

TIME ON MARKET: AN ANALYSIS OF LAKE PROPERTIES

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ABSTRACT

While the concept of selling one's home seems simple at first, it is in reality a complex transaction. Sellers desire their homes to sell for the highest price in the shortest time possible. This paper compares and contrasts the factors that contribute to some of the differences between "time on market" (TOM) of typical and atypical properties (lake properties). The results support the theoretical supposition of Miceli (1989) in that TOM is significantly impacted by the length of the real estate listing contract (LOC).

INTRODUCTION

The greatest struggle any real estate seller and broker face is in reconciling two seemingly discordant elements of real estate: the seller's desire to maximize the selling price of the property while minimizing the time on market (TOM).

It is tautological to suggest that the listing broker will desire a contract that will assure that the property can be sold before the expiration of the listing contract. Similarly, a seller might desire a contract that has a quicker expiration so as to provide the seller with an option to change brokers if they believe the current broker is not performing as expected (Miceli, 1989)

Holding constant the sales price of the property, it is obvious that the seller will desire to minimize TOM so as to maximize the present value of the sales price. However, the seller concurrently has the objective of maximizing sales price while minimizing the length of time required for the property to sell. Such seemingly contradictory objectives complicate the seller's decision in setting the initial selling price (Knight, 2002). This is an optimization problem where the seller hopes to minimize TOM while maximizing the present value of the sales price. This type of optimization problem is intuitive even to the most novices of homeowners. However, little mention of the listing broker's role in length of time

property will remain on the market is found in the literature. Albeit, the homeowner is ultimately responsible for determining the listing price of the property, he is assumed to be advised by the broker with a competitive market analysis (CMA). However, it is well generally recognized that sellers many times set the original listing price of their property too high, even against the advice of the broker. An interesting perspective concerning TOM is whether there exist a significant relationship between TOM and the length of the listing contract (LOC). Miceli (1989) examines whether the actions of a broker or agent are dependent upon the duration of the listing contract and suggests the shorter the listing contract duration the harder the broker will work to find a buyer. A typical real estate listing agreement is a contractual obligation between the homeowner and the broker with the length of the listing contract being a negotiated factor of the contract. Miceli (1989) suggest the listing contract be used by the seller as an incentive for the broker to act in the best interest of the seller. Sellers that limit the contract duration implicitly impose a cost on the broker who had not found a buyer before the listing contract expires.

Other elements that may affect TOM that are considered in this paper include the listing price, length of listing contract, and size of the listing agency.

LITERATURE REVIEW

Several studies have examined the market duration to TOM from a multitude of perspectives. Miller (1978) analyzes the relationship between a property's listing price and selling price, and how this relationship coincides with TOM and finds that higher priced properties do incur a longer marketing duration or TOM. Miller (1978) confirms that the seller must determine whether longer TOM leads to a higher negotiated selling price. Asabere, Huffman, and Mehidian (1995) suggest that the seller derives an optimal list price to maximize the present value of the property's sales price. This optimal price mirrors the maximum price a buyer is willing to pay for the property in the shortest time span TOM. Anglin, Rutherford, and Springer (2003) research a property's list price and selling price and determine TOM is positively related to any increases in list price. Atypical properties generally will face higher variations in offer price which ultimately produces a longer time to sale for profit maximizing sellers (Haurin, 1988). Knight (2002) uses a maximum-likelihood model to assess TOM and selling price and the affects of listing price changes and finds that houses with a larger difference in listing price and selling price face longer TOM and lower selling prices. Also, the model suggests that the TOM for vacant properties is significantly longer than for occupied houses (Knight, 2002).

Although it has long been held that the real estate market is inefficient relative to other financial markets Jud, Seakes, and Winkler (1996) examine different marketing strategies of brokerage firms and the impact of these strategies on TOM and selling price and find no support that any particular brokerage firm has a competitive advantage over any other firm due largely to the efficiency provided by MLS services. Conversely, however, studies conducted by

Haurin (1988), Larsen and Park (1991), Sirmans, Turnbull and Benjamin (1991), all find, in fact, that larger brokerage firms do have a positive effect on optimal price, and shorter TOM.

Yavas and Yang (1995) assert that TOM most strongly relates to local and national economic conditions and the effects of seasonal conditions. They also recognized the importance of independent variables such as selling price, the physical characteristics of a house, seasonal elements, and brokerage firms relevant to the sale of unique properties. Belkin, Hempel, and McLeavey (1978) find that overpricing and under-pricing trends for houses with listing prices not near the average typically result in a longer TOM and those physical characteristics within the housing market cannot be used to measure TOM accurately.

Another important consideration for this sample includes the analysis of seasonality trends in the real estate market. Haurin (1988) and Yavas and Yang (1995b) also determine that TOM is affected by seasonal elements. Anglin, Rutherford, and Springer (2003) also find that of the four seasons, houses listed in the winter experience the longest TOM. Kluger and Miller (1990) find that properties listed in the summer and spring months face less liquidity and thus a longer TOM than those listed in the fall and winter. Our hypothesis is that lake front property, and those properties surrounding a lake community, are affected by seasonality and will likely be an important variable as discussed further in this paper.

DATA

The data set for this paper was taken from the Roanoke Valley Multiple Listing Service's (MLS) and was obtained from their "property sold" files. The original data set consists of 4,640 properties including 1,162 waterfront lake properties listed in the greater Roanoke Valley area, listed between April, 1995 and September 2004. Due to incomplete or illogical data, 68 observations were eliminated rendering 4,572 properties that were included in the analyses. A total of 79 variables were used in the study including 50 realtors (tables 1 and 2).

Time on market (TOM) for the properties included in this study was on average 110 days with an average length of contract (LOC) of 225 days. The average property listed had 3.08 bedrooms (BR), 2.1 bathrooms (FBATH), and 2,025 square feet (SQFT) and was situated on 2.96 acres (ACR). There was an average of 45.5 feet of water front property (WFT) with approximately 25% of the properties being located on the waterfront (WF – dummy variable). The average year built (YRB) was 1975. The average original list price (OLP) was \$209,395, the final list price (LP) before sale was \$204,566 and sales price (SP) was \$198,100. Month for which properties were listed ranged from a low of four percent in December (DEC) to 11% in April (APR). On average, 20% of the properties were listed in winter (WIN), 21% in fall (FAL), 27% in summer (SUM) and 31% in Spring (SPR). See Table 1 for a summary of the data.

Table 1: Variable descriptions and summary statistics

N=4572	Mean	Std. Deviation
TOM	110.00	138.986
LOC	225.45	145.440
ACR	2.956	12.2195
BR	3.08	.922
FBATH	2.10	.754
SQFT	2025.44	922.538
WTF	45.48	110.187
YRB	1975.98	115.216
DIF	11293.93	89648.421
OLP	209394.66	190270.959
LP	204565.64	164208.015
SP	198100.73	157804.635
JAN	.09	.285
FEB	.08	.273
MAR	.10	.305
APR	.11	.316
MAY	.10	.298
JUN	.09	.286
JUL	.09	.289
AUG	.09	.286
SEP	.07	.252
OCT	.08	.266
NOV	.06	.235
DEC	.04	.197
FAL	.21	.408
SPR	.31	.464
SUM	.27	.445
WIN	.20	.402
WF	.25	.435

A total of 50 realty companies are included in the study and are shown in table 2 along with the number of properties sold over the time period. The number of properties sold ranged from a low of 6 properties to a high of 730 properties with the average properties sold per realtor being approximately 88 with a standard deviation of 132 properties. Over 58% of the properties in the sample sold in 90 days or less, it took between three and 6 months for approximately 23% of the listed properties to sell and almost 19% of the properties took longer than 6 month to sell.

Table 2: Realty companies with properties sold

Realtor	Properties sold
A	25
B	14
C	18
D	13
E	252
F	32
G	16
H	18
I	200
J	66
K	83
L	106
M	171
N	316
O	42
P	24
Q	53
R	53
S	19
T	27
U	20
V	102
W	25
X	96
Y	13
Z	45
AA	111
BB	19
CC	506
DD	61
EE	213
FF	103
GG	730
HH	15
II	12
JJ	40
KK	78
LL	18
MM	26
NN	178
OO	57

PP	6
QQ	176
RR	18
SS	55
TT	17
UU	38
VV	21
WW	32
XX	193
	4572

RESULTS

Three regression models were examined in evaluating the factors that are speculated to determine TOM. The first of which included the entire data set, a second which included a subset of data which consisted of only waterfront properties and a third which included non-waterfront properties. The first regression model was composed of the full data set consisting of 4,572 observations and 57 variables.

The results shown in table 3 indicate the chosen variables reasonably well in explaining TOM as illustrated by an R-square of 71.6% as well as the significant F-statistic. The results indicate that the length of the listing contract (LOC) is significant at the .01 level. This provides empirical support for the previous theoretical inference by Miceli, (1989) that brokers may be inclined to work more diligently toward selling a property if they realize that the listing contract will soon expire. The difference between listing price and sales price (DIF) is also positive and significant at the .01 level which might be interpreted to suggest that properties which are over priced will remain on the market for a longer period of time and support the findings of Belkin, Hempel and McLeavey (1976). Square footage (SQFT) is also positive and significant at the .01 level which is in alignment with previous findings that large (unique) properties typically require a longer marketing duration (Haurin, 1988). Furthermore, these results are in contrast to those of Kang and Gardner (1989) which find that a properties size has no significant impact on TOM. Properties with water frontage (WF) are negatively signed and significant at the .01 level which indicates that such properties will sell quicker than properties not located on the water. This finding may be interpreted to be in contrast with the finding of Haurin (1988) that unique properties require a longer marketing period. Although properties listed in fall or spring are significant at conventional levels, those listed in summer are negative and significant at the .01 level indicating that properties listed in summer (SUM) will not remain on the market as long as those properties listed in other seasons (see table 3).

Seventeen of the 50 realty companies are significant at conventional levels (table 3). Ten of the 17 brokerage companies have a positive estimated

coefficient which suggests that properties listed with these firms will endure a longer marketing duration, while 7 of the brokerage firm coefficients are negative which indicates that properties listed with these firms will sell quicker. From the 10 positive and significantly signed brokerage coefficients, the average number of properties listed by these firms is 137.2 as compared to the 7 negative and significantly signed brokerage coefficients of which the average number listed is only 50.9 properties. These findings support the results of Yang and Yavas (1995A), however are in contrast to the findings of Haurin (1988); Larsen and Park (1989); and Sirmans, Turnbull and Benjamin (1991) which find that larger brokerage firms sell a given property more rapidly than do smaller firms.

Table 3: Regression analyses (complete data set)

Model Summary

R	R Square	Adjusted R Square
.846(a)	.716	.712
F = 199.662		

Variable	B	t-value
(Constant)	-84.287	-12.015
DIF	.000	5.312
LOC	.809	101.265
SQFT	.005	4.032
WF	-8.555	-2.602
Fal	-.153	-.044
Spr	-5.659	-1.790
Sum	-6.543	-2.011
A	-12.211	-.755
B	16.193	.779
C	-98.814	-5.313
D	-12.778	-.594
E	14.928	1.966
F	21.399	1.482
G	-9.161	-.468
H	83.827	4.488
I	-2.355	-.298
J	-.040	-.004
K	-21.257	-1.659
L	.609	.065
M	15.726	1.477
N	10.986	1.485
O	46.218	3.566

P	-35.221	-2.148
Q	28.940	2.441
R	1.376	.083
S	-.904	-.050
T	-55.169	-3.554
U	-130.591	-7.363
V	34.114	3.600
W	28.469	1.775
X	32.283	3.349
Y	-50.029	-2.317
Z	49.763	3.925
AA	15.052	1.633
BB	53.245	2.942
CC	6.311	.930
DD	7.698	.685
EE	10.103	1.293
FF	12.214	1.295
GG	13.386	2.034
HH	59.153	2.936
II	24.872	1.114
JJ	24.610	1.866
KK	-22.249	-2.153
LL	11.468	.618
MM	4.953	.314
NN	-8.322	-1.001
OO	3.518	.306
PP	41.237	1.330
QQ	-16.212	-1.987
RR	-36.431	-1.955
SS	-10.425	-.881
TT	32.994	1.734
UU	1.922	.143
VV	-12.613	-.724
WW	-1.757	-.122
XX	-10.432	-1.280

The results illustrated in table 4 are based on 1,161 observations all of which are waterfront properties. The results indicate that the variables in the model do a good job in predicting TOM as evidenced by R-square statistic of .845 along with an F-statistic which is significant at the .01 level. As with the result of the full data set, the estimated coefficients for LOC, SQFT, and DIF are all positive and statistically significant at the .01 level. Likewise the SUM variable is negative and significant as with the full data set. However, the results of the brokerage variable provide a more interesting insight. In contrast to the results of the full data set, brokerage firm with positive and significant

coefficients averaged listing only 32 properties while those with negative and significant coefficients averaged only 21 listings during the period. Furthermore all of the 6 brokerage firm coefficients that were significant considered small with the largest brokerage firm listing 45 properties over the period. This conflicting result tends to support the finding of Yavas and Yang (1995B) that brokerage firms have no impact on TOM. Furthermore, four of the 6 firms have a negative signed coefficient leading to conjecture that small firms might attribute to a reduce TOM.

Table 4: Regression Analysis (only waterfront properties)

R	R Square	Adjusted R Square
.919	.843	.837
F = 139.872		

Variable	B	t-value
(Constant)	-111.538	-6.384
LOC	.896	74.411
SQFT	.006	2.434
DIF	.000	4.075
FAL	-.029	-.004
SPR	-3.707	-.549
SUM	-15.176	-2.242
A	-24.758	-.439
C	-123.893	-4.131
E	3.667	.211
F	50.408	1.074
H	90.082	3.394
I	-10.903	-.456
J	77.689	.994
K	-56.114	-.717
L	2.585	.033
M	24.710	.526
N	12.818	.776
P	-81.514	-2.325
Q	29.175	.373
R	46.835	.831
S	40.128	.854
T	-234.896	-2.999
V	36.624	.466
W	32.457	.986
X	-42.821	-.548
Y	-61.089	-2.035
Z	40.942	2.035

AA	-61.030	-1.475
CC	1.984	.071
EE	36.608	1.221
FF	-.359	-.005
GG	10.885	.672
JJ	20.874	.445
KK	-42.002	-1.844
MM	99.589	1.766
NN	-4.831	-.282
OO	67.003	1.428
RR	-11.078	-.409
SS	-14.568	-.724
UU	17.407	.371
VV	-28.428	-1.124
WW	-10.210	-.271
WATR01	-15.781	-.927

The final regression analysis, shown in table 5 also finds LOC, SQFT and DIF to be positive and significant. However unlike in the previous two models, a property listing in summer (SUM) is not significant when analyzing only those properties that are not waterfront properties. However, the SPR coefficients is negative and statistically significant at the .01 level indicating that properties listed in spring will endure a shorter TOM.. Thirteen of the brokerage firm variables are significant at conventional levels. Four of the 13 brokerage firm coefficients are negative and significant with an average number of listings of 20.75. The remaining nine significant brokerage firm variables are positive with and average number of listings of over 150.

Table 5: Regression Analysis: non-waterfront properties

R	R Square	Adjusted R Square
.783	.613	.606
F = 94.721		

Variable	B	t-value
(Constant)	-67.655	-8.708
LOC	.732	68.218
SQFT	.005	2.941
DIF	.000	3.016
FAL	-1.797	-.467
SPR	-7.920	-2.242
SUM	-3.086	-.841
A	-6.825	-.410

B	14.453	.708
C	-75.330	-3.010
D	-13.556	-.643
E	25.753	2.995
F	16.821	1.132
G	-11.383	-.593
H	27.987	.846
I	-1.580	-.192
J	-.928	-.085
K	-20.748	-1.617
L	3.471	.367
M	13.487	1.248
N	7.586	.818
O	41.849	3.254
P	-10.770	-.587
Q	25.042	2.106
R	-5.366	-.315
S	-6.357	-.331
T	-46.293	-2.977
U	-121.077	-6.928
V	30.625	3.199
W	26.283	1.443
X	31.697	3.262
Y	-36.153	-.982
Z	75.236	3.007
AA	16.678	1.777
BB	51.436	2.891
CC	8.210	1.164
DD	5.143	.459
EE	8.231	1.022
FF	11.406	1.199
GG	16.362	2.266
HH	52.785	2.669
II	27.165	1.242
JJ	24.623	1.826
KK	-13.512	-1.169
LL	9.717	.533
MM	-3.570	-.222
NN	-11.401	-.995
OO	.736	.063
PP	39.251	1.295
QQ	-14.784	-1.782
RR	-72.109	-2.373
SS	-10.106	-.553

TT	34.964	1.871
UU	-1.286	-.093
VV	.455	.015
WW	-.150	-.010
XX	-1.331	-.119

A one-way ANOVA was computed to test for differences in TOM, LOC, DIF, SP, FAL, SPR, and SUM between waterfront properties and non-waterfront properties (table 6). The results indicate a significant difference in TOM, LOC, DIF, SP and SUM for waterfront properties. Based on the ANOVA results, it seems that non-waterfront properties sell, on average 32 days faster than waterfront properties. LOC for waterfront properties are approximately 1.5 months greater than non-waterfront properties. This may be due to the high volatility of offers received on atypical properties (Jud, Seaks, and Winkler 1996) or may be attributed to the decreased effort on behalf of the broker (Miceli, 1989). As expected, sales price (SP) is much for waterfront properties as well as the difference between list price and sales price (DIF).

Table 6: ANOVA (Property type – waterfront vs. non-waterfront)

Variable	N	Mean
TOM .00	3411	101.81
1.00	1161	134.07
Total	4572	110.00
LOC .00	3411	213.81
1.00	1161	259.64
Total	4572	225.45
DIF .00	3411	7675.2448
1.00	1161	21925.5754
Total	4572	11293.9311
SP .00	3411	137799.38
1.00	1161	375265.15
Total	4572	198100.73
FAL .00	3411	.22
1.00	1161	.20
Total	4572	.21
SPR .00	3411	.31
1.00	1161	.31
Total	4572	.31
SUM .00	3411	.26

1.00	1161	.31
Total	4572	.27

Variable	F	Sig.
TOM	47.119	.000
LOC	87.674	.000
DIF	21.987	.000
SP	3434.912	.000
FAL	1.570	.210
SPR	.000	.995
SUM	9.292	.002

CONCLUSION

The major result of this research is the support provided to theory put forth by Miceli (1989) that listing contract may be used by the seller to encourage a more zealous effort on the part of the listing broker. These results show that in typical and atypical properties, the length of the listing contract (LOC) is positive and significant at all levels providing inference to be made that listing brokers do worker harder or possibly more efficient when faced with shorter opportunity in which to sell a property. In addition, the ANOVA results (table 6) indicate a significant difference in LOC for waterfront properties lending credence to another possible explanation for the extended LOC found in this study. Research has shown that atypical properties generally have longer market durations due to the high volatility of offers (Jud, Seaks, and Winkler, 1996). As a result, such properties may require additional marketing time through no fault of the listing broker.

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