FUNDS FROM OPERATIONS VERSUS NET INCOME: EXAMINING THE DIVIDEND-RELEVANCE OF REIT PERFORMANCE MEASURES

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Abstract

We compare the Funds from Operations (FFO) and net income by examining how well these two performance measures explain dividend policy of Real Estate Investment Trust (REIT) firms beyond operating cash flows. Our investigation extends over the period of 2001-2008, subsequent to the provision of the new FFO definition by the National Association of Real Estate Investment Trusts (NAREIT). Specifically, by decomposing the performance measures into their cash and non-cash (accrual) components, we find that, while the non-cash component that is common to both FFO and net income is significantly associated with the level of dividends distributed by REITs, the additional non-cash component contained in net income but not in FFO has no association with dividends. We further find that the non-cash component in net income becomes significantly associated with dividends only when measurement errors in depreciation are low (i.e., reporting quality in depreciation is high). By suggesting that the inclusion of depreciation distorts the dividend-relevance of REIT net income, this paper provides further support to the dominance of FFO over net income for financial reporting in the REIT industry.

Keywords: Funds from Operations; Net Income; Dividends; Real Estate Investment Trusts; Performance Measure; Depreciation

JEL Classifications: M41; G38

1 Introduction

The Real Estate Investment Trust (REIT) industry in the U.S. regularly reports a summary performance measure known as Funds from Operations (FFO) to supplement net income in measuring firm profitability. Since the introduction of the FFO concept by the National Association of Real Estate Investment Trust (NAREIT) in 1991, industry participants have been advocating the adoption of FFO as they perceive it to be a more informative performance measure than net income.

REIT managers generally claim that by excluding depreciation, amortization, and several one-time, non-recurring revenue and expenses, FFO provides useful information about firms' operating performances. They argue that several income statement items, particularly depreciation, distort the true profitability of REIT.[1] However, government regulators, the Securities and Exchange Commission (SEC), and other standard-setters are concerned about the usefulness and reliability of the FFO measure as it is un-audited, voluntarily reported, and not prepared according to Generally Accepted Accounting Principles (GAAP) (see, for example, Baik, Billings, and Morton, 2008).

Previous research that examines the usefulness of the FFO measure (compared to net income) generally finds mixed evidence. For example, Fields, Rangan, and Thiagarajan (1998) focus on a sample of REITs during the period 1991-1995 and find that, while FFO is better in predicting one-year-ahead FFO and cash flows from

[1] Among the rationales underlying this argument is the conventional adoption of the straight-line method for accounting depreciation allocation on the assumption that the value of real estate assets diminishes predictably over time. Yet, managers using this assumption tend to underestimate the period of time over which depreciation occurs (for recent studies that estimate depreciation for real estate assets, see, for example, Fisher, Smith, Stem, and Webb, 2005 and Harding, Rosenthal, and Sirmans, 2007). Also, given the complexity of the real estate portfolios owned by a REIT, it is frequently difficult to categorize real estate properties/capital improvements into the right asset classes such that the correct depreciation schedule can be applied. As a result, the adjustments for depreciation could contain large measurement errors. Finally, net income includes unusual and extraordinary items that are deemed to have little relation with a firm's future operating performance (see NAREIT National Accounting Bulletin, 2002).

operations (CFO), net income is better in predicting contemporaneous stock prices and one-year-ahead net income. Gore and Stott (1998) examine a slightly longer sample period (1991-1996) and use a different empirical design; they find that FFO is, in fact, more closely associated with stock returns than net income. They also find that dividend forecast ability tends to be higher for net income than for FFO. Vincent (1999) examines the relative as well as the incremental information content of FFO compared to earnings-per-share (EPS), CFO, and earnings-before-interest-tax-depreciation-and-amortization (EBITDA) and finds that all four measures are related to stock returns, but their statistical significance is highly dependent on the econometric specification. Graham and Knight (2000) find that FFO has higher and incremental information content over net income. Stunda and Typpo (2004) extend the study of Graham and Knight (2000) and find that REIT investors use both earnings and FFO information in making investment decisions, but FFO gains importance in valuation as earnings become more transitory. Hayunga and Stephens (2009) examine dividend smoothing in REITs and find that both FFO and net income are contemporaneously related to dividends.[2]

By running a horserace comparison of the two measures, these aforementioned studies suggest that the real estate industry seems to perceive FFO as being more useful than (or at least as useful as) net income in valuation. However, only a handful of studies have attempted to provide a rationale for this conclusion.[3] Moreover, prior research on

[2] Some recent studies also examine the relative quality of FFO and net income from the perspective of analysts. For example, Downs and Güner (2006) compare analysts' forecast errors of FFO for a sample of REIT and analyst forecast errors of EPS for a sample of non-REIT firms. They find that analyst forecast errors are lower for the FFO measure. Examining analyst forecast accuracy of FFO and EPS under the same REIT firm construct, Fortin and Tsang (2008) find that analyst forecast accuracy is substantially higher for FFO than for EPS.

[3] Ben-Shahar, Margalioth, and Sulganik (2009), for example, develop a theoretical framework in which they examine the usefulness of reported depreciation and find that none of the commonly used depreciation

the comparison of FFO and net income is also particularly scarce following the provision of the new FFO definition in 2000 that accompanied the improved industry efforts to standardize the FFO measure.[4] Our study fills these voids by empirically decomposing and examining the components that are common to net income and FFO and those in net income but not in FFO over the period of 2001-2008.[5]

Given that dividend-payout represents an important source of income to REIT investors, we particularly focus on the FFO and net income measures from the dividend-relevance perspective. Despite the fact that REITs are required by Federal law to distribute 90% of their taxable income as dividends to shareholders, prior studies (e.g., Wang, Erickson, and Gau, 1993 and Bradley, Capozza, and Sequin, 1998) have shown that REITs tend to distribute more dividends than the statutory requirement and that their dividend policy is more dependent on firm fundamentals such as cash flows, leverage, and firm size rather than on the statutory dividend distribution threshold.

As FFO contains the same cash and accrual components as net income except that it excludes depreciation and several one-time, non-cash, non-recurring items, we

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methods *ex-ante* conforms to the accounting matching principle. They attribute their findings as a resolution to the dominance of FFO over net income in the REIT industry.

[4] Responding to the noted concerns that its member firms may report FFO opportunistically to mislead investors, NAREIT has exerted continued efforts to provide guidance in the preparation of FFO (in 1995 and 1999) and it has subsequently devised a "standard" definition of FFO as of January 1, 2000. The white paper on FFO published by NAREIT currently defines FFO as follows: "Funds from Operations means net income (computed in accordance with GAAP), excluding gains (or losses) from sale of property, plus depreciation and amortization, and after adjustment for unconsolidated partnerships and joint ventures." REIT firms are encouraged to follow the "standard" definition of FFO as defined by NAREIT. However, the guidance of NAREIT remains advisory in nature, and managers have the flexibility to make further adjustments on items to include and exclude as they deem appropriate. In practice, we find that REIT managers also exclude from FFO certain other unusual and infrequent accounting items (e.g., impairment, extraordinary items, and early extinguishments of debt). For studies that focus on the market impact of the regulatory efforts on FFO reporting in 2000, see Higgins, Ott, and Van Ness (2006) amd Baik, Billings, and Morton (2008).

[5] To our best knowledge, the only study that examines the differences between FFO and net income in a similar context is Fortin, Liu, and Tsang (2009), where they examine the imposition of Regulation G in 2003 on the usefulness of FFO. However, they do not examine the relative usefulness of the FFO versus net income.

decompose the performance measures into three components: (1) a cash component that is common to both FFO and net income; (2) an accrual component that is common to both FFO and net income; and (3) an accrual component in net income but not in FFO. We test the dividend-relevance of these components and find that the non-cash component common to both FFO and net income is significantly associated with the level of dividends distributed by REITs, indicating accrual adjustments in the performance measures provide investors with incremental information on a firm's dividend policy beyond cash flows. However, we also find that the additional accrual component in net income but not in FFO has no association with dividends.

We next examine whether it is specifically the reported depreciation, typically the largest expense item on the financial statement of REITs, which distorts the measurement of net income (as depreciation is required by GAAP to be included in net income but is excluded from FFO). Following Healy and Wahlen (1999) and Marquardt and Wiedman (2004), we thus decompose the depreciation expense into its normal and abnormal portions, with the abnormal component as a proxy for the measurement errors in depreciation (due to unintentional mistakes and/or intentional earnings management). We find that only when measurement errors in depreciation are low, the non-cash component in net income, but not in FFO, nonetheless contains dividend-relevant information. Further investigating the non-cash component in net income, but not in FFO, we decompose it into two sub-components, depreciation and other items. We find that, when measurement errors in depreciation are low, while depreciation remains mostly insignificant, the other items that are excluded from FFO but affect revenue and expenses (and thus net income) maintain significant correlation with dividends.

Overall, our findings suggest that while cash flows predictably affect the amount of dividends declared by a REIT, accrued revenue and expenses in FFO that are to be realized into future cash flows are also correlated with current REIT's dividend policy. In contrast, the accrual component in net income but not in FFO has little association with dividends. Furthermore, the evidence reinforces the industry's claim that reported depreciation in REIT tends to contain serious measurement errors; therefore, by excluding depreciation from net income in the calculation of the FFO measure, NAREIT, in effect, provides an alternative performance measure that better reflects REIT's dividend policy.

The remainder of the paper is organized as follows. In the next section, we present the hypotheses and outline the research design. Section 3 explains the sample selection process and describes sample statistics. Section 4 presents the main empirical results. We discuss robustness checks in Section 5 and provide concluding remarks in the last section.

2 Hypotheses and Research Design

Dividend Relevance of FFO and Net Income

As noted earlier, proponents of FFO claim that FFO is a better performance measure than net income as it allows more of the managers' discretion on which financial items to include or exclude, so as to eliminate measurement problems (in depreciation and other items) and, thereby, better reflect firm's cash flows and fundamentals over time. Hence, FFO should further serve as a better measure of a firm's dividend-paying ability. Opponents of FFO, however, argue that the flexibility of the measure does not ensure that FFO has higher quality: By undoing some particular accounting expenses such as

depreciation, FFO merely increases net income by the amount of these adjustments. Moreover, REIT managers have more flexibility in manipulating FFO by selectively excluding certain expenses from net income as FFO is not governed by GAAP. If these excluded expenses require future cash disbursements, managers would undoubtedly consider these future obligations when they determine their dividend policy for the current period. Because these expenses are excluded, FFO would exhibit lower correlation with a firm's dividends than net income.

Our first hypothesis investigates which of the two performance measures, FFO or net income, is more dividend-relevant. Presented in alternative form,

H_1: FFO is more dividend-relevant than net income.

We test this hypothesis by first decomposing the performance measures into different components: (1) a cash component that is common to both FFO and net income; (2) an accrual component that is common to both FFO and net income; and (3) an accrual component in net income but not in FFO. While FFO contains the same cash and accrual components as net income, unlike net income, it excludes depreciation and several one-time, non-cash, non-recurring items. Prior research shows a firm's cash flows are an important determinant for REIT dividend policy (e.g., Hayunga and Stephens, 2009). Yet, the non-cash (accrual) components of the performance measures (i.e., revenue and expenses that are recognized when earned and incurred, respectively, regardless of when the cash is received or paid) can potentially provide incremental information to a REIT's dividend-paying ability as the accruals may affect future cash collection and

disbursement. A rational manager may anticipate these future cash implications from accrued revenues and expenses and determine the current dividend policy accordingly. Thus, we hypothesize that the non-cash component of the performance measures also provides investors with relevant information regarding the dividend policy of REITs.

The fundamental model for evaluating dividend-relevance of net income and FFO is presented in the following regression framework:

(1) $DIV_{j,t} = \alpha_1 + \beta_1 CFO_{j,t} + \beta_2 FFO\_ACC_{j,t} + \beta_3 NI\_ACC_{j,t} + \beta_4 Controls_{j,t} + \varepsilon_{j,t}$,

where DIV_{jt}, is the annual dividend per share declared by REIT *j* in year *t*, and *CFO*, *FFO_ACC*, and *NI_ACC* denote the cash component that is common to both FFO and net income, the accrual component that is common to both FFO and net income, and the accrual component in net income but not in FFO, respectively. We follow Collins and Hribar (2002) and use the direct method to compute total accruals in net income and in FFO, respectively, such that[6]

(2) $TACC_{NIj,t} = Net\ Income_{j,t} - CFO_{j,t}$

and

(3) $TACC_{FFOj,t} = FFO_{j,t} - CFO_{j,t}$.

FFO contains the same accruals as net income except for depreciation and certain one-time non-recurring items, so the accrual component in net income (denoted by $TACC_{NI}$) contains the accrual component of FFO (denoted by $TACC_{FFO}$) and an additional accrual component. Hence, the accrual component common to both FFO and net income,

[6] Collins and Hribar (2002) argue that although previous literature uses both indirect and direct methods to calculate total accruals, the direct method provides a more accurate measurement of total accruals. The indirect method calculates total accruals using information from both the balance sheet and the income statement. The direct method calculates total accruals directly from the statement of cash flows.

FFO_ACC [see equation (1)] is simply $TACC_{FFO}$, while the additional accrual component in net income but not in FFO, [*NI_ACC* in equation (1)], is obtained by

(4) $NI\_ACC_{j,t} = TACC_{NIj,t} - TACC_{FFOj,t}$.

We also include in equation (1) a set of control variables (denoted by *Controls*) documented in prior studies to affect REIT dividend policy. These include firm size (measured as the natural logarithm of the REIT's market capitalization and denoted by *SIZE*); leverage (measured as the ratio of total debt to total assets and denoted by *LEVERAGE*), return-on-assets (denoted by *ROA*), and future growth opportunity (proxied by the market-to-book ratio and denoted by *MTB*).[7] Finally, all financial statement variables in equation (1) are scaled by the firm's average total assets to control for the effect of heteroskedasticity.

Should both FFO and net income be dividend-relevant, we expect the cash *(CFO)* and the non-cash (accrual) components (including both *FFO_ACC* and *NI_ACC*) to maintain significantly positive coefficients. However, if FFO is more dividend-relevant than net income, then we would observe significantly positive coefficients only for *CFO* and *FFO_ACC*.

The Impact of Depreciation on Reported Performance of REIT

[7] Bradley, Capozza, and Seguin (1998) argue that larger firms are more diversified and have less volatile cash flows, and firms with volatile cash flows tend to pay less dividends. Thus, a positive relation is expected. Hardin and Hill (2008) argue that a larger firm may need to conserve more cash to expand its asset base, and hence size can be negatively related to dividends. Therefore, we do not offer directional prediction of the *SIZE* variable. Bradley, Capozza, and Seguin (1998) and Hardin and Hill (2008) both document a negative relationship between leverage and dividend payout. We follow these prior studies and expect a negative coefficient for *LEVERAGE*. As better performing REITs are less motivated to use dividends to signal performance, many studies document a negative relationship between *ROA* and dividends (e.g., Bradley, Capozza, and Seguin, 1998; Wang, Erickson, and Gau, 1993; Ghosh and Sirmans, 2006; and Hardin and Hill, 2008). To proxy for future growth opportunity, we include market-to-book ratio, *MTB.* We expect a negative relationship of *MTB* and dividends because REITs with relatively high *MTB* may seek to conserve more cash for future growth opportunities and thus pay smaller dividends (Devos, Spieler, and Tsang, 2010).

Several studies (e.g., Barth, Cram, and Nelson, 2001 and Cheng and Liu, 2007) have argued that depreciation expenses are, in fact, proxies for expenditure on long-term investments and should be related to cash flows (and thus dividends). Hence, absent measurement errors, depreciation expenses should help explain a firm's dividend distribution. Similarly, the other non-cash non-recurring items included in net income but excluded from FFO should also have cash flow implications and should affect the dividend-payout.[8]

Yet, the determination of depreciation expenses requires managers to form various assumptions on the estimated useful lives, asset classes, and depreciation methods for real estate properties. Hence, depreciation reported by REITs may be more subject to substantial (unintentional) errors when managers have large real estate portfolios consisting of vastly different real properties. As prior research shows, however, errors in depreciation can also be caused by intentional earnings management. Given that depreciation often represents the largest expense item for a REIT, managers might, for example, manipulate net income upward to meet certain earnings benchmarks by understating depreciation. Alternatively, given that the real estate market was burgeoning in recent years before the financial crisis, they might want to smooth net income downward by overstating depreciation.[9]

[8] For example, extraordinary items and results of discontinued operations are typically excluded from FFO but included in net income. However, a loss of property due to extraordinary factors such as fire or earthquake implies cash outflows in the foreseeable future for replacement asset. Accrued revenue from an operating segment to be disposed by the firm in the near future is, in essence, similar to normal accrued revenue and implies future cash inflows.

[9] Previous studies (e.g., Fields, Rangan, and Thiagarajan, 1998) show that both FFO and net income are valued by investors, thus providing an incentive for managers to manipulate net income. Moreover, many bank covenant provisions are based on the GAAP net income measure instead of FFO, thus providing incentives for managers to manipulate net income to meet certain earnings thresholds. Also, Teoh, Wong, and Rao (1998) and Teoh, Welch, and Wong (1998) find that initial public offering (IPO) firms usually adopt income-increasing depreciation policies. Marquardt and Wiedman (2004) show that firms with equity

Overall, we expect that the presence of measurement errors in depreciation expenses lowers the reporting quality of depreciation accruals and introduces noise to the measurement of net income. This leads to the second hypothesis presented in alternative form:

H_2: Net income is less dividend-relevant when the reporting quality (measurement error) of depreciation is low (high).

In the spirit of Healy and Wahlen (1999) and Marquardt and Wiedman (2004),[10] we decompose depreciation expenses into their normal and abnormal (or discretionary) portions. We measure the normal level of depreciation equal to depreciation expenses reported by firms in the previous year adjusted for the proportional increase of property, plant, and equipment (*PPE*) in the current year relative to the previous year.[11] The abnormal component of the depreciation expense is thus equal to

(5) $AB\_DEP_{j,t} = DEP_{j,t} - (DEP_{j,t-1} \times PPE_{j,t}/PPE_{j,t-1})$.

Large positive/negative abnormal depreciation *(AB_DEP)* indicates managers reporting depreciation expenses that are higher/lower than normal. We then define the reporting quality of depreciation using two alternative measures: The first measure,

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offerings tend to manage depreciation downwards. Keating and Zimmerman (1999) show that firms that adopt income-increasing depreciation policy change for all assets exhibit worse performance than firms that only adopt policy change for their new assets.

[10] Healy and Wahlen (1999) report that most earnings management studies use abnormal (or discretionary) portions of accruals as a measure of earnings management. In particular, Marquardt and Wiedman (2004) assume that depreciation expenses remain a constant proportion of gross property, plant, and equipment in the absence of earnings management and view any abnormal level of depreciation expenses as indication of earnings management activities.

[11] As data for property, plant, and equipment is missing for many observations in our sample, we use total assets as a proxy for property, plant, and equipment. We believe this assumption is plausible for the REIT industry as REIT properties typically comprise most of the firm's total assets.

DEPR_Q1, is a continuous variable, measured as the absolute value of *AB_DEP* (scaled by average total assets) multiplied by -1 (i.e., $DEPR\_Q1 = -|AB\_DEP|$). Hence, a firm is classified as having higher reporting quality of depreciation when *DEPR_Q1* is closer to zero. The second variable, *DEPR_Q2*, is a dummy variable equal to 1 when the absolute abnormal depreciation is lower than the sample median; 0 otherwise. We then augment the model in equation (1) by including the measures of reporting quality of depreciation and its interaction term with *NI_ACC*:

(6) $$DIV_{j,t} = \alpha_1 + \beta_1 CFO_{j,t} + \beta_2 FFO\_ACC_{j,t} + \beta_3 NI\_ACC_{j,t} + \beta_4 DEPR\_Q1_{j,t} + \beta_5 NI\_ACC \times DEPR\_Q1_{j,t} + \beta_6 Controls_{j,t} + \varepsilon_{j,t}$$

and

(7) $$DIV_{j,t} = \alpha_1 + \beta_1 CFO_{j,t} + \beta_2 FFO\_ACC_{j,t} + \beta_3 NI\_ACC_{j,t} + \beta_4 DEPR\_Q2_{j,t} + \beta_5 NI\_ACC \times DEPR\_Q2_{j,t} + \beta_6 Controls_{j,t} + \varepsilon_{j,t}.$$

We hypothesize that the accrual component in net income but not in FFO is dividend-relevant when the reporting quality of depreciation is high (i.e., measurement errors in depreciation are low). Therefore, our key coefficient of interest is β_5, which we expect to be positive and significant.

Finally, to further investigate the impact of depreciation on the incremental usefulness of the net income measure, we decompose the differences between FFO and net income accruals, *NI_ACC*, into the depreciation expense (*DEP*) and all other items (*OTHER*). We define other items as follows:

(8) $$OTHER_{j,t} = NI\_ACC_{j,t} - DEP_{j,t}.$$

We augment models (6) and (7) by substituting *DEP* and *OTHER* for *NI_ACC*:

(9) $DIV_{j,t} = \alpha_1 + \beta_1 CFO_{j,t} + \beta_2 FFO\_ACC_{j,t} + \beta_{3A} DEP_{j,t} + \beta_{3B} OTHER_{j,t} + \beta_4 DEPR\_Q1_{j,t} + \beta_{5A} DEP \times DEPR\_Q1_{j,t} + \beta_{5B} OTHER \times DEPR\_Q1_{j,t} + \beta_6 Controls_{j,t} + \varepsilon_{j,t}$

and

(10) $DIV_{j,t} = \alpha_1 + \beta_1 CFO_{j,t} + \beta_2 FFO\_ACC_{j,t} + \beta_{3A} DEP_{j,t} + \beta_{3B} OTHER_{j,t} + \beta_4 DEPR\_Q2_{j,t} + \beta_{5A} DEP \times DEPR\_Q2_{j,t} + \beta_{5B} OTHER \times DEPR\_Q2_{j,t} + \beta_6 Controls_{j,t} + \varepsilon_{j,t}$.

Although depreciation is a non-cash (accrual) expense, Barth, Cram, and Nelson (2001) argue that depreciation expense is, in fact, a proxy for expenditure on long-term investments. Because these investments are expected to generate higher cash flows over multiple future periods, one should expect future cash flows from operations to be positively related to depreciation. Both Barth, Cram, and Nelson (2001) and Cheng and Liu (2007) empirically show that depreciation and amortization expenses are significant in predicting future cash flows in a general market context. In contrast, given the magnitudes and complications of the real estate portfolio generally held by a REIT, the depreciation expenses in REIT may be more subject to unintentional estimation errors (or intentional management errors). These errors may weaken the correlation between the depreciation expenses and the one-period-ahead cash flow from operations. The other items included in net income but not in FFO accruals should be dividend-relevant as one-time, non-recurring, accrued revenue (expense) nonetheless implies future cash collection (disbursement). Finally, our key coefficients of interest are β_{5A} and β_{5B} [see equations (9) and (10)], whom we expect to be positive and significant. That is, we conjecture that when the reporting quality of depreciation is high, both *DEP* and *OTHER* maintain

implications to a REIT's future cash flows and that, in turn, motivates REIT managers to consider these accrued items when determining their current dividend policy.

3 Data and Descriptive Statistics

Our sample consists of all publicly traded REIT firms over the period 2001 to 2008 (we thus avoid the confounding effect of FFO definition change by NAREIT in 2000). Obtaining our sample firm data from the Capital IQ database, we start with a total sample of 1464 firm-year observations.[12] Since this study compares the performance of two alternative measures of the same firm, it is essential that we conduct the analysis on a common sample, thereby eliminating observations for firms that do not choose to voluntarily provide FFO information. We further verify that data is not missing for other variables in our empirical analysis. The final sample consists of 590 firm-year observations.

Table 1 presents descriptive statistics for the regression variables. The average dividend per share is $1.636. We scale the financial statement variables by average total assets to control for the effect of heteroskedasticity. Net income has a mean of 0.036, which is substantially lower than the FFO mean (0.058). We find that CFO, with a mean of 0.062, is higher than both net income and FFO, indicating REITs generally book more non-cash accrued expenses than revenues. When we decompose the performance measures, *FFO_ACC* has a mean of -0.004, while *NI_ACC* has a mean of -0.022. However, the differences between the two accrual components are mainly due to depreciation. Depreciation has an average of -0.031. This reinforces the fact that

[12] We elect to conduct our study based on annual data instead of quarterly because data for depreciation is spare in the quarterly database.

accounting depreciation represents one of the largest expense items in general and the largest reconciling item between FFO and net income for REIT firms. The mean value of *OTHER* is 0.009, indicating that REITs have on average recorded more one-time revenue than expenses.

Table 2 presents Pearson correlations for the regression variables. We find that both FFO and net income are correlated with dividends (with similar correlation coefficients, 0.149 versus 0.150, respectively). Also, FFO and net income are, as expected, highly correlated (0.647). When we decompose the performance measures into their cash and non-cash components, we find that both *FFO_ACC* and *NI_ACC* are insignificantly correlated with dividends. Interestingly, we also find that *FFO_ACC* and *NI_ACC* are negatively correlated (-0.344). Prior research (e.g., Kolev, Marquardt, McVay, 2008) shows that companies tend to reclassify expenses when they choose to report non-GAAP measures. Arguably, the negative correlation coefficient represents the shifting of expenses from recurring to non-recurring items in the calculation of FFO.

4 Empirical Analysis

The outcomes from the estimation of equation (1) are reported in Table 3.[13] The first column reports regression results without the inclusion of control variables. We find that when we decompose the performance measures into the cash and non-cash components, the cash component, *CFO,* is significantly related to dividends at the 1% level. Interestingly, however, the non-cash accrual component in FFO (and common to net income), *FFO_ACC,* is also significantly positively related to dividends at the 1% level.

[13] We run pooled regressions across all firms and years on a common sample using ordinary least squares with robust standard errors.

The finding indicates that REIT managers consider accrued revenue and expenses that will be realized as cash flows in future periods when they determine the level of dividends for the current fiscal period. We also perform a test of the coefficients on *CFO* (4.19) and *FFO_ACC* (3.74) and find that they are statistically insignificantly different from one another, indicating accrued revenues and expenses (common to both FFO and net income) are as important as cash revenues and expenses in determining dividends. Finally, the evidence shows that the accrual component in net income but not in FFO, *NI_ACC*, is not related to dividends. This implies that, given the FFO measure, net income does not provide investors with any incremental relevant information regarding the firm's dividend payout.

The second column of Table 3 reports similar results with the inclusion of control variables. The above outcomes maintain under this specification. Of the control variables, we find that the coefficient on *SIZE* is significantly positive, confirming with Bradley, Capozza and Seguin (1998) that larger firms have more stable cash flows and are likely to distribute more dividends. We also find that the coefficient on the market-to-book ratio (*MTB*) is significantly negative, indicating that firms with greater growth opportunities are less likely to distribute dividends (arguably, to conserve cash for future investment options).

Finally, we include property type fixed effects by classifying firms into six categories by the types of properties in which they invest (residential, industrial, office, retail, specialized, and diversified). The third column of Table 3 shows that *CFO* and *FFO_ACC* remain positively significant while *NI_ACC* remains insignificant.[14]

[14] Although dividends are perhaps the most important return component for REIT investors, investors are obviously also concerned with the security return and price appreciation of a REIT stock. We have

Is it the depreciation item that distorts the reported net income as a qualitative indicator for dividends? Table 4 reports regression results from the estimation of equations (6) and (7) with the inclusion of control variables and property type fixed effects. The first column of Table 4 reports results using *DEPR_Q1* (measuring the absolute value of abnormal depreciation) as proxy for the reporting quality of depreciation. We find that *CFO* and *FFO_ACC* remain significant in explaining dividends. More importantly, after controlling for the reporting quality of depreciation, *NI_ACC* now becomes significantly related to dividends. The key coefficient of interest—the interaction term of *DEPR_Q1* and *NI_ACC*—is significant and positive at the 1% level. The results imply that, the accrual component in net income and not in FFO provides incremental information regarding a REIT's dividend policy when the measurement errors of depreciation (the abnormal depreciation) are low (i.e., quality of depreciation is high).[15]

We conduct an alternative analysis by using a discrete binary measure of the reporting quality of depreciation, *DEPR_Q2* (a dummy variable equal to 1 when the absolute abnormal depreciation is lower than the sample median; 0 otherwise) and report the results in column two of Table 4. Once again, we find that the interaction term is significantly positive in predicting dividends. Moreover, when we compare the

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therefore attempted to re-estimate equation (1) after replacing the dividend-payout dependent variable with REIT stock price as well as various return measures (raw returns, abnormal returns measured as raw returns minus returns from the S&P Index, and abnormal returns using raw returns minus index returns from the FTSE NAREIT U.S. Price Index). Following, for example, Fields, Ranganm, and Thiagarajan (1998) and Kang and Zhao (2010), we have also included *SIZE* as a control variable. Consistent with the results reported above, however, we find that while *FFO_ACC* and *CFO* are positively correlated with the stock price, *NI_ACC* is uncorrelated with the price. Similar results are obtained for the return regression, which is also robust to the alternative return measures. The results of these estimations are available from the authors upon request.

[15] Given that *DEPR_Q1* uses the raw measure of measurement errors to proxy for reporting quality in depreciation, the magnitudes of the coefficient for the interaction variable is difficult to interpret.

coefficients of *FFO_ACC* (3.73) and the combined coefficients of *NI_ACC* and its interaction term with *DEPR_Q2*, *NI_ACC×DEPR_Q2* (-1.09 + 4.48 = 3.39), we find that the coefficients are insignificantly different from one another. This result implies that accrued revenue and expenses that are included or excluded from FFO are both significant in determining REIT dividends when the measurement errors of depreciation are low.

Interestingly, *DEPR_Q1* and *DEPR_Q2* are both positive and significant. We attribute the findings to the possibility that the reporting quality of depreciation can also serve as proxy for other omitted factors on reporting quality. Francis, LaFond, Olsson, and Schipper (2005) show that accrual quality is a priced factor as higher accrual quality lowers the reporting risks of the firm. When firms face lower risks, it is easier for them to maintain their operating cash flows and secure debt and equity funding, thereby improving their ability to maintain a higher level of dividends, such that depreciation quality and dividends is positively related.

To further investigate whether it is depreciation or the other items in *NI_ACC* being dividend-relevant, we divide *NI_ACC* into *DEP* and *OTHER* [see once again equation (8)] and estimate equations (9) and (10). The first column of Table 5 reports results with *DEPR_Q1* as the proxy of depreciation quality. We find that both *OTHER* and the interaction term *OTHER×DEPR_Q1* are positive and significant at the 1% level, indicating that other accrued revenue and expenses included in net income but not in FFO are dividend-relevant when the measurement errors of depreciation are low.

The second column of Table 5 shows similar results. While *OTHER* now becomes insignificant, the interaction term *OTHER×DEPR_Q2*, is significant at the 1% level.[16] The results are interesting as they provide a caveat for the superiority of FFO over net income. Particularly, the findings in Table 5 indicate that the other revenue and expenses excluded from FFO but included in net income nonetheless maintain dividend implications. Hence, it is possible that REIT managers have reclassified some important expenses as non-recurring and have excluded these expenses from FFO.

5 Robustness Analysis

We conduct various additional analyses to test the robustness of our results. We first estimate two separate equations, one for the association of FFO with dividends (excluding net income from the equation) and another for the association of net income with dividends (excluding FFO from the equation). We further include the control variables (*SIZE, LEVERAGE, ROA, and MTB*) and property type fixed effects. We find that while FFO is significantly correlated with dividends at the 1% level, net income is only marginally significant at the 10% level. These results confirm prior studies of, for example, Gore and Stott (1998) and Hayunga and Stephens (2009).[17]

Also, as there may be changes in economic factors across our sample period, we augment model (1) by including a set of year dummies. Fortin, Liu, and Tsang (2009) also document that the imposition of Regulation G in 2003 as a consequence of the Sarbanes-Oxley Act improves the reporting of FFO. Hence, we alternatively include a

[16] Once again, a test of the coefficients show that the coefficient of *FFO_ACC* (3.691) is statistically insignificantly different from the combined coefficient of *OTHER* and its interaction term with the depreciation quality, *OTHER×DEPR_Q2* (-1.522 + 4.494 = 2.972).
[17] All outcomes presented in this section are not tabulated and are available from the authors upon request.

time dummy that is equal to 1 for observations on or after 2003; 0 otherwise. Finally, due to the concern that the current financial crisis has created difficulty for REIT firms in maintaining their dividend payments, we also create a dummy variable that is equal to 1 for observations in 2007 and 2008; 0 otherwise—to control for the impact of the current financial crisis. We find that the inclusion of these time dummies does not alter our findings.

Prior research (e.g., Riddiough and Wu, 2009) shows that external financing is an important source for REITs to obtain funding. We control for the impact of external financing by including a line of credit variable (*LOC*) and a debt variable (*DEBT*) that measure the amount of new debt issue. We obtain similar findings on all the income components when we include these additional variables in equation (1).

In addition, we substitute the dividends per share as the dependent variable in equation (1) with the total amount of dividends of a firm, scaled by average total assets. We find that the coefficients of *CFO* and *FFO_ACC* continue to be positive and significant, while the positive coefficient on *NI_ACC* becomes marginally significant at the 10% level.

Finally, Harding and Hill (2008) examine the impact of excess FFO over its expected level on excess dividends declared by REITs over the statutory required level. Edelstein, Liu, and Tsang (2009) indicate the difficulty of estimating excess dividends using accounting information and, instead, use low dividend payout ratio as a proxy for firms facing a dividend constraint. Accordingly, we investigate whether the correlation of the components of FFO and net income with dividends differs across firms' dividend payout affordability. We augment model (1) by including a dummy variable that is equal

to 1 if the firm reports a dividend payout ratio lower than the sample median; 0 otherwise. We also include interaction terms of this dummy variable with *FFO_ACC* and *NI_ACC.* The results show that, by construction, this dummy variable is negative and significant. However, *FFO_ACC* and *CFO* remain positively significant, *NI_ACC* remains insignificant, and none of the interaction terms is significantly related to dividends. The results thus indicate that FFO continues to provide dividend-relevant information to investors both for firms with the dividend constraint and for those without it.

6 Conclusions

In this study, we provide novel evidence on the relative usefulness of FFO and net income as performance measures in REITs subsequent to the increased industry efforts to improve FFO in 2000. We compare the dividend-relevance of these performance measures. We find that, across alternative model specifications, the non-cash accrual component of FFO is significantly associated with dividends. The results show that FFO provides incremental information (beyond operating cash flows) to investors with regards to a REIT's dividend-payout. We also show that the non-cash accrual component in net income but not in FFO is unrelated to dividends. This empirical result is an imperative support to the assertion by NAREIT that the reporting of FFO provides incremental benefit to investors and is in favor for the continual reporting of FFO for the REIT industry.

We further find that it is the inclusion of depreciation expenses in net income that particularly reduces the dividend-relevance of this performance measure. Specifically, our empirical analysis shows that the accrual component in net income but not in FFO

becomes positively related to dividends when the measurement errors in depreciation are low and reporting quality is high. Moreover, when we decompose the accrual component in net income but not in FFO into its depreciation and other (non-depreciation) revenue and expense items, we nonetheless find that the latter correlates with dividend-payout. Overall, our findings indicate that the extent of measurement errors in depreciation expenses plays a vital role in explaining the low quality of net income in determining dividend policy. These findings support the REIT industry claim that depreciation distorts the information contained in net income as a performance measure.

It should be noted that, beyond the scope of the REIT industry, our evidence adds to the broader accounting and finance literature on the usefulness of non-GAAP, voluntary, financial measures. In the last decade, unregulated non-GAAP measures have been subject to greater scrutiny. Accordingly, academic research on non-GAAP disclosures (particularly pro forma and "street" earnings measure) has received enormous interest.[18] To the best of our knowledge, however, our study is among the few to consider these issues in the context of the REIT framework.

[18] See, for example, Bradshaw and Sloan (2002), Brown and Sivakumar (2003), Lougee and Marquardt (2004), and Bhattacharya, Black, Christensenm, and Larson (2003). For studies on evaluating the excluded components of pro forma measures, see, for example, Doyle, Lundholm, and Soliman (2003), Gu and Chen (2004), Choi, Lin, Walker, and Young (2007), and Black and Christensen (2009).

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Table 1: Descriptive Statistics of Variables by Firm-Year Observations

Variables	**Mean**	**Median**	**Standard Deviation**	**Minimum**	**Maximum**
DIV	1.636	1.625	0.735	0.05	4.08
FFO	0.058	0.056	0.03	-0.218	0.179
Net Income	0.036	0.032	0.036	-0.129	0.376
CFO	0.062	0.06	0.027	-0.025	0.237
FFO_ACC	-0.004	-0.003	0.023	-0.202	0.088
NI_ACC	-0.022	-0.025	0.029	-0.11	0.276
DEP	-0.031	-0.03	0.01	-0.086	-0.002
OTHER	0.009	0.005	0.027	-0.091	0.304
SIZE	6.78	6.889	1.342	2.174	10.017
LEVERAGE	0.538	0.547	0.161	0.003	1.019
ROA	3.584	3.42	1.57	-0.698	10.8
MTB	0.68	0.623	0.382	0.012	2.46

Table 1 reports descriptive statistics for a sample of 590 observations over the period of 2001 to 2008. DIV is dividends per share. FFO is funds from operations. CFO is cash flows from operations. FFO_ACC is the accrual component in FFO. NI_ACC is the accrual component in net income but not in FFO. DEP is depreciation expense. OTHER is the total value of non-recurring items (other than depreciation) excluded from FFO, measured as the differences between NI_ACC and the depreciation expense. SIZE is measured as the natural logarithm of market capitalization. LEVERAGE is measured as total debts divided by total assets. ROA is returns on assets defined in the Capital IQ database. MTB is market-to-book ratio. All financial statement variables are scaled by average total assets.

Table 2: Pearson Correlation Matrix of Variables

	1	2	3	4	5	6	7	8	9	10	11
1. DIV											
2. FFO	0.149***										
3. Net Income	0.15***	0.647***									
4. CFO	0.125***	0.696***	0.597***								
5. FFO_ACC	0.051	0.512***	0.155***	-0.26***							
6. NI_ACC	0.033	-0.233***	0.591***	0.026	-0.344***						
7. DEP	0.035	-0.039	0.212***	-0.135***	0.11***	0.311***					
8. OTHER	0.022	-0.231***	0.544***	0.076*	-0.402***	0.938***	-0.037				
9. SIZE	0.556***	0.063	0.121***	0.111***	-0.049	0.088**	0.037	0.079*			
10. LEVERAGE	-0.015	-0.32***	-0.447***	-0.395***	0.042	-0.232***	-0.262***	-0.149***	0.001		
11. ROA	0.059	0.73***	0.418***	0.612***	0.25***	-0.24***	0.091**	-0.285***	-0.03	-0.133***	
12. MTB	0.167***	0.636***	0.65***	0.606***	0.13***	0.156***	0.06	0.142***	0.266***	-0.406***	0.523***

Table 2 presents Pearson correlations of variables used in the regression analysis.

*** 1% significance, ** 5% significance * 10% significance. See Table 1 for variable definitions.

Table 3: Dividend-Relevance of Components of Performance Measures

(1) $DIV_{j,t} = \alpha_1 + \beta_1 CFO_{j,t} + \beta_2 FFO\_ACC_{j,t} + \beta_3 NI\_ACC_{j,t} + \beta_4 Controls_{j,t} + \varepsilon_{j,t}$

Dependent Variable	*DIV*	*DIV*	*DIV*
FFO_ACC	3.744***	5.049***	3.972***
NI_ACC	1.769	1.416	0.826
CFO	4.187***	4.638***	4.108***
SIZE		0.313***	0.307***
LEVERAGE		0.052	-0.121
ROA		0.004	0.031
MTB		-0.224**	-0.221**
constant	1.43***	-0.612***	-0.465**
Property Type Fixed Effects	No	No	Yes
N	590	590	590
R^2	0.03	0.33	0.38

Table 3 reports regression results using OLS with robust standard errors. *** 1% significance, ** 5% significance * 10% significance (two-sided tests). See Table 1 for variable definitions.

Table 4: Dividend-Relevance of Components of Performance Measures and Depreciation Quality

(6) $DIV_{j,t} = \alpha_1 + \beta_1 CFO_{j,t} + \beta_2 FFO\_ACC_{j,t} + \beta_3 NI\_ACC_{j,t} + \beta_4 DEP\_Q1_{j,t} + \beta_5 NI\_ACC \times DEP\_Q1_{j,t} + \beta_6 Controls_{j,t} + \varepsilon_{j,t}$

(7) $DIV_{j,t} = \alpha_1 + \beta_1 CFO_{j,t} + \beta_2 FFO\_ACC_{j,t} + \beta_3 NI\_ACC_{j,t} + \beta_4 DEP\_Q2_{j,t} + \beta_5 NI\_ACC \times DEP\_Q2_{j,t} + \beta_6 Controls_{j,t} + \varepsilon_{j,t}$

Dependent Variable	*DIV*	*DIV*
FFO_ACC	3.305**	3.732***
NI_ACC	2.995***	-1.088
CFO	3.655**	4.9***
DEPR_Q1	28.988***	
DEPR_Q2		0.152***
NI_ACC×DEPR_Q1	591.416***	
NI_ACC×DEPR_Q2		4.475***
SIZE	0.302***	0.308***
LEVERAGE	-0.12	-0.059
ROA	0.032	0.024
MTB	-0.222**	-0.228**
Constant	-0.311*	-0.579***
Property Type Fixed Effects	Yes	Yes
N	590	590
R^2	0.39	0.39

Table 4 reports regression results using OLS with robust standard errors. *** 1% significance, ** 5% significance * 10% significance (two-sided tests). See Table 1 for variable definitions.

Table 5: Dividend-Relevance of Components of Performance Measures, Depreciation Expense, Other Accrued Revenue and Expenses, and Depreciation Quality

(9) $DIV_{j,t} = \alpha_1 + \beta_1 CFO_{j,t} + \beta_2 FFO\_ACC_{j,t} + \beta_{3A} DEP_{j,t} + \beta_{3B} OTHER_{j,t} + \beta_4 DEP\_Q1_{j,t} + \beta_{5A} DEP \times DEP\_Q1_{j,t} + \beta_{5B} OTHER \times DEP\_Q1_{j,t} + \beta_6 Controls_{j,t} + \varepsilon_{j,t}$

(10) $DIV_{j,t} = \alpha_1 + \beta_1 CFO_{j,t} + \beta_2 FFO\_ACC_{j,t} + \beta_{3A} DEP_{j,t} + \beta_{3B} OTHER_{j,t} + \beta_4 DEP\_Q2_{j,t} + \beta_{5A} DEP \times DEP\_Q2_{j,t} + \beta_{5B} OTHER \times DEP\_Q2_{j,t} + \beta_6 Controls_{j,t} + \varepsilon_{j,t}$

Dependent Variable	*DIV*	*DIV*
FFO_ACC	3.296**	3.691***
DEP	3.783	1.04
OTHER	3.058**	-1.522
CFO	3.926**	5.5***
DEPR_Q1	24.259**	
DEPR_Q2		0.197
DEP×DEPR_Q1	508.111**	
DEP×DEPR_Q2		6.252
OTHER×DEPR_Q1	650.44***	
OTHER×DEPR_Q2		4.494***
SIZE	0.301***	0.306***
LEVERAGE	-0.093	0.014
ROA	0.028	0.014
MTB	-0.218**	-0.214**
Constant	-0.301	-0.539***
Property Type Fixed Effects	Yes	Yes
N	590	590
R^2	0.39	0.39

Table 5 reports regression results using OLS with robust standard errors. *** 1% significance, ** 5% significance * 10% significance (two-sided tests). See Table 1 for variable definitions.