

Pricing, Exposure and Residential Listing Strategies

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Abstract

Sellers of houses signal their motivation or willingness to sell through price and contractual provisions in their listing agreements. A pricing strategy is for motivated sellers to set their listing prices at or below estimated market values as determined by the quality and other characteristics of the house. An exposure strategy is to set a listing price above estimated market value, and increase advertising and broker activity in order to generate more favorable offers. Pricing and exposure are competing strategies and may be revealed in listing contracts through the inclusion of a buyer-broker provision.

Empirical results for the Washington, D.C. area indicate that brokers concentrate their time on sellers following the pricing strategy as opposed to those who follow the exposure strategy. There is a tradeoff between price and exposure. The results demonstrate a positive relationship between increasing listing price and using buyer brokerage.

Introduction

People with houses on the market signal their willingness or motivation to sell through setting listing prices and the selection of contractual provisions in listing agreements.¹ A pricing strategy is for motivated sellers to set their listing prices at or below estimated market value as determined by house quality and other property characteristics. An exposure strategy is to set a listing price above estimated market value and increase the marketing of the property in order to generate more favorable offers. Pricing and exposure are competitive strategies and may be revealed in listing contracts and in listing information on the Multiple Listing Service (MLS).²

One observable provision in the listing contract is a buyer broker provision. Prospective buyers contract with buyer brokers to represent them in negotiations and transactions for purchasing a house in exchange for a commission taken at escrow from the seller's proceeds.³

There is a distinction between the seller's contractual obligation to accept a cooperating broker arrangement and to accept a buyer broker. A seller accepting

broker cooperation, as with standard MLS contracts, agrees to split any commission payable between the listing and selling brokers. The willingness to accept buyer brokerage is separate and not a standard requirement.

The seller must honor any commission contract between the buyer and the buyer broker. Since these buyer brokerage contracts are heterogeneous and not transparent, the seller and listing broker have a potential exposure to paying above-standard commission. “Broker cooperation” and “cooperation with a buyer broker” are separate provisions in the listing agreement. Colwell, Trefzger and Treleven (1993) discuss the disincentives of buyer brokerage including the zero-sum problem. The zero-sum problem is that with a fixed standard commission, any above-market buyer brokerage contract reduces the commission for the listing broker. They suggest contracts pay above the standard commission rate, via inclusion of a bonus.

A seller who accepts buyer brokerage in order to increase market exposure is vulnerable to risky contractual obligations. These obligations could include a commission split to the buyer broker above that in the prevailing market. The net sales price to the seller and the net commission to the listing broker could be reduced.⁴ The seller and the listing broker have an incentive to exclude buyer broker provisions when the property is priced at or below its fair market value. Conversely, on a house priced above its underlying fair market value, the probability of sale is lower, but the seller and the listing broker benefit from increased market exposure via the buyer broker arrangement.

For example, suppose a listing broker has two properties available for sale and the listing prices, adjusted for the houses’ quality, are fully observed to the market through the MLS.⁵ The difference between houses is that one seller follows a pricing strategy and another seller follows an exposure strategy. The listing broker has knowledge of this information about the seller and will allocate time to the listing of the motivated seller, following the pricing as opposed to the exposure strategy.

Under the pricing strategy, the house will be shown intensively to clients of that broker and firm. The listing broker needs relatively little marketing help for selling a property with a motivated seller who has a lower reservation price and is willing to accept a lower transaction price. Conversely, with an exposure strategy, the listing broker needs more time on the market and more marketing resources to move the property and is more likely to suggest that the seller accept buyer brokerage.

While all brokers can observe physical listing attributes about a property from the MLS, the listing broker has more information on seller motivation than do other market participants. Further, but less significantly, there is a time delay between when the listing agreement itself is negotiated, when the seller signs the listing agreement and when it is placed on the MLS. These inherent delays or lags in the listing process enhance the information set of the listing broker relative to

other sales participants in the market.⁶ Thus, the pricing strategy becomes more explicit in the asking price. The exposure strategy, on the other hand, is revealed through the willingness of the seller to accept buyer brokerage.

When buyer brokers direct buyers to those properties with commission splits above the market standard, the listing broker is obliged to cover the differential. Since buyer broker contracts may not be observable to the seller but must be accepted by a seller from a buyer with a market offer, the listing broker carries the risk of lower total compensation. Suppose a listing agreement calls for a 6% commission as a percentage of the sales price. The prevailing commission structure is for a four-way split evenly between the listing and selling brokerage firm and the listing and selling broker. Under this arrangement each of the four participants receives a 1.5% commission rate as a proportion of the transaction price. Now suppose there is buyer who has signed a buyer brokerage contract calling for the selling brokerage firm to be paid a 4% commission (as opposed to 3%). If the seller refuses to pay this additional commission over the agreed rate, the listing broker finds its commission reduced from 3% to 2%, or by one-third.⁷ If the seller absorbs the additional commission, then the net price is 1% lower than under a standard contract. Unless the seller receives an additional, above-standard return, the seller has no incentive to accept buyer brokerage.⁸

The MLS provides non-listing brokers with information on the total commission that the seller and listing broker are willing to accept. The listing broker is not privy to the universe of buyer broker contracts in the market, some of which could have an impact on the allocation of income from the sale of the house. There could be unobservable contracts providing for a 4% commission or other structure favorable to a buyer broker, a split that the listing broker must honor. Buyer brokerage adds an element of uncertainty to the compensation package.⁹

The tradeoff between pricing and exposure strategies is tested in this article. The sample is for transactions on single-family houses in the Washington, D.C. market during 1992. Included are all transactions in two geographical submarkets, Spring Valley and Chevy Chase. The latter is a section of the city that abuts its identically-named neighbor in Montgomery County, Maryland.

The results confirm the hypothesis: houses priced above the predicted level based on value have sellers who are more likely to accept buyer broker cooperation. Conversely, houses priced to sell do not use an exposure strategy. The following sections discuss the brokerage environment, the model, the data and the empirical results. The final section is the conclusion.

Pricing Versus Exposure

Establishing a list price is one aspect of the negotiation between listing broker and seller. Sellers differ in the level of motivation, and part of this difference appears in the type of brokerage contract they accept. Less motivated sellers who

ask prices above those predicted by the house's characteristics are willing to accept alternative forms of marketing and commissions such as buyer brokerage.

With exclusive information about actual quality, physical factors and seller motivation, the listing broker has an informational advantage over another whose only access is seeing the multiple listing information. A non-listing broker could perform due diligence, but this information is costly, requiring access to the property and the hiring of outside inspectors and contractors. The upshot is that quality determination is left to a potential buyer.

Even if all quality differences in the physical real estate were eliminated by full information in the listing data, differences between sellers remain. The listing broker knows better than any other broker about the seller's willingness to negotiate, the financial condition of the seller, the reason for sale and desire to accept a particular reservation price. By having better information about the reservation price, the listing broker can estimate more tightly the probability of receiving an acceptable offer. Furthermore, the time on the market (effectively the inverse of this probability) and the eventual transaction price can be estimated more precisely by the listing broker than by a non-listing broker.

Once a seller and a listing broker have signed a contract, the subsequent relationship between the two involves strategies. The strategies depend on the initial pricing of the house. In real estate markets, unlike in labor or other markets where reservation prices are not observed, the list price is an indicator of the reservation or minimum acceptable price.¹⁰ The asking price indicates a higher endpoint of a range where a seller is willing to transact. Relative to the underlying hedonic price for the property's characteristics and condition, a high asking or listing price implies that the seller is following an exposure strategy. The seller signals a willingness to accept a lower probability of sale and a higher time on the market, hoping for a higher eventual transaction price. The exposure strategy implies that the seller or listing broker will accept the risk of additional commission payment for the benefit of a higher transaction price or lower time on the market.

When a house is favorably priced, signaling a pricing strategy, the market response is to have a lower probability of accepting exposure strategies such as buyer brokerage. Buyer brokers expand the market on a house priced at or below its underlying quality. Since there is a higher probability of a transaction at the observed list price, there is less need to use a buyer broker.

Brokers are aware of these strategies. The compensation structure provides little incentive for brokers to allocate their time and effort to marketing houses priced above their predicted price based on quality, even if the seller could receive an additional return from the sale. A concentrated effort to raise a house price on a fair market value \$100,000 house by \$10,000 may yield the broker only an extra \$600 in commission. The seller receives most of the added price through an additional \$9,400. Because potential buyers observe this inflated asking price and

focus instead on market priced houses, the broker has a lower probability of receiving an offer.

The Appendix contains the derivation of our model with the relevant equations. The structure allows estimation of a pricing model where brokerage inputs enter explicitly. The seller sets either a pricing or an exposure strategy via listing price and chooses whether to undertake a buyer brokerage arrangement. Time on the market and eventual price may be correlated with a willingness to accept buyer brokerage. Under the hypothesis, more expensive houses relative to their underlying value will have a positive exposure effect from buyer brokerage, but not necessarily a higher net sales price for the seller.

Data

The sample includes single-family detached dwellings sold through the MLS of the Washington, D.C. Association of Realtors in 1992. In order to reduce locational variation, the data were confined to two neighborhoods in northwest Washington. The actual areas are zip codes 20015, which covers the Chevy Chase section of Washington, D.C., and 20016 in the Spring Valley area. The Metro subway system's Red Line follows Wisconsin Avenue northward from the city into suburban Montgomery County, Maryland, so the area is desirable for downtown commuters. Of the observations, 61% are in the Chevy Chase section.

The transaction price of each house was obtained, together with the number of bedrooms and bathrooms, the size of the house and the lot in square feet, age, and whether or not there is central air conditioning and an attached garage, along with locational variables such as proximity to the nearest Metro station. Other property status variables include whether the house is tenant occupied and whether it is vacant.

The asking price, selling price and total time on the market are available. The data are summarized in Exhibit 1. The qualitative variables, with values of 0 or 1, are reported as fractions answering affirmatively.

Empirical Results

In Exhibit 2 are the linear probit model results for buyer brokerage selection. A higher hedonic, quality-adjusted price is associated with a greater tendency to utilize exposure for houses priced above underlying characteristics. The decision to use a buyer-broker increases with asking or listing price, proximity to a Metro station and whether there is a fireplace. Because closeness to a Metro station may be a security concern for many buyers in this relatively wealthy area of Washington, D.C., it may be more difficult to sell a home nearer a Metro station. One or more fireplaces may indicate older and therefore less energy-efficient housing. Vacant housing has been demonstrated to impede the sales of houses (Turnbull, Sirmans and Benjamin, 1990), although the results in Exhibit 2 are not

Exhibit 1 | Descriptive Analysis of Washington, D.C. Housing Data—1992

Characteristics	Mean	Std. Dev.	Min.	Max.
Bedrooms	3.73	0.85	2	6
Bathrooms	2.87	0.74	1	5.5
House Size (1000's of sq. ft.)	1.91	0.33	0.80	2.39
Lot Size (1000's of sq. ft.)	6.20	2.66	1.68	23.86
Tenant Occupied	0.11	0.31	0	1
Fireplace	0.95	0.22	0	1
Central AC	0.58	0.50	0	1
Detached Garage	0.30	0.46	0	1
Metro Within 1/4 mile	0.36	0.48	0	1
House Vacant	0.21	0.41	0	1
Age in Years	54.8	16.5	1	85
Time on Market (years)	0.17	0.20	0	1.25
Selling Price (1000's of \$)	371.72	102.67	215.70	925.00
Asking Price (1000's of \$)	391.65	115.27	229.00	975.00

Note: Chevy Chase and Wisconsin Avenue Northwest Areas, $n = 176$.

statistically significant. The decision to accept the buyer brokerage is decreasing in the number of bathrooms and the size of the lot, both of which may proxy overall magnitude of investment.

The regressor $1 - f(M)$ as described in the Appendix is the probability of not using a buyer broker, as a fitted value from the estimates of Exhibit 2. This represents the measure of exposure by the listing broker.

In Exhibit 3 are estimates for the simultaneous price and duration of time on the market. Exhibit 3 includes results for marketing. The dependent variables are the actual sales price and the time on the market. The actual sales price depends on the hedonic characteristics and the use of a buyer broker. This variable is the estimated or fitted value of the probability of using a buyer broker, in an equation where the list price and hedonic characteristics are exogenous.

Among the hedonic variables in the actual sales price equation, those that are significantly positive at the 5% level are the number of bathrooms and the size of the lot. Those that are significantly negative at the 5% level are the size of the house, the size of the lot, proximity to a Metro station, whether there is a fireplace and being in the Chevy Chase area.

Exhibit 2 | Buyer-Brokerage Selection
Linear Probit Model

Variable	Parameter Estimates
Constant	0.527 (0.285)**
Asking Price (\$'000)	0.045 (0.030)***
Bathrooms	-0.071 (0.041)**
Bedrooms	0.032 (0.035)
Metro within 1/4 mile	0.154 (0.053)*
Lot Size (sq. ft.)	-0.018 (0.010)**
House Size (sq. ft.)	0.097 (0.114)
Fireplace	0.131 (0.100)***
Vacant	0.029 (0.058)
Chevy Chase, DC	0.033 (0.078)

Note: Dependent Variable (*Using Buyer Broker* = 1, *Not Using Buyer Broker* = 0). Standard errors are in parentheses. $R^2 = .099$; $n = 176$.
 *Significant at the 1% level with a one-tail test.
 **Significant at the 5% level with a one-tail test.
 ***Significant at the 10% level with a one-tail test.

Regarding the time on the market variable, the only significant independent variable at a 10% level is that on age. Older houses have less time on the market than younger ones. Time on the market, while used extensively in research studies, may be less relevant in actual brokerage operation. Brokers sign a listing contract for a fixed duration, frequently for three months, giving them an incentive to attempt a sale during that period. The sale date within that three-month window is less relevant than the risk of losing the listing at the expiration date. Time on the market in our equation is adjusted by the expiration of contracts and the nature of the brokerage agreement.

The fitted adjustment or exposure estimate ($1 - f(M)$) shows that the property is market-priced and that the listing broker will focus attention on the property. This

Exhibit 3 | Simultaneous Transaction Price and Time on Market Parameter Estimates

Variable	Transaction Price	Time on Market
Constant	12.809 (0.166)*	0.144 (0.236)
Probability of Not Using Buyer Broker	1.428 (0.209)*	0.057 (0.298)
Bedrooms	0.017 (0.018)	0.034 (0.026)***
Bathrooms	0.193 (0.020)*	-0.001 (0.019)
Tenant Occupied	0.006 (0.036)	0.007 (0.051)
House Size (1000's of sq. feet)	-0.221 (0.052)*	-0.239 (0.740)
Metro within 1/4 mile	-0.206 (0.037)*	0.014 (0.053)
Fireplace	-0.159 (0.056)*	0.052 (0.080)
Detached Garage	0.020 (0.023)	-0.005 (0.033)
Central AC	0.048 (0.022)**	-0.040 (0.030)***
Vacant	-0.054 (0.027)**	0.041 (0.040)
Lot Size (1000's of sq. feet)	0.036 (0.005)*	0.004 (0.007)
Chevy Chase (DC)	-0.143 (0.058)*	-0.017 (0.081)
Age	-0.003 (0.008)	-0.002 (-0.001)**

Note: Standard errors in parentheses. System weighted $R^2 = .56$
 *Significant at the 1% level with a one-tail test.
 **Significant at the 5% level with a one-tail test.
 ***Significant at the 10% level with a one-tail test.

adjustment is for a property priced near to the market. On such a property, evaluating at the sample mean multiplied by the coefficient, there is a 7% increase in price. The additional intensity of effort produces a 7% return. This return comes from the price side and not time on the market. Time on the market is not sensitive to broker intensity, possibly because the length of the listing contract is more important than when a property is sold.

Time on the market is largely unaffected by exposure. Again, a possible explanation is the length of the listing agreement and not whether a property is sold within it. There are tradeoffs in listing lengths on fixed costs and incentives to shirk, as Geltner, Kluger and Miller (1991) note. Our results reveal a consistency about real estate sales: houses priced at market are less likely to require additional exposure by a listing broker.

Conclusion

The relationship between seller and listing broker involves strategic considerations, some of which are observable to the entire market. In particular, whether the listing price is above or below the estimated value is a signal to potential buyers of a reservation price and a willingness to sell. Market- or below-market priced houses benefit from greater listing broker activity and sell faster. Above-market priced properties, on the other hand, experience a longer time on the market, suffering from fewer prospective buyers. Because potential buyers shy away from above-market priced houses, the offer distribution has more density near houses priced at market. More offers for houses will occur around the anticipated market value.

Our results indicate that it is better to price a property at or below market value because overpricing yields minimal extra return even with the added market exposure available through buyer brokerage.

The underlying story is that the likelihood of a seller agreeing to cooperate with a buyer broker depends on whether the listing price is at or above fair market value. The results demonstrate a positive relationship between using a buyer broker and increasing listing price. These results are important to brokers and their agents as well as others involved with the transfer of real property.

Appendix

A seller placing a house on the market lists it at asking price $A(X)$, where $X = X_1, \dots, X_N$ denotes the characteristics of the property, such as location, number of bedrooms, number of bathrooms and age of the property. The listing contract with the broker stipulates that if the house is sold, a commission, usually at a flat, linear rate λ will be paid as a proportion of the transacting price, P . This linear commission schedule is shown to be optimal in Arnold (1992), Holmstrom (1979) and Williams (1997) as eliminating adverse incentives.¹¹ Other possibilities are piecewise linear forms as in Anglin and Arnott (1991), but these net listings are illegal. Yavas (1996) discusses alternative compensation schemes. The broker is faced with a package of both commission and asking price $(\lambda, A(X))$ in the listing contract. The broker may view $A(X)$ as being “above market” or “overpriced,” but by accepting the listing, is obliged to accept these conditions. Being overpriced can be measured by comparing the actual list price with the hedonic price based on characteristics, location and previous transactions. Asabere, Huffman and

Mehdian (1993) and Jud, Seaks and Winkler (1996) show that this overpricing measure leads to longer times on the market.

Based on value of time, the need to sell the house quickly because of a job or other relocation, the seller determines whether to price the house reasonably. If the house is priced reasonably, or “priced to sell,” then the seller has an opportunity to recover some of the gain from the selling broker by asking for a reduced commission. Even if the prevailing standard commission on the sale of the house λ^* is a market-wide constant, such as 6%, there are other methods that can be used by a knowledgeable seller. These include emphasizing an in-house sale, where the broker does not split the commission with an outside broker, but pay an overall commission below the standard rate and not cooperating with buyer brokers. Such buyer brokers typically might demand $\lambda^*/2$ be paid to them as a precondition, further squeezing margins on a house priced to sell.

The above-market priced seller, on the other hand, attempts to maximize exposure. This maximum exposure comes by ensuring that the selling broker cooperates fully and by offering a full commission λ^* . The effective commission is a function of the asking price, or

$$\partial\lambda/\partial A \leq 0, \lambda \leq \lambda^*. \quad (1)$$

Market resources are expended by outside brokers other than the listing broker. Letting M be an index of market resources by other brokers than the listing firm, then:

$$M = M(X, A), \quad (2)$$

where M has the properties:

$$\partial M/\partial A \geq 0, M(0, A) = 0, M(X, 0) = 0. \quad (3)$$

As the asking price increases and the house is more likely to be overpriced, it is more likely to have a buyer broker agreement to gain a wider exposure, and therefore market resources M increase.

The total effort expended on marketing the house comes from buyer brokers M and the listing broker B . The total effort is a production function by the brokerage sector $Y(M, B)$. With two inputs, the efforts of the buyer and listing brokers are

substitutes. Higher buyer broker effort M is compensated by lower selling broker effort B at a given level of intensity.

Offers are drawn from a price distribution $f(P)$. The seller sets a reservation price H , which the market infers to be a function of asking price A , so $H(A)$ is increasing. The less overpriced a house is, the higher the probability of receiving an acceptable offer. Since the seller will accept an offer $P > H$, and if H depends on the asking price A , the market-priced houses have a higher probability of selling and a greater impact on brokerage compensation.

There is a self-selection in the underlying distribution of transaction prices. Listing brokers concentrate their efforts on market-priced houses and pay less attention to overpriced ones. Buyer brokers M are crowded out into overpriced houses. Sellers wanting a quick sale demand a lower commission rate. The self-selection implies that the price outcomes from a marketing effort depend on the level of listing broker effort B . Inverting the production function, for a given level of overall broker effort:

$$B = B(M, Y). \quad (4)$$

The outcome in price and time on the market are $P(X, B)$ and $D(X, B)$. Using Equation (4), and since the efforts of the listing broker and market or outside brokers are negatively correlated, then:

$$\begin{aligned} P &= P(X, M) \\ D &= D(X, M). \end{aligned} \quad (5)$$

Here the reasonable-pricing hypotheses entails that P is decreasing in outside or outsourced broker time.

Taking account of commissions and making adjustments for the time on the market, conditional on receiving an acceptable offer, the seller's return is:

$$V = (1 - \lambda)P(X, M)/(1 + R)^{-D(X, M)} \quad (6)$$

where R is the discount rate that applies during marketing time.

Equation (2) estimates market broker effort based on house characteristics and the asking price. Equation (5) estimates the outcomes in price and time on the market, as dependent on house characteristics and the market broker effort. An adjustment

is made for self-selection, where listing brokers focus on at-market houses. Estimating Equations (2) and (5) determines the return to buyer brokerage.

Endnotes

- ¹ Motivation to sell is observable to the broker, but not necessarily to the market. This motivation can affect the transaction price. Glower, Haurin and Hendershott (1998) show that sellers receive lower transaction prices if they have made another offer, have already purchased another house or have already accepted a relocation.
- ² The uncertainty in quality of the physical property and ownership is partly mitigated by having a MLS. The MLS acts as a market place or as bourse for real estate transactions. For a single-family house, the typical listing agreement that is electronically shared includes information concerning the number of bedrooms and bathrooms, age and other attributes. This information is immediately available by electronic transfer to the entire market, and all broker participants have access.
- ³ Elder, Zumpano and Baryla (1997) use cross-sectional data from the 1996 survey of recent home buyers and sellers collected by the National Association of Realtors to test the impact of buyer brokerage. They find that buyers do not pay less when buyer brokers are used. Their study focuses on the buy side of the market, while our study focuses on the sell side of the tradeoff between listing price and exposure strategies.
- ⁴ Real estate markets involve search and transaction costs that lead buyers and sellers to use a broker to provide a match (Wheaton, 1990). “Broker” in this study is used generically to denote licensees, covering both agents and brokers. The information brokers have is valuable in real estate markets that are characterized by illiquidity, agency problems and a lack of diversification by buyers and sellers (Yinger, 1981).
- ⁵ Anglin and Arnott (1991) and Arnold (1992) view the brokerage transaction as a principal-agent relationship. Holmstrom (1979) examines moral hazard in the principal-agent relationship.
- ⁶ These time lags are not the principal source of the sorting. Rather it is the seller behavior, through the decision to choose a pricing versus an exposure strategy. The seller selects between a lower asking price and possibly lower exposure with no buyer brokerage, and a higher asking price and more exposure with a buyer brokerage provision.
- ⁷ The buyer broker is typically not paid unless there is a purchase, but the contract could call for a greater than the standard 3% commission. For example, on a \$100,000 house with the standard 6% commission and split, the listing and selling brokerage firms would each have received \$3,000 in commission income. With the 4% rate from the buyer broker, the listing broker receives \$2,000 if this \$100,000 house were priced and sold near its value. The listing broker would have lost \$1,000 in income. The extra \$1,000 is a lower bound, since the lower price encourages the listing broker to refer the firm’s own clients, with another \$3,000 in commissions being possible.
- ⁸ Williams (1997) models the brokerage arrangement as a game, and shows the optimality of broker effort relative to price compensation with commissions. The article supports the existing prevailing commission structure and notes the danger of net listing agreements, along with why it is appropriate to restrict them. Yavas (1996) examines alternative commission structures.

- ⁹ The equilibrium protection for the listing broker in the contract negotiations is to ask for exclusions of buyer brokerage in the listing agreement.
- ¹⁰ Chinloy (1980) applies the listing price as a proportional shift of the underlying reservation price.
- ¹¹ Arnold (1992) notes that the linear commission schedule maintains incentives in an environment when the selling broker is in the market frequently, but the seller only infrequently. Holmstrom (1978) notes incentives to shirk. Williams (1999) shows that in a game-theoretic context that linearity is preferable to contracts where there is option-type structure. Chinloy (1980) develops a model where the reservation price is linear in the asking price.

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