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Author
Rosen, Kenneth T.

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OF CAPITALIZATION EFFECTS

BY
KENNETH T. ROSEN

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CREATIVE FINANCING AND HOUSE PRICES: A STUDY OF CAPITALIZATION EFFECTS

by

Kenneth T. Rosen
University of California
Berkeley

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"CREATIVE FINANCING AND HOUSE PRICES: A STUDY OF CAPITALIZATION EFFECTS"

by

Kenneth T. Rosen

The last three years have seen a dramatic restructuring of the housing finance system in California and throughout the nation. This restructuring is a function of the interaction of market conditions and a strong deregulation effort on the part of the Federal Government. The market conditions have been characterized by extraordinarily high and volatile short and long-term interest rates. The volatility and the upward trend in interest rates have made it extremely difficult for the traditional mortgage lenders to create and hold long-term fixed rate mortgages profitably. At the same time, high mortgage rates have made homeownership prohibitively expensive for most first time entrants to the California housing market.

The result of these market conditions has been a phenomenal growth of "creative financing" arrangements. While the term creative financing can be applied to a number of alternative financing techniques, we confine ourselves to three major mechanisms. The first is the "buydown" of mortgage interest rates for a two-to five-year period
by a new home builder. Thus, the builder is reducing his buyer's cost for a period of time by paying the interest for the buyer to the financial institution. Presumably, after this period of time, the borrower's income will have risen (because of inflation) so that he or she could afford market rate financing.

The second major mechanism concerns the financing of existing houses through the assumption (transfer) of an existing low rate mortgage loan by the buyer from the seller. The third mechanism involves the provision by the seller of a first, second and/or third mortgage loan, often at below market rates. The extent of these techniques for financing existing home sales has been estimated to be as high as 75 percent of all transactions in California in the past year.

The consequences of the widespread use of creative financing techniques are substantial and differ depending on the party to the transaction. Our research focuses on one possible impact of creative financing. Our study, which is of equal interest to all involved in the transaction, concerns the impact of creative financing on house prices. Given that creative financing involves below market interest rates, at least a portion of these discounts should, theoretically at least, be reflected in higher housing prices. The major purpose of this study is to examine the extent to which below market rate financing is capitalized
in higher housing prices.

The study has four parts. The first involves quantifying the amount of creative financing used in California and around the country. The second portion of the study sets out a theory of house price capitalization. The third phase of the study involves estimating a set of regression equations on the California housing transaction data to derive a measure of the capitalization effect. The final portion of the study creates an adjusted house price series for California using the data derived in Section I and the regression results in Section III.
Section I: The Extent of Creative Financing

Measuring the extent of the use of creative financing in the California and national housing markets is not a straightforward task. Several different techniques have been used. The first is the survey technique in which a sample of home transactions is constructed. The California Association of Realtors, the National Association of Realtors and Century 21 Realty have all conducted such surveys. These surveys yield valuable information on the type and characteristics of creative financing transactions. Our own random sample survey provides similar information which we use in Section IV of this study. However, because of the difficulty in expanding small samples to the universe of all transactions, none of these surveys can be used to determine the aggregate amount of creative financing.

We have, therefore, used an alternative methodology to compute the amount of creative financing. Our technique first calculates the total dollar value of housing transactions. This is done by taking total home sales and multiplying average house prices times average loan to value ratio. This is done separately for the new and used housing markets. This provides an estimate of the total demand for financing in the state and nation. We then subtract from these numbers the dollar amount of
institutional mortgage originations (from savings and loans, commercial banks, mortgage bankers, mutual savings banks, etc.) to determine the amount of mortgage assumptions and seller financing that has occurred. While this is a somewhat complicated methodology, the results give a fairly accurate measure of the amount of non-traditional financing. Table 1 shows the series used for the calculation described above.

It is quite clear from this chart that the use of creative financing has skyrocketed in the last several years. Nearly 50 percent of the value of home sales is being financed creatively in California and over 43 percent of the value of national home sales is being creatively financed. This compares with a normal value of 20 percent. These estimates are quite consistent with the CAR survey which showed a 70 percent incidence of creative financing and the NAR survey which showed a 60 percent incidence of creative financing in terms of the number of transactions.
### Table 1: Extent of Creative Financing (Billions of Dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>Value of Home Sales</th>
<th>Institutional Mortgage Originations</th>
<th>Institutional Financing (Percent of Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>United States</td>
<td>California</td>
<td>United States</td>
</tr>
<tr>
<td>1970</td>
<td>51.0</td>
<td>6.1</td>
<td>35.5</td>
</tr>
<tr>
<td>1971</td>
<td>76.0</td>
<td>9.8</td>
<td>57.7</td>
</tr>
<tr>
<td>1972</td>
<td>96.1</td>
<td>12.2</td>
<td>75.8</td>
</tr>
<tr>
<td>1973</td>
<td>102.4</td>
<td>11.8</td>
<td>79.1</td>
</tr>
<tr>
<td>1974</td>
<td>89.4</td>
<td>10.4</td>
<td>67.5</td>
</tr>
<tr>
<td>1975</td>
<td>98.5</td>
<td>12.7</td>
<td>77.9</td>
</tr>
<tr>
<td>1976</td>
<td>136.2</td>
<td>20.2</td>
<td>112.7</td>
</tr>
<tr>
<td>1977</td>
<td>188.8</td>
<td>30.0</td>
<td>161.9</td>
</tr>
<tr>
<td>1978</td>
<td>226.6</td>
<td>33.4</td>
<td>185.0</td>
</tr>
<tr>
<td>1979</td>
<td>234.3</td>
<td>35.6</td>
<td>186.5</td>
</tr>
<tr>
<td>1980</td>
<td>193.7</td>
<td>29.9</td>
<td>133.7</td>
</tr>
<tr>
<td>1981</td>
<td>170.4</td>
<td>26.8</td>
<td>97.2</td>
</tr>
</tbody>
</table>
Section II: The Capitalization of Creative Financing in House Prices -- Theoretical Model

The essence of our capitalization model involves the view that a household purchasing a home with favorable creative financing is purchasing not only the house with all its physical and locational characteristics but is also purchasing a package of financing from the seller (in the case of an existing home transaction). Since the buyer is receiving an assumable first mortgage and/or a seller second mortgage below current market rates, the buyer should be willing to pay and the seller should demand a price premium for a sale which includes favorable financing. The amount of the premium will vary depending on the present value of the savings over current market financing that the favorable financing package provides. Generally, the lower the interest rate and the longer the term of the financing package, the more valuable the package will be. Adding to these favorable terms would be the fact that, in most cases, the buyer of a house with creative financing would avoid stringent institutional qualifying criteria. Thus, buyers who might otherwise be considered "marginal" from the financial institutions' viewpoint might obtain financing in this fashion.

Offsetting these positive effects on price are several other factors. A creatively financed home purchase might
involve a larger downpayment from the buyer as a significant portion of the old low-rate loan might have already been paid off. Everything else equal, this would tend to lower the creative finance price premium. Second, a creative financing package with a balloon second due in one to three years might be considered risky by the buyer and so, despite a concessionary interest rate, might command a smaller price premium. Finally, since mortgage interest payments are tax deductible, taxpayers in high marginal tax brackets will not value savings from a creative financing package as highly as if there were no interest tax deduction.

Given this array of factors that may influence the "creative finance price premium," it would be a mistake to assume that a direct adjustment, based on the present discounted value of the cash savings from the financing package, (known as the cash equivalence method in the appraisal literature) to the sales price, would be appropriate. In fact, only a statistical analysis based on actual market transactions will provide an estimate of the market's valuation of "creative financing premium." It is to these results that we now turn.
Section III: Empirical Estimates of the Financing Premium

A. "Creative Financing Data Set"

The key to the success of this study was obtaining a random sample of home transactions segmented by geographic area, financing terms and housing characteristics. We gathered this sample through the cooperation of a major title insurance company. We supplemented this title company data by tracing through data on housing unit characteristics with the assistance of the county assessor's office in one of the largest counties in California. Thus, from these two sources we were able to construct a data set which had data on both financing and housing characteristics for sales transactions taking place in June 1981.

The data also allowed us to calculate the actual savings in monthly payments that the creative financing package provided. We calculated the savings from an assumable or a seller-provided first mortgage by taking the difference of the present discounted value of the monthly payment stream under the actual terms of the financing and the monthly payment stream that would be required under conventional financing as proxied by the Federal Home Loan Bank of San Francisco contract mortgage rate for June 1981. A similar calculation was done for seller second and other higher order financing using an appropriately higher market
mortgage interest rate. It must be emphasized that these mortgage payment savings calculations in no way imply value as that is the empirical question we are trying to test.

The characteristics of our data set are shown in detail in Table 2. The data appear to represent a good sample of the middle price range of housing transactions in June 1981.* The mean house price was $110,000 with a mean down payment of $23,345 or 20 percent of value. Two thirds of transactions had an assumable first mortgage, 61 percent had a seller second mortgage, and 52.6 percent has both an assumable first and a seller second. The mean cash payment savings to the buyer from creative financing were $10,835 for our sample. The vast majority of the savings arose from the assumable first mortgage as a result of the longer life, lower interest rate, and generally larger amount of those contracts. The mean savings from the assumable firsts was nearly $8,500. The mean cash payment savings from the seller seconds was only $800 reflecting the shorter life, smaller amount, and higher interest rates on those loans.

* Our sample was purposely stratified to eliminate extraordinarily high priced houses.
### TABLE 2

**HOUSE TRANSACTIONS STATIFIED SAMPLE**

In a Large Country in Northern California

June 1981*

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Error of Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>House Price</td>
<td>110,000</td>
<td>3982</td>
</tr>
<tr>
<td>Down Payment</td>
<td>23,346</td>
<td>2915</td>
</tr>
<tr>
<td>Down Payment (%)</td>
<td>19.86</td>
<td>1.95</td>
</tr>
<tr>
<td>Assumed Firsts (%)</td>
<td>66.6</td>
<td>--</td>
</tr>
<tr>
<td>Seller Seconds (%)</td>
<td>61.4</td>
<td>--</td>
</tr>
<tr>
<td>Assumed Firsts and Seller Seconds (%)</td>
<td>52.6</td>
<td>--</td>
</tr>
<tr>
<td>Cash Payment Savings (PVD)</td>
<td>10,835</td>
<td>893</td>
</tr>
<tr>
<td>Cash Payment Savings (PVD) (Assumable First Only)</td>
<td>8,455</td>
<td>995</td>
</tr>
<tr>
<td>Cash Payment Savings (PVD) (Seller Second Only)</td>
<td>798</td>
<td>297</td>
</tr>
<tr>
<td>Number of Rooms</td>
<td>5.94</td>
<td>.168</td>
</tr>
<tr>
<td>Number of Bedrooms</td>
<td>2.96</td>
<td>.109</td>
</tr>
<tr>
<td>Number of Baths</td>
<td>1.67</td>
<td>.075</td>
</tr>
<tr>
<td>Square Feet</td>
<td>1,299</td>
<td>46.8</td>
</tr>
<tr>
<td>Age</td>
<td>18.5</td>
<td>2.04</td>
</tr>
<tr>
<td>Percent with Pool (%)</td>
<td>5.26</td>
<td>--</td>
</tr>
</tbody>
</table>

* The date sources asked for confidentiality so the county could not be identified. The sample was also statified to eliminate high priced house transactions.
B. Regression Estimates

The data set described above was then utilized in a fairly straightforward hedonic price regression. The dependent variable was the sales price of the house. The independent variables included a wide array of housing characteristics and our estimate of cash payment savings to the buyer. Equation (1) shows this formulation.

(1) \[ \text{Price} = \alpha_0 + \alpha_1 x_j + \alpha_2 \text{Savings} \]

where \( x_j \) = array of housing characteristics

The coefficient \( \alpha_2 \) should provide an estimate of the market value of the creative financing package. A coefficient of 1 would indicate full capitalization and would coincide with the cash equivalence method. In fact, because of the factors discussed in Section II, the coefficient could be greater or less than 1.

The results of our estimation are shown in equations (2) and (3). Equation (2) shows the results for all housing characteristics, while equation (3) shows the results for only the significant set of housing characteristic variables. T-statistics are shown below the coefficients.
(2) \[ \text{Price} = 42086 + 18.09 \text{ Down Payment Percent} \]
\[ (2.94) \quad (.07) \]
\[ + 11221 \text{ Baths} - 1178 \text{ Rooms} - 520 \text{ Bedrooms} \]
\[ (1.92) \quad (-.28) \quad (-.10) \]
\[ + 79.2 \text{ Age} + 50.3 \text{ Square Foot} - 28454 \text{ City Dum} \]
\[ (.44) \quad (3.56) \quad (-4.14) \]
\[ - 1292 \text{ Pool} + 1.017 \text{ Savings} \]
\[ (-.09) \quad (2.15) \]
\[ R^2 = .6838 \quad F = 11.29 \ (57/10) \]

(3) \[ \text{Price} = 40565 + 10524 \text{ Baths} \]
\[ (3.80) \quad (2.02) \]
\[ + 80.1 \text{ Age} + 46.3 \text{ Square Foot} \]
\[ (.47) \quad (5.29) \]
\[ - 29393 \text{ City Dum} + 1.046 \text{ Savings} \]
\[ (-5.47) \quad (2.54) \]
\[ R^2 = .6828 \quad F = 21.96 \ (57/6) \]

The results in equation (2) show that there is clearly a substantial amount of collinearity between various characteristics of the house and size as measured by square footage. A city dummy variable to represent locational attributes within a county was also included.

The results in both equation (2) and equation (3), which eliminate the collinear variables, show that the coefficient on cash payment savings from creative financing
is approximately 1. This implies that the cash equivalent method is a good first approximation of the appraisal adjustment required for creative financing. It thus appears that the market, at least in our data sample, is valuing creative financing at its presented discounted cash value, with the buyer paying a full creative financing premium for this financing package.
Section IV: A House Price Series Adjusted for Creative Financing

Combining the results of Section I and Section III, it is then a fairly straightforward procedure to create an adjusted house price series for California. Basically, our regression results confirm that we can use the cash equivalence method on transactions that are creatively financed. Thus, based on our sample, we would reduce by 9.8 percent the selling price of the average house that was creatively financed in 1980 and 1981 in California. This aggregate adjustment must be contrasted with the disaggregate adjustment that would result from the individual terms of each transaction.

Using the data in Table 1, we can then apply this discount to the proportion of the value of transactions using creative financing. We also assume that prior to 1979 creative financing did not involve substantial savings to the borrower and thus no price correction is necessary. Table 3 shows the actual and corrected price series in 1980 and 1981 and our estimate for 1982. The creative finance premium in the aggregate California house price series is thus estimated to be 3.0 percent in 1980, 4.6 percent in 1981 and 5.5 percent in 1982. Since over 80 percent of the premium is due to the assumption of a first mortgage, the
TABLE 3

CALIFORNIA HOUSE PRICE APPRECIATION

Adjusted for Creative Financing

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate of Appreciation -Existing Homes-*</th>
<th>Creative Finance Adjustment</th>
<th>&quot;True&quot; Price Appreciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>20.2</td>
<td>---</td>
<td>20.2</td>
</tr>
<tr>
<td>1976</td>
<td>11.6</td>
<td>---</td>
<td>11.6</td>
</tr>
<tr>
<td>1977</td>
<td>27.9</td>
<td>---</td>
<td>27.9</td>
</tr>
<tr>
<td>1978</td>
<td>13.7</td>
<td>---</td>
<td>13.7</td>
</tr>
<tr>
<td>1979</td>
<td>18.6</td>
<td>---</td>
<td>18.6</td>
</tr>
<tr>
<td>1980</td>
<td>18.3</td>
<td>-3.0</td>
<td>15.3</td>
</tr>
<tr>
<td>1981</td>
<td>7.5</td>
<td>-4.6</td>
<td>2.9</td>
</tr>
<tr>
<td>1982&lt;sup&gt;E&lt;/sup&gt;</td>
<td>3.0</td>
<td>-5.5</td>
<td>-2.5</td>
</tr>
</tbody>
</table>

* Source: Raw data on house appreciation from Mike Salkin, Bank of America
recent decision confirming the enforcement of the due on sale clause if applied fully to California data, would reduce reported sales prices by approximately 5.5 percent relative to an assumable mortgage environment.