Relative Values for Asset Sales

by

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Abstract

This study provides evidence that the outcome for shareholders resulting from asset sales is determined at the time of transaction by the value for the asset sold. Assets sold above market value are followed by positive and significant abnormal returns over the following three months; these returns are magnified in firms where the balance of power in external governance favors shareholders. Abnormal returns following undervalued asset sales are insignificant from zero, indicating value-preservation. Value-preservation when the assets are sold below market value is more likely for firms that are approaching financial constraints and for firms with quality internal governance. This evidence is documented for apartment REITs where the volume of comparable transactions is sufficient for estimation of expected market values at the time of sale.

Keywords: Asset sales; Apartments; REITs; Corporate governance

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Introduction

There is some disagreement in the finance literature as to whether asset sales result in an increase in shareholder wealth. The source of disagreement appears related to differences in the ex ante motives of managers. Managers can be viewed as either opportunistic or motivated by liquidity, which would have a deterministic impact on the sale price. Yet, valuation effects for asset sales have not been considered because expected market values are extremely challenging to estimate for the typical firm in the stock market where there is often lack of comparable transaction data due to large and heterogeneous assets being sold (e.g., specialized manufacturing equipment, oil rigs). An opportunity to consider valuation effects exists for the REIT sector where similar assets are being sold and comparable transaction data is often available from local real estate markets.

The sale of any asset provides a source of funds to the firm. The relative value for an asset is defined here as the transaction price compared to the expected market value for that asset. A distinction can be made based on these values: an asset sale at higher than expected value is opportunistic; an asset sale at lower than expected is liquidation. The ultimate transaction price determines the opportunity cost of funds generated from sale proceeds, which limits the possible use of funds that are value-enhancing. Asset sales at relatively high market values may serve as the lowest-cost source of capital available to the firm enabling managers to pursue the firm's objectives, consistent with the financing explanation of Lang, Poulsen and Stulz (1995). Assets sold at relatively low market values have high opportunity cost but may be essential to relax financing constraints – related to the liquidity explanation of asset sales by Shleifer and Vishny

(1992). The focus is on the consequence of the managerial decision to sell an asset either above or below expected market value.

Generating funds through asset sales is value-enhancing only when managers distribute the proceeds to shareholders or invest in unfunded positive NPV projects (Bates 2005). However, these outcomes are based on the ensuing use of funds which are contingent on the decision to sell, asset selection and valuation. Prior to transaction, managers consider a purpose for the asset sale which is either opportunistic or necessity-based. Opportunistic sales are motivated by efficiency allocation, with assets being sold to the most productive firms where the investment value is high (e.g., Hite, Owers and Rogers 1987). Necessity-based asset sales are the result of financial constraints imposing spontaneous demand for liquidity. Whether asset sales are motivated by liquidity or relative valuation should result in different outcomes for the shareholders. Liquidation typically occurs at a low market value (Shleifer and Vishny 1992), and funds generated for liquidity purposes are less likely to be distributed. The sale of assets at relatively high market values corresponds with a low cost of capital, expanding the set of financially feasible projects. Thus, relative asset values provide a unique identification strategy for evaluating the opportunity set available to managers on the sale date.

This study provides evidence that the outcome for shareholders is decided on the transaction date through the relative asset value. On the few days immediately surrounding the date of transaction, there is no reaction as the use of funds is unobservable to investors. Instead, a market response is delayed up to three months until at least the next quarterly accounting statement is reported. Firms with fixed assets sold above expected market values experience

positive and significant abnormal returns of more than 2 percent compounded over a 61-trading day window following the transaction, or approximately 9 percent on an annualized basis. In contrast, asset sales occurring below expected market value are not associated with a significant price reaction over the following three months. This evidence suggests that asset sales above expected values are value-enhancing decisions, while asset sales below expected values are ineffective.

Due to the delayed reaction, it is possible that the asset sale itself is not directly causal, but instead is actually symbolic of managerial decisions at large during this period and other factors may also contribute to the abnormal returns. Whether managerial decisions are consistent with shareholder objectives is known to be influenced by internal and external control mechanisms. Agency conflicts can lead to overinvestment and result in poor diversification.[2] Focusing explanations by Schoar (2002) and John and Ofek (1995) suggest that asset sales increase value by reducing the scope of investment. Reallocation of resources following asset sales provides a correction for inefficient investment (Dittmar and Shivdasani 2003). High-quality internal corporate governance can pressure managers to sell unproductive assets (Boot 1992), and insist that sale proceeds are dedicated to value-enhancing uses (Dittmar and Mahrt-Smith 2007). Managers are also influenced externally through the level of shareholder rights. To determine whether the influence of corporate governance is distinct for asset sales above or below expected market values, I consider metrics for internal and external control as factors that might contribute to abnormal returns. To capture external control mechanisms, I use the corporate governance

[2] Overinvestment occurs when managers invest in manager-specific assets (Shleifer and Vishny 1989) or attempt to maximize firm size, when compensation is a function of size (Baker, Jensen and Murphy 1988). Inefficient diversification could be the consequence of attempts to reduce their own risk when managers are heavily invested in the firm's equity (May 1995).

index introduced by Gompers, Ishii and Metrick (2003). For internal control, I generate an index of blockholdings by institutional investors, analogous to the approach of Dittmar and Mahrt-Smith (2007). The findings of this study reveal that abnormal returns following asset sales at higher than expected market values are significantly influenced by the corporate governance index of Gompers, Ishii and Metrick (2003). Abnormal returns for asset sales below expected values are impacted by the index of blockholdings. These findings suggest that the value created from opportunistic asset sales is enhanced through a balance of power that favors shareholders. On the other hand, firm value is more likely to be preserved (less likely to be negatively impacted) following undervalued asset sales when there is high quality of internal governance, proxied by the ownership of institutional investors.

Another issue is that managers may encounter financial constraints and have pressing demands for funds – this intensifies their urgency as sellers of long-term assets. The market for fixed assets lacks liquidity and impatient sellers face tradeoffs between expected time-to-sale and accepting discounts to the asset value. Firms facing financial constraints are more likely to use proceeds from asset sales to quench fixed charges, and the opportunity to invest the funds in positive NPV projects is reduced. Asset sales are more common in firms that are underperforming and have high levels of debt (Warusawitharana 2008; Lang, Poulsen and Stulz 1995). I investigate whether the benefits that accrue to firms selling overvalued or undervalued asset are related to a higher probability of facing financial constraints by creating the financial constraints index following Whited and Wu (2006). I find that undervalued asset sales are more likely to preserve value when the firm is facing a higher probability of being financially

constrained. This also implies that when a firm is in good financial health, undervalued asset sales may be unnecessary and actually destroy firm value.

Other studies find that firm value increases coinciding with asset sales;[3] however, the connection between relative asset values and the outcome for shareholders remains an unexplored topic in the finance and real estate literature. Existing explanations for positive stock price reactions following asset sales include efficiency allocation (Hite, Owers and Rogers 1987), focusing (Schoar 2002); John and Ofek 1995) and financing (Lang, Poulsen and Stulz 1995). In the real estate literature, corporate asset sales are largely considered in setting of divestiture and sell-offs, including studies by Campbell, Petrova and Sirmans (2006), Booth, Glascock and Sarkar (1996), and Mcintosh, Ott and Liang (1995). The concept of relative values for asset sales is drawn from the argument of Lang, Poulsen and Stulz (1995) that asset sales can be the lowest-cost source of funds for the firm. Both Bates (2005) and Lang, Poulsen and Stulz (1995) examine the use of funds from asset sales, finding that the stock price reaction is positive only when proceeds are distributed. This study is most related to the work of Bates (2005) and Lang, Poulsen and Stulz (1995) in recognizing that asset sales do not benefit every firm due to managerial discretion over the use of funds. The key distinction is where I focus on the comparison of transaction prices to expected market values to verify the outcome for shareholders, rather than relying on subsequent observation of the use of funds. The contribution of this study is an identification strategy whereby relative values for asset sales have a deterministic impact on the outcome for shareholders. The extent to which these outcomes are value-enhancing or value-preserving depends on the existing internal and external control mechanisms, as well as proximity to

[3] For examples see Alexander, Benson and Kampmeyer (1984), Hite, Owers and Rogers (1987), John and Ofek (1995).

financial constraints on the date of transaction. These findings largely support the financing hypothesis for value creation in asset sales, which is contingent upon managerial discretion over the use of funds.

The remainder of this paper is organized as follows. Section 1 describes the data used for estimating relative asset values, along with the development of indexes for corporate governance and financial constraints. Section 2 outlines the estimation of short- and long-horizon abnormal returns for the overvalued and undervalued samples of asset sales. Section 3 develops an approach that examines the impact of corporate governance and financial constraints, which considers internal determinants of asset sales proposed by Warusawitharana (2008). Section 4 summarizes the conclusions of this study.

1. Data and variables

Relative asset values offer a unique identification strategy for evaluating firm performance following asset sales. Many fixed assets are physically heterogeneous and trade in segmented markets with scarce transaction data available. Previous studies examine the total value of asset sales using information obtained from 8K forms reported to the SEC, but are unable to estimate relative asset values.[4] The approach I adopt is to consider relative values for asset sales by examining income-producing property transactions by Real Estate Investment Trusts (REITs), where comparable transaction data is available and provided by the CoStar Group. The focus is on apartment properties which are relatively less heterogeneous assets compared to other

[4] For example, Warusawitharana (2008) uses the SDC Platinum database to collect the total value of asset sales, while Lang, Poulsen and Stulz (1995) search the NEXIS database.

categories of income-producing property, including industrial, office or retail.[5] Existing studies in the real estate literature serve as a foundation for estimating the relative asset value for apartments at the time of sale.

Income-producing apartment sales are considered using transaction-level market data with a national scope provided by the CoStar Group.[6] A comprehensive sample of apartment sales is collected over a period ranging from September 1989 through the end of the second quarter of 2008.[7] The apartment sales sample includes 29,041 properties. Asset sales by REITs are identified individually, based jointly on seller name and address.[8] In all, 354 REIT apartment sales are identified in 73 geographic markets.[9]

Expected apartment values are estimated individually for each market, based on physical, legal and locational attributes, with controls for submarket activity and market conditions. In the real estate literature, the fundamentals for apartment valuation are commonly based on the work of

[5] Demand for apartments within each market consists of a large pool of potential users who desire small and similar quantities of space with short-term leases. For industrial, office and retail properties, there are fewer tenants with unique requirements and varied leasing terms. Thus, for income-producing properties, apartment values are estimated on a per unit basis with a higher degree of accuracy.

[6] CoStar provides listing and marketing services for commercial real estate. The data available from CoStar is based on transactions that resulted from these listing services. There are other opportunities for sellers to list and market apartment properties including the local Multiple Listing Service (MLS). The decision to list with CoStar is influenced by sellers who desire to attract a national audience for their property.

[7] September 1989 is the first apartment property transaction reported in the CoStar data.

[8] The list of REIT company names is based on CRSP data availability, collected from the sample of firms with SIC code 6798. At the end of July 2008 the list includes 329 firms.

[9] The list of 73 markets includes Albuquerque, Atlanta, Augusta, Austin, Baltimore, Baton Rouge, Birmingham, Boston, Charleston (SC), Charlotte, Chattanooga, Chicago, Cincinnati/Dayton, Cleveland, Colorado Springs, Columbia, Columbus, Dallas/Ft Worth, Denver, Detroit, East Bay/Oakland, Fayetteville, Fort Wayne, Greensboro/Winston-Salem, Greenville/Spartanburg, Hampton Roads, Houston, Huntington/Ashland, Huntsville, Indianapolis, Inland Empire (CA), Jackson, Jacksonville (FL), Las Vegas, Lexington/Fayette, Little Rock, Long Island (NY), Los Angeles, Louisville, Marin/Sonoma, Memphis, Milwaukee/Madison, Minneapolis/St Paul, Nashville, New York City, Northern New Jersey, Ocala, Oklahoma City, Orange (CA), Orlando, Philadelphia, Phoenix, Portland (OR), Portland (ME), Providence, Raleigh/Durham, Richmond (VA), Sacramento, San Antonio, San Diego, San Francisco, Santa Barbara, Savannah, Seattle/Puget Sound, South Bay/San Jose, South Florida, Tallahassee, Tampa/St Petersburg, Toledo, Tucson, Washington DC, Westchester/South Connecticut, Wichita.

Lambson, McQueen and Slade (2004), who develop a sequential search model where buyers are assumed to differ in the number of units they will purchase. Based on this theoretical assumption, the dependent variable is the natural log of price per unit, ln(*Price_per_unit*). Analogous to the model of Lambson, McQueen and Slade (2004), the operational model is written as:

$$\ln(Price\_per\_unit) = \beta_0 + \beta_1 \cdot Age + \beta_2 \cdot Age^2 + \beta_3 \cdot N\_units + \beta_4 \cdot N\_units^2 + \beta_5 \cdot Avg\_unit\_size + \beta_6 \cdot Avg\_unit\_size^2 + \beta_7 \cdot Land\_area + \beta_8 \cdot Land\_area^2 + \beta_9 \cdot OT\_Buyer + \sum_{i=10}^{M} \beta_i \cdot YearQ_i + \sum_{j=M+1}^{N} \beta_j \cdot SubMkt_j + \sum_{k=N+1}^{Z} \beta_k \cdot Sale\_Condition_k \quad (1)$$

The variable *Age* is property age in years. *N_units* is the number of units in the property. *Avg_unit_size* is the average unit size in square feet. *Land_area* is the lot size measured in square feet, divided by *N_units*. *OT_Buyer* is a dummy variable indicating out-of-state buyers, who tend to overpay for apartments. While the focus of Lambson, McQueen and Slade (2004) is actually on whether out-of-state buyers pay more for real estate, their model is now commonly used as the foundation for apartment hedonics because it is one of the earliest to use CoStar data for estimating multifamily property values.

Real estate cycles are geographically dispersed and idiosyncratic in nature, and the model in equation (1) is estimated individually for each market with *YearQ* indicator variables for each quarter. A generalized linear procedure is implemented using maximum likelihood estimation for the parameter vector including a dispersion parameter. The *SubMkt* variables are dummy variables for each submarket within a market.[10] The *Sale_Condition* variables are indicator

[10] For example, the New York City model includes 4 submarkets defined by CoStar: Uptown, Midtown, Midtown South and Downtown.

variables for unique sale conditions identified by CoStar research following the transaction.[11] The standardized residuals for 224 REIT sales are collected from the estimations of equation (1).[12] These residuals represent the difference from the expected local market value at the time of sale in the relevant submarket, given the possible sale conditions and physical property characteristics. The transaction date and CRSP permno are collected to analyze the consequences for shareholders and factors that influence those outcomes. 132 of the REIT sales have positive residuals revealing that these properties were locally overvalued at the time of sale. The "premium" sample consists of 132 REIT sales with positive residuals, while the "discounted" sample consists of 92 REIT asset sales with negative residuals.

According to Bates (2005), whether asset sales are ultimately a benefit to shareholders is contingent on the funds being distributed. A related issue is that managers may favor control over funds from asset sales with potentially fewer restrictions than outside funds raised in the capital markets. REITs provide an attractive setting to examine the consequence of asset sales because of their obligation to payout at least 95 percent of net income as dividends.[13] Another distinction is that apartment REITs generally invest only in apartments, which reduces the likelihood that asset sales are motivated by product focusing efforts, although geographic focusing cannot be ruled out as a possible objective.

[11] There are 107 unique pairs of sale conditions in the sample. Examples include 1031 exchange, soil contamination, and deferred maintenance.
[12] Standardized residuals are unavailable for 130 of the 354 REIT apartment sales due to data limitations. Examples include transactions where property age, or lot size are unreported.
[13] The mean percentage change in quarterly dividends following an asset sale is insignificant from zero for the premium and discounted samples.

Asset sales at a premium to expected market value reflect superior managerial decisions which are consistent with obtaining lowest available cost of capital. These decisions are opportunistic and can increase shareholder wealth, depending on the use of funds. Managerial discretion over the use of excess funds is related to firm performance through corporate governance. Dittmar and Mahrt-Smith (2007) provide evidence that firms with poor corporate governance are more likely to commit excess cash holdings towards unproductive projects that are non-beneficial to shareholders. Gompers, Ishii and Metrick (2003) construct a corporate governance index based on the count of 24 possible provisions that restrict shareholder rights, labeled the G index.[14] Higher values for the G index indicate greater managerial power and lower shareholder rights. The G index measures external governance mechanisms related to the market for corporate control and exposure to takeover. Internal governance mechanisms are the result of monitoring by large shareholders, with institutional investors commonly participating as active shareholders. To measure the quality of internal governance, the Block index is generated using data from 13(f) filings reported in CDA/Spectrum. The Block index measures the percent of shares held by institutional investors with at least 5 percent ownership, as in Dittmar and Mahrt-Smith (2007).

Following Schleifer and Vishny (1992), undervalued asset sales in the set are more likely to be motivated by liquidity needs. To examine this issue, the REIT transaction dates are merged with accounting data from Compustat. The financial constraints index is constructed following Whited and Wu (2006). Several distinctions are made based on available REIT accounting information. First, REITs typically do not report PP&E and instead report total real estate property, which is substituted for PP&E throughout this analysis. Second, REITs seldom report

[14] The data is derived from publications of the Investor Responsibility Research Center, and the index is available on Professor Metrick's website.

current assets or current liabilities. The adjustment is to approximate current assets as total asset minus total real estate property holdings, and current liabilities as total liabilities minus long-term debt. Finally, all REITs pay dividends during the sample, so the dividend indicator variable in the Whited-Wu (WW) index takes a uniform value of 1.

Table 1 reports the summary statistics for the sample, comparing differences in firm characteristics between the two samples. Several previous studies examining asset sales are related to mergers and divestiture.[15] However, none of the asset sales in this sample of REITs are related to mergers or bankruptcy. As of September 2009 (one year after the most recent asset sale in the sample), not a single firm in the sample had filed for bankruptcy. In one case, CBRE Realty Finance was permanently delisted from the NYSE in November 2008 after failing to sustain a minimum value due to toxic mortgage assets. CBRE Realty Finance accounts for only one asset sale in March 2008.

2. Asset sales and stock returns

Abnormal stock return methods are used to evaluate the identification strategy generated from relative values for asset sales. Previous studies examining price reactions to asset sales document significant abnormal returns around the announcement date.[16] However, a necessary condition for event studies around the announcement date is that the asset sale is publicly announced by the firm. The data used in this study is unique in that the observations are based

[15] Examples of studies examining asset sales related to mergers include Maksimovic and Phillips (2001), Jovanovic and Rousseau (2002). Studies considering asset sales during divestitures include Alexander, Benson and Kampmeyer (1984), Boot (1992), Schlingemann, Stulz and Walkling (2002), Dittmar and Shivdasani (2003), Çolak and Whited (2007).

[16] Examples include Alexander, Benson and Kampmeyer (1984), Lang, Poulsen and Stulz (1995), Bates (2005).

on transaction data in contrast to public announcements. Large-scale apartment transactions are sporadically covered by local newspapers, although seldom is there an official press release from the selling firm. Out of 224 asset sales in the full sample, only 24 sales were announced publicly by the selling REIT.[17] Instead, information related to the asset sale is generally deferred to the next quarterly accounting statement. Such passive disclosure practice suggests that it may be relevant to consider up to 60 trading days following the transaction, in addition to the few days immediately surrounding the transaction date.

Price reactions during two short-horizon windows include a window that spans from one day before the transaction to one day after (-1,+1) and a window ranging from five days before the transaction to five days after (-5,+5). The method is to estimate a market model using a 250 day estimation period that ends 50 trading days before the transaction date, using the equally-weighted CRSP index as the market factor.[18] Abnormal returns are calculated as the difference between the actual and projected returns on a given day within the window. Cumulative abnormal returns (CAR) measure aggregate abnormal returns during the window. Mean and median cumulative abnormal returns are reported in Table 2. As expected, short-horizon price reactions are not significant for either window in the three samples.[19] This lack of evidence coheres with the record that news of these transactions is essentially local business and more than 89 percent are unannounced by the selling firm.

[17] The 24 announcements occur at the earliest one day before the transaction and up to three trading days after at the latest.
[18] Other indexes considered include the CRSP value-weighted index, the S&P 500 and the Nasdaq Composite. The CRSP equally-weighted index produces the lowest aggregate mean squared error over the 224 estimations.
[19] Differences between mean and median cumulative abnormal returns for the premium and discounted samples are not significant.

In cases where the press release includes transaction price and sale proceeds, it is unclear whether this news should be interpreted as positive or negative news without considering relative asset values. Measures of operating performance may improve, but it could take up to three months before the next quarterly accounting statement is released. For this reason, long-horizon reaction is examined over the 61-trading day window coinciding with the transaction date (0,+60). Long-horizon abnormal returns are vulnerable to misspecification (e.g., Fama 1998). To address this concern, three methods are adopted to examine the price reaction over the 61-day window. The first approach is to consider the mean cumulative abnormal return, similar to estimations in the short-horizon analysis. The second procedure calculates buy-and-hold price reactions as the mean compound abnormal return over the 61-day window. The third method makes use of the three-factor model introduced by Fama and French (1993), with the addition of Cahart's (1997) momentum factor.

Table 3 provides the results from the estimates of price reactions over the (0,+60) window. For the full sample and discounted sample, there is no evidence of a significant price reaction around the transaction date of the asset sale. Abnormal returns are small or negative for the discounted sample. Conversely, asset sales in the premium sample are followed by positive and significant long-horizon abnormal returns based on all three methods. These findings support the identification strategy for asset sales based on relative asset values. Largely unannounced asset sales experience no significant price reaction during the immediate window surrounding the transaction date. Instead, the price reaction is delayed up to three months, but only for the assets sold above expected market value. Buy-and-hold compound returns for the overvalued sample outperform the market by more than 9 percent on an annualized basis. This evidence suggests

that sales of overvalued assets are opportunistic and provide a signal for the quality of managerial decisions. The benefits from opportunistic decisions are realized by shareholders over a period that includes the release of the next quarterly accounting report.

Given the magnitude of abnormal returns which accrue over the long-horizon window in comparison to the size of the average asset sale, it is not practical to conclude that the asset sale itself causes this entire return. Instead, it is more likely that the relative value for the asset sale is simply evidence of prudence and market timing by managers during a period which precedes superior stock performance. Other factors which should influence managerial decisions during this period are discussed in the next section, including the determinants of assets sales, corporate governance, and financial constraints.

3. Influential factors in long-horizon price reactions

The identification strategy supported by evidence in the previous section is that relative values for asset sales correspond with long-horizon outcomes for shareholders. The necessary set of information for estimating whether asset sales are above or below expected market values is available in a sample of comparable transaction data, and not in the public announcement. The long-horizon (61-day) abnormal returns associated with asset sales above expected market value are pronounced and substantiate opportunistic selection by managers. Analysis outlined in this section examines whether long-horizon abnormal returns associated with asset sales are related to corporate governance or financial constraints. Corporate governance encompasses frictions in the market for corporate control; the concern is for managerial discretion over use of sale

proceeds. According to Dittmar and Mahrt-Smith (2007), managers in firms with strong shareholder rights are expected to exercise diligence with unsaturated cash by investing in positive NPV projects and distributing unnecessary funds. However, asset sales may be related to financial constraints, in which case managerial prudence may result in sale proceeds that are absorbed primarily by debt.

The effects of corporate governance and financial constraints are considered after the transaction occurs, although preceding motives should have a deterministic impact. Warusawitharana (2008) provides a theoretical foundation for the asset sales decision based on endogenous selection related to the underlying fundamentals. As an empirical strategy, Warusawitharana (2008) proposes the following variables as determinants of asset sales: return on assets, size, momentum, market-to-book, leverage, cash, sales growth, and PP&E growth.[20] The set of determinants is based on the prediction that changes in profitability and investment opportunities trigger the asset sale decision. My approach is to adopt the set of variables used by Warusawitharana (2008) to consider whether anterior motives, proxied through the fundamental characteristics of the firm, have a significant impact on the long-horizon abnormal returns following an asset sale.

Table 4 presents the results from the estimation of long-horizon, cumulative abnormal returns and the determinants of asset sales for the full sample. From the set of variables proposed by Warusawitharana (2008), firm size, momentum, cash and the market-to-book ratio have a negative and significant impact on the long-horizon abnormal returns. In Warusawitharana

[20] Warusawitharana (2008) also proposes a wave dummy variable which corresponds to a heightened period of asset purchases and sales over a two-year window. The wave dummy is found to be a significant determinant for asset purchases, but not for asset sales.

(2008), large firms are more likely to sell assets than small firms and the evidence in Table 4 suggests that asset sales have a greater impact on abnormal returns following the sale for small firms. Small firms have limited access to capital markets and asset sales can serve as a valuable source of internal finance. Warusawitharana (2008) posits that firms grow organically: firms with high momentum are more likely to purchase assets, while those with less momentum are more likely to sell assets. I find that abnormal returns following asset sales are significantly higher for firms with less momentum over the previous 12-months. Firms with low realized returns are more likely to have underperforming assets that drain valuable resources. Market-to-book ratio is a proxy for investment opportunity, with low values indicating better opportunities. Abnormal returns are significantly higher for firms selling assets when there are better investment opportunities available. Outcomes from asset sales are also related to liquidity, as firms with large cash holdings experience significantly lower abnormal returns after an asset sale.

The external corporate governance measure is the G indexes, internal governance is proxied by the Block variable, and for financial constraints is the WW index. The three indexes are evaluated separately and there is a need to control for determinants of asset sales. Table 5 provides the correlation coefficients between the set of asset sale determinants and the variables of interest, which are the corporate governance and financial constraints indexes. The set of variables proposed by Warusawitharana (2008) do not have joint independence from the three variables. The adjustment is to include the subset of asset sale determinants (on the left-hand side of Table 5) that are not significantly correlated with the corresponding financial constraint index or measure of corporate governance. For instance, to examine the impact of the G index,

the variables size, momentum, cash and PPE growth are included as controls for the ex ante motivation for the asset sale. Sales growth, leverage, market-to-book and ROA are omitted due to significant correlation with the G index.

Table 6 reports the results of weighted-least squares estimates for the impact of the corporate governance and financial constraints variables on the long-horizon abnormal returns following the asset sale. The weights are the inverse of the standard deviation of the residuals from the market model estimating the cumulative abnormal returns. The models are estimated separately for the premium and discounted samples. The standard errors are generated from the heteroskedasticity-consistent estimator of the covariance matrix introduced by White (1980). Statistical significance for each coefficient is evaluated based on these standard errors.

The first model in Table 6 considers the impact of the G index on the premium sample, and the coefficient for G index is negative and significant. The G index is the corporate governance index proposed by Gompers, Ishii and Metrick (2003), where low values for the G index indicate stronger shareholder rights. Low values for the G index result in significantly higher abnormal returns following the sale of assets above expected market values. These sales are opportunistic and associated with significant abnormal returns over the three-month window following the transaction. Those abnormal returns are amplified for firms with strong shareholder rights, as measured by the G index.

For the discounted sample, the G index is not significant. Instead, the coefficient for Block is positive and significant. Block measures the percent of shares held by institutional investors

with at least 5 percent ownership. Higher values for Block are associated with higher quality of internal governance through the collective influence of institutional shareholders on the board of directors. Controlling for conditions that prevailed when managers decided to sell assets below market value, the outcome for shareholders is improved when there is high participation by institutional investors. Absent effectiveness of internal governance, managers favor control and are inclined to squander excess cash or pursue suboptimal investment. Thus, internal governance is beneficial when assets are sold below market value; external governance is valuable when assets are sold above market value.

The impact of the WW financial constraints index is estimated in the final column for each sample. In the premium sample, the WW index does not have a significant impact on abnormal returns. For the sample of assets sold below expected market value, the coefficient for the WW index is positive and significant. The WW index is increasing in the likelihood that a firm will face financial constraints, and Whited and Wu (2006) find that the WW index is associated with a risk premium for stock returns. Firms appearing constrained in the WW index are highly-leveraged small firms with low cash flow and limited revenue growth relative to the industry. Financially constrained firms face increasing costs of external finance, and some sell assets to raise cash for liquidity needs. Limited access to capital markets reduces managerial flexibility and investment opportunities. This suggests that undervalued asset sales are beneficial to financially constrained firms. Conversely, undervalued asset sales are detrimental, or unnecessary, when the firm is unconstrained.

4. Conclusion

The findings of this study document empirically that relative values for asset sales identify unique outcomes for shareholders. Asset sales occurring above expected market values are followed by positive and significant abnormal returns, estimated to be at least 2 percent over the following three months. In contrast, there is no evidence that asset sales occurring below estimated market value result in either positive or negative abnormal returns. Thus, relative values for asset sales provide an identification strategy which reveals the opportunity set of managers at the time of transaction, based on the opportunity cost for the source of funds.

Overvalued asset sales correspond with a period of value-enhancement. Abnormal returns during this long-horizon are positively influenced by the index of external corporate governance introduced by Gompers, Ishii and Metrick (2003). This suggests that value created from opportunistic asset sales is enhanced through a balance of power that favors shareholders. Undervalued asset sales are value-preserving (neither value-increasing, nor value-decreasing). Abnormal returns for the discounted sample of asset sales are positively influenced by an index of institutional investor blockholdings, as well as the Whited and Wu (2006) financial constraint index. This suggests that firm value is more likely to be preserved following discounted asset sales when there is high quality of internal governance, measured by institutional ownership. It also suggests that discounted asset sales may be necessary when firms are financially constrained.

These findings complement two sides of the literature dedicated to asset sales. One side provides existing explanations for asset sales which rely on the ex ante motives of managers, including

efficiency allocation, focusing and financing. The other side considers that the ex post use of funds generated from asset sales determine the outcome for shareholders. The contribution of this study is to emphasize that there is relevant information revealed at the time of transaction, including the actual transaction price relative to the expected market value. While firms have no obligation to provide a press release for every asset sale, this information is shown to be symbolic of managerial prudence and reveals a connection between the ex ante motives and the ex post use of funds.

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Table 1
Sample of asset sales

This table reports summary statistics and *p*-values for difference in means and medians between the overvalued and undervalued samples. The premium and discounted samples are identified based on asset sales above or below expected market values, based on the estimation of equation (1). Value of sale ($M) is the total dollar value of the asset sale in millions of dollars. ROA is return on assets, defined as operating income before depreciation divided by total assets. Total Assets ($M) is book values reported in millions. Momentum is the past 12-month stock returns. Market-to-Book is the ratio of market value of equity to book value of equity. Leverage is the ratio of total long-term debt to total assets. Cash is the ratio of cash and short-term investments to total assets. Sales growth measures the most recent annual percentage change in total revenue for the firm. PPE growth measures the most recent annual percentage change in total real estate property for the firm. G index is the index of corporate governance introduced by Gompers, Ishii and Metrick (2003). Block measures the percentage of shares held by institutional investors who hold at least 5 percent of the outstanding shares. WW index is the financial constraints index introduced by Whited and Wu (2006). All accounting values are from the most recent annual statements prior to the asset sale. Corporate governance indexes take on the value of the most recent year reported prior to the asset sale. Block holdings are from the most recent quarter prior to the asset sale.

	Full sample [224 sales]		Premium sample [132 sales]		Discounted sample [92 sales]		*p*-values for difference: Means	Medians
	Mean	(Median)	Mean	(Median)	Mean	(Median)	*t*-test	Mann-Whitney
Value of sale ($M)	23.1	(18.4)	25.5	(22.0)	19.5	(11.3)	0.107	0.000
ROA	0.0773	(0.0756)	0.0766	(0.0745)	0.0784	(0.0772)	0.201	0.246
Total Assets ($M)	8,351	(10,017)	8,683	(10,017)	7,876	(10,017)	0.251	0.180
Momentum	0.123	(0.167)	0.078	(0.113)	0.187	(0.261)	0.004	0.003
Market-to-Book	2.277	(2.274)	2.353	(2.318)	2.170	(2.108)	0.074	0.053
Leverage	0.569	(0.573)	0.561	(0.568)	0.581	(0.573)	0.138	0.040
Cash	0.0177	(0.0161)	0.0163	(0.0161)	0.0197	(0.0161)	0.177	0.297
Sales growth	0.0528	(0.0335)	0.0516	(0.0245)	0.0547	(0.0335)	0.808	0.190
PPE growth	0.0559	(0.0373)	0.0578	(0.0373)	0.0533	(0.0312)	0.782	0.036
G index	8.191	(9.0)	8.237	(9.0)	8.123	(8.0)	0.613	0.282
Block	0.309	(0.307)	0.310	(0.302)	0.308	(0.314)	0.892	0.578
WW index	0.513	(0.500)	0.511	(0.500)	0.518	(0.500)	0.219	0.109

Table 2
Asset sales and short-horizon abnormal returns

This table reports the mean and median cumulative abnormal returns for the windows (-1,+1) and (-5,+5) relative to the asset sale transaction date. Mean and median values are reported for the full sample, as well as the premium and discounted samples. In parentheses is the value of *Z* score introduced by Patell (1976), testing the null hypothesis that mean abnormal returns are zero. In brackets is the *p*-value from the nonparametric rank test introduced by Corrado (1989).

	From day -1 to day +1		From day -5 to day +5	
	Mean	Median	Mean	Median
Full sample (224 sales)	0.00% (0.743)	-0.15% [-0.871]	0.29% (0.032)	0.26% [0.184]
Premium sample (132 sales)	0.12% (0.003)	-0.19% [-0.574]	0.43% (0.310)	-0.01% [-0.049]
Discounted sample (92 sales)	-0.18% (-1.156)	-0.11% [-0.868]	0.08% (0.321)	0.47% [0.298]

Table 3
Asset sales and long-horizon returns: 61-day window

This table reports the abnormal returns for the window (0,+60) relative to the asset sale transaction date. The results of three models for long-horizon event studies are reported for the full sample, as well as the premium and discounted samples. Panel A reports the mean cumulative abnormal using methods described in Table 2. Panel B reports the coefficient for the intercept from the three-factor model introduced by Fama and French (1993), with the addition of Cahart's (1997) momentum factor. The Fama-French factors include the return on the value-weighted market portfolio minus the one-month Treasury bill rate, the difference between the return on a portfolio of small firms and the return on a portfolio large firms, the difference between the return on a portfolio of high book-to-market stock and the return on a portfolio of low book-to-market stocks, as well as the excess return on winners versus losers based on the previous year returns. In Panel C, buy-and-hold abnormal returns are created by compounding 61 daily returns starting on the transaction date and subtracting the compound estimated returns during the same period based on the market model. Based on the corresponding *Z* score for each test, * and ** indicate statistical significance at the 5% and 1% level, respectively.

	Full sample [224 sales]	Premium sample [132 sales]	Discounted sample [92 sales]
Panel A: CAR60			
Mean Cumulative Abnormal Return	1.93%	3.13%**	0.19%
(Patell *Z*)	(1.440)	(2.466)	(0.707)
Panel B: Fama-French Momentum			
Mean Cumulative Abnormal Return	1.26%	2.81%**	-0.95%
(Generalized *Z*)	(1.478)	(2.747)	(-0.985)
Panel C: Buy-and-Hold Abnormal Returns			
Mean Compound Abnormal Return	1.06%	2.21%*	-0.59%
(Generalized *Z*)	(1.024)	(2.021)	(-0.822)

Table 4
Abnormal returns and determinants of asset sales

This table reports the results of weighted-least squares regression for CAR60, which is the 61-day cumulative abnormal returns collected from the estimation for Panel A in Table 3. The weight is the inverse of the standard deviation for the residual from the market model. Regressors are based on the determinants of asset sales developed by Warusawitharana (2008). All variables are defined in Table 1, except Size, which is measured as the log of the book value of total assets. Standard errors are robust to heteroskedasticity using the adjustment to the covariance matrix suggested by White (1980); * and ** indicate statistical significance based on the χ^2 test using these standard errors at the 5% and 1% level, respectively.

Dependent variable:	Full sample	
CAR60	Coefficient	(Standard error)
Intercept	0.61864**	(0.157)
Size	-0.04372**	(0.011)
ROA	0.4875	(1.033)
Momentum	-0.27054**	(0.035)
Market-to-Book	-0.0545**	(0.012)
Leverage	-0.11254	(0.094)
Cash	-1.21826*	(0.504)
Sales growth	-0.2853	(0.172)
PPE growth	0.05361	(0.142)
Number of observations:	219	
R-square:	34.87%	

Table 5
Correlation among regressors

This table reports the correlation coefficients for the variables of interest in this analysis. In the first column are potential control variables based on the determinants of asset sales developed by Warusawitharana (2008). On the top row are the measures of corporate governance and financial constraints index. All variables are defined in Table 1, except Size, which is measured as the log of the book value of total assets. * and ** indicate statistically significant correlations at the 5% and 1% level, respectively.

	G index	Block	WW index
Size	0.058	0.052	-0.985**
ROA	0.32**	0.084	0.434**
Momentum	-0.106	0.033	0.286**
Market-to-Book	0.641**	0.161*	0.051
Leverage	-0.146*	0.001	0.313**
Cash	-0.068	-0.302**	0.205**
Sales growth	-0.147*	-0.215**	-0.179**
PPE growth	-0.053	-0.257**	-0.189**

Table 6
Abnormal returns, corporate governance and financial constraints

This table reports the results of weighted-least squares regression for CAR60, which is the 61-day cumulative abnormal returns collected from the estimation for Panel A in Table 3. The weight is the inverse of the standard deviation for the residual from the market model. Control variables are from Warusawitharana (2008). Control variables are omitted when there is significant correlation between the variable of interest and control variables as reported in Table 5. Variables of interest are the G index, Block, and WW index evaluated in individual regressions. G index is the index of corporate governance introduced by Gompers, Ishii and Metrick (2003). Block measures the percentage of shares held by institutional investors who hold at least 5 percent of the outstanding shares, as in Dittmar and Mahrt-Smith (2007). WW index is the financial constraints index introduced by Whited and Wu (2006). All variables are defined in Table 1. Standard errors are robust to heteroskedasticity using the adjustment to the covariance matrix suggested by White (1980); * and ** indicate statistical significance based on the χ^2 test using these standard errors at the 5% and 1% level, respectively.

Dependent variable:	Premium sample			Discounted sample		
CAR60	Coef	Coef	Coef	Coef	Coef	Coef
Intercept	0.30992*	0.24315	-0.23381	0.61475**	0.72298**	-0.36432*
	(0.143)	(0.177)	(0.136)	(0.162)	(0.276)	(0.146)
Size	-0.00853	-0.02933*		-0.05309**	-0.05197**	
	(0.017)	(0.013)		(0.017)	(0.018)	
ROA		0.58575			-3.46752*	
		(0.941)			(1.479)	
Momentum	-0.26728**	-0.24513**		-0.21064**	-0.2356**	
	(0.048)	(0.042)		(0.052)	(0.064)	
Market-to-Book			-0.00379			-0.04062*
			(0.015)			(0.016)
Leverage		-0.06638			-0.08454	
		(0.153)			(0.158)	
Cash	-2.71702*			-0.31835		
	(1.185)			(0.416)		
PPE growth	-0.03185			-0.26671*		
	(0.089)			(0.110)		
G index	-0.01847*			-0.01060		
	(0.008)			(0.007)		
Block		0.17933			0.28588*	
		(0.104)			(0.113)	
WW index			0.49897			0.85578**
			(0.255)			(0.275)
Number of observations:	116	114	129	79	83	90
R-square:	29.33%	27.33%	2.53%	28.16%	23.33%	11.68%