, fully 75% of elderly households in Minnesota occupy single family homes, according to recent estimates. Approximately 74% of elderly households own their own home, a rate which exceeds the 71% of the general population.

According to a 1968 survey of the aged, the national incidence of homeownership varied only narrowly within income levels, from 69% for those with incomes below \$1,000 to 82% for those with incomes above \$7,500. While the absolute amount of homeownership equity tends to rise with income, the ratio of equity to income is higher among lower-income groups. What the figures suggest is that the elderly tend to be property rich but income poor. The elderly have a higher ratio of net worth to current money income than other age groups.

The theoretical problem that presents itself is one of liquidity or cash flow; that is, how to convert a reasonably favorable net equity position into spendable current income. The practical problem which emerges is that much of the net worth of the elderly is locked into homeownership.

Current mortgage instruments fail to solve the problem. The ordinary mortgage loan intensifies the disparity between current income and total equity by imposing monthly payments on the borrower, creating a drain on current income. An open-end mortgage provision allows additional advances on a paid-down mortgage, but these too need to be amortized, only altering the timing of the cash flow, not reversing it. A non-amortizing loan (in which simultaneous principal and interest payments are not required), if available, would still require repayment during the lifetime of the borrower. It might also be inconvenient, even impossible, to secure enough ready cash for repayment at the appropriate time.

Two alternatives are currently available to senior citizen homeowners. First, they can sell their home, purchase a commercially available annuity plan, and move into an apartment. This option may initiate a separation from family and friends and result in a change from familiar surroundings. In addition, the gain in income from the annuity will be partially offset by rent expenses on the apartment. For instance, if a senior citizen sells a \$34,000 home, he will be able to buy an annuity that will pay him and his spouse approximately \$220 per month. However, a rental unit equivalent to the home he left would cost about \$255. Even if a savings of \$70 per month in taxes (prior to deductions for income-adjusted homestead credit and senior citizen tax freeze) and maintenance costs of \$20 per month are included, the net monthly income advantage from the annuity is only \$15.

Another option is to refinance the home. However, a second mortgage would be difficult for most senior citizens to obtain. If such a mortgage were obtained and invested in a life annuity, the mortgage payments (assuming present interest rates and a short term loan because of a lower life expectancy) would very likely exceed the annuity and have a negative effect on income.

A new approach, the housing-annuity, has been developed recently which would assist elderly homeowners convert the equity they own in their homes to cash. In general, the housing-annuity is a financial arrangement which allows a homeowner to convert the equity in his home into a lifelong flow of income. Because all types of annuities have certain basic characteristics, the following discussion will provide the background for a later analysis of various housing-annuity proposals.

Part 3: Types of Annuities

An annuity is simply a sequence of payments, usually of equal size, which can be based on the value of property or on the investment of a lump sum of cash. An annuity contract can be written in a number of different ways, depending upon the manner in which payment is made. There are basically three types of annuities—fixed, variable, and life annuities.

Fixed annuities (annuities certain or term annuities) make payment for a fixed period and are not contingent upon life expectancy. For example, payment can be made for 120 equal periods. Payment may also be made for a fixed amount for as long as funds last. For example, a housing annuity payment of \$100 per month could be made until the sum of the payments equals the sales price of the home minus accrued interest.

A variable annuity involves a series of regular payments whereby the gross amount of the annuity payment changes under certain specified conditions. For example, an annuity which is based primarily upon an equity investment such as a home mortgage can be periodically adjusted to reflect the actual appreciation or depreciation of the underlying property. Changes in other indeterminate variables can also be brought into the annuity payment reassessment, such as changes in administrative expense, interest rates, mortality, and the like.

The third type of annuity is a life annuity. A life annuity combines features of one or more of the annuity types described above with the guarantee of an income for life. The life guarantee component of a life annuity, under a prudently administered program, is based upon an actuarial table of mortality experience similar to the ones used to determine life insurance rates.

In life insurance programs, the intent is to pool risks for a group by offsetting the risk of early death against the risk of long life. This results in no risk at all being taken by the group. The life annuity has the opposite purpose of a life insurance policy. Life insurance insures against early death. A life annuity insures income against a long life.

By pooling mortality risks in an annuity program, the goal is to transfer the risk of the total lifetime annuity payments equaling more or less than the actual value of the annuity contract from the group and the institutional investor to the individual annuitant. In the case of a housing-annuity, the individual risks receiving less than the full present value of the future sale of his home if he dies before attaining the average lifespan for his group. In return he has the security that he cannot outlive his annuity income.

Adjustments in individual annuity payments can be determined in two ways. Each individual annuity in the annuitant's portfolio can be examined and re-assessed on the basis of changes in individual contract expenses or the equity value of each annuity contract. An alternative method would measure the relevant changes experienced by the group as a whole and apply these calculations to each individual annuity contract.

There are also a number of different arrangements for the payment of a life annuity. Straight life annuities provide income to an annuitant during his lifetime only. Joint life and survivorship annuities extend income guarantees to cover the lifespan of a spouse or other designated survivor. The calculation of the joint probability of either or both parties surviving decreases the size of individual annuity payments below what would be received by a straight life annuitant. Finally, life annuities

with term certain combine a life annuity with a fixed annuity by guaranteeing that a certain minimum number of payments will be made to the spouse or estate if they are not received by the primary annuitant because of early death. Like the joint life contingency, the term certain contingency reduces the amount of each annuity payment below the straight life amount.

Part 4: Housing Annuity Proposals

Several types of housing-annuity plans have been proposed. These include the standard housing-annuity, the split equity contract, the nonrepayable loan, the property contract annuity, and the reverse mortgage. Table 4.1 provides a comparison of these proposals, and each option is described below.

4.1 Standard Housing-Annuity

The term "housing-annuity" was originally used by Dr. Yung Ping Chen of UCLA (1968) to describe a voluntary financial arrangement whereby an elderly homeowner could convert the equity in his home into a lifelong flow of income (a monthly annuity) while being assured lifelong tenure in his house (a life estate). Title to the house would revert to the financial organization that issued the annuity upon the death of the homeowner (or that of his spouse, if married).

The Chen plan for a housing-annuity uses a rather complex actuarial formula to estimate the monthly annuity income to be received by the homeowner. This formula takes into account the following six factors:

1. The present market value of the house.
2. An assumed appreciation of the future market value of the house discounted from the time of future sale to the present (using the standard present value calculation).
3. The outstanding mortgage at the time the annuity contract is signed.
4. The age of the annuitant at the time the annuity contract is signed.

TABLE 4.1

A COMPARISON OF SELECTED HOUSING-ANNUITY PROPOSALS

	Right of Occupancy	Property Title	Repayment to Investor Upon Death of Annuitant	Annuity Basis	Lifetime Income Guaranteed	Survivorship Annuity Possible	Yield to Investor
Housing Annuity	Lifetime	Divided life-time interest; to investor upon death	All proceeds from sale of the house	Actuarially adjusted present value of house at contract writing	Yes	Yes	None
Split Equity Contract 1. Fixed	Lifetime	Divided life-time interest; to investor upon death	All proceeds from sale of the house	Actuarially adjusted present value of house at contract writing	Yes	Yes	Required rate of return plus unanticipated change in property value
2. Variable (individual)	Lifetime	Divided life-time interest; to investor upon death	All proceeds from sale of the house	Periodically updated value of individual home	Yes	Yes	Required rate of return
3. Variable (group)	Lifetime	Divided life-time interest; to investor upon death	All proceeds from sale of the house	Periodically updated value of individual's share of annuity pool	Yes	Yes	Required rate of return
Non Repayable Loan	Lifetime	Remains with homeowner	Lien on estate; remainder goes to heirs	Present value of home adjusted by group mortality to provide specified yield to investor	Yes	Not advisable	Various payment options possible; all returning required yield
Property Contract Annuity 1. 80% of Equity	Lifetime	Remains with homeowner	Lien on estate; remainder goes to heirs	Up to 80% of appraised home value with additional annuities issued on appreciation	No	N.A.*	Interest rate
2. 100% of Equity	Lifetime	Remains with homeowner	All proceeds from sale of the house	100% of original appraised home value	No	N.A.*	Interest plus property appreciation
Reverse Mortgage	Lifetime	Remains with homeowner	Lien on estate; remainder goes to heirs	Negotiable	No	No	Interest rate 1% below conventional mortgage

*N.A. - Data not available.

5. The probability that the annuitant will live to a given age.
6. The present value of the stream of payments which the annuitant will receive from the investor.

A life annuity such as the Chen proposal depends upon the actuarial prediction of mortality rates in order to guarantee a lifetime income to the annuitant. Therefore, a large pool of participants is necessary in order that those with shorter life spans balance out those with longer life spans in a predictable fashion.

4.2 Split Equity Contracts

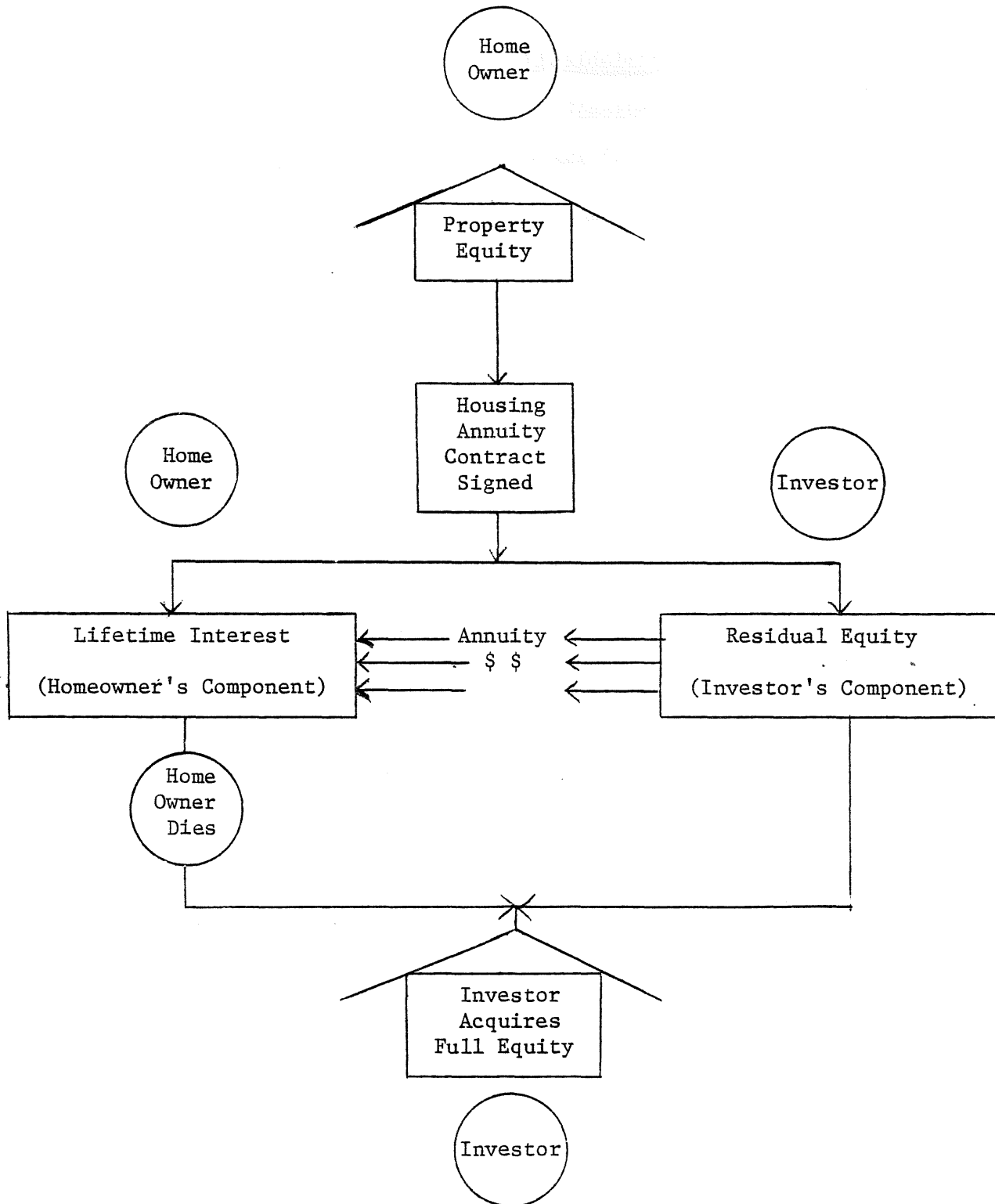
Jack Guttentag of the Wharton School of the University of Pennsylvania has developed proposals for two classes of financial instruments that are based on the same theoretical and practical problem as the housing-annuity model—how to extract the cash value from home equity while retaining occupancy. The two categories he describes are "split equity contracts" and "nonrepayable loans".

Under a split equity arrangement, the equity in a property is divided into the same two components as is the Chen housing-annuity proposal; i.e., a lifetime interest or right of occupancy until death by a specific party and the residual equity held by an investor. The investor acquires full equity in the property upon the death of the seller (See Figure 4.1 for a basic model of a split equity contract).

A split equity program can offer a number of different payment options. A fixed annuity pays a lifetime fixed gross amount to the homeowner each month, with the possibility of deducting a fixed or variable amount of money

FIGURE 4.1

A BASIC MODEL OF A SPLIT EQUITY CONTRACT



from the monthly annuity to assure the payment of taxes, insurance, and maintenance expenses. A variable lifetime annuity allows the gross monthly annuity to be changed periodically (e.g., every three years) based on actual changes in the value of the property underlying each annuity contract. Finally, in the case of a variable lifetime annuity monthly payments are subject to periodic changes based upon the actual average price experience with the resale value of all the properties involved in the annuity program.

A split equity contract can also include provisions that would allow the homeowner to terminate participation in the program at any time by repaying all annuity payments previously received plus interest and perhaps penalties. This concept can also be turned around and used by an elderly person to purchase a home. The home buyer would purchase only the right of lifetime occupancy but not the residual equity. Therefore, he could purchase a home at a price less than that paid by a buyer who purchases the entire equity.

4.3 Nonrepayable Loans

A "nonrepayable" loan is simply an equity loan, secured by a mortgage, that is not repayable until the death of the borrower or upon the sale of the property.

The maximum annuity payable under a nonrepayable loan contract is smaller than under a split equity contract or Chen housing-annuity because the homeowner retains the residual equity as well as a right to occupancy. However, the nonrepayable loan is closer in concept to a conventional mortgage than is a split equity proposal and hence is easier to explain to a homeowner.

A major advantage to the investor is that a nonrepayable loan does not require the investor to take title to the home. The loan becomes a debt to be collected from the estate upon the death of the homeowner. This allows the investor to escape from the potentially onerous task of marketing acquired properties. However, the calculation of the nonrepayable loan exposes the investor to slightly more risk than does a split equity contract because it is based on the life expectancy characteristics of the entire pool of annuitants rather than one individual.

4.4. Property Contract Annuities

Dr. Robert Trumble, Economist and Branch Chief of the National Institute of Health, has proposed a type of housing annuity known as a property contract annuity. There are two options offered through the contract annuity plan.

The first is an annuity which over the expected life span of a recipient would equal up to 80 per cent of the appraised value of the property involved, less the interest on the annuity payments (a present value calculation). This option has the advantage that it can offer many of the safeguards of a conventional mortgage. An FHA or conventional guarantee on up to 80 per cent of the appraised property value could be requested. If the property appreciates, a second annuity could be granted.

The second option is an annuity which permits the cost of the annuity and interest to equal the total appraised value of the property. In return, all proceeds from the sale of the property at death would go to the financial institution issuing the contract. This involves a higher risk to the financial institutions than does the first option. In this case, however, any property appreciation will go to the institution.

Two examples show how these annuity proposals would work.

Example 1. Under the 80% plan, if the homeowner owns a home with a current value of \$34,000 and has a typical life expectancy of 14 years at age 65, he could receive an annuity of \$81 per month for life. This is using an interest rate required by an institution of $3/4$ percent per month, which is a little less than $9\frac{1}{2}\%$ per year. This does not include property appreciation. If an appreciation rate of 5 percent per year is assumed, after 8 years an additional annuity of approximately \$84 per month could be purchased on the appreciated portion of the equity. Since property value increases have tended to compare favorably with inflation, this additional annuity represents a good hedge against inflation.

Example 2. Under an option that is based on the entire value of a property and the same assumptions as given for Example 1, the homeowner would receive \$102 per month, or \$21 (20%) more than under the first example. If the property appreciates, the homeowner could not obtain additional incremental housing annuities. The full appreciated or depreciated value of the home goes to the financial institution on the death of the homeowner. This obviously places more predictive risk on the institution and requires careful assessment of potential future market patterns and interest rates. This option would also tend to place the responsibility to oversee property maintenance on the investing institution, since the homeowner has less incentive to maintain property values through timely maintenance expenditures.

4.5 Reverse Mortgages

The "reverse mortgage" is a plan publicized by John Hardin, President of the United States League of Savings Associations. It is called a reverse mortgage because, although the homeowner borrows money with the home as collateral like a conventional mortgage, he receives the money in the form of monthly installments loans rather than a lump sum payment. The loan is repaid by deducting the sum of the total payments made to the owner plus accrued interest from the mortgage when the home is sold or the owner dies. (The anticipated interest rate for reverse mortgages would be approximately one percentage point below the rate for conventional mortgages.) The remainder of the mortgage value goes to the homeowner or estate. If the loan is called because the owner dies, it can be discharged through probate.

If the homeowner lives long enough to receive payments equal to the value of the home (minus interest) he can make a lump sum mortgage repayment to the lender, and thereby retain possession of his home, by cashing in an insurance policy taken out for that purpose. The disadvantage of this program to the homeowner is that when the annuity payments plus interest equal the value of the house, annuity payments cease. Thus, even though an insurance policy can be cashed in to pay off the annuity payments received, a portion of the mortality risk must be born by the homeowner.

The reverse mortgage has an advantage for the commercial lender (such as a savings and loan) that a conventional mortgage does not. A large lump sum is not released on the front end of the loan. The smaller payments over a period of time free up funds for alternate uses such as short term loans or home mortgages. When the homeowner dies or the mortgage period expires,

the lender gets a large sum of money that can be used for high interest loans such as automobile purchase loans. The reverse mortgage also avoids having to account for appreciation or depreciation of property values by using a fixed annuity based on the present value of the home.

Part 5: Issues Surrounding Program Development

Numerous factors must be considered in developing the structure of a housing annuity program. Figure 5.1 presents a model of a typical housing annuity formulation. The factors which impact on this process are discussed in the following sections.

5.1 Financial Risk

Financial risk is an important consideration when developing an annuity program. Any future determinants of the value of an annuity which cannot be quantified with certainty at the time the annuity contract is signed should be assessed. Mechanisms for properly handling and fairly apportioning such risk should be incorporated into the design of the program.

Major categories of risk to consider when designing a housing-annuity are (1) the mortality pattern of homeowners of a given age and sex, (2) the future rate of property appreciation or depreciation and inflation, and (3) the opportunity loss associated with a change in investment interest rates. Table 5.1 summarizes the impact of these risk categories on each type of housing-annuity proposed.

Mortality risk on a life annuity. Group mortality experience affects both (1) the timing of cash flows returning to the investor from the sale of property, and (2) the amount and number of cash payments that will be made to annuitants. Mortality risk is not troublesome to the institutional investor. Although the average lifespan for a 65 year old person has increased slightly in this century (perhaps 1-2 years), annuity amounts

FIGURE 5.1

A BASIC HOUSING ANNUITY MODEL

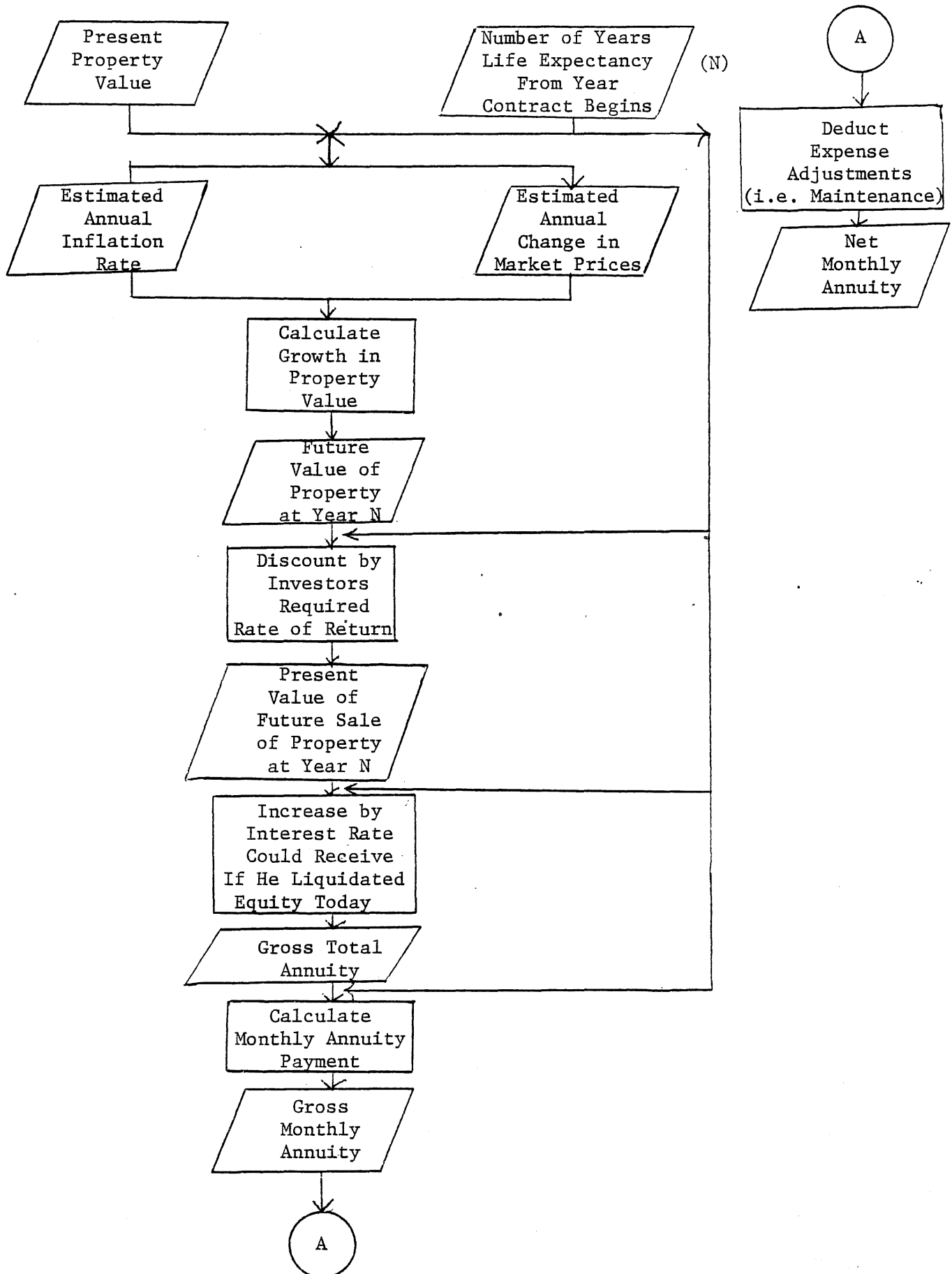


TABLE 0.1

RISK ASSOCIATED WITH SELECTED HOUSING-ANNUITY PROPOSALS

	Mortality Risk		Property Value Change and Inflation Risk		Interest Rate Risk	
	Investor	Homeowner	Investor	Homeowner	Investor	Homeowner
Housing Annuity	Small (if pool is large)	Significant (early deaths do not receive full value)	Significant (if initial assumptions are incorrect)	Significant (if initial assumptions are incorrect)	Significant (if initial assumptions are incorrect)	Significant (if initial assumptions are incorrect)
Split Equity Contract	Small (if pool is large)	Significant (early deaths do not receive full value)	Significant (if initial assumptions are incorrect)	Significant (if initial assumptions are incorrect)	Significant (if initial assumptions are incorrect)	Significant (if initial assumptions are incorrect)
1. Fixed						
2. Variable (individual)	Small (if pool is large)	Significant (early deaths do not receive full value)	Small	Significant	Small	Small
3. Variable (group)	Small (if pool is large)	Significant (early deaths do not receive full value)	Significant (if initial assumptions are incorrect)	Small	Significant (if initial assumptions are incorrect)	Significant
Non Repayable Loan	Significant (if unusual number of long lives)	None	Very Significant	Very Significant	Significant (at high interest rate and annuity payments)	Very Significant (at high interest rates and annuity payments and for deviations from mean life expectancy)
Property Contract Annuity	None	Significant (annuity can run out)	Small or none if insured	Significant	Significant (at high interest rate and annuity payments)	Small
1. 80% of Equity						
2. 100% of Equity	None	Very Significant (annuity can run out)	Very Significant	Very Significant	Significant	Significant
Reverse Mortgage	Insured	Insured (annuity can run out)	Very small	Small	Moderate	Very small

and net yields to the investor are not very sensitive to changes in mortality experience.

A conservative table of actuarial life expectancies can be employed to predict the average expected life span of a group of annuitants. If the group is sufficiently large, half should die before the age given by the table; half will die later. The effect is to offset the risk of early death against the risk of long life, thus resulting in no risk at all being taken by the investor.

Pooling mortality risks transfers the risk of reduced or extended annuity payments caused by a short or long lifespan from the group and institution to the individual annuitant and his estate. A trade-off is involved. The individual risks receiving something less than the present value of the future market price of his home, but in return he has a 50-50 chance of receiving more than his property equity is worth and the security of knowing that he cannot outlive his annuity income.

Property appreciation and inflation risk. Property appreciation or depreciation and inflation determine the future market value of a home and thus affect the final value of an annuity contract. Appreciation and inflation rates are more volatile and difficult to predict than are mortality rates.

If the average appreciation rate is determined for an entire portfolio of home equities held by an institution, and this average is used to calculate the annuity to be paid to each annuitant, little depreciation risk will be born on an individual basis. The risk is transferred to the group as a whole and to the investing institution. This approach has a relatively low cost of assessment and is more standardized than the individual parcel approach.

However, this procedure violates the principle of mutually shared risks and is perhaps unwise for the investor. There is less incentive for the homeowner to properly maintain his property. Even if a variable annuity is reassessed periodically on the basis of group market price experience, any action taken by the homeowner which helps maintain or increase the value of his home will not be directly reflected in the annuity he receives.

There is a certain logic for the homeowner in avoiding all maintenance expenses beyond what is necessary to keep the home livable under a group price experience plan. Not only does he pocket the cash value of maintenance forgone, he also avoids a greater part of the risk that maintenance costs will increase due to inflation. While avoiding the pressure of inflation on maintenance costs, he will receive an annuity which reflects the beneficial effect inflation has on home values.

At some point, forgone maintenance will detract from the value of the property. If the practice becomes widespread it can seriously erode the amount of the variable annuity being paid to the group. In addition, a policy which encourages non-maintenance has a deleterious effect on the quality of the general housing stock in the state.

Therefore, the group experience type of contract is less desirable than other types, unless it is feasible to closely monitor maintenance. A variable annuity can be adjusted periodically based on changes in the appraised value of an individual parcel rather than on a programwide basis. In this case, some of the property value risk is apportioned to the individual homeowner. A more direct relationship is set up between the condition of the property and the value of the annuity, thus making it worthwhile for the homeowner to be more assiduous about maintenance.

The periodic adjustment brings an appraisal-reappraisal problem into the annuity formulation. The cost, although significant, is probably not prohibitive. (The FHA appraisal rate on existing single family homes is currently \$50; private appraisals usually run \$75-\$125.) Care should be taken, however, to secure unbiased appraisals. The incentive is for a profit-oriented administrator to secure an appraisal with a bias toward a high initial appraisal and then to substitute a low appraisal for subsequent appraisals. This would serve as an inducement for homeowners to participate but reduce the need for later adjustments in annuity payments.

Maintenance. Due to the problems discussed above, a provision for maintenance will have to be written into the annuity contract. If maintenance becomes the sole responsibility of the institution, there may be administrative and cost problems particularly if the participating homeowners are widely scattered geographically. So much of the total risk is placed upon the investor that severe inflation could bankrupt the program.

If maintenance is made the sole responsibility of the homeowner by contractual agreement, a regulatory and inspection program would be necessary to insure compliance. This can be a source of much friction between the homeowner and the investor and can result in considerable legal and administrative expense. Mandatory maintenance, if privately contracted for, can open the door to abuse by unethical maintenance service vendors or contractors. For this reason, maintenance service contracts should either be carefully regulated by a governmental agency, or a group maintenance contract should be offered in connection with the annuity program.

5.2 Opt-Outs and Final Reckoning

Assuming that the responsibility for the appraisal functions falls to the institution, an opt-out provision can be incorporated into the contract as a remedy against making an appraisal which is unsatisfactory to the homeowner. The homeowner could repay all annuity payments received plus interest and thus buy out of the contract. In most cases this would oblige the homeowner to sell his home in order to obtain funds to repay the annuity. An opt-out provision can be abused if the investor deliberately forces the homeowner to exercise this option. It does, however, allow the homeowner the freedom to terminate the contract if he desires to move out of his home.

Another risk-balancing feature that can be written into the annuity contract is a "final-reckoning" provision. When the home is sold, if the final sale price turns out to be significantly different from the previously appraised value, the appropriate party will have a claim against the difference. The investor bears somewhat more risk. If the annuity has been undervalued, the homeowner's estate receives the excess proceeds from the sale. If the annuity has been overvalued, the chances are good that the estate of a low income elderly homeowner will contain little value beyond that of the house on which to place a claim.

5.3 Interest Rate Considerations

There are two interest components that should be considered in a housing-annuity formulation:

(1) The interest rate that the homeowner could receive by selling the house immediately and investing the proceeds at a typical market interest rate for the length of time covered by the annuity contract, and (2) the investor's required rate of return.

A public nonprofit institution would require a rate of return sufficient to cover nonsubsidized administrative costs plus an amount sufficient to cover costs associated with any borrowed funds such as bond interest payments. A private institution would require a rate of return which covers the opportunity cost created by investing in a housing annuity rather than available alternative investments. The calculation involves discounting the future value which will be received from the sale of the home by the required rate of return using the standard present value calculation.

5.4 Consumer Demand

The "bottom line" of any housing-annuity program is the consumer demand for the "product". The most elegant annuity formula that can be devised is of no practical value unless it meets the needs and wants of the people that it is designed to serve.

Little information is presently available on consumer demand for housing annuities. The concept is new to the United States. A type of housing-annuity, the rent viagere, has been offered in France for many years, but it is unacceptable as a model for U. S. demand since it operates on a one-to-one basis.

In the United States, one survey of attitudes among older homeowners toward the housing-annuity has been made in Los Angeles County, California

(Chen, 1970). The heads of the households in this survey were between 55 and 75 years old. Of those interviewed, 9% expressed interest in the housing-annuity, 4% were indifferent, and almost 87% indicated that they were disinterested.

Some of the reasons given by the respondents for disinterest in the housing-annuity plan were:

- (1) A desire to leave the house to children or other relatives (30%).
- (2) Income was already adequate and therefore had nothing to gain (22%).
- (3) Would not live long enough to get out from the plan what the house is worth (17%).
- (4) Not enough yearly income from the plan (16%).

Interestingly enough, 12% thought the scheme fraudulent or a communist plot.

Conversely, interested respondents gave the two main reasons for their interest in the housing-annuity:

- (1) Lack of desire to leave the house as an inheritance.
- (2) Concern about insufficient income (either now or in the future).

Statistical analysis provides a profile of five characteristics typical of those expressing interest. These are:

- (1) Mortgage not yet paid-up.
- (2) Income is inadequate.
- (3) Under 65 years of age.
- (4) Childless.
- (5) Tends to feel that events in the environment are independent of personal action and are beyond personal control (external rather than internal orientation).

It might be expected that an older homeowner with a paid-up mortgage would exhibit more interest in the housing-annuity than would a pre-retirement homeowner who still has remaining payments to make on his mortgage because of the higher monthly annuity checks that would be received. This does not seem to be the case, however.

The first three characteristics (mortgage liability, inadequate income, and under 65) are the most significant indicators of interest, particularly mortgage liability. One explanation is that the housing-annuity was not as attractive as a source of income so much as a means of offsetting expenses, particularly for a respondent who was nearing retirement and was worried about what a drop in income upon retirement would have on his ability to maintain mortgage payments and meet other expenses. Or perhaps more interest was shown by younger respondents because they tended to be more open to new ideas than were the older respondents.

Survey findings such as those in the Los Angeles study need to be validated for Minnesota. If the characteristics of a potential consumer can be determined, then the size of the potential market for a housing-annuity program can be estimated. At the same time, the program can be designed in order to maximize its impact and to help promote acceptance of and participation in the program.

5.5. Program Design

Three types of fine-tuning would make a housing-annuity program more effective:

- (1) The annuity formulation itself can be adjusted to be most beneficial to the particular submarkets most likely to be interested in the annuity.

- (2) Entrance criteria can be established which tend to limit participation in the program to those submarkets of consumers most likely to benefit from the program and/or which will not be detrimental to the integrity of the program from the institutional investor's point of view.
- (3) The most effective marketing channels can be selected in order to most effectively reach and impact those consumers for whom the program is designed.

Annuity Formulation. One way to insure that formulation of the annuities maximizes the marketing potential of a program is to offer a variety of types of housing-annuities with various rate-amount combinations all under one program and allow the consumer to chose the package he prefers.

For example, a comprehensive package consisting of lifetime annuities, term annuities, and lump sum loans could be offered to potential housing-annuitants. A homeowner could chose the combination that best meets his needs. All financial combinations in the package would be adjusted so that they provide the same basic yield to the investor. A loading factor could be added if any of the instruments carried a substantially higher amount of risk to the investor.

Thus, a consumer could chose to receive a term annuity to bolster his income until his mortgage is paid-down, at which time he could receive a lifetime annuity on the balance of the unencumbered equity. Alternatively, a homeowner would receive a lifetime annuity of a fixed amount. However, if the value of the house were to substantially increase in value, he could take out an additional term annuity for the amount of the increase. This would yield a higher monthly annuity payment on the increase than would

an additional life annuity under a periodically assessed variable life annuity program. In addition, the additional fixed annuity can be voluntary, and it would still provide a guaranteed life income when combined with the original life annuity contract.

Another way to maximize the annuity structure of a program based on predicted demand is to select those instruments and formulations that will best meet the needs of the primary market that the program seeks to reach. For instance, if it is determined that the program should attract primarily persons under 65 years of age, with payments remaining to be made on a mortgage, and insecure about how to continue payments when income drops drastically upon retirement, then perhaps the best type of program to offer would pay a maximum return in the first few years of the contract. One appropriate program would be the reverse mortgage where a loan in the form of an annuity eventually runs out, but can be repayed with an insurance policy taken out for this purpose. Another program that might be appropriate would be a nonrepayable loan in the form of a term annuity with a large monthly payment (and consequently, a larger interest loading which will continue to accrue to the investor after the annuity runs out, until the death of the annuitant).

If a proposed program is evaluated from an institutional rather than a consumer perspective, those instruments with the lowest potential risk can be offered. Thus, a variable annuity could be offered which is periodically revised. Another possibility is to formulate the annuity so that fluctuations in critical variables such as real estate appreciation or depreciation have less effect on the yield received by the investor.

Entrance Criteria. Eligibility standards can be set up for enrollment in an annuity program. These standards can select for certain characteristics of either enrollees or of the properties on which the annuity contracts are based. These standards would depend upon the criteria used to establish the program.

For instance, the front end funding of the reserve necessary to make monthly payments to annuitants might be raised by a bond issue. It might then be decided that a critical criteria for program design be a predictable yield from the annuity program sufficient to retire the bonds (possibly through some type of sinking fund), cover interest on the bond principle, plus cover administrative costs. Therefore, a conservative plan would be in order. As has already been mentioned, the formulation or the mix of the housing-annuities offered can be adjusted for a conservative weighting.

Another approach is to employ more stringent entrance requirements. For example, age standards can be established for a life annuity program. A minimum age requirement reduces the chance that variances from initial assumptions and predictions will occur, the risk of which increases over time. An upper age limit can be employed if it is felt that the larger monthly annuity paid to an older annuitant, because of his shorter life expectancy, would impose a disproportionate drain on initial limited operating funds, or if the pool of annuitants is not sufficiently large to assure randomness. If the number of older annuitants are disproportionately large, the larger monthly payments that they would receive could have a disproportionately negative effect on the current operating budget and required reserve if they live longer than the mean for their age group.

Property standards could also be imposed, although setting these standards poses a problem. If the standards are set too high, the program will probably not reach many of the low income householders that it has been designed to help. However, if the standards are set too low, the risk increases that the portfolio of home equities held by the investor will deteriorate more rapidly than predicted.

Marketing. The selection of proper marketing channels is important if a program is to effectively reach the submarkets which policy and demand dictate should be served. If the most likely participant in a housing-annuity program is found to be a state resident who is at the pre-retirement planning stage, then perhaps the best medium through which to market a plan would be an employee pension plan or through a retirement planning advisory program offered by a company personnel department.

A good place to market a pilot housing-annuity program might be the State Retirement System. Administrative controls might be easier to affect if all functions of the program are contained within the state system. This, of course, limits the offering to state employees and their families.

5.6 Administrative Organization

For wider impact it might be wise to decentralize administrative functions by specialization, but coordinate these functions through one agency. The central administration could be handled by the State Housing Finance Agency, particularly if bonding is required. It could also be handled by State Retirement.

The real estate function could be subcontracted to a private institution that has expertise in the area, such as a savings and loan or

a mortgage insurance company. Appraisals could be the responsibility of the subcontractor or could be purchased from a large appraisal service such as is offered by FHA. The real estate function could also be handled by MHFA. This would, however, require a change in the Agencies rules and regulations to enable it to take title to the residual equity in a property.

The actuarial function could be handled by State Retirement or could be subcontracted to a commercial insurance company. It would then be up to the insurer to determine appropriate assumptions regarding life expectancy. It would be possible to handle both real estate and insurance functions through a life insurance company since they tend to have expertise in both areas. This would have administrative advantages because of simplicity and both mortality risk and property value appreciation could be the responsibility of the subcontracting insurance company. One disadvantage to this approach is that private insurance companies have a rather conservative legal reserve requirement which would require extra funds and hence extra cost.

The great advantage of a division of functions is the reduction in overhead due to experience and greater efficiency in marketing. The possibility of redundancy of effort among various subcontractors can be reduced by a standardized format for program description, marketing materials, and a book of terms issued by the central administrator. In addition, the various subcontracting agencies could be given access to a centralized computer facility, possibly on-line, to improve information distribution and annuity calculations.

Part 6: Conclusion

The housing-annuity concept provides a mechanism to assist senior citizen homeowners convert their net equity to current money income. A variety of housing-annuity options are possible. As the previous discussion has indicated, numerous factors must be considered in developing a housing-annuity program. These factors must be examined carefully in determining the appropriateness of such a program for the Housing Finance Agency.

BIBLIOGRAPHY

Associated Press. "Reverse mortgage concept is proposed for the elderly." Minneapolis Tribune, Tuesday, March 8, 1977 (p.7A).

- Summarizes the reverse mortgage concept as presented by John Hardin, President of the United States League of Saving Association, to about 600 savings and loan executives from the South.

Brotman, Herman B. "Life Expectancy: Comparison of National Levels in 1900 and 1974 and Variations in State Levels, 1969-1971." The Gerontologist, Vol. 17, No. 1, 1977.

- Gives predictions of the average remaining years of life by age, sex, and race (through age 85) on both a national and state-by-state level. Includes predictions for Minnesota. Additional life expectancies at ages 95, 100 and 105 are given at the national level only. Very complete tables, although age cohorts are limited to ages 25, 45, 65, 75 and 85 at the state level. Very useful.

Chen, Yung-Ping. A Pilot Survey Study of the Housing-Annuity Plan (HAP) (Occasional Paper No. 6).

- Los Angeles: Graduate School of Management, University of California, Los Angeles, March 1973. Gives background and description of the Housing Annuity Plan and contains summary and analysis of a survey of homeowners between 55 and 75 years old in Los Angeles County. An appendix (Appendix E) gives the derivation of the actuarial formula used to calculate the annuity. Also included (Appendix C, p. 121) is a table of single and joint-survivorship annuity payments.

Chen, Yung-Ping. "How to Have Your Cake and Eat It Too: The Case of Homeownership by the Elderly" (et al) in Economics of Aging: Toward A Full Share In Abundance - Part 4: Homeownership Aspects.

- Hearings before the Special Committee on Aging, United States Senate, Ninety-First Congress, First Session. Washington, D. C., U. S. Government Printing Office, July 31, 1969. (University of Minnesota Government Publications Code X4.AG4:EC7 Parts 1-5).
- Materials submitted by Yung-Ping Chen to the 91st Congress Special Committee on Aging describing the housing-annuity are discussed in greater depth than in the later Pilot Survey Study. Discusses actuarial calculation of the annuity.

Chen, Yung-Ping. "Making a Theory Work: The Case of Homeownership By The Aged." International Journal of Aging and Human Development, Vol. 1:1, pp. 9-19.

- Summarizes some of the material presented to the Senate Special Committee on Aging (op.cit. above). Discusses advantages and disadvantages of elderly homeownership and makes suggestions for further research.

- Chen, Yung-Ping. "Present Status and Fiscal Significance of Property Tax Exemptions for the Aged." National Tax Journal, Vol. 18, p.p. 162-174, June 1965.
- Examines property tax exemptions as an aid to the elderly homeowner. Concludes that property tax exemptions transfer an economic burden to other taxpayers. Dated material and not directly relevant to the housing-annuity.
- Chen, Yung-Ping. "Income For The Elderly From Homeownership." The Journal of the Federal Home Loan Bank Board, pp. 11-14, 25, January/February 1970.
- Excerpts from materials presented to the 90th and 91st Congresses. A brief, general summary of materials previously presented. Not very useful, due to redundancy when combined with previous data.
- Toosaner, Samuel J. Taxation of Life Insurance and Annuities, Mundelein, Illinois: Callaghan, 1960.
- Has chapters describing various types of annuities and their tax implications. The annuity descriptions are useful. Some of the tax law information is dated, however.
- Guttentag, Jack M. Creating New Financial Instruments For the Aged. New York: The Bulletin, Center for the Study of Financial Institutions, New York University Graduate School of Business Administration (Bulletin 1975-5), 1975.
- Describes and discusses two financial concepts: (1) Split-equities, and (2) Nonrepayable loans as they may be designed to aid the elderly homeowners, as a housing-annuity. Extremely useful, with many tables and charts which give examples of the operation of split-equities and nonrepayable loans under a variety of assumptions. Also discusses appropriate institution that might offer either of the two plans.
- Harnett, Bertram. Taxation of Life Insurance. Englewood Cliffs, New Jersey: Prentice-Hall, 1957.
- Emphasis is more on taxation laws than on financial instruments. Has a brief chapter specifically on annuities, but the information is dated and of little use in the study of housing-annuities.
- Hart, William L. Mathematics of Investment. Lexington, Massachusetts: D.C. Heath, 1958.
- At the time of publication, the author was a Professor of Mathematics at the University of Minnesota. Very interesting discussion of annuities from a mathematical point of view. Not complicated and easily comprehended discussion. Text book format with exercise.
- Johnson, George E. Variable Annuities. Washington, D. C.: The Reprint Company, 1961.
- Although this text was published 15 years ago and is not extremely well written, it contains a fairly complete, easily understood description of a variety of types of annuities. Fairly useful as a tool for gaining familiarity with annuities.

Lessard, Donald and Nodigliani, Franco, eds. New Mortgage Designs For Stable Housing In An Inflationary Environment. Boston: Public Information Center, Federal Reserve Bank of Boston, January, 1975.

-Proceeds of a conference held in January 1975 at MIT. Unfortunately, this conference seems to have touched all bases on the alternative mortgage design question except for the housing-annuity. Apparently, the omission was made purposely, because the "reverse mortgage" was considered as a topic for discussion, but was rejected as not directly related to the other subject matter. Not directly relevant to the housing annuity study.

The New York Times Sunday Magazine. Sunday, April 9, 1972, pp. 92-97.

-A description of the rent viagere as practiced in France.

Porter, Sylvia: Minneapolis Tribune. Wednesday, February 23, 1977, pp. 11A.

-Mentions the reverse annuity proposal among alternative mortgage possibilities.

Trumble, Robert R. "Economic Choices for the Elderly: The Property Contract Annuity." (Publisher unknown).

-Describes the two options offered under a property contract annuity plan.