JOURNAL OF REAL ESTATE RESEARCH

Adversarial Brokerage in Residential Real Estate Transactions: The Impact of Separate Buyer Representation

*Vickie L. Bajtelsmit**
*Elaine Worzala**

Abstract. **Although substantial research effort has been directed to the examination of optimal search and pricing behavior under traditional brokerage arrangements, market outcomes under conditions of undisclosed subagency and buyer representation have not been fully explored. This study applies the legal and economic theory of agency to real estate markets with cooperating brokers. The existence of cooperating brokers acting as subagents of the seller with the buyer's full knowledge does not change the buyer's and seller's net payoffs relative to the single-agent case. However, when the buyer mistakenly believes that the cooperating broker/subagent is acting as his agent in negotiations, there may be informational gains that result in a higher selling price and a higher payoff to the seller at the expense of the buyer. The analysis indicates that buyer brokers may be a potential solution to this agency problem. When both parties to a real estate transaction have separate representation, their net payoffs are shown to be higher and the sales price lower than under traditional brokerage arrangements. The result is dependent on several factors, including: market conditions, relative bargaining power of the parties, method of broker compensation, and disclosure of the status of the buyer broker.**

Introduction and Background

A 1988 study conducted by the National Association of Realtors found that a large majority of home buyers and sellers employed the services of an agent in the transaction (NAR, 1988). Wolf and Jennings (1991) report that 50% of all lawsuits instituted against real estate agents involve some aspect of agency disclosure. These statistics imply that there may be problems associated with the agency relationship in real estate transactions. The purpose of this paper is to examine the impact of alternative forms of agency in residential real estate transactions. Simple bargaining theory provides a framework in which to look at participant payoffs under different agency structures and with differing levels of information among the parties to the bargain. This study focuses on whether the form of agency affects the equilibrium bargaining outcomes and, if so, who bears the benefits or costs.

It is well known in the real estate industry that home buyers often mistakenly believe that the cooperating broker is their representative in the process of price negotiation.[1] Nevertheless, the law in most states holds that the cooperating broker in a fee-splitting commission arrangement is the subagent of the listing broker.[2] This implies that the cooperating broker has a fiduciary obligation to the *seller* in the real estate transaction and does not owe a duty to the buyer.

*Department of Finance and Real Estate, Colorado State University, Fort Collins, Colorado 80523.
Date Revised—April 1996; Accepted—June 1996.

A dual agency relationship, in which the broker is held to be the agent of *both* the buyer and the seller, arises under very limited conditions (Bryant and Epley, 1992) and requires full disclosure of the relationship to both parties. The National Association of Realtors specifically discourages dual agency because it puts the broker in a difficult role in the negotiation process. Unless the buyer and seller have exactly the same reservation price, it is impossible to simultaneously obtain the highest possible price for the seller and the lowest price for the buyer. Thus, dual agency creates a conflict of interest that necessitates that the agent violate a duty to one or both of the two "principals". Full disclosure of the dual agency relationship does not eliminate this conflict.

In some states, brokers can also be hired for an additional fee to act exclusively on behalf of the buyer. This type of agent is often called a "buyer broker".[3] However, the law is not clear regarding the implications of this form of brokerage, particularly with respect to the commission to be paid when the transaction is listed on the MLS. Furthermore, a contingent fee arrangement with the buyer creates an inherent conflict of interest since the best price for the buyer implies a lower fee for the broker. Alternative pay arrangements, such as flat fees for completion of the transaction, reduce conflicts of interest but have uncertain impact on multiple listing service (MLS) fee splitting contracts.

Intuitively, misunderstanding of the brokers' obligations to each party is likely to result in revelation of information that harms the negotiation position of one or more parties. If the brokers strictly adhere to their legal obligations, the likely outcome is that sellers will be better informed than buyers since the contract price that maximizes the agent's welfare under a percentage commission payment structure is also the contract that maximizes the seller's welfare, i.e., the highest price. With positive search costs born by brokers, however, there may be incentives to reveal privileged information obtained from either party to the transaction in an effort to close a sale.[4]

These types of informational problems have existed for some time. In the last two decades, however, the widespread use of multiple listing services has made it more likely that sales will involve more than one broker.[5] Some state legislatures have reacted by enacting buyer protection laws requiring disclosure of agency relationships[6] but it is not clear that mere disclosure will change the nature of the bargaining outcome.

Although substantial research effort has been directed to the examination of optimal search and pricing behavior under traditional brokerage arrangements,[7] market outcomes with multiple brokers have not been fully explored in the literature. This study applies the legal and economic theory of agency to real estate markets with cooperating brokers and uses a basic bargaining model to analyze the impact of subagency, dual agency, and separate buyer representation. This study differs from search models such as Yavaş and Colwell (1994) and Salant (1991) in that the bargaining game is assumed to begin with the identification of a possible match between buyer and seller. Therefore, the initial search component of the game is not considered, and broker effort is not included as a component of the payoffs. These are potential extensions for future research.

In the following section, the basic bargaining model is presented and the outcome for a no-broker case is developed with a numerical example. This example is then extended to alternative agency arrangements. After a comparison of the bargaining outcomes with two brokers, under conditions of fully disclosed subagency, undisclosed subagency, and separate buyer representation in the third section of this study, section four provides conclusions and policy implications.

The Basic Bargaining Model

The problem is examined as a simple sequential bargaining game with asymmetric information. A risk-neutral[8] seller and a risk-neutral buyer have been identified as a potential match and they bargain to arrive at the final sales price. There is exactly one buyer who has determined that the seller's house meets his[9] desired characteristics (e.g., location, size, general price range). The seller has a reservation price[10] for the property of P_s, the lowest price that she is willing to accept for the property, although the initial asking price will generally be higher. The reservation price for the buyer, the highest price that he is willing to pay, is P_B. It is assumed that taste preferences, personal circumstances, and the imperfections in the market for residential real estate are such that the buyer and seller may place different values on the property. It is assumed that although the buyer and seller may have expectations with regard to the reservation price of the other party, each knows only their own with certainty.

The Bargaining Outcome without a Broker (Case 0)

The outcome in the no-broker case is well known. The seller and buyer will engage in a Nash sequential game in which each takes turn bidding and information is gradually revealed that allows the seller and buyer to split the surplus (P_B–P_s) in proportions ω and (1–ω), respectively (see Rubenstein, 1982). The equilibrium price will be:

$$P_0 = P_s + \omega(P_B - P_s) \qquad P_B - P_s \geq 0\ . \tag{1}$$

Where neither party has a superior bargaining position, ω will be equal to .5. If information is revealed through the process of bargaining that indicates $P_B < P_s$, then the game ends and a sale will not take place. The example developed below and elaborated on in later examples begins with a simple numerical illustration of the case presented in equation (1).

> **Numerical Example (Base Case)—No Broker**
> Suppose that Mr. Buyer has identified Ms. Seller's house as meeting his requirements. Based on available information, Ms. Seller has decided that she must receive at least \$95,000 (P_s) for her house and Mr. Buyer has determined that he is not willing to pay more than \$105,000 (P_B). It is assumed that each party has equal bargaining power (ω=.5). The solution to the bargaining game presented above implies that Mr. Buyer and Ms. Seller will sequentially offer and counter-offer until they arrive at the price that splits the surplus (i.e., the difference between their reservation prices), in this case P_0=\$100,000. Mr. Buyer purchases the house for a price that is \$5,000 less than his maximum and Ms. Seller sells for a price that is \$5,000 more than her minimum, although in each case, the true surplus is this amount less any costs incurred in search and negotiation of the sale.

In the cases that follow, the ways in which this outcome will differ with alternative forms of agency are explored. In all cases, the benefits to the parties are calculated without subtracting for the costs of search and negotiation.

The Bargaining Outcome with Disclosed Subagency (Case 1)

Assume now that the seller employs a risk-neutral real estate broker to act as her agent in the sale under an exclusive right-to-sell contract. Since the standard terms of this type of agreement require that the seller pay the commission even if she finds the buyer herself, it is assumed that the seller has no incentive to exert effort and relies totally on the agent to find a buyer and negotiate the sale.[11] The broker's commission upon sale at price P_1 is kP_1, where k is the commission rate agreed to by the seller. It is initially assumed that neither the buyer nor the seller reveal information about their reservation prices to the agent and thus the agent merely relays the bids between the parties.

Consistent with the results reported below, Yavaş (1992) finds that equilibrium prices in the one-agent case will be higher than in the no-broker case[12] ($P_1 > P_0$), but not high enough to completely offset the commission fee (although both the seller and the buyer enjoy the benefit of the search and transaction services of the broker). The Nash bargaining solution is still the price that splits the difference between the reservation prices, but the seller's new reservation price is now $P_s + kP_1$, i.e., it is adjusted upward to reflect the additional cost of the expected commission. The sale price that splits the difference is:

$$P_1 = P_s + kP_1 + \omega[P_B - (P_s + kP_1)] \; . \tag{2}$$

Comparing this result to (1), it is evident that the equilibrium price with a broker is higher. Rearranging (2), we have: $P_1 = P_s + \omega(P_B - P_s) + kP_1(1-\omega)$. Substituting for P_0, we have:

$$\begin{aligned} P_1 &= P_0 + kP_1(1-\omega) \\ &= P_0 \,/\, [1 - k(1-\omega)] \; . \end{aligned} \tag{3}$$

In other words, the price with only a seller's broker will be higher by a proportion of the commission. If the parties have equal bargaining power, they will split the commission.[13]

Numerical Example—Disclosed Subagency

Assume the same facts as the base case, but now there is a broker who has contracted with the Ms. Seller to be paid 6%[14] of the sales price P_1 upon sale. In order to net at least her minimum of $95,000, Ms. Seller now must receive that amount plus 6% of P_1. Splitting the difference using equation (3) results in sales price P_1=$103,092.78 which nets Ms. Seller $96,907.21. Both Seller and Buyer bear costs as compared to the no-broker case in the amount of 50% of the commission ($3092.79 each), but they also get the benefit of reduced search and transaction facilitation. Ms. Seller receives $1907.22 more than her minimum net payoff and Mr. Buyer pays $1907.22 less than his required maximum out-of-pocket cost.

The Two-Broker Case with Fully Disclosed Subagency (Case 2)

Assume now that the brokerage arrangement involves a split commission between a listing broker and cooperating broker, so that the listing broker's commission upon sale will be αkP_2 where α is the listing broker's share of the commission percentage k based upon the negotiated sales price P_2. The cooperating broker's commission is thus $(1-\alpha)kP_2$.

If the listing broker finds the buyer, then $\alpha=1$. Under the law in most states, the cooperating broker is actually a subagent of the listing broker and thus owes a duty to the seller and is only a transaction facilitator for the buyer. If the buyer understands this, then the outcome should be exactly the same as in the one-broker case offered above, assuming that the buyer does not provide information to the broker sufficient to indicate his reservation price.[15] This implies that:

$$P_2=P_1=P_0 / [1-k(1-\omega)] . \quad (4)$$

Yavaş (1992) notes that in cooperative sales, the listing broker may exert less effort in the initial matching of buyer and seller, but the lower effort will be at least partially offset by the effort of the cooperating broker. It should be noted, however, that the initial assumption is that the broker will adhere to the agency obligations imposed by law and act in the best interest of the seller. In a later section, the impact of incentive incompatibility between the broker and the buyer is considered.

The Two-Broker Case with Undisclosed Agent (Case 3)

Consider now the case in which the game is played without informing the buyer that the agent is actually working on behalf of the seller. Believing that the cooperating broker is acting in their best interest, the seller and the buyer provide information to their brokers with regard to P_s and P_B, perhaps even revealing the exact reservation price. Other valuable information that might be revealed is the degree to which the buyer is committed to buying the particular property (which is a function of the availability of other properties that meet the requirements of the buyer). As before, we assume that the buyer's reservation price P_B includes consideration of these factors.

The law of agency implies that the cooperating broker should reveal any relevant information to the listing broker. In the sequential bargaining game, the solution will no longer split the surplus. Removal of the uncertainty with regard to P_B causes the seller's optimal strategy to be a single "take-it-or-leave-it" offer to sell at price P_B. Given the psychology of real estate contracting, the broker would probably recommend that the seller respond to the buyer's offers by gradually reducing the ask price until it equals P_B and refuse to negotiate further. The transaction price of $P_3=P_B$ is a net gain to the seller in the amount of the buyer's share $(1-\omega)$ of the surplus.

Numerical Example—Undisclosed Agency
Under the same facts as the other examples, the cooperating broker reveals to the listing agent that Mr. Buyer is actually willing and able to pay $105,000 for the property. Knowing this, the listing agent instructs Ms. Seller to not counter-offer below this amount and the parties will eventually contract at P_3=$105,000. Ms. Seller now nets .94 ($105,000)=$98,700 ($3,700 better than her minimum required net) and Mr. Buyer, the victim of undisclosed agency, is worse off than in any of the other brokered scenarios considered thus far.

The Bargaining Outcome with a "Buyer Broker" (Case 4)

Consider now the situation in which the seller has retained the services of a broker (under the same terms as in the previous example), but the buyer, knowing of inherent conflicts

of interest for cooperating brokers, has retained the services of a "buyer broker". The outcome in this circumstance will differ depending upon the method of broker compensation. There are many possible compensation methods, but the following will be considered below:

- The broker splits the full k% commission with the listing broker as would a cooperating broker.[16]
- The broker is paid directly by the buyer at c% of the sales price.[17]
- The broker is paid a flat-rate payment directly by the buyer upon sale.[18]

The first alternative should result in at least as low a sales price outcome as the single-broker case and the two-broker case with full disclosure. However, if it is the case that the buyer receives better advice, greater effort, or other benefits due to his separate representation in the transaction, the net benefit to him after costs may be higher than they are without the buyer broker.

The second alternative payment scheme for buyer brokers may at first seem to be no different than the first. However, there is no reason to believe that the buyer broker's commission c should be the same as the $(1-\alpha)$ share of the k% MLS commission. Even if $c=(1-\alpha)$, the outcome will differ from the earlier cases because of the different impact on reservation prices. If the buyer broker receives c% commission and the listing broker receives α% of the k% commission, the buyer's new reservation price is $P_B - cP_4$ so that after paying the commission, the net cost to the buyer is no more than P_B. The seller's new minimum acceptable price is $P_s + \alpha k P_4$.[19] The transaction price that splits the surplus will be:

$$P_4 = P_0 / [1-\alpha k(1-\omega)+\omega c] . \tag{5}$$

Equation (5) implies that the buyer and seller will split the total commission charges, even when the buyer broker's rate is more than the MLS split. When $c > \alpha k$, the resulting sales price will be lower than in the single-broker case and no-broker case. If $c=\alpha k$, the sales price will be equal to that of the no-broker case ($P_4=P_0$), although the net benefit to buyer and seller will be less before accounting for differences in costs (which will obviously be much higher without a broker).

Numerical Example—Buyer Broker Paid Separate Contingent Commission
Suppose that Mr. Buyer has contracted with a buyer broker to be his exclusive agent in the transaction for a fee of 3% of the transaction price. Ms. Seller has contracted at 6% to be split between the listing agent and the selling agent. Under the facts previously considered, Ms. Seller has a reservation price of $95,000 plus 3% of the final selling price and Mr. Buyer has a reservation price of $105,000 minus 3% of the final selling price. Splitting the difference results in a selling price equal to $100,000 and a net benefit to each party of $2,000 better than their reservation price. (Note that, as compared to the base case, the value of brokerage services would have to be at least $3,000 to each party or there would be no incentive to enter into the brokerage agreement.)

In the example above, if the buyer broker commission percentage were greater than the MLS split commission ($c > \alpha k$), the seller will share the additional commission cost and the resulting sales price, and the net benefit to the parties will be lower than in the case where the buyer broker's commission is equivalent to a cooperating broker's.

The third possibility for payment of buyer brokers is a flat-rate contract. The agency literature and intuition clearly indicate that a flat-rate payment scheme is also undesirable since it will likely result in lower effort by the agent (Levmore, 1993). When a contract at any price would give the agent the same payoff, the agent will have no incentive to obtain the best price for the buyer.[20]

In order to better compare the outcomes under each of the agency alternatives considered in this section, Exhibit 1 provides a summary of the outcomes under each scenario. To make the examples more comparable, the buyer broker case used in the exhibit assumes that the commission rate $c\%$ charged by the buyer broker is equal to the commission that a cooperating broker would have received ($\alpha k\%$) so that the total commission for all examples is 6%.

If brokerage services provided to the buyer and seller are valued, then the true benefit to the buyer or the seller for Cases 1–4 is actually the amount indicated in Exhibit 1 plus the value of the services rendered by their respective broker. If the value of the services provided are the same across all of the agency alternatives, we can conclude that the buyer broker arrangement results in the greatest welfare to the principals. The higher sales prices in the single-agent and two-agent cases result in higher commissions to the agents ($6,185.57 compared to $6,000 for the buyer broker case) and commensurately lower total benefit to the principals ($2,000 compared to $1,907.22 each).

Exhibit 1
Summary of Numerical Examples

All examples are the result of a simple sequential bargaining game. The initial assumptions are that the minimum acceptable net to the seller is $95,000 and the maximum acceptable out-of-pocket to the buyer is $105,000. The seller broker charges an MLS split commission of 6% of the negotiated sales price and the buyer broker charges a commission of 3%.

Case	Description	Sale Price	Net Benefit to Seller[a]	Net Benefit to Buyer[b]
0	No Broker	P_0=$100,000.00	$5,000.00 (minus costs)[c]	$5,000.00 (minus costs)
1	One Agent	P_1=$103,092.78	$1,907.22	$1,907.22
2	Two Agents-Disclosed Agency	P_2=$103,092.78	$1,907.22	$1,907.22
3	Two Agents-Undisclosed Agency	P_3=$105,000.00	$3,700.00	0
4	Buyer Broker-Disclosed to Seller	P_4=$100,000.00	$2,000.00	$2,000.00

[a]The net benefit to the seller is defined as the degree to which the net proceeds exceed the seller's required minimum.
[b]The net benefit to the buyer is defined as the degree to which the net cost to the buyer is less than his predetermined maximum.
[c]Without a broker, the buyer and seller will incur additional costs of search, negotiation and transaction which should be netted out for direct comparisons with the brokered scenarios.

The Bargaining Outcome with Agency Costs Considered

The alternatives considered above have assumed that the agent(s) will act in the best interest of the principal(s). There are some inherent incentive compatibility problems[21] in the traditional compensation methods for real estate agents. First, the fact that the commission is contingent on the final sale price (rather than some measure of the degree to which the brokers' actions benefit the principal) makes the incentives of the agent and the incentives of the principal incompatible. This effect is most serious in the case of a buyer-broker who is typically paid as a percentage of transaction price. The buyer wants the lowest price but the broker will be paid more if the negotiated price is higher. However, there are also incentive compatibility problems with seller's brokers. Although Geltner et al. (1991) show that incentive conflicts may intensify as the listing contract nears an end, a recent study by Miceli (1995) suggests that resulting renegotiation of the listing contract may be Pareto-improving.

First consider the wealth maximization problem of the seller's broker. After finding a potential match for the seller, the broker must balance the incremental commission to be received against the effort exerted to negotiate a higher transaction price and the possibility that the buyer will walk away from the transaction. The relatively small share of the increase in sales price that accrues to the broker is unlikely to provide the incentive necessary to negotiate effectively for the highest price. In fact, when the buyer's and seller's valuations are clearly very similar, the difference may not be sufficient to justify further negotiation and both the listing and the cooperating brokers may have incentive to reveal information to the parties in an attempt to close the deal. Brokers have been shown to respond to an incentive system that rewards only completed sales (Ball, 1991).

Numerical Example of Broker's Incentive Conflict

Consider the same facts as the two-broker case with disclosed subagency, i.e., P_s=\$95,000; P_B=\$105,000; α=.5; k=.06. Suppose that the parties have been negotiating and the last bid by the buyer was \$100,000. If the seller's broker knows the buyer's reservation price, she knows that she might be able to get the buyer to contract at a higher price. The incremental benefit to achieving the "split the surplus" transaction price of \$103,092.78 is only 3% of the \$3,092.78 difference or \$92.78.

If the broker does not know the buyer's reservation price, she still has some expectation of that price and it is likely that the monetary incentive is not sufficient to offset the risk that the contract will fall through and a new buyer will have to be found. The incentive incompatibility created by the prevalent form of broker compensation (percentage commission) makes it likely that benefits to sellers and buyers with brokers will be lower than they would be without the agency costs. The problem may be less costly with the entry of more buyer brokers in the business. In addition, reputation effects will partially offset the incentive for brokers to reveal privileged information or to fail to strive to obtain the best price for their principal.

Conclusions and Policy Implications

This study examines the differences in bargaining outcomes under several possible agency arrangements and with different degrees of information asymmetry. Fully disclosed

subagency arrangements are found to result in lower sales prices and a more equitable split of the surplus than those with undisclosed agency since, in the latter case, information costs are born by the buyer. The existence of agency costs may also result in reduced effort or breach of fiduciary duty by brokers on behalf of principals since the incentive to close the sale will generally outweigh the incentive to obtain a higher price (or lower price if they represent the buyer). With buyer brokers, the outcome to buyers and sellers will depend on the method of compensation. With percentage commissions and equal bargaining power, the seller shares the costs of the buyer broker commission, even when the buyer's separate commission exceeds the MLS share of the seller's commission.

In all the agency arrangements considered, the seller's net proceeds are lower and the buyer's net costs are higher than in the no-agent case. However, the additional costs borne by the principals are offset by benefits associated with reduced search, better match with trading partners, and transaction services provided by the brokers. If the value of the brokers' services are similar across agency alternatives, separate representation of each of the principals will result in the lowest sales price and the highest total benefit to the principal, subject to the assumptions used in the analysis in this paper.

At this point there are only a few states that have passed legislation requiring full disclosure of the agency relationship and encouraging the buyer broker or the facilitator type of agency relationship. As this analysis shows, the costs and benefits to the various parties involved can be substantially different and it is important for brokers and regulators of the real estate industry to understand the impact of their policies. If the intent of the buyer brokerage arrangement is to reduce costs to the buyer, this study shows that this outcome does not always occur. Further work in alternative buyer broker compensation schemes is necessary to determine which arrangement is likely to be best for both parties in the transaction. For example, an incentive-compatible contract could be designed that rewards the agent for successfully lowering the sales price.

Notes

[1]An FTC study in 1983 found that 74% of home buyers believed the cooperating broker to be their representative. A 1984 study by the Hawaii Real Estate Commission reported the number at 90% for their sample.

[2]However, states are now moving toward making subagency optional for Multiple Listing Service agreements and removing barriers to alternative forms of agency. For a summary of recent caselaw, see Waller and Waller (1989).

[3]See Black (1992) and Ferguson (1992) for further discussion of the buyer broker relationship.

[4]For example, in the FTC study (1983), 62% of the buyers surveyed indicated that they had been told by the cooperating broker how low a price the sellers would be likely to accept. The study also found evidence that brokers revealed information obtained from the buyers, although such revelation of information might be considered to be consistent with their fiduciary obligation to the principal.

[5]The FTC reported (1983) that 66% of all residential real estate sales involved a cooperating broker.

[6]For example, Colorado recently passed specific legislation defining the rights and duties of various types of brokerage relationships, and buyers must sign a disclosure form indicating they understand the agency relationship they have with the broker. Larsen (1994) provides a table (p. 214) summarizing state-by-state agency disclosure rules as of 1987.

[7]For example, see Arnold (1992), Geltner et al. (1991), and Yavaş (1992). Also see Yavaş (1994) for a thorough review of the literature on the economics of brokerage.

[8]The assumption of expected value maximizing buyers, sellers and brokers is common in the real estate literature.
[9]For the purpose of clarifying the presentation, the seller and the seller's agent will be portrayed as female and the buyer and the buyer's agent as male.
[10]Reservation prices are assumed to be determined based upon all available information and constraints on the parties. Thus, for example, a buyer's reservation price will reflect available downpayment, ability to qualify for a mortgage, the relative supply of available housing in the area, and expectations with regard to the seller's reservation price. The seller's reservation price will reflect the market conditions, mortgage payoff, etc.
[11]Since the exclusive right-to-sell contract is clearly preferable to agents, it is generally more common. In contrast, an exclusive agency contract would require no payment of commission if the seller were to locate the buyer herself. It is also possible that a seller might have incentive to exert effort in finding a buyer if it will result in a better match, but the gains in sale price would have to be offset by the costs to the seller.
[12]However, other researchers have found no price impact or indeterminate price impact resulting from the use of brokers. See Frew and Jud (1987), Jud (1983) and Kamath and Yantek (1982).
[13]Evidence indicates that although, in practice, ω is generally bounded away from both 0 and 1, it is also not generally a 50–50 split. This may be an indication that the parties do not have equivalent information or equal bargaining power (Frew and Jud, 1987).
[14]Commission levels for residential real estate are generally from 5%–7% of the sales price and are typically split 50/50 between the listing and cooperating brokers. However, commission splits are often established by the local Board of Realtors and therefore vary (Miceli, 1991). In addition, commissions within a real estate office may be split in different ways between the selling agent and the owner (broker) of the agency. It is fairly common for high-volume agents to negotiate a higher split with the broker.
[15]Note that even if the buyer does not directly reveal P_B, the broker may be able to ascertain its level by the acquisition of mortgage information and conversations with the buyer about the property in question. Since prequalification is a standard practice in the industry, the broker will have a very good estimate of the maximum price the buyer can afford, although the price he is willing to pay may be lower.
[16]Traditionally, an agreement to act only on behalf of the buyer violated most Multiple Listing Service contracts (which automatically created a subagency relationship). However, agency conflicts and potential for abuse inherent in the strict subagency contract has led to changes in this area.
[17]For example, in Colorado, a broker who only signs exclusive representation contracts with buyers typically negotiates a commission of 3.5% of the transaction price. The seller's broker receives one half of the total commission (usually 6%) specified in the listing contract but the buyer must pay an additional 0.5% of the price for his broker's services.
[18]This is an example of the current trend toward "facilitator" brokers who charge a fixed price or a fee for services rendered. For example, the broker might charge $2,000 for her role in the negotiations, mortgage processing, preparation of documents, and closing.
[19]Although the seller normally assumes that she will pay the entire commission, it will be in the best interest of the buyer to reveal the separate representation. Therefore the seller will bargain under the assumption that she will only have to pay α% of the k% commission.
[20]See Yavaş and Colwell (1994) for a review of incentive-compatible contracts.
[21]In the agency literature, an incentive-compatible contract is one in which the effort level that produces the best outcome to the agent also produces the best outcome to the principal. See, e.g., Rasmussen (1989).

References

Arnold, M., The Principal-Agent Relationship in Real Estate Brokerage Services, *Journal of the American Real Estate and Urban Economics Association*, 1992, 20:1, 89–106.

Ball, J. N., A Comment on the Brokers' Agency Conflict Debate, *Real Estate Review*, 1991, 20:4, 15–16.

Black, R. T., What is the Role of the Buyer's Broker, *National Real Estate Investor*, 1992, 34, 26 & 28.

Bryant, J. A. and D. R. Epley, The Conditions and Perils of Agency, Dual Agency and Undisclosed Agency, *Real Estate Law Journal*, 1992, 21, 117–35.

Federal Trade Commission, *The Residential Real Estate Brokerage Industry: A Staff Report by the LA Regional Offices of the FTC*, Washington, D.C.: US Government Printing Office, 1983.

Ferguson, J. T., The Growing Importance of Buyers' Brokers, *Real Estate Review*, 1992, 21:4, 83–86.

Frew, J. and G. D. Jud, Who Pays the Real Estate Broker's Commission, *Research in Law and Economics*, 1987, 10, 177–87.

Geltner, D., B. D. Kluger and N. G. Miller, Optimal Price and Selling Effort from the Perspectives of the Buyer and Seller, *Journal of the American Real Estate and Urban Economics Association*, 1991, 19:1, 1–24.

Jud, G. D., Real Estate Brokers, Housing Prices, and the Demand for Housing, *AREUEA Journal*, 1983, 23:1, 21–31.

Kamath, R. and K. Yantek, The Influence of Brokerage Commissions on Prices of Single-Family Homes, *Appraisal Journal*, 1982, 50:1, 63–70.

Larsen, J. E., *Real Estate Principles and Practices*, St. Paul, Minn.: West Publishing, 1994.

Levmore, S., Commissions and Conflicts in Agency Arrangements: Lawyers, Real Estate Brokers, Underwriters, and Other Agents' Rewards, *Journal of Law and Economics*, 1993, 36, 503–39.

Miceli, J. T., The Multiple Listing Service, Commission Splits, and Broker Effort, *Journal of the American Real Estate and Urban Economics Association*, 1991, 19:4, 548–66.

———, Renegotiation of Listing Contracts, Seller Opportunism and Efficiency: An Economic Analysis, *Real Estate Economics*, 1995, 23:3, 369–83.

National Association of Realtors, National Homebuying Survey. Chicago, Ill.: NAR, Economics and Research Division, 1988.

Rasmussen, E., *Games and Information*, Cambridge, Mass.: Blackwell, 1989.

Rubenstein, A., Perfect Equilibrium in a Bargaining Model, *Econometrica*, 1982, 50, 97–109.

Salant, S. W., For Sale by Owner: When to Use a Broker and How to Price the House, *Journal of Real Estate Finance and Economics*, 1991, 4, 157–73.

Sykes, A. O., Some Thoughts on the Real Estate Puzzle, *Journal of Law and Economics*, 1993, 36, 541–51.

Waller, N. G. and T. H. Waller, Protecting the Rights and Interests of Homebuyers in Cooperatively Brokered Sales, *Real Estate Issues*, 1989, 14:1, 32–38.

Wolf, G. P. and M. M. Jennings, Seller/Broker Liability in MLS Real Estate Sales: A Case for Uniform Disclosure, *Real Estate Law Journal*, 1991, Summer, 22–53.

Yavaş, A., A Simple Search and Bargaining Model of Real Estate Markets, *Journal of the American Real Estate and Urban Economics Association*, 1992, 20:1, 533–48.

———, Economics of Brokerage: An Overview, *Journal of Real Estate Literature*, 1994, 2, 169–95.

———, Matching of Buyers and Sellers by Brokers: A Comparison of Alternative Commission Structures, *Real Estate Economics*, 1996, 24:1, 97–112.

——— and P. Colwell, Buyer Brokerage: Incentive and Efficiency Implications, *Working Paper Series in Real Estate*, 94-23, Pennsylvania State University, 1994.

Zorn, T. and J. Larsen, The Incentive Effects of Flat-Fee and Percentage Commissions for Real Estate Brokers, *AREUEA Journal*, 1986, 14, 24–47.