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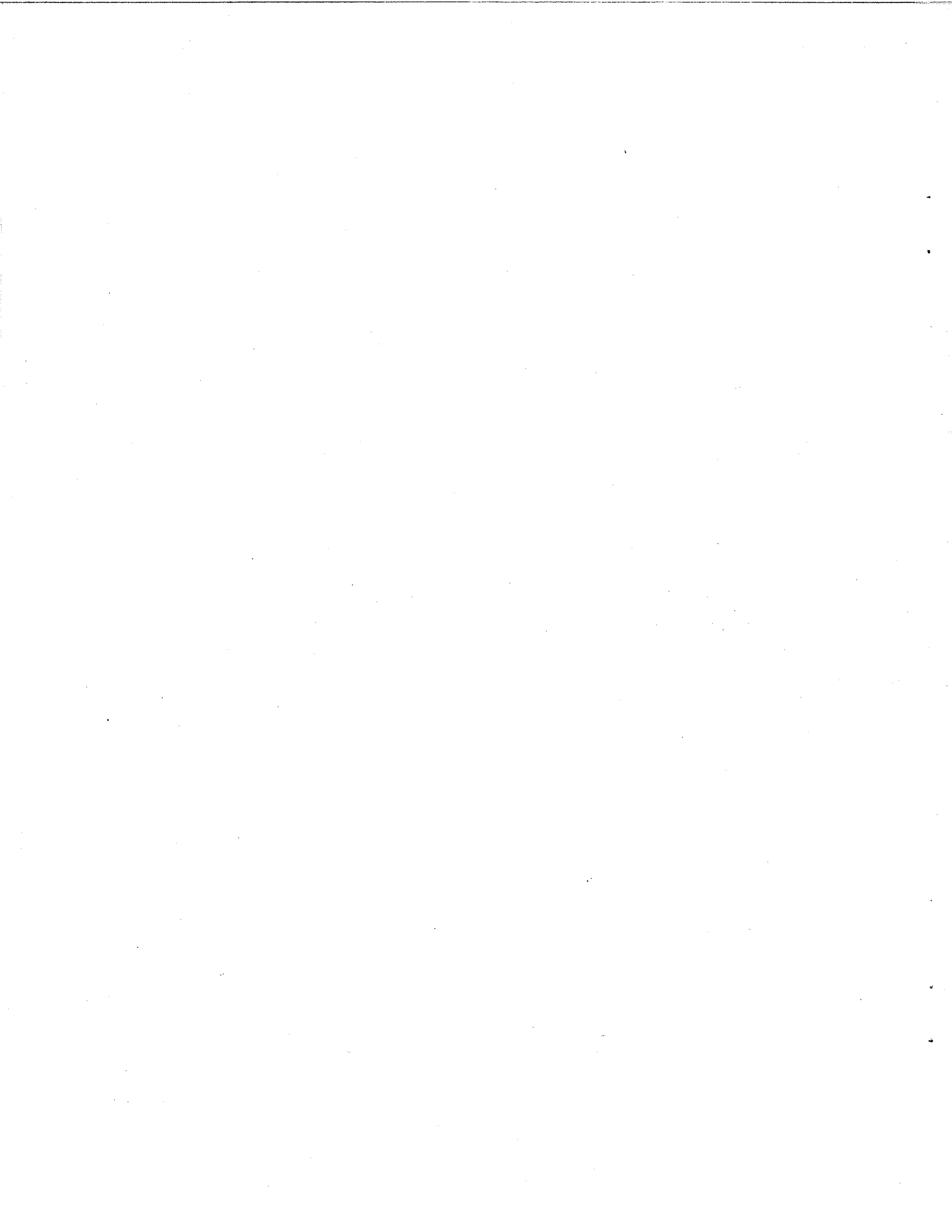
WORKING PAPER 81-32

THE AFFORDABILITY OF HOUSING
IN CALIFORNIA

BY
KENNETH T. ROSEN

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GRADUATE SCHOOL OF BUSINESS ADMINISTRATION



The Affordability of Housing in California*

by

Kenneth T. Rosen
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Working Paper 81-32

The popular press has in the past several years declared an "affordability crisis" in housing in both California and around the nation. This crisis is said to arise because of skyrocketing housing prices and the dramatic rise in long-term mortgage interest rates. This combination has produced a popular press conception that only a small percentage of Californians can afford to purchase housing. It is often stated that less than 5 percent of Californians can afford to buy the median priced home.

Contradicting this pessimistic view of the potential of homeownership are the statements, often in the same newspaper only pages apart, that housing is the best investment one can make and that more families and individuals are opting for homeownership than ever before.

This same dichotomous and seemingly contradictory view of the affordability problem with respect to owner occupied housing is also prevalent in the rental market. Tenants complain about skyrocketing rents and demand rent regulations, while builders and investors cite inadequate returns to capital as the major source of the rental housing

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problem.

The purpose of this paper is to carefully present the best available "hard numbers" concerning the affordability problem in California. It is only through a clear presentation of and agreement on the affordability "facts" that any solution to the affordability problem can take place.

Definitions and Measures of Affordability

As a starting point in an analysis of affordability one must distinguish between categories of consumers and segments of the housing market. Five major categories of consumers must be considered: (1) first time homebuyers, (2) first time entrants to the "coastal metropolitan" California housing market who were homeowners in another area, (3) existing owners of "coastal metropolitan" property in California who move to another home, (4) an existing California home owner who does not plan to move, and (5) California renters. The focus of our research is on the first entrant to California housing and in particular on the first time homebuyer. A brief discussion of the affordability problem for the other categories of consumer is also provided.

Two basic measures of affordability for homeowners are usually examined. The most popular, and the one often used by financial institutions to qualify potential borrowers is the ratio of current before tax housing expenses to household income. Traditionally, an expense-income ratio of 25 percent was considered as the maximum affordability criteria. Increasingly, this traditional criteria is being

modified to recognize the fact that nearly 80 percent of current housing costs represent deductible mortgage interest and property tax payments. Thus, for a household in the 30 percent tax bracket a 35 percent current expense-income ratio represents, after deducting tax benefits, no greater an expense burden than the traditional criteria. A household in the 50 percent income tax bracket could spend 40 - 50 percent of current income for housing and still be paying at only a 25 - 30 percent expense-income ratio after tax deductions. Given the very high level of nominal mortgage interest rates it is incumbent on all participants in the housing market to adjust the old rules of thumb to an after tax calculation. In order to avoid a cash flow problem it is also important that households adjust their withholding tax to reflect their annual deductions of mortgage interest and property tax payments.

While an adjustment to traditional lending criteria to reflect the tax benefits of homeownership is essential, even this change will not adequately take into account the investment character of housing. Rapid price appreciation in California housing markets in the past five years has, perhaps incorrectly, made large numbers of households aware of the investment as well as the shelter component of housing. Thus, households may desire to spend more currently on housing, viewing part of this expense as an investment rather than a consumption expenditure. As a result, a more comprehensive measure of housing affordability would include all capital costs of homeownership. The capital cost of housing includes all current expenses minus current tax deductions plus the

opportunity cost of equity invested in housing minus the expected capital gain from a change in the value of the house. Equations (1), (2), and (3) delineate the current before tax, the current after tax, and the capital cost of housing, respectively.

(1) Current Cost of Housing

$$CC = [(1-\delta) * P * i] + T * P$$

(2) After Tax Current Cost of Housing

$$ACC = [(1-\delta) * P * i + T * P] * (1-t) * \gamma$$

(3) Capital Cost of Housing

$$CCX = [(1-\delta) * P * i + T * P] * (1-t) * \gamma + [\delta * r - \dot{p}^e]$$

where

δ = Down Payment Percent

P = House Price

i = Mortgage Interest Rate

T = Depreciation and Property Tax Rate

t = Marginal Tax Rate

γ = Proportion of Current Costs Deductible

r = Riskless Capital Market Interest Rate

\dot{p}^e = Expected Capital Gain on the House.

It is the difference between the current and capital cost of housing that, in my view, has created the dichotomy between the "affordability crisis" and the "best investment" view of homeownership. The affordability crisis in

California has mainly been a cash flow problem caused by the traditional level payment mortgage and the inability of households to continually monetize their expected or actual capital gains in housing. We now turn to a more detailed analysis of the data.

First Time Homebuyers--Current Costs

First time homebuyers are frequently constrained by the current costs of housing. These costs, both before and after taxes, are shown in Table 1. The table shows that, before tax deductions, current housing costs for the median priced house, have risen from almost 25 percent of median income in California to over 58 percent of median income by 1980. The June 1981 numbers are even more shocking--current costs before taxes were 71 percent of the median households' income. After-tax costs are lower because of the deductibility of interest and property tax expenses. Still, in June 1981, after-tax costs for the median priced home had risen to almost 50 percent of median household income.

The sum of mortgage payments maintenance costs, and property taxes must usually fall below a certain percentage of income in order to qualify for a loan. Also the down payment must be raised to be able to buy a home. A rough rule of thumb used by many lenders is that current housing costs should not exceed 35 percent of income. Using this rule, if tax benefits are not taken into account, a California household with the median income has not been able to qualify for a mortgage on a median priced existing home since 1976. If, however, tax benefits are considered, the median priced existing home could have been bought by a household

with the median income until early 1979. Thus, high current cash flow costs, the major portion of which consists of mortgage payments, prevent first time homebuyers from obtaining a mortgage. Clearly this cash flow constraint is severe for many households.

Throughout the decade, current housing costs (before taxes) in the United States as a whole were smaller relative to income than in California, as seen in Tables 2 and 3. Furthermore, California's before-tax costs rose at a faster rate, by 1981 being almost 25 percent higher relative to income than in the United States. For the first half of the seventies, however, after-tax costs in the United States were comparable to those in California. There are two reasons for this apparent disparity. First, the calculation of tax benefits in both cases is not strictly comparable -- the data on marginal tax rates and surplus standard deductions used in the calculations for the United States were not available for California. Second, interest rates and home prices were somewhat higher in California throughout the decade, and thus deductions were higher. While these factors were still evident in the second half of the decade, before-tax costs rose so much faster in California than in the rest of the nation that by 1981 after-tax housing costs were almost 11 percent more of the median household income in California than in the United States. Still this difference is not as large as the difference in house prices, with California prices nearly 60 percent higher than the rest of the country.

It is the difference in house prices which makes it especially difficult for new residents of the California coastal metropolitan areas

Table 1
Current Costs - California

Year	Homeownership CPI	Median Sales Price Existing Home	Effective Mortgage Rate (Percent)	Annual Mortgage Payments (\$)	Property Tax & Maintenance Costs (\$)	Down- Payment (\$)	Income (\$)	Payment to Income Ratios *	
								Before-Tax Deductions (Percent)	After-Tax Deductions (Percent)
1970	135.44	\$24,128	8.88%	\$1,732	\$603	\$6,146	\$ 9,441	24.7%	18.5%
1971	139.10	26,324	7.81	1,779	658	5,934	9,605	25.4	19.2
1972	145.28	28,479	7.56	1,917	712	5,969	10,236	25.7	19.4
1973	151.54	31,574	8.03	2,170	789	7,218	10,853	27.3	17.5
1974	166.10	36,271	9.15	2,635	907	9,558	11,593	30.6	22.8
1975	192.48	41,100	9.20	3,085	1,028	9,962	12,437	33.1	24.7
Annual rate of change 1970-1975	7.28%	11.24%	0.71%	12.24%	11.26%	10.14%	5.67%		
1976	209.26	\$52,297	9.13	3,941	1,307	12,269	13,417	39.1	29.2
1977	226.58	63,713	9.25	4,845	1,593	15,023	14,359	44.8	33.4
1978	251.33	71,281	9.95	5,684	1,782	17,471	15,869	47.0	35.6
1979	275.23	88,310	11.08	7,657	1,766	22,157	17,756	53.1	39.2
1980	337.56	97,754	12.92	9,863	1,955	23,411	20,198	58.5	42.8
1981	-	102,642	17.00	13,391	2,053	24,582	21,867	70.6	50.4
Annual Rate of change 1975-1980	11.23%	18.92%	7.03%	26.17%	13.72%	18.64%	10.18%		
Annual Rate of change 1970-1980	9.56%	15.02%	3.82%	19.00%	12.48%	14.31%	8.76%		

* Before Tax Payment to Income Ratio = [Annual Mortgage Payments + Property Taxes & Maintenance Costs] ÷ Income.
 After Tax Payment to Income Ratio = [Annual Mortgage Payments + Property Taxes & Maintenance Costs - Tax Benefits (in Table 7)] ÷ Income.

Table 2

Current Costs - United States

Year	Homeownership CPI	Median Sales Price Existing Home	Effective Mortgage Rate (Percent)	Annual Mortgage Payments (\$)	Down- Payments (\$)	Income (\$)	Payment to Income Ratios	
							Before-Tax Deductions (Percent)	After-Tax Deductions (Percent)
1970	128.5	\$23,400	8.45%	\$1,514	\$6,642	\$8,734	23.9	22.2
1971	133.7	25,200	7.74	1,587	6,466	9,028	24.4	24.3
1972	140.1	27,600	7.60	1,744	6,440	9,697	24.9	24.9
1973	146.7	32,500	7.95	1,932	7,167	10,512	25.3	25.2
1974	163.2	35,900	8.92	2,235	8,815	11,197	27.1	26.6
1975	181.7	39,300	9.01	2,524	9,390	11,800	28.9	28.3
Annual Rate of change 1970-1975	7.17%	10.93%	1.29%	10.76%	7.17%	6.20%		
1976	191.7	38,100	8.99	2,734	9,982	12,686	29.1	28.4
1977	204.9	42,900	9.01	3,139	10,682	13,572	31.0	30.9
1978	227.2	48,700	9.54	3,732	12,126	15,064	32.9	30.7
1979	262.4	55,500	10.77	4,649	14,430	16,730	36.0	33.6
1980	314.0	62,500	12.65	5,926	16,670	18,747	39.9	35.6
1981	-	67,900 ^e	14.6 ^e	7,520 ^e	18,081 ^e	19,871 ^e	44.6 ^e	39.7 ^e
Annual Rate of change 1975-1980	11.56%	9.76%	7.02%	18.61%	12.16%	9.70%		
Annual Rate of change 1970-1980	9.35%	10.34%	4.12%	14.62%	9.64%	7.94%		

Table 3
 Comparisons of Current Costs - United States and California
 1970-1975, 1975-1980

	<u>California</u>		<u>United States</u>	
<u>Annual Rates of Change 1970-1975</u>				
Homeownership CPI	7.3%		7.2%	
Median sales price new home	-		11.0	
Median sales price existing home	11.2		9.0	
Effective interest rates	0.7		1.5	
Annual payments	12.2		10.8	
Downpayment	10.1		7.5	
Income	5.7		5.1	
<u>Annual Rates of Change 1975-1980</u>				
Homeownership	11.2		11.6	
Median sales price new home	-		10.5	
Median sales price existing home	18.9		12.0	
Effective interest rates	7.0		10.2	
Annual payments	26.2		18.2	
Downpayment	18.6		13.1	
Income	10.2		11.0	
<u>Payment/Income Ratios</u>				
<u>Year</u>	<u>Before taxes</u>	<u>After taxes</u>	<u>Before taxes</u>	<u>After Taxes</u>
1970	24.7%	18.5%	23.9%	22.2%
1975	33.1	24.7	28.9	28.3
1980	58.5	43.1	39.9	35.6
1981	70.6	50.4	44.6	39.7

to purchase a home even if they owned one in another metropolitan area. Median house prices in the key California metropolitan areas were nearly all over \$100,000 in early 1981. This compares with a median house price of only \$64,000 in the Central Valley in California and with a United States median price of \$66,700. These price numbers are reflected in a national median price to median income ratio of 2.89 and in California a ratio of median price to median income of 4.7.

While most attention focuses on the affordability of the median priced house by the median income family, in fact, there is a wide distribution of both incomes and house prices in California. Thus the affordability crisis might be eased by an above median income family buying a below median priced house. Of course, many professional families (with three times median income) often complain they cannot find a "median" priced house. In essence, what they are saying is that they want a house higher than median quality--but they do not want to pay for it. Table 4a and 4b provide the distribution of house prices, for homes sold in December 1980, and of income for all California households and families households aged 25-34 for 1980.

Existing Homeowners

Homeowners who do not plan to move do not face the same housing costs as those who plan to buy a home. Their costs are based on historical costs: the interest rate and home price that existed when they bought their homes. Those homeowners who plan to move, however, will face current home prices and may face current interest rates if their home is not "creatively financed." They will also reap the benefits of rising home prices

Table 4-a

California Housing Price Distribution
December 1980--California

<u>Price Category</u>	<u>Percent of Sales</u>
Under 49,999	5.1
50,000 - 69,000	14.9
70,000 - 79,999	10.6
80,000 - 89,999	12.2
90,000 - 99,999	9.5
100,000 - 119,999	13.2
120,000 - 139,999	10.5
140,000 - 159,999	7.5
160,000 - 179,999	4.7
180,000 - 199,999	2.9
200,000 - 249,999	4.2
250,000 and over	4.9
Median	\$97,754

Source: California Real Estate Trends, published by the California Association of Realtors.

Table 4-b

California Income Distribution - 1980

Price Category	All Households	Families 25-34
0 - 4,999	6.2	4.1
5,000 - 9,999	16.7	9.5
10,000 - 14,999	13.9	12.6
15,000 - 24,999	24.1	28.2
25,000 - 49,999	30.9	40.5
50,000 and over	8.2	5.0
Mean	23,507	23,828

Source: Regional Data Associates.

in the capital gains they receive on their current house. These capital gains can either be used to make a larger down payment and reduce monthly payments, or be invested and the interest income received used to offset the mortgage payments. Thus in a cash flow sense, existing homeowners face no affordability crisis. In the opportunity cost sense the cost of housing is substantially higher. The cost of housing should include the value of the home owner's equity, as that could be invested elsewhere and earning a return for the homeowner. Realistically, unless the homeowner moves to South Dakota or Indiana, he cannot effectively monetize his equity.

Rental Affordability

The late 1970s have seen the spread of rental control and the general complaints by tenants that rents are rising too fast. In fact, just the opposite has been true, on average, in California. Rents have risen far less than the overall inflation rate and less than the income of renters. Rental costs during the seventies are outlined in Table 5. Median rent rose at a 6 percent annual rate during the decade, while median renter income rose at a 7 percent annual rate. Thus, rental costs were a declining portion of income for renters, falling from 22.6 percent of income in 1970 to 20.7 percent of income in 1980. In general, the national figures for rental costs show the same trend as the California numbers. Rental costs nationwide were a slightly higher portion of income in the United States as a whole than in California throughout the decade.

It is quite clear from these numbers that in general there is no "rental affordability" problem, though specific individuals, of course, may

Table 5
Rental Costs in California

Year	Rental CPI	Median* Rent	Rent/All Household Income	Median** Renter Income	Rent/ Renter Income
1970	144.7	\$ 1,534	16.2 %	\$ 6,787	22.6 %
1971	151.0	1,601	16.7	6,938	23.1
1972	154.6	1,639	16.0	7,354	22.3
1973	159.1	1,686	15.5	7,850	21.5
1974	166.8	1,768	15.3	8,223	21.5
1975	175.2	1,857	14.9	8,627	21.5
1976	187.0	1,982	14.8	9,316	21.3
1977	202.9	2,151	15.0	10,157	21.2
1978	220.5	2,337	14.7	11,110	21.0
1979	242.5	2,570	14.5	12,363	20.8
1980	268.7	2,848	14.1	13,789	20.7
Annual Rate of Change	6.38%	6.38%		7.35%	

* Median Rent is calculated from the Annual Housing Survey (1970, 1974, and 1975) and the ratio of median rent to rental CPI (\$10.5998) is multiplied by rental CPI to obtain values for remaining years.

** Median Renter Income is a weighted average of data from the Annual Housing Survey (1970, 1974, and 1975) -- growth rates are applied to derive values for years for which there were no data.

have a rental-income squeeze. Far more serious, from the viewpoint of the housing market, is the failure of rents to keep pace with inflation and induce a supply of new construction. If anything public policy should attempt to accelerate rather than control rent increases.

Capital Costs of Homeownership

The capital cost of homeownership is a more inclusive and economically valid measure of the cost of homeownership. It includes mortgage interest payments, the opportunity cost of the equity invested in the home, and the costs of insurance, maintenance, repairs, and property taxes. In addition, homeowners receive the benefits of being able to deduct interest and property tax payments on their federal income tax. Homeowners, especially in the seventies, could also expect the value of their home to appreciate. Thus, the capital cost of housing includes a measure of the change in the household's wealth due to house-price appreciation. The capital gains included in this calculation, while properly a component of wealth, are not realized until the house is sold. Thus capital costs must be carefully distinguished from the cash flows which were measured in Table 1.

Table 6 outlines the capital costs and benefits of homeownership in California during the seventies. The most striking aspect of the table is that the capital costs of homeownership were actually negative throughout most of the decade. The net gain homeowners experienced in the last half of the decade rose to nearly 50 percent of median household income. These gains have been declining since 1978, partially because of the rapid increase

Table 6

Capital Costs of Homeownership in California

Year	Mortgage Interest	Opportunity * Cost of Equity	Maintenance Property Taxes	Tax Benefits	Expected ** Capital Gains	Total Capital Cost	Capital Cost/ Income
1970	\$1,597	\$546	\$603	\$589	\$761	\$1,406	14.89%
1971	1,592	463	658	596	1,778	1,014	10.56
1972	1,702	451	712	639	1,793	566	5.53
1973	1,956	580	789	729	2,963	(367)	(3.38)
1974	2,444	876	907	896	4,102	(771)	(6.65)
1975	2,865	917	1,028	1,045	5,351	(1,586)	(12.75)
Annual Rate of change 1970-1975	12.40%	10.93%	11.26%	12.15%	47.71%	n.m.	
1976	\$3,655	1,120	1,307	1,332	9,663	(4,913)	(36.62)
1977	4,504	1,390	1,593	1,638	13,249	(7,400)	(51.54)
1978	5,354	1,738	1,782	1,820	14,482	(7,784)	(49.05)
1979	7,330	2,455	1,766	2,464	16,955	(7,868)	(44.31)
1980	9,605	3,025	1,955	3,175	15,140	(3,730)	(18.47)
1981	13,270	4,179	2,053	4,424	15,254	(176)	(0.80)
Annual Rate of change 1975-1980	27.37%	26.96%	13.72%	24.89%	23.12%	n.m.	
Annual Rate of change 1970-1980	19.65%	18.67%	12.48%	18.35%	34.86%	n.m.	

* Valued at the mortgage rate

** A three year moving average of actual capital gains

in mortgage interest rates, and the deceleration of home prices during that period. As of 1981, the capital cost of owning a home is almost zero. In the nation as a whole, however, the capital cost figures are somewhat different, starting the decade lower relative to income but remaining positive throughout the decade. Both the national and California numbers indicate that the net gains experienced from homeownership have declined in the last several years due to rising mortgage interest costs and smaller expected capital gains. Homes may no longer be the great investment they were five years ago, but homeowners in California still obtain shelter at a fraction of the costs faced by those who do not own their own home.

Alternative Mortgage Instruments and the Affordability Crisis

The affordability crisis in California has mainly been a cash flow problem. High cash payments required by traditional mortgage financing have made it extremely difficult to buy a first home. Alternative mortgage instruments may help alleviate this problem. In Table 7 the current costs presented in Table 1 are calculated using a Graduated Payment Mortgage rather than the traditional mortgage. It is quite clear that the GPM mortgage reduces the initial payment burden of households and goes a long way towards solving the affordability crisis. The after-tax payment/income ratio is reduced from 50 percent to 29 percent in 1981 using a GPM mortgage rather than a traditional fixed-payment mortgage.

Table 7

Current Initial Costs with Graduated Payment Mortgage

Year	Annual Payments	Initial Year Payment/Income	
		Before Tax	After Tax Deduction
1970	\$ 907	14.9 %	8.7 %
1971	912	16.3	10.1
1972	978	16.5	10.3
1973	1,118	17.6	10.9
1974	1,388	19.8	12.1
1975	1,626	21.3	12.9
Annual Rate of Change	12.38%		
1976	\$ 2,075	25.2 %	15.3 %
1977	2,557	28.9	17.5
1978	3,041	28.1	16.7
1979	4,186	33.5	19.6
1980	5,579	37.3	21.6
1981	8,119	46.5	26.3
Annual Rate of Change 1975-1980	37.94 %		
Annual Rate of Change 1970-1980	24.5 %		

Conclusion:

Does an affordability crisis really exist in California? Given that the capital cost of homeownership is 5% (assuming a capital gain of 10 percent per year), an affordability crisis would not exist in a world of perfect capital markets. In such a world the prospective homeowner would be able to obtain financing which would take into account the tax benefits of homeownership as well as expected income increases and capital gains. Many of the alternative mortgage instruments currently being used and being considered take these factors into account. As seen above, the GPM reduces initial mortgage payments, making mortgages affordable for a much larger portion of the population. Another alternative mortgage, the Shared Appreciation Mortgage (SAM), explicitly takes into account the expected capital gains arising from homeownership. With a SAM the lender offers a lower mortgage rate in return for a percentage of the capital gains. Working Paper 81-34 describes these instruments in detail. It is the widespread use of the inflexible traditional mortgage instrument which has made homeownership an almost unattainable dream for most first time homebuyers. New mortgage instruments promise a partial solution to the "affordability" problem in California.

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