

The Valuation Effects of REIT Mergers During the COVID-19 Pandemic

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Abstract

The purpose of this study is to examine the valuation effect of mergers, which generally supports the notion of a synergistic agglomeration. The shock that the COVID-19 pandemic posed upon the real estate industry presented an opportunity for financially stronger REITs to acquire some struggling firms using their free cash flows. This study covers the entire year of 2020, from when COVID-19 was first declared as a public health emergency until the end of the year when the vaccines were approved. By applying a standard event study method, we assess five different return measures of the bidder, target, and their combined outcomes and test them against two competing hypotheses: empire-building versus synergy hypothesis. Contrary to the prevalent finding in the merger literature that mergers are mostly synergistic, our study finds that the COVID-19 pandemic facilitated empire-building mergers. Our study is amongst the first to examine REIT mergers during the COVID-19 pandemic.

Keywords: COVID-19, Event Study, Mergers and Acquisitions, Real Estate Investment Trust (REIT), Valuation Effect.

JEL Classification: G34.

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I Introduction

Most mergers are assumed to create synergy under normal economic conditions. However, in some cases, the bidding firms may overtake target firms without creating the expected synergies or economies of scale. This is known as the empire-building hypothesis (Jensen, 1986). The period of the COVID-19 pandemic presented a different macroeconomic environment. The austere situation of commercial real estate owners and the risk of mortgage insolvency of many residential owners posed a different environment to those negatively affected by the pandemic. However, this situation also allowed financially stable larger companies to expand their empire at a lower cost. Our study explores whether the nature of mergers involving Real Estate Investment Trusts (REITs) during the COVID-19 pandemic has lent support to the empire-building hypothesis instead of the prevalent synergistic merger hypothesis.

II Competing Hypotheses

Studies on mergers from 1980 to 2001 have shown that mergers are generally synergistic and rational, generate efficiencies, and build economies of scale (Moeller, Schlingemann, & Stulz, 2005). By investigating 31 events, Allen and Sirmans (1987) found that REIT mergers among equity/mortgage REIT companies with the same property and geographic focus generated higher

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abnormal returns than unrelated matches. However, regarding the public status of the bidder, Ling and Petrova (2011) found that public acquirers are more disposed to expanding market power.

The empire-building hypothesis is based on Jensen’s (1986) argument that managers use excess resources (i.e., free cash flow) to invest in projects that are not necessarily beneficial to the shareholders but still help enhance the firm’s prestige and popularity. It is expected that if a merger does not add value, such merger news will negatively affect the stock price of the acquiring firm in the market. The synergy hypothesis pertains to Myers and Majluf’s (1984) argument that a way to overcome the lack of financial resources would be to merge with another firm: a strategy with less information asymmetry than relying on external funds. Shareholders perceiving a synergistic merger would then welcome a merger announcement with a positive response.

The hypotheses and expected signs of the target, bidder, and combined outcome are listed in Table 1. The assessed returns in our study are the cumulative abnormal returns (CARs) of five different return measures, evaluated by the *t*-test and Wilcoxon Signed-Rank test on the merger announcement date. *Vis-à-vis* the expected signs of the statistical tests, a positive test result is notated as *Positive*. A negative test result is notated as *Negative*. A zero or negative outcome is notated as *Non-Positive*. A zero or positive outcome is notated as *Non-Negative*.

Table 1: Competing Hypotheses

	Empire Building	Synergy
Target	Positive	Positive
Bidder	Negative	Non-Negative
Combined	Non-Positive	Positive

Andrade, Mitchell, and Stafford (2001) submit that several motivations can drive merger activities: 1) The motivation to create synergy through an economy of scale; 2) The attempt to increase market power by forming monopolies or oligopolies; 3) The motivation to remove incompetent target management through a hostile takeover; 4) An acquirer’s self-serving attempt to over-expand at the agency’s cost; 5) The motivation to diversify through exploiting internal capital markets. Despite these various motivations, all five intentions can be summarized into two competing hypotheses by Jensen (1986), and, Myers and Majluf’s (1984) seminal work.

Regarding REIT mergers, contrary to Jensen’s (1986) free cash flow hypothesis that a firm’s unnecessary expansion through mergers decreases a firm’s value, Ghosh, Petrova, and Xiao (2012) do not find evidence of such mergers. However, Eichholtz and Kok (2007) find evidence of the inefficient management hypothesis in the REIT industry. According to Agrawal and Jaffe (2003), the inefficient management hypothesis posits that a target’s inefficient management before the merger motivates a takeover to enhance the target’s performance. Such merger motivation is detected if a target’s return exhibits a significantly negative performance before the merger, whereby, on the announcement day, both the target and the bidder exhibit positive returns. Observing such inefficient management on the target’s side is important because there are only a handful of cases where a REIT merger involves a tender offer due to the target’s mismanagement – a hostile takeover. The fact that poor performance prior to the merger is the primary reason for a merger, signals that an acquirer’s motivation of building an empire through absorbing a mismanaged target is, in fact, more common than it is explicitly shown in the market, where we define hostile takeovers only by the presence of a tender offer.

Another merger motivation that backs the empire-building hypothesis is the hubris hypothesis. Regarding this hypothesis, Roll (1986) submits that overconfident managers engage in value-destroying acquisitions to disguise their hubris at shareholders' cost. Roll (1986) further argues that overconfident managers tend to overpay the target due to their hubris and miscalculated synergy in the future. The upshot of such a motivation is responded with a negative bidder's return and a positive target's return. Regarding REIT mergers, Lu, Mao, and Shen (2015) find such evidence by observing acquirers that are less transparent and have fewer growth opportunities (i.e., low cash flow). In a public-public merger, the authors (Lu, Mao, & Shen, 2015) find that such acquirers show a statistically significant negative abnormal return on the announcement day.

Regarding the sign conventions of the bidder and target, one of the very first REIT merger studies was conducted by Allen and Sirmans (1987), who found that most of the bidder's returns in a REIT merger were positive during 1977-1983. Sahin (2005), however, found that acquiring firms exhibited a significant negative return, and the target, a positive return, during 1990-1998. Regarding the target's return, McIntosh, Officer, and Born (1989) found that most of the target's returns in REIT mergers were positive during 1962-1986. Even though there are some differences based on different types of mergers and time windows, Ratcliffe and Dimovski (2012) use a meta-analysis and provide evidence that, generally speaking, the target enjoys significantly positive gains in a REIT merger. However, despite their analysis, given the different results based on different waves, it is advised to conduct an examination that includes the combined return.

Regarding the merger of public-public and public-private firms, Chang (1998) finds that the bidder's return is negative in a public-public merger. In contrast, the bidder's return is positive in a public-private merger. Regarding the REIT industry, in a sample of 132 mergers between 1997 and 2006, Campbell, Ghosh, Petrova, and Sirmans (2011) find the same result.

III. Data and Model

Our research observes REIT mergers in 2020 – the first year of the pandemic. This covers the period between the time the Centers for Disease Control and Prevention (CDC) noticed the appearance of the Novel Coronavirus outbreak in Wuhan City, Hubei Province, China (January 9, 2020), and the end of the month when the U.S. Food and Drug Administration (FDA) approved of the first two COVID-19 vaccines: Pfizer-BioNTech (December 11, 2020) and Moderna (December 18, 2020). The primary reason for setting our observation window to this period was to capture the effect of the pandemic before a flurry of merger activities began with the easing of the pandemic-related restrictions in 2021.

We screened our merger cases using Bloomberg Terminal. Table 2 summarizes the conditions that were applied to obtain the merger data. Furthermore, Table 2 shows only completed mergers of U.S.-based publicly listed bidders and targets used in our study. The screening decreased the number of cases to five, significantly lower than the number of mergers in 2021.

As shown in Table 3, the mergers included various types of REITs. While all cases had a REIT company on either the target or bidder's side, only two involved a merger between REITs. Two of the five mergers (i.e., POPE and ANH) involved cash and stock deals, and the remaining three were all cash arrangements.

Two types of data were merged in this study. The stock return data were extracted from the Center for Research in Security Prices (CRSP) database, where firms were traded on the NYSE, NASDAQ, or AMEX. We merged this data with the quarterly financial-accounting information of

each firm, which was obtained from the Standard and Poor Global Market Intelligence Compustat database.

Table 2: Sample Restriction

Sample Restriction by Bloomberg	Obs.
Deal Status: Completed	739,675
Dates: 01/01/2020 – 12/31/2020	38,394
Deal Type: M&A	21,413
Exchange: United States (Apply to Target and Acquirer)	220
Index: United States (Apply to Target and Acquirer)	68
Sector/Industry: Include REITs	5
Public/Private: Public (Apply to Target and Acquirer)	5
SIC Code: Finance, Insurance, and Real Estate (Apply to Target and Acquirer)	5

Table 3: Public-Public REIT Mergers in 2020

Date	Target (Ticker)	Type	Bidder (Ticker)	Type	Deal Value (Mil.)
1/15/2020	Pope Resources a Delaware LP (POPE)	Non-REIT	Rayonier Inc. (RYN)	REIT - Diversified	700.26 [†]
2/10/2020	Taubman Centers Inc. (TCO)	REIT-Retail	Simon Property Group Inc. (SPG)	REIT-Malls	6,480.82
10/19/2020	Front Yard Residential Corp. (RESI)	REIT- Residential	Ares Management Corp. (ARES)	Non-REIT	2,491.74
12/7/2020	Anworth Mortgage Asset Corp (ANH)	REIT- Mortgage	Ready Capital Corp. (RC)	REIT- Mortgage	2,145 [†]
12/30/2020	Red Lion Hotels Corp. (RLH)	Non-REIT	Service Properties Trust (SVC)	REIT-Hotel	89.13

†: Indicates cash-stock deals. The remaining three were all cash arrangements.

We applied parametric (t -test) and nonparametric tests (Wilcoxon Signed-Rank test) to assess the return data. Regarding nonparametric testing methods, MacKinlay (1997) enunciates that they can be used as a robustness test because they do not assume any underlying distributions. Furthermore, nonparametric approaches also apply more stringent test statistics than parametric t -tests. Since it removes the assumption of an underlying distribution and uses ranks instead of raw observation values, it can also analyze data with low observation numbers.

In our study, we used five different return measures. Those five return measures are the net market return, abnormal returns based on the Capital Asset Pricing Model (CAPM) (Sharpe, 1964), Carhart's (1997) Four Factor model, Fama-French Three Factor model (Fama & French, 1993), and Fama-French Five Factor model (Fama & French, 2015). The risk-free rate and the market

factors were imported from Dr. Kenneth R. French's data library.¹ The net market model return, otherwise called the market-adjusted return, was computed by simply subtracting the market return $R_{m,t}$ (i.e., S&P 500 index return) from the raw return $R_{i,t}$ (i.e., holding period return or buy-and-hold return) of the firm (bidder, target). It is simply the difference between the raw and market index returns and does not involve stochastic components. Here, $R_{i,t}$ is the raw return of firm i on trading day t and $R_{m,t}$ is the market index m of the S&P 500 on trading day t . In the equation below, $R_{i,t}^{NM}$ is the net market return of firm i on trading day t .

$$R_{i,t}^{NM} = R_{i,t} - R_{m,t} \quad (1)$$

The abnormal return based on Sharpe's (1964) CAPM is a model where the excess return of the firm was regressed on the market index excess return. Noted is that in all regression-based abnormal return measures, we ran a regression based on the month when the merger was announced. That is, we used the returns in January for the first merger, February for the second, October for the third, and December for the last two mergers.

$$(R_{i,t} - R_{f,t}) = \alpha_i + \beta_i(R_{m,t} - R_{f,t}) + \varepsilon_{i,t}^{CAPM} \quad (2)$$

In the equation above, Jensen's Alpha (Jensen, 1968) is denoted as α_i , the Beta as β_i , and the risk-free rate is denoted as $R_{f,t}$. The stochastic term $\varepsilon_{i,t}^{AR}$ is the error term, which is asymptotically zero. This residual component is the stochastic disturbance or, simply said, the abnormal return. Thus, the abnormal return is the difference between a firm's excess return and its predicted value.

$$\varepsilon_{i,t}^{CAPM} = (R_{i,t} - R_{f,t}) - (\hat{\alpha}_i + \hat{\beta}_i(R_{m,t} - R_{f,t})) = (R_{i,t} - R_{f,t}) - E[R_{i,t} - R_{f,t}] \quad (3)$$

The third return type comes from the Fama-French Three Factor model (Fama & French, 1993). This model includes the SMB (small minus big) and HML (high minus low) factors. Together with the market return premium ($R_{m,t} - R_{f,t}$), these are the three factors in the Fama-French Three Factor model. Here, the residual $\varepsilon_{i,t}^{FF3}$ of this Fama-French Three Factor regression model is the abnormal return that we used in assessing the return outcomes.

$$(R_{i,t} - R_{f,t}) = \alpha_i^{FF3} + \beta_{1,i}^{FF3}(R_{m,t} - R_{f,t}) + \beta_{2,i}^{FF3}SMB_t + \beta_{3,i}^{FF3}HML_t + \varepsilon_{i,t}^{FF3} \quad (4)$$

The fourth return measure comes from the Carhart Four Factor model (Carhart, 1997). This model adds a fourth factor: the MOM (momentum factor), to the Fama-French Three Factor model. As in the preceding model, the residual $\varepsilon_{i,t}^{C4}$ is the abnormal return.

$$(R_{i,t} - R_{f,t}) = \alpha_i^{C4} + \beta_{1,i}^{C4}(R_{m,t} - R_{f,t}) + \beta_{2,i}^{C4}SMB_t + \beta_{3,i}^{C4}HML_t + \beta_{4,i}^{C4}MOM_t + \varepsilon_{i,t}^{C4} \quad (5)$$

¹ https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

The last return type comes from the Fama-French Five Factor model (Fama & French, 2015). The Fama-French Five Factor model adds the RMW (most minus least profitable) and CMA (conservative minus aggressive) to the Fama-French Three-Factor model (Fama & French, 1993). Again, the residual $\varepsilon_{i,t}^{FF5}$ is the abnormal return.

$$(R_{i,t} - R_{f,t}) = \alpha_i^{FF5} + \beta_{1,i}^{FF5}(R_{m,t} - R_{f,t}) + \beta_{2,i}^{FF5}SMB_t + \beta_{3,i}^{FF5}HML_t + \beta_{4,i}^{FF5}RMW_t + \beta_{5,i}^{FF5}CMA_t + \varepsilon_{i,t}^{FF5} \quad (6)$$

Based on the five return measures discussed so far, we also generated the combined return to assess the characteristics of a merger. This return measure is simply the buy-and-hold (or holding period return) of the sum of the bidder's and target's market capitalizations. This measure was also used in seminal studies by Becher (2000) and Mulherin and Boone (2000).

$$\begin{aligned} \text{Combined Return}_{n,t}^a & \\ &= \frac{(PrcShr_{n,t}^{Bid} + PrcShr_{n,t}^{Tar}) - (PrcShr_{n,t-1}^{Bid} + PrcShr_{n,t-1}^{Tar})}{(PrcShr_{n,t-1}^{Bid} + PrcShr_{n,t-1}^{Tar})} \end{aligned} \quad (7)$$

In the notation above, the superscript (*a*) indicates the type of abnormal return. $PrcShr_{i,t}^{Bid}$ is the market capitalization of the bidder observed on trading day *t*. By the same token, $PrcShr_{i,t}^{Tar}$ is the market capitalization of the target observed on day *t*. The superscripts *Bid* and *Tar* each indicate the bidder and the target, whereby *n* is the merger number, and *t* is the trading day.

After obtaining the abnormal returns of five return estimations by the bidder, target, and the combined outcome, we computed the cumulative abnormal return (CAR): the sum from the previous trading day up to the announcement day. The primary reason for applying a one-trading day run-up period is because there could have been early reactions in the market. Contrary to event studies that observe events exogenous to the firm, firm endogenous events most likely experience a market reaction before or on the announcement day, and spillovers to post-announcement days are not uncommon.

$$CAR_i^a(-1, 0) = \sum_{t=-1}^0 \text{Abnormal Return}_{i,t}^a \quad (8)$$

In the notation above, superscript *a* indicates the type of abnormal return. The abbreviations used for each type of return are as follows: NM (Net Market model), CAPM (Capital Asset Pricing Model), FF3 (Fama-French Three Factor model), C4 (Carhart Four factor model), FF5 (Fama-French Five Factor model).

We ran an Ordinary Least Squared (OLS) model and a nonparametric Spearman correlation matrix based on ranks as post-estimation. The OLS model was only based on the target's return, while the Spearman rank correlation table on both. The post-estimation model also applied a nonparametric assessment to address the small sample size limitation of this study.

$$\begin{aligned} CAR_i^a(-1, 0) &= \gamma_1 + \gamma_2MTB_i + \gamma_3DYR_i + \gamma_4REIT2_i + \gamma_5DEALV_i + \gamma_6PTYPE_i \\ &+ \varepsilon_i^a \end{aligned} \quad (9)$$

Regarding the variables in the OLS model, MTB_i is the market-to-book ratio, and DYR_i is the dividend yield ratio of firm *i*. These two variables only pertain to the target firm, whereby

$REIT2_i$, $DEALV_i$, and $PTYPE_i$ have the same values in both the target and the bidder's sample. Variables MTB_i and DYR_i were generated by the previous quarter's financial-accounting information. Variable $REIT2_i$ is a binary variable and indicates whether a merger was between two REIT companies. Variable $DEALV_i$ is the deal value in billion dollars. Variable $PTYPE_i$ is a dichotomous variable that switches on when the payment type involves both cash and stock, compared to a cash-only deal, which was coded as zero.

IV. Results

The summary statistics of two trading days by target (t), bidder (b), and combined (c) return are listed in Table 4. Regarding the CAR values, the summary statistics are based on the CAR before and on the announcement day. As for the last five variables in Table 4, there is no variability among the trading days.

Table 4: Summary Statistics: CAR (-1, 0)

	<i>N</i>	<i>Mean</i>	<i>St. Dev.</i>	<i>Min.</i>	<i>Max.</i>
(t) CAR (-1, 0) NM	10	0.148	0.194	-0.0108	0.514
(b) CAR (-1, 0) NM	10	-0.00416	0.0317	-0.0843	0.0215
(c) CAR (-1, 0) NM	10	-11.65	41.73	-127.7	16.97
(t) CAR (-1, 0) CAPM	10	0.11	0.171	-0.0558	0.405
(b) CAR (-1, 0) CAPM	10	-0.00303	0.0302	-0.0873	0.0121
(c) CAR (-1, 0) CAPM	10	-10.13	64.14	-174.1	86.95
(t) CAR (-1, 0) FF3	10	0.0925	0.168	-0.0636	0.424
(b) CAR (-1, 0) FF3	10	-0.00773	0.0317	-0.0947	0.012
(c) CAR (-1, 0) FF3	10	-4.027	23.11	-61.94	32.53
(t) CAR (-1, 0) C4	10	0.0867	0.156	-0.0643	0.365
(b) CAR (-1, 0) C4	10	-0.00905	0.0313	-0.0946	0.0123
(c) CAR (-1, 0) C4	10	-2.285	13.57	-29.09	26.85
(t) CAR (-1, 0) FF5	10	0.0898	0.173	-0.0739	0.439
(b) CAR (-1, 0) FF5	10	-0.00687	0.0296	-0.0897	0.0104
(c) CAR (-1, 0) FF5	10	-19.49	70.29	-215.7	40.03
(t) MTB	10	-34.76	79.65	-185.7	9.341
(t) DYR	10	0.00917	0.00892	0	0.0213
REIT2	10	0.4	0.516	0	1
DEALV	10	2.381	2.355	0.0891	6.481
PTYPE	10	0.4	0.516	0	1

The *t*-test and Wilcoxon Signed-Rank test coefficients are listed in Table 5. When interpreting the results, it is noted that the Wilcoxon Signed Rank test is evaluated by the *Z*-test.

Given the sign conventions in both tests, we can conclude that REIT mergers in 2020 support the empire-building hypothesis. Most of the five return measures show a positive result in the target, a negative result in the bidder, and a non-positive result in the combined return columns. These findings suggest that mergers predominantly benefitted the target stockholders (e.g., Andrade, Mitchell, and Stafford, 2001). However, considering that the ultimate assessment of the combined return is what concludes whether a merger's perception is built on a synergistic or

expansion-oriented purpose, the non-positive result of the combined return of all five return measures supports the empire-building hypothesis.

Table 5. *T*-Test and Wilcoxon Signed-Rank Test

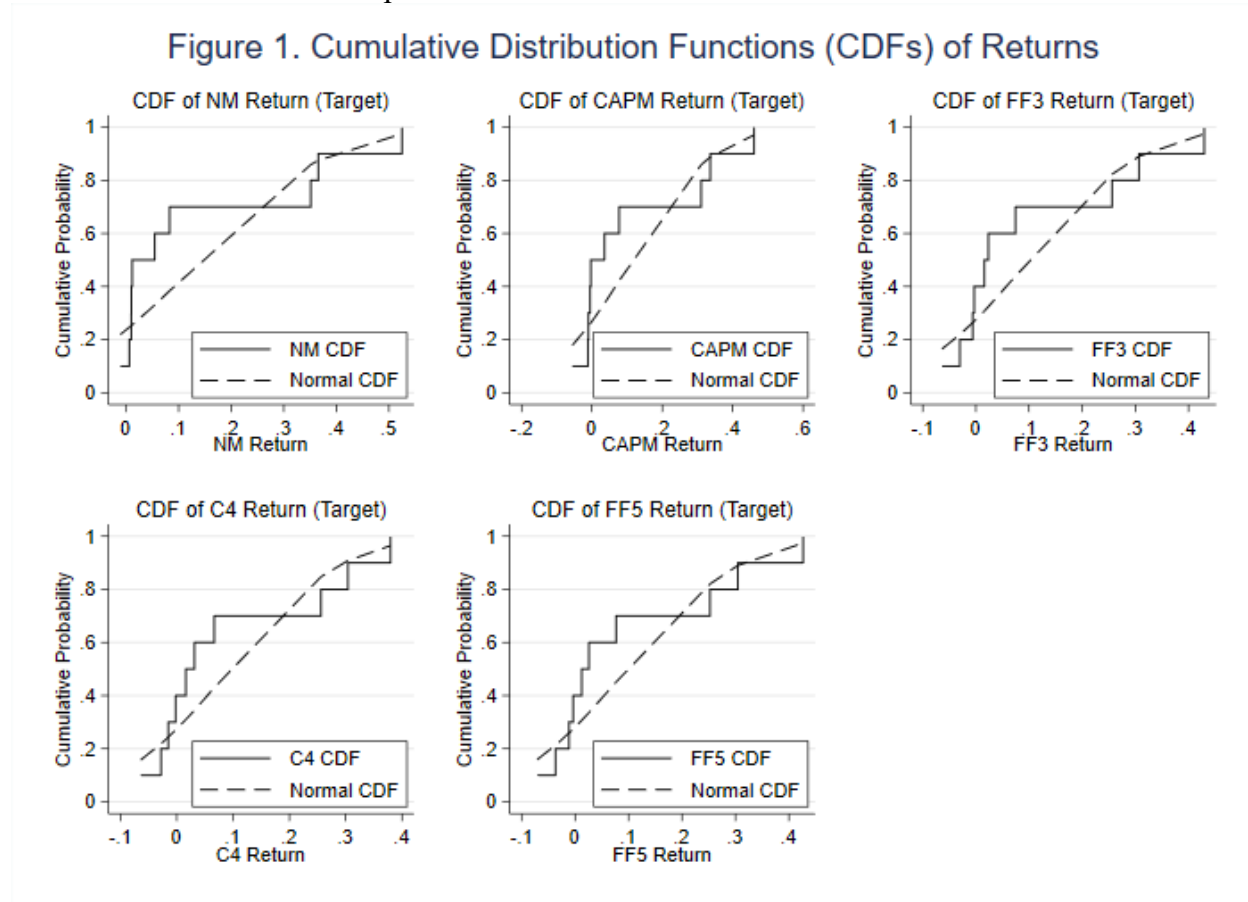
	Target	Bidder	Combined
<i>T</i>-Test	<i>T</i> -Test	<i>T</i> -Test	<i>T</i> -Test
CAR	(obs. = 5)	(obs. = 5)	(obs. = 5)
Net Market Return	3.135**	-0.733	-0.749
Capital Asset Pricing Model	2.921**	0.645	-0.447
Fama-French 3 Factor	2.462*	-0.886	-0.53
Carhart 4 Factor	2.553*	-0.972	-0.358
Fama-French 5 Factor	2.253*	-0.849	-0.835
<i>Wilcoxon Signed-Rank Test</i>	Z-Test	Z-Test	Z-Test
CAR	(obs. = 5)	(obs. = 5)	(obs. = 5)
Net Market Return	2.023**	-0.405	0.135
Capital Asset Pricing Model	1.753*	0.405	-0.405
Fama-French 3 Factor	1.753*	-0.674	-0.944
Carhart 4 Factor	1.753*	-0.405	-0.944
Fama-French 5 Factor	1.753*	-0.135	-0.674

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

One of our study's concerns is the small number of observations. However, given the analysis in MacKinlay's (1997) seminal paper on event studies, the number of observations is not a big concern as long as the magnitude of the abnormal returns is large and the variance among observations is small. MacKinlay (1997) provides evidence that the power of event study test statistics to reject the null hypothesis that the abnormal return is zero increases in one of the three following conditions: 1) Large number of observations, 2) Large abnormal returns, 3) Small variance among observations (i.e., short time window). His paper (MacKinlay, 1997) demonstrates that the number of observations is not a big concern if the abnormal return is large enough. MacKinlay (1997) demonstrates this by comparing the cumulative probability (i.e., the power of an event study test) of a small sample with large abnormal returns against a large sample with small abnormal returns. The results show that the testing power is growing faster in the former case. These results remain solid even when applying a broader observation window. However, the problem with samples with expansive observation windows is that it introduces more variability into the sample. With more variability, the magnitude of the abnormal return is more difficult to observe. As shown in Figure 1, our return samples increase faster than the Normal distribution. This is evidence that our abnormal returns are large enough to satisfy the condition for a good event study to reject the null hypothesis.

MacKinlay (1997) submits that if the testing power is small, the researcher should increase the sample size, shorten the event window, or apply a more rigorous testing method. Except for the sample size stipulation, our study satisfies the remaining two conditions. Regarding the testing method, as MacKinlay (1997) suggests, we apply both the parametric (*t*-test) and nonparametric (Wilcoxon Signed-Rank test) tests.

In many merger-related event studies, the nonparametric test is used to test robustness (e.g., Kim, 2023). The reason for applying a nonparametric approach also pertains to the small observation number in an event study. Since a nonparametric test does not assume an underlying distribution, it is more rigorous for samples with small observation numbers. By assigning ranks based on the magnitude and signs based on each observation's direction, the nonparametric test used in our study approximates our small sample towards a Normal distribution (and, therefore, the Z-test). As shown in Table 5, the test results of the *t*-test and Z-test (based on a nonparametric Wilcoxon Signed-Rank test) are nearly identical, which shows evidence of the robustness of our tests – even with a small sample.



Based on the results in Table 5, we explore the inferences of the target’s return in Table 6. Each model's total number of observations is based on two trading days for each of the five events. Therefore, the ten trading days are based on the merger announcement day and the day before. Despite the low observation number, the *R*-Squared is relatively high, indicating that our regression model exhibits a good fit.

Among the variables added to our estimation model, the DYR shows a statistically significant negative outcome throughout all return types. For tax exemption, a REIT must pay 90% of its taxable income as dividends, and 75% of this income should come from real estate assets. This stipulation pushes REITs towards a low-cash structure with a large amount of debt outstanding. Since REITs are mostly short of cash, during the COVID-19 pandemic, the public found cash losses through dividend payouts would decrease shareholder values.

Such investor sentiment is also found in the positive and significant PTYPE coefficient. This payment type variable was coded as one if the payment was made in cash and stock, compared

to a cash-only deal, which was coded as zero. Previous literature documents that a cash-only deal increases shareholder values (e.g., Andrade, Mitchell, and Stafford, 2001; Heron and Lie, 2002). Similarly, regarding REIT mergers, Ratcliffe and Dimovski (2012) find that bidders gain significant wealth in a cash-financed deal. The opposite holds for public-public mergers financed through stock payments, where the bidder is devalued because the target is then recognized to be overvalued (Campbell, Ghosh, & Sirmans, 2001). In conclusion, based on the results from the dividend yield ratio (DYR) and the payment method in the merger deal (PTYPE), we can conclude that the public did not like cash payments during the pandemic.

In Table 6, variable REIT2 exhibits a positive and significant coefficient, which indicates that a merger between REITs increases the target's shareholder values. A merger between similar types of bidders and targets is informationally more transparent than mergers with non-REIT companies. Similar results were found in Ratcliffe and Dimovski's (2012) meta-analysis on REIT mergers. The authors (Ratcliffe & Dimovski, 2012) find that the mean excess return of the acquirer in a REIT-REIT merger was larger than a merger that involved a non-REIT target.

Table 6: Cross-Sectional Regression (Target)

	CAR (-1, 0) NM	CAR (-1, 0) CAPM	CAR (-1, 0) FF3	CAR (-1, 0) C4	CAR (-1, 0) FF5
(t) MTB	-0.00205 (0.00172)	-0.00178 (0.00151)	-0.00114 (0.00140)	-0.000770 (0.00141)	-0.00117 (0.00139)
(t) DYR	-83.16** (26.02)	-74.50** (22.79)	-66.71** (21.20)	-60.44** (21.33)	-66.22** (20.97)
REIT2	0.710* (0.327)	0.631* (0.286)	0.574* (0.266)	0.509 (0.268)	0.575* (0.263)
DEALV	0.0760 (0.0567)	0.0658 (0.0497)	0.0863 (0.0462)	0.0862 (0.0465)	0.0893 (0.0457)
PTYPE	0.920** (0.279)	0.845** (0.244)	0.732** (0.227)	0.673** (0.229)	0.734** (0.225)
Constant	0.00691 (0.101)	-0.0161 (0.0887)	-0.0628 (0.0826)	-0.0635 (0.0831)	-0.0797 (0.0817)
Observations	10	10	10	10	10
R-squared	0.777	0.778	0.802	0.767	0.816

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors are in parentheses.

The last analysis in our study uses a nonparametric approach as a robustness check to make up for the limitation of using a small sample size. The Spearman correlation in Table 7 shows significant coefficient results that were insignificant in the previous analysis (i.e., Table 6). The rank-based correlation of the bidder and target's CAR values of five return measures suggests that the deal value positively correlates with the target's share price. This is because a higher deal value makes the public think that the target is valuable (e.g., Andrade, Mitchell, and Stafford, 2001). The positive correlation between the market-to-book ratio and the bidder's return shows that the bidder's growth potential assures a favorable bidder valuation. Here, the Spearman correlation does not show any deviations from findings in previous merger studies under normal macroeconomic circumstances.

Table 7: Spearman Rank Correlation Coefficients

	(t) MTB (b) MTB	(t) DYR (b) DYR	REIT2	DEALV	PTYPE
(t) CAR NM	0.172	0.125	0.142	0.197	0.213
(t) CAR CAPM	0.271	0.2	0.142	0.172	0.355
(t) CAR FF3	0.123	0.288	0.355	0.615*	0.142
(t) CAR C4	0.123	0.288	0.355	0.615*	0.142
(t) CAR FF5	0.049	0.356	0.426	0.64**	0.142
(b) CAR NM	0.615*	0.309	0.142	0.64**	-0.213
(b) CAR CAPM	0.591*	-0.042	-0.142	0.394	0
(b) CAR FF3	0.492	-0.236	-0.426	0.32	-0.355
(b) CAR C4	0.714**	-0.139	-0.355	0.492	-0.355
(b) CAR FF5	0.443	-0.103	-0.142	0.394	-0.426

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

V. Conclusions

In this study, we investigated the valuation effects of mergers involving REITs. Contrary to the prevalent finding that mergers create synergy, we found that during the COVID-19 pandemic, mergers advocated the empire-building hypothesis. This was found in the non-positive combined return of five different return types on the merger announcement day. Anomalies of the pandemic were also observed in the dividend yield ratio and the payment type in the merger, where shareholders exhibited an aversion towards cash spending.

References

- Agrawal, A., & Jaffe, J. F. (2003). Do takeover targets underperform? Evidence from operating and stock returns. *Journal of Financial and Quantitative Analysis*, 38(4), 721-746.
- Allen, P. R., & Sirmans, C. F. (1987). An analysis of gains to acquiring firm's shareholders: The special case of REITs. *Journal of Financial Economics*, 18(1), 175-184.
- Andrade, G., Mitchell, M., & Stafford, E. (2001). New evidence and perspective on mergers. *Journal of Economic Perspectives*, 15(2), 103-120.
- Becher, D. A. (2000). The valuation effects of bank mergers. *Journal of Corporate Finance*, 6, 189-214.
- Campbell, R. D., Ghosh, C., Petrova, M., & Sirmans, C. F. (2011). Corporate governance and performance in the market for corporate control: The case of REITs. *Journal of Real Estate Finance and Economics*, 42, 451-480.
- Campbell, R. D., Ghosh, C., & Sirmans, C. F. (2001). The information content of method of payment in mergers: Evidence from Real Estate Investment Trusts (REITs). *Real Estate Economics*, 29(3), 361-387.
- Carhart, M. M. (1997). On persistence in mutual fund performance. *Journal of Finance*, 52(1), 57-82.

- Chang, S. (1998). Takeovers of privately held target, methods of payment, and bidder returns. *Journal of Finance*, 53(2), 773-784.
- Eichholtz, P. M. A., & Kok, N. (2007). How does the market for corporate control function for property companies? *Journal of Real Estate Finance and Economics*, 36, 141-163.
- Ghosh, C., Petrova, M., & Xiao, Y. (2012). Do REITs use cash reserves efficiently? Evidence from corporate acquisitions. *Journal of International Money and Finance*, 31, 1953-1970.
- Heron, R., & Lie, E. (2002). Operating Performance and the Method of Payment in Takeovers. *Journal of Financial and Quantitative Analysis*, 37(1), 137-155.
- Jensen, M. C. (1968). The performance of mutual funds in the period 1945-1964. *Journal of Finance*, 23(2), 389-416.
- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, 11(1), 145-163.
- Kim, S. D. (2023). The valuation effects of hotel mergers. *Tourism Economics*, 29(2), 348-377.
- Lu, C., Mao, T., & Shen, Y-P. (2015). Beyond friendly acquisitions: The case of REITs. *Review of Quantitative Finance and Accounting*, 44, 139-159.
- Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33(1), 3-56.
- Fama, E. F., & French, K. R. (2015). A five-factor asset pricing model. *Journal of Financial Economics*, 116, 1-22.
- Ling, D., & Petrova, M. (2011). Why do REITs go private? Differences in target characteristics, acquirer motivations, and wealth effects in public and private acquisitions. *Journal of Real Estate Finance and Economics*, 43(1), 99-129.
- McIntosh, W., Officer, D. T., & Born, J. A. (1989). The wealth effects of merger activities: Evidence from Real Estate Investment Trusts. *Journal of Real Estate Research*, 4(3), 141-155.
- MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of Economic Literature*, 35(1), 13-39.
- Mulherin, J. H., & Boone, A. L. (2000). Comparing acquisitions and divestitures. *Journal of Corporate Finance*, 6, 117-139.
- Moeller, S. B., Schlingemann, F. P., & Stulz, R. M. (2005). *Journal of Finance*, 60(2), 757-782.
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187-221.
- Ratcliffe, C., & Dimovski, W. (2012). REIT mergers and acquisitions: A meta-analysis. *Journal of Property Investment & Finance*, 30(3), 241-256.
- Roll, R. (1986). The hubris hypothesis of corporate takeovers. *Journal of Business*, 59(2), 197-216.
- Sahin, O. F. (2005). The performance of acquisitions in the real estate investment trust industry. *Journal of Real Estate Research*, 27(3), 321-342.
- Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance*, 19(3), 425-442.