

What Do We Know About Real Estate Brokerage?

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Abstract

Many facets of real estate brokerage have been examined in studies appearing in the literature over the last several years. This review attempts to organize the research around six questions concerning the brokerage industry: (1) What is the nature of the market for brokerage services and how does it influence the individual firm; (2) What factors determine broker and agent compensation; (3) How does brokerage participation influence time on the market and price; (4) Is the brokerage market efficient and equitable; (5) Must brokerage firms assume greater liability; and (6) How do brokerage markets vary internationally. In examining each question, the review points out the major focus of the research and summarizes important findings. Its purpose is to identify key issues facing the brokerage industry and suggest avenues for future study.

Introduction

Beginning in 1981 with the publication of Yinger's (1981) classic study, academic research on the residential brokerage industry has mushroomed. One measure of academic interest in the subject is the number of special issues of the *Journal of Real Estate Research (JREER)* that have been devoted to the topic. Since 1988, *JREER* has published two special brokerage issues and a third is in progress.

This survey examines the direction of research related to the brokerage industry and suggests avenues for future inquiry. In attempting to understand the direction of brokerage research, six questions are asked about broad topical areas: (1) What is the nature of the market for brokerage services and how does it influence the individual firm; (2) What factors determine broker and agent compensation; (3) How does brokerage participation influence time on the market and price; (4) Is the brokerage market efficient and equitable; (5) Must brokerage firms assume greater liability; and (6) How do brokerage markets vary internationally. In each area, this study tries to point out the major focus of the research, to summarize important findings and to suggest issues of further concern.

The Market for Brokerage Services and Its Influence on the Firm

Real estate brokerage firms exist to provide information to sellers and buyers. A number of studies examine the market for brokerage services and how it influences brokerage firm characteristics, such as firm size and other attributes. For example, an early study by Jud (1983) analyzes the factors that influence the decisions of home buyers and sellers to use the services of a broker. For sellers, the decision to list with a broker rather than attempt to sell by owner depends on transaction costs in the housing market, most especially the cost of the owner's time. Sellers who plan on moving outside the local area and high income sellers are substantially more likely to use a broker than others. For buyers, the decision to consult a broker during a housing search is determined primarily by the buyer's prior knowledge of the housing market and the opportunity cost of the buyer's time. Buyers moving into the local area from outside and higher income buyers are more likely to consult a broker, but new home buyers are less likely to consult a broker. Jud suggests that new homes are more widely advertised by builders and thus easier to locate without broker assistance. More recent work by Zumpano, Elder and Baryla (1996) confirms that buyers with higher opportunity costs and less information about local market conditions are most likely to consult a broker during their search for housing.

The Census Bureau estimates that in 1995 there were some 115,409 establishments operating in real estate sales.¹ These firms employed 742,918 persons with a total payroll of \$18.8 billion. The average firm was small, employing 6.4 persons, with a total payroll of \$162,979. Ninety-five percent of all firms employed 19 or fewer persons. Less than 1% of all firms employed 100 or more workers.

The small size of most brokerage firms suggests that scale economies are lacking in the industry. Research by Johnson, Nourse and Day (1988) reveals that the individual agent is more important than the firm is to home sellers selecting an agent. Their survey of Georgia home sellers indicates that prior acquaintance with the agent is the primary factor in considering an agent. They find further that agent characteristics such as integrity, competence, knowledge of market and understanding clients' needs are among the most important attributes to sellers.

Likewise, Nelson and Nelson (1991) studied the criteria used by home buyers in Grand Forks, ND to select a specific real estate firm. They found that the "friendliness" of the agent was the most important attribute. It was followed by "general reputation of firm," and "agent's training/qualifications."

Since the principal asset of the real estate sales firm is its workforce, understanding this human capital component is vital to the success of the firm. A unique study by Chinloy (1988) uses options theory to value the real estate brokerage firm. Estimating an income function, he finds that the maximum value of the licensee to the firm comes after two years of experience.

A 1987 study by Frew examines the earnings of brokerage firms relative to the number of listings held by the firm. He finds that participation in a local multiple listing service (MLS) may not necessarily maximize the income to the firm due to the possibility of splitting commissions with outside brokers, a finding particularly true for a large firm that can obtain many listings and can reasonably expect to match a listing with its own buyer.

Because reputation is important to real estate firms, many firms seek to enhance their reputations through advertising. Colwell and Marshall (1986) explore the factors that affect market share in the brokerage industry. They find that the number of salespeople, presence of a franchise and quantity of display advertising all positively affect market share of sales. Relative to firm performance, a 1987 study by Richins, Black and Sirmans examining market strategy concludes: (1) it is important to be located near the selling areas; (2) it is easier for the firm to sell in an area where it has sold before; (3) it is easier to sell lower-priced properties; and (4) franchise affiliation has a positive effect on market performance.

Franchising

Franchise firms seek to create national reputations through advertising and to take advantage of advertising economies of scale. Studies by Frew and Jud (1986) and Jud, Rogers and Crellin (1994) examine the impact of franchise affiliation. Using data from a National Association of Realtors (NAR) national sample, Jud et al. estimate production and revenue functions for real estate brokerage firms. They find that the number of homes sold by a brokerage firm rises with firm size, age and MLS affiliation. Sales also are positively related to city size. They find that franchise-affiliated firms sell more properties than non-affiliated firms do. After subtracting the royalties, fees and other charges associated with affiliation, the authors conclude that affiliation yields an average 9% increase in net revenues. They further estimate that the increase in net revenues is sufficient to yield positive net present values after consideration of the up-front fees that affiliates must pay.

A number of studies have examined the operating efficiency of firms in the real estate brokerage industry. Included here are studies by Yinger (1981), Crockett (1982), Wachter (1987), Zumpano, Elder and Crellin (1993), Zumpano and Elder (1994) and Anderson, Fok, Zumpano and Elder (1998). Most of these studies report that brokerage firms tend to be relatively inefficient and too small to properly take advantage of economies of scale. Zumpano, Elder, and Crellin (1993) find modest economies of scale but, interestingly, they find that large firms do not have a competitive advantage over smaller firms in terms of unit costs. Zumpano and Elder (1994) find that with a balanced mix of listings and sales minimizing cost economies of scope result. They suggest that specializing in one or the other may be sub-optimal.

A recent study by Anderson, Lewis, Zumpano and Elder (1998) draws on a national sample of real estate firms, employing a classical stochastic frontier

technique to measure X-inefficiencies. The study finds that the average firm operates close to its efficient frontier, indicating that brokerage firms are relative efficient. Like previous studies, the authors report evidence of economies of scale, suggesting that the average firm is too small.

Quality of Broker Services

Measuring the quality of brokerage services and the level of consumer satisfaction is not an easy issue. In identifying the determinants of service quality, Johnson, Dotson and Dunlap (1988) conclude that real estate service quality meets expectations in some areas but falls short in others. Specifically, quality meets expectations in areas such as reliability of service and service empathy but falls short in other areas such as service responsiveness. A more recent study by Nelson and Nelson (1995) measures perceived levels of satisfaction with brokerage service quality. They assert that the industry is not unique and that a modified generic service quality measurement instrument can be used to assess satisfaction with the industry.

Okoruwa and Jud (1995) analyze a nationwide sample of home buyer satisfaction collected by the NAR. Buyer satisfaction is measured by their response to the question: "Would you use your agent again if the opportunity presented itself?" They report that: (1) the buyer's satisfaction with their agent falls with length of search; (2) satisfaction is lower for married home buyers; (3) satisfaction falls if the buyer experiences difficulty with financing; and (4) satisfaction increases when the agent explains the requirements of the fair housing laws.

What Factors Determine Broker and Agent Compensation?

The Census estimates that in 1995, 742,918 persons worked in real estate sales (see, Jud and Winkler (1998). This number was up 30.3% from the 1983 employment level of 570,000, amounting to an annualized growth rate of about 2.2% per year. Females comprised 49.2% of the 1995 workforce in real estate sales, blacks 3.3% and Hispanics 4.5%.

Tabulations from the 1990 Census reveal that the average individual working in real estate sales earns \$33,767 (see, Jud and Winkler (1998). There are substantial differences, however, in the incomes of full-time and part-time workers. Some 38.9% of workers in the industry work only part-time and earn an average of \$21,641, while the 61.1% who work full-time earn \$41,489.

While some 60.6% of part-time workers in the industry are female, differences between full- and part-time work do not account for all of the gender differences in earnings. Men earn more than females, whether they work full- or part-time. Among full-time workers, males earn an average of \$48,629, while females who

work full-time earn \$32,158. Among those working only part-time, males earn \$28,943, while females earn \$16,900.

Census surveys indicate that substantial inequality exists in the distribution of earnings among salespersons in real estate sales (see, Jud and Winkler (1998)). In real estate, the highest 20% of workers earn 32.6% of all income and the highest 5% of salespersons receive 10.5%.

Human Capital Models of Agent Earnings

To explain the distribution of earnings in real estate sales, a number of studies draw on the human capital earnings model developed by Mincer (1970). Studies that examine the determinants of real estate licensee income using the human capital model are presented in Exhibit 1.

The Follain, Lutes and Meier study in 1987, which uses Illinois data, is the first in a series of studies that use the human capital model to examine why some salespeople earn more than others. They find a positive relationship between licensee income and both education and experience. They also find that the number of hours worked, holding a broker's license, the size of the firm and working in a metropolitan area have a positive effect on income. They find no significant difference, however, in income by gender.

A following study by Glower and Hendershott in 1988, using data from Ohio, finds education, experience, number of hours worked, holding a broker's license, being an owner/manager and living in a metropolitan area to have a positive effect on licensee income. Their results show that women earn less than men and that licensees who specialize in residential sales earn less. An additional result shows decreasing marginal returns due to experience.

A study by Crellin, Frew and Jud (1988), using a nation-wide sample of realtors, shows income to be positively related to education, experience, number of hours worked, holding a broker's license, size of the firm and living in a metropolitan area. Variables that have a negative effect on licensee income include gender (women earn less), race (minorities earn less), specializing in residential sales and being affiliated with a franchise. Age of the licensee was not significant in their study.

Combining a human capital model with a psychological factor model, Abelson, Kacmar and Jackofsky (1990) examine licensee income. Their important findings include: the number of hours worked per week have a positive effect on income; females earn more than males; and education, work satisfaction and reputation of the firm are all important in generating licensee income.

Larsen (1991) compares leading agents to non-leading agents. He finds that leading agents deal in higher valued properties, but he finds no significant strategic differences between leading agents and others.

Exhibit 1 | Factors Affecting Broker Compensation

Variable	Sign	Studies
Sharing House/Seller Information	Negative	Frew (1987)—via MLS
Number of Hours Worked	Positive	Follain, Lutes and Meier (1987) Crellin, Frew and Jud (1988) Sirmans and Swicegood (1997) Sirmans and Swicegood (1998) Jud and Winkler (1998)
Experience	Positive	Follain, Lutes and Meier (1987)—but flatten out for 10 years + experience Crellin, Frew and Jud (1988) Glower and Hendershott (1988) Sirmans and Swicegood (1997) Sirmans and Swicegood (1998) Jud and Winkler (1998)
Firm Size	Positive	Follain, Lutes and Meier (1987) Crellin, Frew and Jud (1988) Sirmans and Swicegood (1998)
Sex of Agent/Being a Woman	Positive Neutral— inconclusive Negative	Abelson, Kacmar and Jackofsky (1990)—in residential real estate Follain, Lutes and Meier (1987)—no significant differences Crellin, Frew and Jud (1988) Sirmans and Swicegood (1997) Sirmans and Swicegood (1998) Jud and Winkler (1998)
Race of Agent/Being Black	Negative Neutral— inconclusive	Crellin, Frew and Jud (1988) Sirmans and Swicegood (1997) Sirmans and Swicegood (1998)
Education	Positive	Crellin, Frew and Jud (1988) Glower and Hendershott (1988) Abelson, Kacmar and Jackofsky (1990) Jud and Winkler (1998)
Licenses	Negative Positive	Jud and Winkler (1998)—graduate education Crellin, Frew and Jud (1988)
Franchise Affiliation	Positive Negative	Sirmans and Swicegood (1997) Crellin, Frew and Jud (1988)
Working in a Metro Area	Positive	Follain, Lutes and Meier (1987) Glower and Hendershott (1988) Sirmans and Swicegood (1997) Jud and Winkler (1998)—substantial variation across metro areas

Exhibit 1 | (continued)
 Factors Affecting Broker Compensation

Variable	Sign	Studies
Age of Licensee	Neutral— Inconclusive Negative	Crelin, Frew and Jud (1988) Sirmans and Swicegood (1997) Sirmans and Swicegood (1998)
Working Weekends	Negative	Sirmans and Swicegood (1997)
Perceived Negative Image of Industry	Negative	Sirmans and Swicegood (1997)
Job Satisfaction	Positive	Sirmans and Swicegood (1997)
Having E & O Insurance	Positive	Sirmans and Swicegood
Ownership Interest	Positive	Crelin, Frew and Jud (1988)—substantially more Glower and Hendershott (1988—especially males) Sirmans and Swicegood (1997)
Residential Realtors	Negative	Crelin, Frew and Jud (1988) Glower and Hendershott (1988) Sirmans and Swicegood (1997) Sirmans and Swicegood (1998)
Holding a Sales License	Negative	Crelin, Frew and Jud (1988) Follain, Lutes and Meier (1987) Glower and Hendershott (1988)
Specialty Managers	Positive Positive	Glower and Hendershott (1988) Glower and Hendershott (1988)—depending on number of subordinates Sirmans and Swicegood (1997)
Hours Worked	Positive	Abelson, Kacmar and Jackofsky (1990) Follain, Lutes and Meier (1987) Glower and Hendershott (1988) Sirmans and Swicegood (1997) Crelin, Frew and Jud (1988) Jud and Winkler (1998)
Reputation of the Firm	Positive	Abelson, Kacmar and Jackofsky (1990)
Leading vs. Non-Leading Agents	Positive	Larsen (1991)
Professional Designations	Positive	Sirmans and Swicegood (1998)
Use of Personal Assistants	Positive	Sirmans and Swicegood (1998)
Use of Computers	Positive	Sirmans and Swicegood (1998)

Later research on licensee income returns to the human capital model. Sirmans and Swicegood (1997), using Florida data, report results that are sometimes at odds with the earlier studies. For example, although they find experience to have a positive effect on income, education is not significant. Also, their study shows that the number of hours worked are important, but those holding a broker's license do not have an advantage over those with a sales license. Gender is significant (women earn less), whereas race is not. As with previous studies, they find that specializing in residential sales reduces income and being an owner/manager or living in a metropolitan area increases income. In contrast with previous studies, they find that firm size is not significant but franchise affiliation has a positive effect on income. They also find that age of the licensee has a negative effect on income.

Sirmans and Swicegood (1997) also look at a number of additional variables. For example, they find a negative relationship between income and working on weekends. They also find that the source of prelicensing education and the use of correspondence in furthering education do not affect income. Other factors that did not affect income include belonging to social organizations, holding professional designations, belonging to a referral/relocation service, entering real estate as a second career and changing firm affiliations. Measuring attitudes, their study finds that licensees with greater job satisfaction earn more and those who perceive the industry to have a bad image earn less.

A second study by Sirmans and Swicegood (1998) finds similar results. Using Texas data, the study finds experience but not education to be important. Other variables having a positive effect on income include number of hours worked, size of firm, holding professional designations, having access to personal assistants and the use of computers. Variables that negatively affect income include gender, specializing in residential sales, age of licensee and frequent affiliation changes. Variables that did not have a significant effect on income include holding a broker's versus sales license, race of licensee, being affiliated with a franchise, being an owner/manager, working in a metropolitan area, source of pre- and post-licensing education and spending time reading industry literature.

Another recent study by Jud and Winkler (1998) employs nationwide tabulations from the 1990 Census by occupation and area. Using a human capital model, the authors analyze the factors that determine the earnings of salespersons in the financial services industry. Persons in real estate sales earn substantially less than those in insurance or security sales. The returns to schooling are shown to vary by field, level of schooling and gender. The returns to K-12 schooling are highest in the insurance and securities sales, while the returns to college are highest in security sales. For males, the returns to graduate education are negative in real estate and insurance. For females, returns are large and positive in insurance, but negative in real estate sales. In the real estate field, women earn 47% less than males, after standardizing for differences in schooling, experience and full-time work. The returns to schooling for females are lower in real estate than in insurance and security sales. Due to geographic influences, earnings also vary

substantially across metropolitan areas. In all financial services, earnings are higher in larger, wealthier cities. In real estate, earnings levels are directly related to the rate of household growth in the metropolitan area.

Exhibit 1 gives a summary of the factors affecting broker compensation. Variables that have a positive effect on brokerage compensation include: (1) number of hours worked; (2) experience; (3) education; (4) firm size; (5) manager/ownership interest; (6) firm reputation; (7) franchise affiliation; (8) working in a metro area; (9) professional designations; (10) level of job satisfaction; (11) having errors and omissions insurance; (12) having use of personal assistants; and (13) making use of computers. Factors that negatively affect broker income include: (1) selling residential property; (2) holding a sales license as opposed to being a broker; (3) having a perceived negative image of the industry; and (4) being female.

Four of the studies reported that women earn less than men do after controlling for education, experience and hours worked. Why such differences persist in the industry is a subject that merits additional attention. In addition, the conflicting findings regarding the effects of race on earnings suggests this topic should be explored further.

Regulation, Agent Earnings and Consumer Protection

Most states impose educational and licensing standards on individuals and firms who engage in the brokerage business. The National Association of Real Estate License Law Officials (NARELLO) publishes an annual report of their survey of real estate licensing laws and standards in the United States and Canada. Most of the academic research dealing with brokerage industry regulation has utilized the annual NARELLO survey reports.

Shilling and Sirmans (1988) address the issue of state licensing procedures on the quality of brokerage services. Their results suggest that restricted entry by tougher licensing standards raise the quality of service. They find evidence that licensing procedures benefit the consumer with a higher quality of service. Guntermann and Smith (1988) relate the number of consumer complaints against licensees to state licensing standards regarding education and enforcement. Their findings suggest that minimal preclicensing requirements reduce complaints but additional requirements do not lead to further reductions. Stricter enforcement and higher penalties, they conclude, are more effective methods for reducing complaints.

In general, studies of industry regulation have found that regulation serves as a greater benefit to consumers rather than the industry itself. A study by Johnson and Loucks (1986) examines entry barriers to real estate brokerage and the resulting effect on earnings and quality of service. Their results show that regulation results in a higher quality of service, but show no evidence to indicate the real estate industry regulations raise earnings.

The findings of Johnson and Loucks conflict with the results of research on licensing in other professions. Although the rationale for state licensing is

consumer protection, a number of studies have linked occupational licensing to reduced competition and higher professional earnings (see, for example, Maurizi, 1974; and Carroll and Gaston, 1981).

A major problem confronting studies of the impact of state regulation on earnings is the lack of good data on the earnings of brokers. Data on individuals are difficult to obtain and aggregate data need to be standardized for differences in factors such as education, experience, hours worked and regional cost of living differences. Most studies in this area have not done this adequately.

How Does Brokerage Participation Influence Time on the Market and Price?

Brokerage firms that represent sellers compete for customers by promising to sell homes quicker and at higher prices than their competitors. Several studies examine the relationship between selling time and house prices. Cubbin (1974) and Miller (1978) show that time on the market (TOM) is positively related to selling price. Subsequent work has focused on the relationship between TOM and factors such as list price, mortgage rates and special financing incentives. Some studies have examined the relationship between pricing and TOM. For example, Asabere, Huffman and Mehdian (1993) find overpricing and underpricing to be significant, thus proving a tradeoff between listing prices and TOM. They argue that overpricing in hopes of receiving all possible offers is counter productive and that deviation from the intrinsic price prevents achievement of the optimal selling time. Larsen and Park (1989) find that owners who price their properties lower for quick sale can recover the cost of the concession by a lower commission. Kang and Gardner (1989) report that, for houses of equal quality, TOM varies with the level of mortgage rates. They also find that TOM is shorter for newer houses. Kalra and Chan (1994) find that macroeconomic factors such as mortgage rates and employment levels have an effect on TOM. Cotter and Hoesli (1994) report similar results. Ferreira and Sirmans (1989) find that sellers with favorable financing can capture financing premiums without reducing selling time. They also show that sellers can trade off financing premiums for shorter TOM.

Haurin (1988) introduces heterogeneous properties into the housing search model. He finds that TOM is positively related to the atypicality of the property and the list price. Read (1988) reports similar results. Geltner, Kluger and Miller (1991) explore how the seller's reservation price is related to holding costs. Using simulation analysis, they conclude that the seller's reservation price of sale is negatively related to the holding cost of the property. In addition, they find that the atypicality of the property is positively related to reservation price, because buyer valuations are more uncertain.

Baryla and Zumpano (1995) use a duration model to examine the effect of length of search and search intensity on selling time. They conclude that information asymmetries exist in the real estate market, showing that first-time and out-of-

town buyers search longer than experienced or local buyers do. At the same time, buyers relocated by employers spend less time searching. Real estate brokers play an important role by reducing search time for all classes of buyers.

A couple of studies have addressed the relationship between characteristics of real estate firms and TOM. Yang and Yavas (1995), for instance, use a duration model to examine this relationship. They find a positive correlation between the number of listings and TOM, and a negative correlation between the number of home sales and TOM. Interestingly, they find that neither the level of commission rates nor the size of the listing firm has a significant effect on TOM.

Jud, Seaks and Winkler (1996) examine the impact of brokers, brokerage firms and marketing strategy on TOM. They find that individual agent and firm characteristics do not have a significant impact on selling time. Two interesting results emerge from these studies: Yang and Yavas (1995) find no support for the argument that brokerage firms expend more effort in selling their own listings; and Jud, Seaks and Winkler (1996) produce results that imply an efficient market at the MLS level. They suggest that that no groups of firms or agents have special advantages that enable them to sell houses more quickly than their counterparts.

Price

A number of papers examine the effect of using a real estate broker on selling price. Although some have been theoretical in nature with simulated results, most have provided empirical analysis. For example, Geltner, Kluger and Miller (1991) examine the relationship between the agent and seller in a real estate transaction. Quantifying both selling effort and reservation price, they find that conflict of interest problems in selling effort are most important at the beginning of the listing contract; whereas, conflict of interest regarding reservation price is more severe toward the end of the contract.

The empirical studies exploring the relationship between brokers and selling prices examine a range of issues. An early study by Kamath and Yantek (1982) argues that buyers would be better off bypassing brokers and buying directly from sellers, finding there is no significant difference in prices across the alternatives.

Jud and Frew (1986) examine housing prices paid in the broker-assisted market versus the for-sale-by-owner market in Charlotte, NC. They find that homes sold with broker assistance, through the multiple listing service (MLS), sell for approximately 3% more, after controlling for differences in housing quality. They argue that sellers are able to shift part of the commission to buyers because broker-listed properties are easier to find, resulting in a saving in buyer search costs.

A 1992 study by Sirmans, Turnbull and Dombrow is concerned with efficient pricing of houses that sell quickly. They show that houses that sold before the listing appears in the MLS tend to be smaller. However, the average price per square foot is not significantly different. Thus, they find no significant difference between prices of quick selling houses and others.

A couple of simulation studies examine the effect of brokers on contract prices. Salant (1991) examines pricing during the by-owner phase and the listing phase. The results show that the asking price declines within each phase but may jump up at the transition from by-owner to broker listing. Examining the impact of the use of a broker on buyer and seller search behavior and selling prices, Yavas (1992) finds that the buyer and seller search less intensely when the house is listed with a broker. He also shows that the price increase at listing typically does not fully cover the commission fee.

Time on Market and Price

Some studies relate brokerage firm impact on selling price to TOM. Asabere and Huffman (1993) examine the relationship between listing price concessions, the actual sale price and TOM. Their results show that price concessions lead to discounts in the final sale price and that sale price goes up with TOM. Two following studies also consider TOM. Hughes (1995) examines the impact of the brokerage firm on sale price while holding TOM constant. He concludes that sale price is positively correlated with size of the brokerage firm and that performance for same-size firms in different geographical locations varies widely. Yavas and Yang (1995) examine the impact of listing price on TOM and sale price. For mid-priced houses, they find that the closer the final sale price to the listing price, the shorter the TOM. Showing no differences for high- and low-priced houses, they argue past evidence of market efficiency for these price ranges.

Jud and Winkler (1994) examine the effect of brokerage firm and agent characteristics on house prices. Their results show that selling agents outside the listing firm work harder to get a higher selling price, but that individual agent characteristics do not appear to affect price. Consistent with efficient markets (at least within the MLS), they find no evidence that some brokers consistently get higher prices for the homes they sell. In a later study, Hughes (1995) finds a different result.

Other issues such as the listing price/sale price ratio, the use of buyer's brokers, and brokerage firm characteristics on sale price have been studied. Examining the relationship between listing price and sale price, for example, Knight, Sirmans and Turnbull (1994) find that list price may lead the market when functioning as a signal of seller intent and that list price is a leading indicator of selling price. Looking at the use of a buyer's broker, Black and Nourse (1995) find a significant shifting of closing costs to the seller when a buyer's broker is used. However, they also find that the type of brokerage has no effect on house prices.

In an interesting examination of vacation homes, Tirtiroglu (1996) finds that commissions were not only fully capitalized into sale prices but that buyers appear to overpay the commission. In resort towns, buyers and sellers tend to have high search costs and are more likely to use a broker.

Using a different approach to house prices, Clayton (1996) tests the ability of a rational expectations model to explain short-run fluctuations in real house prices.

He proxies imputed rents for owner-occupied housing and finds that market prices may deviate from fundamental values in real estate price cycles.

Other Influences on Price

Another novel approach to the house price issue is undertaken by Jud, Winkler and Kissling (1995). They examine the determinants of housing market liquidity, where liquidity is measured by the spread between the actual selling price and the original listing price for homes sold through MLS. To explain the price spread in residential housing markets drawing on modern search theory, they develop a model that includes the price of the home, the cost of search and the variance of offer prices. Higher listing prices and search costs raise the price spread, while a larger variance in offer prices reduces the spread. The model suggests that liquidity is a function of transaction costs and market information.

While a number of studies have shown how the atypicality of homes influences price and TOM, most studies have not examined differences in seller motivation. Springer (1996) and Glower, Haurin and Hendershott (1998) develop models that explicitly consider the motivations of sellers. Springer finds that motivated sellers sell their homes at lower prices. Glower et al.'s work reveals that the seller's planned moving date influences both TOM and price. Sellers whose planned moving dates are nearer their original listing dates tend to sell quicker and at a lower price.

Technological improvements that reduce the transaction costs involved in housing search also influence TOM and price. In a unique study, Benjamin and Chinloy (1995) model the effect of such a technological improvement in the Washington, DC area. They investigate the return to adopting a lock box on the front door to enhance security and facilitate the showing of the house. Estimates of the impact of adoption reveal that prices are higher, but TOM is not significantly affected. Adoption raises sale prices by 0.9%.

Evaluation

The large number of studies undertaken on this topic is suggestive of the complexity of the topic and issues involved. It seems clear that future work must consider the interactions between listing price, reservation price, selling price and TOM when modeling the effects of brokerage firms, agents and multiple listing services. Other influences, like seller motivation and the nature of the brokerage relationship, are also important. Further progress in this area of research awaits both better theory and better data.

Is the Brokerage Market Efficient and Equitable?

The questions of economic efficiency and equity have motivated a large number of studies of the brokerage industry. Much of this work has been theoretical in

nature with simulations performed to determine behavior. Findings cover a wide spectrum of conclusions. An excellent review is provided by Yavas (1994).

Yinger (1981), Crockett (1982), Villani and Simonson (1982), Miceli (1992) and others conclude that the brokerage industry is inefficient, that is, it wastes resources. The basis for this conclusion is the idea that commission rates are fixed. There is the assumption that members of local MLSs collude to fix commission rates that are above market equilibrium. However, because there is relative freedom of entry into the brokerage industry, economic profits are competed away through “unproductive” non-price competition.

The notion also prevails that the cost of selling a house is not proportional to the value of the house. If true, fixed percentage commission rates imply that brokers are practicing monopolistic price discrimination.

Several studies have raised questions about the extent of monopolistic behavior in the industry. Schroeter (1987), for example, develops a model of the market for real estate brokerage services in which fixed commissions are a property of competitive equilibrium and not evidence of noncompetitive broker conduct.

Jud and Frew (1986) and Zumpano and Hooks (1988) assert that agents compete for listings by promising to sell homes quicker and at higher prices than their competition. They argue that it is the “net” commission that matters, that is, the total commission less the gain in sales price attributable to the effort of the broker. Thus, the lack of variation in the gross commission rates may not be a signal of an absence of price competition.

Turnbull (1996) demonstrates that non-price competition need not be wasteful if broker services lower buyer and seller transaction costs. In addition, Yavas and Colwell (1995) show that the agent’s efforts on behalf of his or her principle are efficient if they generate benefits for the principle.

In contrast to theoretical studies of this issue, empirical analyses by Carney (1982) and Goolsby and Childs (1988) reveal significant variation in commission rates. In a related result, Frew, Jud and McIntosh (1993) demonstrate that the percentage of commission to a cooperating broker is negatively related to the size of the agency holding the listing.

Sirmans, Turnbull and Benjamin (1991) find that commission rates actually fall as house prices rise. Interestingly, they also find that although larger firms tend to sell houses faster, they do not charge additional commission premiums.

Sirmans and Turnbull (1997) provide very persuasive theoretical and empirical evidence that commission rates are subject to substantial variation. Drawing on data from an entire urban area over an extended economic cycle, they show that rates vary with economic conditions (demand) and broker cost conditions (supply). They find that commission rates vary in a countercyclical manner as would be predicted from a competitive model of brokerage firm behavior.

On a related issue, Yinger (1981) concludes from his theoretical model of the brokerage market that an MLS reduces the search efforts of brokers. In contrast, Wu and Colwell (1986) assert that an MLS does not reduce the resources devoted to search. In their model, changes in the cost of search by brokers for listings and buyers affects the price of housing, brokerage commissions and the size of the split between the listing and selling agent.

Yavas (1992) looks at the effect of the brokerage industry on the resources expended by buyers and sellers in housing search, using a model in which buyers and sellers can choose the amount of resources expended on search efforts. He concludes that an MLS saves resources by lowering the resources that buyers and sellers devote to search.

Another issue is the effect of brokers on the demand for housing. Jud and Frew (1986) assert that brokers do more than produce matches between buyers and sellers. They find that buyers who look for housing with the help of a broker consume more housing. They argue that the influence of brokers on the demand for housing is similar to that of advertising on the demand for other goods and services.

If there are economies of scale in the collection and dissemination of information, an MLS may be a natural monopoly. Yinger (1981) argues this case and suggests that government subsidize the MLS. The advent of the Internet, however, has altered drastically the economics of information dissemination and has undoubtedly changed the basic economics of an MLS, rendering prior conclusions in need of reexamination.

The equity of the distribution of the gains from search among buyers, sellers and brokers has been examined by a number of studies. Bagnoli and Khanna (1991) explain why buyers in the housing market traditionally use an agent employed by the seller: agents reduce the search costs of buyers resulting in more buyer search. Increased search raises the welfare of buyers, and it results in quicker sales and higher prices paid to sellers. Higher selling prices shift some of the gains from search to sellers, resulting in a shifting of the cost of broker services from sellers to buyers. Empirical support for the results of Bagnoli and Khanna are found in Jud and Frew (1986).

Zorn and Larsen (1986) analyze the flat-fee and percentage commission systems from an agency theory perspective. They find that neither system perfectly aligns the interests of the home seller and the broker. Arnold (1992) argues that the listing contract must be designed so that the broker acts to maximize the owner's return. He shows that a percentage contract, as opposed to the flat-fee contract, can produce a first-best, incentive compatible contract. After examining the effect of incentive contracts on both the seller and the broker, Geltner, Kluger and Miller (1992) find that time incentive contracts are not superior to fixed percentage commissions. Carroll (1989) points out that it is difficult to monitor the efforts of

brokers, and thus brokers may tailor efforts toward clients who pay higher commissions.

Miceli (1989, 1991, 1995) provides an important series of papers exploring the equity of various contractual arrangements. His 1989 article examines the length of the listing contract as a means of providing an incentive for the broker to act in the best interest of the home seller. By limiting the duration of the contract, the seller imposes a cost on brokers who fail to complete a sale before contract expiration. The seller must balance the benefits of improved incentives against the expected cost of contract renegotiations.

Miceli's 1991 article analyzes the impact of split commissions on broker effort in MLS sales. He shows that the joint effort of brokers to find a buyer is maximized when the broker who locates a buyer first receives the entire commission. In contrast, commission splitting maximizes the joint profits of brokers. When competition among brokers for listings is introduced into the model, most brokers prefer to take a smaller share of the commission to reduce wasteful competition for listings. If sellers were to attempt to pay only the broker who finds the buyer, brokers may refuse to take the listing or refuse to share it. MLS arrangements allow brokers to avoid costly competition, but they are a mixed blessing for home sellers. Sellers get access to a large amount of costly information; however, brokers are allowed to cooperate, possibly at the expense of sellers.

The 1995 article by Miceli shows that it is possible for the seller to renegotiate a lower commission rate as contract expiration nears, to the detriment of the broker. He uses the theory of the second best to argue that courts should not ban such opportunistic renegotiations because the transaction costs are generally low.

Among other studies that have looked at the efficiency and equity of contractual terms, Anglin and Arnott (1991) conclude that listing contracts perform poorly by failing to allocate risk efficiently or to provide agent incentives. Anglin (1994) proposes a listing agreement where the terms would influence both the broker and seller, since a seller's cost of waiting is higher for a higher-priced home (*e.g.*, commission rates should rise with the price of housing).

Yavas (1996) shows that both fixed-percentage commissions and flat-fee commissions maximize the number of houses sold, but minimize the buyers' and sellers' surplus. He also finds that net listings result in the sale of fewer houses, but yield greater surplus for buyers and sellers.

Buttimer (1998) analyzes the real estate brokerage contract as a contingent claim, in contrast to a certain claim. The broker receives a pay out only if the property sells. A number of factors influence the present value of the contract. Some factors, such as commission rate and term, can be specified up front. Other factors, like the rate at which the broker shows the property and the seller's reservation price, cannot be specified contractually. Since the home seller controls some of the items that affect the contract's value, he or she can decide how much the services of a broker are worth and, even after contracting to a fixed commission rate, limit the

listing agreement's value. Alternatively, the broker can increase the value of the contract by increasing his or her selling effort. In addition, by increasing selling effort, the broker behaves in a way that is consistent with the home seller's interests.

The recent work of Sirmans and Trunbull (1997) and Buttimer (1998) builds a strong case for the prevalence of competitive conditions in the brokerage industry. However, the industry is evolving rapidly as it adapts to new technological innovations. Additional work will want to focus on the impacts of new technology. In this vein, Benjamin and Chinloy (1995) provide an interesting guide for further research. The legal and institutional structure of the industry is also changing and such new developments as buyer brokerage and other novel forms of operation merit exploration.

Must Brokerage Firms Assume Greater Liability?

Historically, in the U.S., the real estate broker has been viewed as an agent of the seller. A spate of recent court cases, however, imposes new duties on the broker to protect the interests of the buyer. In addition, these new obligations conflict with the traditional fiduciary responsibilities of the broker as an agent of the seller. Noting this conflict, Nelson and Potter (1990) review three broad avenues to resolve the conflict: (1) increase disclosure requirements; (2) increase the use of buyers' agents; and (3) increase the use of inspection/warranty programs.

The orthodoxy of the real estate broker as the exclusive agent of the seller also is questionable because agents and market participants do not recognize it as the norm (Ball and Nourse, 1998). Ball and Nourse (1991) review three alternative arrangements for managing real estate transactions: (1) the middleman model; (2) the dual agent model; and (3) the mediator model. The mediator model falls in between the dual agent model and the middleman model. Unlike a pure middleman, a mediator offers help to both parties in the resolution of buyer-seller conflict. Ball and Nourse describe mediation as "transferring information to accelerate the bargaining process." They urge the use of the mediator model and suggest that it affords the greatest number of joint gains to buyers and sellers in their transactions. It also comes closest to meeting the demands of consumers and is the role most often played by brokers in actual practice.

Legal precedents have been established based on litigation for misrepresentation, negligence, etc. A study by Levi and Terflinger (1988) uses actual cases to examine the multiple premises of liability to buyers, including negligent misrepresentation, licensing laws and professional ethics codes. Determining that misrepresentation is a predominant issue, they suggest that brokerage firms revise contracts to contain contingency clauses and develop checklists to ensure against nondisclosure claims.

Marsh and Zumpano (1988) point out that the expanded role of brokers results in their being increasingly more in conflict with regulations. They emphasize that

brokers need increased knowledge about their products and a better understanding of their responsibilities to buyers and sellers. Like Ball and Nourse, they suggest that the agency relationship be restructured to recognize the dual nature of the broker's role in the real estate transaction.

Potter, Nelson and Nelson (1991) further emphasize the need to understand the agency relationship by pointing out that the legal environment for real estate brokers is moving toward a product liability context. This shift in lawsuits from negligence to product liability (with an expanded definition of product) makes it more difficult for brokers to avoid liability. They recommend that the industry move toward a market-making role outside the chain of product distribution.

Later studies have been concerned with the issue of dual agency. Bryant and Epley (1992) address the conditions of dual agency, especially undisclosed dual agency. They conclude that mandatory disclosure by the agent is essential. Roulac (1993) further refines this discussion by addressing the issue of environmental dual agency relative to the Superfund legislation.

A study by Fain (1995) addresses the duties and liabilities of agents and brokers with a focus on negligence and malpractice. The study points out the agent's obligations in such areas as disclosing defects, procuring insurance policies and other miscellaneous claims.

Agents have an affirmative responsibility to treat members of all races and religious groups fairly and without prejudice. Since the passage of federal fair housing legislation in the 1960s, the industry's role in perpetuating racial discrimination has been an issue of public concern. In 1989, the U.S. Department of Housing and Urban Development conducted 2,000 matched-pair audits nationwide, each consisting of a visit to a real estate broker by a white person and a black or Hispanic person with equal qualifications (Yinger, 1991). Ondrich, Stricker and Yinger (1998) analyze these data. They report evidence of extensive discrimination in the brokerage industry and find that brokers discriminate based on personal prejudice and the prejudice of their white clients.

In recent years, Georgia and Colorado have refocused their state laws in the area of real estate so that brokers are no longer considered agents of the seller or the buyer, but function as market intermediaries. These changes have significant implications for the brokerage industry, but little research is available to document and explore these effects.

Technological changes are also altering the ways in which real estate is bought and sold and are overwhelming the current legal and regulatory frameworks. An excellent summary and analysis of recent technological trends is available in Baen (1998). Regarding the impact of these trends on the brokerage industry, Baen foresees "[c]ontinued pressure on fees due to increased competition, easy accessibility of information directly by consumers, and . . . rebate schemes. . ."

How Do Brokerage Markets Vary Internationally?

Miceli (1988) compares the residential real estate industries in the U.S. and Great Britain. He notes that one major difference is the MLS that is so prevalent in the U.S. but largely absent in Great Britain, owing possibly to the different histories of the real estate markets.

Samiei and Schinasi (1994) discuss why inflationary pressures in the 1980s were so highly concentrated in asset markets in industrial countries such as the U.S. and Japan. They develop a maximum likelihood equilibrium pricing model based on price expectations, monetary conditions, income, asset returns and construction costs. The results indicate that the experience of the 1980s somewhat altered the relationship between real estate values and monetary policy.

Pheng and Hoe (1994) develop motivational factors necessary for real estate firms in Singapore to successfully interact with developers. Survey findings suggest that the developers' association with marketing agents and the abilities of the marketing agents had the greatest impact on the developers' appointment of marketing agents. Factors internal to the developers had the least influence. The authors suggest that these factors be taken into account by real estate agencies when marketing their services to property developers.

A notable difference between residential property markets in the U.S. and overseas is the prevalence of auction sales. In the U.S., the use of an auction to sell residential real estate is often associated with distressed sales; however, in other countries like New Zealand, auction sales are much more common. A study by Dotzour, Morehead and Winkler (1998) develops a model to estimate how auction sales affect housing prices. They find that in some cases, auctions can yield premium prices. In no instance in their sample did sale by auction result in a lower price.

Internationally, real estate is bought and sold under a variety of brokerage arrangements, yet no comprehensive comparison of the differing structures has been undertaken. This represents a significant challenge for future research.

Conclusion

A vast amount of brokerage research has been undertaken. In this article, we try to organize this research by asking six questions. First, "What is the nature of the market for brokerage services and how does it influence the individual firm?" Research reveals that brokerage firms exist because of the paucity of information in the housing market. Sellers and buyers with less information or more valuable time are more likely to use a broker in their search. Economies of scale seldom are exploited and the average real estate brokerage firm is small. Franchising somewhat alleviates the small firm disadvantages.

Second, we look at: “What factors determine broker and agent compensation?” We find that human capital variables, such as education, experience and hours worked, exert a consistent influence on earnings. However, more work, with more recent data, is needed to clarify the effects of gender, race and the impacts of new technologies.

The third question, “How does brokerage participation influence time on the market and price?” has received a great deal of attention, but resolution of this complex issue awaits both better theory and better data. Fourth, we review the question: “Is the brokerage market efficient and equitable?” Here recent studies strongly indicate that the brokerage industry is competitive in nature, but new technologies are bringing rapid change to the industry. Moreover, the impacts of these changes are a challenge for further research. Our fifth issue, “Must brokerage firms assume greater liability?” is still being defined. However, changing judicial interpretations, varying institutional structures, and new evidence of racial discrimination provide interesting opportunities for further work. Lastly, when we look internationally, we find that there are significant differences in global real estate markets, most of that remain largely understudied.

Endnotes

¹ U.S. Bureau of the Census, *County Business Pattern, 1995 (United States)*, CBP/95-1.

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