NAV Ratios and REIT Takeovers: The role of Public and Private Deal Premiums

Ryan G. Chacon[†]
University of Colorado, Colorado Springs

Thibaut G. Morillon[††]
Elon University

Abstract:

We investigate how price-to-NAV ratios impact Equity REITs in the market for corporate control. REITs are more likely to be targeted if they are trading at discounts to NAV. For each acquisition, there is a public deal premium (deal value relative to stock price) and a private deal premium (deal value relative to NAV). REITs trading at discounts to NAV command significantly larger public deal premiums and smaller private deal premiums. Shareholders of targeted REITs respond more favorably to transaction announcements if they are trading at discounts to NAV. The average target 3-day cumulative abnormal return (CAR) at announcement is 11% greater for REITs trading below 0.95 price-to-NAV than for REITs trading above 1.05. The sale of a REIT trading at a discount to NAV appears to be a productive transaction for potential acquirers and target shareholders alike. Buyers acquire the REIT at or near the private market valuation (NAV) and target shareholders exit at a significant premium to the public market valuation (stock price).

[†] Contact Author: Ryan G. Chacon is with the University of Colorado, Colorado Springs in the Department of Finance. E-Mail: rchacon2@uccs.edu. Phone: 619-781-7948.

[††] Thibaut G. Morillon is with Elon University in the Department of Finance. E-Mail: tmorillon@elon.edu. Phone: 336-278-6605.

Introduction

Property portfolios of equity Real Estate Investment Trusts (REITs) are unique in that they trade on two distinct markets: the public stock market and the private commercial real estate market. Analysts routinely estimate the net asset value (NAV) of the REITs' property portfolio on the private market. Whether these estimated NAVs and their deviations from stock prices represent mispricing (and associated arbitrage opportunities) or are simply a function of slow-moving private market valuations is subject to debate. However, recent empirical evidence suggests these price-to-NAV ratios are meaningful measures of relative valuation to both managers and shareholders.

Managers appear to monitor the price-to-NAV ratio to inform optimal corporate decision making. Boudry et al. (2010) examine how REIT financing choices are related to the level of relative valuation. Specifically, they find that REITs are more likely to issue equity when they are trading at a premium to NAV. Wiley and Kim (2019) document that a REITs premium or discount to NAV impacts REIT acquisition and disposition activity. REIT net investment (acquisitions minus dispositions) is positively related to price-to-NAV ratios. Shareholders also incorporate the price-to-NAV ratio in their investment decision making. Chacon et. al (2020) find analyst estimates of NAV convey unique information to the stock market. Downs et al. (2019) show that activist investors are more likely to target REITs trading at discounts to NAV. We contribute to this line of research by examining the role of relative valuation in another key area of corporate and investor decision making: the market for corporate control.

Practitioners frequently note that REITs trading at discounts to NAV make attractive takeover targets. For example, Cohen and Steers, Inc. makes the following statement:

"The existence of opportunities for investors to acquire public REITs at parity to NAV or less is what is fueling the continued takeover activity by both public and private investors."

- *Cohen and Steers, Inc., November 2018*[1]

An M&A transaction will always occur at a deal value above the stock price of the target. Therefore, opportunities to acquire a REIT at or near the NAV will only occur when the REIT's stock price is below the NAV. When REITs are trading at premiums to NAV, the deal value will necessarily be well above the NAV because the current stock price is greater than the NAV and the deal value will be greater than the stock price.

Anecdotal evidence suggests REIT shareholders may also view the outright sale or merger of the REIT as a successful exit option when trading at a discount to NAV. An activism case highlighted in Downs et al. (2019) illustrates this view. Well known REIT activist, Land & Buildings Investment Management LLC (L&B), took a large ownership stake in the residential REIT American Residential Properties, Inc. (ARPI). L&B specifically noted share price underperformance relative to the NAV as a reason for the intervention. Ultimately, ARPI merged with American Homes 4 Rent (AMH) in a public-to-public transaction[2]. L&B had the following comment expressing support for the merger:

"We are pleased the Board of American Residential Properties has chosen to move forward with a transaction, a path which we believe represents a positive outcome for all shareholders. As we

[1] https://www.cohenandsteers.com/insights/read/riding-a-wave-of-reit-ma-us

[2] Note from both the Cohen and Steers quote and the L&B example that the usefulness of the NAV is not only for public-to-private "arbitrage" transactions but also for public-to-public transactions where the NAV serves as a measure of intrinsic value.

have publicly stated, ARPI has traded below its intrinsic value for some time and it was clear that a new path was needed to unlock the value imbedded in the Company."

- *Jonathan Litt, Founder and Chief Investment Officer (L&B)*[3]

If REITs trading at discounts to NAV are attractive targets to potential acquirors and their sale is a sufficient exit option for current shareholders, it follows that the price-to-NAV ratio should impact the likelihood of being acquired. Acquirers could purchase the REIT at near or below the NAV and shareholders can liquidate their underperforming investment without taking a significant loss relative to the underlying value of the assets. However, there are a few reasons to suspect this may not be the case.

First, the broad publication of REIT NAVs by sell-side analysts implies that all parties, including the REITs shareholders, management, the board who approves the sale, and potential acquirors, are privy to the level of price discrepancy between the two markets. Therefore, selling parties may be reluctant to sell at a discount to the NAV, even when the current stock price is significantly depressed. If REITs are unwilling to sell at discounts to the NAV, buyers may be unable to make a profitable acquisition. The existence of a publicly available NAV as a reference point may deter potential acquirors all together.

Second, the existence of an active parallel market from which the NAV is derived provides REIT management a potentially superior alterative to an outright sale of the entire REIT. Unlike most industrial corporations who cannot easily sell their assets piecemeal at a profitable price, REITs do have this flexibility, albeit with some limitations. The ability of the REIT to dispose of properties near the estimated NAV value should place upward pressure on the price at which

[3] https://www.businesswire.com/news/home/20151203005913/en/Land-Buildings-Comments-Merger-American-Residential-Properties

potential acquirors would be able to purchase the REIT. This upward pressure could make the acquisition less attractive to potential bidders, decreasing the likelihood of the REIT being targeted.

Interestingly, Wiley and Kim (2019) decompose asset acquisition and disposition activity and find that REITs are no more likely to dispose of assets when trading at a discount to NAV. They argue that REITs inability to dispose of assets without significant tax consequences (Mühlhofer, 2013) and managements financial incentive to be larger (Graff, 2001) limit this channel. Given all these factors, whether the price-to-NAV ratio is a determinant of REIT M&A activity is an open empirical question we aim to address.

We investigate the acquisition of 79 equity REITs with available NAV data between 2001 and 2017 and test whether the price-to-NAV ratio is a determinant of takeover likelihood. We construct a matched sample using propensity score matching (PSM) and find that REITs that are acquired have significantly lower price-to-NAV ratios than the matched sample of REITs that are not acquired. Because price-to-NAVs tend to move together for the entire REIT market and within property sectors, we also examine price-to-NAV relative to the average price-to-NAV of the market and property sector. In all cases, we find that price-to-NAV ratios are between 6% and 14.5% lower for targeted REITs than for their non-targeted counterparts. This evidence suggests that price-to-NAV ratios are a significant determinant of takeover likelihood.

If the price-to-NAV ratio is a determinant of takeover likelihood, it is natural to question how it impacts other aspects of the transaction. Arguably the most important component of an M&A negotiation is the price the acquirer pays for the target. This price, known as the deal value,

is typically evaluated relative the stock price of the target to determine the deal premium.[4] Due to the existence of parallel asset markets for their properties, REIT acquisitions face two distinct deal premiums: a public deal premium and a private deal premium. The public deal premium is the deal value relative to the REITs stock price and the private deal premium is the deal value relative to the estimated NAV.

We next examine how the price-to-NAV ratio impacts public deal premiums. Given all parties are privy to the estimate of value of the REITs assets, we hypothesize that the negotiated deal value will anchor toward the NAV value. If the estimated NAV is a reasonable measure for what the REIT could ask for the property portfolio on the private market, then private market competition should place upward pressure on the deal value of REITs trading at discounts to NAV and place downward pressure on the deal value of REITs trading at premiums to NAV. This implies a negative relation between price-to-NAV ratios and public deal premiums. REITs trading at discounts to NAV will command higher public deal premiums and REITs trading at premiums to NAV will command lower public deal premiums.

This hypothesis may not hold true due to the lack of bargaining power of REITs trading at steep discounts to NAV. REITs trading at such discounts may not be able to negotiate attractive deal premiums for their shareholders. These REITs are more likely to be targeted by activists (Downs et al., 2019) and may have disgruntled shareholders seeking to change the management team. In contrast, REITs trading at premiums may be in a comfortable position to negotiate greater deal premiums. Their lack of desperation may allow them to only select attractive deals. We therefore turn to the data to see which hypothesis is supported.

[4] The stock price of the target is usually lagged to reduce the impact of information leading up to the announcement from estimating the targets baseline value (i.e. the run-up).

We document consistent evidence that the price-to-NAV is negatively related to public deal premiums, consistent with the hypothesis that deal values anchor toward the NAV. The average deal premium for REITs acquired with a price-to-NAV ratio below 0.95 is 1.19 (19%) and the average deal premium for REITs acquired with a price-to-NAV ratio greater than 1.05 is 1.11 (11%). In multivariate analysis, we find that the coefficient of each measure of price-to-NAV ratio (firm, market-adjusted, and sector-adjusted) is negative and statistically significant in a regression on deal premiums with a robust set of control variables and fixed effects.

If acquirers have to pay greater public deal premiums for REITs trading at lower price-to-NAV ratios, why do they continue to target them? While they pay larger premiums over the stock price (public deal premiums), they pay lower premiums, or even discounts, to the NAV (private deal premiums). The average private deal premium for REITs trading at a price-to-NAV below 0.95 is 0.97. This implies that the average deal for these REITs occurs 3% *below* their estimated private market value. For REITs trading at a price-to-NAV greater than 1.05, the average private deal premium is 1.29, suggesting acquirers pay 29% above the estimated private market value. The large private deal premium for REITs trading at higher price-to-NAV ratios is necessary because REITs cannot be acquired at a price below the current stock price. If acquirers incorporate the private market value of the REIT in their target selection process, REITs trading at discounts to NAV should make for more attractive targets. Taken together, these findings suggest that attractive private deal premiums are an important factor as to why REITs trading at discounts are more likely to be targeted.

Lastly, we examine how price-to-NAV ratios impact the target REIT shareholder reaction to deal announcements. Given shareholders own the REIT in the public market, the public deal premium directly impacts their return. If REITs trading at discounts to NAV are able to garner

greater public deal premiums, we anticipate they will also command greater target shareholder responses to the deal announcements. Consistent with this intuition, we document a significantly greater target [-1,+1] trading day CAR response for REITs trading at discounts to NAV than those trading at premiums. Specifically, REITs acquired with a price-to-NAV ratio below 0.95 have an average CAR of 17% and those with a price-to-NAV ratio greater than 1.05 have an average CAR of 6%. Multivariate analysis confirms this finding after controlling for key variables identified in the previous M&A literature.

Our work contributes to three strands of the literature. First, a burgeoning literature examines the role of parallel asset markets for equity REIT corporate decisions. Broadly, the evidence suggests that NAV estimates are meaningful. Some of the work focuses on how management responds to their firms premium or discount to NAV (Boudry et al., 2010; Wiley and Kim, 2019). Other work focuses on how equity investors and activists respond to NAV (Downs et al, 2019; Chacon et al., 2020). Our work is the first to our knowledge to examine how the parallel asset markets impact the market for corporate control.

Second, our work builds on a relatively mature literature of M&A in the REIT space. Our paper is specifically focused on drivers of takeover likelihood and wealth effects for targets. While several papers document various drivers of takeover likelihood for equity REITs (Eichholtz and Kok, 2008; Hardin and Wu, 2009; Ling and Petrova, 2011), we are the first to our knowledge to investigate the price-to-NAV ratio and the associated public and private deal premiums. Additionally, while most papers compare wealth effects in the REIT industry to general corporations, we focus on how announcement returns are affected by price-to-NAV ratios.

Lastly, we contribute to the broader M&A finance literature. A subset of the literature focuses on the role of target valuation in takeover likelihood (Edmans et al., 2012; Dong et al.,

2006). Given target valuation relative to the stock price is notoriously difficult to calculate for industrial firms, we provide an interesting laboratory where an estimate of the targets value is more readily apparent.

The remainder of the paper is organized as follows. Section two reviews the relevant literature. Section three develops the testable hypotheses. Section three and four describes the data and empirical methods, respectively. Section five discusses the findings and section six concludes.

Literature Review

There exists a relatively large literature on REIT M&A activity (see Glascock et al. 2018 for a comprehensive review of the literature). Our paper is specifically related to the literature on the drivers of takeover likelihood and the sources of target announcement returns. With regard to drivers of takeover likelihood, Eichholtz and Kok (2008) use an international sample of real estate firms and show that poor operating and stock price performance leads to an increased likelihood of being targeted. They argue that the market for corporate control is active in the real estate market and inefficient managers are targeted. Hardin and Wu (2009) focus on the access to finance channel. They show that REITs that lose their primary banking relationship are more likely to be acquired.

Ling and Petrova (2011) provide a broader investigation of the characteristics of REITs that become takeover targets. They find that REITs are more likely to be targeted if they are smaller, are not UPREITs, have lower liquidity, have higher dividend yields and higher institutional ownership. The focus of their paper is on the differences between public-to-public acquisitions and public-to-private acquisitions. Specifically, they find that targets of private bidders have lower leverage and lower profitability ratios than targets of public bidders. They also

examine target announcement returns and document that public-to-private deals lead to greater abnormal returns. We are unaware of any real estate literature that examines the impact of target valuation on takeover likelihood. We fill this gap in the literature but utilizing the unique feature of parallel asset markets to proxy for target valuation in REITs.

Many papers quantify abnormal returns to targets at the announcement date of the acquisition.[5] A key finding in the real estate literature is that abnormal returns around announcement dates for REITs are significantly lower than for industrial firms. Various arguments are put forth as to why this is the case, each relating to the nature of the real estate industry. For example, Campbell et al. (2002) and Eichholtz and Kok (2008) argue that the homogeneity of assets decreases potential synergy gains. Womack (2012) argues it may be driven by predicable future cash flows, long-term leases, and other features of real estate assets. Rather than focusing on comparing target announcement returns in the REIT industry to general corporations, our paper focuses on how target announcement returns are impacted by NAV estimates.

The unique feature of parallel asset markets for REITs has been explored in various contexts in the real estate literature. Much literature has focused on identifying the source of the discount (or premium) to NAV (Capozza and Lee, 1995; Barkham and Ward, 1999; Clayton and MacKinnon, 2001; Anderson et al., 2005; Brounen et al., 2013). Variables such as short sale constrains, volatility, firm size, insider ownership, tax structure, agency costs, leverage, and risk have been linked to the discrepancy between stock prices and NAVs. More recent literature investigates NAVs as analyst estimates. For example, Chacon et al. (2020) shows that analyst estimates of NAV contain significant incremental information for investors. Letdin et al. (2019)

[5] Allen and Sirmans, 1987; McIntosh et al., 1989, Elayan and Young, 1994; Campbell et al., 1998; Campbell et al., 2001; Li et al., 2001; Sahin, 2005; Campbell et al. 2005; Eichholtz and Kok, 2008; Campbell et al., 2009; Campbell et al., 2011; Ling and Petrova, 2011; Womack, 2012.

show that NAV analyst coverage has a positive impact on REIT value and a negative impact on REIT volatility.

Our paper closely relates to a burgeoning literature that examines how discounts or premiums to NAV impact REIT manager and shareholder decision making. Boudry et al. (2010) show that REITs are more likely to issue equity when they are overvalued, as measured by their premium to NAV. Downs et al. (2019) find that REITs trading at discounts to NAV are more likely to be targeted by shareholder activists. Ling et al. (2016) examine the asset growth anomaly and find that REITs with higher growth rates tend to underperform REITs with lower growth rates. Interestingly, they document that this result is mitigated when the fast-growing REITs are trading premiums to NAV, suggesting asset growth is potentially valuable when the REIT has a cost of capital advantage in the public market. Kim and Wiley (2019) examine how the premium (discount) to NAV impacts REIT transaction activity in the property market. They document an increase in net real estate investment when REITs are trading at premiums to NAV. However, when they decompose net real estate investment into acquisitions and dispositions, they find the result is driven by increased acquisition activity when the REIT is overvalued relative to the commercial property market. That is, when REITs are undervalued, they do not find evidence that REITs are more likely sell assets. They argue that this finding may be driven by regulation REITs face when disposing of assets. As noted in Mulhlhofer (2013), REITs are subject to the dealer rule which subjects them to minimum holding periods for properties.

A mature literature exists in the mainstream finance literature examining M&A. A key strand of literature pertaining to our work focuses the relation between firm valuation and takeover likelihood. While the findings are mixed of whether undervalued firms are more likely to be targeted, a few notable studies document this relation. Edmans et al. (2012) finds that stock price

undervaluation leads to a significant increased likelihood of being a takeover target. Similarly, Dong et al. (2006) find that low valuation multiples lead to an increased likelihood of takeover.

Lastly, Baker et al. (2012) document the role of anchoring in the M&A negotiations process. Specifically, they show that deal values are biased towards recent peaks in target stock prices (e.g. the 52-week high). They argue that parties use these somewhat arbitrary price peaks as anchors to simplify the merger valuation process. In our context, the reference point is the NAV and although it is far from arbitrary, it can very well serve as an anchor that drives up deal values when the REIT is trading at a discount to NAV.

Hypothesis Development

In this paper, we investigate how the existence of parallel markets for REIT properties impact the market for corporate control. Specifically, we focus on the case where the REIT is a takeover target. We first question how the existence of an active market for the REITs properties impacts the likelihood of the REIT to be a takeover target. Analysts routinely estimate the NAV of the REIT using market comparables from recent property transactions in the private market. This NAV provides a benchmark for the intrinsic value of the REIT's assets that is meant to be compared to the current stock price of the REIT.

In a world with no frictions and accurate public and private market valuations, if a REIT were trading a significant discount to its NAV, the market for corporate control would activate and potential buyers would make a profitable acquisition. The buyers would seek to buy at a premium to the current stock price and a discount to the NAV. The acquiror would capture the difference between the purchase price and the NAV and the sellers would earn a premium the current public market value of their shares.

However, there are two reasons to suspect this may not be the case. First, while the REIT and prospective buyers conduct their own NAV analysis, sell-side analyst estimated NAVs are publicly available information. Therefore, all parties involved in the transaction are privy to the estimated value of the REITs properties on the private market. This publicly available knowledge could limit the acquirer from being able to purchase the REIT at an attractive price relative to the intrinsic value. Second, unlike most industrial firms, REITs have the option to sell their properties individually on the private commercial real estate market. They may be able to transact at or near the estimated NAV, given the NAV is estimated based on this market. If they can sell properties at the NAV, why would they pursue a sale of the entire REIT at a share price below the NAV?

While these factors are likely at play, it is plausible that REITs trading at discounts to NAV still represent attractive M&A opportunities for both acquirors and target shareholders. First, consider the private deal premium an acquirer would receive if they purchased a REIT trading at a premium to NAV compared to a REIT trading at a discount to NAV. Assume REIT A and REIT B both had the same stock price of $100 and were acquired for $112/share (1.12 public deal premium). REIT A was trading at a price-to-NAV of 1.10 (premium) and REIT B was trading a price-to-NAV of 0.90 (discount). While the public deal premium is identical for each, the private deal premiums for each transaction would be 1.23 and 1.01 for REIT A and REIT B, respectively.[6] If, as anecdotal evidence suggests, acquirers incorporate the NAV in their analysis, they should be more likely to target REITs trading a discount to NAV.

Additionally, while REITs may have the option to sell their properties piecemeal in the private market, they face some limitations in doing so. REITs were initially created by congress to

[6] REIT A private deal premium = $112/$91 = 1.21. REIT B private deal premium = $112/$111=1.01. NAVs for each are calculated based on stock price of $100 and price-to-NAV of 1.10 and 0.90.

be passive vehicles; therefore, they are limited from significant property portfolio turnover. Wiley and Kim (2019) examine property disposition activity and price-to-NAV ratios and do not find a significant relation. They note that this may be because REITs are subject to the dealer rule (Mulhlhofer, 2013) and management generates more fee income from being larger (Graff, 2001). Therefore, REITs may be reluctant or unable to dispose of properties with such ease. Given these arguments, whether REIT discounts to NAV are related to takeover likelihood is ultimately an empirical question. We therefore investigate the following null hypothesis:

H1: There is no relation between the Price-to-NAV ratio and the likelihood of being a takeover target.

Next, we investigate how the parallel markets for REITs assets impacts public and private deal premiums of REIT M&A. The deal value is the price negotiated by the acquiror and target that is sufficient to entice equityholders of the target to sell and equityholders of the acquiror to buy. How is this price negotiated and how would the parallel market for REITs assets impact these negotiations?

We hypothesize there exists a negative relation between price-to-NAV ratios and public deal premiums and a positive relation between price-to-NAV ratios and private deal premiums. If REITs can sell their individual properties in the private market at or near the estimated NAV, potential acquirors in the public market are forced to compete with the private market participants for the REITs assets. This should lead to acquisition prices closer to the NAV. Therefore, larger public deal premiums would accrue to REITs trading at greater discounts to NAV.

This relation should also hold when the REIT is trading at a premium to NAV. However, no REIT would sell at a discount to the current stock price, regardless of how low the NAV is

relative to the stock price. Therefore, the deal value will always be above NAV in the case of a REIT trading at a premium to NAV. Competition in the private market for the REITs assets would be moderated given the high relative public market valuation. This would place downward pressure on the negotiated deal value, resulting in a lower public deal premium for REITs trading at high price-to-NAV ratios.

We expect REITs with low price-to-NAV ratios to command lower private deal premiums than those with high price-to-NAV ratios. The ability to purchase a REIT at or near the NAV is precisely what makes low price-to-NAV REITs attractive takeover targets for potential acquirers. REIT shareholders agree to the sale because they can exit at an attractive public deal premium. Given REITs cannot be purchased for less than the stock price, the private deal premium will be larger for REITs trading at higher price-to-NAV ratios.

Alternatively, REITs trading at steep discounts to NAV are generally perceived to be underperforming firms. Downs et al. (2019) shows that these firms are more likely to be targeted by activist investors pushing for change. REITs trading at premiums to NAV are generally perceived to be healthy firms. It is possible that REITs trading at discounts to NAV may have less bargaining power in M&A negotiations than those trading at premiums to NAV. In that case, REITs trading at low price-to-NAV ratios may be cornered into suboptimal public and private deal premiums whereas those trading at high price-to-NAV ratios can select attractive deals. This hypothesis would predict a positive relation between the price-to-NAV ratio and public deal premiums. For private deal premiums, this would also suggest a positive relation with price-to-NAV. The relation between price-to-NAV ratios and deal premiums is therefore an empirical question for which we state the following null hypotheses.

H2a: There is no relation between price-to-NAV ratios and public deal premiums.

H2b: There is no relation between price-to-NAV ratios and private deal premiums.

Lastly, we examine the relation between the Price-to-NAV ratio and target shareholder wealth effects. Equityholders in the REIT are predominately concerned with the public deal premium as it represents directly their return on investment. If acquisitions of REITs trading at low price-to-NAV ratios are transacted at relatively high public deal premiums, equity investors in the target REIT are likely to respond more favorably to the announcement of the acquisition. If the deal value occurs near the NAV, this would represent a successful exit for shareholders who were able to liquidate underperforming investments without having to sell at the depressed public market valuation. Similarly, if REITs trading at high price-to-NAV ratios are sold at relatively low deal premiums, we expect the shareholder reaction to be smaller.[7] If, however, the bargaining power hypothesis holds true, REITs trading at lower price-to-NAV ratios would command lower premiums. In this case, we expect the target shareholder response to suffer as well. Therefore, our final hypothesis is stated as follows:

H3: There is no relation between the Price-to-NAV ratio and target wealth effects.

Data

We collect data on M&As involving a U.S. equity REIT target from 2001 to 2017 from SNL Financial where NAV data is available. Our initial sample includes 118 observations. Then we exclude partial acquisitions and retain only acquisitions where the bidder acquires 100% of the ownership of the target. Moreover, we require our observations to have additional accounting variables available on Compustat, and market related data on CRSP. All accounting variables are measured as of the fiscal year before the announcement of the deal. These screens produce a final

[7] While it would be productive to examine wealth effects of the acquiror, we are unable to test this with accuracy due to a limited number of REIT acquisitions with adequate NAV data from public acquirors.

sample of 79 REIT mergers and acquisitions, including both public-to-private and public-to-public deals.[8] We collect the same data for all equity REITs in the SNL Financial universe that did not receive an M&A bid in order to create our matched sample of REITs that were not targeted.

Descriptive statistics are reported in Panel A of Table 1. The average target in our sample has been operating for less than 10 years, has over $2 billion in assets, with an EBITDA to assets of 8%, a cash to assets ratio of 2%, and a leverage ratio of 0.54. Most targets are UPREITs and roughly 60% are acquired by a public firm. Target shareholders react positively to takeover announcements as the average target experiences a 12% CAR around the announcement of the deal. This value is somewhat higher than other papers in the M&A REIT literature but is explainable by a different sample period and the restriction of the sample to include those with NAV data.

Panel A also reports the values of our three price-to-NAV ratios of interest. Each price-to-NAV ratio is calculated as of 28 trading days prior to the deal announcement. This is done to avoid the run-up period that has been well documented in the M&A literature. A noteworthy observation is that the average target REIT price-to-NAV ratio is 0.96. A price-to-NAV ratio below 1 indicates the target is trading at a discount to its NAV. Our other two measures of interest are *firm/sector price-to-NAV,* and *firm/market price-to-NAV*. Firm-sector price-to-NAV is defined as the difference between the firm's own price-to-NAV ratio and the average price-to-NAV ratio of REITs within the same property sector during the same time period. Firm-market price-to-NAV is defined as the difference between the firm's own price-to-NAV ratio and the average price-to-NAV ratio of all REITs during the same time period. Both measures are negative (-0.03 and -0.09

[8] Given the small sample size, 12 of the deals with available NAV data and deal characteristics were missing a few control variables. We hand collected those variables form Bloomberg to allow them to remain in the sample.

for sector and market, respectively) which further reinforce that targeted REITs are trading at a relative discount.

Panel B of Table 1 breaks down our sample by sector. Transactions occurred across all major property sectors with office REITs being the most frequent targets (25.32%), followed by retail REITs (21.52%) and multifamily REITs (15.19%). The distribution of deals across sector is generally consistent with the size of each property sector.

Table 2 reports various characteristics of the transaction. The mean acquisition was for a deal value of $1.98 billion. Notably, the average private deal premium (Deal Value / NAV) is 1.10, suggesting the typical deal was purchased at a 10% premium to the analyst estimated NAV. The mean public deal premium is 15%. A greater average public deal premium than private deal premium suggests the average REIT was purchased when trading at a discount to NAV. The majority of deals were all cash, reflecting that some public-to-public deals are all cash and all public-to-private deals are 100% cash.

Empirical Methods

To test our first hypothesis, we investigate the relation between price-to-NAV ratios the likelihood of being acquired. We begin by collecting data on all other equity REITs in the SNL Financial universe. We first examine the difference of means between acquired and all other REITs. Next, to control for the possibility that acquired REITs are materially different from non-acquired REITs, we create a matched sample using a propensity score matching (PSM) method. The covariates in the first stage regression are firm age, total assets, leverage, cash levels, profitability, dividend yield, as well as whether the firm is an umbrella REIT. Following Eichholtz and Kok (2008), we ensure that no REIT that is targeted later during the sample period can be used

as a part of the matched sample. We then create a matched sample using the propensity scores with the two nearest neighbors and without replacement. We test for whether there is a difference between the price-to-NAV ratio of targeted firms and that of the matched peers.

To test our second hypotheses of whether price-to-NAV ratios impact public and private deal premiums, we use the OLS regression model described in equation (1) below:

$$\begin{aligned} \textit{Public (Private) Deal Premium}_i = {} & \beta_0 + \beta_1 P/NAV\ measure_i + \beta_2\ Public\ Acquirer_i + \beta_3\ UPREIT_i + \beta_4\ \delta_i \\ & + \beta_5\ ln\ (Firm\ Age_{i,t-1}) + \beta_6\ ln\ (Total\ Assets_{i,t-1}) + \beta_7\ Leverage_{i,t-1} \\ & + \beta_8\ Cash/TA_{i,t-1} + \beta_9\ EBITDA/TA_{i,t-1} \\ & + \beta_{10}\ Dividend\ Yield_{i,t-1} + S_i + Y_i + \varepsilon_i \end{aligned} \quad (1)$$

Where the dependent variable *Public Deal Premium* is computed as the deal value divided by the target's stock price 28 trading days before announcement and *Private Deal Premium* is the deal value divided by the NAV. P/NAV_i *measure* is one of our three Price-to-NAV ratios including *Firm* P/NAV_i, the firm's own price-to-NAV ratio; *Firm-Sector* P/NAV_i, the difference between the firm's price-to-NAV ratio and the average price-to-NAV ratio of REITs within the same sector during the same time period; *Firm-Market* P/NAV_i, the difference between the firm's price-to-NAV ratio and the average price-to-NAV ratio of all REITs during the same time period. *Public Acquirer*$_i$ is an indicator variable equal to one if the acquirer is a listed on a stock exchange, zero otherwise. $UPREIT_i$ is an indicator variable equal to one if the target operates under an umbrella partnership structure, zero otherwise. δ_i is a vector of deal characteristics including *all-cash*$_i$, an indicator variable equal to one if the deal was paid for using cash only, and *all-stock*$_i$ an indicator variable equal to one if the deal was paid for using equity only. $Firm\ Age_{i,t-1}$ is the number of years the REIT has been in operation. We use $Total\ Assets_{i,t-1}$ as a proxy for size, $Leverage_{i,t-1}$ to control for capital structure, $Cash/TA_{i,t-1}$ to control for cash balances, and $EDITDA/TA_{i,t-1}$ as a measure of

profitability. *Dividend Yield*$_{i,t-1}$ controls for the firm's payout policy. We also add property type fixed effects (S_j) to control for sector wide phenomenon and year fixed effects (Y_i) to control for time-invariant potential economy wide shocks.

To test hypothesis 2a and 2b, the coefficient of interest is β_1. A positive value would indicate REITs trading at premiums to NAV command greater public (private) deal premiums and a negative value would indicate REITs trading at discounts to NAV command greater public (private) deal premiums.

To test our third hypotheses, we investigate target cumulative abnormal returns (CARs) around deal announcement dates. The model is identical to equation (1) except the dependent variable is the target CAR rather than the deal premium.

$$\begin{aligned} Target\ CAR_i \quad = \quad & \beta_0 + \beta_1 P/NAV\ measure_i + \beta_2\ Public\ Acquirer_i + \beta_3\ UPREIT_i + \beta_4\ \delta_i \\ & + \beta_5\ ln\ (Firm\ Age_{i,t-1}) + \beta_6\ ln\ (Total\ Assets_{i,t-1}) + \beta_7\ Leverage_{i,t-1} \\ & + \beta_8\ Cash/TA_{i,t-1} + \beta_9\ EBITDA/TA_{i,t-1} \\ & + \beta_{10}\ Dividend\ Yield_{i,t-1} + S_i + Y_i + \varepsilon_i \end{aligned} \tag{2}$$

Where *Target CAR* is the cumulative abnormal returns over a 3-day and 5-day window. CARs are calculated using a market model with CAPM as the benchmark model. The remaining variables are identical to the model in equation (1). Similarly, the coefficient of interest is β_1.

Results

To test whether there is a relation between the price-to-NAV ratio and takeover likelihood, we start by comparing the mean price-to-NAV ratio for targeted firms compared to the universe of equity REITs. The results of this unmatched sample difference of means is tabulated in Table 3. In panel A, we document how the two samples differ on key firm characteristics. The two samples differ in three statistically significant ways. REITs that are ultimately targeted are

younger, smaller, and less profitable. Each of these is consistent with intuition and with the findings documented in prior literature (Eichholtz and Kok, 2008; Ling and Petrova, 2011).

Panel B presents the difference in means between targeted and the unmatched REIT universe for our three measures of relative valuation. The average price-to-NAV for targeted REITs is 0.960, which indicates that the typical targeted REIT is trading at a 4% discount to its NAV. Similarly, the difference between the price-to-NAV of targeted REITs and the average price-to-NAV of the same property sector during the same period is -0.033. This suggests the typical targeted REIT is trading at a 3.3% lower discount than its property sector peers. Lastly, difference between the price-to-NAV of targeted REITs and the average price-to-NAV of all REITs at the same time period is -0.085 (-8.5%). When compared to the unmatched control sample, each of these values is lower than the control group, suggesting targeted firms tend to trade at discounts to NAV. However, only the price-to-NAV relative to the market-wide NAV is statistically significant.

Given the control group differs along various key dimensions to the treatment group, the naïve difference of means between these groups is not an apples-to-apples comparison. Therefore, we next create a matched sample to more adequately compare firms. Specifically, we utilize a PSM empirical method where the covariates are key firm control variables we seek to match on. In the first stage regression, we run a logistic regression model where the dependent variable is an indicator variable that takes the value of 1 when a REIT is a takeover target and 0 otherwise. The first stage regression is reported in panel A of Table 4. Consistent with the difference of means in Table 3, the dominant differences that drive the propensity to be targeted are firm age and firm size, although profitability is insignificant. We then create propensity scores and match to the two

nearest neighbors without replacement. We exclude REITs that are ultimately targeted later in the sample period from being a part of the matched sample.

Panel B of Table 4 produces the difference of means of firm characteristics between the treatment and the propensity matched control group. If the procedure was successful in matching, we expect to find no significant differences across these firm characteristics. Consistent with a successful matching process, we find no statistically significant differences between the treatment group and control group. Panel C of Table 4 presents the difference of means for our variables of interest.

We find that with the apples-to-apples comparison, the differences between treatment and control REITs for all three measures of price-to-NAV are now statistically significant beyond the 10% level. Economic magnitudes are nontrivial. Targeted REITs are an average of 8.6% lower price-to-NAV than their matched sample. This represents a clear economically meaningful difference. For the sector adjusted and market adjusted NAVs the differences are 6% and 13.6%, respectively. The firm relative to the market-wide NAV continues to be the most significant, suggesting REITs trading at discounts relative to the market wide discount or premium are especially attractive to potential acquirers. Overall, we interpret this evidence as consistent with our hypothesis that REITs trading at discounts are more likely to be targeted.

We next test our hypotheses 2 and 3 regarding how deal premiums and target wealth effects are impacted by price-to-NAV ratios. Results are found in Table 5. We begin by splitting the sample into three groups based on their price-to-NAV ratio. Group 1 has price-to-NAV below 0.95, group 2 is between 0.95 and 1.05, and group 3 is above 1.05. We first note that the largest group is that with the price-to-NAV below 0.95 with 36 takeovers compared to 19 and 24 takeovers for groups 2 and 3, respectively. This lends further support that REITs trading at discounts are

more likely to be targeted. We then calculate the mean public deal premium, private deal premium, and target [-1,+1] announcement CARs for each group.

The public deal premium is decreasing monotonically from group 1 to group 3. REITs purchased in group 1 were sold at a premium of 19% compared to 12% in group 2 and 11% in group 3. This suggests a negative relation between the price-to-NAV ratio and the public deal premium. Target CARs decrease monotonically from group 1 to 3 even more dramatically. REITs trading at the greatest discount receive shareholder responses of 17% in the three-day trading window. This compares to 8% and 6% in group 2 and 3, respectively. Lastly, the private deal premium increases monotonically across the three groups. Specifically, REITs acquired trading at discounts to NAV are purchased at an average deal value to NAV of 0.97, suggesting acquirers are able to pay below NAV for the REIT. For the REITs in groups 2 and 3, deal values are well above NAV at 1.13 and 1.29, respectively. Targeted REITs benefit because they are able to command greater public deal premiums and shareholders applaud the decision. Acquirers benefit because they are able to purchase the REIT at or near the NAV.

We add rigor to the analysis by controlling for potentially confounding variables using multivariate analysis. Table 6 presents results from the regressions of each price-to-NAV ratio on public deal premiums controlling for firm characteristics, deal characteristics, and property sector and year fixed effects. For each of the price-to-NAV measures, the coefficients are negative and statistically significant, suggesting REITs trading greater discounts (lower price-to-NAV ratios) command greater public deal premiums. The coefficients are economically meaningful. A 1% increase in the price-to-NAV leads to a decrease in the deal premium of -0.76%.

Next, we examine the relation between price-to-NAV ratios and private deal premiums in the multivariate setting. We utilize the same regression framework and control variable used in the

public deal premium regression. Results are tabulated in Table 7. Regardless of the measure of price-to-NAV, we find a positive and statistically significant relation between the price-to-NAV ratio and the private deal premium. This finding suggests that acquirers are able to purchase REITs with low price-to-NAV ratios at attractive private deal premiums. The findings are economically meaningful. A 1% increase in the price-to-NAV ratio is equal to a 0.64% increase the private deal premium. These findings are consistent with the univariate analysis, lending further confidence in the results.

Table 8 presents a similar regression framework but with target CARs as the dependent variable. We include both 3-day windows and 5-day windows for robustness. Regardless of specification, we document a negative and significant relation between price-to-NAV ratios and target CARs. This suggests that REITs trading at discounts to NAV lead to greater target CARs at deal announcement. The economic magnitudes are meaningful and are similar to the public deal premium regressions. A 1% increase in the price-to-NAV ratio decreases the target 3-day CAR by 0.71%. Overall, these results suggest REITs trading at discounts to NAV are more likely to be targeted, command greater deal premiums, and shareholders respond more favorably to their announcement.

Conclusion

M&A transactions are among the most important decisions acquirers and targets make during the firm's life cycle. A thorough understanding of which firms get targeted and how those deals are negotiated is a first-order concern for all parties involved. We are the first to our knowledge to investigate the role of relative valuation between public and private markets on REIT M&A. Consistent with anecdotal evidence, we document that REITs trading at discounts to NAV are more likely to be targeted in M&A transactions. We provide evidence suggesting this occurs

because REITs with lower price-to-NAV ratios command smaller private deal premiums and larger public deal premiums. Acquirers can purchase the REIT at attractive valuations relative to the private market value and target shareholders are satisfied to sell at adequate premiums to their current stock price. Lastly, we show that target shareholders response more favorably to M&A announcements when they are trading at discounts to NAV.

Further work is needed to understand the role of parallel markets on REIT M&A. The focus of our paper is on REITs targeted that are trading at discounts to NAV, yet we document a non-trivial number of transactions that occur at premiums to NAV. What drives the decision-making process to acquire these REITs trading at seemingly unattractive valuations? Additionally, while a growing literature exists that examines how various stakeholders react in response to price-to-NAV ratios, there is still a broad spectrum of decisions unexamined to date.

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Table 1 – Target Characteristics

Table 1 presents firm characteristics for REITs that are targeted in an M&A transaction between 2001 and 2017. Our sample includes on REITs with non-missing data for the characteristics listed. The definition of each variable is found in the appendix. Panel A presents target characteristics and Panel B presents the primary property sector breakdown of targets.

Panel A: Target Characteristics

	N	Mean	Std	25th	Median	75th
Public Acquirer	79	0.57	0.50	0	1	1
UPREIT	79	0.89	0.32	1	1	1
Total Assets (thousands)	79	$2,340,705	$3,064,635	$879,432	$1,572,951	$2,957,372
Firm Age	79	9.48	5.47	6	10	12
Leverage	79	0.54	0.15	0.49	0.54	0.59
Cash to Total Assets	79	0.02	0.02	0.00	0.01	0.02
EBITDA to AT	79	0.08	0.03	0.06	0.08	0.10
Dividend Yield	79	0.06	0.03	0.04	0.06	0.07
Price-to-NAV	79	0.96	0.17	0.87	0.96	1.07
Firm/Sector Price-to-NAV	79	-0.03	0.12	-0.11	-0.05	0.05
Firm/Market Price-to-NAV	79	-0.09	0.19	-0.16	-0.06	0.03
Target CAR	79	0.12	0.26	0.02	0.08	0.15

Panel B: Target REITs sector breakdown

Sector	*Frequency*	*%*	*Cumulative Freq.*	*Cumulative %*
Diversified	4	5.06	4	5.06
Healthcare	3	3.80	7	8.86
Hotel	9	11.39	16	20.25
Industrial	4	5.06	20	25.32
Multifamily	12	15.19	32	40.51
Office	20	25.32	52	65.82
Other	10	12.66	62	78.48
Retail	17	21.52	79	100
Total	79	100		

Table 2 – Deal Characteristics

Table 2 presents deal characteristics for acquired REITs from 2001 to 2017 with adequate non-missing data. All variables are defined in the appendix.

Deal Characteristics						
	N	Mean	Std	25th	Median	75th
Deal Value (in $ million)	79	$1,979	$2,968	$461	$1,081	$2,555
DVPS	79	$27.34	$17.31	$14.20	$23.00	$37.75
Private Deal Premium	79	1.10	0.20	0.98	1.09	1.24
Public Deal Premium	79	1.15	1.17	1.05	1.12	1.21
% Cash	79	0.75	0.40	0.52	1	1
% Stock	79	0.25	0.40	0	0	0.48
All Cash	79	0.67	0.47	0	1	1
All Stock	79	0.09	0.29	0	0	0

Table 3 – Unmatched Sample Difference of Means

Table 3 presents the difference of means between treatment firms (REITs that are targeted) and an unmatched control group. The control group includes all equity REITs from 2001 to 2017 in the SNL Financial universe with non-missing data. Panel A presents the difference in means for the control variables and Panel B presents the difference of means for the variables of interest. All variables are defined in the appendix. ***, **, and * denote significance of coefficients at the 1%, 5%, and 10% levels, respectively.

Panel A: Sample balance

Variable	Treatment	Control	Difference	T-stat
UPREIT	0.886	0.821	0.065	1.47
Firm age	9.481	14.290	-4.809***	-6.83
Total Assets	2,340	3,939	-1,599***	-3.04
Leverage	0.545	0.523	0.022	1.43
Cash to assets	0.016	0.019	-0.003	-1.00
EBITDA to assets	0.080	0.086	-0.006*	-1.71
Dividend yield	0.057	0.056	0.001	0.32

Panel B: P/NAV Difference of Means

	Treatment	Control	Difference	T-stat
Firm Price-to-NAV	0.960	1.001	-0.040	-1.52
Firm/Sector Price-to-NAV	-0.033	-0.003	-0.030	-1.39
Firm/Market Price-to-NAV	-0.085	-0.004	-0.081***	-3.89

Table 4 - PSM Sample Difference of Means

Table 4 presents the difference of means for the propensity score matched sample. The treatment group includes all REITs acquired from 2001-2017 and the treatment group includes a matched sample based on the PSM matching procedure (defined in the empirical methods section). Panel A presents the first-stage logit regression for the PSM. Panel B presents the difference of means for the control variables. Panel C presents the difference of means for the variables of interest. ***, **, and * denote significance of coefficients at the 1%, 5%, and 10% levels, respectively.

Panel A: Propensity Scores First Stage

Variable	Coefficient
UPREIT	0.15 (0.39)
Firm age	-0.06*** (<0.01)
Total Assets (in $ million)	-0.04* (0.05)
Leverage	0.50 (0.24)
Cash to assets	-3.01 (0.20)
EBITDA to assets	-2.33 (0.23)
Dividend Yield	-2.76 (0.17)
N	1,779
Adjusted R^2	0.094

Panel B: Matched sample balance

Variable	Treatment	Control	Difference	T-stat
UPREIT	0.886	0.892	-0.006	-0.13
Firm age	9.481	9.405	0.076	0.09
Total Assets	2,340	2,488	-148	-0.34
Leverage	0.545	0.563	-0.018	-0.87
Cash to assets	0.016	0.016	-0.000	-0.09
EBITDA to assets	0.080	0.081	-0.001	-0.25
Dividend yield	0.057	0.060	-0.003	-0.59

Panel C: P/NAV Difference of Means

Firm Price-to-NAV	0.960	1.046	-0.086**	-2.09
Firm/Sector Price-to-NAV	-0.033	0.027	-0.060*	-1.68
Firm/Market Price-to-NAV	-0.085	0.050	-0.136***	-3.13

Table 5 – Univariate analysis

Table 5 presents the difference of means difference of means between three groups of REITs that were acquired between 2001 and 2017. The first group include REITs that were trading at a price-to-NAV below 0.95. The second group has price-to-NAV ratios between 0.95 and 1.05. The third group has price-to-NAV ratios above 1.05. Each variable is defined in the appendix. ***, **, and * denote significance of coefficients at the 1%, 5%, and 10% levels, respectively.

Panel A: Low P/NAV (Group 1: Price-to-NAV < 0.95)					
	N	Mean	Median	Mean diff 1 v 2	Mean diff 1 v 3
Price-to-NAV	36	0.83	0.87	***	***
Firm/Sector Price-to-NAV	36	-0.11	-0.11	***	***
Firm/Market Price-to-NAV	36	-0.21	-0.16	***	***
Public Deal Premium	36	1.19	1.16	*	*
CARs	36	0.17	0.09	*	*
Private Deal Premium	36	0.97	0.97	***	***
Panel B: Medium P/NAV (Group 2: 0.95 < Price-to-NAV < 1.05)					
	N	Mean	Median	Mean diff 1 v 2	Mean diff 2 v 3
Price-to-NAV	19	0.98	0.97	***	***
Firm/Sector Price-to-NAV	19	-0.02	-0.05	***	***
Firm/Market Price-to-NAV	19	-0.08	-0.03	***	***
Public Deal Premium	19	1.12	1.11	*	
CARs	19	0.08	0.08	*	
Private Deal Premium	19	1.13	1.14	***	***
Panel C: High P/NAV (Group 3: Price-to-NAV > 1.05)					
	N	Mean	Median	Mean diff 1 v 3	Mean diff 2 v 3
Price-to-NAV	24	1.14	1.11	***	***
Firm/Sector Price-to-NAV	24	0.07	0.06	***	***
Firm/Market Price-to-NAV	24	0.09	0.08	***	***
Public Deal Premium	24	1.11	0.12	*	
CARs	24	0.06	0.07	*	
Private Deal Premium	24	1.29	1.28	***	***

Table 6 – The effect of Price-to-NAV ratios on public deal premiums

Table 6 presents results from OLS regressions of price-to-NAV ratios on public deal premiums (deal value relative to stock price). Column 1 uses the raw price-to-NAV value. Column 2 adjusts the price-to-NAV relative to peer REITs in the same property sector-year. Column 3 adjusts the price-to-NAV relative to the market wide price-to-NAV in the same year. Regressions each include year and sector fixed effects and include standard errors clustered by firm. Each variable is defined in the appendix. ***, **, and * denote significance of coefficients at the 1%, 5%, and 10% levels, respectively.

	Public Deal Premium (Deal Value/Stock Price)		
	(1)	(2)	(3)
P/NAV	-0.76***		
	(<0.01)		
Firm-Sector P/NAV		-0.46**	
		(0.03)	
Firm-Market P/NAV			-0.46***
			(<0.01)
Public acquirer	-0.02	-0.02	-0.03
	(0.75)	(0.67)	(0.59)
UPREIT	0.05	0.04	0.03
	(0.35)	(0.53)	(0.61)
All-cash	0.07	0.08	0.06
	(0.16)	(0.13)	(0.24)
All-stock	0.01	0.01	-0.02
	(0.93)	(0.92)	(0.83)
Firm age	0.06	0.05	0.06
	(0.15)	(0.24)	(0.20)
Total assets	0.01	0.01	0.00
	(0.59)	(0.72)	(0.92)
Leverage	0.00	0.01	0.02
	(0.97)	(0.90)	(0.80)
Cash/TA	0.18	0.06	0.33
	(0.74)	(0.91)	(0.57)
EBITDA/TA	0.48	0.14	0.14
	(0.35)	(0.80)	(0.81)
Dividend Yield	-0.98	-0.62	-0.79
	(0.31)	(0.55)	(0.46)
Sector FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	79	79	79
Adjusted R^2	0.410	0.213	0.228

Table 7 – The effect of Price-to-NAV ratios on private deal premium

Table 7 presents results from OLS regressions of price-to-NAV ratios on private deal premiums (deal value relative to NAV). Column 1 uses the raw price-to-NAV value. Column 2 adjusts the price-to-NAV relative to peer REITs in the same property sector-year. Column 3 adjusts the price-to-NAV relative to the market wide price-to-NAV in the same year. Regressions each include year and sector fixed effects and include standard errors clustered by firm. Each variable is defined in the appendix. ***, **, and * denote significance of coefficients at the 1%, 5%, and 10% levels, respectively.

	Private Deal Premium (Deal Value/NAV)		
	(1)	(2)	(3)
P/NAV	0.64***		
	(<0.01)		
Firm-Sector P/NAV		0.65***	
		(<0.01)	
Firm-Market P/NAV			0.70***
			(<0.01)
Public acquirer	0.06	0.06	0.07**
	(0.11)	(0.13)	(0.05)
UPREIT	0.01	0.01	0.02
	(0.87)	(0.79)	(0.56)
All-cash	0.09**	0.10*	0.12***
	(0.04)	(0.06)	(<0.01)
All-stock	-0.06	-0.06	-0.02
	(0.34)	(0.33)	(0.72)
Firm age	0.00	0.01	0.00
	(0.91)	(0.80)	(0.90)
Total assets	0.03	0.02	0.03
	(0.33)	(0.41)	(0.22)
Leverage	0.05	0.07	0.06
	(0.55)	(0.43)	(0.50)
Cash/TA	-0.20	0.04	-0.34
	(0.72)	(0.95)	(0.55)
EBITDA/TA	0.99*	0.92*	0.87*
	(0.07)	(0.08)	(0.08)
Dividend Yield	0.18	-0.07	0.19
	(0.79)	(0.91)	(0.77)
Sector FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	79	79	79
Adjusted R^2	0.666	0.644	0.692

Table 8 – The effect of Price-to-NAV ratios on Target CARs

Table 8 presents results from OLS regressions of price-to-NAV ratios on target CARs around the announcement date of the transaction. Columns 1-3 use the 3-day CAR and columns 4-6 use the 5-day CAR. Columns 1 and 4 uses the raw price-to-NAV value. Columns 2 and 5 adjust the price-to-NAV relative to peer REITs in the same property sector-year. Column 3 and 6 adjust the price-to-NAV relative to the market wide price-to-NAV in the same year. Regressions each include year and sector fixed effects and include standard errors clustered by firm. Each variable is defined in the appendix. ***, **, and * denote significance of coefficients at the 1%, 5%, and 10% levels, respectively.

	CAR [-1 ; 1]			CAR [-2 ; 2]		
	(1)	(2)	(3)	(4)	(5)	(6)
P/NAV	-0.71**			-0.77**		
	(0.03)			(0.02)		
Firm-Sector P/NAV		-0.50**			-0.53**	
		(0.05)			(0.05)	
Firm-Market P/NAV			-0.40**			-0.42**
			(0.04)			(0.04)
Public acquirer	-0.03	-0.03	-0.04	-0.03	-0.03	-0.04
	(0.61)	(0.59)	(0.53)	(0.58)	(0.56)	(0.5)
UPREIT	0.14**	0.12**	0.11*	0.14**	0.12*	0.11*
	(0.03)	(0.05)	(0.06)	(0.04)	(0.06)	(0.07)
All-cash	0.12**	0.12**	0.10**	0.11**	0.11**	0.10*
	(0.02)	(0.02)	(0.04)	(0.04)	(0.04)	(0.06)
All-stock	0.04	0.04	0.02	0.05	0.05	0.02
	(0.65)	(0.64)	(0.86)	(0.62)	(0.61)	(0.83)
Firm age	0.08	0.07	0.08	0.08	0.07	0.08
	(0.15)	(0.21)	(0.2)	(0.13)	(0.2)	(0.19)
Total assets	-0.02	-0.02	-0.03	-0.02	-0.02	-0.02
	(0.4)	(0.34)	(0.28)	(0.53)	(0.45)	(0.37)
Leverage	-0.04	-0.03	-0.02	-0.06	-0.05	-0.04
	(0.72)	(0.74)	(0.85)	(0.6)	(0.63)	(0.71)
Cash/TA	0.39	0.24	0.53	0.33	0.18	0.47
	(0.46)	(0.63)	(0.33)	(0.54)	(0.73)	(0.39)
EBITDA/TA	0.05	-0.18	-0.31	0.09	-0.17	-0.31
	(0.92)	(0.73)	(0.55)	(0.84)	(0.75)	(0.57)
Dividend Yield	-1.94	-1.61	-1.75	-2.02	-1.67	-1.81
	(0.14)	(0.22)	(0.21)	(0.14)	(0.23)	(0.22)
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	79	79	79	79	79	79
Adjusted R^2	0.650	0.587	0.576	0.632	0.558	0.547

Appendix A – Variable Definitions

Variable	Description
All-cash	An indicator variable equal to one if the deal was paid for using cash only, zero otherwise.
All-stock	An indicator variable equal to one if the deal was paid for using equity only, zero otherwise.
Cash/TA	The target's cash normalized by total assets.
Private deal premium	The ratio of the deal value per share over the target's net asset value 28 trading days before announcement.
Public deal premium	The ratio of the deal value per share over the target's stock price 28 trading days before announcement.
Dividend Yield	Dividend paid over stock price as of the year preceding the announcement.
EBITDA/TA	The target's EBITDA normalized by total assets.
Firm age	The number of years the REIT has been in operation.
Firm P/NAV	The target's price to NAV ratio computed as the target's stock price over the target's NAV estimate 28 trading days before announcement.
Firm-Sector P/NAV	The difference between the firm's price to NAV ratio and the average price to NAV ratio of REITs within the same sector.
Firm-Market P/NAV	The difference between the firm's price to NAV ratio and the average price to NAV ratio of all REITs.
Leverage	The percentage of debt in a REIT capital structure, computed as debt over total assets.
Public Acquirer	An indicator variable equal to one if the acquirer is a listed on a stock exchange, zero otherwise
Target CARs [-1;1]	Cumulative Abnormal Returns computed using the market model with the CAPM as the benchmark model. The three-day trading window is centered around the announcement of the merger.
Target CARs [-2;2]	Cumulative Abnormal Returns computed using the market model with the CAPM as the benchmark model. The five-day trading window is centered around the announcement of the merger.
Total Assets	The dollar value of the firm's assets (in $million).
UPREIT	An indicator variable equal to one if the target operates under an umbrella partnership structure, zero otherwise