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AFFORDABILITY AND THE VALUE OF SELLER FINANCING

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ABSTRACT

The typical methodology in valuing seller financing consists of calculating a discount -- the present value of the after-tax interest savings due to the creative financing -- and including this variable, along with other characteristics of the purchased house, in an hedonic price equation explaining the house price actually paid. Resulting from this equation is a set of marginal prices corresponding to each characteristic of the house, including the quantity (discount) of creative finance accompanying the house. The central question usually addressed is whether the discount is fully capitalized in the value of the house -- whether the price of creative finance is unity. In our view, one should not ask what the price of creative finance is because this price, like that of other housing attributes, likely depends upon supply and demand conditions. We develop and estimate a model incorporating this dependency.

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Affordability and the Value of Seller Financing*

Donald R. Haurin and Patric H. Hendershott

A plethora of studies have appeared recently on the value of creative financing [see Jaffe (1984) for a summary]. The typical methodology consists of calculating a discount -- the present value of the interest savings due to the creative financing -- and including this variable, along with other characteristics of the purchased house, in an hedonic price equation explaining the house price actually paid. Resulting from this equation is a set of marginal prices corresponding to each characteristic of the house, including the units or quantity (discount) of creative finance accompanying the house. The central questions usually raised is whether the discount is fully capitalized in the value of the house -- whether the price of creative finance is unity.

In our view, one should not ask what the price of creative finance is because this price, like that of other housing attributes, likely varies with supply and demand conditions. In a high interest rate/inflation environment, many borrowers have short-run affordability problems. Mortgage payments that will be a minor burden in five years, owing to future nominal income growth, can be a major burden initially. By providing below-market financing for three to five years, seller financing, like builder buydowns and graduated payment mortgages, increases affordability. Similarly, creative financing may allow low wealth buyers to avoid equity downpayment requirements typically faced in the conventional market. The "market price" of a specific creative financing package at any point in time should depend on the ability of the package to address the affordability and downpayment problems of potential buyers.

Moreover, the market price of a typical creative financing package should vary over time, depending on the aggregate demand for and supply of seller finance. When affordability is a major problem overall, creative finance will be in great demand and its price will be relatively high. In contrast, when the availability of creative finance increases, buyers are likely to be able to obtain a given discount for a lower price.[2]

A prior question to determination of the price or value of creative finance is measurement of the discount or the quantity of creative finance. The terms of the seller financing -- initial balance, contract interest rate and repayment schedule -- are generally known, but the "market" interest rate to which the contract rate is compared and with which the resultant interest savings (after-tax) are discounted is not. The appropriate market rate to employ in the calculation depends on the term, default risk and call risk of the loan. The coupon on long-term fixed-rate 80% loan-to-value mortgages being issued at the time of the creative financing, a popular candidate, obviously pertains to too long a term and contains too large a call premium for virtually all seller financing deals.[1] On the other hand, the default premium in this yield is likely too small except for unusually low loan-to-value deals. The market rate for each transaction must be determined individually, depending on the loan-to-value ratio, the term of the loan and the distance the interest rate is below-market (the further below market and the shorter the term, the lower the call premium), and the tax rate of the typical buyer of houses of this type. (The latter, by the way, is the average rate the typical buyer who has taken on substantial debt would be paying, not the higher average rate of the typical holder of houses in the pertinent price range.)

Our paper is divided into five sections. In the first we present a model incorporating a dependency of the real prices of creative finance and other housing attributes on demand and supply conditions, and in the second we discuss the measurement of the quantity of creative finance. Our sample of 162 sales in Columbus, Ohio over the 1979-84 period is described in Section III, and the econometric results are reported and interpreted in Section IV. A summary concludes the paper.

I. The Model

The hedonic price model when applied to housing is based on the assumption that consumers value the components of a house such as lot size, structural characteristics and neighborhood amenities (Rosen, 1974). Total value is determined by the quantities of these components and the manner in which they are bundled into a package. The basic hedonic model is easily extended to include the seller's financing package as a determinant of house value:

$$V = V(h, z),$$

where V is real house value (the recorded sales price deflated by a general price level), h is a vector of structural and neighborhood characteristics of the house and property and z is the "quantity" of creative financing.[3] The implicit real market price (unobserved) of attribute i is $\partial V/\partial h_i = p_i$, and for creative financing the price is $\partial V/\partial z = p_z$. Thus, a linear hedonic price equation implies:

$$V = \beta_o + \Sigma p_i h_i + p_z z. \qquad (1)$$

All the p's should, of course, be positive assuming that the characteristics are defined in a manner such that increased amounts yield increased utility.

The Real Price of Creative Finance

The price of greatest concern in this study is the implicit price of creative financing. At any point in time, this price is affected by specific characteristics of the financing such as the extent to which affordability (a) is increased or the initial downpayment or equity constraint required in the conventional market (e) is relaxed. Again assuming linearity, we write

$$p_z = \beta_1 + \beta_2 a + \beta_3 e. \qquad (2)$$

We measure a as the percentage reduction in the initial monthly payment achieved by the specific creative financing package. With PAYC and PAYO, respectively, being the payments on the creatively and ordinarily financed loans,

$$a = (PAYO - PAYC)/PAYO.$$

PAYC depends on the specific package and PAYO is computed from the standard formula.[4] The greater is a, the more affordable is the house and thus the higher is the price of a unit of creative finance ($\beta_2 > 0$). In the few cases where $a < 0$, it is set equal to zero because a buyer would never choose a loan with a negative a if affordability mattered.

The minimum equity downpayment ratio in the private market is 0.05 plus the 0.0125 first year private default insurance premium. Thus we define the equity constraint as

$$e = \begin{cases} 1.0 - LV & \text{if } e < .0625 \\ .0625 & \text{otherwise,} \end{cases}$$

where LV is the ratio of the loan to the nominal selling price of the house. The lower is e, the more the package has relaxed the equity constraint and the more valuable is the package ($\beta_3 < 0$).

The market price for a specific creative financing package should vary over time with changes in the aggregate demand for and supply of creative financing. On the demand side, we should look to macroeconomic counterparts (A and E) to the a and e variables discussed above. The aggregate affordability index computed by the National Association of Realtors (the ratio of median family income to FNMA's "qualifying income" based on an 80 percent loan-to-value ratio loan on the median-priced existing single-family home) is the obvious choice. The greater is affordability generally, the less valuable is creative finance. Because the importance of the downpayment constraint likely varied little over this period, no macroeconomic E variable is introduced.

Identification of macroeconomic supply side variables is more difficult. Owners will be more likely to provide seller financing if they can obtain below-market funds themselves. Such would be the case if they had far below-market rates on existing loans from institutional lenders who were willing to provide short-term below-market loans in order to get long-term below-market loans off the books. We define S as the difference between the new-issue mortgage rate on loans closed at savings and loans and the average yield on the existing portfolio of loans at these institutions.[5] The greater is S, the lower will be the price of a unit of creative finance. Continuing our linearity assumption, we express the constant term in equation (2) as

$$\beta_1 = b_1 + b_2 A + b_3 S. \qquad (3)$$

The Real Price of Housing

If the real price of housing were constant over the 1979-84 estimation period, the p_i's could reasonably be treated as constants. However, the general rise in both nominal and real after-tax interest rates during this span suggests that the real prices may have declined. Two variables are tested as determinants of real house prices: and the real annual rental cost of owner-occupied housing, U, as computed by Hendershott and Shilling (1982) and the NAR's affordability index, A. Movements in the former are dominated by changes in real after-tax mortgage rates; movements in the latter by changes in nominal mortgage rates. Ideally, U and A would be interacted with all the h_i (all of the p_i would depend on U and A); given our limited degrees of freedom, we allow the real price of only the most important attribute, quality-adjusted square feet (h_1), to vary over time. More specifically, we write

$$p_1 = p_{11} + p_{12} U + p_{13} A. \qquad (4)$$

The higher is the annual cost of housing, the lower should be the price ($p_{12} < 0$). The more affordable is housing, the higher should be the price ($p_{13} > 0$).

Using equations (1)-(4), our preliminary estimation equation is

$$V = \beta_o + (p_{11}+p_{12}U+p_{13}A)h_1 + \sum p_i h_i + (b_1+b_2A+b_3S+\beta_2 a+\beta_3 e)z. \qquad (5)$$

The implicit price of creative financing (the coefficient on z) depends upon the levels of A, S, a, and e. The price will vary temporally with changes in A and S and across observations at any point in time depending on the reductions

in the equity downpayment and monthly mortgage payment offered in a particular financing package relative to ordinary financing. As discussed above, we anticipate $\beta_2 > 0$ and b_2, b_3, $\beta_3 < 0$. Also, we expect $p_{12} < 0$ and $p_{13} > 0$.

II. Measurement of z

Contrast a balloon payment mortgage of maturity M, amount LC, and rate i for the creatively financed loan with an alternative loan of the same maturity and amount but at rate o, the opportunity market cost of the financing. The after-tax present value of monthly payments for the creatively financed loan is:

$$z_c = \sum_{t=1}^{M} \frac{PAYC - i\tau LC_t}{[1 + (1-\tau)o]^t},$$

where PAYC and the time path of LC_t are defined by the contract. The after-tax present value of monthly payments for the first M periods of the alternative loan, which amortizes over N periods, is specified as:

$$z_o = \sum_{t=1}^{M} \frac{PAYO - o\tau LO_t}{[1 + (1-\tau)o]^t},$$

where $LO_t = LC_1[(1+o)^N - (1+o)^t]/[(1+o)^N - 1]$. We specify M as the minimum of the stated period of the loan and 8.1 years. Truncating the maturity of creatively financed loans in this manner accounts for the high probability of relocation or refinancing within 8 years of house purchase.[6]

The nominal quantity of seller financing reflects differences in both the present values of after-tax loan payments and the present values of the outstanding loan balances when the balloon comes due:[7]

$$Pz = z_o - z_c + (LO_M - LC_M)/[1 + (1-\tau)o]^M.$$

To obtain the real quantity, z, we deflate by the CPI-U XI (experimental urban-based CPI), rescaled to unity in January 1979. This deflator is also used to obtain the real house value, V.

The tax rate is inferred from the real house value and a regression, based on the 1979 Michigan Panel Study of Income Dynamics, of marginal tax rates of recent movers on the real values of their house purchases. The regression is

$$\tau = .18 + \underset{(17.7)}{.0000015}\ V. \qquad \bar{R}^2 = .20$$

The t-statistic suggests a quite systematic relation. The tax rate used below in the calculations of our discount varies from a low of 0.21 (real house value of $20,000) to a high of 0.30 (real house value of $80,000).

The most difficult task is specifying o. In general, we write

$$o = g + s + d + c,$$

where g is the risk-free yield of maturity equal to that of the creative financing deal,

s is the servicing fee charged on regular financing,

d is the default premium that would be charged on equally-risky regular financing, and

c is the call premium that would be charged on regular financing with equivalent call risk.

We set s equal to 0.25% and vary d with the initial loan-to-value ratio (see Table 1). For LVs from 80.1 to 95%, the premium is roughly that charged by private mortgage insurers, computed by spreading the difference between their first year fee and 0.25 over roughly 5 years and adding it to the 0.25 annual

fee (insurers raised these fees in late 1984). For LVs of 80% and less we use our estimate of the fee private lenders would build into the mortgage coupon rate. For 95.1 to 97.5% loans, we add 0.20 to the fee on 95% loans; for loans above 97.5% we assume a full 1% default premium. (As indicated in the Table, the creatively financed loans in our sample are spread widely across the spectrum of loan-to-value ratios, with roughly a third having LVs under 75% and one-quarter being over 90%.)

The call premium is especially difficult to estimate because it depends on both the maturity of the loan and the amount by which the loan rate is below market. During the late 1979 - early 1983 period, the call premium on a par-value 30-year mortgage was roughly 1.5% (Hendershott, Shilling and Villani, 1983). Call would have less value for shorter maturity loans and for below-par loans (those with coupon rates below-market). Table 2 indicates our presumed values of call for different combinations of the maturity and distance below market of special financing deals. No number appears when the call value is assumed to be zero. (For our sample, 10 loans have a ¼% call value and 13 loans have higher values, spread about evenly from ½% to 1½%.)

III. The Data Sample

A random sample of 90 creatively financed houses was drawn from the Columbus, Ohio metropolitan area. As a supplement, a sample of 72 non-creatively financed houses was added, these additional houses paired with the creatively financed observations. All creatively financed observations are land contracts available for public inspection. To be included in the sample used in the empirical analysis, the land contracts had to report sale price, the term of the loan, a single interest rate, and monthly payment.

The rest of the sample was of transactions that were conventionally financed and gave no indication of a loan assumption. Observations were obtained by searching for a transaction within a one city block area of a

creatively-financed transaction occurring at a similar point in time. Because of these constraints, matches could not always be obtained. Thus the conventionally-financed sample is of slightly smaller size. The sample period for creatively-financed transactions extends from August 1980 to March 1984, while that for conventionally-financed transactions is somewhat longer, October 1979 to May 1984.

One potential problem with the analysis of creative financing is the inclusion of intra-family or other unusual transactions. These transactions could include a wealth transfer (gift) using the financing of the purchase of the parent's house by the children as the vehicle for the transfer. A number of obvious intra-family transactions were deleted from the original sample. In addition, we deleted 5 observations with no downpayment, 4 observations with $a > 0.5$, 2 with $a < -0.25$, and 2 observations where z/V exceeded 0.3.

In the hedonic price approach, the quantities of structural and locational attributes of a house must be controlled for. Measures of lot size, the square footage of the structure, the type of attic and basement, the number of plumbing fixtures, whether centrally air conditioned or not, the type of exterior, the percentage of the house already depreciated (in the assessor's view), an index of special features, and jurisdictional dummies were obtained from the county tax assessor's office. Table 3 contains variable means and definitions, including the product of square feet and the fraction of the house not yet depreciated.

IV. The Empirical Results

Table 4 contains three sets of coefficient estimates. These equations include z along with the nonfinancial variables affecting real house value. All variables in column 1 have the expected positive signs; the most

significant are area (square footage) and the assessor's estimate of the undepreciated fraction of the property. A more plausible model would include the product of these variables, the quality-adjusted area, rather than the separate variables. The adjusted $\bar{R}^2$ at the bottom of column 2 indicates that such a model does indeed work better. Brick exterior, central air, special features, the high-tax suburb dummy, and quality-adjusted area all have t-statistics in excess of 2.0. The price of special features is of particular interest to accessors. The accessor is asked to state the value of special features in $100 units. The $117 estimated price of these units is not far from the expected $100 value; moreover, in our final equation in Table 5, the estimated price is $102.

The real price of housing (of the quality-adjusted square-foot characteristic) is allowed to vary in column 3 with changes in the annual cost of housing (the real after-tax mortgage rate) and in affordability (the nominal mortgage rate). While movements in both of these variables suggest that a decline in real house prices would be observed between early 1979 and mid 1982, affordability has increased since mid1982, suggesting a recovery in real house prices, but the annual cost variable has remained roughly constant at a high level, suggesting real house prices would not increase. As can be seen, the cost variable seems to be the relevant one, based on the relatively large t-ratio (the affordability variable has the incorrect sign, but its coefficient is very near zero). The cost variable rose from 0.02 in 1978-79 to 0.10 in 1982-83. Evaluated at the mean value of ADJAREA, this increase lowers real value (V) by $6,000, or 14 percent relative to the mean real value in our sample.

The z coefficient (p_z) in these equations is just over one half, with a t-statistic of about 1½ (significantly greater than zero at the 0.10 level). Table 5 contains estimates of the variable-p_z model in which all the determinants of p_z (A, a, e and S) are interacted with z (column 1). These

estimates are not very appealing: only two of the determinants, A and a, have coefficients with the expected signs, and only one of these has a t-statistic greater than unity. The F value of the test of the joint (null) hypothesis that the coefficients of all of the intereaction terms are zero is only 1.18; the null hypothesis cannot be rejected.

In the face of these disappointing results, we were lead to reconsider our linearity assumption. For example, the success of a given quantity of creative finance in addressing the affordability problem might raise the price of creative finance at an increasing rate. So might a reduction in aggregate affordability. To test for nonlinearities, we have replaced b_2Az with $b_{21}Az + b_{22}A^2z$ and $\beta_2 az$ with $\beta_{21}az + \beta_{22}a^2z$. Given our hypotheses about β_2 and b_2, we expect the partial derivatives of p_z with respect to A and a to be, respectively:

$$b_{21} + 2b_{22}\bar{A} < 0$$

$$\beta_{21} + 2\beta b_{22}\bar{a} > 0,$$

where $\bar{A} = 71$ and $\bar{a} = 0.1952$ are the means of the variables. The coefficients in the second column of Table 5 are consistent with these hypotheses. Moreover, the e and S coefficients are now very near zero. The third column excludes these variables, and the equation F value rises to 1.86 which is significant at the 12% level.

Based on these results, we have computed the sensitivity of p_z to the aggregate level of affordability, A, and to the ability of a given quantity (z) creative-finance contract to address the affordability problem by lowering the initial monthly mortgage payment, a. The middle row and column of Table 6 are based on the mean values of A and a for creatively-financed contracts in our sample. That is, on average, the income of the median income family was 71 percent of the income needed to qualify for a 80% loan, at market rates, on the median priced house, and creatively-financed contracts lowered the initial monthly mortgage payment by 19½ percent. The other a values are one standard

deviation from the mean. The high A value is the average of the affordability index in the March-October 1980 period, just before the affordability crunch really set in; the low A value is the average during the June 1981-August 1982 period, when affordability was at its lowest level. Each of these values is also approximately a standard deviation from the mean value of A.

The general contours of the prices in Table 6 are quite appealing, although there are some difficulties with the details. Going from left to right across any given A row, a creatively-financed contract of given quantity has a higher price the more the contract addresses the affordability problem. For example, at the mean aggregate affordability level (A=71), contracts that lower initial mortgage payments little have little value, while those that reduce payments by 30 percent (shorter contracts with a further below-market rate) are worth more than their "book" value. Also, we see that given contracts are generally valued more highly when affordability is a major problem in the aggregate than when it is not. A contract lowering the initial mortgage payment by 20 percent (the middle column) is worth only a few cents on the dollar when affordability is not a major problem, but is worth 65 cents when affordability is tight.

The estimates of p_z raise two major questions. The first is the low average price of creative finance (0.60 in equation 1 of Table 4; 0.66 at the mean values in Table 6). Why are sellers willing to accept less than a dollar for a dollar of value and why don't buyers bid the price of a dollar of value up to a dollar? One explanation of the seller's willingness to accept less than a dollar is that it may not cost sellers a dollar to create the dollar that buyers are getting (Hendershott, 1982). If sellers are in a higher tax bracket than buyers, then the after-tax interest loss of the seller is less than the gain of the buyer; part of the loss is being paid by the U.S. Treasury.[8] Obviously, low tax bracket buyers and high tax bracket sellers have

incentives to opt for seller financing. Also, sellers may have obtained short-term concessionary financing terms from their lenders who were anxious to get long-term, below-market loans off their books. Sellers would be willing to accept 60 cents for a dollar of creative finance if the Treasury and lenders are paying 40 cents of the creative finance dollar.

As for the buyers, one would not expect them to be willing to pay a dollar for a dollar of creative finance, in the absence of a significant affordability problem, because of the costs or risks for the buyer using land contracts that would not be faced by buyers in the conventional market. Examples include prohibitions against the seller taking out second mortgage on the property and the risk involved in refinancing the balloon payment. Also, major alterations could be prohibited or, if allowed, buyers may not be able to reclaim the expense if they default.

The second question concerns the negative prices for low a's and sharply negative prices for low a's and high A's in Table 6. How can prices be negative? While contracts that do little to address the affordability issue likely have little value and contracts generally will have little value if affordability is not a problem in the aggregate, negative prices are difficult to rationalize.[9] We don't believe these negative estimates (which have high standard errors).

V. Summary

Our methodological extensions of the existing literature were summarized in the introduction to the paper, so here we discuss our empirical results only. The first major result is significant sensitivity of real house prices in Columbus to the sharp increase in the annual rental cost of owner-occupied housing (the real after-tax mortgage rate) between early 1979 and 1982. This increase is estimated to have lowered <u>real</u> house prices by 15 percent. The second result is a relatively low value of the price of creative finance. On average, a one-dollar present-value after-tax interest saving is worth only

about 60 cents. This price appears to be quite sensitive to both the aggregate affordability of housing in the economy and the ability of a specific financing package to increase affordability.

The affordability of housing varies over time, with the June 1981-July 1982 period constituting the least affordability in the last quarter century. During this brief period, creative financing packages that increased affordability in a very significant way (reduced the initial monthly mortgage payment by 30 percent relative to that based on conventional finance) were priced slightly above par. That is, the buyer was willing to pay more than a dollar to obtain below-market financing with present value of a dollar. In contrast, buyers have not been willing to pay anywhere near par value for creative financing since affordability problems eased in early 1983. Moreover, the more a given quantity of creative finance increases affordability -- the more the discount is front-loaded to lower the initial mortgage payment -- the higher is the value of the creative finance. To illustrate, the price of a given quantity of creative finance appears to be fifty percent higher if it reduces the initial monthly payment by 30 percent, rather than 20 percent. Further, creative finance packages that lower the initial monthly payment by less than 10 percent seem to be worthless.

Unfortunately, the empirical estimates are not measured with substantial precision and thus our evidence for the hypotheses tested is weak. While weak, the evidence is not disappointingly so. Testing the hypotheses of this paper required a cross-sectional and time series data set. Aggregate affordability and the supply of potential creative finance loans fluctuate only over time, while the observation specific affordability and equity measures vary cross-sectionally. Ideally, one would have a data set of perhaps 200 observations (matched creative and conventionally financed) available in each quarter, yielding a total set of over 3000 observations for the four year period. Our 90 creative-finance observations yield a very small cross-section per quarter,

resulting in limitations being placed upon the generality of approach in the econometric analysis. For example, while variations in the rental cost of owner-occupied housing should affect the real prices of all housing characteristics, not only quality-adjusted area, our small sample size precludes interacting rental cost with the other characteristics. Table 6 suggests the price of creative finance is non-linear in aggregate and micro-level affordability, but a precise measurement of the non-linearities and interactions among the variables affecting price requires a larger data set; the results in Table 6 are about as good as one might expect considering the sample size. Hoping for precision of the estimates in the tails of the distribution of affordability is unrealistic given the sample size.

FOOTNOTES

*Discussions with Steve Buser have helped us to clarify some of the arguments. The research reported here is part of the NBER's research program in financial markets. Any opinions expressed are those of the authors and not those of the National Bureau of Economic Research.

1.This point was first made by Hendershott (1982) and has been emphasized by Jaffe (1984) and Ferreira and Sirmans (1984). The call premium is not accounted for in Rosen (1984) and Smith, Sirmans and Sirmans (1984).

2.Jaffe (1984) notes that the price of creative finance depends on supply and demand but does not generalize to a temporal setting where the price would vary over time. Studies by Rosen (1984) and Smith, Sirmans, and Sirmans (1984) avoid the issue by obtaining a sample that is close to being from a single point in time. One explanation for the widely varying estimates of the price of creative finance [generally in the range of zero to one, Jaffe (1984)], is that the samples are from different time periods in which supply and demand conditions varied markedly.

3.As an alternative to deflation, some studies introduce time dummy variables where the estimated coefficients on the dummies then measure inflation in each period. Other studies enter a general price index as a regressor (Clauretie, 1984). The problem with either of these procedures is the implication that inflation has the same dollar impact on a $20,000 house as on an $80,000 house.

4.More specifically, $PAYO = m(1+m)^{N}L/[(1+m)^{N}-1]$, where m is the current effective mortgage rate, L is the size of the loan, and N is the typical length of a conventional loan. For m, the FHLBB's effective rate charged by all major lenders on previously owned houses is employed; N is assumed to be 25 years.

5.The data are for all mortgage loans at FSLIC-insured savings and loans, and the portfolio yield is a monthly interpolation of a semiannual series.

6.Smith, Sirmans and Sirmans (1984) suggest that maximum maturity of creatively financed loans should be the maximum truncation period that yields a price of creative finance that is not significantly different from unity. In both this study and ours, the result is four years if after tax measure of z is employed. We reject this suggestion because we expected the average price of creative finance to be less than unity (see pp. 13-14 in the text).

7.If the local property tax assessment practice based the evaluation of a particular property's tax on the sale price of that property, then the after-tax measure of the quantity of creative finance should include an additional term reflecting the additional property taxes that would be due. In the sampled area, the assessment procedure is based on the average estimated market value of similar properties in the neighborhood. Because the value of creative finance is not included in the assessed value of a particular property, the formula in the text is applicable to our study.

8.If the buyer has a 0.25 marginal tax rate and the seller has a 0.40 rate, the buyer receives 75 cents for a dollar of below-market interest while the seller only gives up 60 cents. Thus the seller would accept 80 cents (60/75) for a dollar's worth of creative financing.

9.From the seller's point of view, the tax advantages of an installment sale could be sufficient to lead to his being willing to pay to engage in a creatively financed transaction. For example, if the seller had a discounted tax saving of $5,000 on an installment sale of a $100,000 house (the installment sale results in the final sale after the household reaches age 55) and the cost of the deal was $2,000 to the seller, then at the margin the seller would be willing to accept $97,000 for the house. That is, the seller would accept a negative price of 1.5 (-$3,000/$2,000). However, the market price would still be positive.

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Table 1: Loan to Value Ratios and Default Premia
(percentage points)

LV	d	Number in Sample
less than 75	0.0	26
75.1 to 80	0.10	7
80.1 to 85	0.35	14
85.1 to 90	0.40	22
90.1 to 95	0.50	10
95.1 to 97.5	0.70	8
greater than 97.5	1.00	3

Table 2: Values of Call Premium (c)
(percentage points)

g + s + d - i	Years to Maturity						
	1	1-2	2-3	3-4½	4½-6	6-8	8+
less than ½		.25	.5	.75	1.0	1.25	1.5
½ to 1			.25	.50	.75	1.00	1.25
1 to 1½				.25	.50	.75	1.0
1½ to 2					.25	.50	.75
2 to 2½						.25	.5
2½ to 3							.25
over 3							

Table 3

Variable Definitions and Means

Variable	Sample Means	Definition
LOT	8472.28	Square footage of lot size. In the empirical work, the natural lag of lot size is used as the explanatory variable.
AREA	1272.07	Square footage of structure, approximated by the product of square footage on ground floor and the number of stories.
ATTIC	.09	Whether the house has a finished attic.
BASEMENT	.77	Whether the house has a full basement.
AIRCOND	.30	Whether the house is air conditioned.
FIXTURES	6.87	The number of plumbing fixtures including hot water heater, sinks, bathtubs, and toilets.
FEATURES	24.36	An index of the amount of special features including wood burning fireplace, recreation rooms, patios, fences and pools. Each unit of this index equals $100 worth of features as judged by the assessor.
DEPREC	29.1	A depreciation factor estimated by the assessor. The variable utilized in the empirical work is UNDEPR = 100 - DEPREC; thus a positive coefficient is expected.
ADJAREA	8.566	UNDEPR*AREA/100.
COLUMBUS	.65	A dummy variable indicating the property is in the Columbus central city tax district.
SUBURB	.11	A dummy variable indicating the property is in a high tax suburban jurisdiction. The omitted case includes properties in low tax suburbs or in the central city but outside of the boundaries of the Columbus school district.
BRICK	.12	The exterior is made of brick or stone.

cont. Table 3

U	.082	User cost for owner-occupied housing computed as in Hendershott and Shilling (1982) using a 0.25 tax rate.
z	2270.03*	A measure of the discount of the creative financing package, including tax consequences (standard deviation, s.d., equals 2269.4).
e	.0582*	The downpayment to house price ratio. If the value is larger than .0625, it is set equal to .0625 (s.d. = .0114).
M	4.64*	The number of years until the balloon payment is due. If the balloon extends beyond 8 years, the value is set equal to 8.1 years (s.d. = 2.64).
a	.1917*	A measure of the affordability of the house as defined in the text (s.d. = .1092).
A	71.0*	The affordability index of the National Association of Realtors (s.d. = 6.61).
S	4.41%*	A measure of the difference between the current mortgage interest rate and the yield on the existing portfolios of loans (s.d. = 1.33).
o	13.86%*	The market opportunity cost of creatively financed loans as defined in the text.
m	14.61%*	The closing rate on residential mortgages.
V	44012*	The mean real price of housing, 1979 dollars (s.d. = 15904).
z/V	.05*	The amount of the creative financing discount relative to the price of housing.

*Indicates the mean is based on creatively-financed transactions only.

Table 4

Constant p_z Results

	(1)	(2)	(3)
INTERCEPT	-30680.61 (1.8)	-7149.22 (0.4)	-8338.53 (0.5)
Ln LOT	2273.46 (1.1)	2235.85 (1.1)	2421.95 (1.3)
BRICK	3665.11 (1.5)	4679.35 (2.0)	5184.78 (2.3)
BASEMENT	1567.10 (0.8)	1746.35 (0.9)	2055.58 (1.1)
ATTIC	2339.28 (0.9)	2286.49 (0.9)	2494.11 (1.0)
AIRCOND	4931.78 (2.4)	4814.69 (2.4)	4213.04 (2.2)
FEATURES	111.78 (2.8)	117.32 (3.2)	121.76 (3.4)
COLUMBUS	2349.64 (1.2)	1779.88 (0.9)	2059.39 (1.1)
SUBURBS	6217.08 (2.3)	6046.38 (2.3)	7442.20 (2.8)
FIXTURES	176.30 (0.4)	342.49 (0.8)	111.71 (0.3)
AREA	16.06 (6.8)	--	--
UNDEPR	336.95 (6.0)	--	--
ADJAREA	--	22.51 (8.8)	33.48 (3.4)
U*ADJAREA	--	--	-.868 (2.6)
A*ADJAREA	--	--	-.0004 (0.4)
z	.60 (1.6)	.49 (1.4)	.55 (1.4)
$\bar{R}^2$	.643	.656	.669

Table 5

Variable p_z Results

	(1)	(2)	(3)
INTERCEPT	-9573.61 (0.5)	-12296.11 (0.7)	-12852.35 (0.7)
Ln LOT	2592.63 (1.3)	2948.37 (1.5)	2999.93 (1.5)
BRICK	4201.37 (1.8)	3845.75 (1.7)	3867.03 (1.7)
BASEMENT	2389.49 (1.3)	2587.54 (1.4)	2579.28 (1.4)
ATTIC	2637.72 (1.0)	2568.32 (1.0)	2592.62 (1.0)
AIRCOND	4240.88 (2.2)	4597.47 (2.3)	4635.11 (2.4)
FEATURES	113.17 (3.1)	102.40 (2.7)	102.38 (2.8)
COLUMBUS	2121.27 (1.1)	2128.26 (1.1)	2148.75 (1.2)
SUBURBS	7095.99 (2.7)	6879.93 (2.6)	6873.14 (2.6)
FIXTURES	33.47 (0.1)	-1.57 (0.0)	3.37 (0.0)
ADJAREA	30.58 (8.2)	30.09 (8.0)	30.13 (8.1)
U*ADJAREA	-.908 (3.0)	-.884 (2.9)	-.883 (2.8)
z	-.546 (0.1)	-34.22 (0.8)	-35.94 (0.8)
A*z	-.0357 (0.3)	.9057 (0.7)	.9759 (0.8)
a*z	5.58 (1.4)	22.51 (1.6)	22.61 (1.6)
e*z	15.65 (0.4)	6.42 (0.2)	--
S*z	.0024 (0.4)	.0004 (0.1)	--
A^2*z	--	-.0066 (0.8)	-.0071 (0.9)
a^2*z	--	-34.27 (1.2)	-34.43 (1.2)
$\bar{R}^2$	.672	.674	.678
F	1.18	1.23	1.86
Prob(F)	.32	.29	.12

Table 6

Value of p_z*

A \ a	.0941	.1952	.2963
65.5	-.64	.62	1.20
71	-.62	.66	1.24
77.6	-1.14	.14	.72

*Evaluated at mean values of e and S.