



**CANKAYA UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS**

MASTER'S THESIS

**THE IMPACT OF MACROECONOMIC VARIABLES ON TURKISH REAL
ESTATE INVESTMENT TRUSTS (T-REITS)**

Ayçıl ÖZKAN

SEPTEMBER 2018

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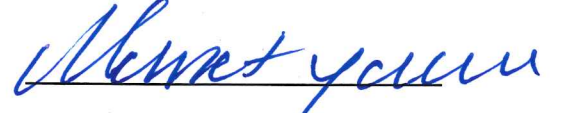
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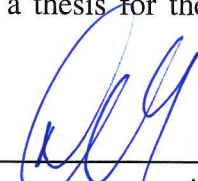
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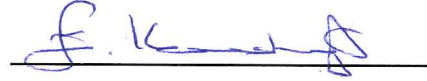
Prof. Dr. Mehmet YAZICI
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of
Master of Science.



Prof. Dr. Nadir ÖCAL
Head of Department

This is to certify that I have read this thesis and that in my opinion it is fully
adequate, in scope and quality, as a thesis for the degree of Master of Science in
Financial Economics.



Assoc. Prof. Dr. EceCeylan AKDOĞAN
Supervisor

Examination Date: 04.09.2018

Examining Committee Members:

Assoc. Prof. Dr. EceCeylan AKDOĞAN (Çankaya Univ.)



Assist. Prof. Dr. Merve KARACAER ULUSOY (YıldırımBeyazıt Univ.)



Assoc. Prof. Dr. Dilek TEMİZ DİNÇ (Çankaya Univ.)



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Name-Surname : Ayçıl ÖZKAN

Signature :



Date

: 04.09.2018

ABSTRACT

THE IMPACT OF MACROECONOMIC VARIABLES ON TURKISH REAL ESTATE INVESTMENT TRUSTS (T-REITS)

ÖZKAN, Ayçıl

Master's Thesis

Graduate School of Social Sciences MSc., Financial Economics

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This study investigates Turkish real estate investment trusts (T-REITs) system in comparison with those of other countries, explaining general properties of REITs and their importance in economy. We also employ empirical analyses in order to examine the impact of macroeconomic variables on T-REITs for the period between 2005:01 and 2017:12 on a monthly basis. Macroeconomic variables used in the study are stock exchange, inflation, industrial output, exchange rate, interest rate and consumer confidence. We use both VAR and VECM models in the study to infer about possible short and long-term relationships between macroeconomic variables and T-REITs.

Keywords: Real estate investment trusts, macroeconomic variables, cointegration, Granger causality.

ÖZET

MAKROEKONOMİK DEĞİŞKENLERİN TÜRK GAYRİMENKUL YATIRIM ORTAKLIKLARINA ETKİSİ

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Bu çalışmada, Türkiye’de yer alan gayrimenkul yatırım ortaklıkları (GYO), diğer ülke GYO’ndan örnekler, GYO’ların genel özellikleri ve GYO’ların ekonomideki önemi açıklanmaktadır. Aynı zamanda tezin asıl amacı; makroekonomik değişkenlerin Türkiye’de yer alan GYO borsa endeksine etkisinin, ampirik analiz uygulanarak 2005:01 ve 2017:12 periyodu arasında, aylık bazda incelenmesidir. Makroekonomik değişkenler olarak; borsa endeksi, enflasyon, sanayi üretimi, döviz kuru oranı, faiz, tüketici güven endeksi kullanılmaktadır. Makroekonomik değişkenler ile Türkiye’de yer alan GYO borsa endeksi arasındaki kısa ve uzun vadeli olası ilişkiler VAR ve VECM ekonometrik modelleri kullanılarak araştırılmaktadır.

Anahtar Kelimeler: Gayri menkul yatırım ortaklıkları, makroekonomik değişkenler, koentegrasyon, Granger nedensellik

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LIST OF ABBREVIATIONS

BIST	Borsa Istanbul Stock Market
CBT	Central Bank of Turkey
CCI	Consumer Confidence Index
CMB	Capital Markets Board
CML	Capital Markets Law
CPI	Consumer Price Index
EPRA	European Public Real Estate Association
GDP	Gross Domestic Product
IFS	International Financial Statistics
IRS	Internal Revenue Service
NAREIT	The National Association of Real Estate Investment Trusts
NASDAQ	National Association of Securities Dealers Automated Quotations
NYSE	New York Stock Exchange
OECD	Organization for Economic Co-Operation and Development
REIT	Real Estate Investment Trust
SEC	Securities Exchange Commission
TSI	Turkish Statistical Institute
VAR	Vector Autoregression
VECM	Vector Error Correction Model
XGMYO	Borsa Istanbul Real Estate Investment Trust Index

INTRODUCTION

Real estate is the national stock of buildings, the land on which they are built, and all vacant land. These buildings are used either by firms, government, non-profit organizations, and so on, as workplaces, or by households as places of residence. When defined this way, the value of all real estate makes up the largest single component of national wealth (Dipasquale & Wheaton, 1996, p1).

Dipasquale & Wheaton (1996) define real estate as a national stock of buildings and they argue that it has an essential role in the economy of countries. Real estate includes immovable attachments like buildings, fixtures, appurtenances, fences, roadways, renovations, improvements, plants, structures, sewers and utility systems. In other words, it is the land and everything on it. It may also be called as real property. However, real property is defined as the ownership rights possessed in the real estate instead of physical asset owned. In that sense, real property is about intangible rights while real estate is about physical assets. On the other hand, we use the term real estate and real property interchangeably in this study.

Real estate can be classified into two subgroups such as income generating and non-income generating real estate. Types of income generating real estate are office property, retail property, industrial property and multi-family residential property. Types of non-income generating real estate, however, are personal homes, vacation properties and vacant commercial buildings.

Everyone can invest in real estate directly by purchasing real estate; or indirectly, by purchasing shares in real estate investment trusts (REITs) or mortgage-backed securities (MBS).

Profits or losses are earned or incurred after direct real estate investment by two means, which are rental income and value appreciation. Most common approach, however, is the latter.

Real estate can generate income in many forms. The rent from land developed into residential or commercial properties is the biggest generator. On the other hand, companies will give payments for acts on raw land, or they may put money on building structures on it, like cell towers or pipelines. Also, income can be generated indirectly from REITs.

REITs can trade like stocks with real estate as their underlying security. In a REIT, the owner of multiple properties sells shares to investors and passes along rental income in the form of distribution.

Investments in REITs can be made either by buying their shares directly on an open market or by a mutual fund that specializes in public real estate. Some REITs are SEC-registered and public, but not listed on an exchange; others are private.

Many REITs can invest specifically in one type of real estate, e.g. shopping malls, or in one specific region, state or country. Others are more diversified. There are several REIT Exchange Traded Funds available, most of which have fairly low expense ratios. Exchange traded funds structure can help investors avoid over-dependence on one company, geographical area or industry.

REITs have become widespread in Turkey since 1995 and gained the legality in 1996 with the first initial public offering. Legal regulations about Turkish REITs (T-REITs) are enforced by Capital Markets Board of Turkey (CMB) (Aydınoglu, 2004).

REITs in other jurisdictions date back rather earlier than Turkey especially in the United States. The system on the REITs improved after 1960s in the United States. In the following years, REIT markets were opened respectively in the Netherlands, Australia and Puerto Rico. The thirteenth country launched REIT

market was Japan. South Korea, Hong Kong, Taiwan, and other Asian countries followed Japanese, then Europe accompanied with these countries. France, the U.K. and Norway launched a system on REITs. So, REITs have gained importance on funding real estate in that process and today (Bruggeman & Fisher, 2011).

There are tax incentives to REITs like being exempted from corporation tax and income tax. William B. Bruggeman & Jeffrey D. Fisher (2011) explain that with Tax Act, developers and businessmen have begun to sponsor the REITs and they turned to be an attractive vehicle for investors who do not want passive investments.

As a type of investment, REITs have become popular according to fund managers all over the world in recent years. The most important reason in becoming popular is that REITs can diversify risk, especially in inflationary economies like Turkey (Aydinoğlu, 2004, Liu *et al.*, 2012). Another advantage of REITs is liquidity as listed REIT shares can be bought and sold easily in the stock exchange.

Erol and Tırtıroğlu (2008) indicate that REITs can be an effective vehicle for the illiquidity problem and provide real estate market get involved to the capital markets. Also, it is important to examine reactions of REITs to volatility of the capital market (Liu *et al.*, 2012).

There are three primary types of REITs: Equity REITs, Mortgage REITs, and Hybrid REITs. The most predominant type of REITs is equity trusts according to market capitalization. Profit of equity trust is the interest of the property (Bruggeman & Fisher, 2011).

Fang *et al.* (2016), Rogers *et al.* (2014), Erol and Tırtıroğlu (2008) and Kroencke *et al.* (2016) document that REITs can diversify market risk with different portfolios and investors can get a stable return especially in inflationary economies. Macroeconomic environment determines and affects the equity market and REITs, as well.

In their study, Fang *et al.* (2016) search the effects of the macroeconomic factors on REITs index in Japan, Singapore and China with using multiple

econometric models. Also, Liu *et al.* (2012) assume that the national economic and financial factors have an impact on REITs returns.

For example, Fang *et al.* (2016) document that Allen *et al.* (2000) show strong evidence that there is a correlation between changes in short and long-run interest rates and REITs returns. Also, they assume that asset income growth rate interrelated with the returns of REITs. In addition, while some researchers believe that inflation has no effect on REITs, there are others that think there is somehow positive or negative relationship between inflation and returns of REITs.

A number of studies indicate that both stock & bond markets and also REITs are affected by the risk factor. Fang *et al.* (2016) aim with their study to provide the investors how they can make profit from REITs by means of macroeconomic factors.

In our study, we investigate T-REITs situation in the capital markets with macroeconomic variables. In other words, the relationship between macroeconomic factors and REITs performance in Turkish capital markets is the focus of the study. We intend to answer how macroeconomic variables affect T-REITs' performance and how investors can make profit from T-REITs by means of macroeconomic factors.

In this framework, this study includes five chapters. Chapter I presents general information about REITs and the importance of them in the economy. Chapter II gives examples of REITs from developed countries and explains the REITs in Turkey and provides a comparison of specific countries in order to reveal Turkey's situation. Chapter III includes the literature review, empirical analysis and our findings. Finally, Chapter IV concludes.

CHAPTER I

GENERAL INFORMATION ABOUT REITs

1.1. Historical Development of REITs

Firms that aim to gain income by rent or capital from real estates as owners, managers, project developers or administrators are called REITs. Shares of REITs are traded on the stock exchange and REITs pay out profits arising from real estates on their portfolios as dividends to shareholders (Çikot, 2011).

The system on REITs has improved after 1960s in the United States. Later, REIT markets were opened respectively in the Netherlands, Australia and Puerto Rico. The thirteenth country launched REIT market was Japan. South Korea, Hong Kong, Taiwan, and other Asian countries followed Japanese, then Europe was added to these countries. France, the U.K. and Norway launched a system on REITs. So, REITs have gained importance on funding real estate in that process and today (Bruggeman & Fisher, 2011).

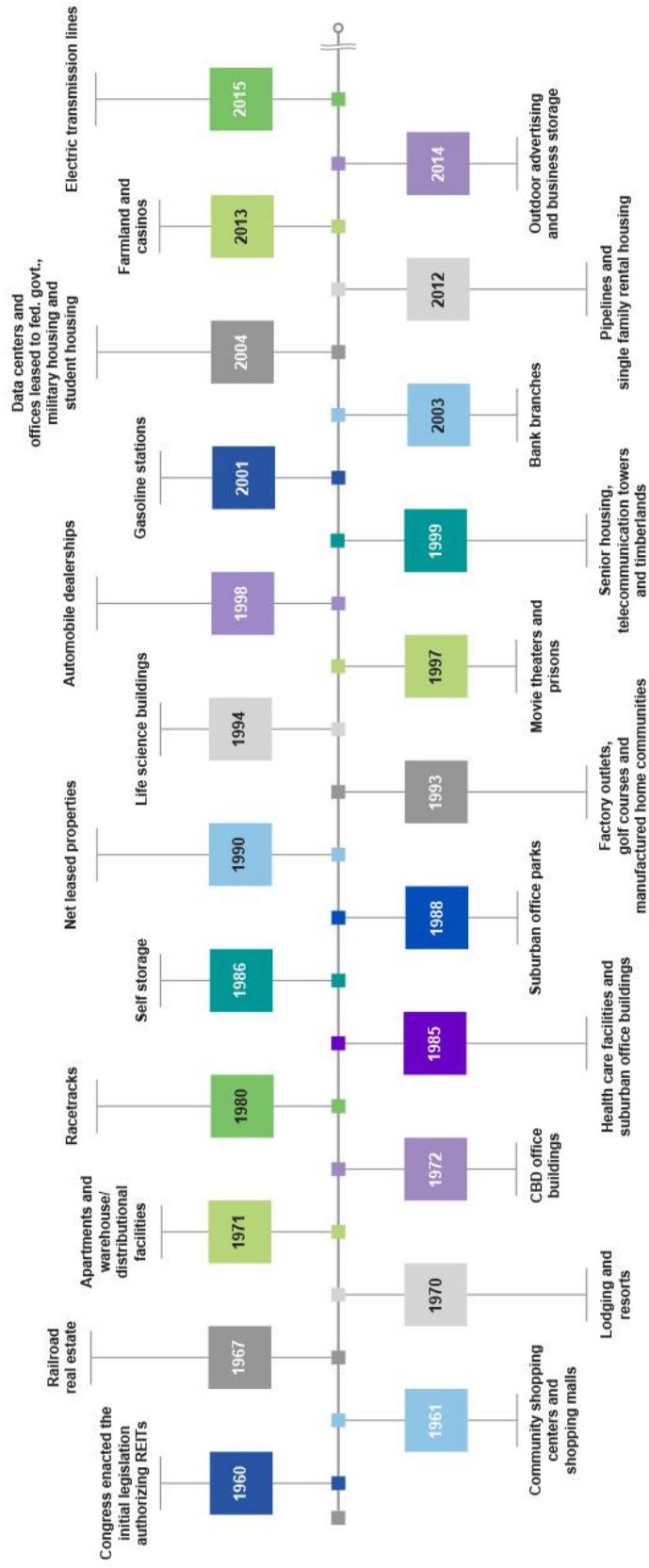
First legislation on REITs was passed on September 14, 1960 in the United States. This law provides investors diversification and opportunity on investing in real estates. First REITs, Bradley Real Estate Investors, Continental Mortgage Investors, First Mortgage Investors, First Union Real Estate, Pennsylvania REIT and Washington REIT were established between in 1960 and 1961. Continental Mortgage Investors shares were traded on New York Stock Exchange (NYSE) in June, 1965 (Çikot, 2011).

REITs can diversify investments by the majority of real estate types like offices, apartment buildings, warehouses, retail centers, medical facilities, data

centers, cell towers, infrastructure and hotels. This diversification can be shown historically in the United States in Figure 1 below.



Listings of REIT Real Estate



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Figure 1. Listings of REIT Real Estate, The National Association of Real Estate Investment Trusts (NAREIT, 2018)

REITs were established with legislation in the Netherlands in 1969 in Europe. Then, Australia followed in 1971 and they were included in investment choices in Canada in 1993. After these countries, REITs became an important investment vehicle in Japan in 2001 and so on in Asia (Çikot, 2011).

1.2. Properties of REITs

Similar to mutual funds, REITs are pass-through institutions which, in harmony with conduit theory, distribute most of their income to investors without taxation at the corporate level. Most of the REITs are closed-ended and traded on major exchanges.

1.2.1. Sectors of REITs

There are many real estate property types on REITs investment especially in the United States. Sectors of REITs, such as apartment buildings, offices, warehouses, retail centers, medical facilities, data centers, cell towers, infrastructure and hotels are the most common ones. Most REITs specialize in a specific type of property; on the other hand, some of them have many of properties together in their portfolios. The National Association of Real Estate Investment Trusts (NAREIT) groups REITs into the following sectors:

Office REITs: Office REITs have and administer office buildings or real estates, plus they rent these real estates to dwellers. Some of them specialize on particular types of the sector like central business districts or suburban areas. They specifically deal with the tenants like government offices or biotech businesses.

Industrial REITs: Industrial REITs have and administer industrial fields and rent places to tenants of industrial facilities. Particular types of these real estates, like warehouses and distribution centers are in the subject of interest of Industrial REITs.

For example, e-commerce and distribution areas are an important part of these REITs.

Retail REITs: Retail REITs have and administer retail properties and rent these to tenants. Especially, large regional malls, outlet centers, grocery-anchored shopping centers and power centers are some of the examples of Retail REITs. Other than rent (ordinary lease), finance lease of these real estates is an important income for Retail REITs. In this way, the tenants of these REITs pay not only rent but also most of the operating expenses for a real estate.

Residential REITs: Residential REITs have and administer many kinds of residences and rent them to tenants. Some examples of residential REITS include apartment buildings, student housing, manufactured homes and single-family homes.

Lodging REITs: Lodging REITs have and administer resorts and hotels and rent areas on these real estates to clients. Lodging REITs have various types of hotels and serve a wide range of guests from businessmen to vacationers.

Timberland REITs: Timberland REITs have and administer different types of timberland properties. These REITs specifically deal with harvesting and selling timber.

Healthcare REITs: Healthcare REITs have and administer healthcare-related real estate and gain income from rents of tenants. Senior living facilities, hospitals, medical office buildings and skilled nursing facilities are the real estate types of Healthcare REITs.

Infrastructure REITs: Infrastructure REITs have and administer infrastructure related properties and take rent from customers. Fiber cables, wireless infrastructure, telecommunications towers and energy pipelines are some of the property types of the Infrastructure REITs.

Self-storage REITs and Data Center REITs are other sectoral types of REITs that deal with rental storage areas for businesses or individuals and providing services to keep data and servers safe by giving uninterruptable power supplies, air-cooled chillers and physical security, respectively.

The last of the sectoral REITs are the Diversified REITs having more than one sectors included in their portfolios like office and industrial properties and the Speciality REITs holding movie theatres, casinos, farmland not being included in any sectors.

1.2.2. Types of REITs

According to NAREIT, three main types of REITs are equity trusts, mortgage trusts, and hybrid trusts traded on major stock exchanges. There are also other types of REITs that are non-listed and private.

1.2.2.1. Equity REITs

Equity REITs (EREITs) are the most common type of the REITs. They provide diversification to investors' portfolios by means of income-producing real estates. EREITs especially deal with all sectors of REITs that equity entities have properties in a wide range of real estate sectors including residences, malls, hotels, and hospitals. Specialization is the key factor for EREITs, which is explained sector by sector above. Property type determines the extent to which specialization is attained by a REIT. Consequently, it is essential to becoming specialized for a REIT to evaluate the risks attended by the ownership of the entity.

1.2.2.2. Mortgage REITs

Income-producing REITs need loans to purchase the properties. As a financier, mortgage REITs (MREITs) meet these needs of the real estate entities by investing in mortgages and mortgage-backed securities (MBS). They gain income from interest that is given to investments. Liquidity is supplied by MREITs for real estate market. The MREITs purchase not only residential and commercial mortgages but also residential mortgage-backed securities and commercial mortgage-backed securities. They also do not have real properties as opposed to EREITs. The MREITs provide finance to 1.8 million homes in the US. Investment performance by property sector and subsector is shown in Figure 2 below.

Investment Performance by Property Sector and Subsector							
September 29, 2017							
Sector	Number of Constituents	Total Return (%)			Dividend Yield (%)	Market Capitalization (\$)¹	
		2016	September	2017: YTD		Equity	Implied
FTSE NAREIT All Equity REITs	169	8.63	-0.79	6.04	3.85	1,042,998,811	1,079,545,907
FTSE NAREIT Equity REITs	159	8.52	-0.03	3.67	4.03	891,339,850	927,508,963
Industrial	11	30.72	-0.66	18.46	2.87	73,169,498	75,935,640
Office	24	13.17	1.82	1.85	3.12	101,651,311	109,506,479
Retail	30	0.95	0.65	-10.82	4.81	176,503,146	188,311,322
Shopping Centers	16	3.68	-0.89	-15.23	4.64	58,622,114	60,131,521
Regional Malls	7	-5.20	2.16	-11.74	4.85	83,119,977	93,368,310
Free Standing	7	17.02	-0.19	0.51	4.97	34,761,055	34,811,491
Residential	21	4.54	-2.51	6.87	3.05	146,739,307	152,682,743
Apartments	14	2.86	-2.37	5.27	3.24	113,826,397	117,617,314
Manufactured Homes	3	14.15	-4.11	17.03	2.76	14,684,224	15,418,021
Single Family Homes	4	26.65	-2.07	13.79	1.63	18,228,685	19,647,407
Diversified	17	10.27	1.59	1.90	4.91	65,545,757	68,117,785
Lodging/Resorts	17	24.34	4.65	1.71	4.74	55,254,604	55,695,886
Health Care	19	6.41	-3.02	6.47	5.31	105,361,547	106,212,659
Self Storage	5	-8.14	5.58	0.43	3.91	56,822,379	58,488,119
Timber	4	8.28	4.94	16.26	3.59	31,870,565	31,870,565
Infrastructure	6	10.04	-7.22	24.39	2.62	119,788,396	120,166,379
Data Centers	5	26.41	-2.91	27.95	2.45	70,536,079	72,724,749
Specialty	10	19.95	1.02	15.36	5.93	39,756,221	39,833,582
FTSE NAREIT Mortgage REITs	36	22.85	1.50	20.04	9.56	67,879,110	67,937,327
Home Financing	23	25.87	1.54	23.97	10.15	49,884,935	49,936,207
Commercial Financing	13	14.33	1.36	7.97	7.66	17,994,174	18,001,120

Source: FTSETM, NAREIT®.

Notes:

¹ Implied market capitalization is calculated as common shares outstanding plus operating partnership units, multiplied by share price. Data presented in thousands of dollars.

Figure 2. Listing of REIT by sector and subsector (NAREIT, 2018)

1.2.2.3. REITs Not Traded on Stock Exchanges

The REITs other than listed on stock exchanges, i.e. public non-listed and private ones explained as follows.

Public Non-Listed REITs: Securities Exchange Commission (SEC) is responsible for public non-listed REITs. Also, they must follow the rules of Internal Revenue Service (IRS) as the other listed REITs do. Their shares are redeemed and their liquidity is limited by restrictions.

Private REITs: Private REITs are not listed on a stock exchange, in other words they are non-listed REITs which only institutional investors can buy. They are usually externally managed companies and their shares generally are not liquid.

1.3. Importance of REITs in Economy

1.3.1. Assessing the Value of REIT Shares

Just as in the case of publicly traded stocks, shares of REITs are priced by the market. So assessing the value of REIT shares is an important issue and the analysts should consider various information such as anticipated growth in earnings per share, anticipated total return from the stock, estimated from the expected price change and the prevailing dividend yield, current dividend yields relative to other yield-oriented investments (e.g. bonds, utility stocks and other high-income investments), dividend payout ratios as a percent of REIT funds from operations (FFO), an additive indicator of REITs operating performance (explained in detail below), management quality and corporate structure, lastly underlying asset values of real estate and/or mortgages and other assets.

To measure earnings and ability of REITs to pay dividends, net income is used as defined under Generally Accepted Accounting Principles (GAAP). Net

income is the primary measure for determining operating performance of REITs. Addition to this, FFO is defined by NAREIT as net income excluding gains or losses from sales of properties and depreciation of property. Generally, as REITs use FFO, appreciation is more than depreciation on real estates.

FFO means funds from operations as defined above and is a measure of cash flow from REITs operations available for distribution of the dividends to shareholders.

To calculate FFO, depreciation and amortization are added to earnings and then any gains on sales are subtracted as in the formula below:

The formula for FFO is:

$$\text{FFO} = \text{Net Income} + \text{Depreciation} + \text{Amortization} - \text{Gains on Sales of Property}$$

An example can be given to explain the function of FFO in Table 1 briefly;

Table 1. An Example For FFO

	REIT Income Statement	REIT FFO
Rent	\$100	\$100
-Operating expenses	40	40
Net operating income	60	60
-Depreciation	40	-
+Gains on sale of property	20	-
Net income	40	-
Cash flow	-	60
EPS	\$4	-
FFO per share	-	\$6

Source: Brueggeman & Fisher (2011)

Brueggeman & Fisher (2011) explain Table 1 as follows;

Assuming that the REIT above has 10 shares of stock outstanding, its earnings per share (EPS) would be reported as \$4.00 per share. However, its funds from operations (FFO) per share would be \$6.00. Generally accepted accounting principles (GAAP) provide for depreciation of assets over time as their useful life is expended. Depreciation is assumed to occur in a predictable fashion and the time periods and rates of depreciation for different types of assets are well established. Most people are familiar with the concept and logic of depreciation based on their experiences with automobiles and other durable goods. As these goods get older, their mechanical parts break down and function less efficiently, decreasing their value. Real estate values tend to rise and fall over time based more on market conditions than physical conditions, although physical conditions can and do play a role in value. The result is that GAAP earnings calculations that use historical cost depreciation do not provide an accurate or meaningful picture of REIT financial performance (Brueggeman & Fisher, 2011, p.688).

As stated above, to understand how REITs' performance plays a role in the real estate economy, one should learn the FFO mechanism. REITs' financial performance is also important for individual investors or credit rating companies. Thus, an investor or a credit rating agency can use FFO as a leverage ratio to evaluate a REIT company's financial risk (Brueggeman & Fisher, 2011).

1.3.2. REIT Growth

New business opportunities, higher revenues, lower costs generate REIT growth. Increase in rents and higher rates of building occupancy are the sources of growth of REITs' revenue. Because of having a little free cash flow, REITs must find some sources for expansion. They should get additional assets.

1.3.3. Investing on REITs

REITs' shares can be purchased by individuals directly on a stock exchange. Besides, investors may also buy shares in a real estate investment fund that specializes in public real estate or exchange traded funds. Many REIT exchange

traded funds are available for investors and mostly have fairly low expense ratios. By means of such a structure, investors can avoid over-dependence on one company, geographical area or industry.

1.3.4. Advantages of Investing in REITs

REITs can provide high dividends. Their long-term total returns react as stock returns and their returns are more than lower risky bonds' returns. REITs are also important investments both for retirement savers and for retirees in virtue of their strong dividend income. Due to this, they can provide a continuing income stream to meet their living expenses.

Furthermore, distribution of large amounts of REITs' taxable income makes their dividends substantial. REITs are also great portfolio diversifiers because listed REIT stock returns have relatively low correlation with the returns of other equities and fixed-income investments.

The advantages of REITs are summarized below:

- **Competitive Long-Term Performance:** REITs provide long-term total returns similar to those of other stocks (NAREIT, 2018).
- **Substantial, Stable Dividend Yields:** REITs' dividend yields historically produce a steady stream of income through a variety of market conditions (NAREIT, 2018).
- **Liquidity:** Shares of publicly listed REITs are readily traded on the major stock exchanges (NAREIT, 2018).
- **Transparency:** Independent directors, analysts and auditors, as well as the business and financial media monitor listed REITs' performances and outlook. This oversight provides investors with a measure of protection

and more than one barometer of a REIT's financial condition (NAREIT, 2018).

- **Portfolio Diversification:** REITs offer access to the real estate market typically with low correlation with other stocks and bonds (NAREIT, 2018).

Investors can easily rectify the values of REITs and the assets of them with market and reporting transparency. With listed REITs, investors can get access to income-producing real estate, which have transparency and traded on public markets. REITs must bring out their financial information and reports on business developments and risks to investors on a timely basis. Due to the high dividend payouts and limited retained earnings, REITs must reach funding from the capital market, so they should disclose and justify their plans for using the funds. In that sense, REITs are required to report their financial statements with FFO as an earning measurement. Also, GAAP standardize listed REITs reporting (NAREIT, 2018).

CHAPTER II

REAL ESTATE INVESTMENT TRUSTS (REITs) IN THE WORLD & T-REITs

2.1. REITs in The World

2.1.1. United States

2.1.1.1. General Information of The United States' REITs System

The US REITs system was enacted in 1960 with the legislation of the US Congress. Congress represented that by purchasing of REITs equity, medium investors should be able to participate in a large-scale-investments of properties (EPRA, 2017). So, the aim of establishing REITs was to provide investors, especially small ones, to reach income-producing real estate (Bruggeman and Fisher, 2011; NAREIT, 2018).

Like stocks of other corporations, the stockholders can profit from income-producing REITs through their ownership of commercial properties. Also, their large scale and diversified portfolios provide more benefits for shareholders than single properties.

There should be one or more trustees or managers on the administration of REITs in the United States. Professionals that have experience on real estate are managers of REITs. There are also tax advantages like being exempted from corporate-level tax. REITs only should distribute their taxable earnings and capital gains from sales of their properties to their shareholders (EPRA, 2017; NAREIT, 2018).

These rules are regulated by a tax law, i.e. Internal Revenue Code. Originally, legal system about REITs includes Internal Revenue Code (IRC) as tax law, Corporate law of each state, Trust Law, Securities Act of 1933, Securities and Exchange Act of 1934 as related laws and their shares are traded on stock exchanges such as NYSE, AMEX and National Association of Securities Dealers Automated Quotations (NASDAQ) in the United States (Bruggeman & Fisher, 2011; EPRA, 2017). The newest law signed on December 18, 2015 is the PATH Act located in the Internal Revenue Code's sections, 856 and 857.

There are 227 REITs in the United States as shown in Table 2 below and their total market capitalization is USD 1,115 trillion. 191 of these trade on the NYSE and listed REITs equity market capitalization is USD 1,005 trillion.

Table 2. Number of REITs in the United States

Country	Number in FTSE NAREIT Index	Number Trade on NYSE	Equit Mkt Cap (Dolar\$t)	Assets (Dolar\$t)
United States	227	191	\$ 1,115	\$ 2,0

Source: NAREIT, 2018

Table 3 shows that 134 of the US REITs are included in the EPRA REIT Index and sector market capitalization is EUR926.316, this is the 65,20% of the global REIT index.

Table 3. US REITs Summary

Country	Number of REITs	Number in EPRA REIT Index	Sector Mkt Cap (EUR€m)	Assets (Dolar\$t)
United States	227	134	€ 926,316	65,20%

Source: EPRA Global Survey, 2017

Top five US REITs according to EPRA are shown in Table 4 below.

Table 4. Top Five US REITs in Europe

Company Name	Mkt Cap (EUR€m)	1 yr Return	Div Yield	% of Global REIT Index
Simon Property Group	€ 44,277	-22,29%	4,33%	4,28%
Public Storage	€ 31,785	-15,36%	3,84%	2,62%
Prologis	€ 27,266	23,06%	3,00%	2,63%

Table 4. Continues

Weltower Inc.	€ 24,030	2,81%	4,65%	2,33%
Avalonbay Communities	€ 23,215	9,60%	2,96%	2,25%

Source: EPRA Global Survey, 2017

2.1.1.2. US REITs Requirements

All of the requirements of US REITs are summarized in Table 5 below and explained under the following sub-sections:

Table 5. Requirements of US REITs

1. Legal & Organizational Requirements		
Legal Form <i>Any legal US entity taxable as a domestic corporation</i>	Minimum Share Capital No	
Organization <i>Should be one or more directors or trustees</i>	Restriction <i>No insurance company or financial institution</i>	
2. Shareholder Requirements		
Shareholder requirements <i>-At least 100 shareholders -Five or fewer individuals or foundations may not hold more than 50% of the shares -No restriction on foreign shareholders</i>	Listing mandatory No	
3. Asset Requirements		
Restrictions on assets <i>-At least 75% of its assets must be real estate, government securities or cash -75% asset test and 75% and 95% income tests -Cannot own more than 10% of another corporation's stock, other than in another REIT or a taxable REIT subsidiary (ownership of a 100% owned 'qualified REIT' subsidiary is ignored). -No more than 5% of the value of its assets can be represented by securities of any one issuer, other than another REIT or a taxable REIT subsidiary (ownership of a 100% owned 'qualified REIT' subsidiary is ignored). -Cannot own more 25% (20% starting in 2018) of its assets in securities of one or more taxable REIT subsidiaries.</i>		
4. Income Requirements		
Income Requirements <i>-Property rental, interest, dividends or sale of a certain asset must be at least 95% of its gross income - At least 75% of its gross income from real property rental, interest on obligations secured by mortgages -No more than 5% of its income from non-real estate entity</i>		
5. Distribution Requirements		
Operative income <i>At least 90% of its taxable ordinary income</i>	Capital gains <i>Not required to distribute</i>	Timing <i>Annually</i>
6. Tax Treatment		
Current income <i>Tax-exempt to extent distribution</i>	Capital gains <i>Tax-exempt to extent distribution</i>	Withholding tax <i>-No refund of foreign withholding tax -It can use a foreign tax as deduction</i>

Source: EPRA Global Survey, 2017, p.243, 244, 245,246

2.1.1.2.1. Legal & Organizational Requirements

Any taxable legal entity can establish a REIT as a domestic corporation through the IRC rules. There must be one or more directors or trustees managing a REIT and shares of it must be alienable. An insurance company or financial institution like a bank cannot administer a REIT. Finally, there is no obligation for a minimum capital for buying a share.

2.1.1.2.2. Shareholders Requirements

At least 100 shareholders must have ownership in a US REIT. It is not acceptable that five or fewer individuals own more than 50 percent of REIT shares during the last half of a taxable year. These two rules are included in the most important two tests for being a REIT. Every domestic corporation needs to pass these two tests, i.e. the 100 Shareholder Test and the 5/50 Test, according to IRC. Addition to this, foreigners can hold shares of a US REIT. Lastly, shares of a REIT must be transferable.

2.1.1.2.3. Asset Requirements

US REITs have to include quarterly at least 75 percent of real estate assets, government securities and cash in their portfolios. Apart from these assets, REITs cannot own more than 10 percent of stocks in another REIT, a taxable REIT subsidiary (TRS) or a qualified REIT subsidiary (QRS). Having stock value of another REIT or a TRS cannot exceed 5 percent of a REITs assets value. In addition, at the end of each quarter REIT cannot possess stocks in taxable REIT subsidiaries more than 20 percent of its assets.

2.1.1.2.4. Income Requirements

A REIT's income derived from income-producing real estate, such as property rental, interest, dividends or sale of a certain asset must be at least 95 percent of its gross income. Moreover, at least 75 percent of its gross income must consist of real property rental, interest on obligations secured by mortgages. Finally, a REIT's income from non-real estate facilities cannot be more than 5 percent of its income.

2.1.1.2.5. Distribution Requirements

A REIT must distribute annually 90 percent of its taxable income to its shareholders. This is one of the most essential properties of being a REIT in the United States. If the REIT cannot distribute 85 percent of its income during the year, it must pay 4 percent of excess tax.

2.1.1.3. Tax Treatment of US REITs

Distributions of dividends are subtracted from taxable income for a US REIT. In other words, these dividends are taxed as ordinary income while they are a return of an investment. As being taxed as ordinary income, the maximum tax rate of these most of distributed dividends of a REIT is 39,6 percent and plus this rate, 3,8 percent is separately for investment income. Retained income and taxable subsidiaries' profits are subject to corporate income tax.

Taxation of US REIT common share dividend historically is shown in Figure 3 below from 1995 to 2015. According to Figure 3, there is a steady increase in longterm capital gain, return of capital and ordinary income of REITs in the US.

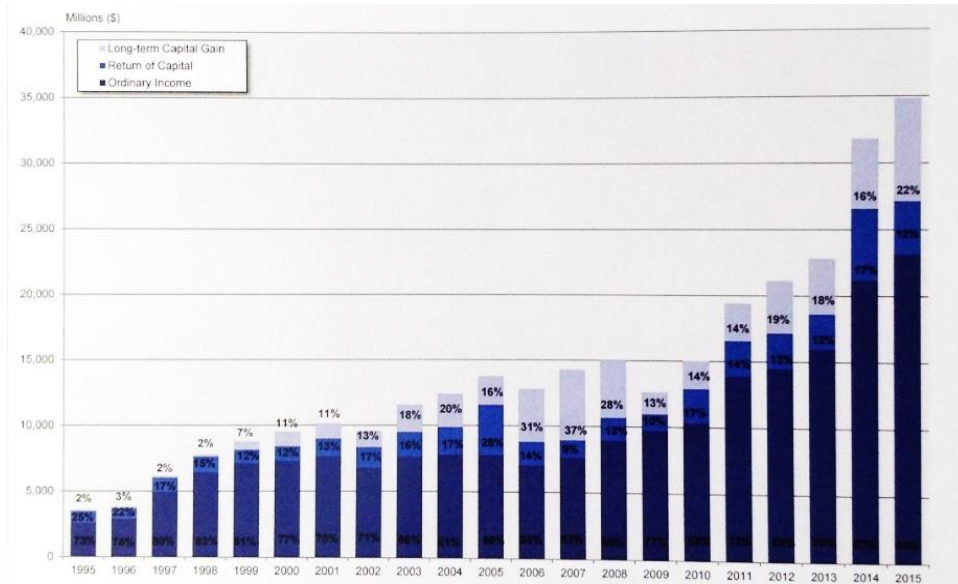


Figure 3. Taxation of REIT Common Share Dividends (NAREIT, 2018)

2.1.2. Japan

2.1.2.1. General Information of Japan REITs System

Japanese Investment Trust (J-REIT) started in 2000 in accordance with the legislation of the Investment Trust and Investment Corporation Law. Legislation of J-REIT System contains the Investment Trust and Investment Corporation Law, the Financial Instruments and Exchange Law. Investment Trust Law requires J-REITs have two types, “investment trusts” and “investment corporations (toshi hojin)”. All J-REITs are listed on the Tokyo Stock Exchange.

There are 58 REITs in Japan. 32 of them are located on EPRA REITs Index and sector market capitalization is EUR89,167 million, this is the 6.71 % of the global REIT Index.

Table 6. Japan REITs Summary

Country	Number of REITs	Number in EPRA REIT Index	Sector Mkt Cap (EUR€m)	Assets (Dolar\$t)
Japan	58	32	€ 89,167	6.71 %

Source: EPRA Global Survey, 2017

Top five Japan REITs according to EPRA are shown in Table 7 below.

Table 7. Top Five Japan REITs in Europe

Company Name	Mkt Cap (EUR€m)	1 yr Return	Div Yield	% of Global REIT Index
Nippon Building Fund Inc	€ 6,324	-6.48%	3.11%	0.55%
Japan Real Estate Investment Corporation	€ 5,711	-9.16%	3.02%	0.52%
Nomura Real Estate Master Fund	€ 5,017	-2.74%	2.96%	0.46%
Japan Retail Fund Investment	€ 4,319	-17.59%	4.10%	0.42%
United Urban Investment	€ 3,826	-9.96%	3.84%	0.35%

Source: EPRA Global Survey, 2017

2.1.2.2. Japan REITs Requirements

All of the requirements of J-REITs are summarized in Table 8 below and explained under the following sub-sections:

Table 8. Requirements of J-REITs

1. Legal & Organizational Requirements	
Legal Form <i>Corporation (in practice)</i>	Minimum Share Capital <i>JPY 100 million</i>
Organization <i>Investment Corporation registered with Financial Services Agency</i>	Restriction <i>No</i>
2. Shareholder Requirements	
Shareholder requirements <i>- No requirements under the Investment Trust Law (ITL). - Special shareholder conditions in order to deduct dividend distribution under the tax law.</i>	Listing mandatory <i>No</i>
3. Asset Requirements	
Restrictions on assets <i>- Merely an asset holding vehicle. - Investment primarily in 'Qualified Assets'.</i>	
4. Income Requirements	
Income Requirements <i>-Property rental, interest, dividends or sale of a certain asset must be at least 95% of its gross income - At least 75% of its gross income from real property rental, interest on obligations secured by mortgages -No more than 5% of its income from non-real estate entity</i>	

Table 8. Continues

5. Distribution Requirements		
Requirements for Dividend Deductibility		
To be exempt from tax during the fiscal year, under the tax law J-REIT must satisfy fundamental requirements below;		
-distributing 90% earnings available for dividends		
-largest shareholder's investments should be fewer than 50%		
-largest shareholder's shares of another company should not be more than 50%		
-borrowed funds must come from an institutional investor		
6. Tax Treatment		
Ordinary income	Capital gains	Withholding tax
- Corporate tax at an effective rate of approximately 35%	- Not distinguished from ordinary income	- Varies depending on the specific circumstances of the shareholder.
- Dividends are deductible from taxable income under certain conditions.		

Source: EPRA Global Survey, 2017, p.375, 376, 377, 378

2.1.2.2.1. Legal & Organizational Requirements

Investment Corporation is more attractive than investment trusts for investors because trust type is expensive and inconvenient. With respect to the Investment Trust Law rules the minimum paid-in capital for J-REITs is JPY100 million. As an investment corporation a J-REIT must be registered with Financial Services Agency.

2.1.2.2.2. Shareholder Requirements

According to Investment Trust Law, there are no requirements for J-REITs' shareholders. But there are some regulations under the tax law for deducting dividend among the special shareholders. Under the Investment Trust Law, J-REITs do not have to be listed; they can also be private REITs.

A J-REIT must meet the following requirements:

1. The fund type must be close-ended for J-REITs under the Investment Trust Law rules.

2. J-REITs must invest in real estate assets including real estate, real estate leasing, surface rights, easement and interest at least 70% of their investment assets.
3. J-REITs must invest in real estate assets and related assets, cash and similar to cash.

2.1.2.2.3. Asset Requirements

A J-REIT invests primarily in asset classes including office, residential and commercial real estates. Some J-REITs also invest in hotels, infrastructure facilities, housing for elderly and increasing number of logistic facilities in recent years.

‘Merely an asset holding vehicle’ means that J-REIT cannot hire employees and asset management, asset custody and general administration must be held by independent professionals.

Moreover, there is another essential asset called ‘Qualified Assets’ including securities, derivative rights, real estate, leasehold rights in real estate, surface rights, promissory notes, monetary claims, interests in a tokumei kumiai, commodities, certain commodities derivatives, renewable energy generating plants and public facilities operation rights. These assets establish more than 50 % of the total asset.

2.1.2.2.4. Deducting Dividend Distribution Requirements

Deduction of dividend distribution of J-REITs is regulated according to the Special Taxation Measures Law. Under the tax law, if a J-REIT satisfies the requirements for dividend deductibility, it does not have to pay corporate income tax during the fiscal year. A J-REIT must distribute 90% of its earnings available for dividends. The largest shareholder’s investments should be fewer than 50%. In addition to this, a J-REIT’s biggest shareholder must not own more than 50% of

another corporation's equities. Another important requirement is that if a J-REIT needs to borrow funds, these must come from an institutional investor.

2.1.2.3. Tax Treatment of Japan REITs

Corporate income tax for Japanese corporations is at an effective rate of 35%, which is the same for rental income, business income and capital gains. Dividends are deducted from taxable income under the Special Taxation Measures Law explained above. Withholding tax is regulated by the situation of the shareholders like corporate shareholders, individual or foreign shareholders under the specific circumstances of the tax law.

2.1.3. Australia

2.1.3.1. General Information of Australia REITs System

First REITs legislation was enacted in 1985 in Australia. A-REITs have the trust structure, where unit trusts are attached to company structures. They consist of listed or unlisted unit trust. Unit trusts are regulated by the general principles of the Unit Trust and Equity Law. Taxation of income gained is adjusted by the Division 6 of the ITAA 1936 under the Trust Income Rules regulated by Income Tax Law. The Unit Trusts or Listed Property Trusts do not have to be listed on stock market but if they are listed on the stock exchange, they must have at least 50 investors or they must have a structure of getting minimum 20% of pension funds. Towards the Australian Corporations Law, the trust must be directed by a corporate trustee/responsible entity /fund manager.

There are 56 A-REITs. 13 of them are located on EPRA REITs Index and sector market capitalization is EUR88,333 million, this is the 6.76 % of the global REIT Index.

Table 9. A-REITs Summary in the European Public Real Estate Association

Country	Number of REITs	Number in EPRA REIT Index	Sector Mkt Cap (EUR€m)	Assets (Dolar\$t)
Australia	56	13	€ 88,333	6.76 %

Source: EPRA Global Survey, 2017

Top five A-REITs according to EPRA are shown in Table 10 below.

Table 10. Top Five A-REITs in Europe

Company Name	Mkt Cap (EUR€m)	1 yr Return	Div Yield	% of Global REIT Index
Scentre Group	€ 14,502	-13,35%	4.47%	1.35%
Westfield Corporation	€ 11,222	-22.24%	3.47%	1.01%
Goodman Group	€ 9,469	12.48%	3.29%	0.90%
Stockland	€ 7,124	-1,59%	4.96%	0,69%
Vicinity Centres	€ 6,842	-17,38%	5.72%	0.55%

Source: EPRA Global Survey, 2017

2.1.3.2. A-REITs Requirements

All of the requirements of A-REITs are summarized in Table 11 below and explained under the following sub-sections:

Table 11. Requirements of A-REITs

1. Legal & Organizational Requirements	
Legal Form Unit trust	Minimum Share Capital \$1
Organization <i>Register with ASIC: managed by external management company</i>	Restriction <i>No special restriction</i>
2. Shareholder Requirements	
Unit holder requirements No requirements	Listing mandatory No

Table 11. Continues

3. Asset Requirements		
Restrictions on assets		
<p>-Public unit trusts and MITs investing in land, must do so for the purpose, or primarily for the purpose, of deriving rent (eligible investment business).</p> <p>-Public unit trusts that carry on a trading business (i.e. a business that does not wholly consist of eligible investment business) are not accorded 'flow through' treatment and unit trusts that carry on a trading business will not qualify as a MIT.</p> <p>-May invest in a single property.</p>		
4. Distribution Requirements		
Operative income	Capital gains	Timing
Typical distribution of 100% of trust's income as defined in the trust's constitution.	To the extent included in the trust's income, any capital gains realised on disposal of property, including interests held in other sub-trusts or other entities.	Annually or semi annually.
5. Tax Treatment		
Current income	Capital gains	Withholding tax
Not taxable in the hands of the trustee provided the unit holders are presently entitled to the trust's income at the end of the income year; otherwise trustee taxed at highest marginal rate.	<p>- Tax treatment of capital gains similar to that of ordinary income.</p> <p>- 50% CGT discount may be available for Australian resident unit holder; however, the 50% discount will not apply to nonresident unit holders on capital gains accrued after May 08, 2012</p>	N/A

Source: EPRA Global Survey, 2017, p.256, 259, 260

2.1.3.2.1. Legal & Organizational Requirements

A-REITs' legal form is unit trust and minimum share capital for an A-REIT is \$1. An A-REIT must be administered by external management company including a corporate trustee/responsible entity/fund manager registered with Australian Securities and Investments Commission. All improvements, administration, maintenance and rental activities of the investment properties are directed by the fund manager. There is no special restriction for establishing a unit trust.

2.1.3.2.2. Unit Holder Requirements

Investors for A-REITs do not have to meet any requirements for their profiles. In order to attain 'flow through' status, listing is not obligatory. On the other hand, A-REITs are usually listed on Australia Stock Exchange and they must meet some of requirements to be listed.

2.1.3.2.3. Asset Requirements

A-REITs (public unit trusts and managed investment trusts 'MITs' are regulated by a number of rules) are established to achieve wealth in two ways; they bring an added value to the real estate assets owned by trusts and they provide capital gain such as rental income. There is no restriction on the type of activities for A-REITs. They can invest in a single type of a property.

However, if a trust wants to be a publicly listed unit trust which have at least 50 unitholder or a certain entity holding 20% of the units or a MIT, there are some restrictions to achieve 'flow through' treatment meaning that the trust pays little or no income tax. In order to achieve 'flow through' treatment status, public unit trusts and MITs must carry on an 'eligible investment business' containing investment on land in order to derive rent.

2.1.3.2.4. Distribution Requirements

There is neither a specific rule for distribution of dividends nor a minimum amount of distribution. However, there are beneficial tax advantages for trusts, which allocate all of their taxable incomes regulated by the new AMIT regime. A-REITs basically deliver their taxable income annually and listed ones distribute their incomes quarterly or semi annually.

2.1.3.3. Tax Treatment

Basically A-REITs' distributed income and capital gains are exempted from tax. On the other hand, non-distributed revaluation gains are subject to tax. Furthermore, 50% of the taxable income including capital gains is exempted from

taxation called capital gains tax. However, withholding tax of the income of an A-REIT's foreign assets is deducted from the distributed foreign income.

2.1.4. Canada

2.1.4.1. General Information of Canada's REITs System

REITs system legally began in 1994 in Canada. There is no initial minimum capital requirement for Canada REITs (C-REIT). According to the legal system of Canada there must be at least 150 shareholders. C-REITs must issue shares through an initial public offering in a stock exchange. The C-REIT system is called as mutual fund trusts (MFTs) is ruled by the Canadian Income Tax Act (ITA).

There are 47 C-REITs. 16 of them are located on EPRA REITs Index and sector market capitalization is EUR48,957 million, this is the 3,02 % of the global REIT Index.

Table 12. C-REITs

Country	Number of REITs	Number in EPRA REIT Index	Sector Mkt Cap (EUR€m)	Assets (Dolar\$t)
Canada	47	16	€ 48,957	3,02 %

Source: EPRA Global Survey, 2017

Top five C-REITs according to EPRA are shown in Table 13 below.

Table 13. Top Five C-REITs in Europe

Company Name	Mkt Cap (EUR€m)	1 yr Return	Div Yield	% of Global REIT Index
Rio Can REIT	€ 5,292	-13,13%	5,86%	0,51%
H&R REIT	€ 4,257	3,90%	6,27%	0,41%
Canadian Apartment Properties REIT	€ 3,079	5,04%	3,81%	0,30%
Smart REIT	€ 2,830	-11,50%	5,29%	0,24%
Canadian REIT	€ 2,268	-1,23%	4,08%	0,22%

Source: EPRA Global Survey, 2017

2.1.4.2. C-REITs Requirements

All of the requirements of C-REITs are summarized in Table 14 below and explained under the following sub-sections:

Table 14. Requirements of C-REITs

1. Legal & Organizational Requirements		
Legal Form Unit trust	Minimum Share Capital No	
Organization Canada resident unit trust	Restriction Business objective is limited to the acquisition, ownership, maintenance, renovation and management of real estate	
2. Shareholder Requirements		
Unit holder requirements - Minimum of 150 unitholders each of whom holds not less than one 'block of units' and having an aggregate fair market value of no less than CAN\$ 500. - Generally, MFTs cannot be established or maintained primarily for the benefit of non-residents of Canada.	Listing mandatory Required to avoid redemption right of unit holders.	
3. Asset Requirements		
Restrictions on assets -The investing in property (other than real property or an interest in real property) is allowed. - The acquiring, holding, maintaining, improving, leasing or managing of any real property (or interest in real -property) that is capital property of the trust is allowed. - Any combination of the foregoing activities.		
4. Distribution Requirements		
Operative income All income of the MFT for a taxation year is paid or payable to unit holders in the year so that MFT does not incur tax.	Capital gains All capital gains are paid out and retain their character as such in the hands of unit holders, provided a designation is made by the MFT.	Timing All income must be paid or recognised as a payable in the taxation year of the MFT. If it is payable then the amount can be paid out later.
5. Tax Treatment		
Current income A MFT is entitled to deduct in a year all income determined for purposes of the ITA paid or payable to unit holders in the year so it may reduce its net taxable income to nil.	Capital gains Capital gains follow the same system for income, except only 50% of a capital gain (a 'taxable capital gain') is included in income and 50% of a capital loss can be applied to offset taxable capital gains.	Withholding tax Credit or refund of foreign withholding tax possible.

Source: EPRA Global Survey, 2017, p.195, 196, 197, 198

2.1.4.2.1. Legal & Organizational Requirements

In Canada, as a most popular investment vehicle, MFT provides tax advantages. C-REITs' legal form includes unit trust and there is no minimum share

capital required. A Canadian unit trust is restricted that the unit trust has to own real estate and it has to take the maintenance and make renovation of the real estate and it has to manage it.

2.1.4.2.2. Unit Holder Requirements

There must be at least 150 unitholders in a C-REIT and at least one 'block of unit' must have minimum CAN\$ 500 market value. Usually, the aim of establishing of the MFTs is not for non-residents of Canada. Unit trusts must be listed and their shares must be traded on stock exchange market in Canada in Toronto Stock Exchange.

2.1.4.2.3. Asset Requirements

C-REITs as MFTs can invest in commercial, industrial, residential properties among other specialized sectors of real estate such as self-storage or care facilities. They can develop and manage their properties. Some of them can also invest in mortgages. However, a MFT may not trade in real estate and manage hotels or nursing houses.

2.1.4.2.4. Distribution Requirements

There is no obligation for the distribution of all income and capital gains for C-REITs, but for providing the advantages of taxation it is useful for the unit trust to hand out its income. Distribution provides unit trusts exemption from tax. Half of the distributed capital gains are exempted from tax and the rest half of them are exempted from tax whether distributed or not. In the taxation year the MFT must pay all income.

2.1.4.3. Tax Treatment

A MFT's income is not exempted from tax according to ITA rules. The 50% of the capital gains are exempted from tax if they are distributed, the rest 50% of capital gains are relieved from taxation.

2.1.5. United Kingdom

2.1.5.1. General Information of United Kingdom REITs System

The REITs system started in 2007 with the Finance Act 2006 in the United Kingdom. The system is called UK-REIT. The law about REITs enacted in 2010, the Corporation Tax Act 2010 provided increase in number of property companies. Moreover, with these improvements on legislation, UK-REIT corporate entities can make diversifiable investments, flexible cash management and more simple tax treatment.

There are 44 UK-REITs. 28 of them are located on EPRA REITs Index and sector market capitalization is EUR60,828 million, this is the 5,23 % of the global REIT Index.

Table 15. United Kingdom REITs

Country	Number of REITs	Number in EPRA REIT Index	Sector Mkt Cap (EUR€m)	Assets (Dolar\$)
United Kingdom	44	28	€ 60,828	5.23 %

Source: EPRA Global Survey, 2017

Top five UK-REITs according to EPRA are shown in table 16 below.

Table 16. Top Five UK REITs in Europe

Company Name	Mkt Cap (EUR€m)	1 yr Return	Div Yield	% of Global REIT Index
Land Securities Group plc	€ 9,123	1.21%	3.81%	0.85%
British Land Co plc	€ 7,101	5.73%	4.82%	0.69%
Segro plc	€ 5,562	27.05%	1.91%	0.54%

Table 16. Continues

Hammerson plc	€ 5,190	11,25%	4.18%	0.50%
Intu Properties plc	€ 4,153	-2.41%	5.20%	0.26%

Source: EPRA Global Survey, 2017

2.1.5.2. UK-REITs Requirements

All of the requirements of UK-REITs are summarized in Table 17 below and explained under the following sub-sections:

Table 17. Requirements of UK-REITs

1. Legal & Organizational Requirements		
Legal Form <i>Listed closed-ended company</i>	Minimum Share Capital <i>GBP 700,000 (if listed in UK on London Stock Exchange)</i>	
Organization <i>-Election must be filed prior to conversion</i> <i>-Certain conditions for REIT status</i>	Restriction <i>No</i>	
2. Shareholder Requirements		
Shareholder requirements <i>-Not a 'close company'.</i> <i>-There are potentially penalties if a single corporate shareholder owns 10% or more of the shares/voting rights.</i> <i>-No restriction on foreign shareholders.</i>	Listing mandatory <i>Yes, must be admitted to trading on a recognised stock exchange and either listed on the London Stock Exchange (or foreign equivalent main market exchange) or traded on any Stock Exchange recognised by the UK tax authorities (within three years).</i>	
3. Asset Requirements		
Restrictions on assets <i>-At least 75% of a REIT's net profits must be derived from the property rental business (measured using financial statements).</i> <i>-At least 75% of a REIT's assets must be used in the property rental business (measured using financial statements).</i> <i>-The REIT must hold at least three separate property assets.</i> <i>-No one property asset may exceed 40% of the total assets.</i> <i>-May invest outside the UK in real estate wherever located.</i>		
4. Distribution Requirements		
Operative income <i>-90% of tax-property rental profits.</i> <i>-100% of PIDs from other REITs.</i>	Capital gains <i>Not included in the distribution obligation.</i>	Timing <i>Within 12 months of the end of the year.</i>

Table 17. Continues

5. Tax Treatment		
Current income	Capital gains	Withholding tax
<ul style="list-style-type: none"> - Income from a property rental business is exempt from Corporation tax. - Residual business income is taxable at the current rate of Corporation tax (19%). 	<ul style="list-style-type: none"> Gains realised on disposals of assets used in the property rental business are not subject to tax. 	<ul style="list-style-type: none"> - In principle, no withholding tax levied on distributions that are made out of the residual business income. - Distributions out of the property rental business profits (PIDs) are generally subject to 20% withholding tax unless the recipient is a UK corporate, UK charity or UK pension fund. - Withholding tax suffered by a UK REIT on its property rental income from directly held non-UK real estate will be deducted in the calculation of the required PID. - Withholding taxes suffered on distributions in respect of shares will be part of the REIT's residual business and tax credit relief may be available

Source: EPRA Global Survey, 2017, p.171, 172, 173, 175

2.1.5.2.1. Legal & Organizational Requirements

A UK-REIT must be a close-ended company and listed on a stock exchange in the UK. There is no restriction on establishing the real estate entity whether in UK or not. Obligation for minimum share capital for a UK-REIT listed on the London Stock Exchange is GBP 700.000.

2.1.5.2.2. Shareholder Requirements

A UK-REIT would not be deemed as a 'closed company' unless five or less than five administer the REIT company. Only if 35% of the shares are publicly held, a listed UK-REIT entity is legally accepted. A single trust's shareholder cannot have more than 10% of the shares or voting rights. If the number of shares is close to 10% of the company's, under the regulation rules, the shareholder must distribute dividends. Trust's foreign shareholders are not restricted by special rules.

The UK-REITs must be listed on the London Stock Exchange or they can be on foreign stock exchanges or any stock exchange accepted by UK.

2.1.5.2.3. Asset Requirements

There are some restrictions regulated by the balance of business tests, which limit the profits gained from rental properties. On the other hand, there is no control for other activities. Especially, only rental profits collected from real estate properties are exempted from taxation under the regulation.

Under the balance of business tests;

- At least 75% of the net profits of the UK-REITs must be gained from rental property activities.
- At least 75% of the UK-REITs' assets must be used in rental property activities.

In addition to this, a UK-REIT must own at least three different real estate sectors of properties and any each of the property's value must not exceed 40% of the total REIT's portfolio. UK-REITs can own real estates and make investments out of the UK.

2.1.5.2.4. Distribution Requirements

In operating income distribution, apart from rental income and capital gains there is a distribution named as Property Income Distribution (PID). 100% of PIDs are handed out within the end of the year. Beside this, 90% of the gains from rental property must be distributed within the end of the accounting year. For capital gains there is no obligation for distribution.

2.1.5.3. Tax Treatment of United Kingdom REITs

In the UK only income from rental business and gains from sales of real estates are exempted from tax. The rest of the income out of rental business income is taxed about the current rate of corporation tax, 19%.

If shareholders are foreign or individual, distributed dividends to them are taxable at the withholding tax rate of 15%.

In the situation of selling the properties developed by the UK-REITs are subject to tax. If any of the real estate's development cost is up to the 30% of the disposal value, this real estate will be evaluated as 'developed property'. If real estate is used except from its purpose, it will be subject to tax. Finally, apart from rental income and capital gains called Property Income Distribution-PIDs are mostly taxed at the 20% withholding tax rate. But if the mandatory is a UK charity, UK corporate or UK pension fund, it will be exempted from tax.

2.2. THE REAL ESTATE INVESTMENT TRUSTS IN TURKEY (T-REITs)

2.2.1. General Information

The system regarding REITs was enacted in 1995 in Turkey with the law of Capital Markets (no.6362, “CML”). They are structured as institutions in capital market and invest in real estates and projects on real estates. T-REITs are exempted from corporate income tax, too, and they also must be listed on stock exchange market. They are traded on Borsa Istanbul Stock Exchange (BIST) with index name of BIST Real Estate Investment Trusts Index (XGMYO).

2.2.2. Legislation of T-REITs

First legislation was passed in 1995 by Capital Markets Board (CMB) of Turkey. Following the revolutionary changes in Capital Markets Law, the Communiqué on Principles of Real Estate Investment Trusts Serial III number 48.1 was published on 28 May 2013. With this amendment management structure, incorporation, legal form, capital and some other requirements were initialized in T-REITs system. Following this, CMB published Communiqué number 48.1-a on 23 January 2014 including the rulings of Infrastructure Real Estate Investment Companies. These types of T-REITs were first produced at 2009 then incorporated to Communiqué number 48.1-a as a type of T-REITs. Hence, T-REITs can invest in infrastructure investment and services and benefit from tax exemption under the rules of Communiqué 48.1-a.

The last amendment about T-REITs, Communiqué number 48.1-b was published in the official gazette on 17 January 2017 by CMB. These changes on legislation provide T-REITs how to practice initial capital, profit distributions, assets or other minor amendments.

2.2.3. Numbers of T-REITs

There were 23 T-REITs in 2011 in Turkey as shown in the Table 18 below and this number has reached to 31 in the last period of 2017. Market value of 23 T-REITs was TRY11.708.492 and this was costed at USD 6.224 million in 2011. This market value has reached to USD 7.125 million in 2017. The year of 2014 has the biggest market value which is USD 9.462 million. The T-REITs in Turkey have not a regular increase in market value but after 2014 market value of T-REITs has decreased till 2017, although the number of companies has increased regularly.

Table 18. Net Asset Value of Real Estate Investment Trusts in Turkey

NET ASSET VALUE OF T-REITs			
Year	Number	Market Value	
		Thousand TRY	Million \$
2011/12	23	11.708.492	6.224
2012/12	25	15.781.822	8.857
2013/12	30	18.632.452	8.730
2014/12	31	21.981.323	9.462
2015/12	31	21.279.729	7.279
2016/12	31	24.961.535	7.080
2017/12	31	26.924.062	7.125

Source: Capital Markets Board (CMB), 2017

Table 18 shows historical consolidated portfolio structure of T-REITs. Their market capitalization values are also portrayed in the table. The market capitalization value has reached to TRY 64.787.048 thousand from TRY18.742.054 thousand from 2011 to 2017. Even though proportions of real estates, real estate projects and rights in the portfolio have demonstrated increase with in years, this increase is not steady. They have reached its maximum value of 79% at the third quarter of 2017.

Another important ratio is the proportion of money and capital market instruments in the portfolio (MCM/ RP) of REITs in Turkey, which has its maximum

value of 18.86% at the fourth quarter of 2013. RP ratio has dropped from 11.33% to 3.94 since the establishment year of REITs of Turkey, 2013 to 2017. Also, the ratio of proportion of affiliates (GB) displayed decrease within the years till 2011 to 2017. The ratio reached its the lowest level 2.87 in 2017. This is portrayed in Table 19.

On the other hand, Table 20 provides general information about T-REITs' market values of the fourth quarter of 2017. According the table the largest company is Emlak Konut Gayrimenkul Yatırım A.Ş. with its market value of 10.678.000.000 TRY, total assets of 20.527.994.000 TRY and number of outstanding shares of 3.800.000.000, besides this its fourth quarter of 2017's stock price is 2,81 TRY.

There are five companies, which have more than 1.000.000.000 TRY market value. These are Torunlar Gayrimenkul Ortaklığı A.Ş., Yeni Gimat Gayrimenkul Yatırım Ortaklığı A.Ş., Akiş Gayrimenkul Yatırım Ortaklığı A.Ş., İş Gayrimenkul Yatırım Ortaklığı A.Ş. and Doğuş GE Gayrimenkul Yatırım Ortaklığı A.Ş. and their market values are respectively TRY 3.330.000.000, TRY 1.460.121.600, TRY 1.346.187.491, TRY 1.242.700.000, TRY 1.075.705.227.

Table 19. Historical Consolidated Portfolio Structure of Real Estate Investment Trusts in Turkey

HISTORICAL CONSOLIDATED PORTFOLIO STRUCTURE OF REAL ESTATE INVESTMENT TRUSTS										
R %: Proportion of Real Estates, Real Estate Projects and Rights in the Portfolio										
MCFI %: Proportion of Money and Capital Market Instruments in the Portfolio (RP)										
GB %: Proportion of Affiliates in the Portfolio										
All Investment Trusts										
Year	Month	Number of Trusts	Market Capitalisation (Thousand TRY)	R %	RP %	GB %	OTHER %			
2011	09	23	18.742.054	66	11,33	5,19	17,50			
2011	12	23	20.769.996	63	11,27	5,45	20,40			
2012	03	24	22.104.329	63	10,70	6,58	19,41			
2012	06	24	21.771.855	64	9,82	6,53	19,37			
2012	09	24	22.561.915	67	6,44	8,32	18,67			
2012	12	25	24.086.877	66	8,18	6,48	19,34			
2013	03	27	27.232.324	65	5,87	10,47	19,16			
2013	06	28	29.487.413	66	6,17	12,61	15,22			
2013	09	30	32.399.777	64	11,91	5,31	18,78			
2013	12	30	37.572.732	59	18,86	4,76	17,07			
2014	03	30	37.948.972	60	18,18	5,07	16,89			
2014	06	31	40.797.481	75	8,19	4,49	12,29			
2014	09	31	41.400.379	67	10,08	4,46	18,49			

Table 19. Continues

Year	Month	Number of Trusts	Market Capitalisation (Thousand TRY)	R		RP		GB		OTHER	
				%		%		%		%	
2014	12	31	42.059.437	71		9,19		4,51		15,63	
2015	03	31	43.472.986	74		10,43		3,61		11,47	
2015	06	31	46.426.798	72		6,76		3,54		18,10	
2015	09	31	49.953.372	72		8,84		3,84		15,46	
2015	12	31	52.530.355	73		6,00		3,82		17,26	
2016	03	31	53.090.220	74		9,49		3,86		12,89	
2016	06	31	55.950.628	76		7,93		3,99		12,39	
2016	09	31	55.594.874	75		8,19		4,49		12,30	
2016	12	31	60.602.223	77		6,80		3,41		12,49	
2017	03	31	62.751.650	76		4,34		2,70		16,65	
2017	06	31	63.978.556	78		3,90		2,61		15,03	
2017	09	31	63.844.830	79		4,09		2,63		14,39	
2017	12	31	64.787.048	78		3,94		2,87		14,98	

Source: Capital Markets Board (CMB), 2017

Table 20. General Information on T-REITs

Name of Company G.Y.O.	Asset Allocation % / 2017 4. quarter											Market Value (TRY)
	Registered Capita (TRY)	Paid in Capital (TRY)	Number Of Outstanding Shares	Real Estate Invest.	Affiliates	Money and Capital Market Instruments	Other	Total Assets (TRY)	Stock Price (TRY)			
1 AKFEN	1.000.000.000	184.000.000	184.000.000	59,39	34,15	0,09	6,37	1.217.053.500	2,410000	443.440.000		
2 AKİŞ	500.000.000	430.091.850	430.091.850	91,22	2,25	2,00	4,52	4.264.607.448	3,130000	1.346.187.491		
3 AKMERKEZ	75.000.000	37.264.000	37.264.000	82,00	0,00	8,65	9,35	240.541.899	20,460000	762.421.440		
4 ALARKO	20.000.000	10.650.794	10.650.794	56,14	0,00	41,41	2,45	926.964.533	50,850000	541.592.875		
5 ATA	135.000.000	23.750.000	23.750.000	68,55	0,00	29,39	2,06	96.717.405	4,790000	113.762.500		
6 ATAKULE	200.000.000	154.000.000	154.000.000	86,17	0,00	6,57	7,26	388.587.305	2,050000	315.700.000		
7 AVRASYA	360.000.000	72.000.000	72.000.000	72,75	0,00	21,67	5,58	175.460.856	1,580000	113.760.000		
8 DENİZ	95.000.000	50.000.000	50.000.000	70,39	11,78	6,55	11,28	249.932.600	2,700000	135.000.000		
9 DOĞUŞ	500.000.000	332.007.786	332.007.786	98,36	0,00	0,77	0,87	1.165.054.708	3,240000	1.075.705.227		
10 EMLAK K.	4.000.000.000	3.800.000.000	3.800.000.000	67,24	0,00	2,88	29,88	20.527.994.000	2,810000	10.678.000.000		
11 HALK	1.500.000.000	820.000.000	820.000.000	87,52	0,00	5,18	7,30	2.376.934	0,960000	787.200.000		
12 IDEALİST	50.000.000	10.000.000	10.000.000	84,32	0,00	0,45	15,23	8.153.067	2,040000	20.400.000		
13 İŞ	2.000.000.000	913.750.000	913.750.000	92,93	0,04	1,57	5,46	5.311.947.256	1,360000	1.242.700.000		
14 KİLER	1.400.000.000	124.000.000	124.000.000	71,96	8,37	0,94	18,73	1.941.060.448	3,660000	453.840.000		
15 KÖRFEZ	330.000.000	66.000.000	66.000.000	70,94	0,00	13,55	15,51	107.458.478	1,660000	109.560.000		
16 MARTI	200.000.000	110.000.000	110.000.000	78,54	16,81	0,01	4,63	533.327.575	2,120000	233.200.000		

Table 20. Continues

Name of Company G. Y.O.	Registered Capita (TRY)	Paid in Capital (TRY)	Number Of Outstanding Shares	Real Estate Invest.	Affiliates	Money and Capital Market Instruments	Other	Total Assets (TRY)	Stock Price (TRY)	Market Value (TRY)
17 MİSTRAL	100.000.000	39.000.000	39.000.000	75,04	0,04	1,34	23,57	287.433.543	7,390000	288.210.000
18 NUROL	200.000.000	80.000.000	80.000.000	84,61	0,00	0,68	14,71	1.841.010.507	4,750000	380.000.000
19 ÖZAK	300.000.000	250.000.000	250.000.000	82,05	6,05	6,37	5,53	2.525.074.338	2,340000	585.000.000
20 ÖZDERİCİ	250.000.000	100.000.000	100.000.000	92,19	0,00	0,14	7,67	540.540.365	1,560000	156.000.000
21 PANORA	90.000.000	87.000.000	87.000.000	94,97	0,01	2,31	2,71	926.112.775	4,890000	425.430.000
22 PERA	250.000.000	89.100.000	89.100.000	91,08	3,73	0,75	4,44	166.088.353	0,880000	78.408.000
23 REYSAŞ	500.000.000	246.000.001	246.000.001	83,73	2,07	7,26	6,94	1.895.927.195	1,270000	312.420.001
24 SERVET	1.000.000.000	52.000.000	52.000.000	76,79	8,05	1,90	13,26	423.584.991	3,040000	158.080.000
25 SİNPAS	1.000.000.000	600.000.000	600.000.000	61,77	3,64	1,35	33,24	1.992.895.169	0,770000	462.000.000
26 TORUNLAR	1.000.000.000	1.000.000.000	1.000.000.000	87,40	2,78	5,31	4,50	11.335.817.000	3,330000	3.330.000.000
27 TSKB	200.000.000	150.000.000	150.000.000	95,38	0,00	2,61	2,00	466.563.935	0,730000	109.500.000
28 VAKIF	500.000.000	217.500.000	217.500.000	84,11	0,00	2,56	13,33	1.152.183.130	2,600000	565.500.000
29 YAPI KREDİ K.	100.000.000	40.000.000	40.000.000	80,75	0,25	13,52	5,48	82.634.767	2,320000	92.800.000
30 YENİ GİMAT	250.000.000	107.520.000	107.520.000	88,72	0,00	10,77	0,51	1.954.234.951	13,580000	1.460.121.600
31 YEŞİL	1.000.000.000	235.115.706	235.115.706	59,31	21,67	0,00	19,02	2.039.708.960	0,630000	148.122.895

Source: Capital Markets Board (CMB), 2017

EPRA stated as in the Table 21 that there are 25 REITs and 4 of them are traded in EPRA REIT Index sector. Their market capitalization is EUR60,828 million, this is the 5,23 % of the global REIT Index.

Table 21. T-REITs Summary in EPRA

Country	Number of REITs	Number in EPRA REIT Index	Sector Mkt Cap (EUR€m)	Assets (Dolar\$)
Turkey	25	4	€ 6,363	0,17%

Source: EPRA Global Survey, 2017

Emlak Konut Gayrimenkul Yatırım A.Ş. has the largest market capital with EUR 2,781 million in Europe and its share in the Global REIT Index is 0.14%. Torunlar Gayrimenkul Ortaklığı A.Ş., İş Gayrimenkul Yatırım Ortaklığı A.Ş. and Doğuş GE Gayrimenkul Yatırım Ortaklığı A.Ş. follow Emlak Konut Gayrimenkul Yatırım A.Ş. according to EPRA's report as shown in the table 22.

Table 22. Top Five T-REITs in Europe

Company Name	Mkt Cap (EUR€m)	1 yr Return	Div Yield	% of Global REIT Index
Emlak Konut Gayrimenkul Yatırım AS	€ 2,781	2.80%	3.290%	0.14%
Torunlar Gayrimenkul Ortaklığı	€ 612	-0,59%	2.03%	0.01%
Is Gayrimenkul Yatirim Ortakligi	€ 332	-1.79%	4.78%	0.01%
Dogus GE Gayrimenkul Yatirim Ortakligi	€ 256	25.61%	0.00%	0.01%

Source: EPRA Global Survey, 2017

2.2.4. Requirements For T-REITs

All of the requirements of T-REITs are summarized in Table 23 below and explained under the following sub-sections:

Table 23. Requirements of T-REITs

1. Legal & Organizational Requirements		
Legal Form <i>Joint stock company</i>	Minimum Share Capital <i>TRY 30 million (for T-REITs and TRY 100 million (for Infrastructure T-REITs)</i>	
Organization Real estate investment trust	Restriction -stockholders must have a certain income and satisfy asset ownership requirements -stockholders must not be involved in business, industry and agriculture outside of legally allowed transactions -stockholders must not be involved in capital market activities other than for managing its own portfolio -stockholders must not be involved in construction activities	
2. Shareholder Requirements		
Shareholder requirements <i>Only for company founders</i>	Listing mandatory <i>Yes</i>	
3. Asset Requirements		
Restrictions on assets - <i>Only transactions permitted by the Communiqué are allowed.</i> - <i>Must primarily deal with portfolio management.</i> - <i>The portfolio of a general purpose T-REITs is required to be diversified.</i> - <i>If a T-REITs is established to display activity in a specific area or invest in a specific project, 75% of its portfolio must consist of assets mentioned in its title and/or articles of association. - Cannot be involved in the construction of real estate.</i> - <i>Cannot commercially operate any hotel, hospital, shopping center, etc.</i> - <i>Cannot provide services by its personnel to individuals or institutions in project development, project control, financial feasibility and follow-up of legal permission except for the projects related or to be related with the portfolio.</i> - <i>Cannot make any expense or commission payment which is not documented or which materially differs from the market value.</i> - <i>Cannot sell or purchase real estate for short-term consistently.</i>		
4. Distribution Requirements		
Operative income <i>T-REITs determine their own profit distribution politics</i>	Capital gains <i>Will be regarded within the distributable profit.</i>	Timing <i>Annually or quarterly.</i>
5. Tax Treatment		
Current income <i>Tax-exempt.</i>	Capital gains <i>Tax-exempt.</i>	Withholding tax <i>Credit/refund may be possible.</i>

Source: EPRA Global Survey, 2017, p.159, 160, 161, 163

2.2.4.1. Legal & Organizational Requirements

The Turkish Commercial Code regulates joint stock companies' regulations, and T-REITs are set by CML and the Communiqué. "Real estate investment trust" should be included in the company's name.

For a T-REIT, the minimum share capital should be TRY 30 million for the year 2017 and TRY 100 million for Infrastructure T-REITs. CMB can make amendment for these amounts annually.

If the initial capital is less than TRY60 million, at least 10% of the shares representing the capital and TRY 60 million or more, TRY 6 million of the initial capital and if exclusively the portfolio of the infrastructure investment will be managed, TRY 10 million of the shares should be issued for cash.

2.2.4.2. Shareholder Requirements

Requirements for shareholders are explained as in the Communiqué number 48.1-b and EPRA report for Turkey below, real or legal builders should not;

- *...have any payable tax,*
- *...be bankrupt, go bankrupt or, have any postponement of bankruptcy*
- *...be the person who has the responsibility for actions causing cancellation of the institution which has permission of the CMB*
- *...be condemned*
- *...decide liquidation process*
- *...must have the honesty and the reputation required for the business*

- *...have been convicted of crimes under the law on Prevention of Financing of Terrorism no 6415*
- *...have been banned on trading pursuant to the investigations of insider trading and manipulation under CML (EPRA, 2017, p.160).*

Lastly, according to listing requirement, total amount of publicly offered T-REITs' shares must be at least 25%. T-REITs must apply to CMB within three months, in order to offer 25% shares of their capital to the public as of their establishment.

2.2.4.3. Asset Requirements

A T-REIT's portfolio should include industry, region and real estate. In other words, the portfolio of a T-REIT must be diversified. The other important issue about restrictions on assets of a T-REIT is that if a T-REIT is set up in a specialized area or project, the title and/or articles of the T-REITs must include 75% of its assets. T-REITs should invest in real estate and their portfolio must include at a minimum rate of 51% real estate projects.

As stated in the Communiqué number 48.1-b and EPRA report for Turkey, T-REITs cannot:

- *Engage in capital market activities other than portfolio management for its own portfolio limited to the investment areas;*
- *Be involved in construction of real estate as a constructor;*
- *Commercially operate any hotel, hospital, shopping center, business center commercial parks, commercial warehouses, residential sites, supermarkets and similar type of real estates and employ any personnel for this purpose;*

- *Engage in deposit business, conduct business and operations resulting in deposit collection;*
- *Engage in commercial, industrial or agricultural activities other than the transactions permitted;*
- *Grant loan or commit in any debit/credit transaction not related to good/services purchase and sale with their participations;*
- *Make any expense or commission payment that is not documented or materially differs from the market value; or*
- *Sell or purchase real estate for short-term consistently (EPRA, 2017, p.161).*

2.2.4.4. Distribution Requirements

Profit distributions are ruled specifically by CMB. There are general regulations enacted by CMB for profit distributions of T-REITs as public companies. Through these rules of CMB and Turkish Commercial Code public companies can determine their own profit distribution politics.

According to CMB Communique`and stated as in the EPRA's Report for Turkey, public companies may freely decide to:

- Distribute dividends entirely in cash;
- Distribute dividends entirely as shares;
- Distribute dividends partially in cash and partially as shares and keep the remaining as reserves; and
- Keep all the profits as reserves.

Advance distribution of dividends, also regulated by CMB, is made by T-REITs quarterly and they can only be given in cash. In addition to this, advance distribution of dividends shall not exceed half of the remained net interim profit and the previous year's net profit amount. Besides, as stated in EPRA's Report: *"...advance distribution of dividends of T-REITs shall not exceed the total amount of other distributable sources, except the net profit amount stated in the financials of the corresponding interim period."*

2.2.5. Tax Treatment of T-REITs

In general, corporate tax rate is 20% for companies or corporations in Turkey. Annual corporate tax is announced and paid in April of the next year. The taxable income of T-REITs is the same as other companies in Turkey, but T-REITs are exempt from tax.

Although dividends taken from non-taxable subsidiaries are taxable in Turkey, there is no tax on dividends get from T-REITs because of the special status of T-REITs about tax exemption.

Additionally, there is no dividend withholding tax burden on dividend distribution to individuals and non-resident shareholders of T-REITs. Also, capital gains of T-REITs are tax-exempt. Basicly, capital gains of T-REITs are considered as commercial income so they are tax-exempt. On the other hand, credit/refund may be possible to withholding taxes.

2.3. Comparison of T-REITs and Other Reits in Different Jurisdictions

When compared six countries selected in our study with respect to their REITs system, first established REITs are US-REITs with the year of 1960. Australia is the second country with establishment year of 1971 and Turkey is the third country with the establishment year of 1985. Canada, Japan and UK follow to them.

Turkey and UK have only listed REITs the others have both types of listed or unlisted REITs which are the REITs of US, Japan, Canada and Australia. While US, Australia, UK and Turkey have closed-ended REITs, Japan and Canada have both closed-ended and open-ended REITs.

According to management, US-REITs are mostly internally managed but also US has externally managed REITs. Japan and Australian REITs are externally managed on the other hand Turkey has only internally managed REITs. Besides, UK is the only country within these six which has both externally and internally managed REITs. Canada mostly has internally managed REITs but also has a small amount of externally managed REITs.

US, Japan, Canada and UK have both corporation and trust as fund vehicle for REITs. But only T-REITs are corporations and Australian REITs are only trusts. There is not any restriction for minimum paid-in capital for US-REITs, A-REITs and C-REITs. On the other hand, 100 million yen is required for J-REITs, 700.000 GBP is required for UK REITs and 1 million Turkish liras is required for T-REITs for minimum paid-in capital.

At least 100 stockholders are required for US-REITs and at least 150 stockholders are required for C-REITs. But there is no restriction on minimum stockholder number for T-REITs, UK-REITs and A-REITs. All these informations and other requirements are summarized with the table 24 below.

Table 24. Comparison of REIT Systems

Country	United States	Japan	Australia	Canada	United Kingdom	Turkey
System	Real Estate Investment Trusts (REIT)	Real Estate Investment Trusts (J-REIT)	Listed Property Trust (LPT)	Real Estate Investment Trusts (C-REIT)	Real Estate Investment Trusts (UK-REIT)	T-REITs
1 Data Established	1960	2000	1971	1993	2007	1985
2 Legal System						
2- (1) Tax Law	Internal Revenue Code	Corporation Tax Law	Income Tax Law	Income Tax Law	Corporation Tax Act 2010	Income Tax Law
2- (3) Stock Exchange	New York (NYSE), American, NASDAQ	Tokyo (TSE)	Australia (ASX)	Toronto (TSX)	London (LSE)	Borsa Istanbul (BIST)
2- (4) Competent regulatory authorities	Securities and Exchange Commission	Financial Services Agency	Australian Securities and Investment Commission (ASIC)	Securities and Exchange Commission of each province	Financial Conduct Authority	Capital Market Board (CMB)
3 Fund Format						
3- (1) Listed/Unlisted	Both	Both	Both	Both	Listed	Only listed
3- (2) Closed-end/Open-end	Closed-end	Both (only closed-end exist)	Closed-end	Both types exist	Closed-end	Closed-end
3- (3) Externally managed/ Internally managed	Both (most internally managed)	Externally managed	Externally managed	Large internally managed, small externally managed	Both	Internally managed
3- (4) Fund vehicle	Corporation, Trust	Corporation, Trust	Trust	Corporation, Trust	Corporation, Trust	Corporation
4 REIT Requirements						

Table 24. Continues

Country	United States	Japan	Australia	Canada	United Kingdom	Turkey
4- (1) Organizational requirements	Not financial institution or insurance company; taxed as domestic company; managed by more than one officer or trustee	Investment corporation registered with Financial Services Agency, investment corporation that satisfies the following "Minimum number of stockholders" or "Public offering requirements"	Register with ASIC; managed by external management company (RE)	Canada resident unit trust, business objective is limited to the acquisition, ownership, maintenance, renovation and management of real estate	UK REIT must be a closed-ended company and Listed on a stock Exchange in the UK and election must be filed prior to conversion, certain conditions for REIT shares	Use the "real estate investment trust" trade name; stockholders must have a certain income and satisfy asset ownership requirements; must not be involved in business, industry and agriculture outside of legally allowed transactions; must not be involved in capital market activities other than for managing its own portfolio; must not be involved in construction activities
4- (2) Minimum paid-in capital		100 million yen			700,000 GBP	1 million Turkish lira
4- (3) Minimum number of stockholders	100	Ownership by more than 50 individuals or qualified institutional investor		150		

Table 24. Continues

Country	United States	Japan	Australia	Canada	United Kingdom	Turkey
4- (4) Public offering requirements		On establishment, publicly offered and total amount of at least 100 million yen				
4- (5) Specific stockholder shareholder ownership regulations (including foreign ownership)	5 people or less must not hold more than 50%	3 or fewer stockholders may not own more than 50% of the total stock value; More than 50% of stock must be placed domestically (written in bylaws)		Foreign ownership up to 49%		

Source: Brueggeman & Fisher, 2011

2.4. REITs of Given Countries and Turkey

EPRA classified the countries into two parts according to their development level. First part is developed markets and the second part is emerging markets which are shown in the tables below.

United States, Japan, Australia, Canada and United Kingdom, which we gave general information about their REITs' structure previous section, are developed countries as known. EPRA also categorized them as developed countries and explain their REITs' situation by numbers in the table 50 below. Addition to this, Turkey is classified as emerging country by EPRA. The table 50 includes five countries which are United States, Japan, Australia, Canada and United Kingdom and their REITs systems are explained previous section. The table 51 represents the emerging countries, which includes information about T-REITs and gives information about their REITs' numbers.

At the end of the third quarter of 2017 the value of the total listed real estate sector in Developed Europe was USD 467 billion. Largest markets are the United Kingdom (USD 100.17 billion), France (USD 93.41 billion), and Germany (USD 88.91 billion). Of the USD 467 billion listed real estate sector 64.9% is represented in the FTSE EPRA/NAREIT Developed Europe Index. The estimated total Commercial Real Estate (CRE) value in Developed Europe is estimated at over USD 7.7 trillion on a total GDP of close to USD 16 trillion. The listed real estate sector in Developed Europe represents 6.04% of the total Commercial Real Estate Value. In North America the estimated value of the Commercial Real Estate sector is over USD 8.8 trillion and the value of the listed real estate sector is USD 1,163 billion. 73% of the listed real estate sector is represented in the FTSE EPRA/NAREIT North America Index. The estimated value of the Commercial Real Estate sector in the Asia-Pacific region is close to USD 4 trillion and the total value of listed real estate in the region is USD 732.94 billion (EPRA, 2017).

United States has the biggest GDP, commercial real estate, total listed real estate, REITs market capital and stock market size which are USD 18.624,45 billion, USD 8.118,30 billion, USD 1.097,08 billion, USD 1.062,27 billion, USD 28.055,84 billion respectively. But the ratio of listed real estate to stock market of US is lower than the other selected countries.

According to commercial real estate and total listed real estate and REITs market capital Japan follows to US, with regard to our study. UK has the third biggest commercial real estate. Canada and Australia follow them respectively. The comparison of REITs in developing countries is shown in table 25 below.



Table 25. Comparison of REITs In Developing Countries

Developed Markets	Dec-16 GDP per Capita (\$)	Dec-16 GDP (\$ Bln.)	Dec-16 Commercial Real Estate (\$ Bln.)	Sep-17 Total Listed Real Estate (\$ Bln.)	Sep-17 Number of Companies	Sep-17 REIT's Market Cap (\$ Bln.)	Sep-17 Stock Market Size (\$ Bln.)	Sep-17 Listed RE/Stock Market %
Austria	44,232,94	386,59	179,3	12,78	9	-	146,06	8,75
Belgium	41,247,86	466,56	216,78	16,78	27	14,00	482,5	3,48
Denmark	53,744,64	306,73	143,06	1,68	10	0,08	457,07	0,37
Finland	43,482,41	238,6	111,07	5,44	6	0,06	267,41	2,03
France	38,177,86	2,466,47	1,155,93	93,41	60	87,21	2,502,53	3,73
Germany	42,176,85	3,479,23	1,601,83	88,91	63	3,47	2,352,44	3,78
Ireland	64,782,30	304,43	127,96	3,20	3	3,20	126,15	2,54
Italy	30,507,18	1,850,74	869,48	3,65	10	3,45	705,01	0,52
Luxemburg	104,094,93	59,98	27,4	-	-	-	20,82	0,00
Netherlands	45,657,57	777,55	360,65	5,79	8	5,55	617,73	0,94
Norway	70,553,11	370,56	187,26	5,88	6	-	299,11	1,97
Portugal	19,820,78	204,65	84,44	0,04	2	-	76,12	0,05
Spain	26,565,15	1,232,60	559,28	27,53	61	23,31	815,07	3,38
Sweden	51,124,76	511	236,59	53,59	48	-	836,32	6,41
Switzerland	80,345,62	669,04	306,94	48,17	41	-	1,753,44	2,75
United Kingdom	40,049,78	2,629,19	1,565,60	100,17	105	73,17	3,619,30	2,77
Israel	37,192,14	317,75	138,49	27,96	67	1,15	164	17,05
Canada	42,224,94	1,529,76	729,26	66,69	78	55,18	2,261,81	2,95
United States	57,607,61	18,624,45	8,118,30	1,097,08	305	1,062,27	28,055,84	3,91
Australia	51,737,23	1,261,65	591,53	107,44	79	103,37	1,294,96	8,30
Hong Kong	43,561,08	320,91	276,34	293,22	99	28,18	4,986,88	5,88
Japan	38,882,64	4,936,54	2,148,25	227,57	155	100,45	5,817,56	3,91
New Zealand	38,277,93	181,71	82,43	6,04	9	4,21	85,16	7,09
Singapore	52,960,56	296,97	269,75	96,65	66	51,57	546,95	17,67
South Korea	27,534,84	1,411,04	623,87	2,02	8	1,52	1,506,03	0,13

Source: EPRA, 2017

The emerging markets have a total estimated Commercial Real Estate value of just under USD 7.2 trillion, covering 23 countries. The total listed real estate sector in the emerging market is USD 849.19 billion. South Africa has the largest REIT market within the Emerging Markets with an estimated value of close to USD 30 billion according to the table 26 below.

The country that has the biggest commercial real estate and total listed real estate is China. Brazil, Russian Federation, Mexico follow China respectively, with regard to commercial real estate values. Turkey is the fifth country according to commercial real estate over the emerging countries.



Table 26. Comparison of REITs In Emerging Countries

Emerging Markets	Dec-16 GDP per Capita (\$)	1,798,62 GDP (\$ Bln.)	Dec-16 Commercial Real Estate (\$ Bln.)	Sep-17 Total Listed Real Estate (\$ Bln.)	Sep-17 Number of Companies	Sep-17 REITs Market Cap (\$ Bln.)	Sep-17 Stock Market Size (\$ Bln.)	Sep-17 Listed RE/Stock Market %
Czech Republic	18,507,73	195,33	77,21	0,00	1	-	31,09	0,00
Greece	18,049,30	194,64	80,83	3,52	13	2,77	45,02	7,82
Hungary	12,652,45	124,38	44,12	0,26	2	-	29,01	0,88
Poland	12,361,27	469,32	168,96	7,92	49	0,25	192,86	4,10
Russian Federation	8,945,64	1,283,16	482,31	6,18	10	-	586,07	1,05
Egypt	3,684,57	332,35	73,92	4,97	29	-	44,24	11,24
Qatar	59,513,91	155,79	97,21	12,58	4	-	122,51	10,27
South Africa	5,302,04	294,90	82,85	31,77	40	29,41	470,07	6,76
Turkey	10,817,41	863,39	290,50	7,47	34	7,47	215,94	3,46
United Arab Emirates	35,383,92	348,74	206,19	39,62	13	0,91	232,47	17,04
Brazil	8,726,90	1,798,62	610,59	22,64	47	0,58	917,77	2,47
Chile	13,576,00	247,03	89,08	48,17	41	-	271,86	17,72
Colombia	5,792,18	282,36	83,71	-	-	-	110,01	0,00
Mexico	8,562,16	1,046,93	349,27	16,59	17	13,74	399,98	4,15
Peru	6,203,66	195,30	53,51	0,39	6	-	87,58	0,44
China	8,123,26	11,232,11	3,261,23	664,92	238	11,58	7,568,91	8,78
India	1,741,65	2,263,79	379,49	18,52	115	-	2,030,82	0,91
Indonesia	3,604,29	932,45	205,07	23,56	53	1,66	477,89	4,93
Malaysia	9,374,10	296,54	96,22	31,85	99	7,03	416,95	7,64
Pakistan	1,440,97	278,91	44,38	0,28	4	0,23	83,48	0,33
Philippines	2,926,60	304,91	62,39	51,74	45	-	271,31	19,07
Taiwan	22,497,00	529,58	220,66	14,03	33	1,97	1,148,33	1,22
Thailand	5,901,75	407,11	108,88	44,29	113	9,97	485,97	9,11

Source: EPRA, 2017

CHAPTER III

EMPIRICAL ANALYSIS ON REITs

In this chapter we seek for how macroeconomic variables affect REITs returns in Turkish capital market.

3.1. Literature Review

To understand the impact of macroeconomic factors on the real estate investment trusts we indicate a brief review of a number of relevant researches. In this section we will investigate which macroeconomic variables affect or not REITs return by analyzing of the studies on literature.

Initially, understanding the theories of the factors impact stock returns is important for this research. First theory developed by Sharpe (1964), Lintner (1965) and Mossin (1966) is Capital Asset Pricing Theory. This theory explains “*excess return of individual stocks*” by the factor of beta which is used for measuring market sensitivity. Then, Arbitrage Pricing Theory was developed by Ross (1976) as an alternative. APT determines the sensitivity of a stock return to various macroeconomic variables by using a linear function.

Many researches try to give results to explain coetaneous relationship between stock prices and macroeconomic variables or past changes of them. Fama (1981) and Chen at al., (1986) used term structure of interest rates, expected and unexpected inflation, industrial and risk premium to explain stock returns. According

to the findings of the study of Fama and French (1993, 1995, 1996) market premium, firm size, book-to-market ratio are standard factors for stocks (Kirdok, 2012).

Gan et al. (2006) examined the interaction between share returns and macroeconomic variables and their sample is New Zealand Stock Index. They used inflation rate, exchange rate, gross domestic product (GDP), money supply, long term interest rate, short term interest rate, domestic retail oil price as macroeconomic variables. Econometric models used in this study are Johansen multivariate cointegration test and Granger-causality to explain the relationship between New Zealand Stock Index (NZSE40) and macroeconomic variables with the data set from January 1990 to January 2003. The results of the analysis concluded with the positive relationship between NZSE40 and interest rate, money supply and real GDP. In other words, they found that NZSE40 is determined by interest rate, money supply and real GDP but they could not find an evidence to explain the changes on macroeconomic variables by NZSE40.

Bhattacharya and Dasa (2014) aimed to test the relationship between macroeconomic factors and stock market returns of Indian capital market in the period from July to June 2010. To test how macroeconomic variables affect Indian stock market returns, researchers applied sample adequacy tests, factor analysis and Cochrane and Orcutt regression analysis. They used index of industrial production, broad money supply call money rate, foreign institutional investors inflow, foreign exchange reserve, whole sale price index, interest rate on 10 years government bonds, yield on treasury bill, growth rate of exchange rate, price of gold, price of crude oil, world index and exports as macroeconomic variables. Their study results show that money market factor, foreign involvement factor and domestic macroeconomic factor explain significantly stock market return.

Khan et al. (2015) conducted an analysis to explore the relationship between stock returns and macroeconomic variables. The study includes South Asian stock returns over the period 1998-2012. They selected the variables as local, regional and global. Economic activities, real interest rates, real exchange rates and the trade balance represent local factors. Inter-regional trade and regional economic activity

are regional and world financial asset returns, world economic activity are global factors. The economic model used in the study is vector autoregression (VAR). This economic model resulted with direct and indirect explanation of Bangladeshi, Pakistani and Sri Lanka stock returns but South Asian markets are not efficient. Besides this the researchers explained that “...*the lagged returns of the Pakistani stock market and world economic activity can explain Indian stock returns.*”

Although most of empirical researches excluded REITs returns from the samples before, over the last decade the relationship between REITs returns and macroeconomic variables have gained importance. Many researches have been done about REITs returns around the world. We will discuss some of them below.

Payne (2003) examined the response of equity, mortgage and hybrid REITs excess returns to unexpected changes in macroeconomic state variables which were the broader stock market, real output growth, inflation, term structure of interest rates, default risk, and the federal funds rate. The data of the research covered the monthly period 1982:10-2003:01. The results obtained by using the VAR model indicated that “...*unexpected shocks in the broad stock market index have a positive impact across the three types of REITs.*” The researcher found also a significant negative impact of an unexpected shock to the growth in industrial production on the mortgage and hybrid REITs returns only. Besides, there is an insignificant impact of unexpected shocks to inflation and default risk on the any of the REITs excess returns. Lastly, the research results obtained that there is an affect of an unexpected shock to the term structure on equity and hybrid markets and an unexpected shock to the federal funds rate affects the mortgage and hybrid REIT markets.

Aydinoglu (2004) aimed to analyze the performance of the REIT sector index of Turkey for the period between January 2000 and December 2003. The results obtained by using the modern portfolio theory indicated that “...*the median risk optimal portfolio as well as most indices and REIT stocks generated negative inflation adjusted expected returns.*”

Erol and Tirtiroglu (2008) tested the inflation-hedging abilities of Turkish REITs in their study. They compared common stocks listed on the Istanbul Stock Exchange (ISE) (in that years BIST was called ISE.) and Turkish REITs with the data period of December 1999 to December 2004. Fama and Schwert (1977) model and Ordinary least square were used as econometric models to analysis the inflation-hedging abilities of Turkish REITs. According to results they found that Turkish REITs have a better inflation-hedging ability than common stocks. Also, Turkish REITs have better ability under high inflation than moderate inflation with respect to the study.

Ucal and Gokkent (2009) investigated macroeconomic factors affecting real estate markets in Turkey. Home prices, consumer price index, wages, loans, interest rate, exchange rate, earthquake dummy are the macroeconomic variables in the study. The economic model VAR was used and they found a small impact of macroeconomic variables on real estate markets.

Altınsoy, Erol, Yıldırak (2010) conducted an analysis to explore time varying beta risk of Turkish REITs. The researchers used weekly and daily REITs returns as the data of the study for the period between February 2002 and June 2009. The results of the Diagonal BEKK M-GARCH model, the Schwert and Seguin (1990) model and the Kalman Filter algorithm which were used in the study as econometric models shows that “...*Turkish REITs have a declining beta over the sample period.*”

Kıyılar and Hepsen (2010) aimed to examine REIT risk-adjusted return performances. The researchers chose 8 REITs to measure REITs returns risk for period January 2000 to December 2008 by using the Sharpe and Jensen performance measures. The findings of researchers with the Sharpe Index indicated as on the paper that “*six of eight REIT stocks have lower total risk-adjusted excess returns than the stock market portfolio.*” Addition to this, according to Jensen performance measuring the risk-adjusted performances of six REIT stocks are better than the market portfolio.

Chen et al. (2012) conducted a study to investigate market states effect on equity REIT returns by monetary policy. The econometric model quantile regression is used for the research. They examined “...*the effect of changes in monetary policy on US equity real estate investment trust (EREIT) returns in lower and higher return ranges during bull, bear and volatile stock market states...*”. It has been found by the researchers that when changes in monetary policy are in bull markets condition, there is a significant negative impact on EREIT returns and, if the markets are volatile and bear, monetary policy changes do not have impact on EREIT returns.

Liu, Loudon, Milunovich (2012) aimed to explain correlations between economic factors and international REITs. They used various variables for data which are unemployment rate, wages, inflation rate, GDP as economic variables and share market, risk-free rate, term spread, credit spread, exchange rate, global equity volatility, global equity volume as financial variables from September 2001 to March 2011. They used the multivariate GARCH framework to model the correlations and the DCC-GARCH framework to model the co-movements between the five markets, US, Australia, Hong Kong, Japan, Singapore. The results of the DCC-GARCH model shows that there are significant correlations between economic factors and REITs. Especially, national inflation rates, default risk premium and global equity market volume have a significant affect on REITs.

Kırdok (2012) aimed with her thesis to examine the dynamic relationship between Turkish REITs returns and macroeconomic variables for the period between January 2000 and December 2011 excluding 2001 crisis. Inflation, unexpected inflation, overnight interest rate, industrial production, stock market return, term structure premium, default risk premium, size and book-to-market ratio were used for macroeconomic variables. The researcher employed VAR model, variance decomposition and generalized impulse response techniques to explain the relationship between REITs returns and macroeconomic variables. It has been found by the researcher that in generally according to the tests some of the macroeconomic variables have negative and some of them have positive impact on REITs returns.

Rogers, Geideman and Karafiath (2014) tested the trading volume on REIT volatility with GARCH model. The data set included REITs traded on the NYSE, AMEX or NASDAQ from 1990 to 2011. The results of the analysis showed that there is a limited relation between volume and REITs volatility.

Fuss, Mager and Zhao (2014) examined the effect of macroeconomic news and monetary policy announcements on US REIT and stock prices by using VECM GARCH model. The researchers used Federal Open Market Committee (FOMC) meeting days, the consumer price index (CPI) and the producer price index (PPI) for US monetary policy and inflation indicators, gross domestic product (GDP), personal income and initial jobless claims for economic activity variables and construction spending, housing starts, new home sales for real estate market indicators. Results of the research indicated that there is a significant correlation between equity REITs and the general stock market within the short term. Also, they found that PPI, personal income and initial jobless claims have a strong affect on REITs in the subprime crisis period.

Kroencke, Schindler, Steininger (2016) investigated to “...provide for the effects of the surprise component of macroeconomic data announcements on the whole listed real estate market and tje sub-indices in the US and UK.” They used data between January 1997 and December 2014 in the US and between January 2005 and December 2014 in the UK. Consumer confidence, inflation, GDP, new home sales, retail sales, unemployment rate are the macroeconomic variables of the study. The results of the regression analysis sh that there is a significant linkage between macroeconomic announcements and the listed real estate market.

Fang at al. (2016) investigated the impact of macroeconomic factors on REITs index of Japan, Singapore and China. They used interest rate, stock index, inflation rate for macroeconomic variables and REIT index for each three countries Japan, Singapore and China. The econometric models used for examining the impact of macroeconomic variables on REITs returns were ARDL bounds test, ARDL long-run model, error-correction model, Granger non-causality test. The researchers used multiple econometric models because they examined the relationship between

macroeconomic variables and the REIT Index within long-run and short-run elasticity. Long-run ARDL model and the Short-run Error Correction model were used for determining the long-run and short-run elasticity. Bounds test was used for examining cointegration between macroeconomic variables and the REIT Index. They found as a result that there is a long-run equilibrium between the REIT index and the interest rate, inflation rate, and stock index for China and Singapore and a unidirectional relationship between inflation rate and REIT index in Japan and Singapore. Lastly, they found a significant relationship between stock index and REIT index in Singapore.

3.2. Data and Methodology

We investigate the impact of macroeconomic variables on the performance of real estate investment trusts (REITs). In this context, keeping in our mind that all REITs in Turkey must be listed in Borsa Istanbul (BIST), we use BIST REIT Index (XGMYO) as a proxy for REITs' performance. Macroeconomic variables, on the other hand, are stock exchange, inflation, industrial output, exchange rate, interest rates and consumer confidence on a monthly basis for the period between 2005:01 and 2017:12.

First of all, formation of stock prices is considered as a barometer for national economies and as a manifestation of the economy and business performance. Inflation, on the other hand, is one of the most important macroeconomic variables that influences financial markets since it affects the real cost of borrowing and real rate of return. From another point of view, inflation and real estate investments go hand in hand when hedging role of the latter against the former is considered. The stability of the economy, its growth potential, and changes in production and output levels naturally affect the income levels and assets prices. With this motivation, industrial production has become a frequently used variable in empirical studies that analyze the REIT returns. Exchange rates, especially USD and EURO, are used as an additional macroeconomic variable in our study due to the fact that volatility in these rates has a considerable impact on stock returns in that when Turkish Lira

depreciates stock market volatility often increases. Interest rate is also an important macroeconomic factor that affects the price of financial assets because the basic rational of asset pricing is based on the discounted cash flows. Accordingly, an increase (decrease) in interest rates will decrease (increase) the present value of REITs future cash flows. Lastly, we include consumer confidence as a proxy for investor sentiment in order to understand investor behavior regarding REIT stocks.

In this context, stock exchange variable is measured by BIST 100 Index (XU100). Inflation and industrial output variables are based on the consumer price index (CPI) data and industrial production index (IPI) data, respectively. EUR and USD are the most relevant exchange rates for Turkish real estate market. The impact of interest rate variable is captured by interest rates applied for housing loans (HIR). Consumer confidence in the market is observed upon consumer confidence index (CCI). Data are obtained from various sources; Bloomberg, the Organisation for Economic Co-operation and Development (OECD), Central Bank of Turkey (CBT), Turkish Statistical Institute (TSI) and International Financial Statistics (IFS). Table 27 displays a brief description of variables used in this study.

Table 27. Variable Definition

Variables	Proxy	Source
REITs	XGMYO	Bloomberg
Stock Exchange	XU100	Bloomberg
Inflation	CPI	CBT
Industrial Output	IPI	OECD
Exchange Rate	USD, EUR	CBT
Interest Rates	HIR	IFS
Consumer Confidence	CCI	TSI

Table 28 presents the descriptive statistics for the series.

Table 28. Descriptive Statistics (percentage data)

Statistics	XGMYO	XU100	CPI	IPI	USD	EUR	HIR	CCI
Mean	0,741	1,279	0,682	0,592	0,744	0,656	-0,283	-0,144
Median	1,118	1,996	0,570	0,498	0,111	0,817	-1,181	-0,064
Max	26,999	22,849	3,270	18,651	21,489	20,475	22,526	22,883
Min	-31,725	-23,120	-1,430	-8,659	-7,324	-6,364	-14,879	-9,602
St.Dev.	8,593	7,666	0,771	2,774	3,976	3,751	5,249	3,968
Skewness	-0,371	-0,177	0,405	1,417	1,646	1,327	1,362	1,140
Kurtosis	4,376	3,454	3,295	14,126	9,091	8,021	7,802	9,622
Jarque-Bera	15,88*	2,151	4,836***	856,9*	311,6***	209,7*	198,1*	318,8*
Observations	156	156	156	156	156	156	156	156

We employ Johansen cointegration and Granger causality tests in our study. These tests require an examination whether variables are stationarity. Thus, we use Augmented Dickey-Fuller (Dickey and Fuller, 1979-ADF) and Philips-Perron (Phillips and Perron, 1988-PP) unit root tests to examine the stationarity of series. Relevant hypotheses are as follows:

H_0 : Series are not stationary (there is unit root)

H_1 : Series are stationary (there is no unit root)

The equations used in ADF (1) and PP (2) tests are provided below:

$$\Delta Y_t = \beta_0 + \beta_1 t + \delta Y_{t-1} + \sum_{i=1}^m \beta_i \Delta Y_{t-i} + u_t \quad (1)$$

$$\Delta Y_t = \alpha_0 + \alpha_1 (t - T/2) + \alpha_2 Y_{t-1} + \sum_{i=1}^m \Delta Y_{t-i} + \varepsilon_t \quad (2)$$

If unit root tests do not yield the same order of stationarity for the variables, they need to be repeated by using the first differences. The series should have the

same order of stationarity so that the cointegration relationship can be investigated between series.

In this regard, we investigate the presence of a long-term linear relationship (cointegration) between the series by using the test introduced by Johansen (1988) and Johansen and Juselius (1990) frequently used in investigating cointegration relations. Investigation of the cointegration relationship is based on the results of the trace and maximum eigenvalue likelihood ratio obtained from the test. Hypothesis to be examined with Johansen cointegration test is presented below:

H_0 : There is no cointegration relationship between variables.

H_1 : There is cointegration relationship between variables.

In the presence of a cointegration relationship, the causality relationship is determined by Granger causality test performed in line with the vector error correction model (VECM) model, while the absence of a cointegration relationship requires that causality relationship should be determined by the standard Granger causality test. Standard equations regarding the VECM are as follows:

$$\Delta X_t = \alpha_0 + \sum_{i=1}^a \alpha_i \Delta Y_{t-i} + \sum_{i=1}^b \beta_i \Delta X_{t-i} + \lambda EC_{t-1} u_{xt} \quad (3)$$

$$\Delta Y_t = \beta_0 + \sum_{i=1}^a \alpha_i \Delta Y_{t-i} + \sum_{i=1}^b \beta_i \Delta X_{t-i} + \lambda EC_{t-1} u_{yt} \quad (4)$$

In the models above, α and β indicate the parameters to be estimated, a and b coefficients indicate lag lengths, EC_{t-1} coefficient indicates error correction term, X and Y coefficients indicates independent or dependent variables.

Lastly, Granger causality is performed in order to determine the direction of the relationship between variables (Granger, 1969). The following model is estimated in order to determine the direction of causality:

$$Y_t = \alpha_0 + \sum_{i=1}^{k1} \alpha_i Y_{t-i} + \sum_{i=1}^{k2} \beta_i X_{t-i} + \varepsilon_t \quad (5)$$

$$X_t = \chi_0 + \sum_{i=1}^{k3} \chi_i X_{t-i} + \sum_{i=1}^{k4} \delta_i Y_{t-i} + v_t \quad (6)$$

In the models above, k shows the lag length and it is assumed that error terms are independent from each other (white noise) (Granger 1969). If all of the coefficients in the equation numbered (5) are meaningless as a whole, and coefficients in the equation numbered (6) are meaningful as a whole, then there is a one-way causality from Y (independent variable) to X (dependent variable). Y is Granger causal of X.



3.3. Empirical Results

First, we examine the impact of macroeconomic variables on REIT returns. Hence, we use monthly percentage changes in all variables. The results in Table 29 give the findings about the ADF and PP test results for our variables.

Table 29. Unit root tests (percentage data)

	Lags	ADF		PP	
		Constant	Constant and Trend	Constant	Constant and Trend
XGMYO	1	-8,527*	-8,495*	-10,663*	-10,621*
XU100	0	-12,135*	-12,095*	-12,135*	12,095*
CPI	8	-6,101*	-6,079*	-10,219*	-10,183*
IPI	1	-9,866*	-9,873*	-18,433*	-18,413*
EUR	0	-12,018*	-12,086*	-12,018*	-12,086*
USD	0	-11,367*	-11,449*	-11,367*	-11,449*
HIR	3	-4,805*	-4,802*	-7,342*	-7,336*
CCI	3	-7,699*	-7,689*	-10,667*	-10,640*

A quick examination will clearly show that all of the variables are stationary at level with a significance level of 1%. This is already expected, because our variables represent percentage data (monthly changes) rather than levels. Therefore, all variables are I(0) in effect. In this respect, there is no long-run relationship and cointegration does not exist by definition in our case. For this reason, we go for Granger causality test for our data.

We employ Granger causality tests in order to infer about the causality between individual variables and REIT performance. “df” stands for the lags selected.

XGMYO and XU100

Equation	Excluded	chi2	df	Prob>chi2
XGMYO	XU100	0,001	1	0,977
XU100	XGMYO	0,960	1	0,327

XGMYO and CPI

Equation	Excluded	chi2	df	Prob>chi2
XGMYO	CPI	15,706	7	<u>0,028</u>
CPI	XGMYO	6,808	7	0,449

XGMYO and IPI

Equation	Excluded	chi2	df	Prob>chi2
XGMYO	IPI	6,803	3	<u>0,078</u>
IPI	XGMYO	25,186	3	<u>0,000</u>

XGMYO and EUR

Equation	Excluded	chi2	Df	Prob>chi2
XGMYO	EUR	10,398	7	0,167
EUR	XGMYO	9,538	7	0,216

XGMYO and USD

Equation	Excluded	chi2	df	Prob>chi2
XGMYO	USD	0,139	1	0,709
USD	XGMYO	2,215	1	0,137

XGMYO and HIR

Equation	Excluded	chi2	df	Prob>chi2
XGMYO	HIR	11,543	8	0,173
HIR	XGMYO	41,966	8	<u>0,000</u>

XGMYO and CCI

Equation	Excluded	chi2	df	Prob>chi2
XGMYO	CCI	1,086	1	0,297

Results presented above show that the only variables that seems to Granger cause XGMYO are CPI and IPI. Interestingly, XGMYO is the Granger cause of IPI, HIR and CCI. In other words, there is a bi-directional causality between XGMYO and IPI; while there is a uni-directional causality between XGMYO and HIR and CCI, which runs from XGMYO to HIR and CCI; and between XGMYO and CPI, which runs from CPI to XGMYO. Within a single VAR system, however, the results are reported in Table 30:

Table 30. Granger causality tests (percentage data)

Panel A				
Equation	Excluded	chi2	df	Prob>chi2
XGMYO	XU100	14,136	8	<u>0.078</u>
XU100	XGMYO	12,529	8	0,129
XGMYO	CPI	31,149	8	<u>0.000</u>
CPI	XGMYO	19,312	8	<u>0.013</u>
XGMYO	IPI	19,693	8	<u>0.012</u>
IPI	XGMYO	9,331	8	0,315
XGMYO	EUR	8,760	8	0,363
EUR	XGMYO	9,462	8	0,305
XGMYO	USD	19,057	8	<u>0.015</u>
USD	XGMYO	5,706	8	0,680
XGMYO	HIR	13,413	8	<u>0.098</u>
HIR	XGMYO	15,904	8	<u>0.044</u>
XGMYO	CCI	18,946	8	<u>0.015</u>
CCI	XGMYO	12,081	8	0,148
XGMYO	ALL	121,08	56	<u>0.000</u>
Panel B				
Lags	Variables	XGMYO (individual)	df	XGMYO (together)
-	XGMYO	-	-	-
1	XU100	-	8	->***
7	CPI	->**	8	<->***
3	IPI	<->****	8	->**
7	EUR	-	8	-
1	USD	-	8	->**
8	HIR	<-*	8	<->*****
1	CCI	<-*	8	->**

Panel A of Table 30 shows that Granger causality runs from XU100, IPI, USD and CCI to XGMYO unidirectionally. There is a bi-directional causality between XGMYO and CPI and HIR. Panel B of Table 30, however, displays a comparison between one-to-one and all-in-one causality analyses results in terms of directions.

Our preliminary results suggest that stock exchange (XU100), industrial output (IPI), exchange rates (USD) and consumer confidence (CCI) Granger cause XGMYO. Inflation rates (CPI) and interest rates (HIR) also interact with XGMYO in bi-directional means. In that sense, macroeconomic indicators have an impact on REIT performance.

Second, we repeat our analyses with level data instead of percentages data. In this respect, we take the natural logarithms of each variable at the first step. Then, we perform unit root tests, Johansen cointegration tests and Granger causality tests in order. Descriptive data are presented in Table 31:

Table 31. Descriptive Statistics (level data)

Statistics	XGMYO	XU100	CPI	IPI	USD	EUR	HIR	CCI
Mean	10,403	10,949	5,254	4,754	0,614	0,863	2,614	4,300
Median	10,482	11,028	5,238	4,749	0,527	0,829	2,568	4,308
Max	10,749	11,656	5,791	5,175	1,366	1,541	3,122	4,524
Min	9,345	10,069	4,741	4,377	0,152	0,450	2,116	4,020
St.Dev.	0,282	0,382	0,297	0,216	0,333	0,269	0,241	0,104
Skewness	-1,872	-0,493	-0,013	0,144	0,717	0,541	0,296	-0,218
Kurtosis	6,922	2,391	1,895	1,750	2,377	2,455	2,150	2,654
Jarque-Bera	191,1*	8,729*	7,939*	10,7*	15,87*	9,551*	6,977*	2,011
Observations	156	156	156	156	156	156	156	156

Unit root tests results are reported in Table 32:

Table 32. Unit root tests (level data)

Level	Lags	ADF		PP	
		Constant	Constant and Trend	Constant	Constant and Trend
XGMYO	2	-2,192	-2,586	-2,056	-2,512
XU100	6	-1,481	-3,621**	-1,418	-3,144***
CPI	7	-0,109	-3,158***	0,375	-3,313***
IPI	4	-0,194	-2,074	0,221	-2,054
EUR	1	0,395	-2,488	0,511	-2,514
USD	1	0,337	-1,958	0,529	-1,996
HIR	4	-2,407	-2,844	-2,369	-2,300
CCI	2	-2,725***	-2,977	-2,894**	-3,141***
First Difference		Constant	Constant and Trend	Constant	Constant and Trend
XGMYO	1	-8,285*	-8,258*	-10,415*	-10,386*
XU100	0	-12,015*	-11,973*	-12,015*	-11,973*
CPI	8	-6,014*	-5,992*	-10,255*	-10,209*
IPI	3	-5,145*	-5,160*	-15,082*	-15,076*
EUR	0	-12,009*	-12,079*	-12,009*	-12,079*
USD	0	-11,420*	-11,490*	-11,420*	-11,490*
HIR	3	-4,650*	-4,660*	-7,152*	-7,163*
CCI	3	-7,653*	-7,636*	-10,536*	-10,506*

As can be seen from Table 32, all variables are non-stationary at level, however when we convert them into first differenced, they become stationary. They are all integrated of same order, i.e. I(1). Hence, we apply Johansen cointegration test and VECM.

Table 33. Co-integration Results (Trace and Max-Eigen Statistics)

	H ₀	H ₁	Eigenvalue	Trace Statistic	1%
0	r=0	r=1		274,625	168,36
1	r≤1	r=2	0,403	198,745	133,57
2	r≤2	r=3	0,374	130,010*	103,18
	H ₀	H ₁	Eigenvalue	Max-Eigen Statistics	1%
0	r=0	r=1		75,880	57,69
1	r≤1	r=2	0,403	68,735	51,57
2	r≤2	r=3	0,374	54,809*	45,10

In line with the results given in Table 33, we reject the null hypothesis that there is no cointegration among our variables. 2 cointegrations exist. In the long run they move together. VECM model results are portrayed in Table 34:

Table 34. VECM Results

	Coef.	Std.Err.	z	P> z
XGMY	-0,511	0,229	-2,24	0,025
O				

Table 34 puts that there is a long-run causality running from all macroeconomic variables to XGMYO with a 5% significance level. Table 35 presents the Granger causality test results in the light of these outcomes:

Table 35. Granger causality tests (level data)

Panel A				
Equation	Excluded	chi2	Df	Prob>chi2
XGMYO	XU100	15,76	8	<u>0,046</u>
XU100	XGMYO	12,469	8	0,131
XGMYO	CPI	26,563	8	<u>0,001</u>
CPI	XGMYO	18,584	8	<u>0,017</u>
XGMYO	IPI	18,12	8	<u>0,020</u>
IPI	XGMYO	10,062	8	0,261
XGMYO	EUR	8,089	8	0,425
EUR	XGMYO	7,994	8	0,434
XGMYO	USD	19,256	8	<u>0,014</u>
USD	XGMYO	8,481	8	0,388
XGMYO	HIR	13,061	8	0,110
HIR	XGMYO	14,046	8	<u>0,081</u>
XGMYO	CCI	20,11	8	<u>0,010</u>
CCI	XGMYO	12,558	8	0,128
XGMYO	ALL	120,2	7	<u>0,000</u>
Panel B				
Lags	Variables	XGMYO (individual)		
-	XGMYO	-		
8	XU100	->**		
8	CPI	<->***		
8	IPI	->*		

Table 35. Continues

8	EUR	-
8	USD	->**
8	HIR	<-.***
8	CCI	->*

Panel A of Table 35 shows that Granger causality runs from XU100, IPI, USD and CCI to XGMYO unidirectionally. Another unidirectional causality reveals itself in the causality running from XGMYO to HIR. There is a bi-directional causality between XGMYO and CPI. Panel B of Table 35, displays these directions.

When we compare Table 35 with Table 30, we can easily see that both results complement each other. In that respect, there is a long-run relationship between REITs and macroeconomic variables. From a short-run point of view, macroeconomic variables, especially stock exchange (XU100), industrial output (IPI), exchange rates (USD), consumer confidence (CCI) and inflation rates (CPI) Granger cause REITs in both price level and return terms.

CHAPTER IV

CONCLUSION

Over the last years there have been rapid improvements on real estate industry in the World and in Turkey. With the establishing of real estate investment trusts (REITs), REIT firms stock returns have gained importance beyond the stock market returns. And, all over the World many researchers have begun to deal with REITs index returns. In time of laws & regulations, restrictions, requirements have demonstrated many changes in many countries.

In this thesis, the definitions, historical developments and properties of REITs are explained in the first chapter. We want to give general information about REITs before the empirical part. Our aim for this is to lead the way for who wants to deal with REITs' system. In addition, we thought that the importance of the REITs in economy should be taken into consideration before dealing with REITs returns because assessing the value of REITs shares or how a REIT perform its growth directly influence REITs' performance in capital markets.

In the third part of our thesis we try to highlight how REITs systems are regulated around the world. It is essential for us to see the place of Turkish REITs system in the world. So, Turkish method of application on REITs system is discussed and analyzed within the examples and applications of other countries. Especially, developed countries are selected for comparing to see inadequacies of Turkish REITs system.

Finally, for the empirical analysis of the thesis, which takes in part of the third chapter, various studies and their findings in the literature are considered through the analysis process of the relationship between macroeconomic variables and REITs

returns. The harmonized understandings after analysis were integrated and placed for the case of T-REITs. Thus, the results which are attained from the analysis are expected to explain how macroeconomic variables affect to T-REITs within the content of the study.

Within this content as an initial step of the study, data which includes BIST REIT Index (XGMYO) as a proxy for REITs' performance and stock exchange, inflation, industrial output, exchange rate, interest rates and consumer confidence as for macroeconomic variables on a monthly basis is analysed for the period between 2005:01 and 2017:12. Data are obtained from Bloomberg, OECD, CBT, TSI and IFS.

We employ VAR model which includes Johansen cointegration and Granger causality tests to investigate the presence of a long-term linear relationship between the series. First, we test stationarity of the variables which is required for the application of the model.

Furthermore, to examine two main hypothesis which are *there is no cointegration relationship between variables (null hypothesis)* and *there is cointegration relationship between variables*, we employ VECM model to determine the causality relationship. Besides, Granger causality is performed in order to determine the direction of the relationship between variables.

The results of the analysis have indicated that there is a bi-directional causality between T-REITs return and industrial production index; while there is a unidirectional causality between T-REITs return and interest rates applied for housing loans and consumer confidence index which runs from T-REITs return to interest rates applied for housing loans and consumer confidence index and between T-REITs return and consumer price index, which runs from consumer price index to T-REITs return. In addition, there is a Granger causality runs from stock exchange, industrial production index, USD and consumer confidence index to T-REITs return unidirectionally and there is a bi-directional causality between T-REITs return and consumer price index and interest rates.

Another interesting result of the study is that there is a long-run relationship between REITs and macroeconomic variables. From a short-run point of view, macroeconomic variables, especially stock exchange, industrial output, exchange rates, consumer confidence and inflation rates have impact on REITs in both price level and return terms.

The main conclusions of this study are that macroeconomic indicators have an impact on REIT performance in the long-run and short-run perspective and with the aporementioned reasons, it should be noted that researchers can take into consideration of macroeconomic variables while analyzing the REITs return by using different methodologies and models.



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CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name : OZKAN, Aycil
Nationality : TURKEY (TC)
Date and Place of Birth : 06 June 1978, Ankara
Marital Status : Single
Phone : 05324093004
Email : ayclozkan@gmail.com

EDUCATION

Degree	Institution	Year of Graduation
MS	Cankaya Univ. Financial Economics	2018
MS	METU City Planning	2006(not completed)
MS	İzmir Institute of Technology Urban Design	2003(not completed)
BS	Gazi Univ. Urban and Regional Planning	2001
High School	Meram High School of Science	1995

WORK EXPERIENCE

Year	Place	Enrollment
2012-Present	General Directorate of Highways	Urban Planner
2011-2012	Ministry of Environment and Urban Planning, Ankara	Urban Planner
2007-2011	Independent Business	Writer Assistant
2005- 2007	Erciyes Univ., Kayseri	Research Assistant

FOREIGN LANGUAGES

Advanced Turkish, Intermediate English, Beginner Spanish

HOBBIES

Reading, writing, listening to music.