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Principal-Agent Conflict and Seller's Strategy Approaching Listing Contract Expiration

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Principal-Agent Conflict and Seller's Strategy Approaching Listing Contract Expiration

Abstract

Real estate markets are excellent venues in which to study principal-agent incentive misalignments. Buyers and sellers who face relatively higher information costs rely on agents to reduce information costs and to assist their negotiation. Previous literature has focused on a typical dilemma real estate agents face – sales price versus time on market (TOM). This paper analyzes sellers' behavior when an exclusive listing contract nears an unsuccessful expiration.

Introduction

Typical sellers will hire a broker whom they trust to be capable of selling their home while maximizing the selling price. The information advantage the broker has is one dominate reason for a broker being hired. The principal-agent conflict would occur due to the misalignment of incentive caused by asymmetrical information. Previous research has been conducted in this field. Most of the research focuses on the conflict of interest between the Principle and the Agent and how Agent's reaction would be in different types of dilemmas. (For example, the dual agency dilemma (Waller and Brastow, 2009) and the change of Agents' performance when they sell their own houses (Levitt and Syverson, 2008).) However, no previous research has focused on how sellers' reactions would be near the listing contract expiration. In addition, traditional empirical real estate studies neglect the distinction between houses that are sold in their original contract and houses that have their contracts relisted or extended, since extensions typically result in a longer Time on Market (TOM).

The seller's incentive is predictable near listing contract expiration. If the sellers still want to sell the house, they will find a way to keep the house on market. If not, they will just withdraw the contract or let the contract expire. This paper will primarily discuss the previous situation, which is the sellers still want to keep the house on market. Therefore, the seller will choose one of the five following strategies:

- 1) Category 1: withdraw with a different broker (wdf)
- 2) Category 2: withdraw with the same broker (wsm)
- 3) Category 3: expired with a different broker (edf)
- 4) Category 4: expired with the same broker (esm)
- 5) Category 5: extension

The data set used to analyze the seller's strategy is from the Central Virginia Multiple Listing Service (MLS), the organization within which local brokers make listings available to one another and to the public.

The paper employs Multinomial Logistic Regression in the analysis. Multinomial Logistic Regression is used when the dependent variable in question is nominal (a set of categories which cannot be ordered in any meaningful way) and consists of more than two categories. In practice, Multinomial logistic regression compares multiple groups through a combination of binary logistic regressions. The coefficient in the Multinomial Logistic Regression measures the effect of the variable on the probability of the home being in that category relative to the probability of the home being in the reference category. In this paper, five categories are created to determine which strategy is most likely to be chosen by the seller:

- 1) Category 1: withdraw with a different broker (wdf)
- 2) Category 2: withdraw with the same broker (wsm)

- 3) Category 3: expired with a different broker (edf)
- 4) Category 4: expired with the same broker (esm)
- 5) Category 5: extension

Category 5 is used as the benchmark in the paper.

Literature review

Agents perform differently when they sell their own house. Research analysis shows that real estate agents' selling price is 3.7% (about 7600 USD) higher than ordinary house owners' selling price (Levitt and Syverson, 2008) and agents' selling period is 10% (10 days) longer than the ordinary house owners' selling period. Levitt and Syverson conclude that the information advantage and the commission structure combine to cause the agents sell their clients' house in a quick but low price method.

Empirical results in Rutherford, Springer and Yavas (2005) shows that real estate agents sell agent-owned houses no faster but in a higher price than non-agent owned houses. The empirical evidence demonstrates that agency problem exists in the traditional percentage commission system. Agents expend less effort for their clients, since the commission structure gives the agent relatively little incentive to expend more resources to achieve a higher selling price.

Asabere, Huffman, and Johnson represented the first empirical analysis in the relationship between sales price and listing contract expiration. They find sellers gain a daily premium from the longer contract length but incur a cost as contract expires. This issue has been further discussed by Waller, Brastow, and Johnson.

Clauretie and Daneshvary conclude that the negative price effect is associated with an upcoming expiration of the sales contract. They discovered that the price-reduction effect dominates the

broker- increased-effort effect near the contract expiration date. The result is consistent with the Miceli and Waller, Brastow, and Johnson discussion of incentive effects of contract length.

Agents are concerned about contract expiration. Clauretie and Daneshvary find that the price falls at the end of the contract and attribute that to agents convincing sellers to accept low prices. Additionally, their finding is consistent with Asabere, Huffman, and Johnson's empirical result that without accounting for time-to-expiration of the list contract, the price-TOM tradeoff model is biased.

Miceli (1989) examined the use of a restriction on the length of real estate listing contracts to ensure the high quality of brokers' efforts. Miceli concludes that this method is potentially effective since it attaches a cost to the broker if he does not to perform his duty. On the other hand, it is also costly to the seller if the broker actually failed to sign the contract. Therefore, the optimal contract length is the balance between the cost to renegotiate a contract and the benefits of a short listing period.

Base on Miceli's theory, Waller, Brastow, and Johnson (2009) find that brokers' efforts will decrease as the length of contract period increases. It can be reflected in lower search intensity, low arrival rates, and an increase in Time on Market (TOM).

Methodology

As a listing contract nears expiration, the seller must choose one strategy from five options below:

- 1) Category 1: withdraw with a different broker (wdf)
- 2) Category 2: withdraw with the same broker (wsm)
- 3) Category 3: expired with a different broker (edf)
- 4) Category 4: expired with the same broker (esm)
- 5) Category 5: extension

For properties that do not sell within the initial listing contract but do sell later, does the seller's choice of agent affect eventual sales price?

Methodology: Using data on properties that did not sell in the initial contract but did eventually sell, a hedonic price regression will be run using dummy variables for the seller's choice of options and controlling for house characteristics, location, and market conditions.

For properties that do not sell within the initial listing contract, does the seller's choice of agent affect the eventual Time on Market (TOM)?

Methodology: Using data on properties that did not sell in the initial contract but were extended or relisted, a hedonic TOM regression will be run using dummy variables for the seller's choice of options and controlling for house characteristics, location, and market conditions.

For properties that do not sell with the initial listing contract, which variables influence the seller's choice?

- 1) Category 1: withdraw with a different broker (wdf)
- 2) Category 2: withdraw with the same broker (wsm)
- 3) Category 3: expired with a different broker (edf)
- 4) Category 4: expired with the same broker (esm)
- 5) Category 5: extension

Methodology: Using data on properties that did not sell in the initial contract, multinomial logistic regression applied to determine the change of the probability of being in one category relative to the omitted or reference category.

Extension (outcome = 5), used as the reference category, implies the outcome of staying with the same broker, because the research is primarily concerns about the factors that influence the decision whether to extend or to withdraw with different agents versus the decision to allow the contract to expire.

Empirical Model

As previously mentioned, the data set for this paper is from a Central Virginia Multiple Listing Service (MLS), the organization within which local brokers make listings available to one another and to the public. Transactions occurred between January 2000 and May 2009 and represent all homes where a listing agent was employed regardless of whether the property eventually sold. The data set consists of 21,209 separate listing observations. Culling incomplete or incorrectly entered data left a sample of 19, 969 of which 12,256 (61.3%) were sold.

This paper analyzes outcomes for properties when a contract expires, or nears expiration, without a sale having occurred. During the term of the listing contract, the owner may decide to withdraw the property from the market (and the MLS). As the contract nears expiration without a sale, the owner may choose to extend the existing contract or simply allow the contract to expire. Once a property is off the market (and out of the MLS data base) either through withdrawal or expiration, the owner may decide to relist the property – with the same broker or with a different one.

Over the entire sample 4117 (19.2%) of the contracts were extended at least once¹. Those properties may have subsequently been sold, been withdrawn from the market, or the listing contract allowed to expire. Slightly more than 500 properties were withdrawn from the market and subsequently relisted. Of those, 280 were relisted with the same broker and 247 were relisted with a different broker. An additional group of over 600 sellers allowed the listing contract to expire and subsequently put the house back on the market. Of those, 413 relisted the property with a same broker and 223 relisted with a different one.

Results

 $^{^{\}scriptsize 1}$ Due to the deficiency of the dataset, the number of extension is unknown.

Based on the *sale price regression*, if the seller chose to withdraw and then relist the contract with the same broker, the sale price would be higher. (Table 5) If the seller chose to let the contract expire, the sale price would be influenced by which broker the seller chose. (Table 1&2) If the listing agent has more experience, the sales price of the listing property would increase. (Table 1 to Table 5) If FRMSD, which is the fixed rate mortgage at the sale date, goes up, sales price will goes up as well. (Table 1 to Table 9)

Factors the lead Sales Price Increase								
Seller's Strategy	Broker	Broker Licenses	Years Licenses	FRMSD				
withdraw and relist	Same Broker		Longer	Increase				
expired and relist		Advanced License	Longer	Increase				
extended			Longer	Increase				

For the *regression conducted on TOM*, if Invomkt, Inventory on the market (number of houses on the market when the house is listed) increase, TOM increase (Table 6 to Table 9). If Invonla, Amount of house listed on the market by the broker, increase, TOM decreases (Table 6 to Table 9). Time variable, which used to capture the change in market condition, tends to be significant and negative (Table 6 to Table 10).

Factors the lead Time on Market (TOM) Increase									
Seller's Strategy	Invomkt	Invonla	Time variable	FRMSD					
withdraw and relist	Increase	Decrease	Decrease	Increase					
expired and relist	Increase	Decrease	Decrease	Increase					
Extended	Increase	Decrease	Decrease	Increase					

Based on *Multinomial Logistic Regression*, for withdraw houses, Invonmkt (Inventory on Market) and Invonla (Inventory of the Listing Agent) are always significant and negative, which means that with the increase in Invonmkt or Invonla, seller would less likely to withdraw the contract or let the contract expire. For the Time variable—with an increase in Time variable, the seller is most likely to let the contract expire and relist with the same broker. In addition, if the agent is a salesman or associates, the seller is more likely to withdraw.

Conclusion

The results show that sellers who relist with the same broker (wsm) sell their home at a higher price and sellers who withdraw and relist with a different broker sell at a lower price. The same effect occurs when the contract is extended (When the contract is allowed to expire, esm and edf are not significant). One possible explanation is that when the seller withdraws a home and relists with the same agent they get the benefit of the agent's familiarity with the property. A possible explanation for Esm's insignificancy is that the withdrawal signals more aggressive sellers than those who allow the contract to expire and then relist.

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LNSP – ln(selling price)

LNTOM – ln(Tom on Market)

INVONMKT – (inventory on market)

INVONLA – (inventory on listing agent)

YEARSLICENSE - the number of years of agent's license

SALESMAN – agent who is a salesman

ASSOCBROK - agent who is a associate broker

PRINBROK – agent who is a principle broker

LNSQFT - ln(square foot of the room)

LNAGE - ln(age)

TOM - time on market

BEDROOMS - the number of bedrooms in the house

FULLBATH – the number of full bathroom in the house

HALFBATH - the number of half bathroom in the house

GARAGE1 - the number of garage in the house

FIRE1 – the number of fire place in the house

BRICK – whether the house is build of brick

VINYLSIDING - whether the house is build of vinyl siding

CARPET – whether the house has a carpet

HARDWOOD – whether the house made of hardwood

POOL – whether the house has a pool or not

VACANT - whether the house is vacant or not

TENANT – whether the house has a tenant

BEDFORD -- location

FOREST -- location

APPOMATTOX -- location

LYNCHBURG -- location

BROOKNEAL -- locaiton

MADISONHEI~S -- location

TIME – time variable, portery

FRMSD - fixed rate mortgage on sales date

	Source	SS	df		MS		Number of obs F(29, 1980)		2010 215, 49
	Model Residual	374.204015 118.560336	29 1980		9035867 9878958		Prob > F R-squared Adj R-squared	=	0.0000 0.7594 0.7559
	Total	492.764351	2009	. 24	5278423	*	Root MSE	=	. 2447
•	Insp	Coef.	Std.	Err.	t	P> t	[95% Conf.	In	terval]
	edf invonmkt invonla /earslicense salesman prinbrok lnsqft lnage tom bedrooms fullbath halfbath garagel firel brick vinylsiding carpet hardwood pool vacant tenant bedford forest appomattox lynchburg brookneal adisonhei~s	0163188 0000162 . 0004662 . 0009585 0370921 0090018 . 7076414 1013962 . 0002422 0245038 . 0851039 . 0485699 . 1453115 . 058549 . 0487492 0497495 0669096 . 0777394 . 0325017 0742502 0550658 . 0620953 . 0050849 0240469 0867762 4138644 0571421	.0147 .0000 .0003 .0002 .0168 .0233 .0281 .0053 .0001 .0119 .0118 .0128 .0139 .0161 .0126 .0147 .0147 .0147 .0147 .0150 .0347 .0150 .0150	1162 8091 8091 8997 8768 8897 6057 408 4774 921 776 2261 5224 721 434 114 2294 726 887 493 102 887 8571 149 758	-1.10 -1.00 1.51 3.20 -2.20 -0.38 25.12 -19.11 1.72 -2.54 7.10 4.12 11.33 4.20 4.11 -3.84 -4.15 6.16 2.20 -6.23 -1.19 2.35 0.25 -0.69 -5.77 -3.35 -2.07	0.269 0.317 0.132 0.001 0.028 0.700 0.000 0.000 0.005 0.011 0.000	1459643 .0103007 0344987 0922706 1162938 655901 1112309 .0143634	(((((((((((((-	0126458 0000155 0010725 0015463 . 003994 0368693 7628855 0909908 0005183 0055836 1086223 0716645 1704657 0859119 0720323 0243654 0353126 .025077 061473 0508951
	frmsd _cons	.0524291 6.010799	. 01329 . 20014		3.94 30.03	0.000	.0263483 5.618274		785099 403325

Table 1 the seller let the contract expired then relisted with a different broker using ln(Selling Price) as a dependent variable

Source	55	df		MS		Number of obs F(29, 1980)	= 2010 = 215,48
Model Residual	374.198593 118.565759	29 1980		033997 0881696		Prob > F R-squared Adj R-squared	= 0.0000 = 0.7594 = 0.7559
Total	492.764351	2009	. 245	278423		ROOT MSE	= .24471
lnsp	Coef.	Std. E	rr.	t	P> t	[95% Conf.	Interval]
esm invonmkt invonla yearslicense salesman prinbrok lnsqft lnage tom bedrooms fullbath halfbath garage1 fire1 brick vinylsiding carpet hardwood pool vacant tenant bedford forest appomattox lynchburg brookneal madisonhei~s time	0206188000164 .0004581 .00092803724890090334 .70697251016315 .00024630244776 .0846079 .0490807 .1454843 .0588862 .04824620500450670704 .0783596 .032048207508190567807 .0600967 .00568460235582085712940588160561794 .0164338	. 01939 . 00001 . 00030 . 01687 . 023 . 02814 . 00530 . 00014 . 01200 . 01177 . 01282 . 01396 . 01187 . 01262 . 0147 . 011 . 04635 . 02646 . 02016 . 03479 . 01499 . 12364 . 00104 . 00104 . 00104 . 00104	652 1991 1004 151 139 167 167 169 169 178 178 179 171 171 171 171 171 171 171 171 171	-1.06 -1.01 1.48 3.31 -2.21 -0.39 25.12 -19.16 1.75 -2.54 7.05 4.17 11.34 4.22 4.06 -3.87 -4.16 6.21 2.17 -6.33 -1.22 2.27 0.28 -0.68 -5.72 -3.28 -2.04	0. 288 0. 311 0. 139 0. 001 0. 027 0. 699 0. 000	6483629	.0174167 .0000153 .0010644 .0015819 0041541 .0368382 .7621729 0912301 .00055571 .1081436 .07218 .1706377 .0862653 .0715388 0246719 0354734 .1031189 .0610263 0518028 .0341252 .1119913 .0452395 .0446845 0563101 1634003 0021289 .0184782 .0791655
frmsd _cons	. 0531224 6. 010756	. 20015		4.00 30.03	0.000	5.61821	6.403302

Table 2 the seller let the contract expired then relisted with the same broker using ln(Selling Price) as a dependent variable

Source	55	df	M5		Number of obs F(29, 10704)	
Model Residual	1880. 2291 632. 635369		64.8354863 .059102706		Prob > F R-squared Adj R-squared	= 0.0000 = 0.7482
Total	2512.86447	10733	. 234125079		Root MSE	= .24311
lnsp	Coef.	Std. E	rr. t	P> t	[95% Conf.	Interval]
extended invonmkt invonla yearslicense salesman prinbrok lnsqft lnage tom bedrooms fullbath halfbath garage1 fire1 brick vinylsiding carpet hardwood pool vacant tenant bedford forest appomattox lynchburg brookneal madisonhei~s time	0244549 000153 . 0001396 . 0004489 . 0061631 . 0295191 . 6707705 1097485 . 0002916 0131733 . 0752954 . 0390907 . 1255768 . 0864228 . 0165541 0730024 0493226 . 0760436 . 0327963 087146 0723429 . 0318481 . 0102973 0364341 0769914 3151575 0521295 . 0162242	.00822 7.24e-(.00014) .00013 .00695 .00991 .0123 .002196 .005310 .00599 .005556 .005996 .005146 .00556 .006885 .005464 .006324 .006324 .014828 .014828 .0148428 .006497 .043434 .011524	06 -2.12 1.00 7 3.43 82 0.89 74 2.98 82 54.45 67 -49.96 9 4.63 18.13 14.18 16. 7.68 12.59 18.14 19.15 19.15 10.17	0.003 0.034 0.319 0.001 0.376 0.003 0.000	040578100002950001351 .00019260074762 .0100791 .64662091140545 .00016820214218 .0648862 .0291081 .1146811 .0746639 .00646680838947062828 .0653313 .020027409758351132907 .010340300605240655007089727740029660747198 .0153528	0083316 -1.14e-06 .0004144 .0007052 .0198024 .0489591 .694921054425 .0004150049249 .0857046 .0490732 .1364725 .0981816 .026641406211010358172 .0867558 .045565307670850313952 .053356 .02664710073676064255123001840295391 .0170957
frmsd _cons	. 0349679 6. 392883	.005235	2 6.68	0.000	.024706 6.22333	. 0452299 6. 562436

Table 3 the seller extended the contract using ln(Selling Price) as a dependent variable

Source	55	df	MS		Number of obs	= 2010 = 215.78
Model Residual	374.322955 118.441397		2.9076881 059818887		Prob > F R-squared Adj R-squared	= 0.0000 = 0.7596
Total	492.764351	2009 .2	45278423		ROOT MSE	= .24458
lnsp	Coef.	Std. Err	. t	P> t	[95% Conf.	Interval]
wdf invonmkt invonla yearslicense salesman prinbrok lnsqft lnage tom bedrooms fullbath halfbath garagel firel brick vinylsiding carpet hardwood pool vacant tenant bedford forest appomattox lynchburg brookneal madisonhei~s time	0300257 0000173 . 0004636 . 0009478 037755 0102962 . 7086234 1016223 . 0002447 0244014 . 0851765 . 0483153 .1455409 . 0568946 . 0482909 0506717 0663179 . 0791782 . 0326547 0749 0565468 . 06258 . 006324 0238421 0843518 4170419 0548608 . 0164314	.0167576 .0000162 .000309 .0002996 .0168659 .0233817 .0281553 .0053007 .0001404 .0096425 .0119861 .0117714 .0128191 .013968 .011867 .0129325 .0161079 .0126294 .0147655 .0118638 .0463222 .0263991 .0201569 .0347694 .0149853 .1233663 .0275519 .0010413	-1.79 -1.07 1.50 3.16 -2.24 -0.44 25.17 -19.17 1.74 -2.53 7.11 4.10 11.35 4.07 4.07 -3.92 -4.12 6.27	0.073 0.285 0.134	06289000490001423 .000360207083170561514 .65340631120178000306043312 .0616698 .0252297 .1204005 .025017807603440979081 .0544099 .003697109816681473921 .01080703320709203061137404	.0028387 .0000144 .0010696 .0015354 0046782 .0355591 .7638404 0912267 .00052 0054908 .1086833 .071401 .1706813 .084288 .0715639 025309 0347278 .1039466 .0616123 0516332 .0342985 .1143531 .045855 .0443464 0549632 1751006 000827 .0184737
frmsd _cons	. 0532448 6. 000493	.013272 .2001813	4.01 29.98	0.000	. 0272162 5. 607905	. 0792734 6. 393081

Table 4 the seller withdraw the contract then relisted with a different broker using ln(Selling Price) as a dependent variable

Source	55	df	MS		Number of obs F(29, 1980)	
Model Residual	374. 320548 118. 443804		9076051 9820103		Prob > F R-squared Adj R-squared	= 0.0000 = 0.7596 = 0.7561
Total	492.764351	2009 .24	5278423		Root MSE	= .24458
lnsp	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
wsm invonmkt invonla yearslicense salesman prinbrok lnsqft lnage tom bedrooms fullbath halfbath garage1 fire1 brick vinylsiding carpet hardwood pool vacant tenant bedford forest appomattox lynchburg brookneal madisonhei~s	.0335396000017 .0004679 .000961703779760087749 .7065478101363 .00025410243818 .0844351 .0493758 .1450341 .0580723 .049274804966440670683 .0780075 .032525407622160539076 .00591076 .0060911024294208539114108930564746 .0163905	.0188374 .0000162 .000309 .0002994 .0168663 .0233783 .028121 .005302 .0001403 .0096427 .0119918 .0117737 .0128214 .0139453 .0118714 .0129338 .0161031 .0126174 .0147651 .0118713 .0463339 .0264411 .0201564 .034768 .0149779 .1233649 .027547	1.78 -1.05 1.51 3.21 -2.24 -0.38 25.13 -19.12 1.81 -2.53 7.04 4.19 11.31 4.16 4.15 -3.84 -4.16 6.18 2.20 -6.42 -1.16 2.24 0.30 -0.70 -5.70 -3.33 -2.05	0.075 0.295 0.130 0.001 0.025 0.707 0.000 0.000 0.070 0.012 0.000	00340350004870001381 .00037450708753054623565139811176110000210432927 .0609172 .0262858 .1198893 .0307233 .02599307502980986491 .0532627 .003568609950311447759 .0072524033438909248114765365283161104987 .0143488	.0704827 .0000148 .0010738 .0015489 0015489 007738 .7616976 0909649 .0005292 005471 .107953 .0724659 .1701789 .0854213 .0725566 024299 0354876 .1027524 .0614822 05294 .0369608 .1109629 .0456212 .0438915 0560169 1689543 0024504 .0184322
frmsd _cons	. 0532864 6. 009153	. 0132722 . 2000302	4.01 30.04	0.000	. 0272574 5. 616861	.0793153 6.401445

Table 5 the seller withdraw the contract then relisted with the same broker using ln(Selling Price) as a dependent variable

Source	55	df	MS		Number of obs F(30, 1979)	
Model Residual	792.066885 350.3029		022295 010056		Prob > F R-squared Adi R-squared	= 0.0000 = 0.6934
Total	1142.36979	2009 . 568	3626075		ROOT MSE	= .42073
Intom	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
edf invonmkt invonla yearslicense salesman prinbrok lnsqft lnage lnloc bedrooms fullbath halfbath garagel firel brick vinylsiding carpet hardwood pool vacant tenant bedford forest appomattox lynchburg brookneal madisonhei~s time timesq	.0124343 .0005446 0015507 .0002091 0278211 .036369 .1267247 00648 .527906 001285 020108 020289 0102992 0280979 .0023332 .0345349 .027377 .0438658 .0288485 .0443828 .1220698 0106734 0358274 1360418 1006077 .1009823 0237101 0160211 0001961	.0253761 .0000161 .0005116 .0005157 .0290229 .0402045 .0483434 .0091274 .0230517 .0166045 .0206291 .0202288 .0220545 .02399 .020413 .0222751 .0277281 .0217117 .0253981 .0204699 .0796979 .0454166 .0346316 .0597987 .0258737 .2122008 .0474397 .0090825 .0001992	0.49 33.88 -2.92 0.41 -0.96 0.90 2.62 -0.71 22.90 -0.08 -0.97 -1.00 -0.47 -1.17 0.11 1.55 0.99 2.02 1.14 2.17 1.53 -0.24 -1.03 -2.27 -3.89 0.48 -0.50 -1.76 -0.98	0. 624 0. 000 0. 004 0. 685 0. 338 0. 366 0. 009 0. 478 0. 000 0. 938 0. 330 0. 316 0. 641 0. 242 0. 909 0. 121 0. 324 0. 043 0. 256 0. 030 0. 126 0. 814 0. 301 0. 023 0. 000 0. 634 0. 617 0. 078 0. 325 0. 000	0373323 . 0005131 0025934 0008023 0847398 0424786 . 0319154 0243803 . 4826979 0338491 060565 059961 0535516 0751461 0377001 0091502 0270023 . 0012855 0209612 . 0042379 0342307 0997428 1037457 2533168 1513501 3151783 1167471 0338333 0005869 . 0478112	.062201 .00057620005081 .0012206 .0290975 .1152167 .221534 .0114202 .5731141 .0312792 .020349 .019383 .0329532 .0189503 .0423665 .0782201 .0817563 .0864461 .0786583 .0845277 .2783704 .0783959 .032090901876690498652 .5171428 .0693268 .0017912 .0001946 .1510659
frmsd _cons	.0994385 1677621	.0263248 .3971736	3.78 -0.42	0.673	9466844	.6111602

Table 6 the seller let the contract expire and relisted with a different broker using lnTOM as a dependent variable

Source Model Residual Total	792.025497 350.344288 1142.36979	1979 .17	MS 4008499 7030969 8626075		Number of obs F(30, 1979) Prob > F R-squared Adj R-squared Root MSE	= 149.13 = 0.0000 = 0.6933
Intom	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
esm invonmkt invonla yearslicense salesman prinbrok Insqft Inage Inloc bedrooms fullbath halfbath garage1 fire1 brick vinylsiding carpet hardwood pool vacant tenant bedford forest appomattox lynchburg brookneal madisonhei~s time timesq frmsd	.0026556 .0005447 0015466 .0001977 0275657 .0365318 .1277182 0063226 .5275523 0013294 0200238 0204614 0104157 0279999 .0024765 .034876 .0274454 .0434793 .0289712 .0451583 .1227668 010263 0364422 1357804 1017105 .0998675 0245883 0161426 0001925 .0985446	.033502 .0000161 .0005316 .0005168 .0290214 .0402065 .048313 .0091229 .023055 .0166055 .0206427 .0202345 .0220546 .0240019 .0204228 .0222657 .0277297 .0217011 .0254044 .0204084 .0797043 .0455081 .0346127 .0598177 .025778 .21259 .0474079 .0002 .0002	0.08 33.87 -2.91 0.38 -0.95 0.91 2.64 -0.69 22.88 -0.08 -0.97 -1.01 -0.47 -1.17 0.12 1.57 0.99 2.00 1.14 2.21 1.54 -0.23 -1.05 -2.27 -3.95 0.47 -0.52 -1.77 -0.96 3.75	0.937 0.000 0.004 0.702 0.342 0.364 0.008 0.488 0.000 0.936 0.332 0.312 0.637 0.244 0.903 0.117 0.322 0.045 0.254 0.027 0.124 0.822 0.254 0.027 0.124 0.822 0.293 0.000 0.639 0.000	0630473 . 0005132 0025893 0008158 0844814 0423197 . 0329685 0242142 . 4823377 0338956 0605075 0601445 0536684 0750716 0375759 0087906 0269372 0009198 0269372 0009198 0269372 0009198 0269372 005134 0335463 0995118 1043234 2530927 1522654 3170562 1175629 0340066 0005847 0469834	.0683584 .0005762 000504 .0012111 .02935 .1153834 .2224678 .011569 .5727668 .0312367 .02046 .0192217 .0328371 .0190718 .0425288 .0785426 .0818279 .0860387 .0787934 .0851825 .27908 .0789858 .0314389 018468 0511557 .5167913 .0683863 .0017214 .0001996 .1501058
_cons	1657467	. 3973864	-0.42	0.677	9450863	.613593

Table 7 the seller let the contract expire and relisted with the same broker using lnTOM as a dependent variable

Source	SS	df	MS		Number of obs F(30, 1979)	= 2010 = 149.14
Model Residual	792.037814 350.331971		4012605 7024745		Prob > F R-squared Adj R-squared	= 0.0000 = 0.6933
Total	1142.36979	2009 . 56	8626075		Root MSE	= .42074
Intom	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
wdf invonmkt invonla yearslicense salesman prinbrok lnsqft lnage lnloc bedrooms fullbath halfbath garage1 fire1 brick vinylsiding carpet hardwood pool vacant tenant bedford forest appomattox lynchburg brookneal madisonhei~s time	0079508 .0005446 0015466 .000195 0276253 .0363178 .1284669 0063403 .5273372 0013125 0200689 0205273 0103948 0282866 .002341 .0347944 .0276129 .0437606 .028986 .0453088 .1224124 0102876 0363551 1354669 1015356 .1000397 0243264 0160338	.0288663 .0000161 .0005316 .0005158 .0290201 .0402139 .0483493 .0091226 .023042 .0166051 .0206299 .0202315 .0220543 .0240221 .0204154 .0222669 .0277365 .0217207 .0253994 .0204099 .0796972 .0454229 .0346101 .0597999 .0257795 .212231 .0474173 .0090963	-0. 28 33. 87 -2. 91 0. 38 -0. 95 0. 90 2. 66 -0. 70 22. 89 -0. 08 -0. 97 -1. 01 -0. 47 -1. 18 0. 11 1. 56 1. 00 2. 01 1. 14 2. 22 1. 54 -0. 23 -1. 05 -2. 27 -3. 94 0. 47 -0. 51 -1. 76	0.783 0.000 0.004 0.705 0.341 0.367 0.008 0.487 0.937 0.331 0.310 0.637 0.239 0.909 0.118 0.320 0.044 0.254 0.027 0.125 0.821 0.294 0.024 0.024 0.000 0.637 0.608 0.078	0645624 . 0005131 0025892 0008166 0845384 0425482 . 033646 0242312 . 4821482 0338778 0605276 0602046 0536468 0753979 0376969 0088746 0267828 0011628 0267828 0011628 0268264 0052817 0338867 0993693 1042311 2527442 1520935 3161799 1173194 0338731	.0486608 .0005761 0005041 .0012067 .0292878 .1151838 .2232878 .0115506 .5725262 .0312529 .0203897 .01915 .0328573 .0188247 .042379 .0784635 .0820086 .0863585 .0787983 .0853359 .2787116 .0787942 .0315209 0181896 0509778 .5162593 .0686666 .0018056
timesq frmsd _cons	0001943 .098624 170826	.0001993 .0262542 .3977714	-0.97 3.76 -0.43	0.330 0.000 0.668	0005852 .0471352 9509208	.0001966 .1501128 .6092688

Table 8 the seller withdraw the contract and relisted with a different broker using lnTOM as a dependent variable

Source	55	df	MS		Number of obs	
Model Residual	792.075588 350.294197		1025196 7005658		Prob > F R-squared Adj R-squared	= 0.0000 = 0.6934 = 0.6887
Total	1142.36979	2009 . 568	3626075		ROOT MSE	= .42072
Intom	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
wsm invonmkt invonla yearslicense salesman prinbrok lnsqft lnage inloc bedrooms fullbath halfbath garage1 fire1 brick vinylsiding carpet hardwood pool vacant tenant bedford forest appomattox lynchburg brookneal madisonhei~s time	0175463 . 0005446 0015507 . 000205 0273943 . 0363345 . 127561 0064504 . 5273574 0013337 0197796 0207136 0102053 0277015 . 0020881 . 0346555 . 0274454 . 0436043 . 0288234 . 0456752 . 1214791 0090277 0364267 1357565 1016779 . 0994755 0243323 0156442	. 0326234 . 0000161 . 0005316 . 0005155 . 0290178 . 0402043 . 0482931 . 0091248 . 023036 . 016604 . 0206363 . 0202341 . 0220563 . 0239915 . 0204216 . 0222672 . 0277275 . 0216993 . 025398 . 0204242 . 0797181 . 0454958 . 0346049 . 059793 . 0257642 . 2122139 . 0474056 . 0091343	-0.54 33.89 -2.92 0.40 -0.94 0.90 2.64 -0.71 22.89 -0.96 -1.02 -0.46 -1.15 0.10 1.56 0.99 2.01 1.13 2.24 1.52 -0.20 -1.05 -2.27 -3.95 0.47 -0.51 -1.71	0. 591 0. 000 0. 004 0. 691 0. 345 0. 366 0. 008 0. 480 0. 936 0. 338 0. 306 0. 644 0. 248 0. 919 0. 120 0. 322 0. 045 0. 257 0. 025 0. 128 0. 843 0. 293 0. 023 0. 608 0. 608	0815261 . 0005131 0025933 000806 084303 0425128 . 0328504 0243456 . 4821799 0338968 0602508 0602508 0603959 0534613 0747527 0379621 0090141 0269327 . 0010483 0209861 . 00562 0348611 0982524 1042925 2530203 1522056 3167107 1173025 033558	. 0464335 . 0005762 0005081 . 0012159 . 0295143 . 1151817 . 2222717 . 0114449 . 5725349 . 0312294 . 0206916 . 0189687 . 0330508 . 0193497 . 0421382 . 078325 . 0818235 . 0861602 . 078633 . 0857303 . 2778192 . 0801971 . 0314392 0184926 0511502 . 5156617 . 0686378 . 0021894
timesq frmsd _cons	0002035 .0992163 1712166	.0002003 .0262841 .3973055	-1.02 3.77 -0.43	0.310 0.000 0.667	0005963 . 0476689 9503976	.0001894 .1507637 .6079643

Table 9 the seller withdraw the contract and relisted with the same broker using lnTOM as a dependent variable

Source	55	df	MS		Number of obs F(30, 10703)		10734 788.35
Model Residual	4849.85736 2194.80076		161.661912 .205064072		Prob > F R-squared Adj R-squared	=	0.0000 0.6884 0.6876
Total	7044.65812	10733	656354991		ROOT MSE		. 45284
Intom	Coef.	Std. Er	r. t	P> t	[95% Conf.	Int	erval]
		**************************************	- 10 M				
extended	.1015574	. 014889		0.000	.072371	.1	307439
invonmkt	. 0005084	8.57e-(6 59.35	0.000	.0004916	.0	005252
invonla	0020255	. 00020	51 -7.76	0.000	0025371	0	015139
yearslicense	2.14e-06	.000243	36 0.01	0.993	0004754	. 0	004797
salesman	0338836	. 0129	51 -2.61	0.009	0592897	0	084776
prinbrok	. 035625	.01847	52 1.93	0.054	0005898	. 0	718399
Insqft	. 0864548	.022926		0.000	.0415139	.13	313956
Inage	0005128	. 004072	27 -0.13	0.900	0084961	. 0	074704
Inloc	. 6438939	.009653		0.000	. 624971	- 6	628168
bedrooms	. 0010643	. 00783		0.892	0142957	. 0	164243
fullbath	. 0048976	. 009893	0.50	0.621	014496	. 02	242911
halfbath	0027752	. 009488		0.770	021374	- 01	158236
garage1	0093535	. 010356		0.366	0296548	. 01	L09477
fire1	0180186	.011167	3 -1.61	0.107	0399085	. 00	038713
brick	0215196	.009584	1 -2.25	0.025	0403062	0	002733
vinylsiding	-0138355	. 010349		0.181	0064513	. 03	341223
carpet	.0028317	.012837		0.825	0223319	. 02	279953
hardwood	. 0162809	. 010177		0.110	0036683		.03623
pool	.0027135	.012135		0.823	0210737	. 02	265007
vacant	. 0292558	.009915		0.003	.0098192	. 04	186924
tenant	. 0560125	. 038923	1 1.44	0.150	020284	.13	323091
bedford	0228974	. 020451	1 -1.12	0.263	0629853	. 01	171905
forest	0139233	.015525	2 -0.90	0.370	0443556	. 01	L65091
appomattox	. 0012857	. 027625	2 0.05	0.963	-, 0528648	. 05	554361
lynchburg	0714668	. 012114	3 -5.90	0.000	095213	04	177205
brookneal	. 0187509	. 080912		0.817	1398527	.17	73544
nadisonhei~s	0311874	. 021463		0.146	0732594	. 01	08847
time	0370321	.004121		0.000	0451104	02	289538
timesq	.0002488	. 000091		0.007	. 0000695	. 0	000428
frmsd	. 0504939	.012021		0.000	. 026929	. 07	40588
	. 0649054	.185444		0.726	-, 2986003		84112

Table 10 the seller extended the contract with the same broker using lnTOM as a dependent variable

Multinomial Logistic Regression:

```
Iteration 0: log likelihood = -5084.7877
Iteration 1: log likelihood = -4106.7922
Iteration 2: log likelihood = -3930.0712
Iteration 3: log likelihood = -3894.6835
Iteration 4: log likelihood = -3892.8382
Iteration 5: log likelihood = -3892.8288
Iteration 6: log likelihood = -3892.8288
```

Multinomial logistic regression

Number of obs = 4488 LR chi2(72) = 2383.92 Prob > chi2 = 0.0000 Pseudo R2 = 0.2344

Log likelihood = -3892.8288

mark	Coef.	Std. Err.	z	P> z	[95% Conf.	Interval]
1						
lnlp	.0402726	. 2214289	0.18	0.856	3937201	. 4742652
Inloc	.0227416	. 1642647	0.14	0.890	2992112	. 3446945
Intom	-1.262051	.1639783	-7.70	0.000	-1.583443	9406597
Insqft	. 6003872	. 3518772	1.71	0.088	0892795	1.290054
Inage	. 0103749	. 0551617	0.19	0.851	0977399	. 1184898
bedrooms	0825887	. 1051739	-0.79	0.432	2887256	.1235483
fullbath	.016801	. 1342119	0.13	0.900	2462495	. 2798515
halfbath	1261679	.1298743	-0.97	0.331	 3807167	.128381
fullbase	. 0711979	. 1346563	0.53	0.597	1927237	. 3351195
fooq	. 034471	. 1619659	0.21	0.831	2829763	. 3519183
vacant	2016662	. 1379561	-1.46	0.144	4720551	.0687227
time	. 0280227	. 0108294	2.59	0.010	.0067974	.0492479
yearslicense	0016718	. 0035199	-0.47	0.635	0085707	.005227
salesman	. 3757277	. 2249295	1.67	0.095	0651259	. 8165814
assocbrok	. 8629158	. 2704156	3.19	0.001	. 332911	1.392921
invonmkt	001645	. 0002057	-8.00	0.000	0020482	0012418
invonla	0087076	. 0047234	-1.84	0.065	0179653	.00055
invonlb	0013064	.0009077	-1.44	0.150	0030854	.0004726
_cons	1.746907	2.315226	0.75	0.451	-2.790852	6.284667
			17887 1196 VIII			200
2	F300000	244.664	ים יי	0.026	. 065334	1.012628
ິ່ງນຶ່ງb	. 5389808	. 241661	2.23 1.93	0.020	0053062	. 6808921
lnloc	. 3377929	.1750538			-1.916871	-1.250921
Intom	-1.583896	.1698882	-9.32	0.000 0.105	-1.397601	.1326863
Insqft	6324575	. 3903866	-1.62	0.103	0998806	. 1298004
Inage	. 0149599	. 0585932	0.26		0990000 2788737	.1858549
bedrooms	0465094	.1185554	-0.39	0.695	2766737 1845488	. 4055268
fullbath	.110489	.1505322	0.73	0.463	6194636	0352356
halfbath	3273496	.1490405	-2.20	0.028	0194030 037539	. 5437692
fullbase	. 2531151	.1482956	1.71	0.088	037 339 224841	. 4783953
lood	.1267772	.1794003	0.71	0.480	224641 1102021	.4630861
vacant	.176442	. 1462497	1.21	0.228		.0310281
time	.0077135	. 0118954	0.65	0.517	0156011	.006268
yearslicense	0006714	.0035406	-0.19	0.850	0076107	
salesman	. 4615483	. 2592625	1.78	0.075	0465969	. 9696936
assocbrok	. 6056471	. 3178628	1.91	0.057	0173524	1.228647
invonmkt	0015485	. 0002272	-6.82	0.000	0019938	0011032
invonla	0171178	.0056391	-3.04	0.002	0281702	0060654
invonlb	. 000945	.0009666	0.98	0.328	0009494	.0028395
_cons	4.31669	2. 57506	1.68	0.094	7303355	9.363715

			a de la companya de l			the other demonstrations and the second
3						
lnlp	.1450264	.1753155	0.83	0.408	1985857	. 4886386
Inloc	-1.322382	.1621996	-8.15	0.000	-1.640287	-1.004476
Intom	3714938	.1692286	-2.20	0.028	7031758	0398117
Insqft	0783056	. 2871493	-0.27	0.785	641108	. 4844967
Inage	. 0605003	.0449371	1.35	0.178	0275748	. 1485753
bedrooms	. 0164255	- 0872713	0.19	0.851	1546232	.1874741
fullbath	.0093014	-1115979	0.08	0.934	2094265	. 2280294
halfbath	0582287	1079339	-0.54	0.590	2697754	.1533179
fullbase	075792	.1109941	-0.68	0.495	-, 2933365	.1417526
pool	. 0597269	.1355342	0.44	0.659	2059152	. 325369
vacant	1301179	.1124298	-1.16	0.247	3504762	. 0902405
time	.0315183	.0089235	3.53	0.000	. 0140286	.049008
vearslicense	0016519	.0028859	-0. 57	0.567	0073082	.0040044
salesman	.0650072	.1731136	0.38	0.707	2742892	.4043036
assocbrok	.1923125	. 2186435	0.88	0.379	2362209	. 620846
invonmkt	0008349	. 000157	-5.32	0.000	0011426	0005272
invonla	0086092	.0035943	-2.40	0.017	0156539	0015646
invonib	0004622	. 00062	-0.75	0.456	0016774	.0007529
_cons	7.078301	1.924261	3.68	0.000	3.306819	10.84978
	7.070302					
4						2250052
lnlp	0693652	. 2276832	-0.30	0.761	5156161	. 3768857
lnloc	-1.281561	. 2033415	-6.30	0.000	-1.680103	8830194
Intom	0945516	2139593	-0.44	0.659	5139042	. 324801
Insqft	. 3274649	. 3695881	0.89	0.376	3969145	1.051844
Inage	.0239516	. 0581933	0.41	0. 681	0901051	. 1380084
bedrooms	117317	.1137582	-1.03	0.302	3402789	.105645
fullbath	1165537	.1457058	-0.80	0.424	4021317	.1690244
halfbath	.1752618	.133366	1.31	0.189	0861307	.4366543
fullbase	1687791	.1421715	-1.19	0.235	4474302	.109872
pool	.0093586	.175297	0.05	0.957	3342173	. 3529345
vacant	0668056	. 1418542	-0.47	0.638	3448348	. 2112236
time	.0636295	.0117821	5.40	0.000	.040537	.0867221
yearslicense	- 0079344	. 0028664	2.77	0.006	.0023163	. 0135524
salesman	2974248	. 2090403	-1.42	0.155	7071362	.1122866
assocbrok	0905757	. 2706491	-0.33	0.738	6210381	.4398868
invonmkt	000987	.0002013	-4.90	0.000	0013815	0005925
invonla	0238	. 0065676	-3.62	0.000	0366723	0109277
invonlb	0010152	. 0008082	-1.26	0.209	0025993	.0005689
_cons	5.056383	2.446551	2.07	0.039	. 2612302	9.851536
	J. W. W. J. W. J.	_3 110334				

Category 1: withdraw with a different broker

Category 2: withdraw with the same broker

Category 3: expired with a different broker

Category 4: expired with the same broker

Category 5: extension