NBER WORKING PAPER SERIES

HOW MUCH VALUE DO REAL ESTATE BROKERS ADD? A CASE STUDY

B. Douglas Bernheim
Jonathan Meer

Working Paper 13796
http://www.nber.org/papers/w13796

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
February 2008

We are grateful to Shirley Campbell, Betty Oen, Jan Thomson, and members of Stanford University's Faculty and Staff Housing Office. Stephan D. McBride, Sriniketh S. Nagavarapu, Harvey S. Rosen, and members of Stanford University's Labor Reading Group provided helpful comments. The views expressed herein are those of the author(s) and do not necessarily reflect the views of the National Bureau of Economic Research.

How Much Value Do Real Estate Brokers Add? A Case Study
B. Douglas Bernheim and Jonathan Meer
NBER Working Paper No. 13796
February 2008
JEL No. D14,R21,R31

ABSTRACT

Sales commissions for residential real estate brokers historically average nearly six percent of a home's closing price. Do brokers add sufficient value to justify those commissions? We address this question using a unique data set pertaining to sales of faculty and staff homes on the Stanford University campus. We find no evidence that the use of a broker leads to higher average selling prices, or that it significantly alters average initial asking prices. However, those who use brokers sell their houses more quickly.

B. Douglas Bernheim
Department of Economics
Stanford University
Stanford, CA 94305-6072
and NBER
bernheim@stanford.edu

Jonathan Meer
Department of Economics
Stanford University
Stanford, CA 94305
jmeer@stanford.edu

1. INTRODUCTION

Historically, sales commissions for residential real estate brokers have averaged between five and six percent of sales prices. In 2004, commissions paid to brokers in the U.S. totaled roughly $61 billion (Hagerty, 2005). Do brokers provide commensurate value?

Sellers potentially benefit from brokers' services in a variety of ways. First, brokers provide promotional services. They help prepare a house for sales, circulate flyers, place advertisements, hold open houses, and recommend the house to individual buyers. Second, they often assist with negotiations.[1] Third, they screen prospective buyers, facilitating and potentially accelerating the process of matching buyers and sellers (Salant, 1991). Fourth, they provide access to the Multiple Listing Service (MLS), which lists all homes available for sale. Fifth, they provide market information and recommendations pertaining to the appropriate asking price.[2] Sixth, they often assist with paperwork and legal documentation.

How much is this bundle of services worth? Because the component services are sometimes unbundled, we can judge their value by examining market prices. Discount brokers provide access to the MLS for as little as $300 (Darlin, 2003). Market information and forecasts of selling prices are available through professional appraisals, which cost a few hundred dollars.[3] In Illinois, where sellers are required to retain real estate attorneys to prepare and review sales contracts, legal fees average roughly $700.[4] Thus, the total market value of the fourth, fifth, and sixth benefits listed in the previous paragraph is roughly $1400 – enough to justify a 6% commission on only

[1] According to the National Association of Realtors, brokers are "trained to negotiate the best possible prices and terms" (Evans, 2003).
[2] Brokers argue that they "offer professional advice and objective insight" (Evans, 2003), while homes sold by owner "often are priced too high and may not sell until the price is reduced, which can turn into an unnecessarily long drawn-out process" (Kossen, 2000).
[3] In Palo Alto, California, the going rate is $350. See, for example, http://www.montgomeryappraisal.com/fees.php
[4] See, for example, http://www.illinois-attorney.com/close.htm

the first $23,000 of proceeds from the sale of a home. To justify brokers' commissions, the value of the first three benefits must be substantial.

Do brokers sell homes faster, and for higher prices? According to the National Association of Realtors (NAR), the median sales price for homes sold by owners, sometimes called FSBOs (for-sale-by-owner), is 27% lower than the median for homes sold by agents (National Association of Realtors, 2002). While realtor trade groups point to this price gap as evidence of their acumen, there is undoubtedly heterogeneity among both homes and homeowners, resulting in potentially severe selection bias. Approximately 83% of sellers use an agent (National Association of Realtors, 2003). FSBO sellers are therefore a small, highly selected group with potentially unusual characteristics and inclinations; for example, they tend to be older and less wealthy (National Association of Realtors, 2002). Moreover, during the first quarter of 2004, 44% of all FSBO homes were never placed on the open market, as the buyer and seller knew each other in advance (Evans, 2003). It is therefore unlikely that a general comparison of sales prices between FSBOs and brokered homes – even one that controls for the characteristics of a home – would reliably identify the effect of using a broker.

In this paper, we estimate the effect of the use of a broker on list prices, selling prices, and speed of sale for homes sold on the Stanford University campus over a 26 year period. In total the Stanford campus housing stock includes roughly 800 homes, the ownership of which is limited to Stanford faculty and a limited number of senior staff.[5] Several features of this data make it particularly useful for our purposes. First, since the eligible buyer population is limited, the MLS plays no role in the campus housing market. Instead, the Faculty Staff Housing (FSH) Office maintains a free listing service for eligible buyers and sellers. Consequently, there is no risk of

[5] Stanford enforces this restriction by retaining ownership of the land. Stanford provides the homeowner with a long-term land lease involving modest monthly payments.

confounding the value of broker services with the value of access to multiple listing services. In addition, access to free listings has historically enhanced the willingness of homeowners to sell their homes without brokers. Indeed, during the 1980s, brokered transactions were rare. Second, our data sample spans a major regime shift. Brokered transactions became increasingly common during the 1990s, and have accounted for roughly half of all sales in recent years (see Figure 1). There is anecdotal evidence that this transition was driven by the aggressive marketing efforts of several realtors rather than by a shift in sellers' preferences. Third, our data include multiple transactions not only for the same home, but also for the same party. In many cases the pertinent transactions span the regime shift. Therefore, the data provide us with opportunities to address the potential effects of unobserved characteristics both of the homes and of the parties involved in the transactions. Concerns about unobserved heterogeneity are also ameliorated to some extent by the fact that the population of buyers and sellers is relatively homogeneous, at least in comparison with the general population.

The value of real estate brokers for Stanford campus transactions is likely confined to promotional services, negotiations (the first and second roles listed above), and the *interpretation* of market data (an aspect of the fifth role). Given the small numbers of available houses and active eligible buyers as well as the physical proximity of all the homes, the costs of comprehensive search, and hence the value of pre-screening by brokers (the third role) is small for both buyers and sellers. As we have mentioned, the value of MLS listings (the fourth role) is zero. The FSH Office also makes comprehensive market information (home characteristics, listing prices, listing dates, selling prices, and closing dates) for all transactions available to all buyers and sellers. Because market participants are generally familiar with the campus neighborhoods, and because the number of comparable transactions is limited, sellers can acquire and review virtually all pertinent market information at low cost. Thus, the value of brokers as providers (rather than interpreters)

of market information (another aspect of the fifth role) is likely negligible. Finally, the FSH Office assists with paperwork, largely eliminating the value of the sixth role. Therefore, an analysis of the Stanford campus housing transactions permits us to hone in on the value of brokers as promoters, negotiators, and interpreters of market data.

Based on our examination of these data, we have reached two main conclusions. First, the use of a broker does not significantly affect either the average initial asking price or the average selling price of a home. In our preferred specifications, we can rule out the possibility that brokers pay for themselves by obtaining prices high enough to offset their commissions. Second, the use of a broker does lead to an accelerated sale. In that respect, brokers appear to add value. Naturally, one must be careful about making broad generalizations from any small sample, particularly one that is not nationally representative.

This paper is related to two recent studies. Using a sample of nearly 100,000 home sales between 1992 and 2002, Levitt and Syverson (2005) find that homes owned by realtors sell for approximately 3.7% more and stay on the market about 10% longer than homes owned by non-realtors. While they do not analyze FSBO transactions, their results suggest that realtors encourage owners to sell their homes too quickly. Contemporaneously with this paper, Hendel, Nevo, and Ortalo-Magné (2007) compared FSBO and brokered transactions in Madison, Wisconsin. After controlling for seller fixed effects, they find "no support... [for] the claim that the MLS delivers a higher price." They also show that houses sold by owners take slightly longer to sell. Both of these findings are consistent with our findings.

2. DATA

The data used in this paper were generously provided by the Stanford University's Faculty and Staff Housing Office. Sales data and certain house characteristics are available as far back as

the 1940s, but information relating to the use of brokers is available only through monthly sales circulars distributed by the FSH office, which are archived back to January 1980. We infer the use of a broker from the contact information provided in the housing listings. Altogether, 1,122 sales were recorded between January 1980 and mid-December 2005, but only 750 appear in the sales circulars. This discrepancy is attributable primarily to two factors: some sales involved land used for new construction, and some were sold off-market without being listed. We dropped thirty-three observations with incomplete data for purchase price, construction date, or home characteristics. We also dropped thirty-seven observations listing Stanford University as the buyer or seller; including those observations does not significantly alter our results, but their prices appear to be atypical.[6] These exclusions leave us with 680 observations, of which 95 involved brokers. Some homes were removed from the FSH listings prior to a sale, only to reappear in subsequent listings, most within one year. If the house reappeared in the listings within 36 months of withdrawal, we treated it as having remained on the market since its initial listing. Roughly a dozen homes were re-listed after 36 months; we treated those as new listings.

Other variables used in our analysis measure characteristics of the property, including the number of bedrooms and bathrooms, site acreage, square footage, dummies indicating the presence of a study or a pool, the age of the house at the time of sale (calculated using its date of construction), and neighborhood indicators.[7] We include a dummy variable indicating sales through estates, as well as year dummies to account for variations in market conditions. In some specifications, we also control for the length of time the seller had lived in the house at the time of sale.[8] This variable presumably proxies for the seller's age or attachment to the house, and possibly for

[6] Among other things, the selling prices for those homes rarely differ from the asking prices.
[7] Numerous studies (MacDonald, 1996; Palmquist, 1984; Parsons, 1986, and others) have demonstrated the importance of these characteristics in determining the price of a home.
[8] We calculate this variable by determining the last date of sale for the same property. In some cases, that information is unavailable.

the condition of the property. Its use further limits our sample to 618 transactions, of which 90 involved a broker. Generally, our results are robust with respect to the combination of variables used.

We also have some information on the characteristics of the buyers and sellers. We were able to determine the ages of 341 sellers and 603 buyers, as well as the department affiliation for 543 sellers and 665 buyers. We do not observe directly whether *buyers* were represented by brokers.[9]

Table 1 reports summary statistics.

3. SELLING PRICES

First we examine the relationship between the log selling price and the use of a broker. Table 2 contains OLS regression results, reported with robust standard errors. Specification (1) includes only a broker dummy and year effects. The coefficient of the broker dummy (0.2801) implies that brokered homes sold for approximately 32 percent more on average than homes sold without brokers. The difference is highly statistically significant, with a t-statistic of just under 4. It is also quite close to the difference in median selling prices reported by the National Association of Realtors, cited above. In that respect, our sample is reasonably representative.

Naturally, the broker coefficient in specification (1) tells us nothing about the effect of using a broker on a home's selling price. As a first step toward measuring that effect, we control for the characteristics of a home that are correlated both with the home's value and with the likelihood that it is listed through a broker. Specification (2) adds the home characteristics discussed in Section 2, as well as dummy variables for eight Stanford neighborhoods. Notice that the coefficient of the broker dummy drops to 0.000433 with a standard error of 0.0245; it is both economically

[9] In addition, Levitt & Syverson (2005) found that the absence of a buyer's agent "has a negligible impact on sale price."

negligible (0.0433 percent) and statistically indistinguishable from zero. To cover a 6 percent sales commission, the use of a broker would need to increase a home's selling price by 6.38 percent, which corresponds to a broker coefficient of 0.0618. Notably, we can confidently reject the hypothesis that the broker coefficient equals 0.0618 (p-value = 0.0125). Other coefficients generally have the expected sign.

Specification (3) adds a measure of the length of time the sellers had lived in the house prior to listing it for sale (as well as its square). Adding this variable reduces the size of our sample from 680 to 618. The broker coefficient rises a bit to 0.0245, with a standard error of 0.0294. The measured effect is now larger economically (2.48 percent), but still less than half of the standard broker's commission, and it remains statistically indistinguishable from zero at conventional levels of confidence. We can no longer reject the hypothesis that the coefficient is 0.0618 at conventional levels of confidence (here, the p-value is 0.1513); consequently, on the basis of this estimate, we cannot rule out the possibility that brokers pay for themselves. The difference between the broker coefficient in specifications (2) and (3) is partly attributable to the smaller sample size.

In interpreting our estimates of specifications (2) and (3), one should bear in mind that the use of a broker may be correlated with unobserved factors that influence transactions prices. Such factors fall into two main categories: characteristics of the home and characteristics of the seller. We experimented with a number of potential instruments such as the recent incidence of brokered sales within a home's neighborhood and among members of the seller's academic division. Unfortunately, none of the instruments we examined had a great deal of explanatory power. As a result, IV estimates were highly imprecise and unstable. We were therefore compelled to address these concerns through different methods.

A. Unobserved characteristics of homes

Many aspects of home quality are, of course, observable to sellers, buyers, and brokers, but unobservable to us. The sharp contrast between the broker coefficients in specifications (1) and (2) indicates that the use of a broker is positively correlated with observed characteristics that enhance a home's value. For example, larger homes are more likely to sell through brokers than smaller homes. Since brokers earn more from the sale of more valuable homes, this pattern is consistent with their incentives, and may reflect targeted efforts to obtain valuable listings. If the same pattern holds for *unobserved* characteristics that contribute to a home's value, then specifications (2) and (3) will tend to overstate the effect of using a broker on a home's selling price.

Many of the relevant unobserved characteristics of a home – location, views, architectural style, and so forth – remain reasonably stable over time. In specification (4), we immunize our estimates against the influence of such unobserved characteristics by including home fixed effects. This strategy is feasible because our sample period covers a reasonable long period of time (26 years), during which many homes were sold multiple times. Our 680 observations pertain to 434 separate homes. Of those, 262 were sold once during our sample period, 111 were sold twice, 50 were sold three times, and 11 were sold four or more times. Due to the regime shift that occurred during the 1990s, virtually all of the early sales occurred without brokers, while the later sales were fairly evenly split between brokered transactions and FSBOs. Therefore, the sample provides good opportunities to, in effect, compare the changes in selling prices for houses that transitioned from FSBO to brokers, with the changes in selling prices for houses that remained FSBOs.

With home fixed effects included, the broker coefficient falls to –0.000157 with a standard error of 0.0320. The measured effect is now once again economically negligible (-0.0157 percent) and statistically indistinguishable from zero. We can also reject the hypothesis that the broker co-

efficient equals 0.0618 with a reasonably high level of confidence (p-value = 0.0540). Notice that for this specification, many of the other control variables are absorbed into the home fixed effect.[10]

B. Unobserved characteristics of sellers

Each seller chooses whether to use a broker. Consequently, the use of a broker may be correlated with unobserved characteristics of the seller that influence the selling price. From a theoretical perspective, the direction of the resulting bias is unclear. A seller who is more concerned about his net yield (and who is therefore more likely to obtain a higher price with or without a broker) may be either more or less likely to use a broker, depending on whether he finds brokers' claims credible. A seller who has more confidence in his own negotiating abilities may be less likely to use a broker, as well as more likely to obtain a higher price, unless his confidence is unwarranted.[11]

If unobserved seller characteristics are reasonably stable over time, then it would be possible in principle to remove their influence by including seller fixed effects. Unfortunately, only 106 observations in our sample involved sellers who sold at least one other home. After controlling for seller fixed effects and house characteristics, too few degrees of freedom remain to measure the broker coefficient with meaningful precision.

The available data do, however, permit us to test the hypothesis that the use of a broker is correlated with characteristics of the seller that independently influence the transaction price. If, for example, those who use brokers are less skilled negotiators, then a seller who used a broker when selling *another* house should obtain a *lower* price in the current transaction, and a buyer who

[10] Though home renovations can lead to changes in certain variables such as the number of bedrooms, bathrooms, and square footage, such changes are relatively rare in our data, and their effects are not identified.

[11] A substantial body of evidence suggests that people tend to be overconfident (see, e.g., Ehrlinger & Dunning (2003), Meer & Van Wesep (2007)). Those with low competence are particularly likely to overestimate their abilities (see, e.g., Kruger & Dunning (1999)).

used a broker when selling *another* house should end up paying a *higher* price in the current transaction.

Of the 106 observations for which the seller sold at least one other house, 16 sellers used a broker on another sale, and 90 did not. Our sample also includes 110 observations for which the buyer sold at least one other house; 14 buyers used a broker on another sale, and 96 did not. The overlap between these two sets of observations was rather small (11 observations).

Using these data, we created the following variables:

$$EVSOLD = \begin{cases} 1 & \text{if buyer sold another campus home, and seller did not} \\ -1 & \text{if seller sold another campus home, and buyer did not} \\ 0 & \text{otherwise} \end{cases}$$

$$EVSOLDBR = \begin{cases} 1 & \text{if buyer sold another campus home through a broker, and seller did not} \\ -1 & \text{if seller sold another campus home through a broker, and buyer did not} \\ 0 & \text{otherwise} \end{cases}$$

Assume for the moment that those who use brokers tend to be inferior negotiators. In that case, the selling price should be higher when the buyer sold another house through a broker, and lower when the seller sold another house through a broker. In other words, the coefficient of *EVSOLDBR* should be positive. We include the variable *EVSOLD* to account for any difference in baseline transactions prices between people with single and multiple campus transactions.

In a model that is otherwise equivalent to specification (4) (one that includes house fixed effects), the coefficient of *EVSOLDBR* is 0.00407, with a standard deviation of 0.0518.[12] The point estimate is small economically: those who use brokers on other transactions receive slightly worse terms than those who don't, but the difference is less than half of a percentage point. We cannot reject the hypothesis that the use of a broker on other transactions is unrelated to the selling price for the current transaction. Thus, there is no indication of spurious correlation within this

[12] The coefficient of *EVSOLD* is 0.00956 (0.0193), and the coefficient of the broker dummy is slightly smaller and less precisely estimated: -0.00316 (0.0615).

sample between the use of a broker and pertinent seller characteristics. However, we acknowledge that the standard error of *EVSOLDBR* is large.

In defining *EVSOLD* and *EVSOLDBR*, we implicitly assumed that the characteristics of buyers and sellers have the same absolute influence on the selling price (in opposite directions). We have also estimated these effects separately for buyers and sellers by creating separate versions of *EVSOLD* and *EVSOLDBR* for each. However, the effects of interest are then identified from half as many observations, leading to even less precision.[13]

4. INITIAL ASKING PRICES

A purported advantage of real estate brokers is their ability to price a house more accurately and objectively than a homeowner. One must also consider the possibility, emphasized by Levitt & Syverson (2005), that the "agent has strong incentives to sell the house quickly, even at a substantially lower price." To examine these possibilities, we estimate the same four specifications as in Table 2, except that we use the log of the initial asking price as the dependent variable. Results appear in Table 3. Not surprisingly, specification (1), which includes only a broker dummy and year effects, indicates that initial asking prices tend to be significantly higher for houses that are sold through brokers than for those that are not. Specification (2) controls for the home characteristics discussed in Section 2, as well as for neighborhood effects. Notice that the coefficient of the broker dummy becomes negative (-0.0282, s.e. = 0.0220). Although the point estimate is economically significant, we cannot rule out the possibility that the true effect is zero. The addition of controls for the length of time the seller has lived in the house (specification (3)) and for house fixed effects (specification (4)) reduces the absolute value of the broker coefficient

[13] For sellers, the point estimate for the coefficient of *EVSOLDBR* is positive (0.0239), indicating that the use of a broker is correlated with characteristics that lead people to obtain more favorable terms. For brokers, the point estimate is also positive (0.0265), indicating the opposite conclusion. However, in both cases the standard errors are large (roughly 0.1).

both economically and statistically. Accordingly, we find no evidence that brokers affect initial asking prices, on average.

5. TIME ON THE MARKET

Does the use of a broker help the homeowner to sell his or her house more quickly? To address this question, we estimate the same four specifications as Tables 2 and 3, except that we use the log of the amount of time on the market (between initial listing and sale) as the dependent variable. Results appear in Table 4. In specification (1), which controls only for year effects, the coefficient of the broker dummy is –0.426 (s.e. = 0.117), which implies that brokered homes sell 34.7 percent faster than homes that are not brokered. This difference is highly significant both economically and statistically. Adding controls for house characteristics and Stanford neighborhoods has a minor effect on the estimated coefficient (-0.414) and its standard error (0.119). When we control for the amount of time the seller has lived in the house, we find that brokered homes sell nearly 40 percent faster than homes that are not brokered (the coefficient of the broker dummy is –0.502, and its standard deviation is 0.121). With house fixed effects, the difference rises to nearly 42 percent (the coefficient is –0.541, with a standard deviation of 0.161). In all cases, the t-statistic for the broker coefficient exceeds three.

When the homeowner is a reluctant seller, a home can remain on the market for an extended period of time. Such sellers may also be disinclined to use brokers, who they know will seek quick sales. The effects discussed in the previous paragraph are not, however, attributable to such considerations. For example, when the sample is limited to houses selling within twelve months (n = 537), the coefficient of the broker dummy in specification (2) rises in absolute value to –0.485 (s.e. = 0.0969). Further limiting the sample to those selling within six months (n = 429) yields a coefficient of –0.319 (s.e. = 0.0861).

We can obtain sharper insights concerning the effect of using a broker on time-to-sale by examining monthly hazard rates. Specifically, we estimate a series of probit models describing the probability of selling a home during the *t*-th month after placing it on the market, conditional on reaching the start of that month without a sale. Table 5 reports the marginal effects of using a broker – in other words, the impact on the probability of a sale. To conserve space, we have omitted the coefficients for other variables, which include a full set of house characteristics, neighborhood effects, and year effects. The results indicate that the use of a broker increases the probability of sale during the first month on the market by nearly 25 percent (s.e. = 6.22 percent). This effect is highly significant, both economically and statistically. During the second month on the market, the effect is roughly half as large, but still significant in both respects.[14] Beyond the second month, there is no clear pattern. The effect is *negative* in the third and fourth months, positive in the fifth month, and essentially zero in the sixth month. After the second month, it is statistically significant at conventional levels of confidence only in the fourth month, during which the use of a broker reduces the probability of a sale by -8.56 percent (s.e. = 2.95 percent).

Thus, we conclude that brokered homes sell considerably faster than homes that are not brokered, owing mostly to an increased likely of sale within the first two months after being place on the market.

6. SENSITIVITY

The qualitative results reported in this paper are robust with respect to a wide range of alternative specifications. Here we briefly summarize some of the alternatives we examined. Full results are available upon request.

[14] Due to the inclusion of year effects, all observations within a given year are dropped if all of the associated homes either sold or failed to sale within a given month after listing. That is why the sample size is smaller for the first month after listing than for the second month after listing.

Variations in market conditions. Our basic specifications control for variations in market conditions through the inclusion of year effects. We also estimated specifications with seasonal effects, half-year indicators, and quarterly indicators. Seasonal effects are marginally significant in some specifications but change the estimated effect of using a broker only slightly, as do half-year and quarterly indicators.

Buyer and seller characteristics. Additional characteristics of buyers and sellers, including age and departmental affiliation, are available for some (but not all) of our sample. In the interest of preserving sample size, we did not include these variables in our basic specification. Adding them sacrifices some precision, but does not meaningfully alter our findings. The effects of buyers' and sellers' ages are generally small and statistically insignificant. While the estimated effects of particular departmental affiliations pass conventional tests for statistical significance in some specifications, collectively those effects are always jointly insignificant, and their inclusion does not significantly change the estimated effect of using a broker.

Heterogeneity across brokers. One company handled 32 of the 95 brokered sales in our sample, and another handled 31. One broker with the first company accounted for 22 transactions, and another broker with the second company accounted for 17. It is therefore important to investigate whether the companies and brokers that dominated our sample are representative. Accordingly, we re-estimated various specifications with additional dummy variables, either for the two lead companies or for the two lead brokers. In the specifications for selling price and initial asking price, the dummies are always jointly insignificant. The measured effects on selling price are economically small. With broker dummies, the measured effects on asking price are economically significant, and suggest that the lead brokers induced buyers to set those prices several percentage points lower, but again the effects are statistically insignificant.

Notably, the acceleration of sales appears to be almost entirely attributable to transactions handled by the two lead companies. With company dummies added to specification (2) in Table 4, the residual broker effect becomes economically and statistically insignificant (-0.00630, s.e. = 0.161). In contrast, the two company indicators are large and highly significant (-0.618, s.e. = 0.228, and –0.747, s.e. = 0.233). This may indicate that the companies with the most experience in this particular market have an advantage in selling homes quickly. Conceivably, more rapid sales could reflect lower initial asking prices, though as mentioned above, the evidence for the latter pattern is imprecise.

7. CONCLUSION

We have employed a unique data set to examine the effects of using real estate brokers on a home's selling price, initial asking price, and time on the market. We find no evidence that the use of a broker significantly affects either the selling price or the initial asking price, though it does lead to more rapid sale. For the median home in our sample, a 6 percent sales commission totals $34,000, a steep price to pay for the value rendered.

REFERENCES

Darlin, Damon. "The 6 Percent Solution: Skip Real Estate Agents." New York Times. September 17, 2005.

Ehrlinger, Joyce and David Dunning. "How Chronic Self-Views Influence (and Potentially Mislead) Estimates of Performance," Journal of Personality and Social Psychology. Vol. 84, 5-17.

Evans, Blanch. "NAR's 2003 Buyer/Seller Survey." July 21, 2003. http://realtytimes.com/rtapages/20030721_survey.htm

Hagerty, James. "Discount Real-Estate Brokers Spark A War Over Commissions." The Wall Street Journal. October 12, 2005.

Hendel, Igal, Aviv Nevo and François Ortalo-Magné. "The Relative Performance of Real Estate Marketing Platforms: MLS versus FSBOMadison." Manuscript, Northwestern University. June 2007.

Kossen, Bill. "For Sale By Amateur." Seattle Times. September 16, 2000. http://marketplace.nwsource.com/realestate/fsbo_amateur.html

Kruger, Justin and David Dunning. "Unskilled and Unaware of it: How Difficulties in Recognizing One's Own Incompetence Lead to Inflated Self-Assessments," Journal of Personality and Social Psychology. Vol. 77, 1121-1134.

Levitt, Steven and Chad Syverson. "Market Distortions When Agents Are Better Informed: The Value of Information in Real Estate. " NBER Working Paper No. 11053. January 2005.

MacDonald, Darla and Michael Veeman. "Valuing Housing Characteristics: A Case Study of Single Family Houses in Edmonton, Alberta." The Canadian Journal of Economics. Vol. 29, Special Issue: Part 2, p. S510-S514.

Meer, Jonathan and Edward Van Wesep. "A Test of Confidence-Enhanced Performance: Evidence from U.S. College Debaters." Manuscript, Stanford University. July 2007.

National Association of Realtors. "Profile of Home Buyers and Sellers 2002." http://www.realtor.org/Research.nsf/files/2002HBHShilites.pdf

National Association of Realtors. "Profile of Home Buyers and Sellers 2003." http://www.realtor.org/Research.nsf/files/2002HBHShilites.pdf

Palmquist, Raymond. "Estimating the Demand for the Characteristics of Housing." The Review of Economics and Statistics. Vol. 66 No. 3, p. 394-404.

Parsons, George. "An Almost Ideal Demand System for Housing Attributes." Southern Economic Journal. Vol. 53 No. 2, p. 347-363.

Realty Direct Corp. "Why A Realtor?" http://www.realty-direct.com/why_use_realtor.htm

Rhodes, Elizabeth. "For Sale By Owner: How It's Done." Seattle Times. April 26, 1998. http://marketplace.nwsource.com/realestate/fsbo_how.html

Salant, S. W. "For Sale by Owner: When to Use a Broker and How to Price the House." *Journal of Real Estate Finance and Economics*. Vol. 4 No. 2, p. 157-173.

Wooldridge, Jeffrey M. *Econometric Analysis of Cross Section and Panel Data*. MIT Press: 2002.

Figure 1
Proportion of Houses Sold Using a Broker

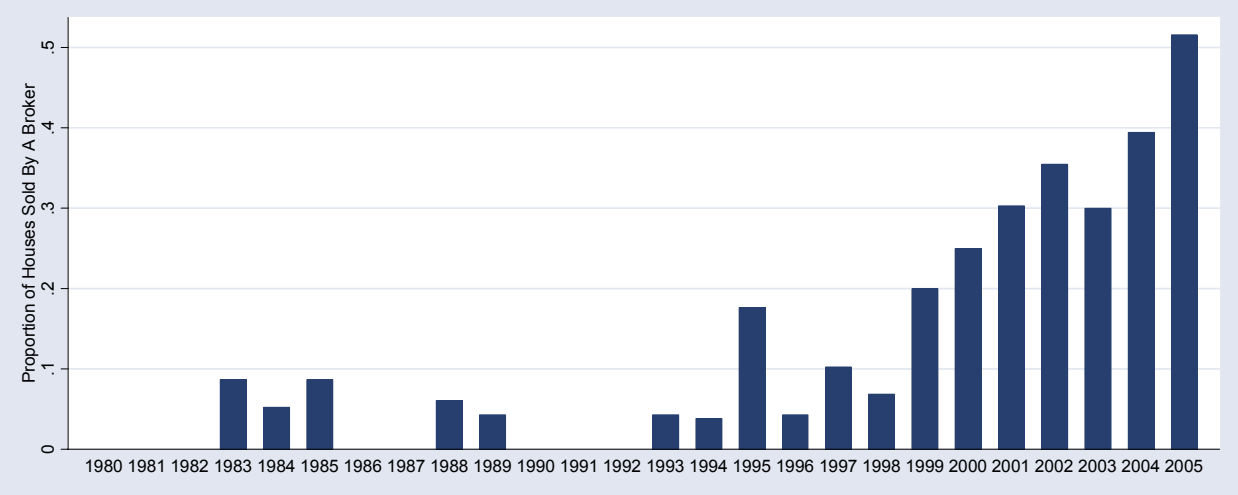

Table 1: Summary Statistics

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
Selling price (2005 dollars, thousands)	701.51	599.21	439.38	151.57	2850.0
Initial asking price (2005 dollars, thousands)	750.54	635.54	489.61	154.19	3991.4
Months between initial listing and close of escrow	9.01	4	12.23	1	88
Whether the seller used a broker	0.1397	0	0.3469	0	1
Age of the house at the date of initial listing (in years).	25.65	21	19.00	2	98
Time seller had lived in the house at the date of initial listing (in years)	13.42	8.62	12.09	0.181	54.35
Whether the house has a study.	0.3882	0	0.4877	0	1
Number of bedrooms.	3.135	3	1.160	1	7
Number of bathrooms.	2.453	2	0.6939	1	5.5
Whether the house has a pool.	0.5618	1	0.4965	0	1
Square footage of the house.	1979	1918	783.4	638	6168
Size of the lot (in acres).	0.2065	0.24	0.2428	0	1.41
Whether the house was sold through an estate.	0.05735	0	0.2327	0	1
Buyer's age	41.74	41	8.870	24	72
Seller's age.	47.52	47	9.900	27	74

Table 2: OLS Regressions for Log Selling Price (2005 dollars)

Variable	(1)	(2)	(3)	(4)
Home fixed effects	No	No	No	Yes
Year effects	Yes	Yes	Yes	Yes
Neighborhood effects	No	Yes	Yes	NA
Broker dummy	0.2801 (0.07080)	0.0004328 (0.02450)	0.02453 (0.02594)	-0.0001566 (0.03198)
House age	-	-0.01052 (0.002338)	-0.007981 (0.002589)	0.004295 (0.009468)
House age squared	-	0.0001138 (0.0000253)	0.0000892 (0.0000268)	0.0001858 (0.0000441)
Time in house	-	-	-0.007232 (0.002257)	-
Time in house squared	-	-	0.0001021 (0.0000517)	-
Study	-	0.02631 (0.01508)	0.02643 (0.01566)	-
Bedrooms	-	0.01195 (0.01261)	0.02117 (0.01440)	-
Baths	-	0.06099 (0.01886)	0.04922 (0.01878)	-
Pool	-	0.08310 (0.02565)	0.06417 (0.02623)	-
Square feet	-	0.0004889 (0.0000877)	0.0005404 (0.000087)	-
Square feet squared	-	-6.10×10^{-8} (1.43×10^{-8})	-6.61×10^{-8} (1.42×10^{-8})	-
Estate	-	-0.1053 (0.03157)	-0.06733 (0.03630)	-0.2041 (0.05010)
Acreage	-	0.4224 (0.2663)	0.3367 (0.2969)	-
Acreage squared	-	-0.2777 (0.1780)	-0.2209 (0.1865)	-
Observations	680	680	618	680
R^2	0.2028	0.9266	0.9356	0.7931

Note: Robust standard errors are reported. The R^2 for the fixed-effects regression pertains to "within" variation.

Table 3: OLS Regressions for Log Asking Price (2005 dollars)

Variable	(1)	(2)	(3)	(4)
Home fixed effects	No	No	No	Yes
Year effects	Yes	Yes	Yes	Yes
Neighborhood effects	No	Yes	Yes	NA
Broker dummy	0.2625 (0.06983)	-0.02817 (0.02195)	-0.01218 (0.02342)	-0.001875 (0.03000)
House age	-	-0.01292 (0.002574)	-0.01119 (0.002984)	-0.006503 (0.009525)
House age squared	-	0.0001186 (0.0000237)	0.0001001 (0.0000273)	0.0001878 (0.0000413)
Time in house	-	-	-0.0004988 (0.002284)	-
Time in house squared	-	-	0.0000731 (0.0000542)	-
Study	-	0.03533 (0.01449)	0.03272 (0.01513)	-
Bedrooms	-	0.02270 (0.01306)	0.02873 (0.01528)	-
Baths	-	0.05664 (0.01942)	0.04619 (0.02040)	-
Pool	-	0.09195 (0.02573)	0.08104 (0.02701)	-
Square feet	-	0.0004398 (0.0001062)	0.0005012 (0.0001126)	-
Square feet squared	-	-5.32×10^{-8} (1.87×10^{-8})	-6.03×10^{-8} (2.00×10^{-8})	-
Estate	-	-0.06489 (0.02655)	-0.03822 (0.02923)	-0.1555 (0.04700)
Acreage	-	0.1084 (0.2735)	0.05471 (0.3026)	--
Acreage squared	-	0.07523 (0.1977)	0.1133 (0.2084)	-
Observations	680	680	618	680
R^2	0.1922	0.9331	0.9406	0.8064

Note: Robust standard errors are reported. The R^2 for the fixed-effects regression pertains to "within" variation.

Table 4: OLS Regressions for Log Time on Market Price (2005 dollars)

Variable	(1)	(2)	(3)	(4)
Home fixed effects	No	No	No	Yes
Year effects	Yes	Yes	Yes	Yes
Neighborhood effects	No	Yes	Yes	NA
Broker dummy	-0.4261 (0.1171)	-0.4143 (0.1191)	-0.5017 (0.1210)	-0.5411 (0.1605)
House age	-	-0.04939 (0.01337)	-0.07252 (0.01599)	-0.6019 (0.04752)
House age squared	-	0.0002524 (0.0001092)	0.0004504 (0.0001291)	0.0009766 (0.0002212)
Time in house	-	-	0.06635 (0.01103)	-
Time in house squared	-	-	-0.001307 (0.0002317)	-
Study	-	0.1123 (0.07717)	0.05681 (0.08361)	-
Bedrooms	-	0.05688 (0.05487)	-0.004867 (0.06128)	-
Baths	-	0.003904 (0.09006)	-0.008890 (0.09751)	-
Pool	-	-0.03204 (0.1288)	0.05132 (0.1327)	-
Square feet	-	-0.001055 (0.0003326)	-0.0008607 (0.0003592)	-
Square feet squared	-	1.63×10^{-7} (5.02×10^{-8})	1.37×10^{-7} (5.36×10^{-8})	-
Estate	-	0.2456 (0.1388)	0.1490 (0.1575)	0.7550 (0.2515)
Acreage	-	0.4188 (1.242)	1.363 (1.480)	-
Acreage squared	-	0.4033 (0.8296)	0.03910 (1.020)	-
Observations	680	680	618	680
R^2	0.2989	0.3735	0.4239	0.6406

Note: Robust standard errors are reported. The R^2 for the fixed-effects regression pertains to "within" variation

Table 5: Probit Models
Conditional Probability of Sale

Effect	Number of Observations	Broker dummy
Sale in first month	492	0.2487 (0.06223)
Sale in second month conditional on no sale in first month	565	0.1275 (0.06849)
Sale in third month conditional on no sale in first and second months	450	-0.06779 (0.05151)
Sale in fourth month conditional on no sale in first through third month	360	-0.08561 (0.02947)
Sale in fifth month conditional on no sale in first through fourth month	270	0.1658 (0.1010)
Sale in sixth month conditional on no sale in first through fifth months	222	-0.006286 (0.08889)

The left hand side variable is a dummy for selling in the *t*th month conditional on not having sold up to that point. Other right hand side variables include house characteristics, neighborhood effects, and year effects. Robust standard errors are reported in parentheses.