Corporate Real Estate Sales
and
Agency Costs of Managerial Discretion

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Abstract

This study contributes to the literature on corporate real estate sales by examining the financing hypothesis of Lang, Poulsen, and Stulz (1995). We exploit the concept that institutional investor involvement and debt obligations lead to effective monitoring of managers, compelling them to take value-maximizing decisions and thus reducing the degree of agency costs of managerial discretion. We show that the stock market responds more favorably to arm's-length corporate real estate sales by low agency-cost firm-years than those by high agency-cost firm-years. The result supports the financing hypothesis that implies a negative relation between stock market responses to asset sales and degrees of agency costs.

I. Introduction

Asset sales are common corporate activity. How do these transactions affect shareholder wealth? Hite, Owers, and Rogers (1987, HOR hereafter) provide empirical evidence that, on average, asset sales lead to significant share price increases for selling firms. Interpreted by HOR (1987), the positive price reactions are because selling firms capture some of the gains from allocating assets to higher-valued uses. In addition to supporting HOR's (1987) efficiency deployment hypothesis, John and Ofek (1995) also find evidence consistent with their own improving focus hypothesis. In their study, the announcement stock returns are greater for the sellers that increase focus in their business than others. In other words, asset sales eliminate negative synergies between the sold asset and the remaining assets, thus increase share prices. Both the efficient deployment hypothesis and the improving focus hypothesis imply that shareholders benefit from asset sales equally whether management re-invests or pays out the sale proceeds. Implicitly the two hypotheses assume that management maximizes shareholder wealth.[1,2]

In the contrary, Lang, Poulsen, and Stulz (1995, LPS hereafter) advance and present empirical support for their financing explanation of asset sales that arising from management self-interest point of view. Valuing firm size and control, management sells corporate assets to pursue its own objectives that may increase or decrease shareholder wealth. Thus the firms, where agency costs of managerial discretion are important, experience more favorable share price reactions when paying out the proceeds than otherwise. In addition, consistent with the financing hypothesis, LPS (1995) show that the payout decision of sale proceeds is positively correlated with the managerial ownership or investment opportunities of the selling firms. Bates

(2002) confirms the correlations. Nevertheless, LPS (1995) do not find a direct link between stock-price reactions and proxies for agency costs of managerial discretion.

On the other hand, Hirschey, Slovin, and Zaima (1990, HSZ hereafter) have evidence that higher stock returns in responses to general corporate divestments made by U.S. firms are associated with higher levels of bank debt. Lasfer, Sundarsanam, and Taffler (1996, LST hereafter) have the similar finding for market responses to general corporate sell-offs and levels of debt financing in U.K. The two studies both show that efficient monitoring is positively associated with market responses to asset sales and thus, provide more direct evidence linking stock-price reactions and agency costs of managerial discretion.

The studies of general asset sales have been extended to focus on corporate real estate transactions. Examples are Glascock, Davidson, and Sirmans (1991; GDS hereafter), Booth, Gloscock, and Sarkar (1996; BGS hereafter), and Liao and Chang (1996). However the studies have not yet examined LPS's (1995) financing hypothesis. This study contributes to the literature on corporate real estate sales by examining the financing hypothesis. Specifically we examine the link between stock-price reactions and agency costs of managerial discretion in the context of corporate real estate transactions.

Stratifying observations into "high agency-cost firm-years" and "low agency-cost firm-years" with monitoring devices, this study presents evidence that abnormal returns are higher for low agency-cost firm-years than for high agency-cost firm-years in corporate real estate sales. This empirical result supports the financing hypothesis that agency costs of managerial discretion matter in corporate real estate transactions.

The rest of the paper is organized as follows. Section II introduces the empirical methods. Section III describes the data. Section IV presents empirical results. The final section offers some concluding remarks.

II. Empirical Methods

To examine whether low agency-cost firm-years have higher abnormal returns than high agency-cost firm-years in real estate sales, we use the market model as the returns generating process[3]:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{1}$$

where R_{it} is the return on security i on day t, R_{mt} is the return on the market index, Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX), on day t, and ε_{it} is a random error term. For each security, the market model is computed over days –120 to –31 relative to the event date of the sale. The 90-day period conforms to the studies on asset sales of Lin and Shen (1996) in Taiwan. We define the dates when transaction contracts are signed as the event dates. Abnormal returns for security i on day t are calculated as:

$$AR_{it} = R_{it} - \left(\hat{\alpha}_i + \hat{\beta}_i R_{mt} \right) \tag{2}$$

where the coefficients $\hat{\alpha}_i$ and $\hat{\beta}_i$ are ordinary least square estimates of the market model parameters for security i. Abnormal returns are then summed up over the period from day T_1 to day T_2 $(T_1 < T_2)$ to obtain individual cumulative abnormal return defined as:

$$CAR_i(T_1, T_2) = \sum_{t=T_1}^{T_2} AR_{it} \tag{3}$$

The cumulative average abnormal returns over a sample of N securities from day T_1 to day T_2 is:

$$CAR(T_1, T_2) = \frac{\sum_{i=1}^{N} CAR_i(T_1, T_2)}{N} \tag{4}$$

The variance of $CAR(T_1, T_2)$ is defined as:

$$Var(CAR(T_1, T_2)) = \frac{Var(CAR_i(T_1, T_2))}{N} = \frac{1}{N(N-1)} \sum_{i=1}^{N} \left[CAR_i(T_1, T_2) - \sum_{i=1}^{N} \frac{CAR_i(T_1, T_2)}{N} \right] \tag{5}$$

Day T_1 to day T_2 is evaluated over the interval from day –4 to day +2 relative to the event date. The interval coincides with the market response pattern for real estate sales documented by Liao and Chang (1996).[4]

The effect of asset sales on shareholder returns are tested for its significance using the t-statistics defined as:

$$t_{CAR} = \frac{CAR}{\sqrt{Var(CAR)}} \tag{6}$$

Following Noronha, Shome, and Morgan (1996), Lee, Pace, and Slawson (2002) and Lee and Slawson (2004), we stratify firm-years into a "low agency-cost" group and a "high agency-cost" group with monitoring devices. Specifically we group firm-years with institutional shareholdings and book debt-to-asset debt ratios. Existing studies generally support institutional investor involvements and debt-financing serve as effective monitoring mechanism. Examples are Agrawal and Mandelker (1990), LST (1996), and Zantout (1997). In particular, Li, Wu, and Yeh (2003) and Kao, Chiou, and Chen (2004) show institutional investors and creditors are effective monitors in Taiwan. We group the firm-years with both institutional ownership and book debt-to-asset ratios below their individual 50 percentiles into the "high agency-cost" group and the other firm-years into the "low agency-cost" group.[5]

We test the difference in cumulative average abnormal returns between the high agency cost firm-years, CAR_H, and the low agency-cot firm-years, CAR_L, with the statistics defined as:

$$t_{H-L} = \frac{CAR_H - CAR_L}{\sqrt{Var(CAR_H) + Var(CAR_L)}} \qquad (7)$$

where $Var(CAR_H)$ and $Var(CAR_L)$ are the variances of the cumulative average abnormal returns for the high agency-cost firms and low agency-cost firms respectively.

One concern is that the difference between CAR_H and CAR_L reflects the removal of financial difficulties if firms facing financial distress dominate the sample of low agency-cost firms. LST (1996) present evidence showing that the benefit from asset sales comes from the resolution of financial difficulties. To address this concern, we regress the cumulative abnormal returns on degrees of agency costs and financial situations along with other control variables:

$$\begin{aligned} CAR_i = \alpha &+ \beta_1 AG_i + \beta_2 AG_i DC_i + \beta_3 S_i + \beta_4 S_i DC_i + \beta_5 RG_i \\ &+ \beta_6 FID_i + \beta_7 ITD_i + \beta_8 MRD_i + \mu_i \end{aligned} \qquad (8)$$

where

AG_i measures the degree of agency costs, equals 1 for high agency-cost firm-years, and 0 for low agency-cost firm-years.

DC_i is the dummy for financial difficulties and equals 1 when the firm has a coverage ratio in the year before the real estate sale below the sample median and 0 otherwise.

S_i is the relative divestment size represented by the ratio of the real-estate-sale price to firm i's equity market value at the 5 days immediately prior to the event date.

RG_i is the relative divestment profit represented by the ratio of the real-estate-sale

profit (the difference between the selling price and the appraised value) to firm

i's equity market value at the 5 days immediately prior to the event date.[6]

FID_i is the financing dummy equal to 1 when the statement of transaction purposes

reveals that the sale is a financing activity and 0 for other purposes.

ITD_i is the insider-trading dummy equal to 1 when the director/management net buys

the corporate shares for the 6-month period prior to the real estate sale and 0

otherwise.

MRD_i is the market condition dummy equal to 1 when the sale occurred in a bull market

and 0 in a bear market.

μ_i is the error term.

Equation (8) is essentially an extension of LST (1996). Nevertheless, we adopt the agency-cost

dummy. In addition, following LPS (1995), we include DC_i as the measure for financial

difficulties.

We further include variables that are deemed to have influence on market reactions to

asset sales documented in the literature. Clubb and Stouraitis (2002) show that sell-off

profitability has impacts on the market reactions to divestiture announcements by U.K. firms. To

consider the effect, we incorporate RG_i in the equation. Following Lin and Shen (1996), we tell

asset sales for financing purposes from other sales according to the corporate statements of

transaction purposes. The dummy FID_i intends to capture the differential announcement effects

of an asset sale whose purpose is financing other than other purposes. Lin and Shen (1996) use

the financing dummy to capture agency costs proposed in LPS (1995). HSZ (1990) show that

insider-trading activity conveys important information to financial market participants about the valuation of an asset sale event. Thus we incorporate ITD_i into our equation. Liao and Chang (1996) indicate that the market condition may affect market reactions to real estate transactions. We include MRD_i in equation (8) to consider this potential effect. Following Liao and Chang (1996), we classify our study period into bull markets and bear market by the overall trend of TAIEX. As expected, the Asia financial crisis period is classified as a bear market.

III. The Data

We initially purchase custom-built data of fixed-asset sales of non-financial firms occurred during March 7, 1994 to November 20, 2003 from Taiwan Economic Journal (TEJ).[7] TEJ is the predominant financial data provider for Taiwan companies. Supplemented with the M.O.P.S. of Taiwan Stock Exchange and the udndata.com, we identify and focus our analysis on the subset of the TEJ data set that meets each of the following criteria. First the events are real estate sales. We exclude the sales involving non-real properties. This ensures that the asset nature does not influence the return behavior around the events. Second, we exclude not-arm's-length sales. Not-arm's-length sales are where buyers who have stakes and/or potential influence on the corporate governance of sellers or vice versa. This exclusion, similar to BGS (1996), helps to focus on sales actually transferring control. Third, we eliminate contaminated events. Specifically we exclude sales that have earnings or dividends announced, or other real estate sales occurred in the twenty days surrounding their event dates. We also eliminate one observation potentially contaminated by a real estate related rumor. However we merge real estate sales by a firm in the same day. And fourth, samples without the other information need to implement the investigation stated in the previous section are further eliminated. We obtain the

information need to implement the investigation stated in the previous section from the usual TEJ databases and the M.O.P.S. This entire process reveals 81 real estate sales occurred during the sample period.

Table 1 contains the descriptive statistics of the final sample. Panel A shows the distribution of the real estate sales over time. The numbers of real estate sales start to increase dramatically in 1997, reach its peak in 1998, then decline and ease to the pre-1997 level from year 2001. The pattern may be caused by our sample selection criteria. Nevertheless the pattern appears to coincide with the perception that the Asia financial crisis may affect corporate real estate holding decisions. Panel B presents other descriptive information about the sample. The mean selling firm's market capitalization is NT$ 39,728 million (median NT$ 9,690 million) and the mean selling price of real estate is NT$ 653 million (median NT$ 267).[8] The mean profit, the difference between the selling price and the appraised value, from the real estate sales is NT$ 18 million (median NT$ 6 million). The mean ratio of selling price over the market capitalization of the selling firm is 19.526% (median 4.409%) and the mean ratio of profit over the market capitalization of the selling firm is 0.166% (median 0.036%).[9]

IV. Empirical Results

The section presents our empirical results. Table 2 summarizes the CARs for the full sample, and separately for the two "high agency-cost" and "low agency-cost" subsamples. The full sample has a significant CAR of 2.368%. The evidence confirms the general outcome of the existing studies that sellers achieve positive unexpected returns at real estate transactions. That is, this result supports the research of GDS (1991), BGS (1996), and Liao and Chang (1996).

The results of the subsamples are consistent with the financing hypothesis that implies a negative relation between stock price effects and degrees of agency costs in asset sales. Specifically the high agency-cost subsample experiences no significant unexpected returns in their real estate sales. The CAR for this subsample is –0.350%. On the other hand, the low agency-cost subsample achieves significant positive unexpected returns. This subsample experiences a CAR of 3.319%. As expected, the difference in the CARs between the two subsamples is statistically significant. The overall results of the subsamples suggest that the positive unexpected returns experienced by real estate sellers are driven by the low agency cost subsample.

Table 3 reports the coefficient estimates for the regression model of Equation (8). Same to Table 2, Table 3 also supports the financing hypothesis. The coefficient on the agency-cost variable AG_i is negative and significant in all specifications. This indicates a negative relation between stock price effects and degrees of agency costs in real estate sales. The results are consistent with the concept that institutional investor involvement and debt obligations lead to effective monitoring of managers, compelling them to take value-maximizing decisions and thus reducing the degree of agency costs of managerial discretion. The coefficient on the interactive term $AG_i DC_i$ is not significant. This does not support LST's (1996) idea that equity investors value monitoring more when the selling firm is financially distressed and the bankruptcy event is avoided. It is likely that our sample firms are financial healthy relative to LST's (1996) firms and face no immediate bankruptcy threat. However our results are consistent with LPS (1995) who imply that the relation between abnormal returns and agency costs does not depend on the selling firm's financial situations.

The ratio of the real estate sale price to the selling firm's equity market value does not appear to have influence on market responses. The positive sign of the coefficient on S_i is the same to the findings in previous studies on asset sales. However the insignificant coefficient on S_i is different from the significant and positive coefficient documented in previous studies on asset sales. These studies include Klein (1986) and LPS (1995). Klein (1986) suspects that the positive coefficient occurs because the transaction price relays information about the net present value of the investment. Clubb and Stouraitis (2002) cast doubt on this explanation and think that the relative transaction size is likely a proxy for the motivation to increase focus.[10] Nevertheless LPS (1995) argue that relative transaction sizes should be negatively correlated to stock market unexpected returns, if sales primarily convey information about the selling firm's financing requirements and hence the firm's financial situation. Apparently there is no consensus on the expectation of the relation between transaction sizes and market responses to asset sales. The insignificant coefficient in our sample suggests that the forces mentioned in the previous studies may offset each other. The negative coefficient on $S_i DC_i$ is consistent with the expectation of LST's (1996) expectation that the stock market response to the transaction size should be greater for financial distressed firms. Nevertheless the coefficient is not significant and thus does not provide support to their expectation. Interestingly LST (1996) themselves are not able to produce supporting evidence, either. In fact, they find that the relative size of the divestment is significant for the healthy, but not for the distressed firms in influencing market reactions. The results are contrary to their expectation.

The relative divestment profit RG_i has a positive coefficient. However the coefficient is not significant. The result does not support Clubb and Stouraitis (2002) who show sell-off profitability has impacts on the market reactions to divestiture announcements by U.K. firms. A

possible explanation is the small magnitude of the relative divestment profit in our sample. Eighty percent of the sample has the relative profit only between -0.157% and 0.843%. The coefficient signs for the financing dummy FID_i and insider-trading dummy ITD_i are consistent with the results of Lin and Shen (1996) and HSZ (1990). Nevertheless neither of the two coefficient estimates is significant. Given the agency cost variable AG_i in the equation, their insignificance is not surprising. Different from Liao and Chang (1996), we find no evidence that the stock market responds more favorably to real estate sales in bull markets than in bear markets. It is likely because Liao and Chang (1996) do not consider the other factors we consider in this study.

V. Conclusion

The financing hypothesis of LPS (1995) implies a negative relation between stock market responses to asset sales and degrees of agency costs. Interestingly LPS (1995) do not find a direct link between stock-price reactions and proxies for agency costs of managerial discretion. Although HSZ (1990) and LST (1996) show such a link in not-real-estate sales, the existing studies on corporate real estate sales has not yet examined LPS's (1995) financing hypothesis.

Supporting LPS's (1995) hypothesis, our study provides new evidence that agency-costs of managerial discretion matter in market responses to asset sales in the context of corporate real estate transactions. Thus this study not only adds to the literature on corporate sell-offs but also contributes to those on corporate real estate sales. We explore the influence of monitoring mechanism on market responses to arm's-length sales of corporate real estate. Consistent with the concept that institutional investor involvement and debt obligations lead to effective monitoring of managers, compelling them to take value-maximizing decisions and thus reducing the degree of agency costs of managerial discretion, our evidence shows that abnormal returns

are higher for low agency-cost firm-years than for high agency-cost firm-years in corporate real estate sales.

Endnotes

[1] Lang, Poulsen, and Stulz (1995) explicitly point out the shareholder wealth maximization assumption in the efficient deployment hypothesis.

[2] The information hypothesis is another explanation that implies management sells corporate assets to maximize shareholder wealth. Hite, Owers and Rogers (1987) examine and reject this hypothesis in the U.S. context. In addition the information hypothesis should be less applicable in the countries where asset revaluation is permitted such as Taiwan.

[3] Booth, Glascock, and Sarkar (1996) use a market model that permits unexpected returns to follow a generalized autoregressive conditional heteroscedastic (GARH) process in their study on corporate sell-offs of real estate assets in US. Lin and Shen (1996) also use a market model with a GARCH process in studying general asset selloffs in Taiwan. Both of the studies conclude that the traditional OLS approach provides overall economic results essentially identical to the GARCH model.

[4] The length of the event interval may reflect the nature of real estate transactions and the price change limits set in the Taiwan stock market. Firms in a real estate transaction usually undergo a period of negotiation and need to seek advices from real estate appraisal firms before signing a transaction contract. Therefore the market may know the information before the contract dates.

[5] The two monitoring devices certainly are not all monitoring devices and the grouping rule may not be the best. Thus our grouping may blur the distinction between actual high-agency firms and actual low-agency firms. Fortunately, as pointed out by Lee and Slawson (2004) and Lee, Pace and Slawson (2003), this consequence should create bias against us to find the significant difference in market responses between classified high-agency firms and classified low-agency firms.

[6] The M.O.P.S. of Taiwan Stock Exchange provides the appraised values of real estate made by real estate appraisal firms for each sale.

[7] Starting from March 7, 1994, Taiwan Stock Exchange required firms to report their sales within two days of the transactions occurred.

[8] NT$34 was about US$1 on November 20, 2003.

[9] A firm usually finances its real estate assets with mortgages. Therefore the selling price can excess the market capitalization of the selling firm's equity stocks. That is, the ratio of selling price over the market capitalization of the selling firm can be greater than 100%.

[10] This explanation does not apply to our study, since none of our sample changes their operating activities materially from selling real estate assets.

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Table 1: Descriptive statistics of the sample of real estate dispositions

Panel A: Disposition activity by year

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Disposition	1	8	2	15	22	11	13	3	5	1

Panel B: Characteristics for the final 81 real estate dispositions

	Firm market value (NT$ million)	Real estate selling price (NT$ million)	Profit on the disposition (NT$ million)	S_i (%)	RG_i (%)
Mean	39,728	653	18	19.526	0.166
Maximum	287,800	6,491	957	483.990	53.622
75% Percentile	30,274	705	16	7.809	0.198
Median	9,690	267	6	4.409	0.036
25% Percentile	4,319	183	0	1.090	0.001
Minimum	108	102	-129	0.042	-24.296

Notes.

1. S_i is the relative divestment size represented by the ratio of the real-estate-sale size to firm i's equity market value at the 5 days immediately prior to the event date.

2. RG_i is the relative divestment profit represented by the ratio of the real-estate-sale profit (the difference between the selling price and the appraised value) to firm i's equity market value at the 5 days immediately prior to the event date.

Table 2: Cumulative average abnormal returns of the full sample and the subsamples

	Full sample (N=81)		High agency-cost sample (N=21)		Low agency-cost sample (N=60)		Difference
Interval	CAR (%)	t_{CAR}	CAR (%)	t_{CAR}	CAR (%)	t_{CAR}	t_{H-L}
-4 to 2	2.368	1.956*	-0.350	-0.307	3.319	2.113**	-1.889*

Notes. * Significant at the 0.1 level; ** Significant at the 0.05 level.

Table 3: Regression analysis of CAR_i on the agency-costs of managerial discretion

Specification	1		2		3	
Adjusted R^2	0.190		0.216		0.010	
	Coefficient	t value	Coefficient	t value	Coefficient	t value
Intercept	0.618	0.38	1.100	0.918	3.319	2.130
AG_i	-2.851	-1.675*	-2.941	-1.759*	-3.669	-1.916*
AG_iDC_i	1.969	0.773	2.092	0.789		
S_i	0.238	1.237	0.240	1.203		
S_iDC_i	-0.165	-0.844	-0.172	-0.848		
RG_i	0.141	0.349	0.165	0.415		
FID_i	-0.888	-0.422				
ITD_i	0.105	0.056				
MRD_i	1.502	0.721				

Notes.

1. AG_i measures the degree of agency costs, equals 1 for high agency-cost firm-years, and 0 for low agency-cost firm-years.

2. DC_i is the dummy for financial difficulties and equals 1 when the firm has a coverage ratio in the year before the real estate sale below the sample median and 0 otherwise.

3. S_i is the relative divestment size represented by the ratio of the real-estate-sale size to firm i's equity market value at the 5 days immediately prior to the event date.

4. RG_i is the relative divestment profit represented by the ratio of the real-estate-sale profit (the difference between the selling price and the appraised value) to firm i's equity market value at the 5 days immediately prior to the event date.

5. FID_i is the financing dummy equal to 1 when the statement of transaction purposes reveals that the sale is a financing activity and 0 for other purposes.

6. ITD_i is the insider-trading dummy equal to 1 when the director/management net buys the corporate shares for the 6-month period prior to the real estate sale and 0 otherwise.

7. MRD_i is the market condition dummy equal to 1 when the sale occurred in a bull market and 0 in a bear market.

8. The t-statistics are based on White's correction for heteroscedasticity.

9. * Significant at the 0.1 level.