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Author

Rosen, Kenneth T.

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THE AFFORDABILITY
OF HOUSING IN
1980 AND BEYOND

by

Kenneth T. Rosen

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The Affordability of Housing in 1980 and Beyond

by

Kenneth T. Rosen
Chairman, Center for Real Estate
and Urban Economics

University of California
Berkeley

The Affordability of Housing in 1980 and Beyond

Nearly as widely acclaimed as the demographic surge of the 1980's is the "fact" that only a small proportion of American families can afford the median priced single family house. There is, of course, a long and honorable tradition among housing analysts (including this author) declaring "housing crises" related to the affordability of housing. In the 1960's the cost of credit appeared to create major problems. In the 1970's the rising price of houses was the prime villain. In late 1979 and 1980 a combination of high prices and record high interest rates led to claims that only 7% of families could afford the median price home. The collapse of the single family home market in 1980 seems to provide some evidence confirming these alarmist views.

On the other hand, there were also some offsetting positive developments in terms of the affordability of housing. The vast majority of households who were already homeowners made huge capital gains on their housing investment in the 1970's. Also the majority of renters saw their "real rent" (change in the rental component of the CPI minus the change in the overall CPI) decline substantially in the 1970's. Thus, there is a need for a careful interpretation of the "affordability question" before a "crisis" can be declared and policies derived.

In analyzing the "housing affordability question" it is necessary to segment housing consumers into at least four categories: (1) households occupying rental units, (2) households buying their first home, (3) households moving from one owned housing unit to another owned housing unit and (4) households occupying an owner occupied unit and not planning to move from their present residence. Each of these housing consumer categories have faced very different cost experiences in the 1970's which are likely to persist into the 1980's.

In addition to categorizing housing consumers it is also essential to carefully define our measure or measures, of affordability. The traditional measure of affordability is current annual housing expenses di-

vided by current annual income. Using this criteria the traditional view was that households should not spend more than 25 or 30% of their annual income on housing. While this criteria may have been appropriate during periods with stable and low inflation rates, high inflationary environments may require a different criteria.

A simplistic, but commonly used, variation of this theme is comparing changes in median home prices with changes in median family income. This measure, of course, ignores the crucial role of changing mortgage interest rates and capital gains in the affordability question.

An increasingly popular alternative among economists (and judging from market behavior, also among consumers) is to emphasize the investment aspect of housing. This concept, which applies to the homeownership consumer, looks at the after tax cost of homeownership where expected capital appreciation is explicitly considered. This cost concept could then be compared with current and/or expected income of the consumer. It is clear, however, that the interaction of consumer type with the appropriate measure of "affordability" is the key to assessing the affordability problem. We now turn to a more detailed examination of measures of affordability.

Current Costs -- Current Income Concepts

A. First Time Home Buyers

In purchasing a first home, the household is confronted with current interest rates, current house prices, and, of course, payments for property taxes and utilities. Thus, measuring the cash costs the first-time home buyer faces over time, requires a comparison of current values of each of these costs. The homeownership component of the consumer price index, despite heavy criticism, is probably a good composite measure of the costs faced by first time homebuyers. Table VIII shows the composite index and various components of the index over the 1970's. The table also shows the monthly payment (including interest payments), property taxes (1.5%), and maintenance, repair and insurance (1.0%) on the median priced existing home. The table also shows data on the other entry barrier to the

first time buyer -- median downpayment requirement on the median priced existing single family home. Finally, the table shows median household money income, our prime measure of current cash flows.

This data shows that there has been a startling deterioration in housing affordability as defined by the monthly payment/income ratio since the mid-1970's. In the early 1970's the 25-30% income ratio looked quite reasonable. By 1978 the ratio had risen by nearly ten percentage points reflecting almost exclusively the rise in house prices, as mortgage interest rates were virtually unchanged. In 1979 and 1980 the unprecedented levels of mortgage interest rates raised the payment/income ratio to an unbelievable 55%, nearly double the level of the early 1970's.

An alternative way of expressing the "affordability crisis" facing first time homebuyers is to determine the income required to support an 80% mortgage on the median priced house assuming the household pays only 30% of its income for the housing costs. In 1970 over 60% of households qualified for a mortgage on the median price home using the same criteria. In 1980 we estimate that less than 25% of households qualified for a mortgage on the median priced home using the same criteria. These numbers show a substantial deterioration in affordability, though they are less dramatic than those reported in the popular press.

While these numbers on current payments versus current income clearly show a reduction in affordability they are however, somewhat misleading in that they ignore some of the positive effects that inflation has on the potential first time homebuyer --- by raising his expected nominal income and his expected capital gain by owning a house.

The interest on the mortgage loan is crucially affected by the rate of inflation. The mortgage interest rate is a function of the expected inflation rate and a real interest component. The high inflation rates of the past several years have raised the contract interest rate and so raised the monthly carrying costs of a conventional mortgage by over 60%. Compared with a 1-2% inflation world, the present monthly carrying costs of a conventional mortgage are over four times higher than would be expected in a low inflation economy. This rise in mortgage payments, and the corresponding rise in the initial yearly payments/income ratio is of course the genesis of the "affordability crisis". In fact it is not high nominal mortgage rates that have created the crisis but rather it is high mort-

TABLE VIII: Housing Costs

	(1) Homeownership Component CPI	(2) Sales Price of New Home	(3) Sales Price of Existing Home	(4) Effective Mortgage Interest Rate	(5) Monthly Pay- ments, Exist- ing Home*	(6) Down Payment Requirement on Existing Home	(7) Median Household Income	(8) Monthly payments/ Household Income (5)/(7)
1970	128.5	\$23,400	\$22,983	8.45	\$2516	\$6642	\$8734	28.8
1971	133.7	\$25,200	\$24,775	7.74	\$2536	\$6466	\$9028	28.1
1972	140.1	\$27,600	\$26,833	7.60	\$2710	\$6440	\$9697	27.9
1973	146.7	\$32,500	\$28,900	7.95	\$3020	\$7167	\$10512	28.7
1974	163.2	\$35,900	\$31,942	8.92	\$3648	\$8815	\$11197	32.6
1975	181.7	\$39,300	\$35,300	9.01	\$4063	\$9390	\$11800	34.4
Annual Rate of Change (%) 1971-75	7.2	11.0	9.0	1.5	10.2	7.5	5.1	-
1976	191.7	\$44,200	\$38,100	8.99	\$4378	\$9982	\$12686	34.5
1977	204.9	\$48,800	\$42,900	9.01	\$4938	\$10682	\$13572	36.4
1978	227.2	\$55,700	\$48,700	9.54	\$5864	\$12126	\$15064	38.9
1979	262.4	\$62,900	\$55,500	10.77	\$7365	\$14430	\$16730	44.0
1980 ^E	315.2	\$67,800	\$61,600	14.25	\$10328	\$17270	\$18747	55.1
Annual Rate of Change (%) 1976-80	11.8	11.5	11.8	10.2	21.0	13.1	11.0	-

*Includes opportunity cost of downpayment valued at the mortgage rate.

Source: Federal Reserve Bulletin, Federal Home Loan Bank Board Journal, Bureau of the Census, National Association of Realtors.

gage rates juxtaposed with the archaic institutional mechanisms of the mortgage market that has created the problem. If the institutional arrangements of the mortgage market were flexible, then as long as the "real" mortgage rate had not risen dramatically, there would be no affordability problem. Unfortunately, however, the institutional arrangements in the mortgage market today were basically established for a low inflation world. The standard mortgage instrument is basically a level payment, amortized loan. This loan is not well adapted to an inflationary environment. It takes no account of inflationary induced rises in money income or inflationary induced increases in the underlying value of the property. Thus, from the borrower's viewpoint, the standard mortgage instrument completely ignores the positive inflation induced dynamics of the housing market. In an inflationary environment, it makes no sense to use a criteria for loan qualification based on an inflation bloated interest rate but a non-inflated income. On the other hand, from the lender's point of view, the standard mortgage instrument does attempt, even though very imperfectly, to anticipate the influence of an inflationary environment on the particular contract. Through the calculation of the mortgage interest rate, the lender attempts to incorporate expectations of inflation over the life of the loan. In the past decade lenders like the rest of society vastly underestimated inflation.

It is this situation which has created a dynamic mismatch between the cost of the mortgage loan to the borrower and the borrower's ability to pay. This dynamic mismatch, is caused by the failure of the standard mortgage instrument, and the standard mortgage qualifying criteria, to adapt to an inflationary environment. It is these archaic institutions which are a major element of the housing crisis.

The extent of this mismatch can best be illustrated by a simple set of examples. For this example, we assume that a household with an income of \$20,000 takes out a \$50,000, 8½%, 25-year mortgage. Further, we assume that the economy experiences a 5% annual average inflation over the life of the mortgage, and that the household experiences a 2% real income growth per year. As a second case, we raise our inflation assumption to 10% and

our mortgage rate to 13½%. In a third case, we raise the inflation assumption to 15% and our mortgage rate to 18½%. In our final case we assume no inflation and a 3½% mortgage rate. Table IX and Chart II show the dynamic payment streams in the 15%, 10%, 5% and no inflation world.

It is quite clear from these comparative examples that even a moderate inflation rate induces a major distortion in the time path of payments relative to income. A 5% inflation rate more than doubles the initial payment/income ratio compared to the no inflation world. By the tenth year, the household in the 5% world with a 8½% mortgage, is paying only 12% of his income to amortize the mortgage, while by the last year of the mortgage he is only paying 4.2% of income for the mortgage. His real payments would have dropped from \$4831 per year to only \$1273 per year by the final year of the mortgage.

In the high inflation cases of 10% and 15% with mortgage rates at 13½% and 18½% respectively, the distortion is so large as to make the results ludicrous. In the 15% inflation world the nominal payments income ratio is nearly 50% in the initial year (five times the payments in the no inflation world). By the fifth year, the payment income ratio would have dropped to a reasonable 20% and by the tenth year to less than 10%. By the 25th year, the payments are less than 1% of the households modest \$1 million income.

To summarize, the first homebuyer in a high inflation world with our archaic mortgage instrument and qualifying criteria based on a first year payment/income ratio does indeed face an "affordability crisis". We would contend, however, that as long as the intrinsic real rate of interest has not changed, the "affordability crisis" is in fact merely a phoney artifact of a lending system which is inappropriate for an inflationary environment. Several alternative mortgage instruments, such as the Equity Adjusted Mortgage, the Graduated Payment Mortgage, or the Shared Equity Mortgage, could be used to alleviate this "crisis". These instruments will be described in the policy section of the chapter.

TABLE IX: Impact of Inflation on the Mortgage Instrument

No Inflation World
 3½% Mortgage Interest Rate
 \$50,000 Mortgage

(1) Year	(2) Annual Nominal Payment	(3) Annual Real Payment	(4) Annual Nominal Income	(2)/(4) <u>Payment</u> <u>Income</u>
1	2119.91	2119.91	20,000	10.60
5	2119.91	2119.91	22,082	9.60
10	2119.91	2119.91	24,380	8.70
15	2119.91	2119.91	26,917	7.88
20	2119.91	2119.91	29,719	7.13
25	2119.91	2119.91	32,812	6.46

5% Inflation World
 8½% Mortgage Interest Rate
 \$50,000 Mortgage

1	4831.38	4831.38	20,000	24.16
5	4831.38	3551.50	28,050	17.22
10	4831.38	2748.08	39,342	12.28
15	4831.38	2126.41	55,179	8.75
20	4831.38	1645.38	82,808	5.83
25	4831.38	1273.16	116,142	4.16

TABLE IX (con't.) : Impact of Inflation on the Mortgage Instrument

10% Inflation World
 13½% Mortgage Interest Rate
 \$50,000 Mortgage

(1) Year	(2) Annual Nominal Payment	(3) Annual Real Payment	(4) Annual Nominal Income	(2)/(4) <u>Payment Income</u>
1	6993.86	6993.86	20,000	34.97
5	6993.86	4342.63	35,247	19.84
10	6993.86	2696.43	62,117	11.26
15	6993.86	1674.27	109,471	6.39
20	6993.86	1039.59	192,926	3.62
25	6993.86	645.51	340,000	2.06

15% Inflation World
 13½% Mortgage Interest Rate
 \$50,000 Mortgage

1	9345	9345	20,000	46.72
5	9345	4646.11	43,849	21.31
10	9345	2309.94	96,137	9.72
15	9345	1148.45	210,774	4.43
20	9345	570.98	462,111	2.02
25	9345	283.88	1,013,156	.92

B. Existing Home Owners

Households who already own their own home are in a far different affordability situation than first-time home buyers. Housing analysts (including this author) have derived much publicity from the statement that only a small portion of present homeowners could afford to buy their present house at current interest rates and current prices. While it is true that many current owners could not afford to buy the home in which they now live, given current interest rates and prices, they in fact do not have to face current interest rates and prices. If they are non-movers they face historic interest rates and historic prices which are fixed at the time of purchase, while at the same time their nominal income is presumably rising. Thus, non-movers who have purchased homes in the past are in that portion of the curve (shown in the previous table) where their house payment/income ratio is falling. In a cash flow sense their real cost of housing is declining (assuming that property taxes and utility and maintenance costs are not rising too rapidly). In an opportunity cost sense, however, their cost of housing is not declining as rapidly. While the mortgage payments are fixed at historic values, because of the rising value of their house, the implicit rental on the equity component of the housing expenditure is rising. As a result, one must combine the fixed mortgage payments with the rising implicit rental cost of housing equity to arrive at an overall opportunity cost of homeownership.

Existing homeowners who decide to move face a cash payment/income problem similar to first-time homebuyers. They are forced to pay current prices and current mortgage rates. This can be an especially severe problem if they move from a low cost housing area to a high cost housing area, or move during a period of cyclical tightness in the market. Offsetting this current price/income squeeze on homeowner movers is the large capital gain they have probably made on their previous home. They can directly use this capital gain to reduce monthly payments on the newly purchased home by putting up a larger down payment. Alternatively, they could invest the equity from the capital gain and use the income to offset the higher monthly payments. While the homeowner-mover can take full advantage of his equity accumulation,

unless his mortgage is assumable he cannot capitalize the value of his low interest fixed rate mortgage.

To summarize, existing homeowners, whether movers or non-movers, in general do not face an "affordability crisis". In fact, as another section of this chapter will show, adding in their investment return has dramatically reduced the cost of owner-occupied housing over the past decade.

C. Renters

Analyzing the current payment/current income ratio of renters would appear to be straight forward. If one compares median rents with median household income over the past decade we find a declining payment/income ratio. Table X shows that this payment/income ratio was essentially flat since the 1970's even though the ratio did drop to 14.4% in 1979. In fact, these numbers give a somewhat incorrect view of the affordability problem of renters as the all household income figures overstate the income of renters. Table X also shows the income of renters and the rent-renter income ratio for selected years. This shows a higher rent/income number, but with a trend which is also essentially flat through 1978. Thus, from the available numbers there does not appear to be an affordability problem in the rental segment of the housing market.

After Tax Capital Cost of Homeownership

An increasingly popular measure of the cost of homeownership is an index which incorporates the current cash costs of homeownership, the opportunity cost of the implicit rental on the owners equity, the tax benefits (reduction) from owning and the expected capital gains of the owners. This measure of homeownership is far more representative of the "affordability of homeownership" than the current cash cost/current income measure. Table XI shows each of the major components of this measure for the 1970's as they would be perceived by a potential home-buyer purchasing a home in any particular year.

TABLE X: Rental Costs

	Rental Compon- ent CPI	Median Rent \$ (Annual)	Rent/All Household Income	Income of Renters	Rent/Renter Income
1970	110.1	1446	16.6	6300 ^a	22.9
1971	115.2	1513	16.8		
1972	119.2	1565	16.1		
1973	124.3	1633	15.5		
1974	130.6	1716 ^a	15.5	7700 ^a	22.9
1975	137.3	1804	16.1		
1976	144.7	2004 ^a	17.0	8100 ^a	24.7
1977	153.5	2116	16.7		
1978	164.0	2254	16.6	10378 ^b	21.7
1979	176.0	2412	14.4		
1980 ^E	198.5	2708	14.4		

a Calculated using Annual House Survey, 1977-1980, calculated using ratio of Annual Housing Survey/1974 Rental CPI * Rental CPI + 100. 1970-1973, 1975 the same methodology without + 100 was used.

b Money Income of Households in 1978, Consumer Income, CPS

TABLE XI: Capital Cost of Housing for the Median Priced Existing Home

	Mortgage Interest Payments	Opportunity Cost of Equity	Maintenance, Repair, Property Taxes, Depreciation (2.5%)	Tax Benefits*	Expected Capital Gains**	Total Capital Cost	Total Capital Costs/Household Income
1970	1381	524	574	150	1293	1046	12.0
1971	1417	478	619	14	1501	998	11.1
1972	1550	465	671	0	1848	900	9.3
1973	1728	533	723	1	2063	919	8.7
1974	2063	755	799	55	2535	1027	9.2
1975	2335	829	882	70	3122	853	7.6
1976	2528	841	953	88	3650	583	4.9
1977	2903	857	1072	16	4143	673	5.3
1978	3484	1057	1218	322	5039	403	3.0
1979	4423	1407	1388	411	6299	508	3.0
1980	6325	2314	1540	800	8231	1148	6.1

* Utilizes data on marginal tax rates and the surplus standard deduction from Diamond, October 1979.

** A three year moving average of actual capital gains.

The trends in mortgage interest costs have already been discussed and clearly taken in isolation they have reduced the ability of households to buy homes. Offsetting this negative impact of inflation on interest is the increased tax benefits because of the deductability of nominal mortgage interest payments and property taxes. Tax benefits have risen because of the sharp rise in mortgage interest payments and the inflation induced marginal tax bracket creep of the median family income household. On the other hand, the benefit to itemizing deductions has been reduced by substantial real increase in the standard deduction.

While the tax benefits to owning have increased moderately, the expected capital gains component of owning has increased dramatically, reflecting accelerating economy-wide inflation as well as specific housing market conditions. In fact, in recent years, the expected capital gains component has been so high as to offset much of the other costs of ownership. Thus, if financial institutions used the capital cost of ownership as their loan qualifying criteria there would be no "affordability crisis" at all. In fact, the behavior of households indicated that they are fully aware that the capital cost rather than the current cost is the appropriate decision-making variable. If they can somehow overcome the monthly payment and down payment constraints they feel they can clearly afford to buy a home.

The Current Payment/Current Income Ratio and the Capital Cost of Housing in the 1980's

The outlook for the most commonly used measure of affordability, current payment/current income, is not especially bright in the 1980's. Even if double digit inflation rates of the past several years recede to the 8-10% level, nominal mortgage rates are still likely to stay in the 11-13% range. This sets a minimum payment income ratio, given present housing prices, of around 45%. This is the relatively good news, as at least nominal mortgage rates will not rise further to exacerbate the affordability problem. On the other hand, it does appear that given a 8-10% overall inflation rate, house prices will rise about 12.2% per year. At the same time, median household income is expected to rise at only 10.8%. This leads to a

widening income price gap over the decade. The net effect of high but stable mortgage interest rates and rising relative house prices is that the median payment/median income ratio of about 45% in 1979 will rise to about 55% by 1990. Table XII shows these cost trends. Of course, we had already achieved the distinctive 55% in 1980. Thus, based on the current payment/income ratio affordability will be reduced somewhat further in the 1980's relative to the 1970's.

Another negative trend in affordability for the 1980's is the expected rise in the down payment requirement on the typical house. This reduction in median loan to value ratio is a function of an emerging "mortgage credit gap" we see emerging in the 1980's.

The fairly strong demographic demand for housing and rising relative house prices creates a strong demand for mortgage credit. At the same time, high inflation rates and a tax system which discourages savings and investment has produced a lag in the supply of loanable funds. This difference between demand for and supply of credit will create this "mortgage credit gap". One of the consequences of this "gap" will be an adjustment of mortgage rate terms to bring the supply and demand for credit into balance. Thus, we expect relative mortgage interests to rise over the decade and median loan to value ratios to fall over the 1980's.

The alternative measure of housing affordability shows just the opposite trend as the current payments /current income ratio. This arises because of two factors. First, the tax benefit component becomes substantially more important in dollar terms in the 1980's than in the 1970's because of the rise in nominal interest rates and because of our assumptions that the excess standard deduction remains at 5.4% of median household incomes and that the marginal tax rate of the median household remains at 25%.

Second, the rising relative price of housing means that the expected capital gains component of the cost of homeownership continues to nearly outweigh the mortgage interest and opportunity cost of homeownership. The net effect of these various factors is that the capital cost/income ratio continues its decline of the 1970's in the 1980's. As Table XII illus-

TABLE XII: Housing Cost Trends in the 1980's

	Home Ownership Component of CPI	Price of New Home	Price of Existing Home	Mortgage Rate	Annual Housing Payments	Downpayment Requirements	Median Household Income	Payment/ Income
1980	315.2	67800	61600	14.26	10328	17270	18747	55.1
1985	467.5	111120	108000	12.77	16490	32074	31184	52.9
1990	695.4	220471	194115	12.53	29170	60041	52650	55.4
% Change 1990/1980	8.3	12.5	12.2	-1.1	11.2	13.4	10.88	-

Rental Costs in the 1980's

	Rent Component in CPI	Rent	Rent/All Household Income
1980	198.5	2607	13.9
1985	330.3	4340	13.9
1990	539.9	7093	13.5

Capital Cost Trends in the 1980's

	Mortgage Interest Payments	Opportunity Cost of Equity	Maintenance, Repair, Prop- erty Taxes	Tax Benefits	Expected Capital Gains	Total	Total/Income
1980	6325	2314	1540	800	8231	1148	6.1
1985	9694	3656	2700	1145	14648	258	.8
1990	16795	6544	4853	2084	27957	-1848	-3.5
Mean	10045	3621	-	1161	-	570	2.7

trates the capital cost/income ratio declines from an average of 7.4% in the 1970's to 2.7% in the 1980's. Thus, by this measure, homeownership is becoming more affordable in the 1980's.

The final measure of housing costs, the rent/income ratio, shows remarkable stability in the 1980's. This confirms the trend of the 1970's and again leads us to the conclusion that there will be no rental affordability problem in the 1980's.

To summarize, using the conventional measure of affordability, current payment/current income, the late 1970's and the 1980's showed and will show an "affordability crisis" for first time home buyers. Using the capital cost of housing measure provides just the opposite conclusion -- housing has become more affordable if only the household could overcome the initial entry barriers represented by the fixed payment mortgage and down payment requirements. The challenge of the 1980's is to devise an institutional structure which will allow the first time homebuyer to purchase the home which, by an investment criteria, he certainly can afford. It is to these alternative institutional mechanisms that we now turn.

Given the substantial institutional difficulties with the present housing finance system, it seems appropriate to propose an alternative package of housing market policies. The package we propose consists of two elements: (1) an equity adjusted mortgage (EAM) instrument and (2) an individual housing account (IHA). The former (EAM) is an attempt to correct the dynamic mismatch between mortgage payments and income induced by inflation. The EAM necessitates little change in the existing institutional and legal situation. It merely involves formalizing a simple incremental borrowing procedure on the part of households. This annual increment in borrowing is based on the assumption that both property values and money incomes normally rise at a minimum of one half the rate of inflation on an annual basis.

The latter proposal, the individual housing account (IHA) is an attempt to provide a mechanism for the first homebuyer to accumulate the substantial downpayment requirement for a home purchase.

Equity Adjusted Mortgage

The mechanism for obtaining an equity adjusted mortgage would be as follows. The individual would contract with the mortgage lender to borrow on the identical terms that now obtain. There would, however, be a provision in the agreement to allow the borrower automatically to receive an additional loan each year, equivalent to one half of his average equity accumulation in the previous three years. For the first year an expected appreciation component would have to be included in the calculation. This loan would then be applied directly to his annual payments due in that year, thereby reducing his monthly payments by the amount of the incremental loan (after the additional amount necessary to amortize the additional annual loans have been taken into account). The additional loan would of course be made at current market rates.

The impact of the equity adjusted mortgage can probably best be seen by examining a simulated example of the loan. For this illustration, it is assumed that a household with an income of \$20,000 in the initial year purchases a \$60,000 house, with a \$50,000, 13½% mortgage loan amortized over 30 years. These terms and prices closely reflect the median conditions and terms currently prevailing in the market. It is also assumed that there will be a constant 10% rate of inflation over the life of the mortgage, that real income of the household will rise at 2%, and that the value of the house will rise at the rate of inflation. We can then compare the dynamic aspects of the standard mortgage instrument and the equity adjusted mortgage.

In examining the comparative paths (see Table XIII), we find that monthly payments in the initial year fall dramatically for the equity adjusted mortgage loan. They drop nearly 40% compared to the payments due on a standard mortgage. Moreover, initial monthly payments drop from 35% to 20% of the household's income. This implies that given the existing institutional rule-of-thumb, a household earning only \$15,000 per year would now be able to purchase the median priced (\$60,000) home.

The focus on the initial year of mortgage payments is extremely relevant, since lenders view the relationship of these payments to money income as the major determinant of the amount of the mortgage loan (and thus the amount of housing) the consumer can purchase. Of course this is the essence

TABLE XIII: Equity Adjusted Mortgage

10% Inflation
 13½% Interest Rate
 \$50,000 Mortgage

(1) Year	(2) Principal Outstanding	(3) Annual Nominal Payment	(4) Equity Adjustment (.05*(9))	(5) Actual Nominal Payment	(6) Real Payment	(7) Money Income	(5)/(7) Payment Income	(9) Property Value
1	50,000	6926	3,000	3926	3926	20,000	19.6	60,000
5	66,988	8875	4,392	4483	2531	35,246	12.7	96,631
10	92,692	12744	7,073	5671	1989	62,117	9.1	155,625
15	130,563	19379	11,392	7987	1740	109,471	7.3	250,635
20	177,381	31569	18,347	13221	1787	192,926	6.9	403,650
25	201,798	58512	29,548	28963	2432	340,000	8.5	650,082

of the so-called affordability crisis. It is quite clear that in this respect the (EAM) is superior to the standard mortgage instrument and can alleviate without any government subsidy a significant portion of the affordability problem of first time homebuyers.

In terms of the dynamic relationship of monthly payments to income, the equity adjusted mortgage again provides a better match between payment obligations and household income levels. In both instruments, payments as a percentage of money income declines over the life of the mortgage. The only difference is that the payment-income ratio declines more slowly in the case of the EAM than in the standard mortgage.* It is not until the 11th year of the loan that the payment-income ratio of the equity adjusted mortgage is as high as that on the standard mortgage loan. In terms of actual monthly payments, the EAM mortgage naturally shows a rising payment stream. Again, however, it is not until the 11th year of the loan that the payments on this loan exceed those on the conventional mortgage. Moreover, it should be emphasized that the rise in money income has more than offset the rise in actual monthly payments.

To summarize, the EAM allows a better matching of mortgage loan payments and the borrower's income by taking advantage of inflation induced rises in income and property values. If instituted, this will substantially increase home ownership opportunities for middle income and young families and will alleviate the need for a costly government program to solve the affordability problem.

Several objections may be raised concerning the EAM. The first potential objection concerns the fact that for most of the mortgage loan the nominal amount of the loan outstanding may increase. While this may be perceived as a "problem" by some lenders, it in fact makes perfect economic sense. As long as money income and property values rise faster

*It is possible to design an equity adjusted mortgage loan that would allow the payment-income ratio to remain constant at the initial level. This would further reduce initial year payments and lower the entry income level even further

than the increase in the mortgage liability there is no increase in lender risk. This point leads directly to the second problem, that the individual borrower's income and the individual property value may not rise at a rate of $\frac{1}{2}$ the rate of inflation. In these individual cases, increased risk and increased debt burden may be incurred. These cases could be handled by some type of co-insurance scheme. In most normal economic circumstances, and for the vast majority of properties and individuals, however, the expected secular rise in money income and property values will of course materialize.

The final problem with the EAM concerns the supply of mortgage funds during periods of tight money. Since the essence of equity adjusted mortgage is the automatic borrowing provision, the mortgage lender would be obligated to provide approximately 5% of the value of the home on an annual basis. This obligation would of course provide competition for funds which might otherwise be used to finance new construction or turnover in the existing stock. This effect must be weighed against the lower initial payment effect, which would reduce the household's sensitivity to changes in nominal interest rates. The combination of these two effects would determine the impact on the housing cycle.

The EAM is of course only one of a number of alternative mortgages which might be used to cope with the inflation induced distortions affecting the traditional fixed payment mortgage. The apparent most popular policy alternative is a variation of the EAM, the graduated payment mortgage (GPM). The GPM sets the inflation parameter at a fixed level for five to ten years. As a result monthly payments start low and move up at the graduated rate to the fixed payment level for the remaining life of the mortgage. If the graduation level is chosen at $\frac{1}{2}$ the rate of inflation in house prices and the inflation rate is constant then the EAM and GPM provide very similar payment streams. If the inflation rate varies then the EAM provides a more flexible payment stream which is directly related to equity accumulation in the house. The GPM, since it fixes the graduation in advance, does not have this flexibility. On the other hand, the GPM provides both the borrower and lender a certain payment stream which might be more desirable than the uncertain payment stream inherent in the EAM.

Another variation of this attempt to lower initial nominal payments for the first time homebuyer could be dubbed a Shared Equity Mortgage (SEM).

Under this plan the household might give up $\frac{1}{2}$ if its equity appreciation rights to the lender in return for a mortgage interest rate that might be 60% of normal. Thus, the lender would achieve part of his return from the inflation in house prices and would not have to front load all of the inflation premium into the mortgage interest rate. The essence of all these alternative mortgages is that they attempt to recognize the positive as well as the negative impacts of inflation on homeownership affordability.

Individual Housing Account (IHA) Policy Proposal

The second policy proposal involves devising a mechanism to allow the moderate-income, first-time homebuyer to accumulate the substantial down payment required to purchase a new home.

It is proposed that households with adjusted gross incomes of less than \$30,000 be allowed to deduct up to \$2500 per year from their gross federal income, and put this money in a segregated individual housing account (IHA). They would be allowed to accumulate up to \$10,000 in this account. At any point after an initial one-year holding period, the household would be allowed to withdraw this money and use it toward the purchase of a home. Providing that the IHA is applied toward the purchase of a home, no tax would have to be paid on this sum or the interest income that has accrued in this account. These special IHA accounts should be restricted to first-time homebuyers (that is, persons who have never owned a home before), as this group of households would not have had the advantage of equity accumulation in an existing home.

It is clear that the IHA account idea is quite similar to the Individual Retirement Accounts (IRA) which have recently been introduced. The same sets of institutions would presumably respond to this incentive scheme. However the individuals participating would be very different. Since the program would be restricted to first-time homebuyers with incomes less than \$30,000, it would benefit young and low-and moderate-income households.

A concept very similar to the Individual Housing Account is presently being used in Canada. The Canadians have adopted a plan known as the Registered

Home Ownership Savings Plan (RHOSP). Essentially the RHOSP enables taxpayers who do not own a home to contribute up to \$1,000 per year to a lifetime maximum of \$10,000 in a RHOSP. The contributions to the plan and the plan's earnings are exempt from tax provided that, when the plan is collapsed, the proceeds are used for the purchase of a house or for furnishings at the time of first occupancy. Both husband and wife can have plans provided that they do not own a home, so that a family can contribute up to \$20,000. No deduction for tax purposes may be made in any tax year in which a home is owned.

For the 1974 year, 231,000 RHOSP's were started and contributions totalled some \$199.4 million. For 1975 tax purposes, 215,000 new RHOSP's were started.

The major objection to the IHA idea concerns the potential loss in tax revenue. Clearly, the IHA involves a tax expenditure. While it is difficult to provide precise estimates of revenue loss, the behavioral response to the Canadian program indicates that first-year costs would be about \$600 million, and steady-state costs would be about \$2-3 billion. Despite this revenue loss, the IHA could be a potentially valuable tool for it allows the government to stimulate housing without disrupting the entire set of financial markets, and it provides a direct subsidy to those households who have become disadvantaged in the housing market.

Summary

The net effect of these policies suggestions are two-fold. First, by the better matching of the households' income and mortgage payment stream they will reduce the initial monthly payment barrier by nearly 25%. This will substantially increase the homeownership market, bring it within the reach of nearly 60% of all American families (versus only 25% of all families who can afford homeownership at present). Second, by helping the household accumulate the downpayment requirement they will increase funds available to the housing industry, encourage increased savings, and assure that homeownership will become financially feasible.

In this way, this program contributes to the goal of a decent home in a suitable living environment at an affordable cost.

CENTER FOR REAL ESTATE AND URBAN ECONOMICS
Institute of Business and Economic Research
156 Barrows Hall
University of California, Berkeley, CA 94720

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