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Profitability Through Product Expansion: Does It Work In The Real Estate Brokerage Industry?

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Abstract. This paper examines the economics of product expansion in the real estate brokerage industry. A two-stage model is developed to examine the effects of product expansion on the profitability of these firms. In the first stage, a variable for additional complementary services is developed through a factor analysis for inclusion in a profitability regression model. In the second stage, the profitability regression equations are estimated with a sample selection correction. When compared with a pure residential brokerage strategy, product expansion offered by real estate brokerage firms has a statistically significant effect on revenues and net profit. The effect on the net margin, however, is statistically insignificant. The factor analysis indicates that inspection, financial, legal, and physical services appear to be important variables leading to higher revenues and net profits.

In the real estate brokerage industry, product expansion (diversification) strategies have become very popular. According to a 2001 National Association of Realtors® (NAR) survey, about 40% of residential brokerage firms offer some kind of additional, complementary service to their clients as an adjunct to their traditional brokerage services.

Product expansion strategies frequently are employed in industries where markets are flat or growing slowly, and competition among rival firms in the same market has become intense. Firms in such an environment often attempt to create new market space by extending their product line by finding product and service offerings that are complementary to the firms' basic product or service. The recent NAR survey suggests that many estate brokerage firms are now trying to create new market space by providing their customers such complementary products or services.

Kim and Mauborgne (1999, 2005) emphasize that untapped value may be hidden in complementary products and services. For example, when selling a home, households need a variety of services besides traditional real estate brokerage. Many may need help finding a new home, help with financial planning, tax advice, assistance with moving, help with managing utility service cut-offs, etc. Similarly, when buying a new home, consumers may need assistance with such things as financing, moving, utility connections, and the entire range of needs and wants related to becoming settled

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in a new residence and a new community, such as home improvements and interior decoration. Brokerage firms that make it easy for their customers to obtain these additional services may be able to substantially enhance the value of their overall service package.

This paper tests the effects of product-line expansion on the profitability of real estate brokerage firms, using data from the 2001 National Association of Realtors® (NAR) *Firm Survey of Real Estate Firms*. The next section reviews product expansion, as well as real estate brokerage economies of scale and scope literature. The third section develops a theoretical model of product expansion in the real estate brokerage industry. The fourth section formulates an empirical model, while the fifth section discusses the sample data and the sixth section uses factor analysis to formulate empirical estimates of the extent of product expansion. The seventh section tests the effect of product expansion on profitability, and the final section summarizes relevant findings.

Product Expansion and Brokerage Economies of Scale and Scope Literature

While research on the effects of product expansion in the field of real estate is scarce,[1] research on the effects of product expansion in other industries is very extensive. Much of the research has focused on the performance of conglomerate versus non-conglomerate firms. For example, an early study by Weston and Mansinghka (1971) compares the mean growth rates and accounting performance ratios of conglomerate firms with random samples of non-conglomerate companies. They find some evidence of reduced profitability among conglomerate firms.

Lee and Cooperman (1989) review the conglomerate performance literature and examine the firm performance of 43 diversified firms operating in at least three distinct industries during 1980–1985. They conduct a number of performance-ratio comparisons including return on equity (ROE), return on assets (ROA), and net profit margin (NPM). They find that although conglomerates have higher gross- and net-profit margins, their poor asset utilization results in lower ROAs and ROEs.

Singh, Mathur, and Gleason (2004) examine the performance of 177 randomly selected diversified and focused firms. Although the total revenues of diversified firms are much larger, the group-mean ROA and the industry-adjusted ROA of diversified firms are not statistically different from those of non-diversified firms. They conclude that diversification is not a performance-enhancing strategy.

Palich, Cardinal, and Miller (2000) review the extensive diversification-performance literature. They report no consensus on the nature of the relationship. Using meta analysis, they examine 55 previously-published empirical studies of product diversification. All of these studies attempt to relate diversification to accounting and market-based measures of firm performance. They find that moderate diversification seems to yield higher firm performance, but both low- and high-level diversification reduce performance.

Palich, Cardinal, and Miller (2000) suggest that a major shortcoming of much of the existing diversification research is that many past studies do not adequately control for industry differences. In those studies that have examined industry differences, such differences have been found to be very important in explaining the effects of diversification on performance. This has been borne out in the empirical work of Powell (1996) and others. And it appears to be largely consistent with Rumelt's (1982) conclusion that profitability is positively related to the "relatedness" of products, and the findings of Lee, Hall, and Rutherford (2003) and Tongli, Ping, and Chiu (2005) that product focus is associated with increased profitability.

Real Estate Brokerage Economies of Scale and Scope

Real estate academics have examined the economies of scale and scope associated with the real estate brokerage industry. In a series of papers, Anderson, Zumpano, and Elder have led the research effort along other authors to look for economies of scale and scope in the real estate brokerage industry. In 1993, Zumpano, Elder, and Crellin find modest economies of scale for residential brokerage firms except for very large brokerage firms. The authors note that bigger brokerage firms do not have competitive advantages over smaller firms regarding unit costs. In 1994, Zumpano and Elder find that economies of scope arise from a balanced mix of brokerage listings and property sales. The authors note that specializing in either listings or sales may be suboptimal behavior while having both listings and sales lowers cost structures. Using a national sample of real estate brokerage firms, Anderson, Fok, Zumpano, and Elder (1998) measure stochastic frontiers and X-inefficiencies generated by data from real estate brokerage firms. The average real estate brokerage firm operates close to its efficient frontier, which indicates that real estate brokerage firms are relatively efficient.

Lewis and Anderson (1999) use a nationwide survey of real estate brokerage firm cost data to estimate a single stochastic cost frontier and then to measure firm efficiency relative to the frontier. The authors show that franchise-related real estate brokerage firms are more cost efficient than independent brokerage firms. Anderson, Lewis, and Zumpano (2000) further demonstrate that franchised firms and older firms may be more efficient than non-franchised brokerage firms, but it turns out that franchise affiliates are not necessarily more profitable. In addition, the authors provide evidence that real estate brokerage firms are operating at increasing returns to scale.

The findings presented in this paper will provide further insight into the relationship between real estate brokerage firms and product expansion.

A Model of Product Expansion in Real Estate Brokerage

This section presents a model of product expansion focused on the real estate brokerage firm. A firm has different business lines that it can enter. In residential brokerage, let n_1 be the number of brokers and agents employed. The production technology is $y_1(n_1, k)$, where y_1 is the number of houses sold during a given period,

taken as a year. Its capital costs are fixed at k. A sale is a transaction in which the brokerage firm has participated either as a seller or buyer. The commission rate on the sales volume is c, which takes into account splits with participating brokers and possible reductions from a prevailing rate, such as 6%. The total gross revenue of the firm is therefore $cy_1(n_1)$. The brokerage firm pays p as a percentage of its commission revenue to its employees, retaining the remaining $(1 - p)$. Its employees are paid in direct labor costs as w_1. Included in w_1 are wages and salaries to staff and non-selling managers, benefit costs to commissioned employees, and arrangements where brokers and agents are paid on salary. In some firms, such as the commercial brokerage Jones Lang LaSalle, agents and brokers can be paid on salary. In others, such as the residential brokerage ReMax, agents and brokers pay a fixed desk fee and retain all the gross commission with no split.

If the firm is only in the residential brokerage business and is maximizing profits, then its profit function is:

$$\pi_1(w_1|p, c, k) = \max_{n_1} c(1 - p)y_1(n_1, k) - w_1 n_1. \quad (1)$$

This is a plausible representation of the residential brokerage firm's behavior. Its maximum profit from selling houses π_1 is based on the wage compensation w for a given environment of overhead k, overall commission per house c, and percentage of that split paid to its employee brokers and agents p. If the real estate brokerage commission is not negotiable and is a constant across firms, such as at 6% of the sales price, and if there is always a 50:50 split between buyer and seller broker, then c is fixed. In addition, Equation (1) is in net operating income (NOI) form, excluding fixed and predetermined capital expenses.

If the production technology is differentiable and concave, the maximization of Equation (1) yields an equation, $w_1 = c(1 - p)y_1'(n_1)$. This determines the optimal size of the workforce.

The next step is on whether a real estate brokerage firm wants to add other services, such as business brokerage, title insurance, or escrow services. Adding other services yields a potential for economies of scope because services can be added at a lower production cost.

Let the added activity have output y_2. There are n_2 separate employees involved, for example, in the escrow services. Escrow services could involve title insurance subject to state regulation similar to brokerage. The firm's overhead is the same, with the secondary activity carried out in the same office. The production of escrow services is $y_2(n_2, k)$, and the sales price of these services is q. The labor cost for the title and escrow staff are $w_2 n_2$. If there were no other interactions, the total profit is:

$$\pi(w_1, w_2|p, q, c, k) = \max_{n_1, n_2} c(1 - p)y_1(n_1, k) - w_1 n_1 + qy_2(n_2, k) - w_2 n_2 + f(y_1, y_2). \quad (2)$$

This condition (2) summarizes the brokerage firm's production decision for residential brokerage and escrow services. The net operating income (NOI) from residential brokerage is $c(1 - p)y_1(n_1, k) - w_1n_1$. The NOI from escrow services is $qy_2(n_2, k) - w_2n_2$. The overhead is k. The remaining term is $f(y_1, y_2)$, the potential externality from carrying out two activities. If the residential brokerage and escrow services have been placed on a production possibility frontier, there would be a tradeoff and gain from producing both. But producing both services causes a distraction for the management in k. If f is positive, profits rise from the economies of scope net of any loss that is embedded in negative output correlations between the two. Diversification leads to a loss of value if f is negative. The firm makes profitability calculations as:

$$\pi(w_1, w_2|p, q, c, k) > \pi(w_1|p, c, k). \tag{3}$$

The firm takes into account the economies of scope-diversification term $f(y_1, y_2)$ with no externalities in production.

Offering the escrow services can also impact the employment of core residential brokers and salespeople. The number of people selling houses now satisfies $w_1 = (c(1 - p) + f_1)y_1'(n_1, k)$ including a scope-diversification term $f_1 \equiv \partial f/\partial y_1$.

Empirical Model

Past studies and the theory outlined in the previous section suggest that a general model of financial performance of sales, net income, and net margin (SIM) can be constructed by including brokerage firm characteristics and other services as independent variables in the model:[2]

$$SIM = f(Aff, Age, Fran, Medfirm, Lrgfirm, Oneoff, Nweb, OS), \tag{4}$$

where:

SIM = One of three measures of financial performance as measured by:
Ln(Rev) = The natural log of total revenue,
Ln(Ninc) = The natural log of net income, or
Ln(Netmarg) = The natural log of net margin.
Aff = A dummy variable indicating if the firm has affinity relationships;[3]
Age = The age of the firm in number of years;
Fran = A dummy variable indicating if the firm is affiliated with a franchiser;
Medfirm = A dummy variable indicating if the firm is medium-size (11–200 salespersons);
Lrgfirm = A dummy variable indicating if the firm is large-size (more than 200 salespersons);
Oneoff = A dummy variable indicating if the brokerage firm only has a single office;
Nweb = The number of third-party websites where the firm's listings are shown; and

OS = A factor analysis scoring variable indicating the extent of product expansion.

The OS variable is created from a factor analysis of fifteen other services offered by brokerage firms. The OS factor captures product relatedness for testing the diversification-performance relationship. Studies by Rumelt (1974, 1982), Palich, Cardinal, and Miller (2000), Chu (2004), and Tongli, Ping, and Chiu (2005) find that product relatedness is important in explaining profitability differences among diversified firms. The complete list of other services is shown in Exhibit 1.[4] In addition to the variables described in Equation (4), a sample selection coefficient (λ) is included in the estimated regression.

Data

The data for this study are from a recent survey by the National Association of Realtors. NAR surveyed 9,321 real estate brokerage firms during Spring 2001 using a firm profile questionnaire.[5] Of those contacted, 2,792 respondents (or 30%) provided usable surveys.[6] Because the focus of this research is on residential brokerage, firms with less than 50% of a respondent's business have been removed from the sample. After eliminating missing or obviously faulty responses, the remaining sample has 1,790 useable observations.

Exhibit 1 shows the weighted summary statistics for fifteen product expansion services provided by firms in the entire sample either directly or indirectly through an ownership interest in another company.[7] Most predominant activities are mortgage lending (13.7%), home warranty (8.0%) and title insurance (4.4%), homeowner's insurance (3.9%), and home improvement (3.9%). To take into account the disparate and large number of services, a factor is constricted.

Exhibit 1 also reports the weighted summary statistics used in the probit and regression equations. Of the 1,790 useable observations, 1,141 firms have net income and net margin information available. The mean age of firms is 15 years with revenue of $5.56 million and net income of $730,000. The mean net margin is 37.7%. About 7.9% and 0.7% of these firms are medium and large in size, respectively, and 78% of firms are one-office firms. More than 78% of firms have affinity relationships, and 16.2% have a franchise. On average, firms have about 1.87 third-party websites where their listings are shown. In comparison with pure brokerage firms, product expansion firms are larger, older, and have more third-party website listings; however, their profit margin is about 7.77% lower.

Factor Analysis

Exhibit 2 reports the findings of the weighted factor analysis. In the top section of Exhibit 2, three factors are reported that have an eigenvalue that exceeds 1.0, with a cumulative proportion of explained variance of approximately 54%. The factor patterns are provided in the lower section of the table for the three factors. Factor 1 offers a considerably greater explained variance. Also Factor 1 loadings are positive

Exhibit 1
Weighted Summary Statistics

	Full Sample			Pure Brokerage			Expansion Firms		
Variable	*N*	Mean	Std. Dev.	*N*	Mean	Std. Dev.	*N*	Mean	Std. Dev.
Other Services									
Appliance repair/sales	1,790	0.014	0.625	1,088	0.000	0.000	702	0.057	0.976
Concierge services	1,790	0.016	0.673	1,088	0.000	0.000	702	0.067	1.047
Home improvement	1,790	0.039	1.048	1,088	0.000	0.000	702	0.166	1.560
Home inspector	1,790	0.022	0.784	1,088	0.000	0.000	702	0.091	1.207
Home security	1,790	0.015	0.652	1,088	0.000	0.000	702	0.063	1.015
Home warranty	1,790	0.080	1.463	1,088	0.000	0.000	702	0.338	1.983
Homeowner's insurance	1,790	0.039	1.047	1,088	0.000	0.000	702	0.166	1.559
Landscaping	1,790	0.007	0.439	1,088	0.000	0.000	702	0.028	0.694
Lead-based paint insp.	1,790	0.011	0.567	1,088	0.000	0.000	702	0.047	0.889
Mortgage lender	1,790	0.137	1.853	1,088	0.000	0.000	702	0.578	2.071
Moving company	1,790	0.012	0.590	1,088	0.000	0.000	702	0.051	0.924
Radon inspection	1,790	0.008	0.486	1,088	0.000	0.000	702	0.035	0.767
Settlement attorney	1,790	0.016	0.684	1,088	0.000	0.000	702	0.069	1.064
Termite/insect inspector	1,790	0.017	0.692	1,088	0.000	0.000	702	0.071	1.074
Title company/insurance	1,790	0.044	1.100	1,088	0.000	0.000	702	0.184	1.623

Exhibit 1 (continued)
Weighted Summary Statistics

	Full Sample			Pure Brokerage			Expansion Firms		
Variable	*N*	Mean	Std. Dev.	*N*	Mean	Std. Dev.	*N*	Mean	Std. Dev.
Probit and Regression									
Rev (in $ mil.)	1,790	5.557	723.260	1,088	2.486	168.955	702	15.395	1,135.123
Ninc (in $ mil.)	1,141	0.730	25.924	660	0.657	26.430	481	0.985	25.218
Netmarg	1,141	37.703	148.693	660	39.430	175.876	481	31.662	96.801
Ln(rev)	1,790	12.219	11.467	1,088	12.069	12.459	702	12.701	9.463
Ln(Ninc)	1,141	10.931	10.773	660	10.787	12.286	481	11.437	7.983
Ln(Netmarg)	1,141	3.194	5.702	660	3.254	6.552	481	2.984	4.179
Aff	1,790	0.787	2.202	1,088	0.782	2.487	702	0.803	1.667
Age	1,790	14.781	74.230	1,088	14.249	77.417	702	16.487	68.567
Fran	1,790	0.162	1.984	1,088	0.159	2.205	702	0.172	1.584
Medfirm	1,790	0.079	1.455	1,088	0.054	1.361	702	0.161	1.542
Lrgfirm	1,790	0.007	0.448	1,088	0.003	0.333	702	0.019	0.579
Oneoff	1,790	0.780	2.229	1,088	0.808	2.375	702	0.692	1.937
Nweb	1,790	1.874	7.714	1,088	1.787	8.162	702	2.152	6.838
OS factor	1,790	0.000	1.000	1,088	−0.048	0.000	702	0.153	1.419
Estimated probability value (λ)	1,790	0.762	0.493	1,088	0.773	0.451	702	0.726	0.524

Exhibit 2
Weighted Factor Analysis of Other Services

Factor	Eigenvalue	Difference	Proportion	Cumulative
1	5.260	3.661	0.351	0.351
2	1.599	0.335	0.107	0.457
3	1.264	0.299	0.084	0.542

	Factor 1 Pattern	Factor 2 Pattern	Factor 3 Pattern	Factor 1 Scoring Coeff.	Factor 2 Scoring Coeff.	Factor 3 Scoring Coeff.
Appliance repair/sales	0.199	0.465	−0.164	0.038	0.291	−0.130
Concierge services	0.211	0.150	0.575	0.040	0.094	0.455
Home improvement	0.491	0.140	−0.240	0.093	0.088	−0.190
Home inspector	0.757	−0.121	−0.089	0.144	−0.075	−0.071
Home security	0.598	0.517	0.138	0.114	0.323	0.109
Home warranty	0.461	0.206	0.510	0.088	0.129	0.404
Homeowner's insurance	0.495	0.270	0.052	0.094	0.169	0.041
Landscaping	0.618	0.561	−0.198	0.117	0.351	−0.157
Lead-based paint insp.	0.794	0.180	−0.337	0.151	0.113	−0.267
Mortgage lender	0.490	−0.023	0.451	0.093	−0.014	0.357
Moving company	0.715	−0.155	−0.070	0.136	−0.097	−0.055
Radon inspection	0.727	−0.365	−0.287	0.138	−0.228	−0.227
Settlement attorney	0.591	−0.332	0.060	0.112	−0.208	0.048
Termite/insect inspector	0.751	−0.444	−0.061	0.143	−0.278	−0.048
Title company/insurance	0.584	−0.363	0.327	0.111	−0.227	0.259

for all fifteen coefficients. For the other two factors, the signs of the factor loadings do not indicate a discernable pattern. The last three columns in the lower section of the table show the resulting scoring coefficients. The scoring coefficients for Factor 1 are used for estimating the *Other Services Factor* variable, which is included in the regression equation.[8]

The magnitude of the factor scoring coefficients in Exhibit 2 indicates a fairly dispersed impact of the various services on Factor 1. The range is from 3.8% to 15.1%. The various inspection services, such as those for the home, lead-based paint, radon, and termite inspections seem to have larger coefficients than most others. Other physical services including landscaping and moving are also strong. Financial and services, such as title insurance, settlement attorney, and mortgage lending, have slightly less prominence. The last tier appears to be appliance repair and sales and concierge services.

Profitability Regression Results

The empirical estimates of the profitability regression equations are shown in Exhibit 3. The three performance measures are total revenue, net income, and net profit margin. The dependent variables for revenue and net income appear in log form. The weighted least squares method is utilized to correct for sample heteroscedasticity.[9] The sample weights from the NAR survey are applied in this procedure, and they are calculated to reflect the differential probability of firm and item non-response in the NAR survey. Owing to the possibility that product expansion firms are somehow different from pure brokerage firms, and these differences may be latent and, therefore, not captured by the explanatory variables, a sample selection methodology is implemented using a two-stage Heckman procedure.[10] The probit model from applying the first stage of this procedure is reported in the Appendix.

Exhibit 3 reports the regression findings for brokerage firms. The three profitability regressions (revenue, income, and net profit margin) are statistically significant at the 1% level with adjusted R-squares of 9.3% to 19.9%. The sample selection coefficient in the revenue regression is positive and statistically significant at the 5% level, indicating the presence of a latent effect not captured by the explanatory variables. The positive sample selection coefficient implies that the revenues of expansion firms are higher than those of pure brokerage firms even after including the explanatory variables. The net income and net margin regressions do not show a statistically significant sample-selection bias problem.

Exhibit 3
Profitability Regression of All Brokerage Firms

	Ln(Revenue)		Ln(Income)		Net Profit Margin	
Variable	Coefficient	t-ratio	Coefficient	t-ratio	Coefficient	t-ratio
Constant	−11.595	−1.19	−7.965	−0.78	8.235	1.58
Aff	1.121	1.83	0.424	0.66	−0.697	−2.12**
Age	0.044	3.90*	0.035	2.94*	−0.009	−1.51
Fran	−0.471	−1.23	−0.527	−1.30	−0.056	−0.27
Medfirm	8.107	2.96*	5.827	2.02**	−2.280	−1.55
Lrgfirm	15.544	3.01*	12.098	2.22**	−3.447	−1.24
Oneoff	−2.179	−2.48**	−1.695	−1.83	0.483	1.03
Nweb	0.613	3.69*	0.452	2.59**	−0.161	−1.80
OS Factor	1.515	4.50*	1.620	4.61*	0.105	0.58
Est. Prob. Value (λ)	29.139	2.39**	23.662	1.85	−5.478	−0.84
Adj. R^2		0.199		0.093		0.156
Model F-Value		32.43*		13.99*		24.47*

Notes: The number of observations is 1,141.
*Significant at the 0.01 level.
**Significant at the 0.05 level.

Revenues on average increase about 4.4% for every year of firm age (shown in left two columns of Exhibit 3). Medium and large firms show the expected positive coefficients for the revenue regression. Also, firms earn about 61.3% more revenue for each additional *third-party website listing* (note that *Nweb* is a continuous variable). However, the coefficients for affinity and franchise are not statistically significant. Of primary importance here is the *OS Factor* variable, which is statistically significant at the 1% level. The positive coefficient indicates that product expansion services increase firm revenues even after correcting for sample selection bias.

The net income regression results are reported in the middle two columns of Exhibit 3. The direction (positive or negative) of the coefficients for all the variables is the same as in the revenue regression model. In addition to the statistical insignificance of affinity and franchise, *Oneoff* is not statistically significant at the 5% level or better. Once again, the *OS Factor* coefficient is positive and statistically significant at the 1% level. Therefore, product expansion firms appear to generate higher profits by offering other services.

In the last two columns of Exhibit 3, the regression results for the net profit margin model are shown. The *Aff* variable has a negative and statistically significant coefficient. The *Age* variable is negative in its sign, in contrast to the other profitability regressions. None of the other coefficients including *OS Factor* are statistically significant in this regression.

Implications and Conclusions

In competitive industries, firms adopt product expansion strategies in an attempt to create new market space by extending their product, that is, by finding offerings that are complementary to the firms' basic products or services. Product expansion strategies are being adopted by large numbers of residential real estate brokerage firms. In our sample, about 40% of residential firms offer some kind of additional complimentary service to their clients besides their traditional brokerage services.

The findings of this study suggest that compared with a pure residential brokerage strategy, most additional complementary services offered by real estate brokerage firms have an effect on revenues and net income, but not on net profit margin. These results are consistent with Hill (1983), who found that the return on sales was not statistically different based on product diversity. The finding of a negative relationship between product diversification and return on sales for U.S. firms by Lee, Hall, and Rutherford (2003) is not supported by our study of firms in the real estate brokerage industry. Likewise, the findings reported by Lee and Cooperman (1989) that more diversified firms have higher net margins does not appear to extend to real estate brokerage firms.

This paper shows that product expansion in real estate brokerage provides additional revenues and net income by enhancing the potential for cross-selling products to existing and new customers. It seems to have no effect on firm profit margins. The current study did not examine the return on assets (or capital) because of the lack of

data. Nonetheless, it is interesting to note that net profits increase with the offering of services as measured by the *OS Factor*, even after controlling for many influences including firm size.

Appendix
Probit Model Results

Variable	Coeff.	Chi-Square
Constant	0.852	1,655.276*
Aff	−0.166	111.736*
Age	−0.003	40.402*
Fran	0.090	27.317*
Medfirm	−0.612	717.211*
Lrgfirm	−1.122	242.991*
Oneoff	0.225	223.284*
Nweb	−0.043	90.740*

Notes: The number of observations is 1,790. Log likelihood is −27,353.098*.
*Significant at the 0.01 level.

Endnotes

1. A couple of recent real estate studies have examined corporate focus and stock performance. Conqvist, Högfeldt, and Nilsson (2001) studied 32 separate Swedish real estate corporations (SRECs) from 1990 to 1996; and using a cross-sectional time series regression methodology, they find that non-focused SRECs have a market-to-NAV ratio that it about 20% below that of focused firms. Boer, Brounen, and Veld (2005), using 17 years of international data on 275 property companies, find companies that have a high level of geographical focus outperform the market on a risk-adjusted basis.
2. The NAR 2001 Survey does not provide capital (or asset base) data; therefore, the return on capital is used instead.
3. The *Aff* variable measures whether or not a firm participates in an affinity arrangement with third parties to generate listings and find perspective buyers. The affinity groups might include credit card issuers, employers, corporations providing services to customers, members of fraternal associations, members of professional associations, etc. The benefits would include commission reduction, a "getting to know you" package, closing services at a discount, a special mortgage package, and other goods and/or services.
4. The factor analysis provides the benefit of reducing collinearity when including fifteen separate dummy variables in the regression. In the factor analysis, the factor loadings are used to estimate a scoring coefficient for each factor that is used in the regression equation.
5. The NAR is comprised of real estate professionals who are involved in all aspects of the real estate industry (but mostly brokers and real estate salespersons) and who subscribe to a strict Code of Ethics.

6. Given that large residential real estate brokerage firms have historically lower response rates to NAR surveys, extra surveys were sent to larger-sized firms (greater than 200 licensees) and medium-sized firms (11–200 licenses). These additional surveys were sent to ensure a representative response by firms. Responses were then weighted by firms as per the membership rolls included in the NAR database system (NRDS).
7. Historically, NAR's surveys of real estate brokerages had suffered from a biased response where smaller brokerages responded at a rate significantly higher than that of larger brokerages. To reduce this bias, for the 2001 survey, NAR stratified the brokerage industry's firms into four different groups. NAR then "over sampled" firms with 11 to 200 agents and those with more than 200 agents relative to firms with just one agent and those with 2 to 10 agents. These "larger" firms received the survey twice to induce a greater response. A weight was developed to control for both the over sampling of firms with 11 or more agents and for the different response rate for each of the four stratified groups.
8. Factors 2 and 3 are excluded from the final regression equations because they are considerably weaker than Factor 1 and they show no discernable loading patterns. However, for testing purposes, Factors 2 and 3 are included in the preliminary tests of the profitability regression equations. These factor variables are statistically significant in all of the regressions.
9. In matrix notation, let W be a diagonal matrix containing the sample weights w along the diagonal and zeros elsewhere, and let y and X be the usual matrices associated with the left- and right-hand side variables. The weighted least squares estimator is: $bWLS = (X'W'WX) - 1X'W'Wy$. See Greene (1996).
10. The problem of sample selection is similar to a specification error of an omitted variable. Therefore, a regression without the correction produces inconsistent estimates of the regression coefficients (Greene, 1996). In the first stage, a weighted profit equation is estimated. The dependent variable equals 1 (expansion firms) or 0 (pure brokerage firms). The independent variables are shown in Equation 4. In the second stage, the estimated probabilities form a variable for the regression analysis, which is the sample selection coefficient (λ) reported in Exhibit 3.

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