The Effects of Uncertainty Disclosures on REIT Returns

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We examine the relationship between uncertainty-related disclosures in annual filings and market returns of REITs. We search annual filings (10-K) of Real Estate Investment Trusts (REITs) with the Securities and Exchange Commission (SEC) for uncertainty words. We then form rolling portfolios of REITs based on occurrences of uncertainty words in annual filing and track the returns. Our main finding is that there are no statically significant abnormal returns to these REIT portfolios. This supports the notion that the stock market is efficient in quickly incorporating any new information revealed in annual reports when the information becomes available.

Keywords: REITs, uncertainty disclosures, returns

INTRODUCTION

Quantitative and qualitative financial information disclosed by a firm's management may significantly impact stock prices. For example, earnings releases in comparison to investors' expectations can lead to large price fluctuations. There are many studies that focus on the effects of earnings surprise on stock returns. However, evaluating the effects of qualitative information disclosures is much more difficult.

In this paper, we use a word list to extract the managerial sentiment regarding the future prospects of Real Estate Investment Trusts (REITs). Research shows that the sentiments reflected in firm disclosures affect stock returns in the short term. We extend this line of research by considering sentiment extracted from uncertainty words and examining its effects on returns over a year after filings. We use the uncertainty world list of Loughran and McDonald (2011) to generate the sentiment from 10-K filings. Our classification based on the use of uncertainty words implies that use of large number of uncertainty words in annual filings convey negative sentiment about the future. Fewer instances of uncertainty words may be related to either positive sentiment or a deliberate attempt by the management to hide negative information.

The REITs offer an interesting environment to test the effects of financial disclosures since they regularly issue securities to raise capital. Their frequent use of capital markets reflects one the requirements of qualifying as REITs that they must pay at least ninety percent of their taxable income as dividends. REITs' frequent access to capital markets makes the financial disclosures in filings even more important to investors.

Our results show that the average performance of portfolios formed based on uncertainty word list are very similar and do not follow any pattern. Standard deviations of returns are relatively high for extreme

positive and negative sentiment portfolios. Even though this result may be expected for the negative sentiment portfolio, the result for positive sentiment portfolio supports the notion that there may be a deliberate attempt to hide negative information. We do not observe any effects of sentiment over a year after the filings. This supports the notion that information revealed in filings is quickly incorporated into prices, and therefore, the stock market is informationally efficient for REITs.

The paper is organized as follows. The next section offers a review of relevant literature followed by a description of data. Afterwards, we talk about the methods used and finally discuss the results to conclude.

LITERATURE REVIEW

There are many studies that examine textual analysis of firm filings, news articles and information releases. In this section, we limit our review to studies that deal with the textual analysis and effects on stock returns in general, particularly REIT stock returns. Our review of studies typically uses word lists to extract sentiment from source documents.

Li (2006) is one of the earlier studies that establish a link between occurrences of specific words (risk and uncertain) in annual filings and stock returns. The sample used in the study includes about 34,000 firm-years and covers the period from 1994 to 2005. Li (2006) find that risk sentiment of firms is related to their future stock performance. According to Li (2206) the annual abnormal return of a hedge portfolio (long on low-risk and short on high-risk firms) exceeds ten percent.

Tetlock, Saar-Tsechansky, and MacSkassy (2008) is similar to Li (2006) but differs on sentiment source, return horizon and sample of firms. Tetlock, Saar-Tsechansky, and Macskassy (2008) use WSJ and Dow Jones News Service stories on S&P 500 firms over shorter time periods. Tetlock, Saar-Tsechansky, and MacSkassy (2008) find potentially profitable strategies based on words used in news stories but point out that returns are not large enough to overcome cost of trading.

In the context of REITs, Dempsey, Harrison, Luchtenberg and Seiler (2012) examine readability of REIT annual reports from 1994 to 2007 on firm performances and market returns. Their sample contains 1,573 firm-year observations. Dempsey, Harrison, Luchtenberg and Seiler (2012) find that firm performance measured by return on assets is negatively related to readability of annual reports. REITs that provide more difficult-to-read annual reports are linked to poor financial performance. In addition, Dempsey, Harrison, Luchtenberg and Seiler (2012) report that readability of annual reports has explanatory power on returns not captured by the Fama and French (1992, 1993) risk factors.

Doran, Peterson and Price (2012) examine the effects of conference call tone on REIT returns. The tone of a conference call is established based on proportional occurrences of specific words and the type of sentiment words convey. The sample covers the earnings call from the fourth quarter of 2003 to the third quarter of 2007 and includes 1,755 conference calls. Doran, Peterson and Price (2012) find that conference call tone significantly explains subsequent abnormal REIT returns. In addition, they find evidence that information beyond the earnings announcement is revealed during conference calls.

It is not clear if sentiment extracted from annual reports has any effects on stock returns. Findings of Li (2006) and Tetlock, Saar-Tsechansky, and MacSkassy (2008) somewhat support the notion that sentiment-related disclosures impact stock returns. However, there is no reason to suspect that this effect should be long-lived. A gradual adjustment to sentiment revealed in annual reports would contradict the informational efficiency of the stock market. Therefore, our main test hypothesis is that the sentiment revealed in annual reports has no impact on future REIT returns.

DATA AND METHODOLOGY

We use COMPUSTAT and CRSP to identify a sample of REITs between 1990 and 2018. We search annual filings (10-K) of Real Estate Investment Trusts (REITs) with the Securities and Exchange Commission (SEC) for uncertain words indicated by Loughran and McDonald (2011). Our final sample covers the annual reports filed between the first quarter of 1996 and 2018. There are very few filings before the first quarter of 1996. Our final sample contains 2,483 firm-year observations.

We then form quintile portfolios of REITs based on occurrences of uncertainty words. The first quintile contains REITs with few uncertainty words, whereas quintile 5 contains those REITs with the man instances of uncertainty words in their annual reports. Returns to these portfolios are tracked for one year. The portfolio formation and return tracking process is repeated annually during the sample period.

The portfolio returns can help establish some association between uncertainty words and stock market returns; however, the relevancy of any association depends on if an empirical pricing model can explain the variation in portfolio returns. We use Fama French (1993) three-factor model to evaluate alphas of portfolios formed based on uncertainty words. The Fama French three-factor model is specified as:

$$r_{i,t} - r_{f,t} = \alpha_i + b_i\left(r_{m,t} - r_{f,t}\right) + b_i(SML_t) + b_i(HML_t) + \varepsilon_{i,t} \quad (1)$$

where $\left(r_{m,t} - r_{f,t}\right)$ is the excess return on the market portfolio, SML_t is the return on small vs. large firms and HML_t reflects the return difference between value and growth stocks. The α_i is known as Jensen's alpha and measures if there is any abnormal return. The factor returns are obtained from the website of Kenneth R. French at https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

RESULTS

We report the number of REITs for each filing year during the sample period and occurrences of uncertainty words in Table 1. The number of uncertainty word occurrences has increased over time, closely following the number REITs included in the sample.

TABLE 1
NUMBER OF REITS AND OCCURRENCES OF UNCERTAINTY WORDS OVER TIME

		Uncertainty Words		
Filing Year	Number of REITs	Average	Minimum	Maximum
1996	16	36.81	6	71
1997	41	41.20	7	95
1998	49	45.43	6	88
1999	56	68.52	14	167
2000	58	66.62	14	233
2001	37	64.41	14	140
2002	47	85.36	24	282
2003	88	97.28	23	230
2004	91	109.80	21	225
2005	96	120.10	33	239
2006	105	141.90	68	282
2007	107	153.60	75	340
2008	111	165.20	0	395
2009	117	181.40	55	394
2010	119	183.40	62	478
2011	128	168.90	64	411
2012	135	192.40	27	399
2013	148	204.80	64	489
2014	166	212.50	63	507
2015	179	216.10	65	448
2016	195	219.20	61	474
2017	200	222.70	61	413
2018	194	230.10	64	424

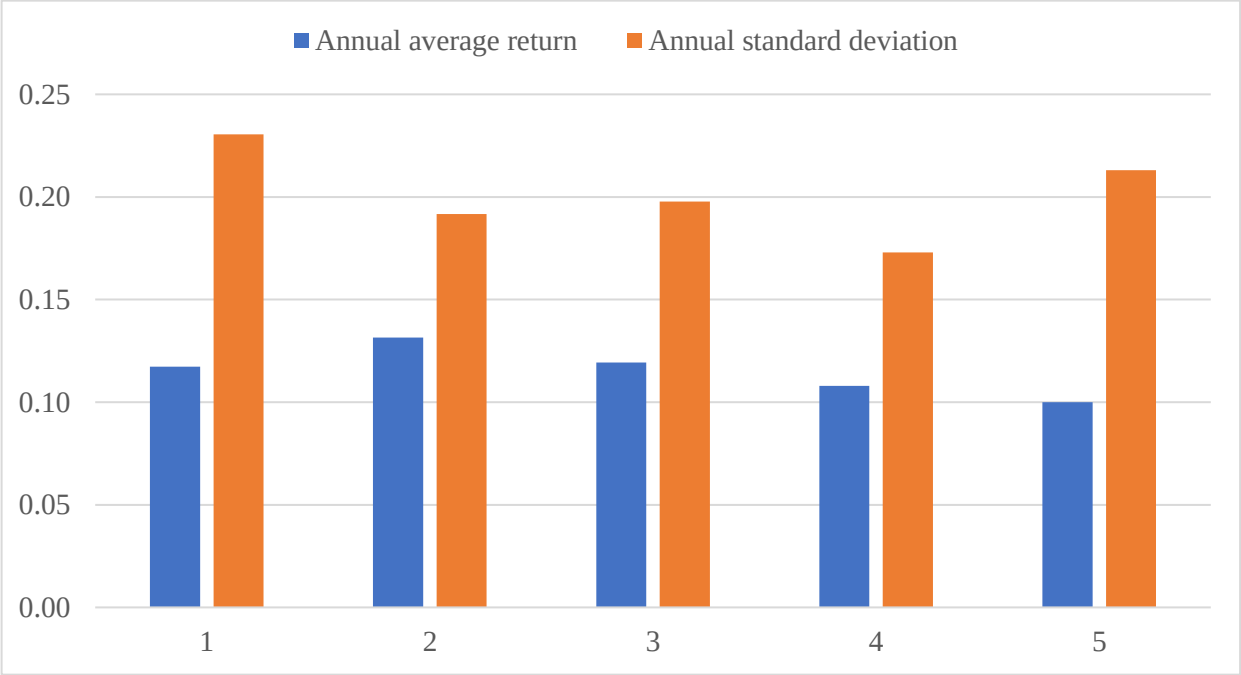
Table 2 shows return characteristics of uncertainty word portfolios. If uncertainty words convey sentiment related to future performance as in Li (2006) then we would expect increasing returns to quintile portfolios.

TABLE 2
RETURN CHARACTERISTICS OF UNCERTAINTY WORD PORTFOLIOS

	1	2	3	4	5
Annual average return	0.1173	0.1316	0.1194	0.1080	0.1000
Annual standard deviation	0.2305	0.1916	0.1978	0.1730	0.2130
Coefficient of variation	1.9650	1.4564	1.6569	1.6019	2.1295
Median	0.0134	0.0142	0.0128	0.0141	0.0141
Kurtosis	5.7846	9.0331	7.1919	4.1983	4.4421
Skewness	-0.1244	-0.9066	-0.4878	-0.8949	-0.0491
Range	0.6983	0.6401	0.6162	0.4364	0.5699
Minimum	-0.3096	-0.3495	-0.2919	-0.2574	-0.2354
Maximum	0.3887	0.2905	0.3243	0.1790	0.3345
Count	275	275	275	275	275

Results indicate that there is no discernible pattern between uncertainty words and performance of portfolios. Annual returns vary between 10 and 13.16 percent. On the other hand, the standard deviation of the first portfolio is the highest. This portfolio contains those REITs that use few uncertainty words in annual reports. Any positive sentiment that may be associated with quintile 1 portfolio does not lead to any superior performance. If quintile 1 REITs convey positive sentiments, it does not appear in returns, but there is larger volatility in returns of quintile 1 portfolio. This suggests that managers may hide negative information or annual reports do not contain sufficient information for investors to analyze. Figure 1 shows the annual returns and standard deviation of quintile portfolio graphically.

FIGURE 1
RETURNS AND STANDARD DEVIATIONS OF UNCERTAINTY WORD PORTFOLIOS



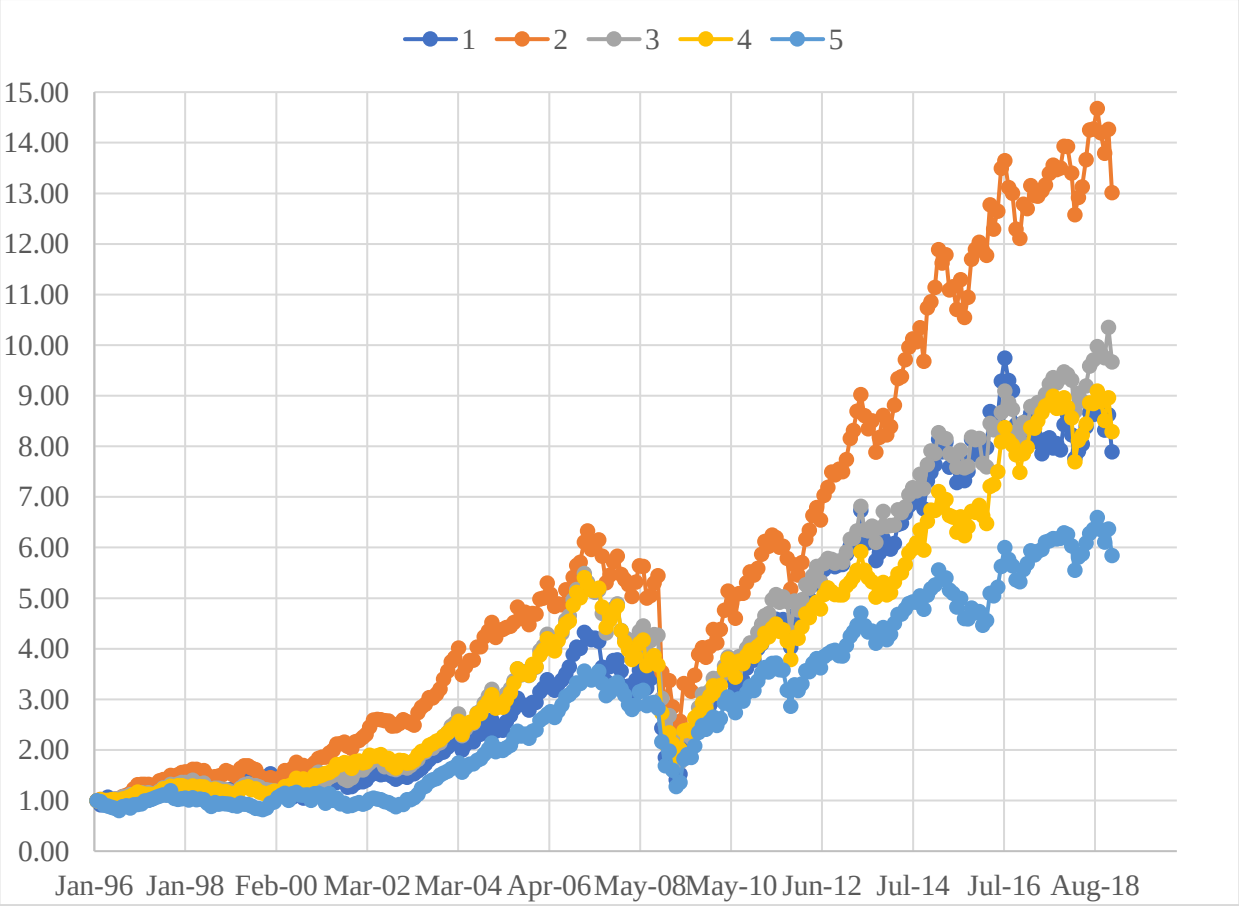
We report return correlations of uncertainty word portfolios in Table 3. As the average returns indicate returns to these portfolios are highly correlated and appear similar.

TABLE 3
CORRELATIONS AMONG UNCERTAINTY WORD PORTFOLIOS

	1	2	3	4	5
1	1.000				
2	0.800	1.000			
3	0.799	0.870	1.000		
4	0.771	0.883	0.844	1.000	
5	0.762	0.814	0.790	0.794	1.000

In Figure 2, we report cumulative performances of uncertainty word portfolios. Quintile 1 portfolio performance is similar to quintiles 3 and 4. However, quintile 5 contains those REITs with many uncertainty words in the annual reports. On its face value, this supports the finding of Li (2006) that sentiment conveyed in annual reports may have an explanatory power over future returns. The difference in return performance of quintile 1 and 5 portfolios is about 2 percent per year, far below what is reported by Li (2006).

FIGURE 2
PERFORMANCE OF PORTFOLIOS FORMED BASED ON UNCERTAINTY WORDS



Results of the Fama French three-factor model are reported in Table 4. These results indicate that none of the Jensen's alphas are statistically significant. The Fama French three-factor model leaves significant portion of return variation unexplained since adjusted r-squares are in 0.41 to 0.48 range. Contrary to Li (2006) we do not find any significant abnormal return to portfolios based on sentiment conveyed in annual reports of REITs.

TABLE 4
PERFORMANCE OF UNCERTAINTY WORD PORTFOLIOS

	1	2	3	4	5
α_i	0.0931	0.3098	0.2013	0.2059	0.0141
	(0.7570)	(0.2057)	(0.4329)	(0.3770)	(0.9589)
$r_{m,t} - r_{f,t}$	0.9796	0.7542	0.7990	0.6563	0.8613
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
SML_t	0.1314	0.2943	0.2700	0.2184	0.4303
	(0.1643)	(0.0002)	(0.0009)	(0.0030)	(0.0000)
HML_t	0.6260	0.7029	0.6096	0.5631	0.4227
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
R^2	0.4538	0.4781	0.4609	0.4194	0.4741

CONCLUSION

We examine the effects of sentiment extracted based on the occurrences of uncertainty words on future returns of REITs. Our results contradict the findings of Li (2006). We do not find significant abnormal returns to these REIT portfolios. There appears to be no link between sentiment captured by occurrences of uncertainty words and future REIT returns. These findings suggest that the stock market is efficient in quickly incorporating any new information revealed in annual reports when the information becomes available.

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