Causation of Dual Agency Transactions?
Buyer Choices or Broker Manipulation: Theory and Evidence

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Abstract

A significant portion of residential real estate transactions are dual agency transactions, a situation where the buyer and seller are represented by the same brokerage firm. Recent studies report alarming trends in dual agency transactions with occurrences as high as 48 percent.[1] This study attempts to disentangle the underlying factors that impacts the likelihood of a dual agency transaction, and explores whether dual agency transactions are situational or amenable to influence or manipulation by the listing broker, buyer or seller? Do listing agents influence the terms of the listing contract or persuade the principal to include prohibitive conditions or restrictions (e.g., requiring listing broker to be present at showings) that increase the likelihood of a dual agency transaction? The findings suggest that there is evidence that some listing brokers engage in debatable practices that increase the likelihood of dual agency transactions such as offering the cooperating broker a lower commission split, negotiating longer listing contracts and limiting the amount of information provided in the MLS listing to the public and/or cooperating brokers. Our findings reflect that a listing broker offering a lower commission to cooperating brokers, 2-2.5% or 2.5-3% increases the likelihood of a dual agency transaction by 54% and 43% respectively, relative to a comparable property offering a rate greater than 3% to the cooperating broker. Results also indicate that MLS listing with limited comments or photos are also more likely to be dual agency transactions.

[1] Kadiyali et al, 2014.

1. INTRODUCTION

Sellers of residential real estate are likely to seek out the assistance of a broker in whom they have confidence will assist them in the marketing and selling of their home as quickly as possible at a maximum selling price. Alternatively, buyers seek the expertise of an agent that will assist them in locating a home that satisfies their needs and/or utility as quickly as possible at a minimum price. It is immediately obvious that buyers and sellers have opposing objectives when it comes to transaction price; that is sellers are looking to maximize selling price while buyers have an opposing objective to minimize purchase price. Such intuition may be obvious to an experiences housing consumer, however the typical consumer engages in a very limited number of real estate transactions during his or her lifetime. In fact, it is this inexperience that drives buyers and sellers alike to seek the services of a real estate licensee for assistance in the home buying/selling process. In residential real estate markets, both buyers and sellers rely greatly on the advice and expertise of real estate brokers largely for their superior knowledge and experience. Actually, 88% of buyers and 92% of sellers utilize the assistance of a real estate broker when buying or selling their home (NAR, 2016). Real estate brokers possess superior informational knowledge about the geographical area, market inventories and local trends and are acutely aware of consumer demand in terms of locational preferences as well as property characteristics and associated amenities of available properties listed for sale. Listing brokers may also be aware of situational issues facing the buyer and/or sellers they represent such as divorce, job relocation or financial difficulties. Sellers, entrusting that their broker will act in their best interest, are likely to share relevant information about the listing such as their reservation price. Such a situation may place the broker in a compromising position in attempts to weigh her goal of maximizing commission revenue and minimizing search effort versus efforts to obtain the highest price for the principal (Bian, et al, 2017).

With the increased utilization of real estate brokers by both buyers and sellers, it is reasonable to expect increasing occurrences of dual agency transactions. A potential problem with such an arrangement is that the involved parties (buyers and sellers) may not be fully aware as whom the broker is representing in a dual agency transaction. A Federal Trade Commission (Federal Trade Commission, 1983) study shows that over 74% of buyers mistakenly believed that

the agent showing the property (listing agent) worked for the buyer and not the seller and there is no evidence or data to suggest perceptions have changed over time.

Dual agency has been a contested topic for decades and outright dual agency where the same agent is representing both the seller and buyer, is prohibited in eight states. However, of those eight states, four allow for designated agency,[2] and three allow for transaction brokerage.[3] However, all 50 states allow for a process whereby the broker can earn commission on both sides of the transaction.[4] A designated agency is where the listing agent finds a potential buyer for a property listed by her brokerage firm and in such an instance, the broker would assign a different agent (within the same firm) to represent the buyer. While such an arrangement does not allow for an agent to "double-dip", such an arrangement still poses problems as it is common for information sharing within brokerage firms. In fact, many have weekly meetings to share information concerning new listings. A transaction brokerage is a situation where one or two agents within the same brokerage firm can represent the buyer, seller or both in a non-agency relationship where no duties are owed to either the buyer or seller. That is, neither party's best interest is being represented.

In those states where dual agency is allowed, regulatory authorities still recognize the potential hazards of dual agency and as such require additional disclosures to protect the interests of buyers and sellers. Most states, including the state of Virginia, where the data of this study is collected, simply require a disclosure that mandates that the broker disclose the dual agency relationship and gain permission from both buyer and seller. Consumer advocates claim that it is impossible to represent both the buyer and the seller in the same transaction with complete allegiance, likening it to a law firm representing both the plaintiff and the defendant in the same case (WSJ, 1995). With regard to the sales price, clearly the two principals (seller and buyer) have incompatible incentives. Any gain to the buyer in the form of a lower price, represents a loss to the seller.

There are situations which a dual agency relationship develops out of a circumstance where a potential buyer seeks out the services of a broker to assist with the search and negotiation process of buying a home and said broker has in her inventory a property that coincides with the wants and

[2] Alaska, Colorado, Maryland and Texas
[3] Florida, Kansas and Oklahoma.
[4] https://www.inman.com/2012/02/24/buyer-and-seller-beware-your-agent-may-not-represent-your-best-interests/ (last visited on 9-10-2018).

needs of the buyer. In such a situation, a dual agency relationship might provide transactional and informational efficiencies. Brastow and Waller (2012) find that dual agency transactions can result in informational and transactional efficiencies, particularly those that transact within 30 days of the listing date. The information advantage enjoyed by the listing agent may reduce transactions costs associated with matching a property with potential buyers. Agents who specialize by listing properties in defined geographical areas or properties with heterogeneous attributes (e.g., farmland) possess detailed knowledge of property characteristics and market conditions that may create advantages in matching a property with potential buyers. From another perspective, the listing agent may be aware of internal clients (clients being represented by the listing agent or other agents within the same firm) that are potential buyers which minimizes search costs. There are other circumstances whereby a potential homebuyer may be involved in a dual agency relationship as a result of attending an "open house" for a property which they have an interest. In such a situation, it is natural that buyers seek out the services of the listing agent assuming no prior brokerage representation. Other examples might include buyers discovering a property from a website such as Zillow, newspaper advertisements or other marketing materials, or as a result of observing a "FOR SALE" sign while perusing prospective neighborhoods. Again, in such examples, if the buyers are without brokerage representation, it is reasonable to expect the buyer to make initial contact with the listing broker to seek out additional information or to arrange a tour of the property. In the above scenarios, the buyer plays the most significant role in broker selection which results in a dual agency relationship.

The seller may also have preferences or place demands on the listing agent that might promote a dual agency transaction. For example, a seller might negotiate a commission with the listing broker that is below average for their market which is likely to negatively impact the efforts of cooperating brokers decreasing the likelihood of a cross-agency transaction and thus increasing the likelihood of dual agency transaction. Alternatively, the seller may work with a listing broker without having a signed listing contract or request that the property not be included in the MLS. This absence of this information being provided to cooperating agents will severely negate, if not eliminate any reasonable likelihood of a cross-agency transaction, therefore increasing the probability of a dual agency transaction. The listing price may also influence the likelihood of a dual agency. Determination of the list price is ultimately a seller's decision; however, it is typically made in conjunction and consultation with the listing broker. Most homeowners have an emotional

connection to their property and while such an emotional attachment has value for the owner, it generally doesn't for prospective buyers. Such emotions can come into play as a factor in the listing price of the property as most sellers believe their properties are worth more than market value. A listing broker may choose to accept an overpriced listing but would likely do so out of desperation or with the expectations that the buyer will adjust his/her valuation of their property after observing little or no activity on the listed property (Anderson et al, 2014). Research also shows that listing brokers tend to encourage sellers to price listings at or below current market value in order to earn a commission as quickly as possible (Benjamin and Chinloy, 2000). Our model predicts that when property price increases, the change in the likelihood of dual agency depends on a tradeoff between a higher commission from an internal listing (dual agency transaction) and a higher chance of a successful sale. When the first effect dominates the second effect, the likelihood of dual agency increases; otherwise, the likelihood of dual agency decreases. Assessment using home transaction data provides validation of the model's predictions and discussed later in the paper.

A responsibility of the listing agent is to promote and market the listed property. Such a responsibility can be split into categories; the first being advertising the property in local media, holding open houses as well as marketing the property to cooperating brokers. One such factor in the listing broker's control is the number of pictures included in the MLS profile. One would expect that the number of pictures included in the listing would provide additional information to cooperating brokers as well as to potential buyers searching portals such as Zillow or Reator.com. It is a generally accepted economic principle that consumers prefer more information to less and pictures and descriptions of the property should reveal additional information about the property's design, layout and physical condition, all of which are concerns for potential homebuyers.

The listing broker may take actions, intentional or not, which may increase the likelihood of a dual agency transaction. Some of the factors which the listing broker may control or others which she may have influence include terms of the listing contract including the listing price, commissions, commission splits, length of contract duration[5], requiring the listing agent be present at showings, limiting the number of descriptive comments[6] and/or photos in the MLS profile.

[5] Listing contract length is the time allotted to the listing broker to find a ready, willing and able buyer. The State of Virginia, where the data of this study is collected, requires that every listing contract must have an expiration date.
[6] For example, if the property had granite counter-tops, hardwood floors and cathedral ceilings but none were mentioned in the MLS listing.

There is also space allocated within MLS where the listing broker may provide information to cooperating brokers such as comments about the listed property[7] or showing instructions for cooperating brokers.[8] The listing broker also has a large degree of control as to the allocation of commission to the cooperating or selling broker. For example, if the typical commission in the area is 6% and the listing broker allocates only 2% to the cooperating broker, it is likely to discourage cooperating brokers from showing the property. Listing contract duration is another factor which the listing broker has influence as it is a negotiated term between the seller and listing broker. While the principal (seller) has the ultimate authority as to the amount of time in which to list the property, the listing agent typically presents a contract to the seller that has a predetermined contract duration (e.g., 1 year). If the seller chooses not to agree to the contract duration, the broker may choose not to the accept the listing. Determining an optimal listing contract length can be difficult, as the amount of time to adequately market a property can be impacted by multiple factors such as economic and market conditions, broker inventory, comparable properties on the market, subject property condition and asking price. Given that many properties are being simultaneously marketed by a given broker, it stands to reason that listing brokers would prefer a longer listing contract as it gives them the opportunity to place their immediate efforts on other listed properties with nearing expiration dates. Such a situation increases the likelihood of earning a commission on all listed properties. It is practical that brokers will insist upon extended listing contracts during periods of economic crisis such as the housing and financial crisis in late 2000's. However, it is also possible that listing agents might demand a longer listing contract due to other factors such as increased broker inventory, broker procrastination or for no other reason than increasing the probability of a successful transaction. Furthermore, when agents are financially rewarded by their brokerage firm for selling internal listings, it could create an additional moral hazard as a result of the financial incentives for agents to direct their customers to internal listings first rather than the right match, resulting in dual agency transactions (Han and Hong, 2016). Higher commissions offered to cooperating agents provide a stronger incentive for all agents to find the right match rather than promoting internal listings (at a lower commission) for a bonus from the brokerage company, thus negatively affecting the probability of a dual agency transaction.

[7] An example might include "property being sold as-is".
[8] An example of such comments might include "24-hour notice to show", or "contact listing office for showing instructions".

This paper differs from previous dual agency research in that we are examining the contributing factors which motivate dual agency transactions. The findings provide invaluable insight to housing consumers and policy makers as go the dangers of dual agency transactions in housing markets. The remainder of the paper is organized as follows. Section 2 reviews the literature. Section 3 presents a theoretical model in analyzing the factors that affect the likelihood of dual agency transactions. Section 4 describes the data and econometric setting. Section 5 reports the estimation results and discusses their implications, and Section 6 concludes.

2. LITERATURE REVIEW

The real estate and urban economics literature have a plethora of principal-agent issues as a result of asymmetric information resulting in moral hazard situations impacting consumers. Examples include the relationships between listing price, selling price and/or liquidity in the housing markets examining principal-agent conflicts involving pricing, commissions, agent experience, firm size, broker inventory, contract length, and broker geographic specialization amongst others (Anglin et al, 2003; Turnbull et al, 2018; Bian et al, 2017; Bian et al, 2015; Waller and Jubran, 2012; Yavas and Yang 1995; Anderson et al, 2014; Brastow et al, 2012).

In addition to aforementioned principal-agent issues, agency disclosure problems have also been well documented in the literature (Ball and Nourse, 1988; Miceli, Pancak and Sirmans, 2000; Pancak and Sirmans, 2006; Wiley and Zumpano, 2009) without clear consensus on disclosure requirements. Recognizing such problems, every state now requires agency disclosure, signaling a regulatory reliance on disclosure as an effective tool to reduce informational costs for real estate buyers and sellers and allow them to make more informed choices concerning broker representation (Wiley and Zumpano, 2009). Although agency disclosure is required by every state, the costs of monitoring, policing and enforcing such requirements are significant. There is anecdotal evidence that some market participants report being presented with disclosure and/or disclaimer forms during the final stages of the transaction. The fact that agency disclosure is not required "at the first substantive contact" may put the buyer in the precarious position of providing information to the broker as a result of the perceived brokerage relationship. Wiley and Zumpano (2009) in an examination of agency disclosure find that a large number of homebuyers surveyed were not certain as to whether they received disclosure documents. Such uncertainty raises the

question as to the amount of effort by the listing broker to help the buyer understand the dual agency relationship.

There are a growing number of academic articles concerning dual agency including the impact on marketing outcomes, incentive effects of dual agency, as well as the potential benefits or efficiencies as a result of dual agency. Gardiner, et al. (2007) examine the impact of selling price and marketing duration following the introduction of legislation requiring mandatory disclosure of dual agency and find that dual agency transactions have a negative impact of 8% on selling prices prior to legislation relative to only a 1.4% impact post-legislation. The time required to sell the property also decreased following the mandatory disclosure of dual agency (8.5% pre-legislation; 8.1% post-legislation). In the period following the mandatory legislation, dual agency was found to decrease from 43.8% to 28.1% which provides additional evidence that prior to the legislation brokers may not have been acting in the best interest of their principals (Gardiner, et al. 2007). Although not specifically an investigation of dual agency, Turnbull and Dombrow (2007) analyze how agent and brokerage behavior affect selling price and time on market and suggests that the possibility of dual agency may lead to greater effort by the listing agent resulting in reduced time on market or higher selling prices. The authors argue that such a transaction may result in economies of scope due to "productivity advantages" which may lead to higher sales prices. Clauretie and Daneshvary (2008) contend that as listing contracts near expiration brokers are apt to increase their marketing efforts to sell the property and/or increase their efforts to encourage sellers to accept a lower reservation price. Both of these efforts are likely to increase the likelihood of a dual agency transaction.

Deng et al (2018) examine the impact of internal and external transactions (dual agency versus cross agency) in relationship to market strength from both a theoretical and empirical perspective. The authors conclude that internal transactions are more likely to occur when market demand weakens resulting in a lower selling price. Although not addressing the issue of dual agency, Waller and Jubran (2008) in their investigation of broker experience on marketing outcomes find that the number of real estate agents decreased precipitously following the "dot com" bust in the late 1990's as well as the financial and housing crisis in late 2000's. Relating these findings back to the findings of Deng et al (2018), a declining real estate market results in inexperienced agents exiting the market resulting in fewer agents in the marketplace thus increasing the probability of a dual agency.

Brastow and Waller (2013) examine marketing outcomes over the duration of the listing contract and find that marketing outcomes in dual agency transactions is dependent upon the timing. More specifically, they investigate both the timing and effects of dual agency transactions and find that dual agency transactions are more likely to occur either at the beginning of the listing contract when agents are more likely to enjoy informational advantages and more likely to rationally procrastinate, or at the end of the listing contract when the listing agent faces a potential loss of commission and therefore more likely to exert additional efforts on the principal to either lower the reservation price and/or extend the listing contract. The author's find that in both periods dual agency transactions have lower selling prices than properties that are listed and sold in a cross-agency transaction.

Evans and Kolbe (2005) using repeat home sales find that dual agency produces mixed results across a variety of modeling techniques and data sets. The authors find no evidence that dual agency biased prices. Kadiyali, et al. (2014) find that dual agency transactions distort some outcomes. When their analysis examined properties that sold quickly, they found that listing and selling prices were higher for those properties sold via a dual agency transaction relative to a cross-agency transaction. The authors find, in the overall sample, that dual agency did not have a significant effect on selling price but was associated with higher listing prices and shorter marketing durations. These results are consistent with the hypothesis that agents suggest higher list prices based on knowledge of internal buyer preferences and then systematically show these internally listed properties to internal buyers. The authors conclude that dual agency transactions may be the result of misaligned principal-agent incentives or the result of informational efficiencies enjoyed by the listing agent. Wiley, Waller and Brastow (2013) examine dual agency transactions from both the buyer and seller's perspective using National Association of Realtors homebuyers' survey and MLS transactional data. The authors identify factors which contribute to both the likelihood that a buyer is unrepresented and the likelihood of a dual agent transaction including the experience, or lack thereof, of the homebuyer, the broker's familiarity with the geographical area of the listed property as well as the means of marketing listed properties. The authors conclude that certain factors do contribute to the likelihood of a consumer being unrepresented by a broker resulting in dual agency. Examples include homebuyer experience, familiarity with the area and the marketing means by which they discovered the available property. Johnson, Lin and Xie (2015) study the role of seller type in dual agency transactions and find that

agent-owned properties transact for 6.35% premium; however, sell for a 25% and 5% discount for government and bank-owned properties respectively. They find no significant impact for individuals or corporations. Han and Hong (2016) find that residential real estate agents are more likely to promote their own brokerage firm's listings as a result of the strategic financial incentive of getting both the listing and selling side of the transaction. The authors show that approximately one third of dual agency transactions are the result of an agent's strategic promotion of an in-house transaction motivated by financial incentives.

3. THEORETICAL MODEL

In this section, we present a search model in real estate market and the equilibrium conditions. We extend the model of Han and Hong (2016) in a continuous time search environment with limited duration term of listing contract and continuous arrival of potential buyers. Our theoretical analysis focuses on how various factors contribute to the likelihood of dual agency transactions.

Let us consider a set up where there is one type of buyer, two types of houses (H_1 and H_2), and one selling agent (buyer's agent).

The buyer gets utility $u_1 = H$ from visiting H_1 and $u_2 = L$ from visiting H_2. Let us assume $H > L$. That is, the buyer prefers H_1 to H_2.

The valuation of the buyer v_h for house *h* is learned upon inspection of the house. The buyer incurs a search cost c to visit a house, which follows a cumulative function of $F(c)$. The net utility from visiting a house *h* is derived as following:

$$u_h = \int_{P_h}^{k} (v_h - P_h) dS(v_h)$$

Where $S(v)$ is the cumulative distribution of the v, $k = H$ for house 1 and $k = L$ for house 2.

Besides the difference in matching quality, the two houses are also different in terms of listing contract. H_2 is the selling agent's own listing,[9]with a contract duration of T. H_1 is listed by another brokerage firm. For simplicity, we assume prices of houses are exogenously given as P_1 and P_2. It is consistent with the fact that prices are generally determined by general market conditions.

The selling agent knows the matching quality of each house, due to his superior information of houses available in the market. But he does not know the search cost c of the buyer. We denote θ_1 as the probability that the selling agent shows the buyer H_1 for the initial visit. If $\theta_1 < 1$, it suggests the selling agent strategically markets (or shows) the buyer his own listing, rather than properties listed by other agents, which provide greater utility to the buyer.

Each seller agrees to pay α percent of the property price P, $0 < \alpha \leq 1$, as commission to the listing agent (seller's agent) upon the sale of the property. If the listing agent sells the property, he will receive the full commission, αP. Otherwise, the selling agent (buyer's agent) who first brings a buyer receives $\alpha\beta P$, and the listing agent (seller's agent) receives $(1-\beta)\alpha P, 0 \leq \beta \leq 1$, as commission. Thus, the selling agent will receive net commission rate as $\alpha\beta$ for H_1 and α for H_2 upon a successful sale. When the selling agent sells his own listing, he serves as a dual agent by representing both the buyer and the seller. The buyer arrivals to the selling agent at a rate of λ.

The timing for the model is as follows: the selling agent announces θ_1. After observing θ_1, the buyer decides whether to follow the selling agent's advice. The buyer searches and makes purchase decisions.

Let us assume the buyer's search cost c satisfies the following condition $u(P_2) \leq c \leq u(P_1)$.[10]

With probability θ_1, the selling agent brings the buyer to H_1 first. The buyer will make a purchase and view no additional properties if $v_1 - P_1 > Max\{u(P_2) - c, 0\}$. Since $u(P_2) \leq c$, the buyer will stop her visit for sure.

[9] Own listing is defined as the selling agent's own listing or listings from other agents affiliated to the same brokerage firm as the selling agent.

[10] When $c > u(P_1)$, the buyer will not visit any properties. When $c < u(P_2)$, the buyer will visit both properties regardless of which one the cooperating agent shows her for the first visit. So the intermediate search cost is the interesting part.

With probability $1-\theta_1$, the selling agent brings the buyer to H_2 first. The buyer will buy H_2 and stop search if $v_2 - P_2 > Max\{u(P_1) - c, 0\}$. Otherwise, the buyer will visit both houses. Upon visiting both houses, the buyer compares the two houses and purchases the one that gives her higher utility, which is $\max\{v_1 - P_1, v_2 - P_2\}$. Let us denote the probability that the buyer purchase H_2 as φ,

$$\varphi = Prob(v_2 - P_2 > v_1 - P_1) = \int_{P_1}^{H} \int_{v_1 - P_1 + P_2}^{L} dS_L(v_2)\, dS_H(v_1)$$
$$= \int_{P_1}^{H} \left(1 - S_L(v_1 - P_1 + P_2)\right) dS_H(v_1) \tag{1}$$

Knowing θ_1, the buyer follows the agent's advice if her search cost is below some critical value u. Note that, when $\theta_1 = 1$, $u = u^H(P_1)$ and $u_{\theta_1=1}(\theta_1 = 1) = u^H(P_1) - u^L(P_2)$

The selling agent's expected profit is

$$\pi = \theta_1 \alpha\beta P_1[F(u) - F(u_L)] + (1-\theta_1)\{[\alpha\beta P_1(1-\varphi) + \alpha P_2 \varphi] \int_{u^L}^{u} S_L(P_2 + u^H - c) f(c) dc$$
$$+ \alpha P_2 \int_{u^L}^{u} [1 - S_L(P_2 + u^H - c)] f(c) dc\} \tag{2}$$

Let the discount rate be *r*, where $0 < r < 1$. Since the arrival rate of buyer is λ and the contract term for H_2 is T,[11] the agent's expected payoff is

[11] The commission rate granted from any other listing agent in the market is αβ. The term for the commission rate on external listing could be treated as unlimited in this set up.

$$\Pi = \int_0^{\infty} \{\theta_1 \alpha\beta P_1[F(u) - F(u_L)] + (1-\theta_1)\alpha\beta P_1(1-\varphi)\int_{u^L}^{u} S_L(P_2 + u^H - c)f(c)dc\}\, e^{-(\lambda+r)t}dt + \int_0^{T}\{\alpha P_2 \int_{u^L}^{u}[1 - S_L(P_2 + u^H - c)]f(c)dc + (1-\theta_1)\{\alpha P_2\varphi \int_{u^L}^{u} S_L(P_2 + u^H - c)f(c)dc\}\, e^{-(\lambda+r)t}dt \quad (3)$$

After integration, equation (3) becomes

$$\Pi = \frac{\{\theta_1 \alpha\beta P_1[F(u) - F(u_L)] + (1-\theta_1)\alpha\beta P_1(1-\varphi)\int_{u^L}^{u} S_L(P_2 + u^H - c)f(c)dc\}}{\lambda + r} + \{\alpha P_2 \int_{u^L}^{u}[1 - S_L(P_2 + u^H - c)]f(c)dc + (1-\theta_1)\alpha P_2\varphi \int_{u^L}^{u} S_L(P_2 + u^H - c)f(c)dc\} * (1 - e^{-(\lambda+r)T})/(\lambda + r) \quad (4)$$

Take the F.O.C of Π with respect to θ_1 and solve for the equilibrium θ_1.

We arrive in equilibrium: $\theta_1 < 1$, iff

$$\frac{P_2[1 - e^{-(\lambda+r)T}]}{\beta P_1} > 1 + \frac{f(u^H)(u^H - u^L)}{F(u^H) - F(u^L) - (1-\varphi)\int_{u^L}^{u} S_L(P_2 + u^H - c)f(c)dc} \quad (5)$$

Equation (5) defines the condition when the selling agent strategically promotes his own listing. Any factor that contributes to the inequality in equation (5) will lead to own listing promotion and a higher likelihood of a dual agency transaction.

Proposition 1: A higher commission rate offered to the selling/cooperating agent results in a lower likelihood of dual agency transaction.

Proof.

When the commission rate split to the selling agent β increases, βP_1 increases. The condition in equation (5) is less likely to hold. In other words, the selling agent is less likely to promote his own internal listings when his commission split as a selling agent for H_1 increases. Because if he shows the buyer a match H_1 first and closes the deal immediately, the commission income is higher when β increases

Proposition 2: When property price increases, the change in the likelihood of dual agency depends on a tradeoff between a higher commission from internal listing and a higher chance of a successful sale. When the first effect dominates the second effect, the likelihood of dual agency increases; otherwise, the likelihood of dual agency decreases.

Proof.

When P_2 increases, the commission income from selling own listing and receiving full commission increases. The left-hand side of equation (5) increases and equation (5) is more likely to hold.

In the meantime, the probability that the buyer decides to continue search after visiting H_2,

$\int_{u^L}^{u_1} S_L(P_2 + u^H - c)f(c)dc$, increases. The probability that the buyer decides to buy H_1 after visiting both houses,$(1-\varphi)$, also increases. The right-hand side of equation (5) increases. Equation (5) is less likely to hold. That is, the agent's incentive to secure a successful sale by showing H_1 first dominates that of promoting own listing.

The net change in the probability of dual agency transaction depends on which effect is stronger. When the benefit to complete a cross-agency transaction dominates the benefits from selling own listing, the selling agent is less likely to promote his own listing, therefore the less likelihood of a dual agency transaction.

Similarly, the larger the degree of overpricing (DOP) has two opposite effects on the likelihood of dual agency transaction. Overpriced property may be difficulty to sell after buyer's visit, which makes the equation (5) less likely to hold. On the other hand, higher price creates a stronger incentive for agent to get a full commission by selling own listing, which makes equation (5) more

likely to hold. The net effect of DOP on the probability of dual agency depends on the trade-off between the two effects.

Proposition 3: When length of listing contract increases, the probability of a dual agency transaction increases.

Proof.

When T is larger, equation (5) is more likely to hold. When the contract duration is longer, the selling agent has a higher chance of receiving full commission from sale of own listing. So he has a stronger incentive to promote own listings, increasing the likelihood of a dual agency sale.

Proposition 4: When search cost for the buyer increases, the probability of a dual agency transaction increases.

- When *c* becomes smaller, a buyer is more likely to visit both houses regardless of which one the selling agent shows in the initial visit. Since H_1 generates a higher utility for the buyer, she is more likely to purchase H_1 after the visit, which decreases the likelihood of dual agency transaction

When *c* becomes larger, equation 5 is more likely to hold. Higher search cost makes the visit to H_1 more costly after the initial visit to H_2 , thus leading to a higher chance of a dual agency transaction.

4. DATA

The data for this study consists of residential properties obtained from a Central Virginia multiple listing service (MLS) and includes 341,207 properties marketed for sale over the period January 1999 through October 2015. MLS listing data are entered by agents and many times are laden with errors or missing information. In order to address such issues, the data are carefully reviewed for errors as well as comparing it with government tax records. After culling for incomplete, missing or illogical data that suggest data entry errors, the final data set comprises 313,192 listings of which 202,993 were successful transactions.[12] The data collected from the MLS include typical

[12] Following previous studies, properties were culled that listed for less than $45,000 or more than $1 million, those with less than 400 or more than 15,000 square feet, properties that were greater than 100 years old and those with more than 10 bedrooms.

property characteristics (square footage, bedrooms, baths, etc.), location, market and calendar information (list date, sale date, length of listing contract). Tables 1 and 2 present a variable legend and summary statistics respectively. The average listing price of the typical property is $244,848 with a selling price of $229,027. The typical property is 26 years old, with of 2,040 square feet, 2.0 full bathrooms and 3.5 bedrooms. Approximately, 6.5% of homes were new construction, 16% possessed a basement, and 33% with brick exterior.

Table 3 provides a comparison of means for cross agency versus dual agency transactions. For example, 77% of cross-agency transactions are associated with a 3% commission to cooperating brokers whereas only 68% of dual agency transactions offer 3%. Cross agency or non-dual transactions have a higher listing price (246,134 vs. 235,567), tend to be larger in terms of square footage (2,045 vs. 2,006), have more bedrooms (3.47 vs.3.40) full baths (2.0 vs. 1.99) and half baths (.59 vs. .55). For properties that sold within 3 days of listing, 4.3% were cross agency transactions versus 17.4% that were dual agency transactions. Degree of overpricing (DOP)[13] for the entire sample is 1.98%, however is 2.5% for non-dual transactions and -1.5% for dual agency transactions. Interestingly, agents which are more prone to be involved in a dual agency transaction (50% or more) have a DOP of -13.7% whereas those less likely (0-50%) have a DOP of 2.0%.[14] Table 4 illustrates the number of dual agencies by year and shows that the percentage of dual agencies have declined from 28% in 2000 to a low of 8.01% in 2009 following the housing and economic crisis, however have trended back upward to 9.19% in 2015. Table 5 shows the number and percentage of transactions by price categories. The percentage of dual agency transactions for the entire sample was is 12.7%. For those properties that sold for less than $140,000, between $140,000 and $250,000 and greater than $250,000 the incidences of dual agency were 20%, 17% and 7.9% respectively. These univariate statistics are aligned with the findings of Wiley et. al (2013) which suggests that dual agency transactions are more likely to occur in lower priced properties which may be the result of less educated or less informed buyers.

5. METHODOLOGY

[13] Following Haurin et al (1988).
[14] Results not displayed but available upon request.

We use probit model to estimate the potential effect of a set of variables on the probability of dual agency transaction for houses in the sample. The dependent variable y_n, t = 1, 2, . . . , N, is a realization of a stochastic process that only takes on values one and zero. In our analysis, the value of an observable binary dual agency indicator depends on the type of transaction in the following way:

$$y_n = \begin{cases} 1, if\ the\ transaction\ is\ a\ dual\ agency\ transaction \\ 0, if\ the\ transaction\ is\ a\ cross-agency\ transaction \end{cases}$$

In other words, conditional on the information set Ω_n, y_n has a Bernoulli distribution:

$$y_n|\Omega_n \sim E(p_n)$$

Let $P_n(.)$ denote the conditional expectation and conditional probability given the information set Ω_n, respectively. In the probit model the conditional probability that y_n takes the value 1 can be written as

$$p_n = P_n(y_n = 1) = \Phi(Z_n)$$

where Z_n is a linear function of variables included in the information set Ω_n and $\Phi(.)$is a standard normal cumulative distribution function.

We use the following probit model for estimation,

$$PROB(Dual\ Agency) = \frac{1}{(1 + e^{-Z})}$$

and

$$Z = XB$$

X vector represents the key variables of interest expected to impact dual agency along with property characteristic and market conditions variables. For instance, the property characteristics include property characteristics such as age, size, square footage, vacant or occupied, tenant or owner-occupied, etc. The transaction variables include sale price, DOP, commission rate. Agent's characteristics include agent's experience and listing agent's inventory. The contract terms include length of contract, details on showing, etc. The market controls include mortgage rate and year effect. All variables included in the model can be found in Table 1.

5. RESULTS

The Probit results are displayed in Table 5. The property characteristic variables commonly used in pricing and duration studies such square footage, brick exterior, hardwood and ceramic floors are all significant with the expected signs. New construction (***NEW***) properties are 12% more probable to be a dual agency transaction, while older properties (***AGE***) become less likely by a rate of 1.2% for each additional year of age. Exclusive right to sell listing contracts are the most common in residential real estate which entitles the listing broker to a commission regardless of whom finds the buyer. Brokers with exclusive right to sell listing contracts (***EXCLUSIVE***) are 4.2% more likely to be involved in a dual transaction. Following the work of Xie et al (2015), we examine the type of ownership on dual agency and control for properties owned by corporations, bank-owned or those a part of an estate. ***CORPORATE*** and ***REO*** properties are 4.74% and 19.5% less likely to be involved in a dual agency while ***ESTATE*** owned properties are 11.52% more prone to dual agency.

Referring to ***proposition 1***, which states that dual agency transactions are likely to increase as the commission rate offered to the cooperating or selling broker decreases. More specifically, the lower the amount of commission offered to selling agents, the less likely the property will get shown by external agents. The commission offered to cooperating or selling agents is categorized into four interval variables ***COM=3%; 2.5%<=COM<3%; 2%<=COM<2.5% and COM<2%*** with the omitted variable being commission rates offered above 3%. Each of the commission variables are positive and significant indicating that listing brokers which offer cooperating or selling brokers a commission of 3% or less, are more likely to be involved in a dual agency transaction. holding all else equal. In fact, a 3% commission offered to a selling broker increases the likelihood of dual agency by 31.5%, a cooperating commission rate between 2.5% and 3% increases the likelihood of a dual agency transaction by 43.7%, a commission rate between 2% and 2.5% increase the probability of dual agency 54.9% and rates offered below 2% are 84.4% more likely to end in a dual agency transaction relative to a comparable property with a cooperating commission rate greater than 3%. These findings provide evidence that the listing broker can significantly influence the probability of dual agency by manipulating the commission rate offered to cooperating brokers thereby positively (negatively) influencing the efforts of internal

(cooperating) agents. Decreased search efforts by cooperating agents as result of a lower than normal commission rate offered to selling agent will decrease the arrival rate of buyers and therefore impact the likelihood of dual agency and as such the listing broker benefits by collecting both sides of the commission.

Proposition 2 purports that the role of the listing price on a dual agency transaction depends on the degree of the two effects, which have opposite impacts on the probability of dual agency transaction. Higher priced properties are likely to be positively associated with dual agency transactions when coupled with increased earnings as the result of higher commission from an internal transaction. However, higher priced properties could also negatively affect the likelihood of dual agency due to a lower chance of successful sale. The effect of price on the probability of dual agency depends on the magnitudes of these two opposite effects. The net change in the probability of dual agency transaction depends on which effect is stronger. Our results show that the sales price variable (***LnSale Price***) is negative and significant, suggesting that the agent's incentive to secure a successful sale dominates that of promoting own listing. When the benefit to complete a sale dominates the benefits from selling own listing for high priced property, the selling agent is less likely to promote his own listing, therefore a less likelihood of dual agency transaction. These results are not surprising given that higher priced properties generate more revenue for brokers even so at a lower commission rate.

Proposition 3 puts forth that longer listing contract durations will increase the probability of a dual agency transaction. The length of contract coefficient (***LnLOC***) is positive and significant indicating that properties with longer listing contracts are more likely to be associated with a dual agency transaction. For every 1% increase in listing contract length, the probability of dual agency increases by 1.5%, which would equate to a 15% increase in the likelihood of dual agency for a listing contract extended by just over two weeks based on the sample contract length mean.[15] These results are aligned with the findings of Miceli (1988), Clauretie and Daneshvary (2008), Waller et al (2010), Brastow and Waller (2013), Geltner et al (1991), Wiley et al (2013).

Proposition 4 contends that when search costs increase for the buyer, the probability of a dual agency transaction increases. This proposition encompasses multiple variables that have the

[15] The mean contract length is 177 days, with 195 days representing an increase of 10%.

potential to impact search costs which include broker inventory, broker experience, "hip-pocket" listings, the number of photos or comments included in the MLS listing as well as the number of comments or instructions provided by the listing broker for cooperating brokers.

As the size of brokerage firm inventory increases, (***INVENTORY***) the more likely a dual agency transaction. The ***INVENTORY*** coefficient in positive and significant which indicates that larger broker inventories are more likely to be involved in a dual agency transaction. The listing agent ***EXPERIENCE*** coefficient is negative and significant indicating that more experienced brokers are less likely to get involved in such transactions. Furthermore, the amount of information provided to cooperating brokers and potential buyers via the MLS listing portal including the number of pictures provided (***PHOTO***), the number comments about the property's characteristics or features (***REMARKS***), instructions provided in the MLS record with instructions to cooperating brokers concerning showing the property (***SHOWING INSTRUCTIONS***) or private comments between listing broker and other licensed real estate agents (***AGENT COMMENTS***). Each of these four variables are negative and significant indicating that the more information provided by the listing agent, the less likely a property will be involved in a dual agency transaction. For example, for each additional photo or remark provided in the MLS listing illustrating and/or describing the property, amenities or the neighborhood decreases the probability of dual agency by 0.64% and 1.5% respectively or 6.4% and 15% for an additional 10 photos or remarks. Similar results are found for a decrease in the likelihood of dual agency for showing instructions (-10.8%) and broker to broker comments (-3.2%).

Tenant occupied properties (***TENANT***) are typically more difficult to show due to scheduling conflicts with the occupants many times requiring significant notice or appointments made through the listing broker's office. As a result of the increased efforts required to show these properties, it is less likely to be shown by external agents. In fact, tenant occupied properties are 27% more likely to be a dual agency transaction. Conversely, vacant properties (***VACANT***) are generally easier to show with less restrictive showing requirements and thus are 2.3% less likely to be a dual transaction. Finally, brokers with "hip-pocket" listings (***QUICK SALE***), are those that are not listed in the MLS either by seller's request or agreement with broker and therefore not available to cooperating brokers. As such, these listing are 43% more likely to be part of a dual agency transaction.

6. CONCLUSIONS

Over 20% of residential real estate transactions in North America are dual agency transactions. In this paper, we study the causes and implications of dual agency transactions both theoretically and empirically. Our model predicts that when property price increases, the change in the likelihood of dual agency depends on a tradeoff between a higher commission from internal listing (dual agency transaction) and a higher chance of a successful sale. When the first effect dominates the second effect, the likelihood of dual agency increases; otherwise, the likelihood of dual agency decreases. When the contract duration is longer, the probability of dual agency sale is higher. Larger brokerage firms contribute to a higher likelihood of dual agency transactions. When the search cost for buyer is lower, the probability of dual agency transactions is lower. Assessment using home transaction data provides validation of the model's predictions. Our results show that longer listing contracts, higher commission rates to cooperating agents and requirements for the listing broker to be present at showings all lead to an increased probability of a dual agency transaction. On the contrary, number of remarks, broker-to-broker comments, number of "showing instructions" and the number of property photos provided in the listing all reduce the likelihood of dual agency transactions. "Hip-pocket" listings are associated with higher incidences of dual agency increases. The findings suggest that there is evidence that at least some listing brokers may engage in practices to increase their likelihood of earning both sides of the transaction. Also, several of the variables that proliferates dual agency transactions have a negative impact on the pricing and liquidity of the listed property.

Our findings are particularly important in the current housing markets as most states in the U.S. have now required agency disclosure, indicating a regulatory reliance on disclosure to reduce inefficiency resulted from dual agency transactions. Our result helps homebuyers make more informed choices and constrains agents' ability to strategically promote.

Table 1: Variable Legend[16]

VARIABLE	DEFINITION
DUAL	Dummy variable, 1 if the buyer and seller are represented by same broker, 0 otherwise
COM=3%	Dummy variable, 1 if the commission rate to the selling broker is equal to 3%, 0 otherwise
2.5%=<COM<3%	Dummy variable, 1 if the commission rate to the selling broker is greater than or equal to 2.5% but less than 3%, 0 otherwise
2.%<=COM<2.5%	Dummy variable, 1 if the commission rate to the selling broker is greater or equal to 2 but less than 2.5%, 0 otherwise
COM<2%	Dummy variable, 1 if the commission rate to the selling broker is less than 2%, 0 otherwise
SPRICE	Selling price of property
DOP	Degree of overpricing
NEW	Dummy variable, 1 if the property is new construction, 0 otherwise
INVENTORY	Listing broker inventory
EXPERIENCE	Listing agent experience
LOC	Length of listing contract
QUICK SALE	Dummy variable, 1 if listed property sold with 5 days of listing, 0 otherwise
EXCLUSIVE CONTRACT	Exclusive right to sell listing contract
SHOWING INSTRUCTIONS	Showing instructions for listed property
AGENT COMMENTS	Number of comments provided to cooperating brokers
REMARKS	Number of remarks provided in MLS that is viewable by public
PHOTO	Number of pictures provided by listing broker for public viewing
SQFT	Square footage of living area
AGE	Age of property (years)
BED	Number of bedrooms
FULL BATH	Number of full bathrooms
HALF BATH	Number of half-bathrooms
BRICK	Dummy variable, 1 if brick exterior, 0 otherwise
VACANT	Dummy variable, 1 if property is vacant, 0 otherwise
TENANT	Dummy variable, 1 if property has tenant, 0 otherwise
BASEMENT	Dummy variable, 1 if property has basement, 0 otherwise
HARDWOOD	Dummy variable, 1 if property has hardwood floors, 0 otherwise
CERAMIC	Dummy variable, 1 if property has ceramic floors, 0 otherwise
VINYL	Dummy variable, 1 if property has vinyl floors, 0 otherwise
CARPET	Dummy variable, 1 if property has carpet floors, 0 otherwise
CORPORATE	Dummy variable, 1 if property is listed by corporation, 0 otherwise
ESTATE	Dummy variable, 1 if property listing is an estate, 0 otherwise
REO	Dummy variable, 1 if property listing is bank-owned, 0 otherwise
30 YEAR RATE	30-year FHLMC mortgage rate
TIME	Chronological time variable, 1998.1=1

[16] Housing and parking types not shown but available upon request include condo/townhomes, patio, ranch, cape cod, 2-story, cottage, colonial, manufactured, garage, paved drive, off street and circle drive

Table 2: Descriptive Statistics (All properties)

VARIABLE	OBS	MEAN	STD. DEV.	MIN	MAX
DUAL	313,192	0.1216	0.3268	0	1
COM=3%	313,192	0.7625	0.4256	0	1
2.5%=<COM<3%	313,192	0.2065	0.4048	0	1
2.%<=COM<2.5%	313,192	0.0099	0.0989	0	1
COM<2%	313,192	0.0030	0.0546	0	1
LIST PRICE	313,192	244,848	146,825	45,034	999,999
SALE PRICE	204,993	229,027	133,453	50,000	138,3048
DOP	313,192	0.0198	0.2791	-2.33	2.43
NEW	313,192	0.0630	0.2430	0	1
INVENTORY	313,192	305.32	467.00	0	5078
EXPERIENCE	297,851	13.3785	9.7742	0	55.92
LOC	313,192	176.63	138.66	0	1461
QUICK SALE	313,192	0.0587	0.2351	0	1
EXCLUSIVE CONTRACT	313,192	0.9129	0.2820	0	1
SHOWING INSTRUCTIONS	313,192	2.8853	2.5027	0	17
AGENT COMMENTS	313,192	17.9336	14.8376	0	108
REMARKS	313,192	69.0219	41.7032	0	234
PHOTO	313,192	6.2196	6.4863	0	34
SQFT	313,192	2040.11	911.46	419	14340
AGE	313,192	26.0496	24.9075	0	99
BED	313,192	3.4582	0.8376	1	10
FULL BATH	313,192	2.0048	0.7309	1	9
HALF BATH	313,192	0.5874	0.5468	0	10
BRICK	313,192	0.3346	0.4718	0	1
VACANT	313,192	0.3936	0.4886	0	1
TENANT	313,192	0.0321	0.1762	0	1
BASEMENT	313,192	0.1646	0.3708	0	1
HARDWOOD	313,192	0.4851	0.4998	0	1
CERAMIC	313,192	0.1974	0.3981	0	1
VINYL	313,192	0.2990	0.4578	0	1
CARPET	313,192	0.5686	0.4953	0	1
CORPORATE	313,192	0.1463	0.3534	0	1
ESTATE	313,192	0.0175	0.1312	0	1
REO	313,192	0.0578	0.2333	0	1
30 YEAR RATE	313,192	5.3953	1.0074	3.31	8.64

Table 3: Difference in means (Dual Agency vs non-Dual Agency)

	CROSS AGENCY TRANSACTIONS			DUAL AGENCY TRANSACTIONS			
	N	Mean	Std. Dev.	N	Mean	Std. Dev.	t-value
COM=3%	275,102	0.7743	0.4180	38,090	0.6768	0.4677	42.06
2.5%=<COM<3%	275,102	0.1949	0.3961	38,090	0.2907	0.4541	-43.44
2%<=COM<2.5%	275,102	0.0096	0.0974	38,090	0.0121	0.1092	-4.62
COM<2%	275,102	0.0026	0.0513	38,090	0.0055	0.0742	-9.73
LIST PRICE	275,102	246,134	147,190	38,090	235,567	143,820	13.17
SALE PRICE	167,127	228,348	131,185	37,866	232,025	142,997	-4.84
DOP	275,102	0.0245	0.2772	38,090	-0.0145	0.2901	25.58
NEW	275,102	0.0617	0.2406	38,090	0.0723	0.2589	-7.93
INVENTORY	275,102	318.95	486.01	38,090	206.85	276.05	44.04
EXPERIENCE	261,584	13.3807	9.7881	36,267	13.3625	9.6731	0.33
LOC	275,102	174.47	139.78	38,090	192.19	129.22	-23.40
QUICK SALE	275,102	0.0428	0.2023	38,090	0.1738	0.3790	-103.73
EXC. CONTRACT	275,102	0.9124	0.2827	38,090	0.9168	0.2762	-2.87
SHOWING INSTR.	275,102	2.9296	2.5290	38,090	2.5647	2.2785	26.71
AGENT COMMENTS	275,102	18.3340	14.8525	38,090	15.0419	14.4030	40.69
REMARKS	275,102	70.8435	41.4177	38,090	55.8657	41.3950	66.15
PHOTO	275,102	6.4623	6.5342	38,090	4.4667	5.8366	56.56
SQFT	275,102	2044.88	912.99	38,090	2005.61	899.55	7.88
AGE	275,102	26.26	24.83	38,090	24.5244	25.3525	12.75
BED	275,102	3.4666	0.8372	38,090	3.3973	0.8377	15.13
FULL BATH	275,102	2.0075	0.7295	38,090	1.9853	0.7401	5.57
HALF BATH	275,102	0.5927	0.5463	38,090	0.5493	0.5485	14.53
BRICK	275,102	0.3338	0.4716	38,090	0.3399	0.4737	-2.33
VACANT	275,102	0.3884	0.4874	38,090	0.4315	0.4953	-16.14
TENANT	275,102	0.0315	0.1748	38,090	0.0361	0.1865	-4.71
BASEMENT	275,102	0.1653	0.3715	38,090	0.1593	0.3660	2.94
HARDWOOD	275,102	0.4901	0.4999	38,090	0.4494	0.4974	14.91
CERAMIC	275,102	0.2006	0.4004	38,090	0.1747	0.3797	11.90
VINYL	275,102	0.2991	0.4579	38,090	0.2979	0.4573	0.50
CARPET	275,102	0.5732	0.4946	38,090	0.5354	0.4987	13.94
CORPORATE	275,102	0.1384	0.3453	38,090	0.2032	0.4023	-33.58
ESTATE	275,102	0.0168	0.1286	38,090	0.0226	0.1487	-8.11
REO	275,102	0.0599	0.2373	38,090	0.0423	0.2012	13.84
30 YEAR RATE	275,102	5.3688	1.0104	38,090	5.5864	0.9642	-39.60

Table 4: Dual agency transactions by year

YEAR	NON-DUAL	DUAL	TOTAL	% DUAL
2000	51	20	71	28.17%
2001	2,814	860	3,674	23.41%
2002	17,742	4,582	22,324	20.52%
2003	19,125	4,525	23,650	19.13%
2004	20,705	4,633	25,338	18.28%
2005	23,146	4,638	27,784	16.69%
2006	27,725	4,276	32,001	13.36%
2007	29,127	3,457	32,584	10.61%
2008	26,035	2,428	28,463	8.53%
2009	23,641	2,058	25,699	8.01%
2010	22,879	2,079	24,958	8.33%
2011	19,273	2,150	21,423	10.04%
2012	18,525	2,101	20,626	10.19%
2013	19,846	2,257	22,103	10.21%
2014	18,584	1,938	20,522	9.44%
2015	9,062	917	9,979	9.19%

Table 5: Dual Agency Transactions by Price Categories

VARIABLE	*OBS*	*MEAN*	*STD. DEV.*
SP>45K	210,576	0.1274	0.3334
45K<SP<140K	36,563	0.2035	0.4026
140K<SP<250K	60,623	0.1714	0.3769
SP>250K	113,390	0.0793	0.2701

Table 6: Probit Results (Dependent Variable is Dual Agency)

DUAL	COEF.	STD. ERR.	Z	P>Z
COM=3%	0.3147	0.0339	9.28	0
2.5%=<COM<3%	0.4368	0.0357	12.24	0
2.%<=COM<2.5%	0.5493	0.0531	10.34	0
COM<2%	0.8445	0.0799	10.57	0
LN(SPRICE)	-0.4079	0.0267	-15.3	0
DOP	0.4082	0.0312	13.1	0
NEW	0.1219	0.0241	5.06	0
INVENTORY	4.06E-05	1.81E-05	2.25	0.025
EXPERIENCE	-0.0009	0.0004	-2.07	0.038
LN(LOC)	0.0148	0.0066	2.23	0.025
QUICK SALE	0.4435	0.0137	32.39	0
EXCLUSIVE CONTRACT	0.0417	0.0149	2.8	0.005
SHOWING INSTRUCTIONS	-0.0108	0.0019	-5.64	0
AGENT COMMENTS	-0.0032	0.0003	-9.95	0
REMARKS	-0.0015	0.0002	-9.83	0
PHOTO	-0.0064	0.0013	-5.01	0
SQFT	0.5632	0.0316	17.83	0
AGE	-0.0118	0.0009	-12.6	0
BED	-0.1034	0.0082	-12.66	0
FULL BATH	0.0403	0.0103	3.91	0
HALF BATH	-0.0474	0.0104	-4.54	0
BRICK	0.0617	0.0098	6.29	0
VACANT	-0.0233	0.0110	-2.11	0.035
TENANT	0.2670	0.0255	10.46	0
BASEMENT	0.0752	0.0120	6.27	0
HARDWOOD	0.0434	0.0103	4.23	0
CERAMIC	0.0193	0.0120	1.61	0.107
VINYL	-0.0567	0.0101	-5.61	0
CARPET	-0.0353	0.0099	-3.55	0
CORPORATE	-0.0474	0.0147	-3.22	0.001
ESTATE	0.1152	0.0294	3.92	0
REO	-0.1948	0.0221	-8.8	0
30 YEAR RATE	0.0551	0.0086	6.39	0

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