THE EXPLANATORY POWER OF ALTERNATIVE INCOME MEASURES ON STOCK PRICES: EVIDENCE FOR CANADIAN REAL ESTATE INVESTMENT TRUSTS

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ABSTRACT

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The relationship between performance measures and stock prices is well documented in the financial literature. Some studies find that the relationship is positive (Lev, 1989) and others find a negative relationship (Anwaar, 2016, Sloan, 1996), although most studies exclude REITs due to their unique tax exemptions. This paper examines the explanatory power of net income (NI) and funds from operations (FFO) as it relates to stock return in Canadian real estate investment trusts (REITs) that traded on the Toronto Stock Exchange (TSE) during the 2001-2016 period.

Legislation exempts Canadian REITs from corporate taxes as long as they satisfy a number of mandated requirements. The most essential legal requirement is the payment of dividend as a specified percentage of a REIT's cash flow. Industry-specific cash flow measures, such as NI, FFO, or cash flow distributions may explain their stock return performance in Canada. In particular, FFO may explain stock return performance better than NI or distribution due to its unique qualities. Analysis on a hand-collected and proprietary Canadian REIT quarterly data set that covers 2001 to 2016 reveals that FFO does in fact have better explanatory power than NI, consistent with studies of U.S. REITs.

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1-INTRODUCTION

Cash flow variables, such as net income, dividends, and cash flow from operations are assumed to explain firms' stock returns (Fama and French, 1988, Eaton and Paye, 2017, Lewellen and Lewellen, 2016). This is despite the fact that the external factors, such as inflation, GDP growth, international political concerns market characteristics are part of stock returns expectations.

The association between stock price and net income (also called earnings) has been widely reviewed in academic research. For instance, Lev (1989) analyze several studies related to price/earnings relationship and concluded that the relationship between price and earnings is positive and statistically significant, yet their explanatory power, proxied by R-squared, was somewhat weak. Conversely, in his seminal work, Sloan (1996) examines the relationship between stock prices and earnings and concludes that if market participants and investors fixate on earnings, the results, on stock return will be biased in favor of earnings rather than cash flow. Research findings examining dividend policy and expected returns lack consensus. For short-term return, i.e. monthly or quarterly, dividend payout explains less than 5% (R-squared value) of stock returns. In comparison, 25% (R-squared value) of stock return is often explained by dividend yield for longer periods, typically two-to-four years (Fama and French, 1988). David et.al. (1994), on the other hand, found that even two-day returns after dividend announcement had positive impact. The accounting literature offers several examples of extensive research analyzing cash flow from operations and expected stock returns. For instance, Loerk and Willinger (1996) study cash flows from operations as a performance measure and conclude that it is positively related, and that cash flow is more informative than net income.

Since their inception in the early 1960s in the U.S., REITs have gradually become an attractive investment vehicle. In general, REITs employ investing and operating income-generating real estate properties offering transferable shares, limited liability and, most importantly, stable dividend pay-out (Chan, Erickson, and Wang, 2002). Over the years, however, they have also been investing in financial equity investments as well as mortgage and lending firms in order to sustain their growth and to respond to investors demand.

Canadian REITs first appeared after Revenue Canada allowed real estate firms to become closed-end mutual fund trusts by amending the Income Tax Act (ITA) in 1995 (Pachai, 2016). In January 2011, after the grace period ended for new rules on specified flow-through (SIFT), tax exemptions were fully enacted, forcing SIFTs to convert REITs entity. By 2015, the number of REITs listed on TSE reached 42 firms with a $66 billion market capitalisation.

1.1 Conventional profitability measure using net income (NI) and the introduction of Funds From Operations (FFO)

Researchers conventionally use net income to measure the profitability forecast of firms. Although there are a number of differences between Generally Accepted Account Principles (GAAP) and International Financial Reporting Standard (IFRS), net income, in general, is calculated by adding revenues and subtracting expenses such as operating expenses, interest, amortization, depreciation, taxes, non-recurring, Managers in REITs often assert that such conventional methods do not reflect the value of a REIT's underlying assets and do not provide accurate data to measure REITs' legally mandated dividend payout and distribution to the investors. The key reason is that the values of REITs' underlying assets typically grow over time (Ben-Shahar, Sulganik, and Tsang, 2011). Therefore, the National Association of Real Estate Investment Trust (NAREIT) proposed a supplementary performance measure called funds from operations (FFO) which means net income including depreciation and amortization and excludes gains(losses) from sales of property (NAREIT White Paper, 2002). For the REIT industry, FFO could be a better performance measure than net income because REITs calculate their distribution ratio based on FFO results (Vincent, 1999).

Tables 1 and 2 describe the basics of the relationship between NI, FFO, depreciation/ amortization, and gains/losses from sales of property.

Table 1: Income Statement

NET INCOME STATEMENT
Investment properties revenue (+)
Investment properties operating revenues (+)
Net Rental Income
Expenses
General and administrative (-)
Depreciation and amortization (-)
Gains/losses from sale of property (-)
Net income (NI)

Table 2: Funds from Operations

FUNDS FROM OPERATIONS
Net income (NI)
Depreciation and amortization (+)
Gains/losses from sale of property (+)
Fair value adjustments to investment properties (+)
Other adjustments such as internal leasing costs (+)
FFO
Distribution to unit holders (usually 85-95% of FFO)

This thesis evaluates which performance measure (FFO, NI or distribution) offers better explanatory power for stock returns for Canadian REITs. Despite NAREIT's claim that FFO is better than net income, market analysts and government organizations (Revenue Canada for instance) discourage the demonstration of supplementary performance measure (Gore and Stott, 1998). Currently, FFO is presented in the management and discussion analysis section of the financial statements as an alternative non-GAAP performance report.

In spite of having an extensive two decades of REITs history in Canada, there exists minimal academic research conducted on Canadian REITs, possibly because of data constraints. The System for Electronic Document Analysis and Retrieval (SEDAR) has been collecting financial statements and other related alternative reports for Canadian REITs since 1997, but they are not in measurable and testable format on any statistical software unless manually converted.

The remainder of the paper is organized as follows: the next section reviews the relevant literature, the following chapter after the literature review presents data collection and methodology of testing data, the fourth chapter discusses empirical results and the fifth chapter concludes the study.

2-LITERATURE REVIEW

REITs were formed when the U.S. Congress passed the act that allows special tax treatment in the 1960s (Chan et. al, 2003; Nikhbakht, Smith and Spieler, 2014). The first REIT, Continental Mortgage Investors, was established in 1965 (Chan et. al, 2003; Nikhbakht, Smith and Spieler, 2014). The late 1960s and early 1970s were booming years for REITs in the U.S. After 1986, when Congress accepted the Tax Reform Act, REITs have been considered not only an investment tool for tax benefits but also an income-generating investment vehicle.

2.1-Canadian REITs

The first Canadian REIT became public in 1995 (Potter, 2017, REALpac, 2017). Prior to 1995, REITs in the market had two possible types of mutual fund structures. These funds were either open-end where they provided a right of redemption to stakeholders or closed-end where a right of redemption option does not exist. When the market is highly volatile or stock prices tend to decline for any reason, the right of redemption in open-end trust becomes problematic, especially if large volumes are exercised for redemption by the unit holders, because of the limited cash availability in REITs. The majority of REITs existing prior to 1995 were closed-end REITs due to this problem.

The REIT market in Canada reached a reasonable market size in the late 1990s and early 2000s before the amendment of the Income Tax Act (ITA) was enacted in 2007 to intentionally shut down the tax benefit of specified flow-through (SIFT) entities. ITA (122.1) proposed two changes in 2007 Tax Plan (Pachai, 2016). First, the corporate income tax rate had been gradually decreased from 21 percent to 18.5 percent. Second, funds classified SIFT would be taxed at the corporate level, so unitholders would pay taxes as regular income tax when they received annual distribution from SIFTs. Such tax regulation would cover both resident and non-resident investors (Pachai, 2016, Potter, 2017). SIFTs were not taxed at the corporate level to avoid double taxation, yet individual shareholders would pay income tax for the dividend they received before the amendment. REITs were excluded from this proposed amendment. The ITA in 2007 allows existing SIFT entities to convert their mutual fund structure to REITs entity over a 4-year period. Since REITs were considered a sub-category of the specified flow-throughs (SIFTs) and were the only exception for the corporate level tax shelter, many SIFTs converted to REITs in order to maintain tax benefits until the grace period of ITA ended on January 2011 (Potter, 2017, Pachai, 2016). Since the amendment proposed by the Department of Finance in October 2012 and enacted in early 2013, Canadian REITs must be either an open or closed-end mutual fund trust (Potter, 2017). REITs must also have a minimum of 150 unitholders, who must hold at least 80% of their portfolio as sets as real Canadian properties in their portfolio and at least 90% their income must be generated from real estate properties in Canada (Potter, 2017). REITs distribution ratio to unitholders are set individually by their trust declaration, yet it is in the range of 85-95%.

2.2-Tax Benefits for REITs

REITs have a significant tax benefit at the corporate level as long as they maintain the distribution of their taxable income within the range of 85% to 95% as stated in their trust declaration. Moreover, after 2013, REITs must pay out all of their taxable income and capital gains in order to maintain their tax-exempt status. Such a high yield distribution ratio creates a considerable amount of cash shortage, since REITs are not able to retain cash funds from operations. Therefore, REITs use debt and equity securities in their capital structure to fund their current constructions and future development projects and receive possible tax shield on debt (Feng, Ghosh, and Sirmans, 2007). Although corporate level tax pass-throughs may offset higher borrowing cost in capital markets, REITs, with their high level of accounting transparency with financial disclosure in addition to the minimum conformation required for annual filings, are considered more credible by capital markets (Danielsen et. al., 2014).

Researchers have investigated REIT performance through initial public offerings (IPOs), dividend pay-out policies, capital structure of real estate investment trusts, agency costs and growth of REITs. Boudry et. al., (2014) investigated the factors driving REITs' performance and identify four main factors, 1) corporate governance, 2) insider ownership, 3) dividend pay-out, and 4) underlying real asset market. Hardin and Hill (2008) reviewed excess dividends in capital markets by providing evidence that high dividend payout ratio and excess dividend payments reduce the agency cost and improve the growth of the firm's value. Ott et. al (2005) investigated agency influences on the capital market, finding that insufficient internal funds due to high dividend pay-out causes agency issues for REITS in their decisions about accessing external capital. Boudry (2011) proposed that dividends in REITs consist of two components, discretionary and nondiscretionary dividends. In his study, he examined REITs' dividend payout policy and determined that these two components have an inverse relationship. Managers in REITs tend to pay out high nondiscretionary dividends while holding the discretionary dividend level down to 18% to 35% in order to smooth their regular dividend payout.

REITs have a unique capital structure in comparison with other financial investment tools due to the corporate level income tax regulation. Feng et. al., (2007) examined the relationships between REITs capital structure, and price valuation in terms of their market-to-book and leverage ratios. REITs must payout 90% of their cash flow in dividends, therefore the tax deductibility of paying interest, which is an accounting tool for other investment methods, is not an option for REIT accounting.

2.3-Relationship between Dividend Yield & Stock Return

Several researchers have studied the relationship between dividend yields and stock return. In their seminal study, Fama and French (1988) explained that dividend yields account for a small portion of short term (typically a month or a quarter,) stock return. In the long-range horizon, dividend yields' impact rises up to 25% of a firm's expected stock return. Future cash flows, such as income, dividend, and cash flows from operations, are positively related with a firm's expected stock return (Chu, 1997). In his study, Chu (1997) analyzed these three cash flow measures and found that earnings and future cash flows are positively correlated with stock returns. In his study, Chu (1997) examined a firms' stock prices reflection on future earnings information.

Sloan (1996) observed that the investors' obsession with earnings introduced errors when analyzing financial data containing accruals and cash flows components on the firms' earnings. In his findings, reporting earnings quarterly has a negative coefficient with stock return whereas annual earnings have a positive coefficient with performance. Anwaar (2016) analyzed the impact of firm performance on stock returns using the firms listed on the FTSE-100 index in the London Stock Exchange. Her findings revealed that earnings over outstanding shares had a negative relationship to stock returns. She explained this as an investors desire to realize short-term gain by selling shares when the dividend announcement is high due to higher firms' net income, so stock prices would tend to decline. Dividend yields, along with operating income, provide informative signals to investors. Eaton et. al., (2017) analyzed future stock returns and dividend yield relevance and concluded that future expected stock return is low when the stock price is highly related to dividend yield.

2.4-REITs and Dividends

Wang et al.,(1993) found that REITs often pay out more dividends than they are required by regulations. Geltner et.al. (2007) explained this phenomenon as dividend being paid out from cash flow and not from accounting earnings. These studies suggest that REITs pay about 70% to 80% of their FFO as dividend (Geltner et.al, 2007). Vincent (1999) analyzed FFO and earnings per share (EPS) information contents when FFO was introduced to the REITs industry, and found weak evidence that both FFO and EPS affect REIT performance measures.

2.5-Forecast Quality of FFO for REITs Performance

Comparing companys' financial situations is difficult because firm sizes vary. Financial ratios are the way to eliminate this issue (Ross, Westerfield, Jordan, and Roberts, 2010, pp. 63). Earnings per share (EPS), which reflects the allocation of company's net income over total shares outstanding, is one of the ratio that is used for market evaluation (Ross et. al., 2010, pp 72). Tsang (2006) examined forecast errors on both EPS for non-REIT firms and FFO for REIT firms and concluded that forecast errors on EPS are larger than forecast errors on FFO. Funds from operations better explains stock return anomalies. In other words, the market reacts positively when REITs announce an unexpected FFO. Giyamfi-Yeboah et. al., (2012) found that FFO provides more useful information to investors than net income. Downs et., al., (2006) focused on FFO forecast quality and found that FFO forecasting quality is superior to net income forecasting quality in REITs. Ben-Sahar et. al., (2010) evaluated company performance of REITs by comparing FFO versus net income in regards to dividend policy explanations into their cash and non-cash components and found that net income and FFO in non-cash (accrual) components are related to dividend distribution.

Graham and Knight (2000) examined the relationship between NI and FFO with stock return using a parsimonious regression model and found that FFO is a better performance measure of market price than net income. Gore et. al., (1998) compared NI and FFO towards REITs' stock returns. In their two-explanatory variable regression model, they found FFO is a better predictor of stock return than NI. Gore et. al., (1998) decomposed NI into three components, 1) FFO, 2) depreciation, and 3) gains/losses from sales, and concluded that the depreciation expense is not significantly related to stock return, while both FFO and gains/losses from sales have significant relationships. Chen et., al., (2011) performed an empirical study measuring operating performance on both FFO and NI for REITs in Taiwan and found little evidence, with their very small sample data, that FFO is better for forecasting.

3-DATA COLLECTION

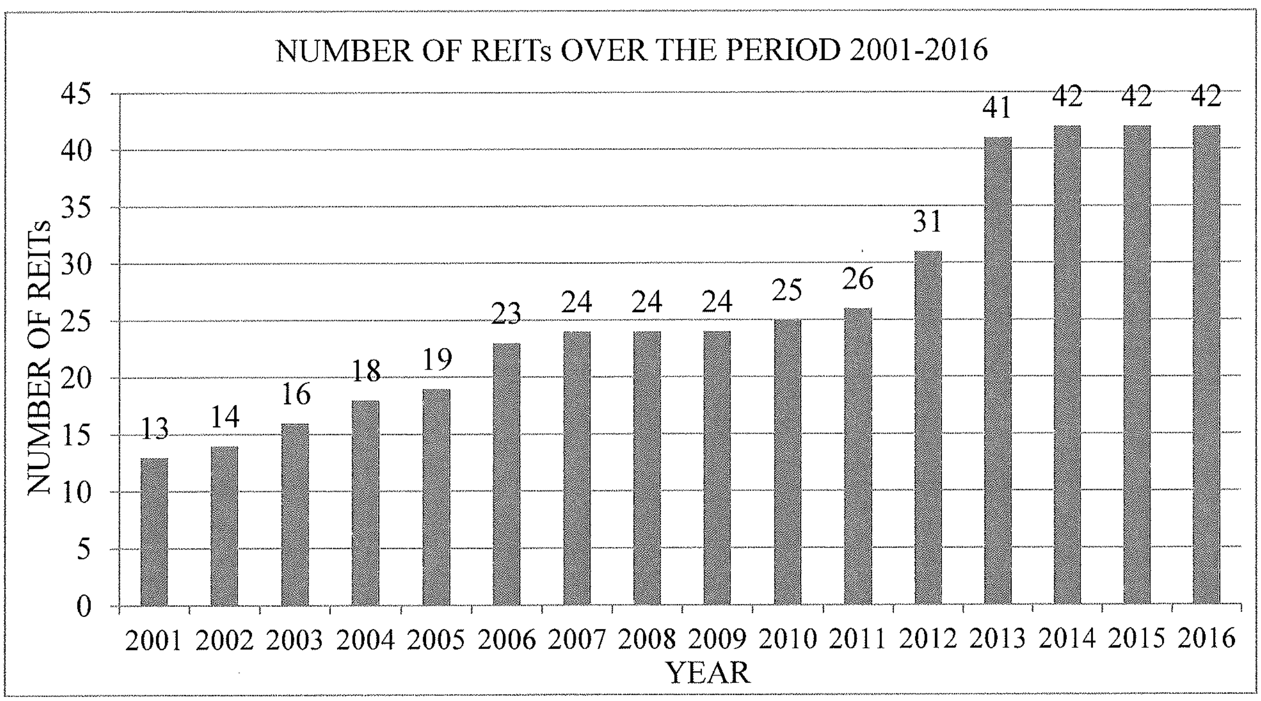
Data for this study comprise publicly traded equity Canadian REITs from 2001 to 2016. The data set contains 1,332 firm-quarter observations collected from 42 firms' financial statements reported to System for Electronic Document Analysis and Retrieval (SEDAR). Some non-GAAP measures such as FFO and AFFO are also reported to SEDAR on alternative documents other than financial statements. The daily stock returns as well as quarterly dividend pay-out for this sample data set are collected from Toronto Stock Exchange (TSE) daily reports.

Table 3 – Descriptive Statistics

Variables	Definition	Mean	Median	Min	Max	St. Dev.
STOCK RETURN	Quarterly return	6.6%	1.0%	-46.7%	74.0%	80.9%
ADJUSTED TOTAL ASSETS	Total asset plus depreciation and amortization at quarter t (millions$)	2085.92	1225.96	6.009	13790	2615.39
NET INCOME	Net income at quarter t (millions$)	7.87	6.35	-38.5	96.7	0.033
FFO	FFO at quarter t (millions$)	9.6	9.9	-6.02	26.9	0.02
PAYOUT RATIO	Distribution at quarter t divided by FFO at quarter t (millions$)	88%	87%	39%	150%	32%
DISTRIBUTION	Amount paid to unitholder at quarter t (millions$)	8.76	8.17	-0.6	22.9	0.004
TSE INDEX	Quarterly Return TSE index	1.4%	0.3%	-23.5%	19.0%	7.5%
TSE REIT INDEX	Quarterly Return TSEREIT index	1.0%	0.3%	-32.5%	25.5%	8.3%

Table 3 provides descriptive statistics for key variables in the database. The average quarterly stock return for the period 2001-2016 is 6.6%. The mean net income and net income-lagged are $7.87 million and $7.83 million respectively. The mean FFO is $9.6 million, while the mean net income is lower, at $7.87 million. The mean quarterly distribution paid to unit holders is $8.76 million, which means that the mean payout ratio (distributions divided by FFO) is 88, which is in the range of the REIT tax exemption requirement. Although the range of minimum and maximum of payout ratio (39% and 150%, respectively) is wide, the low standard deviation provides evidence that the minimum legal industry requirement dividend distributions are met. The adjusted total assets are the total assets plus depreciation and amortization and have a mean size of $2.085 billion.

Figure 1: Number of REITs in the Period of 2001 to 2016



As depicted on Figure 1, the number of REITs listed on the TSE has increased over the period 2001 to 2016. The particularly high increase from 2011 to 2013 was due to the end of the grace period of the SIFT regulation amendment.

Table 4 displays the Pearson correlation estimate for the variables that are used in the empirical analysis. The NI, FFO and the distribution have all been scaled by dividing by the REIT's adjusted total assets. This creates a relative measure that facilitates analysis. In addition, the lagged version of each variable at time t-1 has also been included in Table 4.

Stock return has a negative correlation with all the cash flow variables, with the largest magnitude for scaled distribution (lagged) at -0.06, which is still quite low. There are weak negative correlations between stock return and scaled NI, scaled NI lagged and scaled distribution.

There is a weak relationship between the scaled NI variable and the scaled FFO variable (correlation of 0.04) and also between the scaled distribution variable and the scaled FFO variable (0.04). However, there is a strong positive linear relationship between scaled FFO and scaled distribution (0.65). A similar strong positive relationship is also observed between scaled FFO-lagged and scaled distribution lagged (0.60). This is as expected since distribution is calculated as some relatively consistent proportion of FFO.

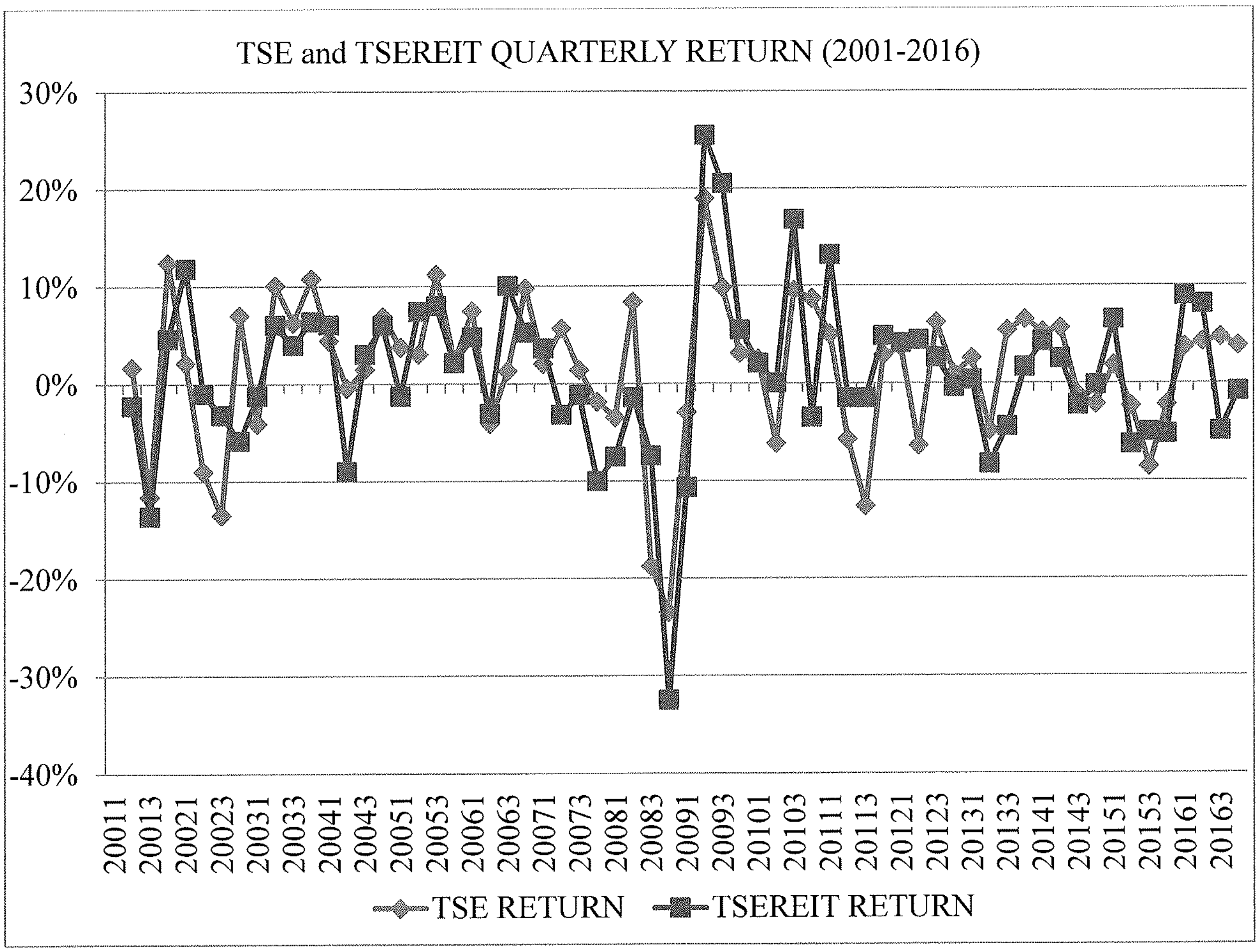
The TSE return is positively related to the individual REIT stock return (0.30). There is also a moderate relationship between the TSE REIT return variable and the individual REIT sock return variable (0.40), while the correlation between the TSE return variable and the TSE REIT return variable is strong and positive (0.65).

Table 4 – Correlation Coefficients

	REIT Stock Return	Adjusted Total Assets	Scaled NI	Scaled NI (Lag)	Scaled FFO	Scaled FFO (Lag)	Scaled Distrib	Scaled Distrib (Lag)	TSE Return
Adjusted Total Assets	-0.04	1.00							
Scaled NI	-0.02	0.03	1.00						
Scaled NI (Lag)	-0.03	0.03	0.04	1.00					
Scaled FFO	-0.02	-0.09	0.16	0.04	1.00				
Scaled FFO (Lag)	-0.03	-0.08	0.05	0.16	0.53	1.00			
Scaled Distrib	-0.02	-0.11	0.14	0.04	0.65	0.52	1.00		
Scaled Distrib (Lag)	-0.06	-0.11	0.06	0.15	0.51	0.60	0.81	1.00	
TSE Return	0.30	0.00	-0.02	-0.03	-0.02	0.01	-0.01	-0.01	1.00
TSE REIT Return	0.40	0.00	-0.02	-0.03	-0.04	-0.02	-0.05	-0.05	0.65

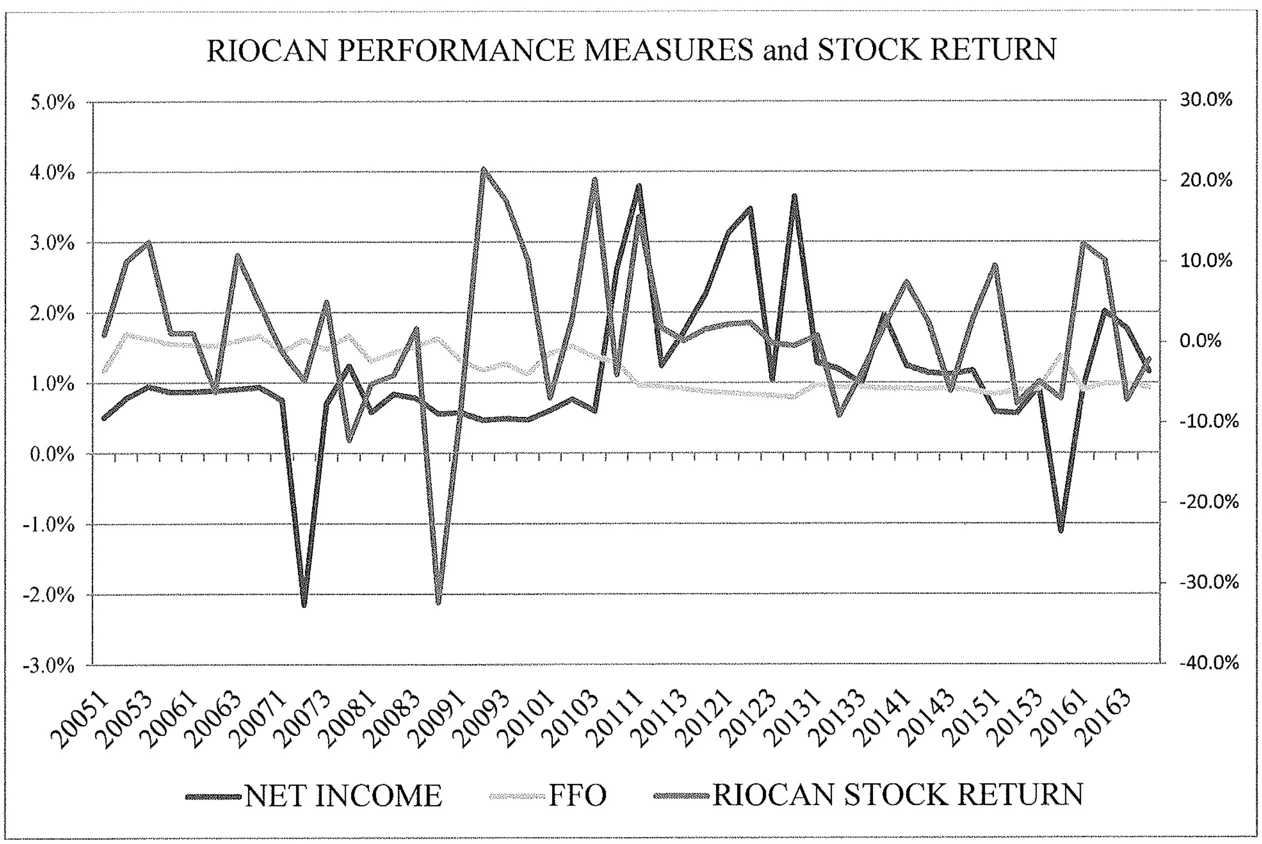
The relationship between the TSE Index and the TSE REIT index is depicted on Figure 2. The TSE REIT index represents the weighted average daily return of the 14 Canadian REITs that have existed since 2001. The TSE and TSEREIT indices have generally moved in step except for Q4 in 2007 and Q1 in 2009 when the subprime mortgage crisis deeply impacted global stock markets.

Figure 2 - TSE and TSEREIT Quarterly Return (2001-2016)



To illustrate the relationship of performance measures and stock return for one sample REIT, data from RioCan is presented in Figure 3. RioCan is one of the oldest and, by far, the largest REIT in Canada with close to $8 billion in market cap in 2016. RioCan operates shopping malls, outlet malls, and other type of retail centers. In 2016, RioCan reported $830 million net income, $540 million FFO, and $450 million distribution. Its stock price was around $26.50 in the last TSE trading day in 2016. As depicted on Figure 4, net income and stock return have a somewhat similar path in their volatility over the period of 2005 to 2016 whereas FFO has low volatility. This provides some evidence that FFO is a clear measure of performance because it excludes volatile depreciation and gain/losses in sales.

Figure3 - RioCan NI, FFO, and Stock Return for 2005 to 2016



4-METHODOLOGY

Panel data regression analysis, also known as cross-sectional time-series data analysis, considers a dataset with a number of cross-sectional observable units in a number of time periods (Bai, 2009). Panel data specifically allows certain types of omitted variables to be controlled (Wooldridge, 2010).

The model is expressed as

$$Y_{it} = \alpha_i + \beta X_{it} + \xi_{it}$$

where Y_{it} is the dependent variable in $i=1,2,....,N,$ and $t=1,2,....,T$, X_{it} is independent variable, β is the vector of unknown coefficient, α is the unknown intercept for each REIT. The individual effect, α_i, and unobserved time effect, ξ_{it}, additively affect the model.

There are three approaches to panel data estimation. The first-difference estimator is an approach to explain the issue of variables that are omitted and it is obtained by pooled OLS estimation regression. First-difference estimator allows us to cancel out α, the unknown intercept for each firm. Hence, OLS regression becomes easier to run.

The fixed-effect estimator, also known as within-estimator, is an approach that assumes time independent effects are correlated with the regressors. The result of fixed-effect estimation is similar to first-difference estimation as they both cancel out unobserved heterogeneity which is constant over time.

With random-effect estimator, on the other hand, unobserved heterogeneity is not correlated with the regressors. Random-effect estimation is a result between pooled OLS estimator and fixed-effect estimator; therefore it is also called between-estimator. If it is obvious that the data has endogenous fixed factor then fixed-effect estimation should be used.

In order to determine which estimation has a better fit to the empirical model, comparative rules for fixed effects and random effects (Guajarati and Porter, 2009) are applied. Guajarati et.al. (2011) briefly details how the number of time-series versus cross-sectional units is related to the fixed effects and random effects approaches. If the number of time series data is larger than the number of cross-sectional units in panel data, fixed effects model are preferred. The Hausman test (Hausman, 1978) is econometrically developed to analyze these two approaches based on the covariance of regressor value. If the covariance of regressor values is zero, it means that the coefficient of the fixed effect is equal to the coefficient of random effect, thus the random effect is better. The fixed effects model is a better fit when covariance of the coefficient of regressor's difference is greater than zero (Wooldridge, 2010, pp 288-290).

5-EMPIRICAL RESULTS

This research analyses stock price performance as a function of NI, FFO and distributions using panel data regression analysis. It is alternatively stated as;

H_1: FFO has higher impact on stock return than NI or Distribution

To evaluate the explanatory power of FFO and NI over stock performance, this hypothesis is tested on two primary versions of empirical models. First, in the return model, NI, FFO, and distribution are tested with stock performance return at the same quarter when these measures are announced. Second, in the return-lagged model, lagged data of NI, FFO, and distribution are used to test stock returns. NI is the standard net income on the financial statements as per GAAP standards. The FFO, as defined by NAREIT (2002), is this NI with the depreciation of firms' investment properties and the gains/losses from the sales of these properties added back in to remove their influence. See Table 1 and 2 for further elaboration of the relationship between these cash flow measures. The coefficient between the scaled NI and the scaled FFO is 0.16, which is low.

The value of NI, FFO and Distribution in each quarter/firm are divided by the adjusted total assets of the same firm in the same quarter in order to mitigate noise and expected potential correlation from one quarter to another one. This scaling helps to reduce heteroscedasticity with robustness check on variables as well as to smooth the high volatility of NI on each quarter. Current stock returns are affected by prior quarter financial statement announcement so the lagged versions of the cash flow measures are also included in the analysis.

5.1-Test Process, Models tested, Results and Interpretation

Table 4 below provides summary results on these models. The R^2 statistic is used as a comparative benchmark to evaluate the results from regression analysis. The TSE index variable (the change in the quarterly TSE index), is used as a control variable to capture the association between each Canadian REITs' stock return behaviors with overall market conditions in the same quarter.

The empirical tests are conducted with cross-sectional time series analysis using all firms' quarterly financial statements data collected from SEDAR and tested with Stata statistical software. The Hausman test result for our FFO model is 0.009 with chi-square value in one degree of freedom of 7.29, so the fixed effects model is appropriate.

The six specifications for the model are:

(1) $STOCKRETURN_{it} = \alpha_1 + \beta_1\, SCALEDNETINCOME_{it} + \beta_2\, TSEINDEX_{it} + \varepsilon_1$

(2) $STOCKRETURN_{it} = \alpha_2 + \beta_3\ SCALEDFFO_{it} + \beta_4\ TSEINDEX_{it}\ + \varepsilon_2$

(3) $STOCKRETURN_{it} = \alpha_3 + \beta_5\ SCALEDDIST_{it} + \beta_6\ TSEINDEX_{it}\ + \varepsilon_3$

(4) $STOCKRETURN_{it} = \alpha_4 + \beta_7\ SCALEDNETINCOMELAG_{it-1} + \beta_8\ TSEINDEX_{it} + \varepsilon_4$

(5) $STOCKRETURN_{it} = \alpha_5 + \beta_9\ SCALEDFFOLAG_{it-1} + \beta_{10}\ TSEINDEX_{it} + \varepsilon_5$

(6) $STOCKRETURN_{it} = \alpha_6 + \beta_{11}\ SCALEDDISTLAG_{it-1} + \beta_{12}\ TSEINDEX_{it} + \varepsilon_6$

Details of how each variable is measured are in the Appendix and the estimation results are shown in Table 5.

Table 5 – Empirical Results

	(1)	(2)	(3)	(4)	(5)	(6)
NETINC	-0.793					
	-0.558					
NETINCLAG				-2.426		
				-2.053		
FFO		-2.335***				
		-0.106				
FFOLAG					-8.072***	
					-0.355	
DIST			-1.093			
			-2.042			
DISTLAG						-3.799
						-1.998
TSE Return	0.652***	0.717***	0.629***	0.623***	0.626***	0.623***
	-0.106	-0.945	-0.829	-0.91	-0.883	-0.899
Constant	0.0201***	0.0364***	0.0195	0.0333*	0.0919***	0.0436*
	-0.00378	-0.00115	-0.0173	-0.0158	-0.00338	-0.0171
N	1332	1275	1302	1308	1248	1275
R-squared	0.064	0.096	0.09	0.161	0.454	0.086
Adj R-sq	0.063	0.094	0.089	0.16	0.453	0.084
RMSE	0.239	0.239	0.179	0.225	0.184	0.18

Standard errors in parentheses
** p<0.1, ** p<0.05, *** p<0.01*

Model 1 has a negative coefficient for scaled net income (-0.793) which is statistically insignificant (t-statistic -1.42). Model 4 has a negative coefficient for scaled net income-lagged (-2.426), which is statistically insignificant (t-statistic -1.18). Models 1 and 4 demonstrate that net income is not significantly associated with REITs' stock return performance when we control for the TSE return. Model 2 shows a negative coefficient for scaled FFO (-2.335), which is statistically significant at the 0.01 level (t-statistic -22.94). The interpretation is, therefore, that when the scaled FFO is higher, then the REIT's stock return would decline. Model 5, the coefficient for the scaled FFO (lagged) is negative, (-8.072) and statistically significant at the 0.01 level (t-statistic -22.73). The coefficient in the scaled FFO (lagged) model is four times larger in magnitude than that of scaled FFO (not lagged) which suggests that the market reaction is stronger in the following quarter.

Model 3 has a negative coefficient for scaled distribution (-1.093) which is statistically insignificant (t-statistic -0.54), and model 6 shows that the coefficient of scaled distribution-lagged is negative, (-3.798) and is statistically insignificant (t-statistic -1.90). The R^2 value for each estimation is listed in Table 4. The highest R^2 value is for model 5 at 45.4%, providing evidence that the FFO (lagged) has better explanatory power for stock performance than anyone else that was tested. Therefore, the lagged FFO is the preferred cash flow measure to model stock return for Canadian REITs.

6-CONCLUSION

New evidence on the proportionate beneficial of three performance measures, NI, FFO and distribution to unit holders, is provided through the analysis of a unique Canadian REIT financial data set. Since NAREIT first proposed FFO as an alternative non-GAAP performance measure, a great number of academic papers have examined its relationship with stock performance, capital structure and other financial variables. It is widely believed that REITs are cash flow entities, hence measures for controlling cash flows such as FFO attracts both analyst and investor attention. The unique financial and economic data of 42 publicly traded Canadian (REITs) from 2001 to 2016 are manually collected and tested using the Stata statistical software. The Pearson correlation estimate coefficients indicate that Ni, FFO and distribution have a negative correlation with stock return and this is confirmed through empirical estimations using the panel data with fixed effects method.

The results show that FFO (lagged) provides better incremental information related to a stock's performance than that of accounting-based net income or distribution to unit holders. The R^2 value in compared across the six models and the highest value is for the lagged scaled FFO, so this is the preferred model. The coefficient for the scaled, lagged FFO is statistically significant with a negative coefficient.

Using our preferred model, we would expect that if FFO is high in a given quarter, then we would expect that the REIT stock return would be lower the next quarter. This may indicate that investors sell their shares for short term gains. The opposite is also true, in that when the FFO is lower, then the stock return would be higher next quarter, as investors tend to buy and hold the firms' common shares for future expected gains.

6.1-Future Research

The empirical results raise different matters for future research. For example, what is the stock performance reaction to Canadian REITs' excessive dividend payout? Also, given that the FFO, depreciation and gains/losses are the three components of net income, further work to break these down might be interesting. Gore and Stott (1998) analyze informative measure of operating performance and find that FFO is more value-relevant than the other two components, while FFO has a positive correlation with stock performance in U.S REITs. Investigating the value relevance of these three net income components of Canadian REITs would contribute to the literature since net income is negatively correlated with stock performance.

APPENDICES

APPENDIX 1 – Detailed Data Definitions

$STOCKRETURN_{it}$ = The price of the firm *i's* share at the time *t* minus the price of the firm *i's* share at the time *t-1* over the price of the firm *i's* share at the time *t-1*

$$STOCKRETURN_{it}=((STOCKPRICE_t+DIVIDEND_t)-(STOCKPRICE_{t-1}+DIVIDEND_{t-1}))/(STOCKPRICE_{t-1}+DIVIDEND_{t-1})$$

$TSEINDEX_{it}$ = TSE index at the time *t* minus TSE index at the time *t-1* over TSE index at the time *t-1*

$$TSEINDEX_{it} = (TSEINDEX_t - TSEINDEX_{t-1})/TSEINDEX_{t-1}$$

$SCALEDNETINCOME_{it}$ = The firm *i's* net income at the time *t* scaled by the firm *i's* total assets at the time *t*

$$SCALEDNETINCOME_{it} = NETINCOME_t / TOTALASSETS_t$$

$SCALEDFFO_{it}$ = The firm *i's* funds from operations at the time *t* scaled by the firm *i's* total assets at the time *t*

$$SCALEDFFO_{it} = FFO_t / TOTALASSETS_t$$

$SCALEDDIST_{it}$ = The firm *i's* distribution at the time *t* scaled by the firm *i's* total assets at the time *t*

$$SCALEDDIST_{it} = DIST_t / TOTALASSETS_t$$

$SCALEDNETINCOMELAG_{it}$ = The firm *i's* net income at the time *t-1* scaled by the firm *i's* total assets at the time *t-1*

$$SCALEDNETINCOMELAG_{it} = NETINCOME_{t-1} / TOTALASSETS_{t-1}$$

$SCALEDFFOLAG_{it}$ = The firm *i's* funds from operations at the time *t-1* scaled by the firm *i's* total assets at the time *t-1*

$$SCALEDFFOLAG_{it}= FFO_{t-1} / TOTALASSETS_{t-1}$$

$SCALEDDISTLAG_{it}$ = The firm *i's* distribution at the time *t-1* scaled by the firm *i's* total assets at the time *t-1*

$$SCALEDDISTLAG_{it} = DIST_{t-1} / TOTALASSETS_{t-1}$$

$ADJUSTEDTOTALASSETS_{it}$ = Total assets plus depreciation and amortization (adjusted) at the end of quarter t

i = The number of firms (1,2,3,……,42)

t = End of each quarter (2001Q1, 2001Q2, ………, 2016Q4)

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