REITs Return Behavior and Legal Infrastructure: The 1993 Revenue Reconciliation Act and Inspirations for China's Emerging REITs Market

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Abstract

REIT is an important but complex financial innovation. The next decade is likely to see the emergence and fast development of REITs market in China. The development of a sound legal and regulatory infrastructure is a critical first step. Obviously, the lessons in the 48 years development of the U.S. REITs market provide a great reference for the latecomers. In particular, the 1993 Revenue Reconciliation Act is the most important milestone for REITs history. The study uses a multi-factor risk-based model to evaluate the evolvement of REITs returns behavior before and after the 1993 Act. This model decomposes REITs excess returns into risk premiums of three stock market factors, two bond market factors and one real estate market factor. The results show that this framework is more appropriate in explaining the expected excess return of REITs. This study reveals that the REITs are less stocklike and bondlike, but maybe more real-estate-like after 1993, which is in contrast to the findings of most existing studies. This result indicates that the REITs could provide efficient risk diversification for the stock market and bond market after 1993. This study also documents that the performance of excess REITs returns in post-1993 period outpace that in pre-1993 period in general due to the increase of institutional ownership. In the last part, this paper attempts to provide some legal implications for the development of China's emerging REITs market.

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1. Introduction

REIT (real estate investment trust) is one of the most important real estate based financial innovations. The REITs market in the U.S. has grown dramatically in size and importance since 1960s, especially during 1990s. Although REITs market cools in recent years, REITs still play an important role as a source of capital for underlying real estate and as investment instruments, and therefore attract an increasing attention from institutional investors and academic researchers.

In China, driven by the domestic real estate investor demanding, a commercial real estate based trust was first offered by a Shanghai trust & investment company in 2002 (Mao, 2007). The new issuance of such kind of products increased to 14.65 billion RMB in 2006 (Chen et al, 2007). Although they are not REITs proper, they have some basic characteristics of the U.S. counterparts. Many China's scholars (Wang and Yu, 2006; Dai, 2007) forecast that the next decade is likely to see the emergence and fast development of REITs market in China.

The development of a sound REITs law and associated legal and regulatory infrastructure is a critical first step that usually requires important adjustments in existing laws and regulations,. The legal and regulatory infrastructure includes financial legal frameworks (such as bankruptcy bodes and conflict resolutions mechanisms between creditors and debtors), supervision, accounting, auditing, and the rules, practices and professions that go with them, as well as financial corporate governance and institutions (Renaud, 2003 and 2004). In this vein, China still has a lot of work to do.

We are interested to discover the relationship between the evolvement of REITs returns behavior and the change of legal and regulatory infrastructure. Obviously, the experiences in the 48 years development of the U.S. REITs market provide the best reference for the latecomers. In particular, the 1993 Revenue Reconciliation Act is the most important milestone for REITs history. Therefore, the key question is how and in what magnitude the 1993 Act impact the REITs return behavior. The results of this study are expected to provide insights to China's REITs market development.

Meanwhile, the increased ability to use REITs as part of investment instruments requires additional understanding of their return behavior as a function of other variables. The previous literature of REITs return behavior mainly focuses on three topics: predictability, risk characteristics, and performance. The focus is on the second and third topic.

The study uses a multi-factor risk-based model to evaluate the evolvement of REITs returns behavior before and after the 1993 Act. This model decomposes REITs excess returns into risk premiums of three stock market factors, two bond market factors and one real estate market factor. The results show that this framework is more appropriate in explaining the expected excess return of REITs than previous works. This study reveals that the REITs are less stocklike and bondlike, but maybe more real-estate-like after 1993, which is in contrast to the findings of most existing studies. This result indicates that the REITs could provide efficient risk diversification for the stock market and bond market after 1993. This study also documents that the performance of excess REITs returns in post-1993 period outpace that in pre-1993 period in general due to the increase of institutional ownership.

This paper is organized as follows. Section 2 briefly reviews the development of the U.S. REITs market and the changes in legal and regulatory infrastructure. Section 3 reviews the related literature. Section 4 describes the research questions, data sources and research method. Section 5 reports the empirical results of the multi-factor risk based models. The last section gives the conclusions and legal implications for China’s emerging REITs market.

2. The U.S. REITs Market and Its Legal Infrastructure Changes

The U.S. President signed legislation allowing the creation of REITs in 1960. The legislation aimed to give small investors and individuals a way to invest in large-scale income-producing real estate properties that they could not afford to own and manage on their own (Fickes, 2006; Block, 2002). Since securitization making real estate investment more transparent and liquid, investors would be enabled to make more informed judgments and investment decisions about likely investment returns. In turn, the participation of the informed investors,

especially institutional investors creates discipline and more transparency which help to reduce the volatility of real estate industry which is beneficial to both the industry and investors (Fickes, 2006; Block, 2002).

However, between 1960 and 1990, REITs grew slowly, according to NAREIT, from 1972 to 1990, the annual increase rate of REITs market capitalization is only 9.74%[3]. The reason is that compared with the securitized real estate debt – MBS/CMBS, REITs faced a number of issues. Prior to 1986, according to law, REITs were prohibited from both operating and managing their own real estate. Therefore, third parties were hired to supply management services. However, investors were concerned that the potential severe agency problem -- economic interests of third-party managers might differ from those of REIT management and shareholders. The year of 1986 is one milestone in the REITs history (Cannon and Vogt, 1995; Chan et al., 2002; Fickes, 2006). The 1986 Tax Reform Act removed restrictions that prevented REITs from operating and managing their properties. As a result, economics instead of tax law began to govern real estate development and investment decisions (Fickes, 2006). Although on one hand, the deregulation changes the external advisor operating model, on the other hand, the REITs was facing fiercer competition from the broad array of investment vehicles and capital shortage problem caused by the 1989 Financial Institutions Reform Act, which reduced the ability of banks and savings and loans to invest in real estate. Thus, REITs was not growing dramatically in the late 1980s.

Unlike the MBS/CMBS market, the REITs market didn't take off unless the announcement of Revenue Reconciliation Act of 1993, which is the most important milestone for REITs history. Prior to 1993, to be qualified as a REIT, more than 50 percent of its shares cannot be owned by five or fewer individuals. REITs are especially attractive vehicles for pension investment in real estate since their dividends are excluded from unrelated business taxable income and their shares offer a more realistic exit strategy than do interests in pension commingled funds (Brandon, 1997). However, pension fund was treated as a single individual even if it had

[3]" Historical REIT Industry Market Capitalization: 1972-2006", NAREIT, website: http://www.nareit.com/library/industry/marketcap.cfm (Access on 5th November, 2007)

many participants. Because of the five-or-fewer rule, pension funds were restricted from REIT holdings. The 1993 Revenue Reconciliation Act entitles REITs to be owned by an individual pension fund and count the number of its participants as number of individuals (Brandon, 1997; Craft, 2001; Fickes, 2006). It relaxed the main constraint facing REITs, thus greatly spurs the interest by pension funds and other institutional investors in the REIT market and substantially increased institutional ownership and began to grow as a mainstream investment option (Below et al. 2000; Crain et al, 2000; Fickes, 2006). New capital of REITs raised increased from $6.5 billion in 1992 to $18.3 billion in 1993 and market capitalization doubled from $16 billion to $32 billion in the same year (Glascock et al., 2000). The market capitalization in 1992 is 15.91 billion U.S. dollars, while in 2006 it reaches 438.07 billion, which records a 26.72% growth rate per year (NAREIT data). Chan et al (1998) find institutional ownership in REITs ranged from 12% to 14% in the period of 1986 to 1992, and it increased to 30% in 1995. Ling and Ryngaert (1997) document that the average institutional holding of Equity REIT IPOs issuance had increased substantially from 10.1% during the 1980-1988 period to 41.7% during the 1991-94 period. A larger and more liquid REITs market is helpful to create discipline and transparency by higher analyst coverage and evaluation of rating agencies, thus, improve the performance of REITs and lower the capital cost for REITs. Based on these factors, we expect a more efficient market with lower betas, a measure of volatility or risk. Another hypothesis is that REITs return is supposed to become more akin to their unsecuritized real estate. The predictability of REITs will be less due to the efficiency enhancement since 1993.

3. Literature Review

Return behavior is one of the most controversial areas in finance literature. Because of the different methodologies, data and sample periods, the studies on the returns behavior of REITs report different even conflicting conclusions.

In the topic of stock performance, some recent studies (such as Chan et al, 1998) report that REITs perform no better or worse than the stock market, while several other studies report

that REITs perform worse than the stock market (such as Wang et al, 1995). In the topic of risk characteristics and pricing, some studies such as Liao and Mei (1998) report that return of Equity REITs behaves differently with that of stocks and bonds. Nelling and Gyourko (1998) use time-series model and report that risk structure of the REIT market is different from that of the general stock market. The probable reason as they explain, is partially because a REIT's primary source of income is from long-term leases or loans in an existing portfolio of properties, then its cash flows are almost certainly more stable and predictable than those of, say, a software producer. However, Liu and Mei (1992) and Mei and Lee (1994) report that they cannot find evidence to support market segmentation (significant difference between REITs and the stock market) and thus they suggest that real estate stocks are not good instruments to help diversify stock market risk. Using multifactor asset pricing model, Ambrose et al. (1992), Li and Wang (1995), and Lee and Chiang (2004) also report that REITs market is integrated with the general market.

So far, empirical studies of the REITs return behavior have followed two divergent streams: Time-series approaches and risk based approaches (asset pricing models).

The time-series approach has become one of the common used methodologies on finance research since the findings of long-term reversal (DeBondt and Thaler, 1985 and 1987), short-term reversal (Jegadeesh, 1990) (Lehmann, 1990), and intermediate-term momentum (Jegadeesh and Titman, 1993) in average stock returns. The time-series approaches find that the magnitude and persistence of future abnormal returns can be predicted based on past performance (returns, earnings, trading volume, etc.) and firm characteristics (firm size, book-to-market ratio, etc.). Only few studies use this approach in examining the return behavior of REITs. Mei and Gao (1995) report significant short-term return reversals in REITs. Nelling and Gyourko (1998) find that monthly Equity REIT returns are predictable based on past returns and capitalization. However, the arbitrage profits disappear after taking into account transaction costs and the bid-ask spread. Larson (2005) finds that short-horizon reversal is significant and larger when the initial REITs price decline is larger and the size or

trading volume is small. Graff and Young (1997) find mixed evidence with positive momentum effects only observed for twelve-month horizons. Ling et al (2000) find active-trading strategies outperform REIT buy-and-hold strategies. But they do not find a level of abnormal profit large enough to cover transaction costs. Stevenson (2002) tests mean reversal and momentum effect of REIT over both short-term and long-term horizon and provide little evidence in favor of such price behaviors.

Many studies indicate there are many average stock return patterns which can not be explained by the capital asset pricing model (CAPM) of Sharp (1964) and Lintner (1965). Fama and French (1996, 1997) argue that much of the CAPM average abnormal return can be explained by the Fama & French three-factor model (Fama and French, 1993). The three-factor model is cited as the theoretical basis of multi-factor asset pricing model.

Since Titman and Warga (1986), REITs became the subject of multi-factor pricing studies. Liu and Mei (1992) argue that multi-factor model is more appropriate than single factor models (such as, CAPM) in predicting the expected excess return of EREITs. Other studies, such as Gyourko and Keim (1992), Liang and Webb (1995), Li and Wang (1995), Liao and Mei (1998), and Swanson, Theis and Casey (2002) also use the multiple-factor asset-pricing framework to investigate the risk characteristics and the performance of REITs. Peterson and Hsieh (1997) report that the risk premium on equity REITs is related to the Fama-French three risk factors. Chiang et al (2004) argue that the Fama-French Book-to-Market factor helps to resolve the Beta puzzle confronted by traditional CAPM. Mei and Lee (1994) find the real estate factor in addition to both a stock factor and bond factor in REIT pricing. Clayton and Mackinnon (2003) decompose REIT return variability into components related to major stock, bond, and real estate-related return indices to examine the link between REIT, financial asset and real estate returns. He (2002) argues that the real estate factor could be regarded as a macro factor because real estate is a major asset class, and almost all firms have operating expenses under this category. A significant portion of corporate assets, on average as high as 25%, is real estate related.

The impact of important legislative events on REITs return behavior is also an interesting research topic. Some studies report behavior changes of REITs return before and after the 1993 Revenue Reconciliation Act. Wang et al (1995) report fewer institutional investors investing in REIT stocks than in the general stock market up to 1992. They argue that such an ownership structure negatively affects the value of REIT. Ott et al (2005) indicate that most of the new-era growth was caused by investment from established firms rather than new entry into the sector. They argue that this outcome occurred in response to concerns of outside investors and rating agencies that facilitate the building of more stable financial policies of REITs (Ott et al, 2005). New capital of REITs raised increased from $6.5 billion in 1992 to $18.3 billion in 1993 and market capitalization doubled from $16 billion to $32 billion in the same year (Glascock et al, 2000). By the end of 1998 the total market capitalization of REITs is more than $300 billion (NAREIT 1999 Statistics Digest).

Different conclusions are derived in previous studies. Glascock et al (2000) and Glascock and Ghosh (2000) find that REITs behave more like fixed-income government bonds prior to 1992 but more stocklike since 1992 due to the increased institutional ownership and sheer increases in size. Liao and Mei (1998) also document that REITs have a high sensitivity toward stock market portfolio thus cannot provide efficient diversification for the rest of the stock market. Their evidence is in contrast to the study of Ghosh et al (1996), which reports that REITs look less and less like stocks over time. Clayton and Mackinnon (2003) find that REITs gradually began to reflect the nature of the underlying, unsecuritized assets and become less dependent on market stock indices as the result of institutionalization of ownership since 1993.

4. Methodology and Data

4.1 Research Questions

The purpose of this research is to address the following three questions empirically.

First, this research will use the multi-factor risk based pricing framework to examine the risk premiums characteristics of REITs returns (All-REITs, Equity-REITs, Mortgage-REITs, and Hybrid-REITs) in the US since 1972 to 2007. Given the legal and regulatory infrastructure changes caused by the 1993 Revenue Reconciliation Act, together with the REITs market bust since the middle of 1990s, the key question is how and in what magnitude the 1993 Revenue Reconciliation Act impact the REITs return behavior. In particular, are REITs stock-like, bond-like or real-estate-like and thus are good instruments to help diversify stock market risk? Are REITs outperform or underperform the whole stock market portfolio? The results of this study are expected to provide insights to China's REITs market development strategy.

4.2 Hypotheses

Ambrose et al (2000) document that growth in average net real estate investments by large REITs outpaced small REITs by 13 percent between 1990 and 1997. They report no economies of scale are found over this period. Glascock and Ghosh (2000) cited Raiman's (1999) argument to explain that REITs that seek "merely to grow in size…will ultimately deter shareholder value. Ott (2005) indicates that most of the growth after 1993 was caused by investment from established firms rather than new entry into the sector. Thus, REITs are expected to behave more like big firms and have a smaller firm size effect (smaller coefficient of Fama-Frenth's SMB factor) after 1993 structure change.

The return patterns for REITs differs from that of other stocks due to the fundamentals of REITs are largely driven by local economies, each with its own unique rent mechanism. With the maturing of the REITs market in 1990s, especially, the increase of institutional holdings after 1993 has a significant impact on REITs performance. REITs become more liquid and the information of local economies become more available to investors. This change means the REITs market becomes more efficiently reflect the unique performance information of its underlying assets rather than solely depend on the information of whole stock market. Thus, I hypothesize that after 1993 REITs behave more like real estate and become less stocklike.

Another major change in the REITs market that occurred in the 1990s is change in management style. In contrast to the passive investment style that was widely used to manage REITs before 1990, REITs post-1990 period are more actively managed, which is likely to make them more difficult to value (Chui et al, 2003). So, the REITs return is expected to be more compatible to fixed-income securities (T-bonds or Corporate bonds) before 1993 when REITs were managed passively and become less bondlike after 1993.

Finally, Chan et al (1998) and Ott et al (2005) report that the increased institutional ownership improves the performance of REIT stocks after 1993. So, the performance of excess REITs returns in post-1993 period is expected to outpace that in pre-1993 period.

4.3 Data Sample

Data for this study covers the period from January 1972 through March 2007. My analysis employs monthly and quarterly data. The data sources are as follows.

Table 1: Data Description (1972-2007)

Data	Source (Website)	Original Frequency	Available Period
REITs indices	NAREIT (http://www.nareit.com/)	Monthly	01/1972–03/2007
Four-week T-Bill	Ibbotson and Associates, Inc.	Monthly	01/1972–03/2007
Fama-French's three factors (stock market excess return, size factor and B/M factor)	Kenneth R. French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)	Monthly; Quarterly	01/1972–03/2007; Q1/1972–Q1/2007
Constant-maturity 10-year T-note rate and Secondary Market six-month T-bill rate	Fed. Reserve Bank at St. Louis (http://research.stlouisfed.org/)	Monthly	01/1972–03/2007
Moody's Seasoned Aaa and Baa corporate bond	Moody's Investors Service (http://www.moodys.com/)	Monthly	01/1972–03/2007
NCREIF Property Index	NCREIF (http://www.ncreif.com/)	Quarterly	Q1/1977–Q1/2006
Seasonally adjusted Consumer Price Index	Bureau of Labor Statistics, U.S. Department of Labor (http://www.bls.gov/)	Monthly	01/1972–03/2007

REITs indices data (including All-REITs, Equity-REITs, Mortgage-REITs, and Hybrid-REITs) are obtained from Association of Real Estate Investment Trusts (NAREIT). Four-week Treasure Bill return collected from Ibbotson and Associates, Inc and is used as Risk-free rate of return in this study. Fama-French's three factors (stock market excess return, size factor

SMB, and B/M factor HML) which are created from CRSP database are collected from Kenneth R. French's website. Return of Constant-maturity 10-year Treasury note and the six-month Treasury bill are obtained from Federal Reserve Bank at St. Louis. Data of long-term Aaa corporate bonds and Baa corporate bonds are the Moody's Seasoned Aaa and Baa Corporate Bond Yield and they are obtained from the Moody's Investors Service. The quarterly NCREIF Property Index (NPI) is collected from National Council of Real Estate Investment Fiduciaries (NCREIF). Seasonally adjusted Consumer Price Index (CPISA) is obtained from Bureau of Labor Statistics, U.S. Department of Labor. Other data sample information is illustrated in Table 1.

4.4 Methodology

The study employs a multi-factor risk based model in which the excess return on REITs indices is specified as a linear function of stock, bond, and real estate factors:

$$r_{reits} = \alpha + b_1 r_{stock} + b_2 r_{bond} + b_3 r_{re} + \varepsilon \quad (1)$$

The dependent variable r_{reits} is the spread between return of REITs indices and risk-free rate of return (R_{REITs}-R_f, excess REITs return).

$$r_{reits} = R_{REITs} - R_f \quad (2)$$

REITs index returns R_{REITs} include returns on NAREIT's All-REITs, Equity-REITs, Mortgage-REITs, and Hybrid-REITs index. R_f is risk-free rate of return (four-week T-Bill return). The independent variables are widely used in studies concentrating on security returns. They consist of three stock market factors, two bond factors, and one real estate factor. r_{stock} is the 1×3 vector of the stock factors; r_{bond} is the 1×2 vector of the stock factors; and r_{re} is the real estate factor. b_1, b_2 and b_3 are 3×1 vector, 2×1 vector and 1×1 vector of coefficients respectively. α is constant. ε is regression error term.

The common practice uses the average historical factor premiums as a proxy for the estimated factor premiums.

Stock Market Factors

Fama and French (1993 and 1995) find that two classes of stocks tend to do better than the market as a whole: (i) small caps and (ii) stocks with a high book-value-to-price ratio. Fama and French regard such high returns as a reward for taking on high risk. Thus, they add these two factors to CAPM model.

Fama-French's three factors are: (1) the excess return on a broad market portfolio R_m-R_f, defined as the return on NYSE, AMEX and NASDAQ value-weighted stock index less the risk free rate of return; (2) size factor *SMB* (small minus big), defined as the difference between the return on a portfolio of small stocks and the return on a portfolio of large stocks; and (3) book-to-market factor *HML* (high minus low), defined as the difference between the return on a portfolio of high book-to-market stocks and the return on a portfolio of low book-to-market stocks. Thus, the stock market risk factor premium could be interpreted as the following:

$$b_1 r_{stock} = \beta_1 (R_m - R_f) + \beta_2 SMB + \beta_3 HML \qquad (3)$$

R_m-R_f, *SMB*, and *HML* are the proxy of the excess market portfolio return, firm size factor, and the book-to-market factor.

By the way *SMB* and *HML* are defined, the corresponding coefficients β_2 and β_3 have values on a scale of roughly 0 to 1. $\beta_2 = 1$ would be a small cap portfolio, $\beta_2 = 0$ would be large cap, $\beta_3 = 1$ would be a portfolio with a high book-to-market ratio, etc. If the REITs act more like big firms and less like general stocks in the period of post-1993, I expect that the regression coefficient of *SMB* would be bigger and coefficient of R_m-R_f would be smaller than the pre-1993's.

Bond Market Factors

Two bond market risk factors used in this study are the spread between yields of the constant-maturity 30-year Treasury note and the six-month Treasury bill (*TERM*), and the spread between the yields on long-term Baa corporate bonds and Aaa corporate bonds

(*RISK*).

The treasury term spread *TERM* acts as the proxy of the possible increase in interest rates. The corporate bond yield spread *RISK* acts as the proxy of credit or default risk. Changes in *RISK* could be interpreted as reflecting shifts in the probability of default. Such similar technique has been used by Bradley, Gabriel and Wohar (1995), Peterson and Hsieh (1997), Liao and Mei (1998), Li and Wang (1995), and Swanson, Theis and Casey (2002).

The bond market risk factor premium could be interpreted as the following equation:

$$b_2 r_{bond} = \beta_4 TERM + \beta_5 RISK \qquad (4)$$

If the REITs market is less bondlike after 1993, I expect that the regression coefficients of *TERM* and *RISK* would be smaller than those of before 1993.

Real Estate Market Factor

REITs returns are expected to be correlated to the performance of unsecuritized real estate market since 75 percent of REITs assets must be real estate related and 75 percent of their income must come from rents or mortgage interest. Particularly, after the 1993 Revenue Reconciliation Act, as mentioned before, the REITs market is hypothesized to be more real-estate-like.

The most widely used benchmark of real estate performance is the NCREIF Property Index (NPI). Glascock et al (2000) find REITs are cointegrated with NPI in the period of 1977-1997. However, some studies reports that the NPI returns probably don't reflect true market risk as the result of both appraisal smoothing bias and selected bias (concentrated on only institutional grade properties). These biases limit the ability of the NPI to provide timely and precise information of market behavior (Clayton and Mackinnon, 2003). Gyourko and Keim (1992) find four-quarter lagged E-REIT returns are particularly strong predictors of the real estate return.

In this study, I simply move NPI index four-quarter back to act as the proxy of real estate performance and use the difference between the return on adjusted NPI (ANPI) and risk free

rate of return (R_{ANPI}-R_f, the average excess return of real estate market) to proxy the real estate risk factor r_{re}.

Gyourko and Linneman (1988) and Glascock et al (2000) document a positive relationship between unsecuritized real estate and inflation. The evidence implies that the change of the consumer price index has impacts on the performance of REITs indices. Thus, I employ the change rate of seasonally adjusted CPI (*INF*, inflation) as an alternative real estate risk factor.

$$r_{re} = R_{ANPI} - R_f \quad \text{or} \quad r_{re} = INF \tag{5}$$

If the REITs market behaves more like unsecuritized real estate market after 1993, the regression results of REITs returns are expected to be more highly correlated to real estate factor (R_{ANPI}-R_f or *INF*).

Substituting the equation (2), (3), (4) and (5) into (1), I derive the multi-factor risk based regression models for REITs as follows:

Model 1:

$$R_{REITs} - R_f = \alpha + \beta_1(R_m - R_f) + \beta_2 SMB + \beta_3 HML + \beta_4 TERM + \beta_5 RISK + \beta_6 INF + \varepsilon \tag{5}$$

Model 2:

$$R_{REITs} - R_f = \alpha + \beta_1(R_m - R_f) + \beta_2 SMB + \beta_3 HML + \beta_4 TERM + \beta_5 RISK + \beta_6(R_{ANPI} - R_f) + \varepsilon \tag{6}$$

5. Empirical Results

Table 2 and Table 3 present the summary statistics for the dependent and independent variables in monthly and quarterly frequency for the period from March 1972 to March 2007.

Both tables reveal that in the period of 1972-1992 (subperiod I), mean excess return of the general stock market is much larger than that of All-REITs, Mortgage-REITs, and Hybrid-REITs, but slightly less than the Equity-REITs excess return. However, in the period of 1993 through 2007 (Sub-period II), excess return of general stock market is less than that of all kinds of REITs. Also, in the post-1993 period, each unit of All-REITs excess return bears smaller risks (standard deviation) than the stock market. It means REITs as a whole are less volatile than the whole market. This evidence is consistent with previous studies (e.g. Li and Wang, 1995, Peterson and Hsieh, 1997, and Liao and Mei, 1998).

Table 2 and Table 3 also report the autocorrelations of all dependent and independent variables. The bond factors and real estate factors have larger and more persistent autocorrelations than the stock market factors and excess REITs returns. The larger correlations are between the *TERM* and real estate factor *INF* (-0.43 in Table 2 and -0.51 in Table 3), and between the R_m-R_f and *SMB*, and between the R_m-R_f and *HML*. However, there is no evidence of supposed high positive correlation between *INF* and R_{ANPI}-R_f. Generally, the size of the correlations among the independent variables shows that the collinearity should not be a big concern.

Table 4 reports the correlation coefficients between monthly REITs returns and monthly excess stock market return from January 1972 to March 2007. I find that REITs are less correlated with stock market after 1993 in that the correlations tend to weaken overtime. This finding is also confirmed by following regression results.

Table 2: Summary Statistics for the Dependent and Independent Variables (Monthly Frequency)

Variables		Mean	Std. dev.	Autocorrelations at Lag 1	Lag 2	Lag 4	Lag 12	Correlation Coefficients R_m-R_f	*SMB*	*HML*	*TERM*	*RISK*	*INF*
Panel A: From January 1972 to March 2007													
Dependent Variable	**All-REITs**	0.50	4.44	0.06	-0.01	0.03	0.13						
	Equity-REITs	0.69	4.00	0.08	-0.01	-0.05	0.13						
	Mortgage-REITs	0.21	5.84	0.04	0.04	0.05	0.11						
	Hybrid-REITs	0.39	5.51	0.01	0.03	0.10	0.14						
Independent Variable	R_m-R_f	0.52	4.49	0.04	-0.04	-0.05	0.02	1					
	SMB	0.21	3.08	0.06	0.07	-0.05	0.08	0.28	1				
	HML	0.41	3.30	0.13	0.05	0.03	0.06	-0.35	-0.23	1			
	RISK	0.08	0.03	0.96	0.91	0.84	0.58	0.10	0.10	0.02	1		
	TERM	0.12	0.10	0.96	0.91	0.81	0.46	0.11	0.11	0.02	0.13	1	
	INF	0.38	0.33	0.63	0.51	0.48	0.38	-0.18	-0.04	0.06	0.14	-0.43	1
Panel B: Sub-period I (January 1972 to December 1992)													
Dependent Variable	**All-REITs**	0.22	4.81	0.08	-0.04	0.06	0.16						
	Equity-REITs	0.50	4.10	0.13	-0.05	-0.05	0.18						
	Mortgage-REITs	-0.12	5.68	0.02	-0.04	0.06	0.14						
	Hybrid-REITs	0.18	5.99	-0.04	0.02	0.12	0.13						
Independent Variable	R_m-R_f	0.46	4.76	0.05	-0.05	-0.04	0.04	1					
	SMB	0.17	2.86	0.14	0.09	-0.01	0.21	0.32	1				
	HML	0.46	2.74	0.15	0.06	-0.02	0.05	-0.42	-0.06	1			
	RISK	0.09	0.03	0.95	0.88	0.79	0.41	0.20	0.13	-0.01	1		
	TERM	0.11	0.10	0.95	0.88	0.76	0.42	0.18	0.08	0.01	0.12	1	
	INF	0.49	0.34	0.65	0.59	0.46	0.35	-0.22	-0.07	0.10	-0.09	-0.64	1
Panel B: Sub-period I (January 1993 to March 2007)													
Dependent Variable	**All-REITs**	0.91	3.79	-0.02	0.06	-0.07	0.05						
	Equity-REITs	0.97	3.83	-0.03	0.06	-0.06	0.04						
	Mortgage-REITs	0.71	6.04	0.06	0.14	0.02	0.06						
	Hybrid-REITs	0.69	4.73	0.12	0.05	0.05	0.19						
Independent Variable	R_m-R_f	0.63	4.08	0.02	-0.04	-0.08	0.00	1					
	SMB	0.27	3.39	-0.03	0.04	-0.09	-0.06	0.23	1				
	HML	0.32	4.00	0.12	0.04	0.07	0.04	-0.30	-0.38	1			
	RISK	0.06	0.02	0.95	0.89	0.79	0.45	-0.07	0.12	0.04	1		
	TERM	0.12	0.09	0.98	0.95	0.89	0.46	-0.03	0.15	0.04	0.32	1	
	INF	0.21	0.22	0.22	-0.27	0.01	-0.21	-0.10	0.01	-0.01	-0.08	-0.03	1

Note: (1) All dependent variables are excess returns; (2) Data are in monthly frequency.

Table 3: Summary Statistics for the Dependent and Independent Variables (Quarterly frequency)

Variables		Mean	Std. Dev.	Autocorrelations at Lag 1	Lag 2	Lag 4	Lag 12	Correlation Coefficients R_m-R_f	*SMB*	*HML*	*TERM*	*RISK*	*INF*	R_{ANPI}-R_f
Panel A: Entire Period (March 1972 to March 2007)														
Dependent Variable	**All-REITs**	1.56	8.60	0.06	0.00	0.06	-0.14							
	Equity-REITs	2.11	7.43	0.04	-0.01	0.07	-0.12							
	Mortgage-REITs	0.77	11.51	0.07	0.09	0.10	-0.12							
	Hybrid-REITs	1.28	10.84	0.09	-0.03	0.13	-0.11							
Independent Variable	R_m-R_f	1.70	8.69	0.02	-0.07	-0.01	-0.03	1						
	SMB	0.79	5.93	-0.04	0.13	0.09	0.06	0.46	1					
	HML	1.21	6.48	0.15	-0.03	0.06	-0.01	-0.38	-0.09	1				
	RISK	0.25	0.09	0.90	0.79	0.60	0.20	0.16	0.16	0.01	1			
	TERM	0.35	0.29	0.90	0.75	0.48	-0.36	0.17	0.19	0.05	0.13	1		
	INF	1.15	0.85	0.67	0.64	0.56	0.29	-0.25	-0.02	0.01	0.17	-0.51	1	
	R_{ANPI}-R_f	0.97	1.86	0.75	0.72	0.69	0.08	0.13	0.21	-0.03	-0.21	0.05	-0.09	1
Panel B: Sub-period I (March 1972 to December 1992)														
Dependent Variable	**All-REITs**	0.74	9.44	0.09	-0.07	0.11	-0.15							
	Equity-REITs	1.55	7.61	0.10	-0.14	0.16	-0.11							
	Mortgage-REITs	-0.29	10.87	0.07	-0.02	0.09	-0.18							
	Hybrid-REITs	0.65	11.60	0.03	-0.09	0.10	-0.10							
Independent Variable	R_m-R_f	1.43	9.13	0.08	-0.18	-0.03	-0.07	1						
	SMB	0.70	6.16	-0.07	0.11	0.26	0.22	0.48	1					
	HML	1.35	5.74	0.02	0.04	0.08	0.06	-0.42	-0.05	1				
	RISK	0.29	0.10	0.86	0.71	0.44	-0.20	0.32	0.19	-0.04	1			
	TERM	0.35	0.30	0.88	0.71	0.46	-0.31	0.27	0.11	0.04	0.13	1		
	INF	1.49	0.89	0.71	0.60	0.49	0.06	-0.30	-0.01	0.03	-0.11	-0.75	1	
	R_{ANPI}-R_f	0.22	1.95	0.64	0.61	0.64	0.08	0.07	0.34	-0.01	0.02	-0.06	0.19	1
Panel C: Sub-period II (March 1993 to March 2007)														
Dependent Variable	**All-REITs**	2.78	7.08	-0.05	0.15	-0.10	-0.06							
	Equity-REITs	2.93	7.14	-0.07	0.17	-0.10	-0.08							
	Mortgage-REITs	2.33	12.31	0.05	0.20	0.10	-0.04							
	Hybrid-REITs	2.21	9.63	0.20	0.07	0.20	-0.13							
Independent Variable	R_m-R_f	2.08	8.08	-0.10	0.15	0.03	0.08	1						
	SMB	0.93	5.62	0.02	0.15	-0.19	-0.12	0.43	1					
	HML	0.99	7.49	0.27	-0.08	-0.01	-0.07	-0.35	-0.15	1				
	RISK	0.19	0.05	0.88	0.75	0.48	0.23	-0.12	0.25	0.08	1			
	TERM	0.36	0.27	0.94	0.81	0.47	-0.46	-0.02	0.32	0.05	0.32	1		
	INF	0.64	0.45	-0.28	-0.02	-0.13	0.06	-0.19	0.00	-0.10	-0.11	-0.05	1	
	R_{ANPI}-R_f	1.88	1.26	0.82	0.80	0.55	-0.40	0.30	0.08	-0.07	0.18	0.28	-0.02	1

Note: (1) All dependent variables are excess returns; (2) Data are in quarterly frequency.

Table 4: Correlation Coefficients between Excess Returns on REITs Indices and Excess Stock Market Return (1972 through Mar 2007)

	Correlation Coefficients with Excess Stock Market Return in					
	1972-1982	**1983-1987**	**1988-1992**	**1993-1999**	**2000-2007**	**Entire Period**
All-REITs	0.72	0.71	0.65	0.43	0.31	0.57
Equity-REITs	0.70	0.67	0.69	0.40	0.30	0.55
Mortgage-REITs	0.66	0.58	0.38	0.45	0.30	0.49
Hybrid-REITs	0.65	0.66	0.55	0.33	0.28	0.50

Note: (1) All variables are excess returns; (2) Data are in monthly frequency.

CAPM Model

Table 5 and Table 6 present the regression statistics of CAPM model for REITs returns (in monthly and quarterly frequency respectively) from 1972 to 2007. Except in subperiod II (1993-2007) for Mortgage-REITs and Hybrid-REITs returns in Table 6 (quarterly frequency results), the F-statistics for the all REITs returns in the entire sample period, sample subperiod I (1972-1992) and subperiod II (1993-2007) are significant at the 5% percent level.

Chow test for almost all REITs indices are significant at 5% except for Hybrid-REITs in Table 5 (monthly frequency results) whose Chow test P-value is 9%. This result indicates that a structural change takes place with respect to the subperiod I and II samples. The regression coefficient on excess market return drops dramatically, for example, in Table 6 from 0.79 in subperiod I to 0.31 in subperiod II for All-REITs index, and so do those of Equity-, Mortgage- and Hybrid-REITs. As expected, it indicates the REITs market is less like general stocks in the post-1993 period.

The adjusted R^2 of different REITs indices ranges from 0.44 to 0.63 in subperiod I and 0.01 to 0.11 in subperiod II of Table 6, which means that the sole stock market variable $R_m - R_f$ cannot capture the variation of REITs returns in post-1993, so for Table 5. The implication is that the REITs market less depends on the information of whole stock market and behaves less stocklike after the 1993 Act.

Table 5: Regression Results of CAPM for REITs Returns (Monthly Frequency)

Dependent Variable	Period	Coefficient		Model Summary						
		Constant	$R_m - R_f$	Obs. No.	Ad. R^2	F-test	DW-test	AIC	BIC	SBC
All REIT	**Entire period**	0.20	0.56	423	0.32	204.0**	2.16##	1096.2	1098.2	1104.3
		(1.12)	(14.28)**							
	Subperiod I	-0.10	0.69	252	0.46	216.4**	2.31##	637.7	639.8	644.8
		(-0.43)	(14.71)**							
	Subperiod II	0.72	0.31	171	0.11	21.2**	2.08##	438.5	440.6	444.8
		(2.58)**	(4.60)**							
	Chow-Test = 12.18		**P value** = 0.00							
E-REIT	**Entire period**	0.43	0.49	423	0.30	183.2**	2.10##	1022.7	1024.8	1030.8
		(2.64)**	(13.54)**							
	Subperiod I	0.23	0.59	252	0.46	214.5**	2.16##	558.5	560.5	565.6
		(1.23)	(14.65)**							
	Subperiod II	0.78	0.30	171	0.09	18.5**	2.12##	444.8	446.9	451.1
		(2.77)**	(4.30)**							
	Chow-Test = 8.08		**P value** = 0.00							
M-REIT	**Entire period**	-0.12	0.63	423	0.24	130.7**	2.00##	1381.0	1383.0	1389.1
		(-0.48)	(11.43)**							
	Subperiod I	-0.44	0.70	252	0.34	128.6**	2.31##	774.0	776.0	781.1
		(-1.50)	(11.34)**							
	Subperiod II	0.39	0.50	171	0.11	21.8**	1.77##	597.2	599.3	603.5
		(0.89)	(4.67)**							
	Chow-Test = 2.42		**P value** = 0.09							
H-REIT	**Entire period**	0.07	0.61	423	0.25	140.2**	2.16##	1325.6	1327.6	1333.7
		(0.28)	(11.84)**							
	Subperiod I	-0.17	0.77	252	0.37	148.9**	2.47##	787.1	789.2	794.2
		(-0.57)	(12.20)**							
	Subperiod II	0.51	0.30	171	0.06	12.1**	1.76#	522.7	524.8	529.0
		(1.43)	(3.47)**							
	Chow-Test = 9.88		**P value** = 0.00							

Note: (1) This table reports the regression statistics of CAPM: $R_{REITs} - R_f = \alpha + \beta(R_m - R_f) + \varepsilon$

where $R_{REITs} - R_f$ is the excess REITs return; $R_m - R_f$ is the excess stock market return; and R_f is the risk free rate of return measured by four-week T-notes rate.

(2) T statistics are shown in parentheses below the coefficients of independent variables.

(3) T statistics and F statistics superscripted by * are significant at 10% level and ** are significant at 5% level. Durbin Watson statistics superscripted by ## means that the test doesn't reject the null hypothesis that first order autocorrelation coefficient is equal zero at 5% significance level; # means that the test is inconclusive; otherwise, reject the null at 5% significance level.

(4) AIC represents the Akaike Information Criterion, BIC represents the Bayesian Information Criterion), and SBC is Schwarz Bayesian Criterion.

Table 6: Regression Results of CAPM for REITs Returns (Quarterly Frequency)

Dependent Variable	Period	Coefficient		Model Summary						
		Constant	$R_m - R_f$	Obs. No.	Ad. R^2	F-test	DW-test	AIC	BIC	SBC
All REIT	**Entire period**	0.50	0.63	141	0.40	93.3**	1.91##	537.3	539.4	543.2
		(0.88)	(9.66)**							
	Subperiod I	-0.39	0.79	84	0.58	114.1**	2.16##	306.9	309.0	311.8
		(-0.58)	(10.68)**							
	Subperiod II	2.14	0.31	57	0.11	7.8**	1.79##	218.6	220.7	222.7
		(2.34)**	(2.80)**							
	Chow-Test = 7.91		**P value** = 0.00							
E-REIT	**Entire period**	1.19	0.54	141	0.40	93.1**	1.88##	496.1	498.2	502.0
		(2.40)**	(9.65)**							
	Subperiod I	0.60	0.66	84	0.63	139.6**	1.95##	260.3	262.4	265.2
		(1.17)	(11.82)**							
	Subperiod II	2.29	0.31	57	0.10	7.5**	1.83##	219.8	221.9	223.8
		(2.48)**	(2.74)**							
	Chow-Test = 5.39		**P value** = 0.01							
M-REIT	**Entire period**	-0.28	0.62	141	0.21	38.9**	1.70#	657.1	659.1	663.0
		(-0.32)	(6.24)**							
	Subperiod I	-1.43	0.79	84	0.44	65.3**	2.09##	354.7	356.8	359.5
		(-1.58)	(8.08)**							
	Subperiod II	1.75	0.28	57	0.02	1.90	1.67##	287.3	289.4	291.4
		(1.05)	(1.37)							
	Chow-Test = 4.03		**P value** = 0.02							
H-REIT	**Entire period**	0.15	0.67	141	0.28	55.6**	1.74##	627.7	629.7	633.6
		(0.19)	(7.45)**							
	Subperiod I	-0.65	0.91	84	0.50	84.5**	2.30##	355.3	357.4	360.2
		(-0.71)	(9.19)**							
	Subperiod II	1.78	0.21	57	0.01	1.70	1.42	259.4	261.6	263.5
		(1.36)	(1.30)							
	Chow-Test = 7.88		**P value** = 0.00							

Note: (1) This table reports the regression statistics of CAPM: $R_{REITs} - R_f = \alpha + \beta(R_m - R_f) + \varepsilon$

where $R_{REITs} - R_f$ is the excess REITs return; $R_m - R_f$ is the excess stock market return; and R_f is the risk free rate of return measured by four-week T-notes rate.

(2) T statistics are shown in parentheses below the coefficients of independent variables.

(3) T statistics and F statistics superscripted by * are significant at 10% level and ** are significant at 5% level. Durbin Watson statistics superscripted by ## means that the test doesn't reject the null hypothesis that first order autocorrelation coefficient is equal zero at 5% significance level; # means that the test is inconclusive; otherwise, reject the null at 5% significance level.

(4) AIC represents the Akaike Information Criterion, BIC represents the Bayesian Information Criterion), and SBC is Schwarz Bayesian Criterion.

Multi-factor Risk Based Models

Since the regression results in monthly frequency are generally similar with those in quarterly frequency, I only exploit the six-factor regression of Model 1 and Model 2 in quarterly frequency in this section and present the OLS regression results in Table 7 and Table 8 , and present the GMM regression results in Table 9 and Table 10 respectively.

In Table 7 and Table 8, F statistics and Durbin Watson statistics for the four classes of REITs indices in the entire sample period, sample subperiod I (1972-1992) and subperiod II (1993-2007) are significant at the 5% percent level. So it is confident to reject the null hypotheses that the joint coefficients on independent variables are not different from zero and the model has significant autocorrelation in error term. In Table 9 and Table 10, Overidentifying Restrictions Test (O-R Test) which is distributed as a chi-square. P-values below the parameter for the O-R Test measure the significant level of null hypothesis that the moment condition restrictions could be satisfied. We can not reject the null that the overidentifying restrictions fit the model because all P-values are higher than significance level 0.05. Godfrey Test represents Godfrey Lagrange Multiplier Test for serially correlated (autocorrelated) residuals. 1^{st}- and 2^{nd}-order Godfrey Test statistics are reported. The results indicate that we can reject the null that the residuals are autocorrelated at the 2^{nd} order. OLS regression results are quite similar with those of GMM, so we only talk about OLS below.

These multi-factor models are more appropriate than CAPM in pricing the expected excess return of REITs. The adjusted R^2 of Model 1 and 2 are much higher than that of CAPM, particularly in post-1993 period. For example, the adjusted R^2 for All-REITs index in samples of subperiod II is 0.38 in Model 1 and 0.39 in Model 2, whereas that of CAPM is only 0.11. The result is consistent with previous studies (Liu and Mei, 1992; Liao and Mei, 1998).

It is noteworthy that in general the multi-factor risk based models have less explanatory power (adjusted R^2) for all types of REITs of post-1993 period than for pre-1993, especially more apparently for Equity- and Mortgage-REITs. For example, In Table 7 and Table 8, employing Model 2, the adjusted R^2 for Equity-REITs index is 0.36 in post-1993 compared to 0.70 in pre-1993 period. This result means firm idiosyncratic and/or sub-sector specific effects account for more of the excess REITs return variability after 1993.

Chow test for all classes of REITs indices are significant at 5% confidence level, which indicates that a structural change occurs between the subperiod I (1972-1992) and subperiod II (1993-2007). This also could be found in the comparison of return risk pattern between these two periods.

The constant terms in post-1993 period are higher in general than those in the pre-1993 period. That means the REITs market performance gets improved in the post-1993 period partially due to the increased participation of institutional investor. However, there is no evidence to support the undervalued or overvalued performance of REITs compared with the general stock market after 1993.

The coefficients associated with the market factor R_m-R_f decreases apparently after 1993. The phenomenon of less sensitivity to the market factor indicates that the stock market's explanatory power on REITs performance is diminishing. The result that the REITs have become less stocklike since 1993 is in contrast to the findings of most existing literature, such as Mei and Lee (1994), Liao and Mei (1998), Glascock et al (2000) and Glascock and Ghosh (2000), but is consistent with what reported by Ghosh et al (1996) and Clayton and Mackinnon (2003). The smaller loadings of R_m-R_f in the post-1993 period indicates that REITs have a very small sensitivity toward general stock market. This suggests that REITs might be good instruments to help diversify stock market risk.

The coefficients on size factor *SMB* at Model 1 and Model 2 are significant and more pronounced after 1993, especially for Mortgage-REITs and Hybrid-REITs. It probably means that the REITs behave more like small stocks. The evidence is opposite to my expected hypothesis and inconsistent with the study of Ambrose et al. (2000).

The coefficients on B/M factor *HML* are significant and record a substantial increase after 1993 for all REITs indices at both multi-factor models. It means that the REITs act more like "value" stocks (high B/M ratio stocks) rather than "growth" stocks (small B/M ratio ones). My result agrees with Peterson and Hsieh's (1997) findings.

Table 7 (Model 1) and Table 8 (Model 2) present different trends across time for coefficients on term factor *TERM* and default factor *RISK* of Equity-, Mortgage-, and Hybrid-REITs. Notably, almost all coefficients on *TERM* and *RISK* are not significantly different from zero,

which indicts that the REITs might be not sensitive to interest rate expectation. However, for the All-REITs, the coefficients on *TERM* and *RISK* for both models become less pronounced. Therefore, taking both *TERM* and *RISK* into account, it is likely that the whole REITs sector behave less like fixed-income government bonds and corporate bonds in post-1993 than in pre-1993. My finding is inconsistent with the results of Swanson, Theis and Casey (2002) which report that interest rate risk (rate spread between short-term and long-term treasuries) and credit risk (rate spread between commercial Baa bonds and short-term treasuries) have important impacts on REIT returns, and REITs are more sensitive to credit risk after 1993 Revenue Reconciliation Act.

Table 7 (Model 1) and Table 8 (Model 2) present consistent trend for the coefficients on real estate factors (R_{ANPI}- R_f and *INF*) after 1993. Although the coefficients have decreased for Mortgage- and Hybrid-REITs since 1993, they have increased for Equity-REITs and All-REITs which is a proxy for the performance of overall REITs sector. The fact that All- and Equity-REITs returns are more highly correlated to real estate factor indicates that the Equity-REITs market behaves more like unsecuritized real estate market after 1993 as reported by Clayton and Mackinnon (2003). The evidence of less stocklike and more real-estate-like tends to support the existence of market segmentation between REITs and the whole stock market. Also, noted that, all coefficients on real estate factors are not significantly different from zero, which indicts that the REITs are not highly sensitive to the their underlying assets.

It is interesting to note that I find no substantial evidence supporting divergent structural changes after the 1993 among Equity-REITs, Mortgage-REITs and Hybrid-REITs within the multi-factor risk based framework. Because different types of REITs are within the same industry and tend to be highly correlated: they operate in the same regulatory environment, exhibit similar behavior in the corporate finance arena, and thus tend to be similarly sensitive to macroeconomic information shocks and are exposed to similar industrial fluctuations.

Table 7: OLS Regression Results of Multi-factor Risk Based Model 1 for REITs Returns (Quarterly frequency)

Dependent Variable	Period	Coefficient							Model Summary						
		Constant	R_m- R_f	*SMB*	*HML*	*TERM*	*RISK*	*INF*	Obs. No.	Adj. R^2.	F-Test	DW-Test	AIC	BIC	SBC
All REIT	All	-1.17	0.58	0.43	0.48	1.33	6.79	-1.16	141	0.62	38.89**	2.01##	477.51	480.24	498.15
		(-0.76)	(8.63)**	(4.89)**	(6.25)**	(0.69)	(1.33)	(-1.72)*							
	Subperiod I	-5.32	0.72	0.42	0.47	3.71	9.10	0.11	84	0.75	42.50**	1.75##	267.41	270.67	284.43
		(-1.99)*	(8.90)**	(4.22)**	(4.51)**	(1.38)	(1.65)*	(0.12)							
	Subperiod II	-0.30	0.36	0.40	0.49	0.13	6.21	0.40	57	0.38	6.68**	2.38##	202.58	206.50	216.88
		(-0.08)	(3.07)**	(2.40)**	(4.49)**	(0.04)	(0.36)	(0.23)							
	Chow-Test = 10.47		**P value** = 0.00												
E-REIT	All	0.79	0.51	0.36	0.37	1.11	0.43	-0.68	141	0.57	32.09**	2.20##	452.80	455.53	473.45
		(0.56)	(8.27)**	(4.51)**	(5.31) **	(0.63)	(0.09)	(-1.11)							
	Subperiod I	0.23	0.59	0.36	0.25	1.70	-0.77	-0.33	84	0.73	38.91**	1.95##	236.73	239.98	253.74
		(0.10)	(8.80)**	(4.30)**	(2.92)**	(0.76)	(-0.16)	(-0.43)							
	Subperiod II	-0.13	0.36	0.38	0.47	-0.02	5.31	0.74	57	0.35	5.95**	2.39##	206.35	210.27	220.65
		(-0.03)	(2.97)**	(2.26)**	(4.25)**	(-0.00)	(0.30)	(0.41)							
	Chow-Test = 7.49		**P value** = 0.00												
M-REIT	All	-3.63	0.57	0.55	0.74	2.15	15.01	-2.09	141	0.49	23.67**	1.76##	599.98	602.70	620.62
		(-1.52)	(5.47)**	(4.04)**	(6.26)**	(0.73)	(1.90)*	(-2.02)**							
	Subperiod I	-10.43	0.70	0.45	0.59	4.89	20.70	0.21	84	0.65	26.41**	1.76##	319.98	323.23	336.99
		(-2.85)**	(6.34)**	(3.29)**	(4.17)**	(1.33)	(2.70)**	(0.17)							
	Subperiod II	0.29	0.31	0.66	0.84	3.91	6.12	-4.12	57	0.34	5.85**	2.00##	268.91	272.83	283.21
		(0.04)	(1.51)	(2.24)**	(4.34)**	(0.72)	(0.20)	(-1.31)							
	Chow-Test = 6.68		**P value** = 0.00												
H-REIT	All	-4.72	0.65	0.58	0.75	3.79	10.90	-0.46	141	0.60	35.50**	1.85##	550.91	553.63	571.55
		(-2.35)**	(7.45)**	(5.04)**	(7.63)**	(1.53)	(1.64)	(-0.53)							
	Subperiod I	-9.13	0.85	0.50	0.62	6.16	11.71	1.22	84	0.69	31.59**	2.06##	320.51	323.76	337.52
		(-2.49)**	(7.69)**	(3.69)**	(4.38)**	(1.68)*	(1.52)	(0.97)							
	Subperiod II	-5.31	0.32	0.63	0.87	2.48	19.98	1.02	57	0.56	12.67**	1.99##	218.47	222.39	232.78
		(-1.24)	(2.42)**	(3.35)**	(7.01)**	(0.71)	(1.01)	(0.50)							
	Chow-Test = 13.79		**P value** = 0.00												

Note: (1) This table reports the regression statistics of Model 1: $R_{REITs} - R_f = \alpha + \beta_1(R_m - R_f) + \beta_2 SMB + \beta_3 HML + \beta_4 TERM + \beta_5 RISK + \beta_6 INF + \varepsilon$

where R_{REITs} - R_f is excess REITs return; R_m- R_f is excess stock market return; R_f is the risk free rate of return measured by four-week T-notes rate; *SMB* is size factor; *HML* is B/M factor; *TERM* the spread between yields of the constant-maturity 10-year Treasury note and the six-month Treasury bill; *RISK* is the spread between the yields on long-term Aaa corporate bonds and Baa corporate bonds;; and *INF* is the inflation rate.

(2) T statistics are shown in parentheses below the coefficients of independent variables.

(3) T statistics and F statistics superscripted by * are significant at 10% level and ** are significant at 5% level. Durbin Watson statistics superscripted by ## means that the test doesn't reject the null hypothesis that first order autocorrelation coefficient is equal zero at 5% significance level; # means that the test is inconclusive; otherwise, reject the null at 5% significance level.

(4) AIC represents the Akaike Information Criterion, BIC represents the Bayesian Information Criterion), and SBC is Schwarz Bayesian Criterion.

Table 8: OLS Regression Results of Multi-factor Risk Based Model 2 for REITs Returns (Quarterly frequency)

Dependent Variable	Period	Coefficient							Model Summary						
		Constant	R_m- R_f	*SMB*	*HML*	*TERM*	*RISK*	R_{ANPI}-R_f	Obs. No.	Adj. R^2.	F-Test	DW-Test	AIC	BIC	SBC
All REIT	**All**	-2.49	0.52	0.37	0.44	1.32	6.52	0.51	117	0.54	23.25**	2.11##	386.11	388.99	405.44
		(-1.62)	(7.42)**	(3.70)**	(5.50)**	(0.76)	(1.27)	(1.90)*							
	Subperiod I	-4.64	0.66	0.39	0.38	1.66	10.91	0.32	64	0.70	25.81**	1.76##	187.77	191.46	202.89
		(-2.52)**	(7.50)**	(3.18)**	(3.25)**	(0.90)	(2.00)*	(1.12)							
	Subperiod II	0.08	0.28	0.45	0.47	-0.44	-0.86	0.80	53	0.39	6.56**	2.37##	190.03	194.11	203.82
		(0.02)	(2.27)**	(2.66)**	(4.37)**	(-0.12)	(-0.05)	(1.13)							
	Chow-Test = 8.81		**P value** = 0.00												
E-REIT	**All**	-0.57	0.48	0.35	0.38	1.09	1.84	0.45	117	0.50	20.57**	2.28##	379.38	382.26	398.72
		(-0.38)	(7.09)**	(3.61)**	(4.89)**	(0.65)	(0.37)	(1.72)*							
	Subperiod I	-0.58	0.60	0.33	0.24	1.36	0.97	0.43	64	0.70	24.97**	2.04##	174.49	178.18	189.61
		(-0.35)	(7.58)**	(3.03)**	(2.33)**	(0.82)	(0.20)	(1.66)*							
	Subperiod II	0.60	0.26	0.45	0.46	-0.62	-3.38	0.91	53	0.36	5.94**	2.37##	193.19	197.28	206.99
		(0.17)	(2.09)**	(2.58)**	(4.11)**	(-0.17)	(-0.18)	(1.25)							
	Chow-Test = 7.55		**P value** = 0.00												
M-REIT	**All**	-5.26	0.55	0.52	0.75	2.73	11.27	0.34	117	0.39	13.51**	1.80##	502.91	505.80	522.25
		(-2.08)**	(4.78)**	(3.14)**	(5.69)**	(0.96)	(1.33)	(0.78)							
	Subperiod I	-10.13	0.62	0.44	0.49	2.84	23.54	0.29	64	0.57	14.88**	1.68##	231.68	235.37	246.79
		(-3.91)**	(4.99)**	(2.54)**	(3.04)**	(1.09)	(3.06)**	(0.73)							
	Subperiod II	-3.87	0.47	0.56	0.88	3.40	26.02	-1.13	53	0.33	5.28**	2.14##	253.02	257.10	266.81
		(-0.63)	(2.09)**	(1.81)**	(4.46)**	(0.53)	(0.78)	(-0.88)							
	Chow-Test = 7.55		**P value** = 0.00												
H-REIT	**All**	-5.64	0.55	0.60	0.70	3.38	12.68	0.40	117	0.54	23.26**	1.90##	447.78	450.66	467.11
		(-2.83)**	(5.98)**	(4.57)**	(6.73)**	(1.50)	(1.90)*	(1.15)							
	Subperiod I	-6.73	0.77	0.52	0.49	2.20	15.24	0.49	64	0.62	18.45**	2.06##	234.34	238.03	249.45
		(-2.54)**	(6.03)**	(2.95)**	(2.93) **	(0.83)	(1.94)*	(1.18)							
	Subperiod II	-3.46	0.27	0.67	0.83	5.11	9.26	-0.18	53	0.58	12.93**	2.09##	201.59	205.67	215.38
		(-0.92)	(1.94)*	(3.55)**	(6.86)**	(1.28)	(0.45)	(-0.23)							
	Chow-Test = 13.88		**P value** = 0.00												

Note: (1) This table reports the regression statistics of Model 2: $R_{REITs} - R_f = \alpha + \beta_1 \left(R_m - R_f \right) + \beta_2 SMB + \beta_3 HML + \beta_4 TERM + \beta_5 RISK + \beta_6 \left(R_{ANPI} - R_f \right) + \varepsilon$

where R_{REITs} - R_f is excess REITs return; R_m- R_f is excess stock market return; R_f is the risk free rate of return measured by four-week T-notes rate; *SMB* is size factor; *HML* is B/M factor; *TERM* the spread between yields of the constant-maturity 10-year Treasury note and the six-month Treasury bill; *RISK* is the spread between the yields on long-term Aaa corporate bonds and Baa corporate bonds; and R_{ANPI}-R_f is the excess return on adjusted NPI (ANPI).

(2) T statistics are shown in parentheses below the coefficients of independent variables.

(3) T statistics and F statistics superscripted by * are significant at 10% level and ** are significant at 5% level. Durbin Watson statistics superscripted by ## means that the test doesn't reject the null hypothesis that first order autocorrelation coefficient is equal zero at 5% significance level; # means that the test is inconclusive; otherwise, reject the null at 5% significance level.

(4) AIC represents the Akaike Information Criterion, BIC represents the Bayesian Information Criterion), and SBC is Schwarz Bayesian Criterion.

Table 9: GMM Regression Results of Multi-factor Risk Based Model 1 for REITs Returns (Quarterly frequency)

Dependent Variable	Period	Coefficient							Model Summary				
		Constant	$R_m - R_f$	*SMB*	*HML*	*TERM*	*RISK*	*INF*	Obs. No.	Adj. R^2.	O-R Test	Godfrey Test 1	Godfrey Test 2
All REIT	**All**	-0.55	0.56	0.37	0.40	0.76	5.32	-1.12	139	0.61	12.61	2.68	4.46
		(-0.37)	(8.52)**	(4.14)**	(6.46)**	(0.45)	(1.19)	(-1.67)*			(0.40)	(0.10)	(0.11)
	Subperiod I	-3.03	0.67	0.40	0.37	1.64	7.30	-0.33	82	0.74	10.09	3.76	4.45
		(-1.34)	(8.93)**	(4.40)**	(3.94)**	(0.79)	(1.51)	(-0.40)			(0.61)	(0.05)	(0.11)
	Subperiod II	-0.85	0.33	0.42	0.44	-0.41	12.43	-0.14	57	0.37	14.17	4.35	4.40
		(-0.29)	(3.24)**	(2.23)**	(6.22)**	(-0.18)	(0.94)	(-0.11)			(0.29)	(0.04)	(0.11)
	Chow-Test = 9.99		**P value** = 0.00										
E-REIT	**All**	0.79	0.54	0.37	0.35	1.17	0.38	-0.90	139	0.57	11.48	3.45	4.60
		(0.66)	(8.86)**	(4.90)**	(6.05)**	(0.72)	(0.10)	(-1.51)			(0.49)	(0.06)	(0.10)
	Subperiod I	-0.68	0.61	0.37	0.27	2.26	-0.55	-0.07	82	0.74	9.45	0.60	0.70
		(-0.44)	(11.48)**	(5.81)**	(4.07)**	(1.17)	(-0.16)	(-0.12)			(0.66)	(0.44)	(0.71)
	Subperiod II	-1.23	0.32	0.42	0.43	-0.98	14.19	0.49	57	0.34	14.54	4.85	4.94
		(-0.42)	(3.04)**	(2.18)**	(5.62)**	(-0.42)	(1.08)	(0.38)			(0.27)	(0.03)	(0.08)
	Chow-Test = 7.67		**P value** = 0.00										
M-REIT	**All**	-1.23	0.56	0.48	0.61	1.12	6.20	-1.92	139	0.48	14.00	5.14	5.40
		(-0.58)	(5.69)**	(4.15)**	(5.57)**	(0.54)	(0.92)	(-2.29)**			(0.30)	(0.02)	(0.07)
	Subperiod I	-5.94	0.55	0.51	0.42	3.26	13.94	-0.79	82	0.63	8.41	5.46	5.46
		(-2.14)**	(5.28)**	(4.42)**	(3.39)**	(1.31)	(2.27)**	(-0.90)			(0.75)	(0.02)	(0.07)
	Subperiod II	2.98	0.40	0.63	0.83	1.45	-3.43	-4.14	57	0.33	11.55	0.97	1.06
		(0.65)	(2.12)**	(2.45)**	(6.28)**	(0.39)	(-0.17)	(-1.58)			(0.48)	(0.32)	(0.59)
	Chow-Test = 6.28		**P value** = 0.00										
H-REIT	**All**	-4.38	0.59	0.58	0.71	3.67	10.24	-0.47	139	0.59	4.84	1.58	1.61
		(-1.99)	(6.78)**	(4.42)**	(5.70)**	(1.62)	(1.68)*	(-0.51)			(0.96)	(0.21)	(0.45)
	Subperiod I	-7.51	0.79	0.47	0.57	4.63	10.95	0.97	82	0.68	12.20	1.95	2.12
		(-2.32)**	(9.00)**	(3.68)**	(3.66)**	(1.57)	(1.60)	(0.87)			(0.43)	(0.16)	(0.35)
	Subperiod II	-3.52	0.32	0.77	0.86	5.58	5.46	0.37	57	0.54	11.07	2.47	2.59
		(-1.23)	(3.22)**	(4.89)**	(11.55)**	(1.90)	(0.38)	(0.24)			(0.52)	(0.12)	(0.27)
	Chow-Test = 11.81		**P value** = 0.00										

Note: (1) This table reports the regression statistics of Model 1: $R_{REITs} - R_f = \alpha + \beta_1(R_m - R_f) + \beta_2 SMB + \beta_3 HML + \beta_4 TERM + \beta_5 RISK + \beta_6 INF + \varepsilon$

where $R_{REITs} - R_f$ is excess REITs return; $R_m - R_f$ is excess stock market return; R_f is the risk free rate of return measured by four-week T-notes rate; *SMB* is size factor; *HML* is B/M factor; *TERM* the spread between yields of the constant-maturity 10-year Treasury note and the six-month Treasury bill; *RISK* is the spread between the yields on long-term Aaa corporate bonds and Baa corporate bonds; and *INF* is the inflation rate.

(2) T statistics are shown in parentheses below the coefficients of independent variables. * means it is significant at 10% level and ** significant at 5% level.

(3) We use the dependent variables and their first and second order of lags as instruments and use Bartlett Kernel as proxy for Newey-West Kernel. O-R Test represents the Overidentifying Restrictions Test. Godfrey Test represents Godfrey Lagrange Multiplier Test for autocorrelated residuals. P-value is shown in parentheses below the test statistics. We would not reject the null hypothesis that the overidentifying restrictions fit the model if it is higher than significance level 0.05. 1st and 2nd autoregressive order Godfrey Test statistics are reported. If the residuals have n-order but not higher-order autocorrelation , the lag n+1 test may be more likely to reject (lag n+1 test P-value is higher than significance level 0.05 but lag n test P-value is less than 5%).

Table 10: GMM Regression Results of Multi-factor Risk Based Model 2 for REITs Returns (Quarterly frequency)

Dependent Variable	Period	Coefficient							Model Summary				
		Constant	R_m- R_f	*SMB*	*HML*	*TERM*	*RISK*	R_{ANPI}-R_f	Obs. No.	Adj. R^2.	O-R Test	Godfrey Test 1	Godfrey Test 2
All REIT	**All**	-2.03	0.55	0.36	0.43	0.87	4.13	0.48	115	0.53	9.93	1.66	1.67
		(-1.47)	(8.71)**	(3.50)**	(6.44)**	(0.63)	(0.89)	(2.05)**			(0.62)	(0.20)	(0.43)
	Subperiod I	-4.10	0.60	0.39	0.36	2.03	8.95	0.28	62	0.70	6.92	1.78	3.56
		(-2.15)**	(8.51)**	(3.94)**	(4.18)**	(1.44)	(1.53)	(1.33)			(0.86)	(0.18)	(0.17)
	Subperiod II	0.22	0.19	0.57	0.42	-1.71	-3.82	1.35	53	0.38	11.45	5.54	6.00
		(0.09)	(1.88)**	(3.40)**	(6.26)**	(-0.59)	(-0.29)	(2.38)**			(0.49)	(0.02)	(0.05)
	Chow-Test = 7.83		**P value** = 0.00										
E-REIT	**All**	-1.02	0.55	0.28	0.36	1.23	1.82	0.56	115	0.50	8.94	4.67	4.73
		(-0.92)	(9.00)**	(2.81)**	(5.67)**	(0.88)	(0.58)	(2.61)**			(0.71)	(0.03)	(0.09)
	Subperiod I	-1.01	0.63	0.25	0.24	1.49	1.60	0.49	62	0.71	3.75	0.54	1.07
		(-0.82)	(11.57)**	(3.84)**	(3.20)**	(1.17)	(0.55)	(2.42)**			(0.99)	(0.46)	(0.59)
	Subperiod II	0.62	0.14	0.59	0.40	-2.79	-5.52	1.62	53	0.34	11.56	6.81	7.29
		(0.26)	(1.45)	(3.48)**	(5.53)**	(-0.91)	(-0.42)	(2.86)**			(0.48)	(0.01)	(0.03)
	Chow-Test = 7.16		**P value** = 0.00										
M-REIT	**All**	-4.20	0.49	0.50	0.63	2.77	5.77	0.33	115	0.38	13.84	3.14	3.26
		(-1.48)	(4.01)**	(3.23)**	(5.33)**	(1.23)	(0.64)	(0.90)			(0.31)	(0.08)	(0.20)
	Subperiod I	-9.99	0.47	0.47	0.37	4.76	20.68	0.46	62	0.55	8.79	4.09	5.35
		(-4.27)**	(4.37)**	(3.10)**	(3.09)**	(2.15)**	(2.96)**	(1.20)			(0.72)	(0.04)	(0.07)
	Subperiod II	-1.39	0.51	0.66	0.88	0.36	17.88	-1.03	53	0.32	14.17	0.95	1.11
		(-0.38)	(2.25)**	(2.57)**	(7.24)**	(0.09)	(0.93)	(-1.13)			(0.29)	(0.33)	(0.58)
	Chow-Test = 7.10		**P value** = 0.00										
H-REIT	**All**	-6.33	0.50	0.65	0.66	4.02	14.41	0.31	115	0.54	7.13	0.76	0.87
		(-3.39)**	(5.57)**	(4.47)**	(5.22)**	(2.07)**	(2.33)**	(1.18)			(0.85)	(0.38)	(0.65)
	Subperiod I	-6.31	0.65	0.62	0.46	2.94	13.69	0.42	62	0.62	6.96	1.06	1.36
		(-2.52)**	(8.28)**	(4.17)**	(3.23)**	(1.43)	(1.72)*	(1.52)			(0.86)	(0.30)	(0.51)
	Subperiod II	-1.91	0.29	0.83	0.84	6.99	0.88	-0.61	53	0.56	9.25	2.46	2.75
		(-0.89)	(3.26)**	(5.52)**	(11.98)**	(3.00)**	(0.07)	(-1.13)			(0.68)	(0.12)	(0.25)
	Chow-Test = 11.70		**P value** = 0.00										

Note: (1) This table reports the regression statistics of Model 2: $R_{REITs} - R_f = \alpha + \beta_1 (R_m - R_f) + \beta_2 SMB + \beta_3 HML + \beta_4 TERM + \beta_5 RISK + \beta_6 (R_{ANPI} - R_f) + \varepsilon$

where R_{REITs} - R_f is excess REITs return; R_m- R_f is excess stock market return; R_f is the risk free rate of return measured by four-week T-notes rate; *SMB* is size factor; *HML* is B/M factor; *TERM* the spread between yields of the constant-maturity 10-year Treasury note and the six-month Treasury bill; *RISK* is the spread between the yields on long-term Aaa corporate bonds and Baa corporate bonds; and R_{ANPI}-R_f is the excess return on adjusted NPI (ANPI).

(2) T statistics are shown in parentheses below the coefficients of independent variables. * means it is significant at 10% level and ** significant at 5% level.

(3) We use the dependent variables and their first and second order of lags as instruments and use Bartlett Kernel as proxy for Newey-West Kernel. O-R Test represents the Overidentifying Restrictions Test. Godfrey Test represents Godfrey Lagrange Multiplier Test for autocorrelated residuals. P-value is shown in parentheses below the test statistics. We would not reject the null hypothesis that the overidentifying restrictions fit the model if it is higher than significance level 0.05. 1st and 2nd autoregressive order Godfrey Test statistics are reported. If the residuals have n-order but not higher-order autocorrelation , the lag n+1 test may be more likely to reject (lag n+1 test P-value is higher than significance level 0.05 but lag n test P-value is less than 5%).

6. Conclusions

6.1 Conclusions and Limitations

The multi-factor approach in this study extend the existing REITs return predictability studies by separating excess REITs return into risk premiums of stock market (Fama-French three factors), bond market (term and default factor), and unsecuritized real estate market factor. Over the entire sample period of 1972-2007 and subperiods prior to and after 1993, I find this framework is more appropriate than the models of pervious literature in explaining the expected excess return of REITs.

Since the REITs' legal and regulatory infrastructure has changed since 1993, conclusions drawn from the analysis of prior returns may be erroneous. Chow test is utilized in interpreting the pricing pattern change between the periods of pre-1993 and post-1993. The results indicate that a structural change occurs from the subperiod 1972-1992 and 1993-2007. This change could be partially attributed to the 1993 Revenue Reconciliation Act, which facilitates the growth of the institutional participation in the REITs market.

Evidence of this study reveals that the REITs are less stocklike and bondlike, but maybe more real-estate-like after 1993. It supports the existence of market segmentation between REITs and the whole stock and bond market and suggests that REITs might be good instruments to diversify stock and bond market risk as the consequence of introducing the Revenue Reconciliation Act. In addition, the multi-factor risk-based models have less explanatory power (adjusted R^2) for samples of post-1993 period than for pre-1993, which means firm specific effects account for more of the excess REITs return variability after 1993.

Although this study documents that the performance of excess REITs returns in the post-1993 period outpace that in the pre-1993 period, there is no direct evidence supporting undervalued or overvalued performance of REITs compared with the overall stock market after 1993.

The risk characteristics of REITs change significantly by different subperiods, but it seems the investors' view appear to be relatively unchanged by the type of REITs. In general, I find

no strong evidence of divergent structural changes among Equity-, Mortgage- and Hybrid-REITs in this study.

Admittedly, the conclusions of the report are limited by data reliability and frequency of real estate factor. The historical data for NPI index is in quarterly frequency and many of the properties in the index are only reappraised annually. This implies that the NPI is essentially an annual index that is partially updated each quarter (Fisher et al, 1994; Clayton and Mackinnon, 2003). Inflation (*INF*) as an alternative proxy of real estate factor only indirectly and partially reflects the real estate specific risk. Thus, the problem of real estate factor limits the reliability of this model. The potential impacts of cyclical pattern and sub-sector (Equity-, Mortgage- and Hybrid-REITs) specific characteristics on REITs returns tend to become more important after 1993, however they are not included in this study due to the data availability. The sub-sector specific characteristics including the asset structure, financial leverage and management strategy are related to their sensitivity to interest rate and market risk (Allen et al, 2000). So the multi-factor model's explanatory power for the future forecasting could be subject to these sub-sector factors. In this respect, the results and explanations of this study are an open area of discussion and need further study.

6.2 Implications for Development of China's REITs Market

Considering the huge market capitalization of China's commercial properties and residential/commercial mortgages, the securitized real estate debts (MBS/CMBS) and equities (REITs) have enormous growth potential. Real estate security markets are unique to each country, thus direct comparisons are not always meaningful. Nonetheless, the experience of over 40-year history of the U.S. REITs market could provide instructive implications to the development of China's REITs market.

The most direct implication is to develop associated legal and regulatory infrastructure prerequisites as the first step. It also requires important adjustments in existing laws and regulations. Although the U.S. doesn't have a specific REITs law, the success of REITs in Singapore, Japan, Korea, and Hong Kong in recent years means a sound REITs law is critical.

The impact of the 1993 Revenue Reconciliation Act on the REITs reveals that the REITs law and associated legal and regulatory infrastructure should facilitate the participation of institutional investors such as pension funds, because institutional investors create discipline and transparency which are beneficial to both the industry and investors (Fickes, 2006; Block, 2002).

In addition to the direct associated legal and regulatory infrastructure, another important legal issue is the fragmentation of property rights. China's economy is transited from a former centrally planned economy. As a result, all urban land in China is still owned by the state or by agricultural collectives. The fragmentation of property rights among different administrations, state enterprises and private owners in the cities is a fundamental obstacle to the efficient use and trading of urban properties. This problem must be first resolved in the main body of laws, but it will take substantially long time in large countries such as China (Lam, 2005; Stein, 2007).

The China's financial system is a traditional, state-owned bank-based and opaque system. The serious information asymmetry problem becomes a very important obstacle to the development of REITs market and other real estate finance market. The lack of financial infrastructure is a potential constraint ahead after the recent emergence of commercial property based trusts market (they are similar to but indeed not REITs) and the forthcoming REITs market development. The U.S. experience indicates that besides the legal and regulatory infrastructure, other financial infrastructure, such as the information infrastructure (credit bureaus, rating agencies, and valuers, etc.), the risk-pricing infrastructure (government securities market, corporate bond markets, etc.), the payments and settlements infrastructure, and the financial stability infrastructure (liquidity and other safety net facilities) (Renaud, 2004), are significant for the long-run development of China's REITs market under a more market based financial system.

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