Market Timing Behavior of the Secondary Equity Offerings of REITs

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Abstract

In corporate finance literature, the concept of market timing means that managers would make their equity finance decisions according to the conditions of the capital market. REITs are special investment vehicles and are not included in the studies of general stocks. Thus the question is: do REITs have the same market timing behavior in their secondary equity offerings like general stocks?

In this study, we would use the secondary equity issues data of US equity REITs to analyze the market timing behavior of REITs. We are trying to learn about the short-run and long-run performance of REITs around equity issues, to find out the market timing pattern of REITs SEOs. Our findings could help us understand the meanings behind the equity issuing decisions of REITs managers, and help investors make appropriate reaction to these signals.

Our results show some evidence of the market timing behavior under the asymmetric information hypothesis. However, compared to general stocks, the timing behavior is less obvious for REITs. With regard to the long-run performance, no long-run underperformance is found after REITs SEOs. These results have two implications. First, although REITs are comparatively transparent than industrial firms, the REITs managers still have the market timing abilities to utilize the market conditions. Asymmetric information and adverse selection still exits for REITs, although the timing behavior is less obvious for REITs compared to general stocks. Second, the absence of long-run return anomaly after SEOs of REITs means that the market efficiency is not violated.

1. Introduction

Real Estate Investment Trusts, or REITs, are always treated as special investment vehicles in finance research, and are always treated differently from general stocks when doing empirical finance studies. Since 1960's, the REITs industry has undergone rapid growth, both in U.S. and other countries. REITs, especially U.S. REITs, are now the focus of many research studies. The special characteristics of REITs, including the special institutional structure requirements and the close relationship with heavy-financed properties, etc, have been studied to differentiate REITs from general industrial stocks. With regard to the equity financing patterns, the first day overpricing of IPO and long-run over-performance after IPO waves also distinguished REITs from general stocks. In this paper, the market timing abilities of REIT managers in secondary equity offerings will be studied to uncover the validity of equity market timing theory for US equity REITs.

3. Literature Review

In corporate finance literature, equity market timing means that managers tend to make financing decisions for firms according to the market conditions. In other words, they would issue equity when the stock prices are overvalued, and repurchase them when stock prices are undervalued. Market timing first appears as a dynamic form of Myers and Majluf (1984). In Myers and Majluf (1984), managers are assumed to have information that investors do not have, and they act on behalf of current investors instead of future investors. When they face an investment opportunity, they have to issue equity to finance the project. Under these assumptions, if the stock price of the company is undervalued, they would wait until the real value is realized and forego the current investment. If the current stock price is overvalued, managers would issue equity immediately. Thus equity issues would appear after positive abnormal stock returns. Also it is believed that compared to stock shares, debt and internal capital do not have the problem of being under-priced, thus if there is an investment opportunity, managers would choose internal capital first or debt, and the last resort is equity. This is the pecking order theory.

On the basis of Myers and Majluf (1984), Lucas and McDonald (1990), Korajczyk, Lucas and McDonald (1991) and Korajczyk, Lucas and McDonald (1992) studied the variations of adverse selection costs of equity issues with the existence of asymmetric information. Since the equity issues only happen when the stock prices are overvalued, the stock prices would decrease on announcement of the equity issues. Outsiders would lower their evaluation of the issuing firm's quality, and this creates a "lemons market" in new equity issues. In Korajczyk, Lucas and McDonald (1991) and Korajczyk, Lucas and McDonald (1992), the asymmetric information is not fixed over time, and firms tend to issue equity when the market is most informed about the quality of the firm, for example, after earnings releases. They find that managers can control the informational disadvantage of the market by choosing the timing of an equity issue.

In Baker and Wurger (2000), it is found that the equity share in total new equity and debt issues is a strong predictor of US stock market returns between 1928 and 1997. This finding could not be explained under the market efficiency explanations. The assumption of market efficiency is relaxed and managers or investors can be irrational. Managers try to exploit the market conditions, and they time both their idiosyncratic return and the market return (Baker and Wurgler 2000). The market inefficiency is challenged.

The underperformances after IPO reported by Ritter (1991), the long-run underperformances after equity issues recorded in Loughran and Ritter (1995), etc. All these findings seem to indicate that firm managers have the ability to time the market when they make equity financing decisions. Besides above evidence from US, data using other countries data also find support for the market timing behavior. Besides the market timing behavior of managers before equity issues, other corporate decisions, for example spin-offs, debt offerings, and stock splits all indicate market timing abilities of managers from the long-run abnormal returns (Desai and Jain (1999), Spiess and Affleck-Graves (1999), and Ikenberry, Rankine and Stice (1996)). Above findings document the long-run abnormal returns and such findings challenge the market efficiency hypothesis (Baker and Wurgler (2002)).At the same time, some doubts are also casted on this version of market. Before Baker and Wurgler (2000), other researchers also performed similar tests but they do not find strong evidence against market efficiency (Fama and French (1988) and Kothari and Shanken (1997)). Besides, on-going debate exists to give methodological

suggestions on the long-run anomaly (Fama (1998), Eckbo, Masulis, and Norli (2000), and Brav, Geczy, and Gompers (2000)). The robustness of the long-run returns calculations are questioned by researchers.

With hot debate on the market timing behavior of general stocks, the market timing of REITs is not studied thoroughly. The reasons for us to choose to study the market timing of REITs are as following. First, REITs are also considered to be different from general stocks and are always excluded from general stocks in empirical corporate finance studies. The result is that above research findings and theories are not necessarily valid for REITs. Second, less asymmetric information is expected from REITs compared to industrial stocks. Such expectation is because of the higher tangibility of REITs assets and the predictability of cash flows. Third, the research findings about the long-run performance of REITs stock returns after IPOs and SEOs seem be in a mixture of underperformance and over-performance. Take initial public offering as an example. Wang, Chan and Gau (1992) found that the long-term underperformance exists for REITs after IPO. However, Ling and Ryngaert (1997) showed over-performance instead of underperformance of REITs after IPO. A more recent study by Buttimer, Hyland and Sanders (2005) documented the long-run performance of equity REIT IPOs during and after IPO waves, and found no evidence of the long-run underperformance for REITs. All these special characteristics of REITs make the market timing of REITs different and even more interesting.

In this study, we focus on the secondary equity financing of REITs, because secondary equity financing has important influences on the capital structure changes of firms, and are important reflections of financing decisions of managers. Thus it is meaningful to find out whether REITs managers have the market timing abilities when they issue secondary equities, and understand the short-run and long-run performance of REITs after SEOs.

First we would test whether market timing exists for REITs by looking at the relationship between stock returns and equity issues. Then we would examine the short-run and long-run performance of REITs after equity issues to test some hypotheses of the theory.

According to the asymmetric information framework, managers have superior information about the stock prices compared to investors. Under such condition, managers would choose to issue equity when the stock prices are overvalued and

repurchase them when stock prices are undervalued. Thus the positive abnormal returns preceding the equity issues would be used as one method to test the market timing abilities. If managers could time the market when they issue the equity, the stock prices should be increasing before the equity issues. As the stock prices have reached its peak when new equity is issues, the stock prices would decline at the announcement or issues of the new shares. Another hypothesis is managers would choose to issues equity when the market is best informed of the quality of the firm to reduce the adverse selection problem.

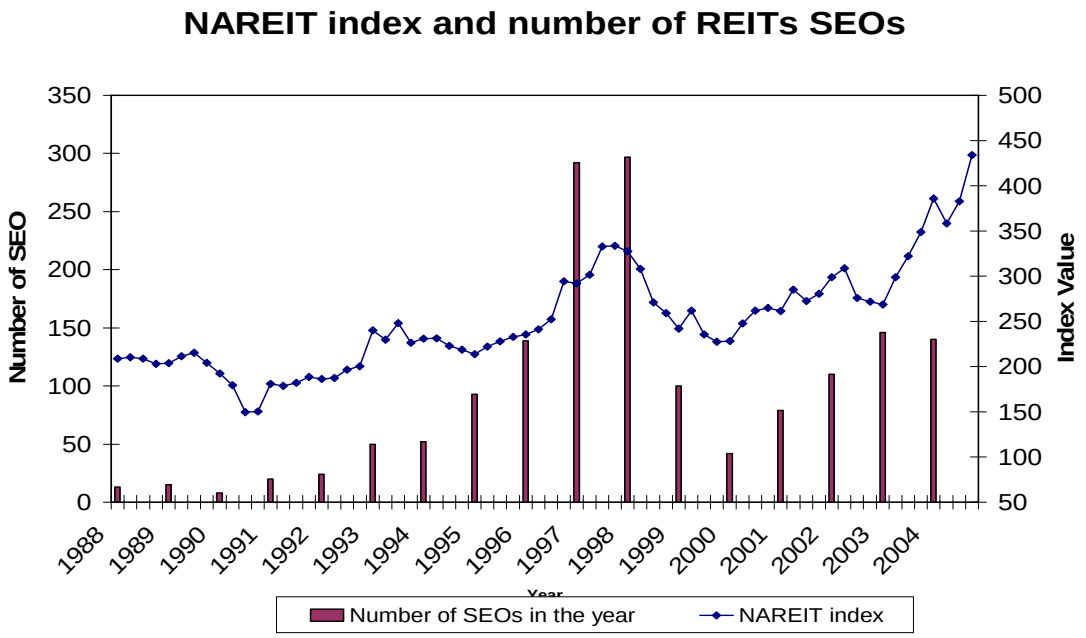
The long-run performance after secondary equity issues of REITs would also be tested. Previous research findings about the long-run performance of REITs SEOs include Howton, Howton and Friday (2000), which found long-run underperformance of REITs SEOs when comparing the holding period return of equity issuing REITs with non-equity offering REITs. The method applied by Howton, Howton and Friday (2000) is questionable because it compares equity issuing REITs with non-equity offering REITs, we would use the Fama and French four factor model to calculate the long-term returns. One point must be made clear is that the second version of market timing does not require the market to be inefficient. The long-run underperformance indicates managers are successful in timing the market. While failure to find the long-run underperformance only means the timing behavior is not successful.

Previous research works about the market timing behavior of REITs secondary equity offerings include Li and Ooi (2004). They found that US REITs time both the equity and debt market conditions using a sample of equity REITs from 1986 to 2003. The P/B ratio and P/E ratio is considered as the proxy of market misevaluations and equity/debt issues/repurchases are analyzed. They conclude that REITs time the market in both equity and debt offerings. However, they did not study the performance of RETIs after equity issues.

Before our empirical tests, let's first look at the following graph to have a brief understanding of the equity issues and stock price trends for REITs. In Figure 1, the NAREIT equity REIT price index and the number of secondary equity offerings in the corresponding year is plotted. Although this only gives us a brief understanding, it is

obvious that these two variables are correlated, and the market timing is observed from the chart.

Figure 1: NAREIT index and number of REITs SEOs



The study proceeds as follows. Section 4 introduces the data. Section 5 studies whether market timing exists in the net equity issues of REITs. Section 6 tests the short-run performance of REITs after equity issues. Section 7 tests the long-run performance of REITs after equity issues. Section 8 gives some discussion and in Section 9 the expected future work is described.

4. Data

All the US equity REITs studied in this paper are reported by National Association of Real Estate Investment Trust. US REITs are of relatively long history, and this allows us to know the market timing behavior in more developed REITs markets. There are 123 equity REITs captured in this study, which comprise a great majority of the equity REITs reported by NAREIT. The list of REITs names that are captured is listed in the Appendix. The quarterly data of these equity REITs cash flows comes from Compustat database. The daily price data comes from CRSP. Dates of first public announcement of quarterly earnings are from Compustat database. The record of all equity issues of REITs

(excluding IPOs) comes from SDC database. Long-term interest rate is found from the website of U.S. Federal Reserve Board and the data of NAREIT equity REITs price index comes from NAREIT website. The data of equity REITs that are captured spread from January 1980 to March 2004, 279 months in total. The time series plots of some important variables are presented in the appendix.

5. The market timing of REITs

In this part, the existence of market timing behavior would be examined by looking at the relationship between equity issues and stock returns. Market timing theory implies that managers would choose to issue equity when their stock prices are (believed to be) overvalued and repurchase the stocks when they are (believed to be) undervalued. The equity issues always occur after positive stock returns. For the individual REITs captured in this part, the following hypotheses would be tested: would net equity issues change according to the capital market conditions? The data here is unstructured panel data instead of time series data, as the data of net equity issues and stock returns of individual REITs are unstructured panel data.

In this part, the VAR model and panel regression would be employed to test the relationship between relevant variables. The autoregressive model is

$$y_t = \mu + \tau_1 y_{t-1} + \Lambda + \tau_p y_{t-p} + \varepsilon_t \qquad (1)$$

Where ε_t is a vector of non-autocorrelated disturbances with zero means and contemporaneous covariance matrix $E\left[\varepsilon_t \varepsilon_t^{'}\right] = \Omega$. This equation system is a vector autoregression, or VAR. Vector means that we are dealing with a vector of variables while autoregressive means the appearance of the lagged value of the dependent variable. Akaike or Schwarz Criterion can be used to decide how many lags to take.

One of the virtues of the VAR is that it obviates a decision as to what contemporaneous variables are exogenous; it has only lagged (predetermined) variables on the right-hand side, and all the variables are endogenous (although in some circumstances exogenous variables can also be included). VARs are special, because in simultaneous or structural equation models, the equations in the system should be determined before the estimation of the model. This kind of identification is often subjective. Using VAR this subjectivity

could be avoided. Employing VAR model allows us to test which variables are more relevant in determining the equity issues or stock returns, and we do not need to specify the relationships before the estimation.

The VAR test for individual REIT is run according to regression equation 2 shown below.

$$\begin{aligned}&(Equity_t, Debt_t, M/B_t, Stockreturn_t) = \mu + A_1(Equity_{t-1}, Debt_{t-1}, M/B_{t-1}, Stockretun_{t-1}) \\ &+ ... + A_n(Equity_{t-n}, Debt_{t-n}, M/B_{t-n}, Stockreturn_{t-n}) + B_1 Interest_{t-1} + ... + B_n Interest_{t-n} \\ &+ C_1 Size_{t-1} + D_1 SP_{t-1} + ... + D_n SP_{t-n} + \varepsilon_t \end{aligned} \quad (2)$$

The meanings of the variables are explained as following:

$Equity_t$: The net changes of equity of individual REITs in quarter t;

$Debt_t$: The net changes of book value of long-term debt of individual REITs in quarter t;

M/B_t : The average M/B ratio of individual REITs in quarter t;

$Stockreturn_t$: The stock return of individual REITs in quarter t;

$Interest_t$: Change in the long-term interest rate of U.S. in quarter t;

$Size_t$: The total assets of individual REITs in quarter t;

SP_t : S&P 500 composite index return in quarter t.

The detailed explanations of these variables are:

Specifically, the calculations of the variables from the database are:

(a)Market value of equity= price closed at the end of the third month of each quarter * shares outstanding (splits adjusted)

(b) Long-term debt= long-term debt total

(c)Market-to-book ratio= market value of assets/ total assets= (market value of equity + long-term debt+ preferred stock + debt in current liabilities)/total assets

(d)Long-term interest rate= 10 year interest rate

The statistical summary of variables different from industry analysis is listed in the following table.

Table 1: Statistic summary

Variable	Stock return	Average m/b	Size	Equity issues	Debt issues
Average	0.02157871	1.120571	1654.926	26.67834	34.66847
Standard Deviation	0.18043912	0.362092	2560.893	175.618	225.1028

The result of the unit root test is shown in Table 2.

Table 2: Panel Unit Root Test

Stock return	Average m/b	Size	Equity issues	Debt Issues
I(0)	I(0)	I(1)	I(0)	I(0)

The regression results are listed in Table 3

Table 3: VAR-1

Included observations: 5200 after adjustments,

Sample (adjusted): 1981Q3 2004Q1

T-statistics in [ ]

	EQUITY	DEBT	M_B	STOCK_RETURN
EQUITY(-1)	-0.005289	0.197363	-2.94E-05	-1.25E-05
	[-0.67312]	[9.52623]	[-2.38310]	[-1.04931]
EQUIY(-2)	-0.024216	0.112762	-3.21E-05	-3.72E-05
	[-3.05342]	[5.39278]	[-2.58380]	[-3.09654]
EQUITY(-3)	-0.016118	0.171033	-3.83E-05	-4.85E-05
	[-2.03067]	[8.17272]	[-3.07523]	[-4.03673]
EQUITY(-4)	0.081659	-0.012729	-1.56E-05	1.77E-05
	[10.2281]	[-0.60471]	[-1.24233]	[1.46529]

DEBT(-1)	0.010325	0.448416	-1.01E-05	-1.31E-05
	[2.20871]	[36.3821]	[-1.38184]	[-1.85665]
DEBT(-2)	0.016166	-0.032547	2.37E-05	4.59E-05
	[3.03451]	[-2.31723]	[2.83201]	[5.68557]
DEBT(-3)	-0.031153	-0.028431	-6.49E-06	-3.92E-05
	[-5.87481]	[-2.03359]	[-0.77993]	[-4.87596]
DEBT(-4)	0.005433	0.411931	5.15E-07	1.94E-06
	[1.19842]	[34.4625]	[0.07237]	[0.28186]
M_B(-1)	-16.00809	-29.19196	-0.411122	-0.021493
	[-1.61005]	[-1.11361]	[-26.3622]	[-1.42695]
M_B(-2)	-4.470159	-70.81985	-0.145928	0.011525
	[-0.41812]	[-2.51248]	[-8.70217]	[0.71159]
M_B(-3)	31.06788	-84.83172	-0.070283	0.030194
	[2.91867]	[-3.02274]	[-4.20956]	[1.87241]
M_B(-4)	10.68653	-117.6904	0.053928	0.025100
	[1.08219]	[-4.52040]	[3.48172]	[1.67782]
STOCK_RETURN(-1)	32.09656	40.75670	0.111794	-0.024330
	[3.08996]	[1.48821]	[6.86158]	[-1.54612]
STOCK_RETURN(-2)	21.86568	48.72704	0.044731	0.011186
	[2.08202]	[1.75980]	[2.71545]	[0.70308]
STOCK_RETURN(-3)	-5.154828	28.32217	0.060545	0.011342
	[-0.49049]	[1.02214]	[3.67284]	[0.71237]
STOCK_RETURN(-4)	1.741413	118.8321	-0.007881	0.104842
	[0.16574]	[4.28969]	[-0.47821]	[6.58662]
C	1.323815	18.16881	0.008425	0.023957
	[0.89444]	[4.65606]	[3.62919]	[10.6847]
SIZE	0.420879	0.156160	-5.30E-05	5.95E-06
	[105.934]	[14.9079]	[-8.50050]	[0.98866]
S & P(-1)	18.38772	-358.9140	0.139533	0.104501
	[1.25887]	[-9.31995]	[6.09035]	[4.72257]
S & P(-2)	6.961842	300.2952	0.001197	0.126372
	[0.46933]	[7.67840]	[0.05147]	[5.62353]
S & P(-3)	-43.39512	-78.78929	-0.132118	-0.155593
	[-2.94394]	[-2.02733]	[-5.71427]	[-6.96761]
S & P(-4)	-42.27946	-72.00826	-0.210619	-0.240718
	[-2.90640]	[-1.87749]	[-9.23069]	[-10.9230]
INTEREST(-1)	0.770845	-12.26899	-0.004092	-0.013932

	[0.35712]	[-2.15590]	[-1.20859]	[-4.26053]
INTEREST(-2)	1.691328	-2.459602	0.000995	0.005867
	[0.78853]	[-0.43493]	[0.29573]	[1.80548]
INTEREST(-3)	0.549756	-12.91616	-0.008054	-0.007865
	[0.24738]	[-2.20441]	[-2.31050]	[-2.33609]
INTEREST(-4)	-2.195680	-16.35361	0.005017	0.008124
	[-1.01731]	[-2.87387]	[1.48196]	[2.48452]
R-squared	0.697649	0.665228	0.165404	0.070151
Adj. R-squared	0.696188	0.663611	0.161372	0.065658

In Table 3, we can find that the stock returns in the previous two quarters have positive effects on the equity issues. This is consistent with the market timing theory. However, this consistency is only limited to two quarters' horizon. When we trace back to three quarters before, then the coefficient could not be explained by market timing.

With regard to the effects of S & P 500 index on equity issues, they also have positive effects and the positive effects are also confined to two quarters. However, their effects are not significant.

Another finding is that the equity issues have negative effects on the stock return in the following three quarters. This could be observed from the last equation in Table 3, where the stock return is the dependent variable.

If we look at the effects of the interest rates on the issues of debt, we could find that increasing interest rate would lead to decrease of debt issues. This is consistent with Li and Ooi (2001) that REITs also time the debt market.

6. Short-run Performance of REITs after SEOs

In this part, some hypotheses under the asymmetric information theory would be tested. Since the equity issues are considered as signals to the market, the price would drop on the announcement day and the issue day (Asquith and Mullins (1986), Masulis and Korwar (1986), and Barclay and Litzenberger (1988)). Some companies actually would announce the equity issues on the issue day, while for others there are several weeks between these two dates. As the announcement dates of the secondary equity offerings

are unavailable in our data, we would use the issue day as the focus of study. This is the first hypothesis that would be tested. Also, in order to reduce the price drop at the issuing day, managers would issue equity when the market is most informed, such as after quarterly earnings announcement. If managers delay the equity issues, with time goes by, they have more asymmetric information, and the price drop at the issuing would be larger. We would test these hypotheses separately.

Hypothesis 1: The stock prices drop at the equity issuing day.

Here we calculate the gross stock return and the abnormal stock return on the equity issuing day. The abnormal return is the gross stock return minus the CRSP equally weighted return excluding dividend. From Table 4, we can find that there is significant negative return on the issuing day.

Table 4: Event day return

	Average	T-statistic	N
Gross return on the issuing day	-0.00866	-3.20356	427
Abnormal return on the issuing day	-0.00292	-3.5890	427

Hypothesis 2: Equity issues would cluster after earnings releases.

This hypothesis is based on the time-varying asymmetric information in equity issues. With time-varying asymmetric information, managers want to issue equity when the market is most informed of the quality of the firm and reduce the cost of adverse selection. One of the most important sources of information is the quarterly earnings announcement. It is expected to see that equity issues would cluster shortly after earnings releases, and it is supported by the result in Korajczyk, Lucas and McDonald (1991).

The lag between the equity issues and the latest quarterly earnings announcement is calculated for each secondary equity issues of REITs. It is found that, about 50% of the equity issues occur in 40 days after the quarterly earnings announcement, compared to 75% for general stocks. The distribution of the time lags is shown in Figure 2.

Figure 2: Distribution of time lags between equity issues and the latest quarterly earnings announcement

In Figure 2, there is roughly a trend of decreasing number of issues after the quarterly earnings announcement. However, this trend is less obvious compared to general stocks. For example, for general stocks, the number of issues in more than 90 days is about 20% of the number of issues in 7 days (Korajczyk, Lucas and McDonald (1991), while for REITs, it is about 40%. For general stocks, the largest number of issues happens about 28 days after earnings announcement. While for REITs, it happens in 49~55 days, which is much later than general stocks.

Hypothesis 3: The closer the issue follows an earning release, the smaller the price drop at the issue day.

The closer the issue follows an earning release, the market is more informed, and the price drop at the issue day is expected to be smaller. A simple regression is run here to test this relationship. The result is shown in Table 5.

Table 5: Regression Result (with t statistic in parenthesis)

	Gross return	Abnormal return
Constant	-0.00506 (-2.98459)***	-0.00147 (-0.9676)
Days between announcement and	-7E-06	-3.4E-05

equity issues	(-0.20757)	(-1.13819)
No. of observation	427	427
R-square	0.00012	0.000813

Table 5 shows that there is no significant relationship between the lag of days and the price drop at the issuing day. This is also different from the result of general stocks.

In this part, some hypotheses of the market timing under the asymmetric information theory are tested. These results give only weak evidence of the existence of the asymmetric information in the market timing of REITs.

7. Long-run Performance of REITs after SEOs

Generally there are two methodologies when researchers calculate the long-run performance. First method, is the method used by Ritter (1991), comparing the returns with out-of-sample assets. The second method is the Fama and French (1993) three factor model. Since most of the REITs have offerings during the study period, the second method is applied to test for abnormal returns. The momentum variable in Carhart (1997) would also be included in the regression equation. Thus the model we applied here is the four-factor model.

The portfolios are formed by the REITs that have equity offerings during the previous five years. The study period is 1980 January to 2004 March. The average monthly return of REITs that have equity issues in the past five years is calculated for each month. Both value-weighted and equally-weighted monthly returns are calculated. Then the abnormal monthly return for each portfolio is regressed against the three Fama and French (1993) equity risk factors, Market, SMB, and HML, Carhart's (1997) momentum variable, and the return on the NAREIT index minus the risk-free rate. First we use the above four factors in the regression, then the NAREIT index is included. The NAREIT index return is added to mimic the risk in returns specifically related to the real estate industry.

The regression equation is

$$REIT_t - Rf_t = \alpha + \beta_1 (NAREIT_t - Rf_t) + \beta_2 (Market_t - Rf_t) + \beta_3 SMB_t + \beta_4 HML_t + \beta_5 MOMENTUM_t + \varepsilon_t$$

(5)

Where,

$REIT_t$: The value-weighted (equally-weighted) return in quarter t of REITs with equity offering in the last 5 years;

Rf_t: Risk-free rate in quarter t;

$NAREIT_t$: Return of NAREIT equity REIT index in quarter t;

$Market_t$: Value-weighted CRSP returns in quarter t;

SMB_t: The difference between the returns on small and big stock portfolios with about the same book to market equity in quarter t;

HML_t: The difference between the returns on high book-market firms and low book-market firms in quarter t;

$Momentum_t$: The high momentum stock return minus low momentum stock return where momentum is measured based on past one-year return.

The regression result is shown in Table 6.

Table 6: Long-run performance calculation (with t statistic in parenthesis)

	Equally Weighted Sample		Value Weighted Sample	
Intercept	-0.90267 (-2.81326)***	-0.28621 (-1.0493)	-0.46257 (-1.64439)	0.209893 (1.015668)
Market-Rf	0.794521 (10.02469)***	0.228695 (2.659)***	0.685877 (9.870976)***	0.068649 (1.053489)
SMB	0.497781 (5.038377)***	0.085063 (0.931093)	0.376862 (4.350941)***	-0.07335 (-1.0597)
HML	0.741875 (6.173396)***	0.102222 (0.868265)	0.685335 (6.504967)***	-0.01243 (-0.13931)
Momentum	-0.00013 (-1.08236)	-8.6E-05 (-0.83581)	-0.00015 (-1.35925)	-9.5E-05 (-1.22083)
NAREIT-Rf		1.042685 (10.19353)***		1.137407 (14.67648)***
Adjusted R-square	0.335899	0.543682	0.320062	0.651075

In Table 6, significant long-run underperformance is found only in equally weighted four factor regression. When the NAREIT is included in the regression, the explanatory power of the equations are increased, both in equally and value weighted return. If we compare equally weighted regression with value weighted regression, we can find that the

intercept in value weighted regression is larger than in equally weighted. The reason may be that larger REITs have better performance compared to small REITs. In the last column of Table 6, the intercept becomes positive.

Our result is consistent with Buttimer, Hyland and Sanders (2005), in which study on long-run underperformance is found using REIT s IPO data. Since both positive and negative concepts exist in our result, the argument in Fama (1998) is valid, that the result of long-run underperformance is not robust. Thus the market efficiency is not violated.

8. Conclusion

REITs have always been considered as a special investment vehicle because of its different institutional structures from general stocks, and are always excluded from general stocks in empirical studies. Besides the close relationship with the real estate properties, which makes REITs an industry with heavy dependence on capital, REITs also have special requirements on dividend payout and gearings compared to general stocks. For example, in US, REITs are required to payout at least 90% of the distributable dividends to their investors. At the same time, equity REITs have higher predictability in their future cash flow as the main source of capital is the rent, thus less asymmetric information is expected in REITs. Also, most of the assets of REITs are tangible assets. With all these anomalies, would the market timing found in general stocks also be valid for US REITs? This paper tries to answer the above questions.

First, whether market timing exists for REITs is tested. Using a VAR model, it is found that REITs secondary equity offerings always occur when the stock prices are high. This means that market timing behavior exist for REITs in SEOs. For the short-run performance of REITs around SEOs, we find partial support to the market timing theory under the framework of asymmetric information. The stock price decreases on the equity issuing day, but the timing of the equity issues is less obvious compared to general stocks. There is no relationship between the issue day price drop and the timing of the issues. With regard to the long-run performance study of REITs after SEOs, our result shows no long-run underperformance of REITs after SEOs. All these evidences suggest that, although REITs also exhibit market timing behavior, the timing pattern is different from general stocks both in the long-run and short-run.

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Appendix

Table 1: Equity Market Capitilization Outstanding
(Millions of dollars at year end)

	Equity		Mortgage		Hybrid	
End of Year	# of REITs	Market Capitalization	# of REITs	Market Capitalization	# of REITs	Market Capitalization
1971	12	332.0	12	570.8	10	591.6
1972	17	377.3	18	774.7	11	728.9
1973	20	336.0	22	517.3	11	540.2
1974	19	241.9	22	238.8	12	231.7
1975	12	275.7	22	312.0	12	312.0
1976	27	409.6	22	415.6	13	482.8
1977	32	538.1	19	398.3	18	591.6
1978	33	575.7	19	340.3	19	496.4
1979	32	743.6	19	377.1	20	633.3
1980	35	942.2	21	509.5	19	846.8
1981	36	977.5	21	541.3	19	920.1
1982	30	1,071.4	20	1,133.4	16	1,093.8
1983	26	1,468.6	19	1,460.0	14	1,328.7
1984	25	1,794.5	20	1,801.3	14	1,489.4
1985	37	3,270.3	32	3,162.4	13	1,241.2
1986	45	4,336.1	35	3,625.8	16	1,961.7
1987	53	4,758.5	38	3,161.4	19	1,782.4
1988	56	6,141.7	40	3,620.8	21	1,672.6
1989	56	6,769.6	43	3,536.3	21	1,356.3
1990	58	5,551.6	43	2,549.2	18	636.3
1991	86	8,785.5	28	2,586.3	24	1,596.4
1992	89	11,171.1	30	2,772.8	23	1,968.1
1993	135	26,081.9	32	3,398.5	22	2,678.2
1994	175	38,812.0	29	2,502.7	22	2,991.3
1995	178	49,913.0	24	3,395.4	17	4,232.9
1996	166	78,302.0	20	4,778.6	13	5,695.8
1997	176	127,825.3	26	7,370.3	9	5,338.2
1998	173	126,904.5	28	6,480.7	9	4,916.2
1999	167	118,232.7	26	4,441.7	10	1,587.5
2000	158	134,431.0	22	1,632.0	9	2,652.4

2001	151	147,092.1	22	3,990.5	9	3,816.0
2002	149	151,271.5	20	7,146.4	7	3,519.4
2003	144	204,800.4	20	14,186.51	7	5,225.0
2004	153	275,291.04	33	25,964.32	7	6,639.37

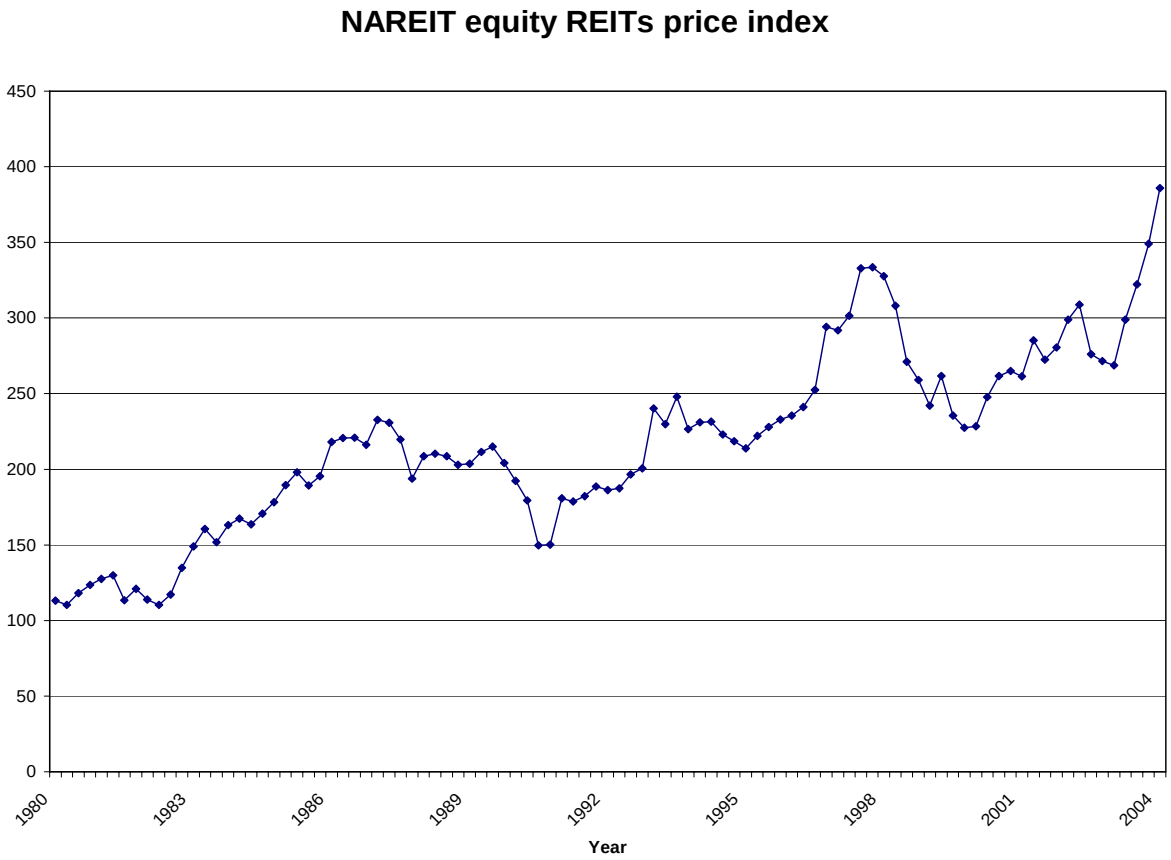
Source: NAREIT website. Available at http://www.nareit.com (Market capitalization equals price of shares multiplied by shares outstanding.)

2. Historical Securities Issuance by US REITs (Millions of dollars)

	Total Financing		IPO		Secondary Equity		Debt Offering	
Period	Number	Capital Raised	Number	Capital Raised	Number	Capital Raised	Number	Capital Raised
1988	37	3069	13	1374	13	785	11	909
1989	34	2441	11	1075	15	722	8	644
1990	24	1765	10	882	8	389	6	494
1991	35	2289	8	808	20	786	7	694
1992	58	6615	8	919	24	1055	26	4642
1993	141	18327	50	9335	50	3856	41	5135
1994	146	14771	45	7176	52	3945	49	3651
1995	196	12505	8	939	93	7321	95	4245
1996	221	17063	6	1108	139	11201	76	4754
1997	463	45271	26	6297	292	27377	145	12597
1998	474	38382	17	2129	297	19378	160	16874
1999	205	17214	2	292	100	6444	103	10477
2000	114	10376	0	0	42	2834	72	7542
2001	127	18752	0	0	79	6082	48	12670
2002	187	19768	3	608	110	7776	74	11383
2003	228	25562	8	2646	146	10663	74	12252
2004	266	38773	29	8271	140	13196	97	17306

Source: NAREIT website. Available at http://www.nareit.com

3. Figure 1: NAREIT equity REITs price index



4. Figure 2: S & P 500 price index