

Financial Econometrics proposal

Everything you need to know about Singapore equity market.

1. Research Question and Motivation

We start with brainstorming:

As foreigner students, why you chose Singapore as your destination ?

I believe one of reason is that Singapore is a wealthy country. Singapore's economy is often referred to as a "miracle" due to its rapid transformation from a developing country to a developed, high-income economy in a relatively short period of time.

The second question is that you want to be wealthy in Singapore ? How would you do to achieve this goal?

There is a option - invest in Singapore equity market.

How do you know about the Singapore equity market? While the Singapore stock market may not be as exciting as its US counterpart, it is known for its stability and high dividends.

Our team aims at the following research question about Singapore equity market:

- 1. The overall introduction of Singapore equity market.**
- 2. The characterizes of Singapore equity market.**
- 3. The development path of Singapore equity market.**
- 4. Based on above analysis, give the conclusion of the worthiness of investing in Singapore equity market. And some suggestion of investment.**
- 5. Simulated investment in Singapore equity market. Analysis the results.**

2. Overall introduction

3.The characterizes of Singapore equity market

3.1 High Dividends

3.2 Accessibility and Connection (DY)

3.2.1 Analysis field

In this section, We will use REITs market to analysis the accessibility and connection of Singapore equity market.

3.2.1.1 Data Needed:

3.2.1.1.1 Specific REITs:

3.2.1.1.1.1 The 41 REITs listed on SG exchange currently. Selecting following REITs:

Sabana REIT (SGX: M1GU) :

An industrial REIT with a portfolio of 18 properties in Singapore covering high-tech industrial, warehouse and logistics, and general industrial sectors.

Keppel Pacific Oak US REIT (SGX: CMOU):

An office REIT with 13 freehold office buildings and business campuses across eight markets in the US.

Frasers Logistics & Commercial Trust (SGX: BUOU)

A diversified portfolio of 108 properties across Singapore, the UK, Australia, the Netherlands, and Germany.

Mapletree Logistics Trust (SGX: M44U)

An industrial REIT with a portfolio of 187 properties spread across eight countries.

The price of these REITs in over one years.

3.2.1.1.1.2 The dividends above fist four REITs paid in past two years.

3.2.1.1.2 Market analysis:

CSOP iEdge S-REIT Leaders Index ETF S\$ (SRT) Currency in SGD

CSOP iEdge S-REIT Leaders Index ETF (SRU.SI) Currency in USD

The CSOP iEdge S-REIT Leaders Index ETF (the "Sub-Fund") is a sub-fund of the CSOP SG ETF Series I. The Index is concentrated in REITs which are listed on the SGX-ST.SGD Counter Stock Code: SRT, USD Counter Stock Code: SRU

The Straits Times Index (STI) Currency in SGD

SG market indicator

SPDR S&P 500 ETF Trust (SPY) Currency in USD

American market indicator

Dow Jones Global Index (^W1DOW)"

Global market indicator

above index price over past one year.

3.2.1.1.3 Other asset

ABF Singapore Bond Index Fd (A35.SI)

The price of SG bond index over past five year.

3.2.1.2 Analysis:

(1) The Real Estate Investment Trust (REIT)

(1.1) What is REITs

A real estate investment trust (REIT) is a company that owns, operates, or finances income-generating real estate. They package these real estate as mutual funds and put into equity market.

The function of REITs is similar to stock. They pool the capital of numerous investors. This makes it possible for individual investors to earn dividends from real estate investments—without having to buy, manage, or finance any properties themselves. Compared with physical real estate investments, REITs is more accessible and liquid.

REITs invest in most real estate property types, including apartment buildings, cell towers, data centers, hotels, medical facilities, offices, retail centers, and warehouses. In other words, REITs is flexible in invest in commercial, public and residential property at period. In contrast, the physical real estate investments may not achieve this diversification.

Types of REITs:

REITs	own and manage	Revenues
Equity REITs	income-producing real estate	rents
Mortgage REITs	Holds mortgages on real property	net interest margin
Hybrid REITs	Combine above two	Combine above two

(1.2) S-REITs

Singapore REITs are an important component of Singapore's stock market

Largest REIT market in Asia ex-Japan.

<https://www.reitas.sg/singapore-reits/overview-of-the-s-reit-industry/>

(2) characterizes of REITs

(2.1) High dividends

By law and IRS regulation, REITs must pay out 90% or more of their taxable profits to shareholders in the form of dividends. As a result, REIT companies are often exempt from most corporate income tax.

We should generate a visualized view of that how the dividends from REITs is high.

Approach:

1. Plot the REITs yield rate and average yield in stock (such as DBS Group Holdings Ltd, Singtel and etc.), compare the return from REITs sector to the average return from other sector.
2. Plot the SREITs yields vs other Asset Classes (such as STI and bonds)

(2.2) Exposure to global real estate

Over 90% of S-REITS own properties outside Singapore. Which market the REITs suffer most?

Approach:

1. Regress these REITs on three different market (SG, US and global market index), identify the foreigner market contributor of the price of REITs.
2. Tabulate the Correlation Matrix Between SREITs and other assets in different market.

(3) Long-term investment

REITs offer a strong, stable annual dividend and the potential for long-term capital appreciation.

Approach:

1. Using the average annual total returns in CSOP iEdge S-REIT Leaders Index ETF to generate the yield curve from 1 year to 5 years.
2. In contrast, plot the yield curve in stock index, bonds of SG market, combined with U.S. stocks and U.S. Market index.
3. Compare the long term return of each financial assets, to analysis the connection of REITs and other equity and identify the long-term advantage of REITs.

(4) Mitigate economic cycle risk

Combining assets that exhibit low performance correlation can play an important role in reducing portfolio risk without sacrificing return potential. REITs is a good portfolio diversifier.

Approach:

1. Generate following portfolios:
 - (1) 55% Market index funds + 35% Bonds + 10% REITs
 - (2) 40% Market index funds + 40% Bonds + 20% REITs
 - (3) 33.3% Market index funds + 33.3% Bonds + 33.3% REITs
 - (4) 60% Market index funds + 40% Bonds
 - (5) 80% Market index funds + 20% Bonds

2. Calculate the expected returns, standard deviation of returns and Sharpe ratio on these portfolios.
3. Rank these portfolio under Sharpe ration, and plot the scatter diagram in average return and standard deviation.
4. Compare the average annualized return between the portfolios with REITs and without REITs.

Analysis the ability of REITs in diversification of risk.

3.3 Low liquidity and risk

4.The development path of Singapore equity market.

5. Simulated investment in Singapore equity market