

# Research on the Impact of Big Data on Real Estate Investment Trusts Applied in China

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**Abstract:** It is known Real Estate Investment Trusts could improve the Chinese real estate market in a very positive way, but the government limit its application in the imperfect conditions market based on cautious on the capital market. This article focuses on the real estate investment trusts in the world development trend analysis, as well as study the plight of China's real estate investment trusts application, it's proved that the big data revolution will effectively avoid the traditional real estate investment trusts in the capital risk, improve capital operation transparency, make China's real estate market can learn and use advanced foreign experience more quickly, thus the development of China's real estate market will be healthy.

## Introduction

Real Estate Investment Trusts (REITs) is a collection of investors' funds to invest in can generate stable cash flow rental type of real estate assets, in order to provide investors with long-term stable cash income trusts or corporate type funds, it's managed by a professional organization and the resulting cash income is distributed timely as dividends [1]. In the US, REITs are seen as an important asset allocation category after select stocks, bonds and cash away. In 2005. US Congress passed a bill that REITs products was recommended for the annuity, social security funds, pension funds, insurance funds investment products.

Depending on the source and nature of the investment income, REITs can be divided into three types: equity REITs, mortgage REITs and hybrid REITs [2]. REITs have the following advantages:

- Because of the characteristics of the real estate itself, the transaction process must resort to intermediaries, which is not only time-consuming but also complicated in transfer procedures. Due to the poor liquidity, so that investors have a high liquidity risk. REITs are securitization recognized of the value of real estate, securities can be traded on the secondary market after the offering, investors can always concentrate on the OTC market or trading in the securities market, this way is helpful to the circulation of funds and a certain extent eliminate the traditional concerns about real estate is not easy to dispose of.
- Since the high separation between REITs management and ownership through professional management, REITs can greatly improve the operating performance of real estate to make a direct impact on rising prices of REITs securities, so that investors can share the fruits of real estate investment professionals.
- REITs are beneficiary certificates (or stock) to raise funds in the capital markets, and then finance in the real estate market of business investments directly or not directly, which is effectively combining the real estate market and the capital market together. By combining these two markets, it's useful to accelerate capital accumulation and promote the effective use of land in large-scale real estate development made by the funds.
- REITs are beneficiary certificates (or stock) ways to raise public funds to engage in a variety of investment, in addition to reduce the risk through different types of real estate, location, mode of operation and other portfolio, and to engage in public debt within the scope of the Act, stocks and other securities investments to diversify investment risks.

- Because the portfolio, investment period, benefiting from sources and the allocation of REITs matters are subject to strict regulations, its aim is to prevent short-term trading of real estate speculation, so investment can promote the effective use of immovable property.

Although REITs has many advantages, but because of the many problems that exist in China's economic development, its application delays to get promotion. Many scholars are also trying to study ways to practice REITs in China, but they did not find a better solution, along with the development of information technology, the authors believe that the future of big data will be an important factor to promote REITs applications.

## Application and trends

The United States is the world's largest and most abundant and mature product REITs market. US REITs are organized mainly in the form of investment companies whose stock is generally freely traded on the stock exchange or market. According to the National Association of Real Estate Investment Trusts (NAREIT), REITs total market capitalization from \$ 42 million in 1962 increased to \$ 500 billion in 2013, the number of publicly traded REITs from 2 to 202. As for ROI, REITs long-term returns is better than stocks and bonds. The US, as of the first quarter of 2013, MSCI US REITs Index cumulative return since 2002 reached 354.36 percent over the same period the cumulative gain for the Standard & Poor's index of real estate developers 156.88%.

In the US, REITs are divided into public and private, which public REITs are divided into non-traded REITs and publicly traded REITs. The current US REITs market structure is based UPREIT way to operate. UPREIT structure means REITs do not directly own real estate, but by a private enterprise partnership (Operation Partnership, referred to as OP) control of real estate, thus achieving an effective combination of existing real estate assets of the partnership with the REITs cash, and become one of the most commonly used form non-listed companies switch to REITs.

Table 1, US real estate index returns and dividend yield

Time	US Treasury 10-year Treasury yields	Standard & Poor's Index		NAREIT All REITs Index		S&P 500	NAREIT All REITs	NAREIT equity REITs	NAREIT mortgage REITs
		S&P 500	Utilities	S&P 500	NAREIT All REITs	NAREIT equity REITs	NAREIT mortgage REITs		
Year-end value									
2010						1.84	4.23	3.58	13.03
2011	3.30	2114.29	309.84	3458.89	134.39	2.07	4.83	3.83	14.82
2012	1.87	2158.94	371.54	3710.61	137.57	2.13	4.38	3.70	12.93
2013	1.75	2504.44	376.34	4458.10	158.18	1.89	4.43	4.09	10.31
2014	3.01	3315.59	426.06	4601.14	156.35	1.87	4.00	3.65	10.66
2015	2.17	3769.44	549.53	5850.23	190.65	1.9	3.88	3.51	10.36

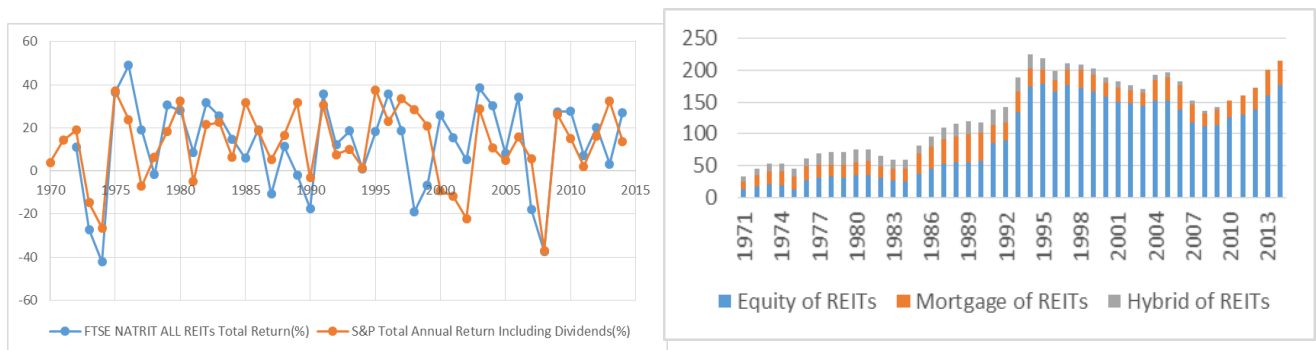


Figure 1, 1971-2014 REITS and S&P annual return contrast and the number of public REITs

July 28, 2002, Shanghai International Trust and Investment Corporation launched the first domestic "real estate investment trust" products - New Shanghai International Tower project trust funds, within 10 days of 230 million yuan sold and unprecedented warm response. REITs first test the water in the financial market, the domestic researchers began to gradually focus on REITs, and gradually expand the research and analysis in China's financial markets and the existing laws and policies, gradually raise the appropriate way to resolve and practices.

Domestic application and research focused on the following three aspects:

#### *Introduction of REITs and foreign relevant experience*

After entering the 21st century, researchers began to focus on REITs, in this period, the research has focused on the basic concepts of REITs and operating mode of presentation modes and features. As Zhou(2003) made a related note on the characteristics of REITs and the possibility of its practice in China, and proposed China has no relevant preferential tax policies of tax relief REITs; and partly because of REITs cannot be listed now. This will seriously affect the income of REITs [3].

So far, the best research on the introduction of REITs and foreign relevant experience is Chen Qiong and Yang Shengang published in 2009, "The International Development of REITs and China's Path Choice", the paper comprehensively summarizes major international national and regional experience in the real estate investment trusts in the development of the mode of operation, monitoring measures, and other aspects of the tax system. Taking full account of the development of China's real estate financial market on the basis of the actual situation, the authors put forward the development of China's real estate investment trusts in strategic vision, as well as specific policy proposals to promote the development of China's real estate investment trust fund [1].

#### *Research on the legal system of REITs*

REITs is difficult to be widely implemented in China, one important reason is the lack of a corresponding legal system, it has also become the subject of research by many scholars competing. Li Zhi (2005) mainly focused on legal basis for US REITs and launched a study on the implementation and produce for each bill [4]. Lu Zirui (2012) focused governance system firstly and proposed more stringent principle of fairness should be used to resolve the conflict of interest, in order to real estate investment trust; secondly, the author explained real estate investment trust system by asset securitization theory; finally, discussed the lack of "Trust Real Estate Investment Trust Business Management Approach (draft)" in our country and propose corresponding amendments [5].

#### *Applied REITs to the construction of affordable housing*

In early 2010, mortgage REITs for affordable housing in Shanghai and Tianjin allegedly had been submitted to the State Council for approval. According to press reports, REITs pilot program will mainly depend on banks as core investors. Market speculation, for the institutional investors involved in stock formula REITs ownership, REITs' return may need to reach 8%, given the current nominal lending rates more than 5 years loans remained at 5.94%. Li Jing (2010) believe REITs will become financially viable potential funding sources for affordable housing [6]. Li Zhongfu and He Weiming (2011) proved that use of low-cost housing REITs mode of financing is feasible from rate of return from connotation, ROA and ROE [7].

Table 2, 5 REITs investment modes in China

Released	Issuer	Investment targets
August 2012	CITIC Securities	40,000 low-rent housing of Tianjin Real Estate Development Group Co., Ltd.
August 2013	UBS Global Asset Management	Developed public rental housing in Hongkou District
September 2014	CSC	Operating income in the next five years the right to Haeinsa shares and 13 subordinate subsidiaries of 14 commercial property
May 2014	CITIC Securities	Beijing and Shenzhen CITIC Securities Buildings
February 2015	CITIC Securities	Suning's 11 stores in the interests of property-related assets

## Big data and motivation

Tax incentives is the main driving force of the development of REITs, the evolution of relevant US tax law is the main factor determining its REITs structure, development and evolution. While securities laws as the "Securities Law" and "Securities Exchange Act" REITs also made special provisions. US REITs development model is mainly manifested in two main ways: first, the tax law, the basic conditions of REITs, tax incentives is the main driving force for the development of REITs; second, REITs has chosen the right structure and development strategy based on the innovative development of the market.

Big data refers to the size of more than a traditional database software tools' ability of capture, storage, manage and analysis the data base.

Simply, big data aggregation made by the three main techniques. a) Massive transactions: In the ERP application to the data warehouse applications on-line transaction processing (OLTP) and analysis systems, conventional relational data and semi-structured and unstructured information continues to grow. b) Massive interaction data: including call detail records (CDR), device and sensor information, GPS and geolocation mapping data, manage massive image files transferred via File Transfer Protocol, Web text and click-stream data. c) Massive data processing: the emergence of big data architecture gave birth for data-intensive processing, such as an open-source, running on commodity hardware group - Apache Hadoop.

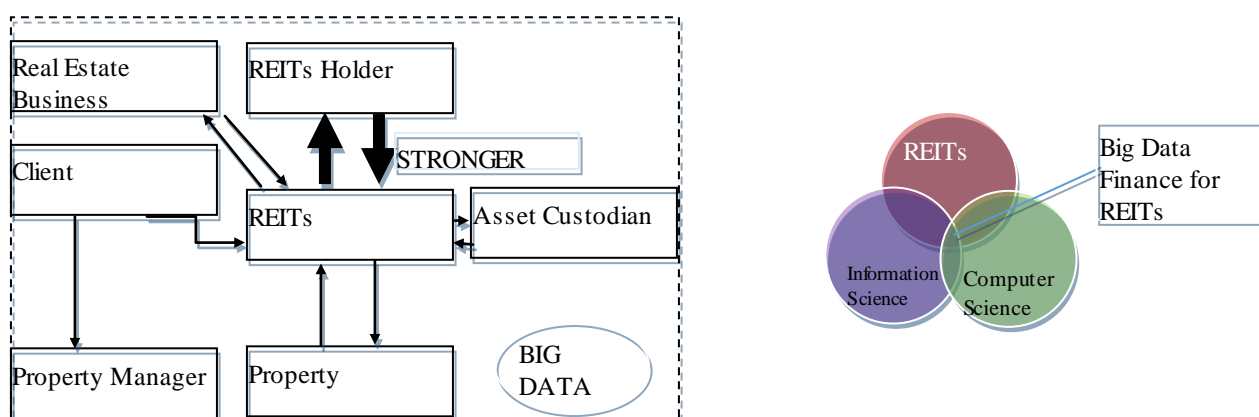


Figure 2, Big data changes the structure of REITs trading and constitution of big data

Big Data has brought significant changes to REITs trading in the following areas.

- Contact between REITs and REITs holders are getting closer. Big data does not change the relationship between owners and REITs, but greatly improved channels of communication between the two. Due to the big data itself could reveals the market discipline, makes the holder to judge the

market more rational, the holder transforms identity becomes more convenient because of developing information technology, REITs can quickly attract more people into the investment too.

- Weakening the importance of asset custodian. Due to limitations of the market and the region, the traditional custodian of funds played an important role to maintain market stability and fair, but the big data breaks this balance, investors are able to choose in a very broad range of markets, while financial supervision has changed even more transparent.
- Reduce transaction costs under big data environment, for China, the high transaction costs is an important reason that REITs cannot rapidly development. Big data transaction entirely improved process of target selection, investment options, trading efficiency and profitability rate, thus it's creating a market of products based on Internet technology, and REITs are more resistant against fluctuations in the future market.

## Conclusion

China Real Estate Investment Trust field is gradually evolving, real estate companies is already very optimistic about the development of real estate investment trusts, REITs are also pushed to application and practice in China. However, China's financial market is very fragile, development is still in its infancy, and has relatively poor ability to resist outside, so it must establish a relatively sound operational systems and legal support.

Undoubtedly, the development of big data will strongly promote the application and practice of real estate investment trusts, but the community should take the risks and benefits with full understanding, we must prevent the financial risk impact on Chinese economic foundation

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