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OWNERSHIP OR RENTAL REVISITED: 1983

BY

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GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

CENTER FOR REAL ESTATE AND URBAN ECONOMICS
UNIVERSITY OF CALIFORNIA, BERKELEY

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OWNERSHIP OR RENTAL REVISITED: 1983

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Purchase of a home is the most significant expenditure in the life of many persons. A home provides shelter, but also is an important investment. Many individuals that are approaching the home ownership decision are finding a problem in qualifying for a mortgage. They find a market which requires a historically high percentage of income to be allocated to shelter. As interest rates on fixed mortgages carry a large inflation premium, this means less expenditures for non-housing items and also a risk factor in case of illness or job loss by one of the spouses.

Important to both potential homeowners and their employers is the impact of homeownership on mobility. Uncertainty, in respect to the future of house prices means that mobility may be restricted. For example, gain or loss on sale of a home will be an important consideration for the young professor who has an attractive offer from another university, or a young CPA whose career would be facilitated by a geographical move.

Objectives

This paper reviews the choice of owning or renting in a situation representative of the current market. An additional choice is examined. This is the choice of renting to provide shelter and at the same time purchasing a residence for an investment.

Decision makers obviously consider economic and non-economic factors. Minimization of unit cost of housing is a primary objective. Cost of housing is impacted by expected appreciaton in housing prices as well as current mortgage payments and costs of upkeep.[1] For comparison purposes, the present value of future cash flows under the three alternatives are presented.

Two alternative ratios of house payments to income are calculated as measures to indicate the percentage of family resources allocated to housing and non-housing expenditures. Ratios of loan balances to home values are computed as they are relevant to the ability to obtain funds on equity in case of emergency and the ability to trade up to a more expensive house. Geographical mobility is impacted as it is difficult to move if there is little equity in a home. Finally, effects of current tax regulations are examined to indicate the relative quantitative impact on owners, renters, and landlords.

This paper is also designed to provide a useful framework for the decision. Values for variables can be substituted based on the best expectations at the time of the decision. It is not clear that a purchase of a home will automatically be a fine investment on the assumption house prices will advance ahead of general inflation. In many geographical areas home prices have advanced significantly more rapidly than the cost of living. A person could have paid an excessive amount for a home in certain areas in the 1970s and still have a good investment. However, given projections of a 4.5 percent annual inflation together with mortgage payments which include a substantial inflation premium, it is not clear that the experience of the 1970s will be repeated in the future.[2]

Preferences

Individuals have different preferences which are important in the decision to purchase a home. Minimization of unit housing costs is not the only consideration. Certain individuals will wish to allocate more or less income to housing. Mobility is an important factor which may be hindered by home ownership. Home ownership also involves risk in cases where a loan is a high percentage of home value, and there is risk of loss of job by one of the spouses. Either a forced sale could occur or else an undesirable percentage of income could be used on house payments. Finally, the subjective factors such as pride of ownership weigh differently for different individuals.

Assumptions

The model is intended to represent as far as possible market conditions in the area adjacent to the University of California at Berkeley. There are three couples and each has $20,000. One couple, designated as O, purchases a home. Another couple, R, decides to rent. R invests $20,000 in a money fund which pays 10 percent per annum. The third couple (R & O) takes a different approach and rents their shelter and invests $20,000 in a home which they will rent out. The detailed assumptions are presented in Exhibit I. Mortgages are currently being written on a 30-year fixed payment basis. This model uses the current rate of 13½ percent and two points. House price is $120,000 with a $20,000 down payment and a $100,000 loan. Alternative mortgage forms such as variable rate mortgage, graduated payments mortgages, and equity sharing will be examined in another paper.

A non-scientific sampling of property in several local housing areas indicates that a house of market value of $120,000 can be rented for approximately $8,400 per annum. Contrast this to payments of $13,810 for a $100,000 loan. These differences likely represent the incorporation of tax benefits in rental property and/or expectations of appreciation.

The intent is to capture all costs of owning or renting a home. Thus, in addition to the obvious costs such as rent or mortgage interest, the model incorporates the impact of capital appreciation in home value as well

EXHIBIT I

ASSUMPTIONS FOR MODEL

Filing status	Married, joint return
House cost	$120,000
Mortgage	Fixed, 13½%, 30-year amortization
Rent	$8,400 per annum
Inflation rate	5% per annum, house value, salary, rent income, rent expense, repairs, and property tax increase
Discount rate	10%
Down payment	$20,000
Closing costs	Points $2,000, title insurance $300, escrow fee $75
Investment income	10% per annum on $20,000, assumed spent annually; fixed return
Rental income for landlord	$8,400, increases 5% per year
House tax allocation	Land $40,000, building $80,000
Repairs and insurance	8% of annual rent applicable to homeowner and to landlord
Property tax	1% of house value at beginning of year
Tax rates and rules	Does not change
Tax depreciation - landlord	Accelerated cost recovery system, 15 years

as the difference in tax consequences of taxable investment income for a renter and non-taxable implicit income on home equity for the owner.

Computation of Cash Flow, Taxable Income and Taxes

The formulas for calculation of cash flows, taxable income and taxes are provided in Exhibit II. Most are self explanatory. Note the differences for R, O, and R & O. The renters will have investment income each year but do not have excess itemized deductions greater than the zero bracket amount. O and R & O do not have investment income from the money fund but will have excess itemized deductions greater than the zero bracket amount. R & O has rental income and tax deductible repairs and depreciation. Taxable income for R & O is shown in equation (7). Exhibit III indicates the specific cash flow and income tax items that are relevant for the three couples.

Present Value of Cash Flows

From an economic standpoint, a taxpayer would attempt to maximize the present value of cash flows which, of course in this example, means minimization of the present value of housing costs. Present values are presented in Exhibit IV.

Here we separate annual cash flows from total cash flows. Annual cash flows are more certain than cash flows from sale of the home. Mortgage payments are fixed and subject to a contract. Sales proceeds are less certain and further removed in time than annual cash flows.

On an annual cash flow basis, ownership is only $5,132 better than rent. This amounts to only 2.8 percent. Both O and R are superior to R & O on annual cash flows exclusive of sale as R & O's cash flow from invest-

EXHIBIT II

FORMULAS FOR CALCULATION OF TAXABLE INCOME AND CASH FLOW

(1) TI[1] = S + INV - MCR = AGI - [ID - ZBA] - PE

(2) T = TR * TI

(3) CFA = S + INV + RR - MP - P - RI - T - R

(4) GS = SP - C - AB

(5) TGS = [GS - .6GS]TR

(6) CFS = SP - C - MB - TGS

(7) TI(7) = S + RR - MCR - MI - P - RI - D = AGI - [ID - ZBA] - PE

where

TI[1]	=	taxable income for owner or renter
TI[7]	=	taxable income for landlord
S	=	salary
INV	=	investment income
MCR	=	marriage credit
AGI	=	adjusted gross income
ID	=	itemized deductions
ZBA	=	zero bracket amount
PE	=	personal exemptions
T	=	tax payable
TR	=	tax rates
CFA	=	annual cash flow
MP	=	mortgage payment
P	=	property tax
RI	=	repairs and insurance
R	=	rent expense
GS	=	gain on sale
C	=	commission on sale
AB	=	adjusted basis
CFS	=	cash flow from sale
TGS	=	tax on gain on sale
RR	=	rental revenue
D	=	depreciation

EXHIBIT III

CASH FLOW AND INCOME TAX ITEMS FOR VARIOUS TENURE CHOICES

	Owner	Renter	Rent & Own
Salaries	Yes	Yes	Yes
Rent revenue	No	No	Yes
Investment income	No	Yes	No
Marriage credit	Yes	Yes	Yes
Mortgage interest	Yes	No	Yes
Property tax	Yes	No	Yes
Repairs, insurance	Yes	No	Yes
Tax depreciation	No	No	Yes
Personal exemptions	Yes	Yes	Yes

EXHIBIT IV

PRESENT VALUE OF CASH FLOWS: OWNERSHIP OR RENT ALTERNATIVES COMPARED

		PV Annual Cash Flow	PV Sale Proceeds	PV Total Cash Flows	PV Equity Year 10	PV Annual Plus Equity
(1)	Ownership	182,839	29,753	212,592	39,063	221,902
(2)	Rent	177,707	7,771	185,478	7,771	185,478
(3)	(1) - (2)	5,132	21,982	27,114	31,292	36,424
(4)	Rent & Own	151,229	21,311	172,540	39,063	190,292
(5)	(1) - (4)	31,610	8,442	40,052	0	31,610
(6)	(2) - (4)	26,478	-13,540	12,938	-31,292	-4,814

ment in the house before tax is negative.

Present value of sales proceeds show O with $29,753. R & O has a $21,311 present value from sale because part of the gain is recaptured as ordinary income. The present value of the $20,000 in R's money fund is $7,771.

The present value of total cash flows still shows O in the superior position at $212,592 compared to R at $185,478 and R & O at $172,540. Note, however, O is only 14.6 percent higher than R, and R only 7.5 percent higher than R & O. Gain on sale is an important factor in the superiority of O over R. Recall there is a 5 percent inflation rate in the model and the discount rate is 10 percent. R maintains his mobility which may be more or less important to him than the difference.

The present value of annual cash flows plus present value of equity is also shown for O and R & O. It is likely that the home will not be sold at year 10 or, if sold, tax at that time could be avoided by O making a timely replacement under IRC Sec. 1034 and R & O making a trade under IRC Sec. 1031. On this basis, the superiority of O and R & O over R is increased because tax on sale is excluded from the computation.

There is another important objective in addition to the minimization of cost of housing. This is to keep current expenditures for shelter within a reasonable relationship to income according to utility preferences. Increased expenditures on homeownership mean less expenditures for other goods and services. Maximization of utility of consumption goods likely will give different expenditure patterns for dissimilar individuals. The risk factor also enters because if the ratio of housing expense to income is too high, there is a danger of risk of loss of home. This could occur in case of loss of job, disability, or loss of one income in a two-income family.

Two ratios are computed in Exhibit V. The first is the conventional ratio of house payments to income before tax (Ratio I). The numerator is mortgage payments, property tax, repairs and insurance. The second ratio is net house payments divided by disposable income (Ratio II). House payments are computed after tax benefit. For the renter there is no tax benefit. The owner's house payments result in a reduction of income taxes equal to the tax savings caused by the excess of itemized deductions over the zero bracket amount. This reduction is computed at the marginal tax rates since these deductions reduce taxable income at the highest marginal rates paid by the taxpayer. This ratio is perhaps more meaningful because it takes into account the tax impact on cash flow.

In current markets, owners are likely to allocate much more of income to house payments in early years. In year one (Ratio I), owners spend 35 percent on housing compared to 18 percent for R. Using Ratio II, O spends 33 percent on house payments compared to 23 percent for R. It is clear that in the short run the decision to purchase a house involves a much larger allocation of income to housing than does renting.

Over a longer time period, under the assumptions that salaries increase and mortgage payments are fixed, differences in percentages of income spent on housing by O and by R narrows. At year five, O spends 29 percent of before tax income compared to 18 percent by R. Measuring the relationship on an after-tax basis, O spends 27.6 percent compared to 24.0 percent for R. This is because as income rises, O is in a higher tax bracket and the tax shield increases. After tax, O pays $11,839 in year 1, $11,449 in year 5, and $11,516 in year 10 as R pays $8,400, $10,210, and $13,031 in the same years. R's payments go up with inflation. O's gross payments go up somewhat with increases in property tax and repairs and

EXHIBIT V

ALTERNATIVE RATIOS: HOUSEHOLD PAYMENTS TO INCOME

	Year 1		Year 5		Year 10	
	Owner	Renter	Owner	Renter	Owner	Renter
Before tax[1]						
House payments	15,682	8,400	16,085	10,210	16,704	13,031
To income before tax	45,000	47,000	54,699	56,698	69,811	71,810
Ratio I percentage	34.8%	17.9%	29.4%	18.0%	23.9%	18.1%
After tax[2]						
House payments	11,839	8,400	11,449	10,210	11,516	13,031
To disposable income[3]	36,293	36,732	41,410	42,529	49,980	51,009
Ratio II percentage	32.6%	22.9%	27.6%	24.0%	23.0%	25.5%
Net cash flow	24,454	28,332	29,961	32,319	38,464	37,978
House payment or Rent	11,839	8,400	11,449	10,210	11,516	13,031
Total	36,293	36,732	41,410	42,529	49,980	51,009

[1] Before tax house payment = mortgage payments, property tax, repairs and insurance.
[2] After tax house payments = before tax house payments less tax benefit.
[3] Disposable income = after tax cash flow + house payments or rent after tax benefit.
[4] House payment after tax benefit.

insurance, but are offset by larger tax benefits as O's income goes up on the progressive tax scale. This is assuming that O keeps the same house. It has been typical for many owners to trade up as their equity in the house, together with increased income, makes this a viable alternative.

From a decision standpoint, the homeowner should consciously determine that according to his or her preference scale it is desirable to spend a certain proportion of income on housing. This is particularly true in the early years when there are many other demands on income.

Mobility and Risk

Maintenance of geographical mobility is an important consideration for career oriented individuals. If a couple's home has not advanced in price, the career advantages of the geographical move may be offset by a possible loss on the disposal of a house. This, of course, would be partially a function of relative movements in home prices in different areas.

The ratios of loan balances to home payment, according to the assumptions of our model, are calculated in Exhibit VI. A high ratio of loan balance to home values may decrease mobility and increases concern over risk of loss. A low ratio indicates ability to sell a home, withdraw amounts for other purposes, and the ability to trade to a higher price home based on equity. Refinancing does not create a tax liability. Replacement of a principal residence in the prescribed time period also does not result in current tax. In the model it is assumed the renter leaves the $20,000 in the money fund and withdraws and spends the income. Reinvestment of the income or investment in a different type fund such as a stock fund would give different results.

Inflation in house prices, together with the fixed mortgage, obviously

EXHIBIT VI

RATIO OF LOAN BALANCE TO HOME VALUE

Owners Equity	Year 1[1]	Year 5	Year 10
Home value	126,000	153,154	195,469
Mortgage balance	99,690	97,972	94,150
Equity	26,310	55,182	101,319
Percentage	20.8	36.0	51.8
Renter Investment[2]	20,000	20,000	20,000

[1] End-of-year balances.

[2] Assume income withdrawn and principal does not vary.

decreases the ratio of mortgage balance to house prices over time. If alternative forms of mortgage financing rather than fixed is obtained, this ratio may be more significant.[3] Also, if house prices do not rise with inflation, this ratio would not improve.

Tax Impact on Decisions

Currently there is considerable discussion concerning the tax law because of need for additional revenue and perceived inequities in the law. Generally, criteria for the tax law includes horizontal equity and vertical equity. Horizontal equity relates to equal taxes for taxpayers with equal income. Vertical equity involves a "fair" progression of income. These criteria are overruled in many cases when the tax law attempts to accomplish another purpose.

Homeownership is favored in that imputed rent from equity in a house is not taxed whereas interest and property taxes are deductible. The ability to sell a home and defer a gain by purchasing a qualifying house in the prescribed time period as well as the forgiveness of certain amount of gain over age 55 are further tax preferences for homeownership. National policy considerations are examined in another paper.[4]

How tax policy interacts with other variables in the decision to buy, rent, or rent and buy is presented in Exhibit VII. O pays less tax than R as interest and property taxes are deductible. R pays $150,320 taxes in the ten-year period compared to $94,354 for O, assuming the house is not sold. R & O deducts depreciation and repairs and insurance as well as mortgage interest and property taxes. As depreciation and repairs and insurance are not greater than rent revenue, more tax is paid than by O.

R & O pays more tax on sale, $34,316, compared to $12,420 for O

EXHIBIT VII

ALTERNATIVE INCOME TAX EFFECTS

	Col. (1) Total Tax No Sale	Col. (2) Present Value Col. (1)	Col. (3) Tax on Sale	Col. (4) Present Value Col. (3)	Col. (5) Present Value Total with Sale
Owner (1)	94,354	53,031	12,420	4,788	57,819
Renter (2)	150,320	86,865	0	0	86,865
Rent & Own (3)	111,755	62,413	34,316	13,230	75,643
(2) - (1)	55,966	33,834	-12,420	-4,788	
(3) - (1)	17,401	9,382	21,896	8,442	
(2) - (3)	38,565	24,452	-34,316	-13,230	

because part of the gain on sale is ordinary income to the extent the accelerated cost recovery system depreciation taken is greater than straight-line depreciation.

The tax law provides a preference to O and R & O relative to R. These tax preferences may be capitalized in house prices so that the renter benefits from lower rents as the landlord passes on certain tax benefits to renters and to the extent tax preferences are built into home prices.

The discussion of the relationship of house payments to income (Exhibit V) presented above points up the impact of deductibility of interest and taxes on the homeowner's position relative to that of the renter who has no deduction.

Taxpayers only benefit from itemized deductions to the extent itemized deductions exceed the zero bracket amount. In this model, there is no allowance for itemized deductions other than mortgage interest and property taxes. Decision makers would have to allow for different patterns of expenditures on other deductible itemized deductions.

Summary and Conclusion

A model patterned on current market parameters has been developed with the objective of comparing options of owning, renting, or renting and investing in a residence. The approach here may be used as a framework for individuals to analyze their location decisions with values for variables relevant to the time of decision.

Based on the assumptions of our model which includes a five percent inflation rate and a 13½ percent fixed mortgage rate, the present value of cash flows for homeowners is only $5,732 or 2.8 percent better than renting. Both owning and renting are superior to renting and owning on the criteria of present value of annual cash flows.

When present value of sales proceeds are included, O is 14.6 percent higher than R and only 7.5 percent higher than R & O. The difference between R and R & O narrows as R & O's gain on sale is included in the calculation.

Expenditures on housing versus non-housing as a proportion of income are much higher for the owner than the renter in the early years (Exhibit V). O spends 33 percent of disposable income on housing compared to 23 percent for R in year one. This factor must be weighed against the objective of minimization of housing costs. In the early years it is generally when incomes are strained to meet desired expenditure patterns. Housing payments based on two income families and rapid income expansion cause risk that must be evaluated in the decision process by the homeowner.

Maintenance of geographical mobility is likely impacted by the relationship of loan valuation to home value (Exhibit VI). A high ratio of loan value to home values may decrease mobility and increase concern over risk of loss. Purchase of a home results in a contractual relationship for an asset that is not always liquid. Given the assumption here of a fixed mortgage together with five percent inflation, the equity obviously increases over the time period. Expectations of a lower inflation rate or a variable rate mortgage would cause this consideration to be more important.

Tax policy is an important factor in the quantitative difference in cash flows for owners, renters and landlords. Exhibit VII illustrates that renters pay $55,966 more tax than owners over the ten years, excluding tax on sale proceeds.

The decision to purchase a home should not be automatic. It should be made after considering alternative costs of shelter, expected income patterns, expected inflation, and preference for housing versus non-housing expenditures. Desire for mobility and willingness to accept risks inherent in high contractual mortgage payments relative to income should also be considered.

FOOTNOTES

1. For a discussion of inclusion of appreciation in calculation of costs of housing as well as current costs and historical trends in these costs, see Kenneth T. Rosen, "The Affordability of Housing in California," Center for Real Estate and Urban Economics, University of California, Berkeley, September 1981; and Douglas Diamond, Jr., "Taxes, Inflation, Speculation and the Cost of Homeownership," <u>AREUEA Journal</u>, Fall 1980.
2. The Annual Report of the Council of Economic Advisors projects an inflation rate of 4.6 percent for the years 1983 to 1988 inclusive. <u>Economic Report of the President</u> (Washington, DC: U.S. Government Printing Office, 1983), Table 6-10, p. 144.
3. Terms and conditions of alternative mortgage forms are found in K.T. Rosen, "New Mortgage Instruments: A Solution to the Borrower's and Lender's Problems," Center for Real Estate and Urban Economics, U.C. Berkeley, September 1981; and Diane Haber and Joy Sekimura, "Innovations in Residential Financing: An Analysis of the Shared Appreciation Mortgage and a Comparison of Existing Alternative Mortgage Instruments," U.C. Berkeley, June 1981. See also, Diane Haber and Joy Sekimura, "Alternative Mortgages Consumer Information Pamphlet," Center for Real Estate and Urban Economics, U.C. Berkeley, 1981.
4. For further discussion of policy implications of tax preferences for homeownership, see Alan Cerf, "Homeownership: Tax Incentives and National Policy," Center for Real Estate and Urban Economics, U.C. Berkeley, 1983; and Henry Aaron, "Income Taxes and Housing," <u>American Economic Review</u>, December 1970.

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