

An Empirical Study on the Characteristics of K-REITs

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Abstract

In this study the characteristics of REITs in Korea were investigated. REITs has been introduced and managed for almost 15 years in Korea. The research results show that K-REITs has higher return and lower risk structure than KOSPI, and higher return and higher risk than bond. These results indicate that we can attain portfolio effects by including REITs in an investment set. Regarding the correlation between return of K-REITs and that of stock and bond is smaller than that of the case of the U. S., which means there is possibility to attain more portfolio effects in Korea than the U. S. using REITs. Also the systematic risk of K-REITs is near zero. And alike from that of U. S., the asymmetric risk and return structure according to the market condition of K-REITs is not found. So if an investor analyzes the volatility of real estate market and the unique characteristics of REITs exquisitely and includes the REITs in his/her portfolio accordingly, he/she can achieve reduced risk and improve portfolio effects. In short, K-REITs can be very useful to diversify the investment and attain portfolio effects in the financial market.

Keywords: K-REITs, portfolio effect, risk and return, diversification, beta

1. Introduction

REITs is a company that invests its assets to mainly commercial buildings and distribute returns from the investments to its shareholders. A REITs has two characteristics, that is, it has real estate characteristics that can hedge inflation and also has liquidity characteristics that listed stocks have. Of the characteristics, REITs' real estate characteristics attract investors' interest because by using the characteristics investors can attain portfolio improvement effects because the rate of correlation between stock market movement and real estate market movement is low. The case of U. S. shows that the betas of listed REITs are small, which means returns of REITs are not significantly influenced by the market and thus investors can have improved portfolio effects by putting REITs in their basket. For these reasons, many fund managers include REITs in their fund for risk-return structure improvement. In this study the characteristics of so-called K-REITs (REITs in KOREA) are investigated and ways to vitalize them are suggested.

2. Literature Review

Most studies on REITs have been done in US where REITs was introduced first and has been repped up. The frequently stood out issue regarding REITs has been the relation with common stocks in the financial market. Especially in 1990's the studies were very active. Li and Wang (1995) argued that REITs are integrated in normal stock market. Mull and Sonen (1997) alleged that there is strong relation between REITs and stock and REITs can contribute to inflation hedge and improve portfolio diversification. While Wang, Erickson, and Chan (1995) argue that there is fundamental difference between REITs and stock in terms of data set provided, traded amounts, and the rate of participation of program trader. Han and Liang (1995) reported that the performance of the REITs was consistent with the security market line for the 1970-1993 period. Chian, Lee and Wisen (2005) show that market beta of REITs has decreased over time during 1972-2002 continuously and gradually. Chen and Peiser (1999) found that from the return and risk perspective, S&P 500 and Mid-cap 400 are superior to REITs. Peterson and Heish (1997) argue that the relationship between REIT and stock market is decreasing more these days thus REITs is excellent asset for achieving diversification. Goldstein and Nelling (1999) allege that equity REITs has more relationship during downphase than that of upphase and thus REITs has different return and risk structure according to the market condition. Devaney (2001) showed that the trade-off between excess returns and the conditional variance was positive for both equity and mortgage REITs but it was significant only for the

latter. Chatrath, Liang, and McIntosh (2003) show that the asymmetry in beta is similar to small capitalization stocks in general. Hsiang and Huang (2006) allege that property stocks are generally sensitive to changes in the long-term and short-term interest rates and to a lesser extent, their volatility. Najand, Lin, and Fitzgerald (2006) found that equity REITs have outperformed the stock market with an average abnormal annual return of 2.25% with a low time-varying beta around .24 during the June 1995 to December 2003 period. Zietz, Sirmans, and Friday (2003) explored the financial economic literature on the environment and performance of REITs.

These results show that equity REITs has lower risk in general and contribute more to the entire risk of a portfolio as a whole during upphase. In sum, although there are some differences, most of the study results reach similar conclusion that REITs has different risk and return structure from other investment instruments and there is little relationship with other assets thus has remarkable effects on diversification.

In Korea, REITs was introduced in 2001. At the beginning, researchers focused on ways to activate REITs. Since then as time goes by and the data accumulated enough to study, studies on the characteristics of REITs have been conducted. Similar to the studies in U.S., many studies analyzed REITs in terms of the risk and return structure. Conclusions of the studies are almost the same to those of U. S. That is, REITs has different risk and return patterns from those of stocks in financial market. In this study we analyze the risk and return patterns of K-REITs with more data than previous studies for more accurate results.

3. Data

Till 2009, 44 REITs were established. Of 44, 10 liquidated, corporate restructuring 23, trust management 7, self-management 1, development REIT 3. The reason of most REITs are corporate restructuring is tax benefits, exempt of duties of inviting public participation, loose dispersion ratio of stockholders etc.

The sample data is for 8 listed REITs. Regarding data, only the data from listed REITs is available. The period for this study analysis is 2002. 01. 30 - 2009. 07. 31. Data comes from the Financial Supervisory Service electric public notice system.

Table 1. K-REITs situation

Name of K-REITs	Date of establish	Date of clearance	Final price	Equity amount (billion won)	Total asset (billion won)
Kyobo	2002.12.21	2006.12.27	5,130	84	90.8
KOCREF 1	2002.04.30	2007.03.22	12,600	133	244
Realty Korea	2003.05.13	2008.02.20	9,300	66	143.7
Ures Merits	2003.08.29	2008.05.29	4,445	50	119.8
KOCREF 3	2003.08.30	2008.05.29	13,750	68	153.1
Mcquary	2004.01.18	2009.08.01	10,350	70.3	168.7
KOCREF 7*	2005.10.26	2009.08.01	6,450	60	144.4
KOCREF 8**	2006.06.15	2009. 08.01	5,550	46	122.4

Note. * The date of clearance for KOCREF 7 was 2010.10.31.

** The date of clearance for KOCREF 8 was 2014.04.31.

4. Return and Risk Measure

In general investors measure their return based on holding period return. In this study we first measure dividend rate and capital gains rate and then based on the results we estimate total return and risk pattern of REITs.

The following table shows daily dividend rate, average price increase rate and standard deviation of K-REITs and KOSPI. From the table we can find the following three characteristics.

Table 2. K-REITs trading volume, price, dividend payment date

Name of K-REITs	Highest Price	Lowest Price	Average Monthly Trading Volume	Dividend Payment Month
Kyobo	5,600	4,920	887,560	6, 12
KOCREF 1	10,300	4,880	450,911	6, 12
Realty Korea	7,000	5,010	335,897	4, 10
Ures Merits	5,640	4,940	345,194	3, 9
KOCREF 3	6,900	5,040	516,464	2, 8
Mcquary	7,280	5,050	1,099,803	6, 12
KOCREF 7	6,853	4,957	no data	6, 12
KOCREF 8	6,679	4,375	no data	2, 8

First, dividend rate of K-REITs is far more than that of KOSPI. Second. The price increase rate of K-REITs is lower than that of KOSPI. Third, risk from dividend for K-REITs is bigger than that of KOSPI. However, we should not miss the fact that dividend rate of K-REITs is 4 times bigger than that of KOSPI. So risk per dividend unit of K-REITs is smaller than that of KOSPI.

Table 3. Daily dividend yield and daily capital gains yield

Firm/Stock	Period	Daily Dividend Yield		Daily Capital Gains Yield	
		Average	Std. Deviation	Average	Std. Deviation
Kyobo	2002.01.20-2006.12.20	7.92	1.15	-0.06	10.93
KOCREF 1	2002.05.30-2007.03.22	9.21	0.38	22.06	14.79
Realty Korea	2003.05.13-2008.02.20	9.33	0.72	16.31	14.92
Ures Merits	2003.08.29-2008.05.29	4.62	0.98	-4.29	5.22
KOCREF 3	2003.08.29-2008.05.29	8.79	1.41	20.11	20.34
Mcquary	2004.01.08-2009.08.21	7.92	1.01	12.49	17.22
KOCREF 7	2005.10.26-2009.08.01	2.17	2.16	2.37	5.21
KOCREF 8	2006.06.15-2009.08.01	2.03	4.08	3.01	4.98
KOSPI*	2002.01.20-2009.08.01	1.67	0.31	13.22	26.44
Large-Cap Stock	2002.01.20-2009.08.01	1.72	0.33	14.14	27.33
Med-cap Stock	2002.01.20-2009.08.01	2.03	0.81	17.71	24.16
Small-cap Stock	2002.01.20-2009.08.01	2.15	0.72	11.26	21.77

* KOrea composite Stock Price Index.

From the table we can see that for the return of K-REITs dividend rates occupy the big scale of the total return. Thus we can say that REITs investors tend to prefer stable dividend rate from the longer term to market gains in shorter term. The following table shows daily return and monthly return of bond, stock and REITs.

Table 4. Average return and risk of bond, stock and REITs

Firm/Stock/Bond	Daily Total Return		Monthly Total Return	
	Average	Std. Deviation	Average	Std. Deviation
Kyobo	7.86	10.93	7.66	4.56
KOCREF 1	31.27	14.59	28.95	8.54
Realty Korea	25.64	14.92	21.37	7.90
Ures Merits	0.33	5.22	-1.27	5.32
KOCREF 3	21.52	20.34	16.94	11.99
Mcquary	20.41	17.22	17.37	10.57
KOCREF 7	4.54	2.16	4.02	2.06
KOCREF 8	5.04	4.08	4.85	3.99
KOSPI	14.89	26.44	11.09	22.36
Large-cap Stock	15.86	27.33	12.27	21.03
Medium-cap Stock	19.74	27.33	17.24	22.36
Small-cap Stock	13.41	21.77	11.02	20.67
T-Bill	4.67	0.69	4.75	0.70
Corporate Bond	5.26	0.81	5.43	0.84

From the table we can see that for t-bill and stock there is little difference regarding the level of risk and return. On the contrast, there are significant difference in the level of risk and return for stock and REITs. When the measuring period changed, that is, whether the period is month or day, the results change. While the standard deviation of monthly return of KOSPI shrinks to 78% of that of daily return, the standard deviation of the monthly return of REITs decreases to on average 40% of that of that of daily return. Also when based on daily base 3 out of the sample REITs show higher return and lower risk than KOSPI, but when the measuring period changed from daily to monthly the number changes from 3 to 4. From the results, we can argue that the price volatility of REITs decrease rapidly from daily base to monthly base.

5. Portfolio Effects of REITs

Previous sections tell us that K-REITs has higher return and lower risk structure than KOSPI, and higher return

and higher risk than bond. These results indicate that we can attain portfolio effects by including REITs in an investment set. Thus we investigate further the correlation between the return of REITs and that of stock, bond. The following table shows the correlation.

Table 5. Correlation between REITs and bond, stock

	Daily Return				
	KOSPI	Large-cap Stock	Medium-cap Stock	Small-cap Stock	Corp. Bond
Kyobo	0.034	0.035	0.046	0.069	-0.008
KOCREF 1	0.018	0.017	0.039	0.034	-0.022
Realty Korea	0.065	0.066	0.087	0.051	-0.042
Ures Merits	0.055	0.047	0.071	0.084	-0.017
KOCREF 3	0.073	0.074	0.092	0.075	0.003
Mcquary	0.034	0.036	0.030	0.030	-0.033
KOCREF 7	0.047	0.049	0.048	0.049	-0.027
KOCREF 8	0.052	0.053	0.044	0.052	-0.021
	Monthly Return				
	KOSPI	Large-cap Stock	Medium-cap Stock	Small-cap Stock	Corp. Bond
Kyobo	0.216	0.211	0.218	0.169	-0.109
KOCREF 1	0.029	0.006	0.069	0.101	-0.203
Realty Korea	0.047	0.046	0.093	0.072	-0.289
Ures Merits	-0.081	-0.115	0.109	0.071	-0.202
KOCREF 3	-0.057	-0.051	-0.149	-0.187	-0.023
Mcquary	0.071	0.048	0.259	0.129	-0.231
KOCREF 7	0.033	0.031	0.279	0.122	-0.202
KOCREF 8	0.027	0.004	0.038	0.092	-0.109

The range of correlation between daily return of REITs and that of stock is from the lowest of -0.017 to the highest of 0.076. That is, the correlation is almost zero. There is no significantly big difference regarding correlation between the daily return of REITs and that of stock based on stock types (large capital stock, medium capital stock, small capital stock). The correlation between daily return of REITs and that of bond is lower than the correlation between that of REITs and that of stock. The correlation between monthly return of REITs and that of stock is somewhat different from that of daily return case. In this case, the lowest is -0.059 and the highest is 0.237, which is wider range distribution than that of daily return. Except one REITs, the correlation is almost zero. The signs of correlation between monthly return of stock and that of bond are negative for all the cases. Also, for the monthly return case, we can see that the absolute values of coefficients are bigger than those of daily cases. So we can argue that monthly return of REITs is correlated with that of bond return negatively. Concerning the correlation between the monthly return of REITs and that of stock type, the correlation between that of REITs and monthly return of medium-cap stock and small-cap stock is higher than that of large-cap stock. In sum, we can tell that the correlation between return of K-REITs and that of stock and bond is smaller than that of the case of the U. S., which means there is possibility to attain more portfolio effects in Korea than the U. S. using REITs.

6. Market Risk

The price of REITS is influenced by the real estate market condition as well as the stock market condition because REITs invests its assets to real estates and its equity is listed and traded in the stock market. Thus there exist higher possibilities of different risk and return structure for REITs from that of stock. If REITs has different risk and return structure from that of common stocks, then investors can improve portfolio results utilizing REITs' risk and return pattern by reducing risk of portfolio.

We measured the beta of REITs and analyzed the risk structure of REITs according to the market condition to ensure whether REITs has different risk and return structure than that of common stocks and the level of portfolio effects was calculated as well. We used market model and followed Gyourko and Nelling (1999). Gyourko and Nelling divided market condition into bullish market and bearish market and measured beta. The market model is as follow.

$$R_i = \alpha_i + \beta_i R_m + \epsilon_i \quad (1)$$

where R_m is market return and the data of return is historical data.

The following table shows the results of regression analyses.

Table 6. Market beta (The results of market model)

Daily Return			
Firm	Constant	Beta	R-square
Kyobo	0.0758(1.2600)	0.0135(1.2312)	0.0013
KOCREF 1	0.2996(2.5050)	0.0125(0.5584)	0.0003
Realty Korea	0.1946(2.0905)	0.0384(1.8973)	0.0040
Ures Merits	0.1072(1.0291)	0.0344(1.5181)	0.0028
KOCREF 3	0.2022(1.6511)	0.0579(2.1764)	0.0057
Mcquary	0.2672(2.4217)	0.0230(0.9510)	0.0012
KOCREF 7	0.1947(2.3565)	0.1304(0.6672)	0.0017
KOCREF 8	0.2001(2.0197)	0.1201(0.5976)	0.0032
Monthly Return			
Firm	Const.	Beta	R-square
Kyobo	0.0690(3.3569)	0.0497(1.8449)	0.0564
KOCREF 1	0.2335(5.5896)	0.0123(0.2211)	0.0009
Realty Korea	0.1622(3.5653)	0.0211(0.3134)	0.0024
Ures Merits	0.1128(3.5999)	-0.0245(-0.5255)	0.0072
KOCREF 3	0.1850(2.5775)	-0.0390(-0.3650)	0.0035
Mcquary	0.2050(3.4585)	0.0380(0.4142)	0.0052
KOCREF 7	0.2013(3.5987)	0.1102(0.6588)	0.0030
KOCREF 8	0.3102(2.4872)	0.0981(0.9274)	0.0061

From the table, the beta of daily return of REITs is from the highest of 0.0125 to the lowest of 0.0579, and the beta of monthly return of REITs is from the highest of -0.0390 to the lowest of 0.0497. There is no big difference between daily and monthly return. The following table shows the regression results of bullish market and bearish market.

Table 7. Results of regression (market model)

Daily Return								
	Kyobo	KOCREF1	RealtyKorea	UresMerits	KOCREF3	Mcquary	KOCREF7	KOCREF8
Bull	-0.0328	0.4501	-0.0628	0.1101	0.1832	0.01724	0.2110	0.0231
Bear	0.0512	-0.01928	0.0469	0.0280	0.0459	0.0234	-0.089	-0.0978
p-value	0.1629	0.1929	0.6902	0.7989	0.7021	0.9796	0.2781	0.0854
Monthly Return								
	Kyobo	KOCREF1	RealtyKorea	KOCREF3	UresMerits	KOCREF7	Mcquary	KOCREF8
Bull	0.0688	-0.0712	-0.0609	-0.2714	-0.0928	-0.0924	-0.0953	-0.0765
Bear	0.0259	0.1109	0.1704	0.0559	0.3799	0.2902	0.0412	0.0262
p-value	0.6701	0.3502	0.3455	0.4519	0.0799	0.2529	0.2217	0.3018

Overall, while the beta of K-REITs delivers wide range of numbers, most of the numbers are near zero. From the results, we can argue that the systematic risk of K-REITs is near zero. And alike from that of U. S., the asymmetric risk and return structure according to the market condition of K-REITs is not found. So if an investor analyzes the volatility of real estate market and the unique characteristics of REITs exquisitely and includes the REITs in his/her portfolio accordingly, he/she can achieve reduced risk and improve portfolio effects. In short, K-REITs can be very useful to diversify the investment and attain portfolio effects in the financial market.

7. Conclusion

In Korea, REITs has been introduced and managed for almost 15 years. At the beginning, the objects of introducing REITs were providing investment diversification ways for general investors and easier asset securitization ways for firms. As we see the study, REITs has many useful characteristics for portfolio in Korean stock market, but it has been sagging. The main reasons are that there have been problems with regard to the

REITs system and embezzlement accidents by system administrators. Regulators have raised the level of required conditions for establishing REITs, also difficult and fastidious judging criteria have been applied to listing for the purpose of protecting general investors. Accordingly, the number of public offering has been reduced, and thus less and less opportunities for general investors to invest in REITs and attain portfolio effects and only private fund and institutional investors have dominated the market. No more public offering has been made since 2012. Now it is time for the regulators to reconsider REITs. The regulation should be effective and efficient, but no regulations just for regulation should be avoided. A peace-at-any-price principle regarding REITs should be abolished. In addition to that, some policies to revitalize the REITs market are required and thus to provide more chances for general investors in terms of investment and portfolio setting.

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