Real Estate Brokerage and the Housing Market: An Annotated Bibliography

Authors

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Abstract

A number of facets of real estate brokerage have been examined over time in theoretical and empirical articles appearing in the literature. This article summarizes brokerage research and suggests avenues for future inquiry. In attempting to organize brokerage research, the research is classified into eight broad topical areas: (1) brokerage firm characteristics; (2) broker commissions; (3) time on the market; (4) broker compensation; (5) the effects of brokerage on house prices; (6) regulation of the brokerage industry; (7) legal liability; and (8) international comparisons. In each area, we point out the major focus of the research by summarizing important findings.

Introduction

This article presents an annotated bibliography of the extant brokerage literature and suggests avenues for future inquiry.[1] The existing brokerage research is grouped here into eight broad topical areas: (1) brokerage firm characteristics (see Exhibit 1); (2) broker commissions (see Exhibit 2); (3) time on the market (see Exhibit 3); (4) broker compensation (see Exhibit 4); (5) the effect of brokerage on housing prices (see Exhibit 5); (6) regulation of the brokerage industry (see Exhibit 6); (7) legal liability (see Exhibit 7); and (8) international comparisons (see Exhibit 8). In each area, we list articles of major interest, pointing out their focus and summarizing important findings. We hope this bibliography will aid future researchers in understanding and interpreting existing work in the field.

Directions for Further Research

Research dealing with various aspects of the real estate brokerage industry is extensive, as the accompanying bibliography makes clear. Yet, a number of unresolved issues suggest that the industry still holds substantial interest for real estate scholars. Among the most long-standing of these issues is that of the effect

Exhibit 1 | Brokerage Firms' Characteristics and Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Jud	Real Estate Brokers and the Market for Residential Housing	*Journal of the American Real Estate & Urban Economics Association*, 1983, 11:1, 69–82.	Sample of housing transactions in Charlotte, Greensboro and Raleigh, NC during 1980.	■ Estimates a search model of buyer and seller behavior using a conditional logit model. ■ Finds, for home buyers, the decision to use a broker during housing search is determined by the buyer's prior knowledge of the housing market and the opportunity cost of the buyer's time. Higher income buyers are more likely to employ a broker in their search. ■ Buyers who used a broker conduct more rapid searches and spend substantially more on housing. ■ For home sellers, the decision to list with a broker depends on housing market transaction costs including the cost of the seller's time.
Jud and Frew	Real Estate Brokers, Housing Prices, and the Demand for Housing	*Urban Studies*, 1986, 23, 21–31.	Sample of housing transactions in Charlotte, NC during 1977.	■ Develops and estimates a hedonic pricing model that examines the role of the residential real estate broker. ■ Finds that broker-assisted home sellers obtain higher home prices and shift part of the brokerage commissions to the buyer. ■ Shows that broker-assisted homebuyers have higher demands for housing than buyers who search the market without the help of a real estate agent. ■ Suggests that agents appear to be salespersons for the housing industry and to generate sales effects similar to advertising.
Wu and Colwell	Equilibrium of Housing and Real Estate Brokerage Markets Under Uncertainty	*Journal of the American Real Estate & Urban Economics Association*, 1986, 14:1, 1–23.	Theoretical paper with simulation results.	■ Develops a model of the real estate brokerage and housing markets with imperfect information, considering general equilibrium in these markets with and without a Multiple Listing Service (MLS). ■ Reviews the optimization problem of brokers, owner-sellers, buyers and market equilibrium issues in the MLS and non-MLS environment.

Exhibit 1 | (continued)

Brokerage Firms' Characteristics and Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Finds input prices affect the equilibrium housing price, brokerage commission and commission split factor. Introducing MLS causes housing value to increase, but its effect on the commission rate is indeterminate. MLS brokers, on average, will likely undertake more search for both buyers and listings than will non-MLS brokers, primarily because the MLS context allows greater efficiency of search.
Frew and Jud	The Value of a Real Estate Franchise	*Journal of the American Real Estate & Urban Economics Association*, 1986, 14:2, 374–83.	Sample of 84 brokerage firms in Charlotte, Greensboro and Raleigh, NC during 1982; 18 of these were franchise affiliates. Half of the 900 home sales in Greensboro NC during 1977 were by franchisees.	■ Estimates an OLS regression similar to one used by Yinger (1981) to develop and estimate a model of franchise and independent brokerage firm sales. ■ Finds that franchise affiliation contributes positively to firm sales, controlling for the size and experience of the brokerage staff and the experience of the broker. ■ Affiliation with a national franchise appears to be worth about $930,000 in additional sales to the average firm.
Colwell and Marshall	Market Share in the Real Estate Brokerage Industry	*Journal of the American Real Estate & Urban Economics Association*, 1986, 14:4, 583–99.	Sample of 1232 sales in Champaign County, IL from MLS data on market share and number of salespeople for 1980-81; advertising data from local newspapers and Yellow Pages.	■ Suggests that the factors determining the market share of listings and of sales for brokerage firms are: (1) number of salespeople; (2) advertising in Yellow Pages; (3) newspaper display ad space; (4) classified ad space; (5) number of open houses conducted; and (6) whether a firm is a franchise. ■ Develops and tests models in a SMSA that conveniently corresponds to a particular MLS area, using a tobit model in addition to OLS regressions. ■ Computes indices of firm specialization and market concentration as well as conventional characterizations of the market and the data.

Exhibit 1 | (continued)

Brokerage Firms' Characteristics and Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Results reveal a small degree of consistency in the impacts of the explanatory variables over the two years of the study and over the listing and sales markets. ■ Number of salespeople is the most consistently significant variable. Indeed, market share per salesperson appears to be a non-monotonic function of the number of salespeople. ■ Presence of a franchise and the quantity of display advertising are occasionally significant. ■ Classified advertising, Yellow Pages listings and open houses do not significantly affect market share per salesperson.
Richins, Black and Sirmans	Strategic Orientation and Marketing Strategy: An Analysis of Residential Real Estate Brokerage Firms	*Journal of Real Estate Research,* 1987, 2:2, 41–54.	Sample of 2373 observations collected in Baton Rouge, LA area during 1985. MLS roster contains 176 firms with 36 accounting for 85% of transactions during the period. Smaller firms and firms with low volume are excluded from the sample.	■ Analyzes marketing strategy concepts as they apply to real estate brokerage firms and reports an empirical investigation of marketing strategies of firms in a local market, to determine whether strategic orientation in regard to supply and demand exists in real estate brokerage and whether the elements of the marketing mix can be identified and their effectiveness measured. ■ Observation sets collected from firms include details of sale, commission arrangements, construction dates and location. ■ Identifies three strategic orientations: (1) obtaining listings sold by other firms (supply only); (2) selling properties listed by other firms (demand only); and (3) selling properties listed by the firm itself (supply and demand). Firms follow one of these three strategic orientations with respect to revenue generation, depending on the extent to which they emphasize obtaining listings versus making sales. ■ Analyzes marketing mix variables in groups (*i.e.*, firm, product, price, distribution, communication).

Exhibit 1 | (continued)

Brokerage Firms' Characteristics and Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Concludes: (1) it is important to locate the office near the areas where the firm wants to sell; (2) it is more likely for a firm to sell in the area where it sold before; (3) it is easier to sell less expensive properties; (4) service level (agent "coverage") is negatively related to number of properties sold; and (5) franchise affiliation has a positive effect on market performance. ■ Finds varied effectiveness of marketing mix strategy variables such as service level and advertising in achieving market share, depending on the strategic orientation adopted by the firm.
Chinloy	The Real Estate Brokerage: Commissioned Sales and Market Values	*Journal of Real Estate Research*, 1988, 3:2, 37–51.	Total annual commission amounts for 1985 observations during 1973–88 from questionnaires distributed to real estate brokerage firms in British Columbia, Canada.	■ Develops a valuation model of the real estate brokerage firm, assuming that brokerage has a positive market valuation while having a negligible book value. ■ Uses options theory to value the firm. The firm writes an option by taking a contingent claim on income generated, through the commission split. The firm holds other options, including the right to modify the commission split. ■ A valuation model for the firm permits a hiring strategy to be developed. Brokers vary by characteristics such as experience. It is better to hire an experienced licensee over a rookie, primarily because of the expected future career with the firm, commissions generated and the achievement of sales targets. ■ Determines the value of a superstar to the firm, to permit incentive structures on the commission to be generated. ■ Estimates a turnover function to determine the length of career over which the firm capitalizes future income.

Exhibit 1 | (continued)

Brokerage Firms' Characteristics and Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Estimates an income function, contingent on staying with the firm. ■ Analyzes by age, sex and experience, although the former two cannot be used in hiring. ■ Finds that the maximum value of the licensee to the firm comes after two years' experience, where the net value to the firm of a broker in 1984 was $43K. The net value to the firm of a commissioned seller with no experience is negative. In effect, the firm subsidizes rookies.
Johnson, Nourse and Day	Factors Related to the Selection of a Real Estate Agency or Agent	*Journal of Real Estate Research*, 1988, 3:2, 109–18.	Sample of 172 questionnaires from homeowners of Athens, GA collected August 1987.	■ Attempts to show the characteristics of the firm or individual agents that are important to market participants for real estate firms attempting to maintain or increase market share. ■ Finds the following: (1) the individual agent is more important than the firm itself in the selection of a real estate firm; (2) knowing an agent of the firm is the primary factor considered in the selection of a real estate firm; and (3) agent characteristics of selling ability, competence, integrity, knowledge of the market, and understanding the client's needs and concerns are most important.
Anglin and Arnott	Residential Real Estate Brokerage as a Principal-Agent Problem	*Journal of Real Estate Finance and Economics*, 1991, 4:2, 99–125.	Theoretical paper with simulation results	■ Analyzes the terms of the brokerage contract between a house seller and his agent, using the established literature on the principal-agent problem. ■ Predicts a number of features of the contract, considering the influence of moral hazard and adverse selection. Many of these features are not present in observed contracts. To account for this discrepancy, the authors discuss certain aspects of the real estate market that are not included in the standard principal-agent model but may explain the difference.

Exhibit 1 | (continued)

Brokerage Firms' Characteristics and Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Shows that standard principal-agent theory neglects important contract design considerations, namely robustness and costs of complexity. ■ Explores the moral hazard hypothesis and potential for adverse selection on the part of the broker given the risk/return imbalance between the parties to a brokerage contract. ■ Finds that, in general, the commission contract performs poorly by failing to allocate risk efficiently or to provide agent incentives. It favors established agents and precludes contractual diversity.
Zumpano, Elder and Crellin	The Market for Residential Real Estate Brokerage Services: Costs of Production and Economies of Scale	*Journal of Real Estate Finance and Economics,* 1993, 6:3, 237–50.	Sample of 279 observation sets of brokerage firms; about one-third were Certified Real Estate Brokerage Manager (CRB) designees, and the remaining were randomly selected from the general membership list of NAR (National Association of REALTORS).	■ Employs a translog cost function to model the underlying production function for the residential real estate brokerage industry and applies a cross section sample of real estate brokerage firms that derive at least 75% of their revenues from residential transactions. ■ Results indicate that, except for very large firms, modest economies of scale persist throughout almost the entire range of output. ■ Results also indicate that while average firm size is increasing, many real estate firms are too small to take full advantage of the cost reductions possible with a larger scale of operation. Equally important, large firms do not command a competitive advantage over smaller firms as far as unit costs are concerned.
Anglin	Contracts for the Sale of Residential Real Estate	*Journal of Real Estate Finance and Economics,* 1994, 8:3, 195–211.	Theoretical paper with simulation results.	■ Proposes a model where the terms of a real estate broker's contract influence choices of both the broker and the seller. ■ Theorizes that—given equal contract, higher quality and thus higher prices on average—house will sell in less time.

Exhibit 1 | (continued)

Brokerage Firms' Characteristics and Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Posits that simple conditions suffice to show that a "competitively set" commission rate should fall as the average price rises; and, since a seller's cost of waiting is higher for higher quality houses, commission rates of the real estate brokerage cartel should rise with the average price. ■ Because this model studies the effects of alternate contracts on observable variables such as the sale price of a house and its time-till-sale, its implications are testable.
Jud, Rogers and Crellin	Franchising and Real Estate Brokerage	*Journal of Real Estate Finance and Economics*, 1994, 8:1, 87–93.	NAR data comprising a national sample of brokerage firms.	■ Extends the work of Frew and Jud (1986) by estimating production and revenue functions for real estate brokerage firms. ■ Finds that franchise-affiliated firms sell more properties than non-affiliated firms. ■ Finds that the benefit of franchise affiliation is a 9% increase in net revenues. When compared to the up-front fees and other charges associated with affiliation, affiliation yields positive net benefits.
Zumpano and Elder	Economies of Scope and Density in the Market for Real Estate Brokerage Services	*Journal of the American Real Estate & Urban Economics Association*, 1994, 22:3, 497–513.	Revenue, expenses, market share, commissions, employment data for 232 brokerage firms obtained from NAR in 1988.	■ Uses a multiproduct translog cost function to examine the case for economies of scope and density in the market for residential real estate brokerage services. Earlier research that treats output as a homogeneous commodity reports modest economies of scale for this industry. ■ Results suggest that the composition of output is an important source of these scale economies, rather than simply firm size. These economies of scope imply that a balanced mix of listing and sales is the least costly type of operation, a result borne out by the product mix found in the sample.

Exhibit 1 | (continued)

Brokerage Firms' Characteristics and Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Results also show product-specific diseconomies of scale, suggesting that specialization in either listing or sales may be sub-optimal under the current institutional arrangements present in the market. ■ Market density appears to be, at best, only a nominal source of savings for real estate brokerage firms.
Cotter and Hoesli	The Determinants of the Sales Rate of U.S. Residential Real Estate	*Journal of Property Research*, 1994, 14:1, 12–25.	U.S. macroeconomic variables and home sales data from January 1970 to December 1990.	■ Attempts to model, using macro-economic variables, the probability that a home will be sold. ■ Results indicate that the home sales rate is related to affordability of housing (positively), unemployment (negatively), and the overall state of the economy (positively).
Anderson, Fok, Zumpano and Elder	Measuring the Efficiency of Residential Real Estate Brokerage Firms	*Journal of Real Estate Research*, 1998, 16:2, 139–58.	Data on 276 brokerage firms from NAR nationwide survey for 1990–91; Certified Real Estate Brokerage Manager designees and random realtors completed survey.	■ Uses data envelopment analysis, a linear-programming technique, to estimate X-inefficiency levels (*i.e.*, difference between how a firm could utilize resources versus how it actually did), so as to measure the relative efficiency of real estate brokerage firms. ■ Five different efficiency measures were used: overall, allocative, technical, pure technical and scale. ■ Results suggest that brokerage firms operate inefficiently off their efficient frontiers (*i.e.*, firms have high X-inefficiency scores) because of sub-optimal input allocations and the failure to operate at constant returns to scale. ■ Supports previous studies that most brokerage firms are too small to capture cost savings associated with larger brokerage firms. ■ Regressions show that increasing firm size increases efficiency, but choosing to franchise, adding an additional MLS and increasing operating leverage decrease firm performance.

Exhibit 1 | (continued)

Brokerage Firms' Characteristics and Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Yavas	Seller-Broker Relationship as a Double Moral Hazard Problem	*Journal of Housing Economics*, 1995, 4:3, 244–63.	Theoretical paper.	■ Uses a general matching technology to model the sell-broker relationship as a double moral hazard problem. ■ The probability of selling a property is determined by the search efforts of both seller and broker and the interaction between their actions. ■ Examines the incentive and efficiency problems of the seller-broker relationship. ■ Shows that when sellers and brokers are both included in the search, it becomes possible for either the sellers or the brokers (but not both) equilibrium search effort levels to be efficient and incentive compatible. ■ Demonstrates that when modeling real estate problems where the payoffs hinge on the joint actions of participants (*e.g.*, the seller and the broker), the outcome depends on the assumptions made about the strategic interactions between the actions of the participants. ■ Advertising by the agent's brokerage firm to bolster the agent's efforts and the use of MLS services can reduce the efficiency and incentive-compatibility problems.

Exhibit 2 | Articles Examining the Size and Influences of Brokerage Commissions on the Real Estate Market

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Crockett	Competition and Efficiency in Transacting: The Case of Residential Real Estate Brokerage	*Journal of the American Real Estate and Urban Economics Association*, 1982, 10:2, 209–27.	Theoretical paper with simulation results.	■ Examines the efficiency of the providing and pricing of real estate brokerage services for residential property, by describing the brokerage function and issues criteria for efficient operations. ■ Develops a model of brokerage firm competition. ■ Finds that the traditional absence of price competition among brokers may have led to resources being inefficiently committed to the brokerage industry. This situation is evidenced by the excessive rates paid by consumers of brokerage services.
Carney	Costs and Pricing of Home Brokerage Services	*Journal of the American Real Estate and Urban Economics Association*, 10:3, 331–54.	Data from 7,000+ home transactions during 1975, 1978, 1979 from 23 cities in various states.	■ Explores a simple economic search model and various brokerage cost assumptions to derive brokerage pricing implications for three dimensions of the home transaction: (1) level of home price; (2) new relative to existing home sales; and (3) co-op relative to non co-op sales. ■ Incorporates in a model time on the market or the price-time tradeoff as an important element in home brokerage (search). ■ Argues that relative search cost differences imply that commission rates will be lower on: (1) sales of higher-priced homes; (2) sales of new relative to existing homes; and (3) non co-op relative to co-op sales. ■ Presents supporting evidence showing variation in actual home brokerage commission rates according to these three variables.

Exhibit 2 | (continued)

Articles Examining the Size and Influences of Brokerage Commissions on the Real Estate Market

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Villani and Simonson	Real Estate Settlement Pricing: A Theoretical Framework	*Journal of the American Real Estate & Urban Economics Association*, 1982, 10:3, 249–75.	Theoretical paper with simulation results.	■ Examines the pricing of real estate settlement services. Prices charged by real estate brokers, title insurers, private mortgage companies and other settlement service providers have been a public policy issue for a decade. The Real Estate Settlement Procedures Act of 1974 did little to alleviate public concerns or change pricing practices. ■ Provides both a conceptual framework and some observations on how prices for settlement services are determined. ■ Concludes that demand has little to do with the services themselves, but rather depends on the actual demand for housing. These relationships create an environment for unnecessary services to be performed and for prices to be far in excess of cost.
Schroeter	Competition and Value-of-Service Pricing in the Residential Real Estate Brokerage Market	*Quarterly Review of Economics and Business*, 1987, 27:1, 29–40.	Theoretical paper with simulation results.	■ Posits that, since residential real estate brokerage services are generally priced as a fixed percentage of the selling price, the direct cost of selling a house is unrelated to the value of the asset. This practice is sometimes interpreted as prima facie evidence of price fixing. ■ Presents a model of the brokerage services market in which value-of-servicing pricing emerges as a property of competitive equilibrium. ■ Results suggest that inferences of noncompetitive broker conduct, based on the prevalence fixed percentage pricing, may be incorrect.

Exhibit 2 | (continued)

Articles Examining the Size and Influences of Brokerage Commissions on the Real Estate Market

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Goolsby and Childs	Brokerage Firm Competition in Real Estate Commission Rates	*Journal of Real Estate Research*, 1988, 3:2, 79–85.	275 observations from sales data for each year, from 1983 and 1987 in Knoxville, TN MLS.	■ Provides an explanation for the variance in real estate commission rates by analyzing the interaction of the real estate commission and the selling price of properties. Contrary to commonly voiced opinion of the irrelevance of commissions, due to the fact that brokers compete on the basis of net cost of providing the service, the data presented strongly suggest that there is competition in the rate of commission charged by real estate brokerage firms. ■ Attempts to model the appropriate rate of commission based on age of the house, expected commission amount, sales and list price, days on market and listing options. ■ Uses OLS analysis for the whole sample and for two subsample periods for 1983 and 1987. ■ Results suggest that commission rates do vary among brokerage firms, primarily with the age and value of the property.
Carroll	Fixed-Percentage Commissions and Moral Hazard in Residential Real Estate Brokerage	*Journal of Real Estate Finance & Economics*, 1989, 2:4, 349–65.	Theoretical paper with simulation results.	■ Theorizes that if home sellers cannot monitor real estate brokers' efforts on their behalf, fixed percentage brokerage commissions can promote welfare by giving brokers an incentive to tailor their services to their clients' demands. ■ Shows how a competitive broker optimally allocates selling effort across clients who pay different commissions. In fact, fixed percentage commissions can promote welfare (relative to uniform fee pricing) by giving the broker an incentive to respond in a positive way to differences in clients' valuations of the broker's services. ■ Posits an equilibrium in which clients who value brokerage services are more likely to offer to pay larger commissions and consequently receive more selling effort from the broker.

Exhibit 2 | (continued)

Articles Examining the Size and Influences of Brokerage Commissions on the Real Estate Market

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Concludes that, if clients who are selling higher priced houses tend to value brokerage services more highly, then this result helps explain the prevalence of fixed percentage commissions in the residential real estate brokerage industry and implies that they could emerge in a competitive setting. Still, a commonly held perception of tacit collusion in the brokerage industry can only be judged in the context of a more complete theoretical model of collusive brokerage.
Sirmans, Turnbull and Benjamin	The Market for Housing and Real Estate Broker Services	*Journal of Housing Economics*, 1991, 1:3, 207–17.	Sample of 1225 single-family housing transactions, obtained from MLS in the Baton Rouge, LA area from January 1985 to December 1987.	■ Estimates a simultaneous model of housing and real estate broker services markets and specifies the housing-broker service model, emphasizing the simultaneous determination of equilibria in both markets. Further, the three-equation system is specified to fit house prices, brokerage commission ratio and TOM for the sample data. ■ Finds the commission rate falls as house price rises and rises when days on market variable rises; the relationships are significant at 5% or lower level. Consumers do not pay additional premium for listing with larger firms; however, larger firms do sell houses faster than smaller ones. Still, there is no conclusive evidence that the former charge higher commissions. ■ Concludes that MLS successfully separates broker listing and selling services, and prevents faster selling larger firms from exacting listing premia in the broker services market. Regardless of the incentives to withhold listings from the MLS, the results also imply that such withholding behavior is not pervasive.

Exhibit 2 | (continued)

Articles Examining the Size and Influences of Brokerage Commissions on the Real Estate Market

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Miceli	The Multiple Listing Service, Commission Splits, and Broker Effort	*Journal of the American Real Estate and Urban Economics Association*, 1991, 19:4, 548–66.	Theoretical paper with simulation results.	■ Examines the impact of split-commissions on broker effort in MLS sales. ■ Theorizes that the joint effort of brokers to find a buyer for a given listing is maximized when the broker who locates a buyer first receives the entire commission. In contrast, splitting the commission between the listing and finding broker (when they differ) maximizes the joint profits of brokers. ■ Observes that when competition among brokers to acquire listings is considered, the split brokers most prefer entails a smaller (though still positive) share for the listing broker—in order to reduce wasteful competition for listings. ■ Concludes that sellers still prefer to pay only the broker who finds a buyer, but brokers may not be willing to acquire and share listings under such an arrangement.
Geltner, Kluger and Miller	Incentive Commissions in Residential Real Estate Brokerage	*Journal of Housing Economics*, 1992, 2:2, 139–158.	Theoretical paper with simulation results.	■ Considers the reason why real world contracts are usually simpler than what is optimal according to principal agent theory. ■ Attempts to shed light on this discrepancy by using simulation analysis to quantify the magnitude of the effect of incentive contracts on both the seller and his broker under typical operating conditions. Broker behavior is assumed to be governed by profit maximization objective, which maximizes the present value of the listing contract. ■ Finds that time incentive contracts offer negligible gains over the status quo fixed percentage commission; price incentive contracts, on the other hand, do appear to offer potential improvements for both the seller and broker, assuming symmetric information about the market for the house. With asymmetric information, however, the price incentive contract may be worse for the seller than the status quo fixed percentage contract.

Exhibit 2 | (continued)

Articles Examining the Size and Influences of Brokerage Commissions on the Real Estate Market

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Miceli	The Welfare Effects of Non-Price Competition Among Real Estate Brokers	*Journal of the American Real Estate and Urban Economics Association*, 1992, 20:4, 519–32.	Theoretical paper with simulation results.	■ Examines the role of brokers in economizing on transaction costs in the housing market by using a partial equilibrium model to show how an excessive commission rate can lead to dissipation of welfare gains. ■ Compares the costs of transactions with and without brokers to provide a benchmark for efficiency; then develops an equilibrium model of broker competition, characterized by non-price competition (non-flexible commission structure) and free entry. ■ Uses the model to examine the market implications of an "excessive" commission rate on brokers' average costs of transactions. ■ Shows that by lowering the cost of transactions, brokers create welfare gains compared to a market in which buyers and sellers transact on their own. Excessively high commission rates will increase broker revenue but invite greater competition for listings. Therefore, costs devoted to brokerage rise, and welfare in the housing market is reduced. Also, if brokers engage in unproductive, non-price competition to acquire a larger share of available listings, then some of the welfare gains are dissipated.
Frew, Jud and McIntosh	A Note on Agency Size and Brokerage Commission Splits	*Journal of Real Estate Research,* 1993, 8:2, 287–91.	Data from 100 transactions from MLS in Lexington, KY during 1987.	■ Develops a model to explain the commission split among cooperating real estate brokers operating within a MLS where individual agencies are free to negotiate. ■ Analyzes the deals completed by 25 firms of the 341 agencies operating in Lexington. In 37 transactions, the listing agency sold its own listing and did not pay a cooperating broker.

Exhibit 2 | (continued)

Articles Examining the Size and Influences of Brokerage Commissions on the Real Estate Market

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Uses OLS and log linear regression to arrive at its conclusions. ■ Results provide theoretical and empirical evidence suggesting that the amount of the total commission paid to a cooperating broker is a negative function of the size of the agency listing the property for sale.
Miceli	Renegotiation of Listing Contracts, Seller Opportunism and Efficiency: An Economic Analysis	*Real Estate Economics*, 1995, 23:3, 369–384.	Theoretical paper with simulation results.	■ Argues that while a limit on the duration of the listing contract provides the broker with an incentive to work hard to find a buyer, it also creates the potential for seller opportunism. In particular, sellers have an incentive to renegotiate a lower commission as the end of the contract approaches; also, sellers may wait until the end of listing period or the extension clause to deal with the buyers directly. ■ Examines the efficiency aspects of broker and seller "shirking," and reviews the effects of such on the initial commission rates. ■ Concludes that, from an efficiency perspective, renegotiations can be either efficiency enhancing—they would allow transactions not possible otherwise—or purely redistributional, that is, they would have taken place at the original price. ■ Faced with difficulty of distinguishing between the two options, courts should generally enforce such renegotiations, given that transaction costs between brokers and sellers are ordinarily low.

Exhibit 2 | (continued)

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Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
O'Donnell and Geurts	Competition and Value-of-Service Pricing in the Residential Real Estate Brokerage Market	*Quarterly Review of Economics and Finance*, 1995, 35: 2, 327–32.	Theoretical paper with simulation results.	■ Reacts to the article by Schroeter (1987, see above) arguing that Schroeter's article is cited as one of the few to show that the uniformity of the commission brokers charge can be consistent with a market structure in which brokers have no market power. ■ Shows that the model Schroeter developed does not give a stable equilibrium, unless one of the principal assumptions of the model is violated. His model also is severely restricted by other assumptions, *e.g.*, service intensity is limited to variation of the listing pool; opportunity costs of the seller are not fully taken into account.
Yavas	Matching of Buyers and Sellers by Brokers: A Comparison of Alternative Commission Structures	*Real Estate Economics*, 1996, 24:1, 97–112.	Theoretical paper with simulation results.	■ Examines the optimality of strategies used by brokers under different commission structures, characterizing the set of Pareto optimal and stable matchings among buyers and sellers. ■ Results show that the profit maximizing strategy for the broker under percentage commission and flat-fee systems maximizes the number of houses sold, but it minimizes the buyers' and sellers' surplus. On the other hand, net listings result in the sale of fewer houses but yield a larger surplus for buyers and sellers.
Turnbull	Real Estate Brokers, Non-price Competition and the Housing Market	*Real Estate Economics*, 1996, 24:3, 293–316.	Theoretical paper.	■ Focuses on non-price competition in the level or quality of services offered buyers and sellers in the market, examining the equilibrium adjustment process, comparative static predictions and efficiency implications. ■ Demonstrates, in contrast with earlier studies focusing on wasteful advertising, that higher commission rates can either increase or decrease social deadweight loss, depending upon how broker services affect buyer and seller transaction costs.

Exhibit 2 | (continued)

Articles Examining the Size and Influences of Brokerage Commissions on the Real Estate Market

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Proves that: (1) higher buyer transaction costs reduce the price of houses, the equilibrium number of houses sold, the broker service level and the equilibrium number of brokerage firms; (2) higher seller transaction costs increase the market price of houses and the equilibrium broker service level; the number of firms increases when the number of houses sold increases or stays the same; (3) increase in supply of houses decreases equilibrium house price and the level of broker services per transaction; the number of firms decreases when the number of houses sold decreases or stays the same; (4) pure marginal change in either buyer or seller transaction cost will not affect the housing or broker market equilibria; (5) fixed commission rate housing and broker services market equilibrium is not in general *Pareto Optimal*; and (6) if marginal transaction cost savings to buyers and sellers exceed the broker's marginal cost of providing the additional service, then an increase in the service level per transaction ultimately decreases the social costs of transactions. ■ Obtains ambiguous results trying to determine whether (1) higher seller transaction costs have impact on number of houses sold and the number of brokerage firms in equilibrium, and (2) an increase in market supply of houses has impact on the total number of houses sold and the number of brokerage firms in equilibrium.

Exhibit 2 | (continued)

Articles Examining the Size and Influences of Brokerage Commissions on the Real Estate Market

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Sirmans and Turnbull	Brokerage Pricing Under Competition	*Journal of Urban Economics*, 1997, 41:1, 102–17.	Sample of 15,608 transactions obtained from MLS in Baton Rouge, LA area for 1985 to 1992.	■ Examines the structure of a brokerage service market in order to evaluate the broadly accepted hypothesis that real estate broker commission rates are fixed across house listings and over time, for the MLS as a whole and for different size firms in the market. ■ Posits: competition promotes counter-cyclical changes in the commission rate. ■ Constructs a simple model of competitive price determination for the real estate broker commissions to examine the brokerage market structure and pricing behavior. In this model, several sets of regression equations for the housing sales and brokerage commissions are solved simultaneously to arrive at a set of relationships. ■ Finds no evidence for a "fixed commission rate" hypothesis, but finds strong clustering at even percentage rates with substantial variation in commission rates across sales and over time. Even more unexpected are the observed commission rate variations in agent pricing within brokerage firms and the systematic variation in the commission rate dispersion (within and across firms) following changes in housing market conditions. ■ Demonstrates, using regression analysis results, that the "average" commission rate-house price relationship changes systematically in response to housing market conditions. The overall level of commission rates responds to housing market conditions in accordance with what the competitive pricing model predicts: commission rates rise (fall), housing demand falls (rises), ceteris paribus.

Exhibit 3 | Articles Examining the Relationship of Brokerage Participation and Days on Market for a Property

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Ferreira and Sirmans	Selling Price, Financing Premiums and Days on the Market	*Journal of Real Estate Finance and Economics*, 1989, 2, 209–22.	Greater Greenville, SC area single family residential housing sales: (1) 1975–76: 51 assumptions, 66 new conventional loans; (2) 1980: 68 assumptions, 62 new conventional loans.	■ Examines the effects of financing premiums on the time a single family home remains on the market: to what extent are home sellers willing to compromise on financing premiums and make concessions to buyers in order to sell their properties more quickly. ■ Uses a sample with assumption financing and new conventional financing, and employs a logarithmic transformed linear regression model along with the hedonic model in a two-step least squares procedure to explain the days on market variable. ■ Results show that financing premiums are present in selling prices of assumption financed home sales during the 1975–1976 period and that sellers were able to capture a premium and maintain the same average time on the market as properties with other types of financing. During a period of unfavorable market conditions in 1980, the results indicate that home sellers with assumption financing conceded or negotiated away any premium to significantly decrease the number of days their properties stayed on the market for sale.
Miceli	The Optimal Duration of Real Estate Listing Contracts	*Journal of the American Real Estate and Urban Economics Association*, 1989, 17;3, 267–77.	Theoretical paper with simulation results.	■ Examines the defined length of the real estate listing contract as a means of providing an incentive for brokers to act in the best interest of home sellers. ■ Uses a series of equations, with Poisson random variable as search intensity, to model the broker cost/benefit relationships. Further, OLS equations contrast marginal benefits of greater selling effort with the marginal cost. Thus, a limitation on the duration of the contract accomplishes the objective of creating an incentive by imposing a cost (namely, the foregone commission and reputation consequences) on brokers who fail to complete a sale before the contract expires.

Exhibit 3 | (continued)

Articles Examining the Relationship of Brokerage Participation and Days on Market for a Property

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Search results show that the shorter the listing time, the higher is the incentive for a broker to sell. At the same time, the seller's optimal contract duration balances the benefits of improved incentives against the expected cost of renegotiating a new contract in the event of a failure by the broker. Sometimes, it is reasonable to assume that even given the best efforts of the broker, a property cannot be sold before the listing expires.
Kang and Gardner	Selling Price and Marketing Time in the Residential Real Estate Market	*Journal of Real Estate Research,* 1989, 4:1, 21–35.	Data for 1,877 single-family home sales, between January 1982 and December 1986, in the Bloomington-Normal area of central IL from the MLS of McLean County.	■ Examines the complex relationship between selling price, listing price, housing features, housing market conditions and marketing time using linear, log-linear and non-linear models to evaluate three main hypotheses. ■ Finds that there is no consistent intertemporal relationship between the variables. A key finding is that, in general, for houses of equal quality, marketing time varies with the level of contract mortgage rates (accepts "Miller hypothesis"). ■ Overpricing by sellers is not a successful strategy, however, even under market conditions in which houses in general sell relatively quickly (accepts days on market hypothesis). ■ Marketing time is significantly shorter for newer homes, particularly those in medium or high price ranges, but a home's size has no significant effect on the number of days it remains on the market (accepts interest rate hypothesis).
Asabere, Huffman and Mehdian	Mispricing and Optimal Time on the Market"	*Journal of Real Estate Research,* 1993, 8:1, 149–56.	Data for 337 residential sales, Dec. 1986 to June 1990, covering Philadelphia (urban, 125), Montgomery (suburban, 100), and Chester (rural, 112) counties of PA.	■ Examines empirically the relationship between pricing and optimal TOM. ■ Estimates optimal TOMs for their data set, generated using a linear programming model. ■ Provides a workable measure of pricing based on predicted listing prices and predicted sales prices to measure directly the relationship between pricing and optimal TOM.

Exhibit 3 | (continued)

Articles Examining the Relationship of Brokerage Participation and Days on Market for a Property

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Studies a data set that includes physical characteristics of houses as well as macroeconomic variables (interest rates, unemployment) obtained from the government sources. ■ Results of analysis indicate that overpricing and underpricing are both statistically significant at 1% level; this result proves again that there is a trade off between listing pricing and TOM. A common practice of overpricing in the hopes of receiving all possible bids is suboptimal and counterproductive. Thus, the deviation from the "true" reservation price would prevent the achievement of optimal TOM and result in suboptimal sale prices.
Yang and Yavas	Bigger is Not Better: Brokerage and Time on the Market	*Journal of Real Estate Research,* 1995, 10:1, 23–33.	Data for 388 single-family home sales in State College, PA, in 1991. 19 brokerage firms involved, 3 in listings only, 4 in sales only, and 12 in both listings and sales. The two largest firms maintained 53% of listings and executed 50% of sales.	■ Examines the relationship between the seller's choice of a real estate agent/firm and TOM, utilizing a duration model with a Weibull distribution. ■ Finds that neither the commission rate of the selling agent nor the size of the listing firm has a significant impact on TOM. Incentive offered in the sales commission rate is adequately adjusted for the degree of difficulty to sell the property; on average, houses listed with firms of varying sizes stay on the market on average for approximately the same time. ■ Finds that delays in reporting new listings to MLS by the larger firms are insignificant in the given sample. ■ Results also indicate that an increase in the number of listings by the listing agent increases TOM while an increase in the number of house sales by the listing agent decreases TOM. Yet, they fail to find empirical support for the argument that the brokerage firms and agents expend more effort to sell their own listings.

Exhibit 3 | (continued)

Articles Examining the Relationship of Brokerage Participation and Days on Market for a Property

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Dwyer, Donegan and Robinson	The Relationship Between Mispricing and Optimal Time on the Market	Presented to ARES, March 1996.	Data 333 houses in Sydney, Australia, with similar sets of amenities and structure.	■ Reviews the relationship between the pricing of residential property and selling time. ■ Constructs a model for predicting optimal selling time involving: (1) determining the optimal TOM; (2) determining hedonic pricing models for predicted list price and predicted sales price; and (3) modeling minimum and deviation from optimal TOM. ■ Achieves, with some qualification, reasonably good predictive capacity. While deviation from minimum TOM appears to be completely random, there does appear to be a relationship between minimum TOM and pricing. It is partly based, however, on actual list price, which might not be optimal.
Jud, Seaks and Winkler	Time on the Market: The Impact of Residential Brokerage	*Journal of Real Estate Research,* 1996, 12:3, 447–58.	Data from Greensboro, NC regional Association of Realtors from September, 1991 to September, 1993. 2285 sales, involving 111 brokerage firms and more than 600 individual real estate agents.	■ Examines the impact of brokers, brokerage firms and marketing strategy on TOM in the residential housing market. ■ Uses a duration model methodology and finds duration dependence to be positive, suggesting that the probability of sale increases with TOM. ■ Finds that pricing related marketing strategies strongly influence TOM: overpricing lengthens TOM, while a downward change in listing price reduces it. House atypicality is directly related to TOM, with more atypical houses having longer average TOM. ■ Finds that influences of individual agent and firm characteristics on TOM are not statistically significant. ■ Results are consistent with an efficient market within a MLS: no group of agents or firms appears to possess special advantages enabling them to sell homes more quickly than their rivals.

Exhibit 4 | Articles Examining Broker Compensation

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Frew	Multiple Listing Service Participation in the Real Estate Brokerage Industry: Cooperation or Competition?	*Journal of Urban Economics*, 1987, 21:3, 272–86.	Data from 705 homes sold by 75 brokerage agencies in a major urban area of NC during 1977.	■ Models the expected benefit of exclusive listing, evaluating the influence of the agency size and withholding decision. In the sample, approximately 50% of sales occurred within one month of being listed and 90% within three months. All realtors are automatically members of MLS, and their exclusive listings are entered within 48 hours of receiving them unless clients decide otherwise. ■ Estimates a regression equation with dummy variables accounting for three groups of agencies by number of listings (1–10, 11–19 and 20–36). ■ Results show that sharing information with other brokers over a MLS is inconsistent with individual broker's income maximization. When a broker expects to match a listing with his own buyer, expected income would be maximized by withholding the listing from the MLS to avoid the possibility of splitting the commission with another broker, unless the expected costs of this opportunistic behavior outweigh the gains. Given the problems of monitoring and enforcing a MLS type contract, it is likely that withholding a listing will often result in a positive payoff (particularly for large brokerage agencies that obtain many of the listings).

Exhibit 4 | (continued)

Articles Examining Broker Compensation

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Follain, Lutes and Meier	Why Do Some Real Estate Salespeople Earn More Than Others?	*Journal of Real Estate Research*, 1987, 2:1, 73–81.	Data from 674 observations of broker characteristics (of these, 78.2% married, and 51.9% women) obtained from a survey of members of the Illinois Association of Realtors in the spring of 1985.	■ Explores broker compensation by analyzing via multivariate regression analysis over twenty factors thought to determine real estate sales success as measured by income from real estate brokerage. Factors are divided into five groups of features: personal traits, work effort, firm traits, market traits and formal education. ■ Findings include: (1) number of hours worked is closely linked to income; (2) income increases substantially with years of experience in the early years of a career (over 20% per year for the first five years), but these increases flatten out for the veteran with more than ten years of experience; (3) income is higher for employees of the larger firms across the sample; and (4) no significant differential in earnings is detected between men and women of the same age and with the same education.
Crelin, Frew and Jud	The Earnings of Realtors: Some Empirical Evidence	*Journal of Real Estate Research*, 1988, 3:2, 69–78.	Data for 1621 realtors, 41% female, 4% black, 80% full time, 62% in residential real estate. Average age 47, average 8 years of experience; with their present firm for 7 years. 55% licensed and 35% with ownership interest. Obtained from a nationwide random sample of real estate professionals gathered by the NAR in 1984.	■ Explores the factors that influence the earnings of realtors by employing an OLS regression to estimate a log-linear model that relates various factors (*i.e.*, hours worked, race, sex, age, experience, schooling, etc.) to the resulting earnings of a broker. ■ Finds earnings to be strongly influenced by hours worked (with declining marginal rewards); experience (+1%, firm specific gave additional 1%); schooling (up to +2.5% per year of school). Business degrees' holders earn 18% more; MBAs earn 30% more. Professional training contributes up to +1.1% in income per course taken. Women earn 19% less, ceteris paribus.

Exhibit 4 | (continued)

Articles Examining Broker Compensation

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Licensees earn 23% more than non-licensed brokers. Those with ownership interest earn about 33% more than non owners. Realtors working with residential real estate earn 13% less; salespeople earn 23% less. Earnings of all individuals involved appear to rise with the firm size. ■ Compares estimates of realtor earnings with previous studies that have been based on surveys of realtors in individual states.
Glower and Hendershott	The Determinants of Realtor Income	*Journal of Real Estate Research,* 1988, 3:2, 53–68.	Data from 481 observations of Ohio realtors in 1986.	■ Employs a regression equation to estimate the relationship between compensation, schooling and experience. ■ Empirical analysis yields results consistent with the theory of human capital that suggests that one's wage varies positively with one's formal education and informal training. ■ Shows practical results: respondents with some college earn 15% more, and degree holders earn 12% additional compared to those with only high school education; experienced (up to 17 years) realtors earn up to 1.8 times more than rookies; specialty realtors earn 30% more than residential; there are decreasing returns to hours worked per week; managers with a degree earn 15%+ more depending on number of subordinates; male owners earn a 15%–70% premium over non-owners.

Exhibit 4 | (continued)

Articles Examining Broker Compensation

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Larsen	Leading Residential Real Estate Sales Agents and Market Performance	*Journal of Real Estate Research,* 1991, 6:2, 241–49.	Data from 298 observations by Dayton, OH MLS and from top residential agents, from October 1, 1987 to September 30, 1988. 28 listed and sold by a LA, 168 listed by LA and sold by NLA, 40 listed and sold by a NLA and 62 listed by NLA and sold by LA.	■ Reports the results of an empirical study conducted to determine whether leading residential real estate agents, as a group, follow various pricing and/or selling strategies that may enhance the amount of commissions generated. ■ Tests the following hypotheses: (1) leading agents (LAs) deal in properties with the same value as non-leading agents (NLAs); (2) ceteris paribus, LAs list properties at the same price as NLAs; (3) ceteris paribus, LAs sell properties at the same price as NLAs; and (4) ceteris paribus, LAs secure the same percentage of list price as NLAs. ■ Estimates a semilog regression equation, which fits property features and sale details to the selling price. ■ Results indicate that some of the success enjoyed by leading agents is attributable to the fact that they deal in higher value properties compared to other agents. ■ Discovers, by controlling for differences in property characteristics and other factors, no other significant strategic differences between leading agents and others.
Sirmans and Swicegood	Determinants of Real Estate Licensee Income	*Journal of Real Estate Research,* 1997, 14:1, 137–53.	Data from 185 observations from a 1995 survey of 1200 random active real estate brokers and salespeople in Florida.	■ Examines the factors that influence income of real estate licensees. ■ Results show that a number of factors have a positive effect on income: number of hours worked, experience, franchise affiliation, being an owner/manager, working in a metropolitan area, level of job satisfaction, and having errors and omission insurance. ■ Variables which have a negative relationship with income include: gender (men earn more), selling primarily residential properties, age of licensee, image perception, and working weekends.

Exhibit 4 | (continued)

Articles Examining Broker Compensation

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Segmenting the sample into thirds, difference-in-means tests show that the high income group has significantly higher means for a number of variables including: hourly income, number of hours worked, working full-time, work experience, membership in club/professional organizations, holding a broker's license and holding professional designations.
Jud and Winkler	The Earnings of Real Estate Salespersons and Others in the Financial Services Industry	*Journal of Real Estate Finance and Economics*, 1997.	Nationwide data on earnings by occupation and area from the 1990 Census.	■ Analyzes the factors that determine the earnings of salespersons in the financial services industry, using a human capital model. ■ Results show that persons in real estate sale 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 areas, 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 and negative in real estate.
Sirmans and Swicegood	Determining Real Estate Licensee Income	*Journal of Real Estate Research*, 2000, 20:1/2, 187–204.	Data from 310 observations from a survey of 2500 random real estate brokers and salespeople in Texas.	■ Extends, somewhat, the previous study by Sirmans and Swicegood (1997). ■ Examines the factors that affect real estate licensee income by including additional variables. ■ Factors that have a positive effect on income include: number of hours worked, work experience, being a male, using computer technology, being involved in more transactions, holding professional designations, being associated with a larger firm and having access to personal assistants.

Exhibit 4 | (continued)

Articles Examining Broker Compensation

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Variables having a negative effect on income include: age of licensee, selling primarily residential properties and having more affiliations. ■ Variables having no significance include: type of license, education, race, being an owner/manager, association with a franchised firm and working in a metropolitan area. ■ Segments data to compare the highest and lowest groups and uses difference-in-means tests to show that the higher income group has significantly higher means for these variables: income, hours worked, education, experience, gender (males), use of current technology, type of license and holding professional designations.

Exhibit 5 | Articles Examining the Influence of the Real Estate Brokerage on House Prices

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Nelson and Rabianski	Consumer Preferences in Housing Market Analysis: An Application of Multidimensional Scaling Techniques	*Journal of the American Real Estate and Urban Economics Association*, 1988, 16:2, 138–59.	Responses from 238 interviews with residents of Bowling Green, KY housing market.	■ Studies the subjective, perceptual criteria that the value of single-family housing is a function of demographic, economic and psychographic variables. ■ Uses consumer-supplied similarity measures of housing alternatives (features of homes, neighborhoods, attitudes) to develop a multidimensional perceptual "map" of the way that consumers view housing choices. The dimensions of this perceptual space represent the evaluative criteria utilized, consciously or unconsciously, during the housing evaluation process. ■ Suggests, as a result of exploratory analysis, that: (1) all perceptually defined market segments use the same evaluative construct; (2) market segments may be defined in terms of differences in the relative importance of each criterion; (3) market segments do not necessarily correspond to simple demographic measures; and (4) the major evaluative criteria in the perceptual process generally agree with those found in the literature based on objective measurements.
Can	The Measurement of Neighborhood Dynamics in Urban House Prices	*Economic Geography*, 1990, 66:3, 45–57.	Uses data from the Columbus, OH MSA.	■ Introduces an explicit geographic perspective for modeling the housing price determination process. ■ Accepts the traditional econometric models that utilize the hedonic price regression, but extends them to incorporate spatial neighborhood dynamics. The expansion method is used as the general modeling framework. ■ Poses the question: Do housing attributes produce different pricing differentials depending on location? ■ Generates models that are characterized by spatial variation with respect to the influence of housing attributes on housing prices.

Exhibit 5 | (continued)

Articles Examining the Influence of the Real Estate Brokerage on House Prices

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Deals with, in addition to its conceptual concern, spatial dependence, an issue that has not been addressed in the previous empirical investigations. ■ Results suggest that the models constructed using the expansion method more accurately mirror the workings of the residential real estate markets.
Bagnoli and Khanna	Buyers' and Sellers' Agents in the Housing Market	*Journal of Real Estate Finance and Economics*, 1991, 4:2, 147–56.	Theoretical paper with simulation results.	■ Explains why buyers in the housing market use an agent employed by the seller. Such agents reduce buyers' search costs so that more buyers search a particular house, increasing the probability of the sale of the house and possibly also the selling price. However, since the selling price increases, if at all, by less than the fee paid by the seller to the agent, both buyers and sellers are better off. ■ Identifies two characteristics that give rise to sellers' agents and show that markets that do not have such agents are missing at least one of these characteristics. Analogous institutions (*e.g.*, recruiters, headhunters) are shown to possess similar characteristics and allow the sellers to win by hiring the seller's agent. ■ Explains this rationale by using several scenarios: (1) when no agents are involved; (2) when there are buyers' agents who reduce search costs; and (3) when there are both buyers' agents and one seller's agent (where there are several possibilities for parties to use each other's agents). The sellers gain by employing their own agents and can achieve a better selling price.

Exhibit 5 | (continued)

Articles Examining the Influence of the Real Estate Brokerage on House Prices

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Salant	For Sale by Owner: When to Use a Broker and How to Price the House	*Journal of Real Estate Finance and Economics*, 1991, 4:2, 157–74.	Theoretical paper with simulation results.	■ Examines the idea that by using a broker, the owner of a house can speed up his search for buyers but must pay a percentage of the sale price as a commission. Non-stationarities inherent in the housing market may make it optimal to market a house "by-owner" at the outset and to retain a broker only if the house remains on the market later in the selling season. ■ Investigates the optimal sequence of asking prices within the by-owner phase, within the broker phase, and at the transition between the two phases, utilizing a theoretical optimization approach. ■ Finds that the asking price declines within each phase but may jump up at the transition to cover part of the commission. The model implicitly determines the demand for broker services as a function of the commission rate. When estimated, it may be useful in investigations of price fixing among brokers.
Yavas	A Simple Search and Bargaining Model of Real Estate Market	*Journal of the American Real Estate and Urban Economics Association*, 1992, 20:4, 533–48.	Theoretical paper with simulation results.	■ Examines the impact of brokers on buyers' and sellers' search behavior and on the transaction prices in real estate markets. ■ Develops an approach that incorporates bargaining stage as well as buyers' and sellers' search function into the model. The study seeks to model the empirical relationships between various factors.

Exhibit 5 | (continued)

Articles Examining the Influence of the Real Estate Brokerage on House Prices

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Shows that: (1) the seller and the buyer search less intensively if the house is listed with brokers. The seller gets a higher price when he employs a broker, but the increase in price is smaller than the commission fee. More specifically, the portion of the commission covered by the increase in price is directly related to the bargaining powers of the buyer and the seller; (2) in the special case where the price is determined according to the Nash bargaining solution, the increase in price is half of the commission fee; and (3) an increase in the commission rate increases the equilibrium price but decreases the equilibrium search intensities.
Asabere and Huffman	Price Concessions, Time on the Market, and the Actual Sale Price of Home	*Journal of Real Estate and Economics*, 1993, 6:2, 167–74.	Data from 337 residential sales from December 1986 to June 1990 from MLS of Philadelphia (125), Montgomery (100), and Chester (112) counties of PA.	■ Examines the relationships between listing price concessions, TOM and the actual sale price of homes with special reference to a buyer's market. The data set includes physical characteristics of houses as well as macroeconomic variables obtained from the government sources. ■ Proves empirically the principal hypothesis tested—that significant listing price concessions, usually the result of overpricing, can lead to real discounts on the final sale price. ■ Finds that the longer the TOM, the higher the sale price, ceteris paribus. This finding is consistent with the theory that the longer the property remains on the market, the higher the probability is that a relatively superior selling price can be realized. In case the property is grossly overpriced, however, substantially higher concessions from the seller to achieve a sale would be required.

Exhibit 5 | (continued)

Articles Examining the Influence of the Real Estate Brokerage on House Prices

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Knight, Sirmans and Turnbull	List Price Signaling and Buyer Behavior in the Housing Market	*Journal of the American Real Estate and Urban Economics Association*, 1994, 9:3, 177–92.	Data for 12,308 sales of single family detached homes in Baton Rouge, LA housing market between the fourth quarter of 1984 and the fourth quarter of 1992.	■ Investigates the relationship between list price and selling price in housing markets. ■ Develops a model of buyer behavior from a search-theoretic perspective to determine whether list price contains useful information for anticipating trends in eventual transactions prices, ■ Estimates separate price indexes with list price and selling price as the respective dependent variables in the hedonic regressions. ■ Finds that the list price may lead the market when functioning as a signal of seller intent, but list price will probably lag a market driven by buyer willingness to purchase. Granger causality tests conducted on quarterly data for the eight-year period of the study support the proposition that the listing price is a leading indicator of selling price. However, a visual examination of the indexes around the period of market reversal suggests otherwise. Indeed, listing prices appear to contain the least useful information at the times when information would be most valuable—at the peaks and troughs of the market cycle.

Exhibit 5 | (continued)

Articles Examining the Influence of the Real Estate Brokerage on House Prices

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Jud and Winkler	What Do Real Estate Brokers Do: An Examination of Excess Returns in the Housing Market	*Journal of Housing Economics*, 1994, 3:4, 283–95.	Data for 2630 sales, involving 111 brokerage firms and more than 600 individual real estate agents from Greensboro, NC regional Realtors Association from September, 1991 to September, 1993.	■ Explores the effect of real estate brokerage firm and agent characteristics on the prices received by home sellers. ■ Develops a model for assessing the impact of firm and agent characteristics on the prices received by sellers in a MLS and employs the ordinary least squares and fixed effect regression equations. ■ Results show that independent selling agents may try harder to extract higher price from the buyers as compared to the situation when both selling and listing agents work for the same firm. Agent ability and knowledge do not appear to have any effect on price obtained. More expensive and generally more atypical homes tend to command higher excess returns compared to the more typical homes. ■ Empirical estimates of the model, in general, reveal no evidence that some brokers are able to obtain higher prices for the homes that they sell than are others. This is consistent with the idea of an efficient information flow in the MLS market, where firms and individuals do not possess special advantages because information is shared within the MLS among agents, firms, sellers and buyers.
Black and Nourse	The Effect of Different Brokerage Modes on Closing Costs and House Prices	*Journal of Real Estate Research,* 1995, 10:1, 87–98.	Data from 80 single-family residential sales between January 1989 and August 1990 in north suburban Atlanta, GA, by 39 brokers of various affiliations.	■ Tests two hypotheses: (1) there is no difference to the buyer in shifting cash charges at closing; and (2) there is no difference in house prices attributable to the representational form of real estate brokerage. ■ Employs a hedonic pricing model to demonstrate that a substantial portion of closing costs are shifted to the seller whenever an independent buyer's broker is involved as compared to seller's broker. This shift is the most pronounced when house prices rise above a low level, at which the seller absorbs most of the closing costs regardless of the mode of brokerage.

Exhibit 5 | (continued)

Articles Examining the Influence of the Real Estate Brokerage on House Prices

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Shows, by an OLS regression, no significant effect on actual sales prices based on the form of brokerage used in the transaction. While the closing prices paid by the buyer represent a significant variable in the overall model, they are not significant in the sales involving buyer's brokers.
Benjamin and Chinloy	Technological Innovation in Real Estate Brokerage	*Journal of Real Estate Research,* 1995, 10:1, 35–44	For 177 sellers, 60% chose to use the lockbox in the Washington, DC area codes 20015 and 20016.	■ Estimates the return (*i.e.,* selling price change) from adopting a technological innovation to assist in the brokerage of a house. The innovation is the use of a lockbox, located on the front door of the selling home, that enhances seller security and facilitates increased buyer showings. In the authors' model, the seller has a choice on whether or not to adopt the technology and makes the decision prior to knowing the selling outcomes. ■ Uses a three-stage procedure to estimate the model, beginning with an estimation of house selling price. The second stage employs a probit model where the adoption of the lockbox can be predicted with a probability of 92% for a seller with the most favorable mix of characteristics. The third stage uses a set of contemporaneous regression equations for sale price and TOM. ■ Results show adoption of the lockbox is more likely for more expensive properties, which have a higher initial asking price, larger floor plans, better furnishings, better proximity to the metro station, existence of air conditioning and current vacancy. For those sellers adopting, the innovation results in a higher sales price, while the TOM remains essentially the same.

Exhibit 5 | (continued)

Articles Examining the Influence of the Real Estate Brokerage on House Prices

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Sirmans, Turnbull and Dombrow	Quick House Sales: Seller Mistake or Luck?	*Journal of Housing Economics*, 1995, 4:3, 230–43.	Single-family housing transactions conducted in Baton Rouge, LA, from January 1985 to December 1991. 2651 transactions exposed to MLS, 100 not fully exposed. Details about properties involved obtained from MLS.	■ Examines the price of the houses that sell quickly. Real estate brokers in the housing market are typically required to enter a listing into the MLS system within a short period of time. Some houses sell immediately after listing, often before entering into the MLS. One of the explanations proposed is that these houses are mispriced. ■ Employs OLS and regression analysis to find the hedonic equations estimates. ■ Results of the analysis show that houses sold before exposure to MLS tend to be smaller, but average price per square foot appears to be the same in all transactions involved. However, about 60% of houses sold before MLS exposure are vacant, as compared to 36% those in market exposed database. ■ Finds, overall, no significant differences between prices of "quick" selling houses and those with a normal marketing time. ■ Concludes that the MLS system is efficient to protect buyers and sellers from abnormal pricing.
Hughes	Brokerage Firms' Characteristics and the Sale of Residential Property	*Journal of Real Estate Research,* 1995, 10:1, 45–56.	Data for 11,563 observations collected from MLS database for sales from 1985 to 1991 in Baton Rouge, LA.	■ Empirically examines the firms' impact on a tangible feature of the home sale process: the sale price, over and above the offer of new services, ranging from media access to new search technology to reputation, which may enhance the experience of home transition for individuals and may attract business when past customers describe their comfort with the firm. There is a generally accepted trade-off when individuals sell their homes. Speed of sale and price obtained are balanced against each other.

Exhibit 5 | (continued)

Articles Examining the Influence of the Real Estate Brokerage on House Prices

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Presents evidence suggesting that some firms consistently achieve higher sale prices than other firms, holding TOM as well as property amenities constant. With hedonic modeling techniques to distinguish between performance of different brokerage firms, the Goldfeld-Quandt Test is applied to parts of the sample to eliminate the potential skewness of distribution of property values. ■ Conducts separate tests to evaluate the influence of the market conditions on firm performance. ■ Results show that performance of same size brokerage firms in different geographical areas widely varies. In a given market, when homes are listed with one of the largest firms, the owner can anticipate a significantly higher sale price. This effect is consistent across different market conditions. Still, the firm size effect is very limited as some large firms consistently sell at prices below the small firm comparison group.
Jud, Winkler and Kissling	Price Spreads and Residential Housing Market Liquidity	*Journal of Real Estate Finance and Economics*, 1995, 11, 251–60.	Data from 3,597 MLS transactions in Greensboro, NC during 1991–1993.	■ Examines the spread between the listing and contract prices. ■ Develops a model to explain the price spread in the residential housing market, modeling the price of the home, the cost of search, the standard deviation of offer prices and TOM. ■ Results show that higher listing prices and search costs raise the price spread, while a larger variance in offer prices reduces the spread. Since price spreads are a measure of liquidity, the model suggests that liquidity is a function of transaction costs and market information.

Exhibit 5 | (continued)

Articles Examining the Influence of the Real Estate Brokerage on House Prices

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Yavas and Colwell	A comparison of Real Estate Marketing Systems: Theory and Evidence	*Journal of Real Estate Research,* 1995, 10:5, 583–600.	Data for 125 observations from a section in the southwest corner of Champaign, IL obtained from the assessor's office, MLS "comp" books and non-MLS property lists from January 1, 1977 to December 31, 1978.	■ Provides a search-theoretical model of the marketing choice of the seller (own efforts, MLS broker or non-MLS broker) in order to explain the seemingly contradictory empirical results as to whether a seller raises the price of his house so as to pass on a portion of the broker's commission to the buyer. ■ Uses hedonic regression equations to estimate the price differential between MLS and non-MLS sales using dummy variables for property attributes, controlling for selectivity bias in the data, given the non-exogenous nature of seller's choice of MLS. ■ Finds that the price differential has a significant influence on the choice of the marketing strategy (own efforts, MLS broker or non-MLS broker) and, as expected, the higher price differential makes the MLS choice more likely. ■ Obtains an unexpected result that the decision to use MLS decreases the sale price of a property.
Yavas and Yang	The Strategic Role of Listing Price in Marking Real Estate: Theory and Evidence	*Real Estate Economics*, 1995, 23:3, 347–68.	Data from 270 house sales from MLS of the State College School District of PA in 1991.	■ Attempts to provide a theoretical and empirical analysis of the impact of listing price on TOM and the transaction price. The listing price on a property affects how long it takes to find a buyer while TOM influences the final selling price. ■ Utilizes the two-stage regression model: first, predicted sale price for each property is estimated as a function of its physical and locational characteristics; then, TOM is regressed on the ratio of the actual listing price to the predicted price above.

Exhibit 5 | (continued)

Articles Examining the Influence of the Real Estate Brokerage on House Prices

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Results show that, on the one hand, the closer the final sale price to the original sale price, the lower is the TOM for the mid-price houses; there is no significant effect of price relationship on high or low price houses. On the other hand, TOM is shown not to depend on the physical and locational characteristics of houses; rather, it depends on market conditions at the time of listing. ■ Formulates, given the above results, a market efficiency hypothesis, claiming the same TOM irrespective of differences between properties (which are already captured in the price). As the results show, the efficiency hypothesis is only true for low and high priced houses but not for the medium priced.
Clayton	Rational Expectations, Market Fundamentals and Housing Price Volatility	*Real Estate Economics*, 1996, 1996, 24:4, 441–70.	Data for 153 quarterly, single-detached house prices in the city of Vancouver, British Columbia, from March 1979 through September 1991.	■ Derives a forward looking rational expectations house price model and empirically tests its ability to explain short-run fluctuations in real house prices. ■ Combines a novel approach to proxying the imputed rents of owner-occupied housing, as a function of observable housing market fundamentals with a housing market arbitrage relation to derive a present value model for real house prices. ■ Tests of the rational expectations, nonlinear cross-equation restrictions reject the joint null hypothesis of zero parameters for rational expectations and the asset-based housing price model. The model fails to fully capture observed house price dynamics in two real estate booms but tracks real house prices well in less volatile times, suggesting that prices may temporarily deviate from fundamental values in real estate price cycles.

Exhibit 5 | (continued)

Articles Examining the Influence of the Real Estate Brokerage on House Prices

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Anglin	The Contribution of Buyer Brokers	*Journal of Housing Economics*, 1997, 6:3, 277–92.	Theoretical paper.	■ Develops a matching model (matches buyers and seller of homes) where the type of brokerage is irrelevant. ■ Also, assumes sales price is randomly determined. ■ Results show that the optimal buyer brokerage is increasing in price for certain intervals. ■ Suggests that buyer brokerage could be indistinguishable to seller brokerage if the optimal buyer brokerage contract has a short duration.
Yang, Trefzger and Sherman	A Microeconomic Study of Commercial Real Estate Brokerage Firms	*Journal of Real Estate Research*, 1997, 13:2, 177–94.	Nationwide survey conducted by Society of Industrial and Office Realtors (SIOR) in 1992; 215 of 888 SIOR members responded.	■ Models and examines the operating characteristics (profitability, scale effects and expenditures) of income-property brokerage firms at the firm level. ■ Finds that scale economies exist for expenses, but net income per producer falls as firms grow in size (decreasing returns to scale when net income considered). ■ Results may be time dependent (survey performed during commercial real estate market weakness in 1992). ■ Optimal firm size is relatively small, a result different from recent residential brokerage firm research (the two real estate brokerage sectors may be structurally different). ■ Also, optimal firm size depends on the percentage of its productive effort that the firm devotes to various business activities. ■ Results show that to increase brokerage firm gross income, technology and support staff spending should be increased, but not advertising.

Exhibit 6 | Articles Examining Influence of the Regulation (Licensing and Other); Consumer Satisfaction with Real Estate Brokerage; Principles; Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Johnson and Loucks	The Effect of State Licensing Regulations on the Real Estate Brokerage Industry	*Journal of the American Real Estate and Urban Economics Association*, 1986, 14:4, 567–82.	Data from 1983 National Association of License Law Officials' report on licensing in various states; 1980 Census reports on broker earnings and income.	■ Examines entry barriers within the real estate brokerage industry to determine the effect of differing state entry requirements on the supply of practitioners, earnings and quality of service provided. ■ Develops a simultaneous system of equations where the number of licensees per capita, earnings and quality are jointly estimated. ■ Two-stage least squares results support the premise that the consumer rather than the industry benefits from real estate pre-licensing regulation with a higher quality of service. More stringent requirements imposed by licensing commissions ensure higher service quality. Significant evidence is not found to support the common idea that the real estate industry regulations are self serving. ■ Positive correlation between earnings and licensees per capita means that brokers are drawn into the profession by prospects of excess earnings, a phenomenon which in turn is explained by low barriers of entry into the industry.
Guntermann and Smith	Licensing Requirements, Enforcement Effort and Complaints Against Real Estate Agent	*Journal of Real Estate Research,* 1988, 3:2, 11–20.	Pre-licensing/ continuing education requirements, histories of complaints and disciplinary actions for CA, FL, IL, TX from the 1986 "Digest of Real Estate License Laws" (NARELLO).	■ Relates complaints against real estate licensees to compliance and enforcement efforts by regulators and pre-licensing education requirements. ■ Studies two hypotheses: (1) complaint levels across states are inversely related to intensity of compliance and enforcement; and (2) beyond a low threshold, education requirements do not materially reduce compliance levels. Factors accounting for education requirements and passing scores on license exams as well as compliance statistics are included in the two-stage OLS model.

Exhibit 6 | (continued)

Articles Examining Influence of the Regulation (Licensing and Other); Consumer Satisfaction with Real Estate Brokerage; Principles; Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Results suggest that minimal pre-licensing education requirements may reduce complaints, but more stringent requirements do not appear to lead to further reductions. The most effective way to reduce complaints is found to be through vigorous efforts at compliance and enforcement. The example of such an approach is in Illinois where relatively non-stringent pre-licensing requirement is coupled with a policy of severe disciplinary actions. To achieve significant reductions in complaints, the policy implication is that states would need to shift resources to the compliance and enforcement areas.
Johnson, Dotson and Dunlap	Service Quality Determinants and Effectiveness in the Real Estate Brokerage Industry	*Journal of Real Estate Research,* 1988, 3:2, 21–36.	Data from 375 randomly selected homebuyers and 178 real estate licensees (both brokers and sales agents) in randomly selected counties of NC during 1984–1985.	■ Analyses expectations and perceptions of homebuyers as well as salespeople to determine the gap between performance and expectations of parties. ■ Uses factor analysis of survey response data to develop an empirical application of a theoretical service quality model (originally developed by Parasuraman, Zeithaml and Berry, 1985). ■ Finds, except for rank order, real estate service quality determinants match those in other industries. Real estate service quality meets expectations in three areas (reliability of service, service empathy, tangible product characteristics) and is below expectations in two areas (service assurances and responsiveness, tangible firm characteristics). ■ Suggests independent peer or supervisor evaluation of recently completed transactions to improve broker service quality.

Exhibit 6 | (continued)

Articles Examining Influence of the Regulation (Licensing and Other); Consumer Satisfaction with Real Estate Brokerage; Principles; Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Shilling and Sirmans	The Effects of Occupational Licensing on Complaints Against Real Estate Agents	*Journal of Real Estate Research,* 1988, 3:2, 1–10.	Data from 1983 data on real estate licensing activities and complaints against real estate agents from National Association of Real Estate Law officials; also, 1980 census data.	■ Addresses the issue of the effects of state licensing procedures on the quality of brokerage services and provides evidence of a simultaneous relationship between the anti-competitive effects of licensing and the quality of brokerage services, as measured by the number of complaints filed against real estate brokers. ■ Establishes a model encompassing factors that might contribute to the anti-competitive effects of licensing (passing score, exam time, exam cost, demand for broker services, etc.) ■ Tests the hypothesis that licenses serve to promote the interests of already established firms. ■ Establishes another model that links factors that influence the number of complaints (passing score, expected compensation, minority ratio, ratio of national association members, etc.) to test the hypothesis that higher passing score requirements lead to lower number of complaints. ■ Results suggest that restrictions on entry into the business imposed by tougher licensing standards raise the quality of service but at the same time are conducive to lessened competition. The article contradicts the notion that the sole purpose of occupational licensing is to enhance the prestige and economic status of the profession; tougher licensing standards also appear to yield substantial benefits to the consumer in terms of higher levels of service quality.
Nelson and Nelson	RESERV: An Instrument for Measuring Real Estate Brokerage Service Quality	*Journal of Real Estate Research,* 1995, 10:1, 99–113.	Mail questionnaire: RESERV instrument contains 31 items in 7 dimensions, exhibiting both high internal consistency and convergent validity.	■ Develops, by applying the process utilized in the development of a generic service quality measurement instrument (SERVQUAL), an instrument to measure perceived levels of satisfaction with real estate brokerage service quality (mail questionnaire—RESERV).

Exhibit 6 | (continued)

Articles Examining Influence of the Regulation (Licensing and Other); Consumer Satisfaction with Real Estate Brokerage; Principles; Other Issues

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Findings, which are based on a survey of home sellers, support the notion that the real estate brokerage industry is not unique and a modified generic service quality measurement scale is appropriate for use in real estate brokerage assessments. As a result, the latter can benefit from the extensive body of knowledge available in other service industries.
Sirmans	Licensing Requirements, Enforcement Effort, and Complaints Against Real Estate Licensees	Funded research for the Education and Research Foundation, Florida Real Estate Commission, 1994.	Data for 435 observations involving sanctions against licensed real estate brokers and salespeople in Florida from October, 1992 through December, 1993.	■ Examines complaints and sanctions against real estate licensees in Florida. ■ Finds that a majority of infractions were committed by brokers as opposed to salespeople, geographic distribution of infractions was roughly comparable to distribution of population, about two-thirds of licensees with infractions were male, infractions were not necessarily a function of inexperience, most infractions resulted from mishandling of funds in escrow and trust accounts, and suspension and/or revocation of license occurred in about 16% of the cases.

Exhibit 7 | Articles Examining Liability Issues in Real Estate Brokerage

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Levi and Terflinger	A Legal-Economic Analysis of Changing Liability Rules Affecting Real Estate Brokers and Appraisers	*Journal of Real Estate Research*, 1988, 3:2, 133–50.	Examples of real life cases from a variety of courts.	■ Considers the multiple premises of liability to buyers, including negligent misrepresentation, state licensing laws and professional codes of ethics. Also considered are applications to appraisers, liability economics and preventive strategies. The increasing number of lawsuits reflects the arrival of the age of consumerism in the real estate industry. Liability positions being staked out are largely premised on industry professionalization. The area of greatest activity is misrepresentation litigation initiated by buyers. ■ Covers misrepresentation as one of the predominant issues in litigation; in particular, negligent misrepresentation, negligent nondisclosure, innocent misrepresentation et al. are described on 1980s cases. State courts, however, have shown widely varying approaches to misrepresentation issues. Buyer cases have become crucial for developing "public policy" concepts of professional liability. In particular, in some cases the state licensing requirements are interpreted as standards by which the licensed brokers and salesmen may be held liable to purchasers. ■ Suggests that realtors include a properly drafted contingency clause in broker-seller contracts; also, the authors recommend developing checklists for various kinds of properties to insure brokers against possible nondisclosure claims in the future.

Exhibit 7 | (continued)

Articles Examining Liability Issues in Real Estate Brokerage

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Marsh and Zumpano	Agency Theory and the Changing Role of the Real Estate Broker: Conflicts and Possible Solutions	*Journal of Real Estate Research*, 1988, 3:2, 151–64.	Theoretical paper with real court case citations.	■ Examines the nature of the evolving multifunction role of the real estate broker and the demands being placed on brokers by both buyers and sellers, which increasingly place brokers in conflict with the laws governing their conduct as agents. ■ Evaluates proposed solutions to this problem. To decrease the potential for lawsuits, increased product knowledge and better understanding by brokers of their responsibilities to both buyers and sellers is recommended and will help improve the quality of real estate services. A more fundamental approach would require restructuring of the agency relationship (by legal practitioners, courts et al) to recognize the dual nature of broker's role in the conveyance process.
Potter, Nelson and Nelson	Product Liability Issues in Real Estate Brokerage	*Journal of Real Estate Research*, 1991, 6:1, 87–98.	Theoretical paper with real court case citations.	■ Posits that the legal environment for real estate brokers is moving inexorably toward the doctrine of strict liability in a product liability context. The agency relationship model currently popular in real estate brokerage may not be able to withstand this threat. The burden of broker obligations as a part of the legal "consumerism" movement since the 1970s is likely to increase because of product liability litigation. ■ Argues that local law is coming close to treating construction firms and brokers as their agents with a similar standard as used in product liability litigation. The potential shift of lawsuits from negligence claims to product liability and the expansion of the legal definition of "product" make it much more difficult for brokers to avoid liability.

Exhibit 7 | (continued)

Articles Examining Liability Issues in Real Estate Brokerage

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Recommends that the industry move toward a market making role that lies outside the chain of distribution of the real estate product. By moving out of the distribution channel, brokers may be able to revert to a "due care" standard of performance.
Bryant and Epley	The Conditions and Perils of Agency, Dual Agency, and Undisclosed Agency	*Real Estate Law Journal,* 1992, 21: 2, 117–35.	Review of court cases.	■ Identifies the conditions under which a dual agency and an undisclosed dual agency are created with an emphasis on real estate agents and selects relevant court cases. ■ Concludes that mandatory disclosure by the agent to the parties involved is essential. Further, the states could classify and define the precise duties of a dual agent to eliminate any confusion. Also, the broker must restrict their activities with the opposing party to a conveying of information by describing, showing, completing, transmitting and informing.
Roulac	Environmental Due Diligence Informational Requirements and Decision Criteria	Journal of Real Estate Research, 1993, 8:1, 139–48.	Review of court cases.	■ Asserts that environmental due diligence, now a necessary precondition to a real estate transaction, has been raised to a higher priority by the so-called Superfund legislation. Although passed a decade ago, only in the last several years have legal implications for real estate transactions been recognized. ■ Argues that the reality of environmental liability combined with substantially constrained capital availability for new development projects will introduce new standards of development assessment and serve to constrain the pace of development activity in the 1990s.

Exhibit 7 | (continued)

Articles Examining Liability Issues in Real Estate Brokerage

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
				■ Focuses on the awareness of these developers and advisors who represent institutional investors of environmental due diligence requirements and how information generated in the due diligence process is employed in property acquisition decisions.
Fain	An Overview of Real Estate Agent or Broker Liability	*Real Estate Law Journal*, Winter, 1995, 257–67.	Review of court cases.	■ Addresses duties and liabilities of the real estate agent or broker, focusing primarily on professional negligence or malpractice. Specifically, these liabilities relate to the agent or broker's obligation to inspect and disclose physical defects in the property, the obligation to procure or transfer insurance policies or productivity of property, other miscellaneous claims and defenses asserted by agents or brokers.

Exhibit 8 | International Brokerage

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Miceli	Information Costs and the Organization of the Real Estate Brokerage Industry in the U.S. and Great Britain	*The Journal of the American Real Estate & Urban Economics Association,* 1988, 16:2, 173–88.	Survey data from the Federal Trade Commission Reports on buyer's behavior published in 1983.	■ Examines the institutional aspects of the residential real estate brokerage industry in the U.S. and Great Britain. Different brokerage structures result as alternative solutions to a common set of informational problems. ■ Investigates why the MLS is so pervasive in the U.S., but underutilized in Great Britain. Some possible reasons are related to differing historical owner occupancy rates, to different brokerage compensation schemes, and to reduced government licensing of brokers in Great Britain.
Samiei and Schinasi	Real Estate Price Inflation, Monetary Policy, and Expectations in the United States and Japan	*International Monetary Fund Working Paper,* WP/94/12, January 1994, pp.		■ Discusses why, during the mid- to late 1980s, inflationary pressures were highly concentrated in asset markets in many industrial countries. ■ Develops a forward-looking supply and demand model of the real estate market in which equilibrium prices depend on price expectations, monetary conditions, income, returns to alternative assets and construction costs. In this model, the current equilibrium price is determined by expectations formed in different time periods by consumers and producers. ■ Estimates the model and its more generalized dynamic specifications by maximum-likelihood methods. ■ Finds that the empirical results do not reject the view that the relationship between real estate values and monetary policy was altered in 1980s.

Exhibit 8 | International Brokerage

Author(s)	Title	Source	Data, Location, Time Period	Summary of Study
Pheng and Hoe	Motivational Factors for Developers' Appointment of Real Estate Marketing Agents in Singapore	*Journal of Property Research*, Winter 1994, 14–22.	Survey of a random sample of 58 property developers in Singapore during mid-1993.	■ Posits that for real estate agency firms to successfully market their services, they need to understand the more important factors that motivate developers to engage them for their services. For this purpose, the marketing-mix model is a useful starting point for real estate agency firms to formulate their marketing strategies. They would then need to evaluate if the outputs from their marketing-mix model accord well with the factors that actually motivate developers to appoint their marketing agents. ■ Identifies four categories of motivational factors: internal factors, external factors, characteristics of the development and characteristics of the marketing agents. From these groupings, a total of 21 survey factors are subsequently derived and tested. ■ Findings suggest that the developers' association with marketing agents and the abilities of those marketing agents are found to be the two factor groupings with the greatest impact on the developers' appointment of marketing agents. Factors that are internal to the developers have a positive but lesser influence on their appointments of marketing agents. These findings should be taken into consideration by real estate agencies when marketing their services to property developers.
Dotzour, Moorehead and Winkler	The Impact of Auctions on Residential Sales Prices in New Zealand	*Journal of Real Estate Research*, 1998, 16:1, 57–71.	Data from 5,344 New Zealand housing sales, including 158 auction sales, for 1991–1992.	■ Observes that the use of an auction to sell residential real estate in the U.S. is often associated with distressed sales; however, in New Zealand and elsewhere, auction sales are much more common. ■ Develops a model that corrects for sample selection bias to estimate how auction sales affect housing price. It finds that, in some cases, auctions can yield premium prices. In no instance did sale by auction result in a lower price.

of state-mandated regulations. Most states impose educational and licensing standards on individuals and firms who engage in the brokerage business; however, the effects of these regulations are not well understood. For example, the impacts of regulation on commissions, quality of service and firm efficiency need to be further explored. The factors that shape entry into the brokerage profession also have received relatively little research attention. How entry is influenced by regulatory changes and the responsiveness of new entrants to changes in earnings, working conditions and other factors remain to be explored.

The entry of women into the brokerage industry over the past two decades has altered the composition of the workforce, yet research suggests that women working full time earn substantially less than do equally qualified men. The reasons for the large gender difference, however, has not been fully investigated or explained. Also, there has been relatively little research exploring racial differences.

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. A notable difference between residential property markets in the United States 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 such as New Zealand, auction sales are much more common. On the Internet, real estate auction sales are also more common. A recent *Wall Street Journal* article reports that homebid.com has conducted residential auction sales in the Phoenix area and has plans to expand into the Las Vegas and Washington, DC areas.[2]

Implications of Technological Change

In 1995, there were some 115,409 establishments operating in the real estate brokerage business, employing 742,918 persons with a total payroll of $18.8 billion.[3] The average brokerage firm was small, with a staff of 6.4 persons and a total payroll of $162,979. Ninety-five percent of all brokerage firms employed 19 or fewer persons. Less than 1% of all firms employed 100 or more persons.

The small size of most brokerage firms indicates that scale economies have been absent in the industry. Traditionally, individual agents have been more important than real estate firms to home sellers selecting a listing agent. Likewise, most homebuyers have searched for and found their homes using real estate brokers.

Historically, buyers and sellers have relied on real estate brokers to aid them in their home search because obtaining housing market information was time-consuming and costly. The new technology of cyberspace, however, has wrought a sea change that is making housing searches much cheaper and easier. Real estate websites like Realtor.com, sponsored by the National Association of REALTORS®, Home-Advisor.com, sponsored by Microsoft, and others allow

potential buyers to search available properties by location or zip code and narrow the search by adding information on desired amenities and price range. Many sites also provide virtual tours of home interiors, allowing buyers a 360-degree look at each room. When web searchers find something that meets their specifications, they can email their interest to the seller or the listing broker.

Websites also provide buyers and sellers with basic information about the home-buying process, loan qualification and other basics of a real estate transaction. They offer information about communities such as tax rates, school test scores, crime rates, etc. They also provide links to service providers such as mortgage bankers, moving companies, utility providers, etc. Some also offer tools such as mortgage loan calculators and links to online appraisal services.

These online services are provided free to consumers. The site sponsors' revenues come from selling advertisements and links to other web sites. Thus, there is competition among sites to offer the most services to capture the highest traffic volumes. Real estate websites represent substantial resource commitments by their sponsors, and there is continued pressure to expand and consolidate to capture an ever larger market share. This dynamic augers for substantial change in the brokerage industry and the way services are provided.

The Internet makes housing markets more efficient because it increases the quality and quantity of information available to buyers and sellers. It allows housing market participants to make better informed decisions at lower cost. Historically, the brokerage business has existed because of the lack of market information. Buyers and sellers needed brokers to assemble market information that was too costly and time-consuming for them to amass on their own. With the Internet, however, more information is available at lower cost, and this reduces the demand for real estate brokerage services.

As the decreased cost of search reduces the demand for traditional brokerage services, fewer real estate brokers and brokerage firms will be needed. Falling demand seems certain to put downward pressure on commissions and fees. The brokers and firms that survive will be forced to become more productive by mastering the new technology. This will put the greatest strain on the oldest members of the profession with the least technology experience, but all brokerage professionals will be forced to make ever larger investments of human and physical capital to acquire the necessary information technology. The falling demand and an expanding need for investment expenditures may force many small firms into consolidation or closure.

For years, brokerage firms have worked together to increase the efficiency of housing search through local multiple listing services (MLSs). By cooperating and sharing information through their MLS, brokers have reduced the cost and raised the efficiency of search. Because access to the MLS was available to market participants only through member brokers, the MLS gave members an informational monopoly. Now, with the availability of free housing market

information online, the power of the MLS monopoly has been greatly reduced. Almost everyone now has access to market information through the Internet.

As technological change lowers the demand for brokerage services, brokers can raise their operating efficiency to levels that will allow them to remain competitive only by increasing the level of investment in information technology. And this dynamic necessitates that firms become larger and more capital intensive. Many small firms will exit the industry, while others will seek to survive through merger and consolidation.

Forces Fostering Consolidation

Real estate companies are likely to look for assistance to other industries with more capital and technological experience, and firms in other industries are going to look toward real estate brokerage as a way to bring additional customers into their marketing networks. A housing transaction generates a great deal of data about the buyer and the seller that when captured by an information network becomes valuable in the target marketing of additional products.

Looking only at the sales of existing, single-family homes suggests that the potential market is quite large. In 1997, for example, there were some 4.2 million homes sold at an average price of $124,000, generating a transaction volume of some $520.8 billion. If this volume of transactions were to generate only 5% in additional fees and profits from the sale of other products, it would potentially add some $26 billion to the bottom lines of those companies that capture it.

In the early 1980s, a number of financial services companies like Sears, Merrill Lynch and others moved into the real estate brokerage business, but by the 1990s most of these ventures were abandoned. However, these efforts came before the development of the Internet and its sweeping potential for change.

The withdrawal of financial services firms from the brokerage business was also stimulated by the legal morass engulfing the industry over the past two decades. Beginning in 1983 with a report by the Federal Trade Commission (FTC), the industry has been charged with failing to disclose whom the broker really represents, and the industry has appeared deceitful and untrustworthy to many consumers. In addition, an increasing number of product liability lawsuits have been directed at brokers owing to their agency status in real estate transactions.

The Changing Legal Structure of the Industry

These legal problems have stimulated the NAR and others to push to reduce the broker's legal liability by creating a form of non-agency client representation that has become known as "transactional brokerage." Transactional brokerage is a means of providing neutral third-party real estate brokerage services to buyers and sellers and at the same time reducing the liability of the broker. By replacing the

common law of agency with state statutes that clearly define broker and agency relationships, the movement to transactional brokerage hopes to make brokers no longer subject to court cases in which the common law of agency either has set or will set a precedent of broker liability. The new statutes will clearly define the duties and responsibilities of brokers, thus eliminating the basis of many liability lawsuits. A number of states, including Colorado, Florida, Georgia, and Texas have moved or are moving in this direction.

The elimination of the liability problems that threaten the industry will have two effects. First, it will put further downward pressure on commission rates and fees. When brokers come to be seen not as agents but only as transactional middlemen, it will become harder for the industry to uphold traditional commission rates. The clear precedent here is what has happened in the securities industry since commission rates were deregulated. This change in legal status will thus heighten the downward pressure on rates. Second, with the removal of the impediments of potential legal liability, entry into the industry will become easier and less threatening, furthering the movement toward merger and consolidation.

Thoughts on the Future

We foresee a future brokerage industry characterized by: (1) the crumbling of the MLS informational monopoly; (2) the abandonment of agency law; and (3) the increased competition of firms outside the industry for a share of the brokerage market. The days of the small local firm protected by a close knit trade association are passing fast as the integration of real estate brokerage into the networks of large service firms becomes the new reality.

The heightened competition among companies will lead inevitably to fee-for-service pricing as cost-conscious consumers seek to purchase only the services that they need. Thus, buyers and sellers will be offered a wide array of services such as appraisal, marketing advice, financial assistance, etc. The traditional broker is likely to evolve into a home marketing specialist, providing sellers advice on pricing, showing, negotiating, etc. and providing buyers help with inspecting various properties, obtaining financing, making an offer, negotiating and moving. As employees of larger firms, real estate personnel will be offered a combination of salary and commissions based on the volume of business they bring to their firm. The big winners in this new arrangement will the consumers: the home buyers and sellers who will be provided with better, more-timely information at lower cost.

Endnotes

[1] Beginning in 1981 with the publication of Yinger's (1981) classic article, academic research on the residential brokerage industry has mushroomed. One measure of academic interest in the subject is the number of special issues in the *Journal of Real Estate*

Research that have been devoted to the topic. Since 1988, *JRER* has published two special brokerage issues, and this is the third.

[2] Joelle Tessler, More People Turn to the Web to Buy, Sell Homes, *The Wall Street Journal*, July 8, 1999, p. B9.

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

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