ARES | Routledge
American Real Estate Society | Taylor & Francis Group

Check for updates

Factors That Affect Listed Real Estate Investment Trust Market Capitalization: A Country Level Analysis

Soonwoo Jang, Seungwoo Shin and Hana Yim

Department of Real Estate, Konkuk University, Seoul, Republic of Korea

ABSTRACT

This study investigates key country-level economic factors that influence listed real estate investment trust (REIT) market capitalization across 23 countries that currently operate active REIT markets. The primary contribution of this study is to apply existing analyses that focused on the real estate market as a whole to the REIT market in order to identify the correlation, as well as significance, of each factor on REIT market volume. We find the GDP per capita, stock market capitalization, and soundness of the banking sector to be positively significant factors. Through the findings, the study can stand as a reference for academic researchers and professionals of the industry to identify country-level factors that affect respective REIT market volumes, which is essential for international diversification portfolio strategy construction. The study also suggests factors that government authorities such as legislators and licensing departments of either REIT trustees or asset management companies may wish to address and adjust to create sound REIT investment environments for their countries.

The global REIT market volume surpassed a market capitalization of approximately US$1.7 trillion in 2017. The number of countries with mature or emerging REIT structures has grown to 37, and more countries are expected to establish REIT regimes in the near future. The growth of the global REIT market indicates that the concept of REITs as a significant and profitable investment sector in the field of real estate is becoming better understood and pursued around the world. Knowing the differences in regulations and governance standards on a global basis is essential for internationally diversified portfolio construction strategies (Bond et al., 2003).

All countries that either have established REIT regimes or are pursuing the adoption of REIT practices are illustrated in Figure 1. While many new entrant countries are pursuing the establishment of effective REIT investment environments, studies of factors influencing this continuously growing sector of real estate investment largely concentrate on specific country markets, provide noteworthy yet secondary observations as non-primary factors, or constitute parts of studies on the general real estate investment environment and its more encompassing sectors.

In the case of South Korea, the current REIT market volume seems to be misaligned with typical trends associated with factors such as economic size and duration of the REIT market since introduction. Although South Korean policymakers had essentially duplicated the U.S.-style REIT Modernization Act, a very important catalyst (see Akimov et al., 2016; Chan et al., 2003), there has been no considerable positive change in the South Korean REIT market.

While it is generally acknowledged that countries with relatively larger economic volumes and a longer industrial sector history tend to have larger volume and higher activity in the sector, South
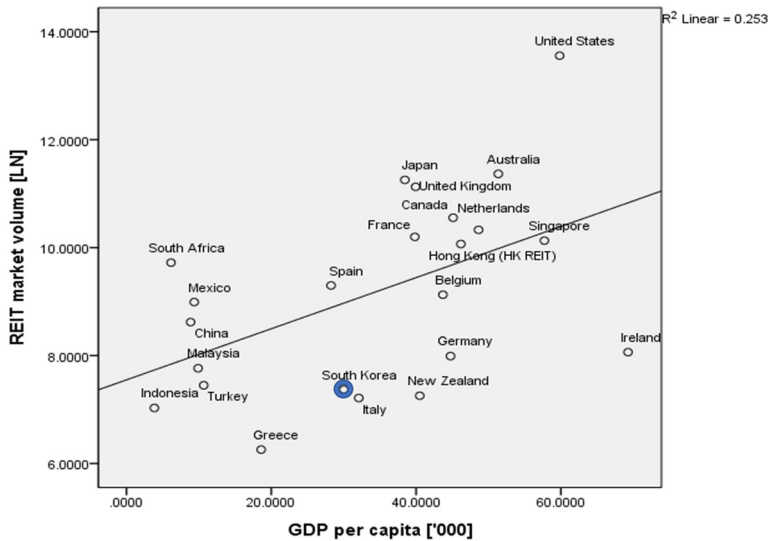
Figure 1. REIT regimes of the world.
Note. Countries in blue currently have established REIT regimes or in the process of adopting REIT practices.
Source. Country data retrieved from NAREIT and EPRA/FTSE/NAREIT Series.

Korea's REIT industry shows a trend of decline that indicates a need to investigate which factors show significant correlation to REIT market volume (Figure 2).

The present study attempts to utilize various indicators and factors that were used to explain broader sectors or country-specific REIT markets in previous research to determine which factors have significant correlations to REIT market volume. In doing so, it investigates whether the case of South Korea's REIT market can be explained through a statistical approach. By analyzing the findings of the empirical study, the study also indicates results that are relevant to efforts by industry professionals and related government agencies to adjust REIT market environments.

The general structure of this article is as follows: First, we briefly mention relevant previous research and state how the present study differs in its attempt to identify conditions that affect REIT market volume. Next, we report relevant literature from which key ideas and factors utilized in this paper have been identified and developed. We then explain the data and methodology used for the study, followed by an explanation of the results and discussion of the research findings.

Literature Review

Currently, a significant proportion of studies on REITs focus on returns and performance of the investment vehicle. While there are several studies (e.g., Chan et al., 2013; Ooi et al., 2006; Packer et al., 2014) that provide descriptive overviews of international and continental REIT markets, a large portion of research on REITs focuses on the performance or returns in specific countries or continental regions.

Mohamad et al. (2014) identify factors that determine REIT performance based on Asian REITs, while Wong (2017) identifies macroeconomic factors such as inflation and unexpected change in

Figure 2. REIT market volume in relation to GDP per capita.
Note. While countries typically followed the trend of larger REIT market volume in relation to higher GDP per capita, countries such as South Korea, Greece and Italy appear to be outliers
Sources. Original REIT market volume and GDP per capita data retrieved from EPRA/FTSE/NAREIT Series and Euromonitor International.

risk premiums that affect REIT returns in Australia. Research topics on REITs in South Korea are also dominated by performance and returns, as exemplified by Yeo et al. (2014) and other studies that use internal variables such as capitalization and average rate of return of individual REITs, both listed and non-listed, in the country to determine factors that affect REIT returns. Regarding the listed REITs in Korea, I et al. (2016) investigate the mid- to long-term market performance while Kim et al. (2012) study IPO market performance.

Another line of research regards the second and/or third REIT return moments, and Anderson (1996) provides a general empirical modeling framework for return, return volatility, and trading volume. Stevenson (2002) investigates the factors affecting REIT return volatility and finds small stock market capitalization is one of the main influences. Akimov et al. (2016) further research the third moment (skewness) by utilizing REIT return volatility, skewness, and trading volume.

Differing from previous research, the focus of this study is to identify key factors that commonly affect the capitalization of REIT markets around the globe. To accomplish this objective, we concluded that using variables limited to specific regions or countries such as capitalization of individual REITs or average rate of return of regional markets would limit the scope of our research; thus, we focus on utilizing variables common to REIT markets around the world that are publicly available.

To identify variables for this study, we review literature that provides findings unrestricted by region or country. According to DiPasquale and Wheaton (1992), a country's productive economy positively affects the demand for real estate assets. To identify key economic factors relevant to the research, we take DiPasquale and Wheaton's claim as the basis for selecting factors that positively affect REIT market volume. Chen and Hobbs (2003) find that the size of an economy has a positive effect on investment activity, as relatively larger economies are more stable than smaller economies due to higher capability to cope with external economic challenges. From these findings, we presume that gross domestic product (GDP) and GDP per capita are relevant drivers of REIT market volume. Van Doorn (2003) states that GDP per capita is a factor often utilized during decisions of strategic real estate asset allocation. Hoskins et al. (2004) find that GDP growth, inflation, and rate of unemployment have significant effects on composite real estate property returns.

Through the literature review of economic activity, we select GDP per capita as a key factor for this research.

Thrall (2002) states that demand for real estate is positively affected by growth in the level of sophistication of the service economy. The level of sophistication is conveyed by the performance and circumstances of the financial and business service sectors. Studies show that macroeconomic variables that have been identified to provide explanation of the returns and risks of stock and bond markets also have significance in explaining the returns and risks of REITs at monthly and quarterly levels (e.g., Chan et al., 1990; Karolyi & Sanders, 1998; Naranjo & Ling, 1997).

Although we do not include the specific macroeconomic variables utilized in these studies, we hypothesize that an individual country's stock markets and its capital volume are positively correlated to corresponding REIT market volumes. There are a considerable number of studies regarding market integration or market segmentation, as well as the predictability of individual market return on both regional and global bases. Ling and Naranjo (1999) are the first to examine the extent to which markets are integrated with each other. Karolyi and Sanders (1998) and Ling et al. (2002) also research this hypothesis by exploring the predictable components of REIT returns.

Lastly, regarding the empirical approaches such as econometric models and variables on a global scale, three papers are noteworthy among others. Firstly, Bond et al. (2003) employ country-level performance indices to study the risks and returns profile of securitized real estate products in different countries incorporating multifactor models of international asset pricing. Additionally, Ling and Naranjo (2002) are interested in Jensen's alpha and the Treynor ratio of each country market. They use return data on over 600 companies in 28 countries. Both studies place an emphasis on the existence of transparent market indices. Finally, De Wit and Van Dijk (2003) propose GDP, rate of inflation, unemployment, rate of vacancy, and available inventory stock as important determinants of office property returns after scrutinizing the private office property market on a global basis.

We choose the volume of the stock market and the soundness of banks for individual countries to illustrate both the level of governance and transparency of each country's capital market.

Data and Methodology

For this study, we employ multiple regression analysis to find the relationship between REIT market volume and the factors that affect the real estate industry. The dependent variable for the analysis is the REIT market volume of a country sample taken December 29, 2017, while independent variables include each country's GDP per capita, stock market capitalization, soundness of banks, and number of years passed since the introduction of REIT practices. In the case of South Korea, the REIT market volume data was absent from the specified date's EPRA/FTSE/NAREIT Series.[1] To input relative data into our analysis, we apply techniques proposed by Nardo et al. (2005) to find missing data from other sources and procure the latest available data for that year.[2] The variables used in this research are selected by referring to the study by Lieser and Groh (2014), which presents a comprehensive and organized set of variables that affect international commercial real estate investments.

We attempt to include as many variables used in past literature as possible but limit the total number of factors to four, as increasing the number of independent variables limits the analysis of the data sample. To maintain as many country samples as possible and avoid the problem of overfitting, the number of factors that affect REIT volumes is capped at four, while the number of countries is limited to 23. The selection of countries for this study is determined by the availability of timely and consistent data. Most importantly, for a country to be included, it must currently have an operating REIT market as well as consistent and observable data of the industry's market capitalization. We select publicly available factors and their relative data to be easily replicable and to stand as a reference for expansion, adjustment, and further study in future research (Tables 1 and 2).

Table 1. Variables and data sources.

Name	Unit	Source
REIT market volume	[USD mn]	EPRA NAREIT FTSE Series
GDP per capita	['000 USD per capita]	Euromonitor International
Stock market capitalization (LN)	[USD mn]	World Bank (WDI); Where data is unavailable, data is retrieved from stock market reports
Soundness of banks	[Number between 1 and 7]	World Economic Forum 2016/2017 (Schwab, 2016)
Years since introduction	[Number of years]	EPRA Global REIT Survey

Table 2. Descriptive statistics.

Variable	Remarks	Min	Max	Mean	σ	C.V
REIT market volume	(USD million)	522.00	771,457.00	52,781.14	158,692.49	3.01
REIT market volume	(LN)	6.25	13.56	9.16	1.79	0.20
GDP per capita	(Thousands)	3.84	69.28	34.04	19.00	0.56
Stock market cap	(LN)	10.83	17.29	13.89	1.50	0.11
Soundness of banks		2.70	6.60	5.32	0.98	0.18
Years since introduction		4.00	57.00	19.96	14.96	0.75

Note. The number of data is 23.

Table 3. Estimation results.

Variable	Coefficient	Standard error
GDP per capita (Thousands)	0.25*	−0.012
Stock market capitalization (LN)	.682***	−0.148
Soundness of banks	.457*	−0.234
Years since introduction	0.018	−0.015
Adjusted R-squared	0.709	
No. of observations	23 countries	
Dependent Variable	REIT market volume (LN)	

Note. One, two, and three asterisks indicate statistical significance at the 10, 5, and 1% levels, respectively.

Discussion

The results show that countries with high GDP per capita (10% confidence) also have larger REIT market volumes (Table 3). This finding supports the claim of Chen and Hobbs (2003) that economic size positively affects real estate investment activity. This result also aligns with Van Doorn (2003), who notes that GDP per capita is a factor commonly used in real estate asset allocation decisions. It can be inferred that the more income an individual earns in a country, the more the individual is likely to seek investment in the REIT market, which would result in the market's larger volume.

However, the results also show that economic size is not the most significant determinant of REIT market volume. Stock market capitalization and soundness of banks show higher relevance, conveying that countries with large stock market volumes (1% confidence) and sound banks (10% confidence) have higher REIT market volumes. This finding supports the assertion of Thrall (2002) that higher levels of capital market sophistication positively affect demand for real estate. We may conclude that the soundness of banks and stock market volumes convey the economic stability that investors seek during investment decisions.

Unlike the aforementioned factors, the age of an individual country's REIT market does not seem to have a significant correlation to REIT market volume. This may be due in part to countries that stray away from the line of fit, such as Hong Kong, Singapore, or South Africa, which have relatively large REIT market volumes despite a relatively short history of REIT operation. Countries such as Turkey, New Zealand, and Greece, on the other hand, have relatively small REIT market volumes despite longer histories of respective REIT markets, further diminishing the correlation of time since implementation of REITs and the current market volume (Figure 3).
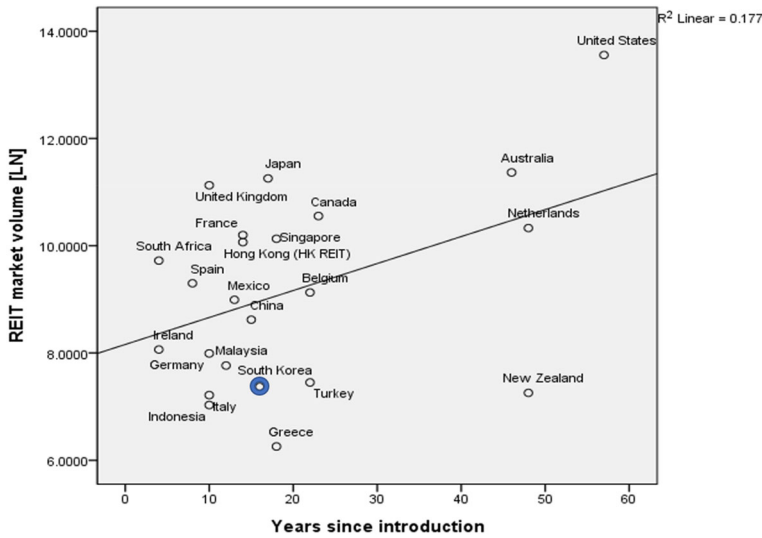
Figure 3. REIT market volume in relation to years since REIT introduction.
Note. While countries typically follow the trend of larger REIT market volume in relation to duration of time since implementation of REIT practices, countries such as South Korea, Greece, and New Zealand appear to be outliers.
Sources. Original REIT market volume and GDP per capita data retrieved from EPRA/FTSE/NAREIT Series and Euromonitor International.

Finally, we also test couples of real estate related variables such as urban population, density of road networks, and property rights, admitting that REITs are a hybrid between real estate and general finance. However, the tests fail to demonstrate a statistical significance. We conjecture that listed REIT markets are much closer to the general finance market.[3]

Conclusion

Through empirical analysis, we examine the correlations that GDP per capita, stock market capitalization, soundness of banks, and age of REIT market have with REIT market volume. While GDP per capita, stock market capitalization, and soundness of banks are shown to have positive effects on REIT market volume as previous studies propose, we conclude that economic size is not the most significant factor in determining REIT market volume. Although economic size remains important, the close relationship the REIT industry has with the capital market suggests that improvements in regulations and policies regarding stock markets and banking systems may provide more significant assistance to the growth of the REIT market.

Secondly, the age of the REIT industry in a country does not seem to have a significant effect on the market's volume. While countries such as the United States and Australia show high growth of market volume as their REIT industries age, the same does not apply to many others. It may be detrimental to possess a passive attitude towards the market in hopes that time will allow the industry to grow. Attention to a more proactive approach and experience accumulated over time may be more important considerations for participants striving to achieve success in the market.

While this study attempts to examine and explain factors that affect REIT market volume, several limitations are associated with the research. First, the availability of data is a major issue for developing an encompassing and relevant dataset. The data for some countries may be absent in a factsheet, or different organizations may have different values for the same categories of data. In

addition, the need to create a unified set of data results in the exclusion of many countries and possible variables which, if added to the dataset, might yield improved results.

Notes

1. The data were retrieved from the 2018 Global REIT Survey by EPRA.
2. Stock market data for the United Kingdom and Italy were retrieved from Historic Statistics, as of December 2017, published by the London Stock Exchange and Borsa Italiana.
3. At least in Korea, REIT investment activity has been conducted by a general finance department rather than a property-related department.

References

Akimov, A., Hutson, E., & Stevenson, S. (2016). The interaction of volatility, volume and skewness: Empirical evidence from REITs. *Journal of Real Estate Portfolio Management*, *22*(1), 1–17.

Bond, S., Karolyi, A., & Sanders, A. (2003). International real estate returns: A multifactor, multicountry approach. *Real Estate Economics*, *31*(3), 481–500.

Chan, S., Erickson, J., & Wang, K. (2003). Real estate investment trusts: Structure, performance and investment opportunities. Oxford University Press.

Chan, S., Chen, J., & Wang, K. (2013). Are REIT IPOs unique? The global evidence. *The Journal of Real Estate Finance and Economics*, *47*(4), 719–759.

Chan, K. C., Hendershott P., & Sanders, A. (1990). Risk and return on real estate: Evidence from equity REITs. *Real Estate Economics*, *18*(4), 431–452.

Chen, J., & Hobbs, P. (2003). Global real estate risk index. *The Journal of Portfolio Management*, *29*(5), 66–75.

De Wit, I. & van Dijk, R. (2003). The global determinants of direct office real estate returns. *Journal of Real Estate Finance and Economics*, *26*(1), 27–45.

DiPasquale, D., & Wheaton, W. (1992). The markets for real estate and space: A conceptual framework. *Journal of the American Real Estate and Urban Economics Association*, *20*(1), 181–197.

Hoskins, N., Higgins, D., & Cardew, R. (2004). Macroeconomic variables and real estate returns: An international comparison. *The Appraisal Journal*, *72*(2), 163–170.

I, T., Kim, G., & You, S. (2016). 상장 리츠시장의 효율성 점검 [Market efficiency for Korean public REITs market]. *Journal of the Korea Real Estate Analysts Association*, *22*(2), 29–40.

Karolyi, A., & Sanders, A. (1998). The variation of economic risk premiums in real estate returns. *The Journal of Real Estate Finance and Economics*, *17*(3), 245–262.

Kim, D., Shin, S., & Kim, E. (2012). 항공산업의 자산 유동화 – 부동산투자회사 기업공개 [Securitization of airline industry-REITs IPOs]. *Journal of the Aviation Management Society of Korea*, *10*(4), 81–95, in Korean.

Lieser, K., & Groh, A. P. (2014). The determinants of international commercial real estate investments. *The Journal of Real Estate Finance and Economics*, *48*(4), 611–659.

Ling, D. C., & Naranjo, A. (1999). The integration of commercial real estate markets and stock markets. *Real Estate Economics*, *27*(3), 483–515.

Ling, D. C., & Naranjo, A. (2002). Commercial real estate return performance: A cross-country analysis. *Journal of Real Estate Finance and Economics*, *24*, 119–142.

Ling, D., Naranjo, A., & Ryngaert, M. (2002). The predictability of equity REIT returns: Time variation and economics significance. *Journal of Real Estate Finance and Economics*, *20*, 117–136.

Mohamad, N., & Zolkifli, I. (2014). The determinant factors of real estate investment trust (REIT)'s performance: Evidence from Asian REITs. *Indonesian Capital Market Review*, *6*(1), 53–59.

Naranjo, A., & Ling, D. C. (1997). Economic risk factors and commercial real estate returns. *The Journal of Real Estate Finance and Economics*, *14*(3), 283–307.

Nardo, M., Saisana, M., Saltelli, A., Tarantola, S., Hoffman A., & Giovannini, E. (2005). *Handbook on constructing composite indicators: Methodology and user guide.* (OECD Statistics Working Paper No. 2005/3).

Ooi, J., Newell, G., & Sing, T. (2006). The growth of REIT markets in Asia. *Journal of Real Estate Literature*, *14*(2), 203–222.

Packer, F., Riddiough, T., & Shek, J. (2014). A global tour of commercial property and REIT markets. *International Real Estate Review*, *17*(2), 241–274.

Schwab, K. (2016). *The global competitiveness report 2016/2017*. World Economic Forum.

Stevenson, S. (2002). An examination of volatility spillovers in REIT returns. *Journal of Real Estate Portfolio Management*, *8*(3), 229–238.

Thrall, G. (2002). *Business geography and new real estate market analysis*. Oxford University Press.

Van Doorn, L. (2003). *Investing in Europe: The way to diversify*. [Paper presentation]. IPD European Property Strategies Conference: IPD Compendium of Real Estate Papers, Wiesbaden, Germany.

Wong, W. (2017). The Macroeconomic forces that drive REIT returns in Australia. [Conference presentation]. 24th Annual Conference of the European Real Estate Society, Delft, Netherlands.

Yeo, S., Yoo, S., & Shin, D. (2014). 리츠 수익률의 결정요인에 관한 연구 – 내부요인을 중심으로 [An empirical study on the determinants of the returns on REITs: Focusing on internal factors]. *Journal of the Korea Real Estate Society*, *32*, 183–208, in Korean.

www.m