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TITLE: Dynamics of Asset Prices During Economic Crises

AUTHOR: Pol Guàrdia Camacho

TUTOR: Karen Davtyan

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Abstract

The purpose of this thesis is to analyse the dynamics of asset prices during global recessions in order to determine which asset (real estate or equities) performs better during periods of economic instability. The hypothesis of this thesis is that risky assets (equities) tend to offer a higher return than less risky assets (real estate), due to the prices of real estate are less volatile than equities. However, (Jordà, Ò., Knoll, K., Kuvshinov, D., Schularick, M., & Taylor, A. M., 2019) says that this is not true. Therefore, in order to verify our hypothesis, an exhaustive analysis has been done in order to analyse the performance of both assets during the economic recessions.

In the analysis, it has been exanimated the performance and price dynamics of both assets from the First World War until the COVID-19 Pandemic, in the most important and developed countries in the world. The countries that have been analysed are the United States, Spain, France, United Kingdom, Germany, Japan and Italy and the periods that were analysed are; First World War, Roaring 20s[1], Great Depression, Second World War, 1973-1975 recession, Dotcom Bubble, Financial Recession and the COVID-19 pandemic.

The results observed in the analysis indicate that in four of the seven countries analysed the value depreciation of real estate properties was smaller than in the case of equities. That means that the price of real estate properties decreased less than the price of equities during the periods of time analysed.

Finally, in five of the seven countries analysed real estate offered better returns than equities. Therefore, the results obtained indicate that real estate has performed better than equities in most of the countries analysed and as consequence investors should invest in real estate rather than in equities.

Keywords:

Asset, Real Estate Market, Stock Market, Equities, Price, Value, Return, Recession, WWI, Roaring 20s, Great Depression, WWII, 1973-1975 recession Dotcom Bubble, Financial Recession, Covid-19 Pandemic.

[1] The Roaring Twenties is not a recession. But it has been analysed due to it is a key period of time to understand the Great Depression.

Index

List of Figures

1. Introduction

We live in a world where the economy is constantly changing, since there are periods where an economy is growing and periods where the economy of a country is degrowing. Therefore, investors due to the changes in the economy, try to look for assets that can offer a certain stability and a good return especially in periods of instability.

Among the most common assets within the world, we find the stocks (equities) and real estate (houses, flats, land and son on). In (**Figure 1)** we can observe that investing in the real estate in the long run has been a good option since the prices of houses have increased during the last century, but during recessions the prices of houses tend to decrease. The same can be seen in the case of the stock market (see **Figure 2)**. However, determine which of these two assets offers a higher level of return in comparison to the risk assumed, during the recessions, is very hard.

In this thesis I am going to explain what is an asset and also, I am going talk about the most important assets in the world, stocks and real estate. In addition, I will explain the causes and consequences of the most important recessions that the world has suffered during the last century.

In addition, this thesis will try to discover which of the two assets mentioned above has a better performance during the recessions. This will be done by means of doing an exhaustive analysis of the performance and price dynamics of both assets during the economic recessions using the data elaborated by (Jordà, Ò., Knoll, K., Kuvshinov, D., Schularick, M., & Taylor, A. M., 2019), available in the **MACROFINANCE & MACROHISTORY LAB**. Concretely, in this thesis it will be exanimated the performance and price dynamics of real estate and equities from the First World War until the COVID 19 pandemic, in the most important and developed countries in the world.

Based on the above, the aim of this thesis is to provide an exhaustive analysis of the performance and price dynamics of equities and real estate during the recessions. Therefore, the research question is defined as follows:

Which asset, real estate or equities, has performed better during recessions?

Through this thesis it is expected to contribute to investors and to individuals a clear vision about the behaviour of stocks and real estate during economic recessions and therefore provide a valuable information about which of the two assets is better to invest.

2. Theoretical Backgrounds

2.1 Definition of the concept Asset

The FASB (Financial Accounting Standard Board) defines the concept of **asset** as "probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events" (Schuetze, 1993).

The FASB says that an asset has to accomplish with 3 features in order to consider something as an asset.

- The company or person who holds the asset will obtain a probable economic benefit in the future, mentions (Schuetze, 1993).

- The company or person can control others access to the asset and obtain a benefit, mentions (Schuetze, 1993).

- The transaction or other event giving rise to the entity's right to control of the benefit has already occurred, mentions (Schuetze, 1993).

Furthermore, assets can have other properties or characteristics that can be used to identify them. Assets normally are acquired at cost, are tangible, exchangeable or legally enforceable. However, (Schuetze, 1993) says that these features are not essential to identify something as an asset. Firstly, because we can find assets that can be acquired without costs (someone gives who you something for free). Secondly, because there are assets that can be intangible (e.g. the software of a company). Thirdly, because assets also cannot be exchangeable, since they may be usable by a company in producing or distributing other goods or services.

In conclusion, for something to be considered an asset, it must meet three key features: the holder will obtain a probable economic benefit in the future, can control access to the asset and gain a benefit, and the transaction or event giving rise to the entity's right to control the benefit has already occurred. Additionally, assets may exhibit other characteristics such as being acquired at a cost, being tangible, exchangeable, or legally enforceable. However, these features are not essential.

2.2 Types of assets

There are many ways that we can use in order to classify assets. We can classify assets by its nature, liquidity, use, origin, source of value and financial perspective

2.2.1 Classification of assets by nature

The classification by nature is based on the expected time that the asset is expected to generate economic benefits in the future to the holder. Following this classification, we can find two kinds of assets:

- **Non-current assets**: According to (Ripoll, 2023), **NCA** are the assets that are expected to be working for the company or person for a period longer than one year. Therefore, it is expected that will generate economic benefits to the holder for more than one year.

  Inside the NCA we can find different assets:

  - **Tangible NCA**: Factories, laptops, real state, machinery, and so on, says (Ripoll, 2023).
  - **Intangible NCA**: Software, apps, brands, and so on, says (Ripoll, 2023).
  - **Long-Term Investments**: Investments in other companies that are not related with the activity of the firm, says (Ripoll, 2023).

- **Current-assets:** According to (Ripoll, 2023), **CA** are the assets that are expected to be working for the company or person for a period lower than one year. Therefore, it is expected that will generate economic benefits to the holder for less than one year.

  Inside the CA we can find different assets:

  - **Cash and Cash equivalents:** Physical money or money deposited in bank accounts or credit institutions, says (Ripoll, 2023).
  - **Accounts receivables:** Claims for payment held by a business for goods that customers have ordered but not paid**,** says (Ripoll, 2023).
  - **Inventories:** Raw materials (gold, silver, etc.), goods that are in progress and goods that are already finished, mentions (Ripoll, 2023).
  - **Other current assets:** Short term investments of the company, says (Ripoll, 2023).

2.2.2 Classification of assets by liquidity

According to (Ripoll, 2023), we can classify assets also by its liquidity. That is the facility of the assets of being converted into cash. Based in this classification we find two kinds of assets:

- **Liquid assets:** Assets that can be easily and quickly converted into cash. Remark that current assets are more liquid assets than non-current assets and the most liquid asset is cash or cash equivalents, says (Ripoll, 2023).

- **No liquid assets:** They require more time and effort to convert into cash. Remark that the most illiquid asset is real estate, says (Ripoll, 2023).

2.2.3 Classification of assets by use

We can classify assets by its use. This classification is based on the fact if the assets participate or not in the daily operations of the company. Here we can find two kinds of assets:

- **Operating assets:** Assets that are used in the daily operations of a company (machinery, property plant and equipment, raw materials and so on).

- **Non-operating assets:** Assets that are not used in the daily operations of a company like for example investments in other companies.

2.2.4 Classification of assets by origin

We can classify assets by its origin. This classification classifies assets depending if the assets have been developed inside the company or if the assets have been bought externally.

- **Own assets:** Assets that have been acquired and developed internally within the firm like for example the brand of the company, patents or the intellectual property of the company**.**

- **Acquired assets:** Assets that have been acquired or bought externally like for example property, plant and equipment, stocks, raw materials etc.

2.2.5 Classification of assets by source of value

We can also classify assets into primitive assets and derivatives:

- **Primitive assets:** According to (Prat, 2023), primitive assets are those assets that have an intrinsic value that does not depend on the price or performance of other assets .Within the primitive assets we find:

    - **Real assets:** Real estate, companies, equipment and so on, says (Prat, 2023).

    - **Intangible assets:** Patents, brands, R&D and so on, says (Prat, 2023).

    - **Financial Assets:** Stocks (shares), fixed income (bonds), cash and currencies, says (Prat, 2023).

- **Derivatives:** According to (Prat, 2023), derivatives are those assets whose value depends on the performance or price of another asset, also known underlying asset. Within the derivatives we find:

    - **Futures and Forwards contracts:** Is the commitment by two parties to engage in a transaction at a given date at an agreed price. Futures carry almost no credit risk because they are settled daily (mark to market), this is not the case of most forward contracts. Forwards are customized contracts between parties while futures are standardized and usually traded in markets, says (Prat, 2023)

    - **Options:** According to (Prat, 2023), an option is an agreement that gives to a part the right but not the obligation to buy (call) or sell (put) a certain amount of something at a given price.

    - **Swaps:** Swaps are very similar to forward contracts. According to (Prat, 2023), the difference is that swaps are equivalent to a series of forward contracts

2.2.6 Classification of assets by a financial and non-financial perspective

Finally, we can classify assets as financial assets or non-financial assets:

- **Financial asset:** According to (Prat, 2023), a financial asset is a financial security that represents an asset for its owner or holder and a liability for its issuer or writer. Financial assets are sensitive to interest rate and can be traded in the financial markets. An example of financials assets would be bonds and treasury bills.

- **Non-financial assets:** According to (Prat, 2023), non-financial assets are those assets that cannot be traded in the financial markets.

2.3 Asset valuation approaches

According to (Moody, Walsh, 1999), we can use three methods in order to assess how much an asset is worth. These 3 methods are the historical cost, market (current cash equivalent) approach and the utility (present value) approach

2.3.1 Cost (Historical cost)

This is the most common method used to calculate the value of an asset. This method says that an asset is valued based on how much was originally paid to acquire the asset.

According to (Moody, Walsh, 1999), the weakness of this valuation method is that it may not reflect the current value of an asset, since once you buy an asset this asset can suffer a depreciation over the pass of the years. This can be seen in the case of cars due to the value of the car when you buy it is bigger than the value of the car 2 years later.

2.3.2 Market (Current Cash Equivalent)

According to (Moody, Walsh, 1999), the market (current cash equivalent) method values an asset based on how much other people or firms are prepared to pay for it. The advantage of using this method is that we can obtain a good indicator of the value of the asset compared to the historical cost. However, (Moody, Walsh, 1999) says, that the weakness of this method is that it is time-consuming and expensive compared to the historical cost valuation method.

2.3.3 Utility (Present Value)

According to (Moody, Walsh, 1999), the utility (Present Value) method values an asset based on the present value of expected economic benefits that the asset will generate in the future.

$$PV= CF/(1+R)^n$$

The weak point of this method is that it is very hard to determinate the expected cash flows that the asset will generate in the future. This makes this valuation method quite subjective due to the difficulties in estimating the expected cash flows and also its discount rate used to discount the cash flows, mentions (Moody, Walsh, 1999).

The method is used normally to asses the price of monetary assets like for example bonds or leases, where the expected cash flows are specified in a contract and therefore can be determined objectively, says (Moody, Walsh, 1999).

2.4 Real Estate

Real estate is one of the most important assets, since everyone in the world needs a home to live. Real estate can be defined as “the physical land and those human-made items which attach to the land”, says (Trinh, 2022). Real estate is a type of asset class that can be classiefied as a non current asset which tends to be non-liquid. Normally, this assets are bought by the households in order to own its own house or to obtain a profit from a possible appreciation in the future.

According to (Simons, n.d.), the owner of a property has the following rights :

- **Right to use Property**: The owner of the property has the right to use the property in all cases except in the case that the owner is doing an illegal activity inside the property

- **Right to enjoy the property**: The owner of the propperty has the right to enjoy any benefits generated by the property. That means for example that the owner of the property has the right to obtain ecnomic benefits by means of renting the property.

- **Control of the property**: The owner of the house has the right to control the property and exclude others from using it.

- **Dispose of Property**: The right to sell the property at any time at a fair price.

- **Subsurface rights:** The right to exploit the resources under your propety.

(Simons, n.d.) says, that the real estate market is the place where houses, flats and other related items are traded between buyers and sellers at a determined priced by the market.

The market value of the property can be done following some valuation approaches:

- **Cost approach**: Is the cost of the land + the costs of constructing the house, says (Simons, n.d.).

- **Comparison aproach** : We value the price of a property comparing the prices of other similar properties, says (Simons, n.d.).

- **Income Capitalization approach**: The market value of the property is based on the expected income received by the property via rents, says (California State Board of Equalization, (n.d.).

To obtain this properties is necessary to have a huge amount of money. The financing of this purchases can come from the own savings of the person or firm. However, the must usual way to obatin the money is to borrow money from the bank having as underlying asset the property. Remark that in case of borrowing money the borrower will borow money if the inreresr rate is small.

2.4.1 Factors that affect the price of real estate properties

In the real estate market the prices of the property can fluctuate. According to (BBVA ,n.d.) , the events that can make fluctuate the prices of the properties are the following:

- **Location:** The better located the property the higher will be its value. Therefore, if the property is not located in a good area its value will decrease, says (BBVA, n.d.).

- **Supply and demand:** The supply and demand of real estate properties have a big effect in the value changes of a property. From the supply side when there is low supply of properties the prices go up and when there is a high supply of properties the prices go down. From the demand side when the demand of properties goes up the prices also go up and when the demand of properties goes down the prices of the properties goes down, says (BBVA, n.d.).

- **Interest rates:** If the central bank of the country increases the interest rates then the cost of borrowing money will increase and as a consequence people will not buy houses and hence the price of the properties will decrease. However, if the central bank decides to decrease the interest rates then the cost of borrowing money will decrease and therefore the people will decide to buy houses, which will lead at the to and increase in the value of the property, says (BBVA, n.d.).

- **Economic perspectives**: If the economy of the country is in good shape in other words if the economy is growing, the unemployment rate will decrease and then the more people will be able to buy properties and as consequence the price of the properties will increase. If the econonomy of the country is in bad shape in other words if the economy is degrowing, the uneployment rate will increase and then the less people will be willling to buy a property and therefore its value will decrease, says (BBVA, n.d.).

- **Population and demography**: The higher the number of people that want to live in an specific area the higher the value of the property. Therefore, the lower the number of people that want to live in an specific are the lower the value of the property, says (BBVA, n.d.).

- **Constructing Costs**: If the costs of building a house or any kind of infraestructe increase, the prices of the properties will increase and the opposite will happen whether the construction costs decrease, says (BBVA, n.d.).

2.4.2 Real estate perfomance

In (**Figure 1)**, we can observe the price evolution of houses in the United States of America from 1890 until 2023. In this figure, we can clearly observe that houses in the US have increased in the long run. The Shiller index [2]in 1890 was 100 and nowadays the shiller index is more than 200. Therefore, the price of a house in the the United States has doubled. Moreover, in this figure we can observe the evolution trends in the US of the population and the population in this country in 1890 was 63 MLN and nowadays the population is 300 MLN. That means that the country has triplicated its population. Also, in this figure we can observe that real building costs of building a house in this country in 1890 was 50K and nowadays is 100k, therefore the building costs have doubled

Source: (Shiller,n.d.)

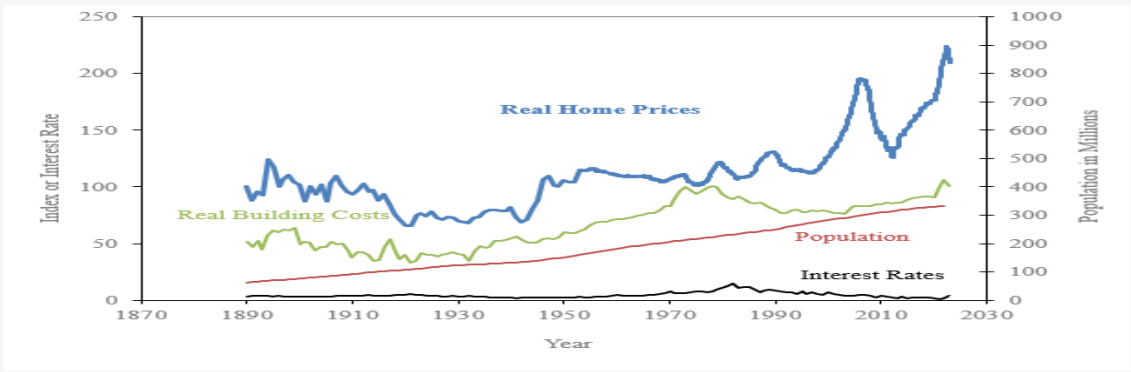

Figure 1: Shiller index, real estate prices in the US from 1890 until 2023

Regarding the price evolution of houses, we can observe that in the long run the prices of real estate properties have a long rung tendency to grow. However,we can clearly observe that during recessions the value of real estate properties tends to decrease. For instance, during the Financial Recession of 2008 we can observe a huge drop in the value of real estate properties. This can also be seen during the WWI and also during the WW2.

[2] The Shiller Index is and index that calculates the evolution of house prices in the United States

2.5 Stocks (equities)

(Mishkin & Eakins, 2018), in its book called financial markets and institutions, defines the concept of **stock** as "a security that is a claim on the earnings and assets of the corporation". Issuing stock and selling shares in the stock market is a way for firms and individuals to raise funds to finance their activities.

Corporations issue stock in order to obtain funds from the investors who participate in the financial markets. When Investors buy the shares of the companies that are listed, they own a part of the company and therefore they can earn a return from the stock they hold by means of the payment of dividends or the increase of the stock price of the company.

The ownership of stock gives to the stockholder certain rights regarding the firm:

- **Right to vote**: Is the right to vote for the election of the directors of the company or the voting on some specific topics or issues in the company, says (Mishkin & Eakins, 2018).

- **Residual claimant**: The right that the (stockholders) have on whatever remains in the company once all the obligations that the company have been paid off, says (Mishkin & Eakins, 2018).

2.5.1 How stocks are sold?

Stocks can be sold in two ways:

- **Organized Securities exchanges:** Securities are traded in a specific place, says (Mishkin & Eakins, 2018). The most important organized exchange is the NYSE (New York Stock exchange). However, we can find other exchanges such as the DAX in Germany or the Nikkei in Tokyo, according to (Mishkin & Eakins,2018).

  Remark that to have a stock listed for trading on one of the organized exchanges a firm needs to accomplish the required criteria of the exchange. Normally the enterprise must have important earnings and market value (greater than 10 MLN earnings and 100 MLN market value), says (Mishkin & Eakins, 2018).

- **Over the counter:** Securities that can be traded in different places around the world through sophisticated telecommunication networks, says (Mishkin & Eakins,2018). One example of market where securities are traded is the NASDAQ, says (Mishkin & Eakins, 2018).

2.5.2 How we compute the price of stocks?

According to (Mishkin & Eakins, 2018), in order to assess the price of a share or stock of a company we can use 4 models; the one period valuation model, the generalized dividend model, the Gordon growth model and finally the price earnings valuation method.

However, there are many opportunities for errors in applying the above-mentioned models. These include problems estimating growth, estimating risk, and forecasting dividends, according to (Mishkin & Eakins, 2018).

A) The one period valuation model

According to (Mishkin & Eakins,2018), the one period valuation model is the easiest technique to compute the price of the stock of a company. This method assumes that an investor buys shares of a company, holds it for one period to get a dividend, and then afterwards sells the stock after one year.

The current price or present value is:

$$\mathrm{Po} = \frac{\mathrm{Div1}}{1 + \mathrm{ke}} + \frac{\mathrm{P1}}{1 + \mathrm{Ke}}$$

Where:

Po= The current price of the stock at time 0, also known as the present.
Div1= The dividend paid at the end of the year
Ke= The required return on investments in equity
P1= The price of the share at the end of the first period.

However, this model is not very accurate because it is very complicated to estimate how much money the company will pay to the customer with dividends of the company.

B) The generalized dividend model

The generalized dividend model states that the current value of a share of stock depends on the present value of the expected dividends that the person will earn during the years that holds the stock and there are no other factors that have an effect on its price, according to (Mishkin & Eakins, 2018).

$$\mathrm{Po} = \sum_{\mathrm{i}=1}^{\infty} \frac{\mathrm{Dt}}{(1 + \mathrm{ke})^{\mathrm{t}}}$$

Where:

Po= The current price of the stock at time 0.
Divt=Dividend paid at the end of the year t.
Ke= The required retorn on investments in equity
T= Number of years

C) The Gordon growth model

The Gordon growth model assumes that the price or value of a share of company depends on a constant dividend growth. The Gordon growth model also assumes that the expected growth rate of the dividends is lower than the required return on equity, according to (Mishkin & Eakins, 2018).

$$\mathrm{Po} = \frac{\mathrm{Do} * (1 + \mathrm{g})}{(\mathrm{ke} - \mathrm{g})}$$

Where:

Po= Current price of the stock at time 0
Do= Curren dividend
g= growth of dividend
Ke= The required retorn on investments in equity

This model is also not very accurate because it requires to analyse which rate of growth the company will experience. Normally, analysists estimate the rate of growth using historical trends however this is not very reliable since the model does not consider any changes in the firm or economy that can affect the growth rate, according to (Mishkin & Eakins, 2018).

D) Price earnings valuation method

The price earnings valuation method consists on using the average PE of the specific industry where the company operates and then multiply it by the earnings per share of the company (E)**,** according to (Mishkin & Eakins,2018).

$$\mathrm{Po} = (\mathrm{P}/\mathrm{E})*\mathrm{E}$$

Where:

Po= Current price of the stock at time 0
(P/E) = Average PE od the industry
E= Earnings per share of the company

The price earnings ratio (PE) has two interpretations:

- A higher-than-average PE may mean that markets expect that the earnings of the company will tend to increase in the future, according to (Mishkin & Eakins, 2018).

- A high PE may also mean that the market feels that the firms' earnings are low risk and therefore investors would pay a premium for them, according to (Mishkin & Eakins, 2018).

Remark that according to (Mishkin & Eakins, 2018), this model is also not very accurate because it takes into account the average PE of the industry and this is not very reliable since the PE of the company could be higher than the average or lower.

2.5.3 Factors that affect the price of stocks

In the stock market the prices of stocks can fluctuate. According to (BBVA, n.d.), the events that can make fluctuate the prices of equities are the following:

- **Profits:** If the company has obtained profits during the year the value of the shares of this company will increase, says (BBVA, n.d.).

- **Expectations of the market:** If the market expects that a company will perform good and therefore distribute dividends then the price of the shares of the company will increase, says (BBVA, n.d.).

- **Nº of shares(Supply) :** If the company issues new shares then its price will decrease, says (BBVA, n.d.).

- **Demand:** The higher the demand to acquire a share of a company the higher will be its price. Therefore,the lower the demand to acquire a share of a company the lower will be its price, says (BBVA, n.d.).

- **Interest rates:** If the central bank of the country increases the interest rates then the cost of borrowing money will increase and as a consequence people will not buy shares and hence the price of stocks will decrease. However, if the central bank decides to decrease the interest rates then the cost of borrowing money will decrease and therefore the people will decide to buy shares, which will lead at the end to and increase in the value of stocks, says (BBVA, n.d.).

- **Economic perspectives:** If an economy is in recession or in war, then the value of stocks will decrease. However, if an economy is in good shape the value of stocks will increase, says (BBVA, n.d.).

2.5.4 Stock Performance

In **(Figure 2),** we can observe the evolution of the price of the Dow Jones index. The Dow Jones index is an index that measures the performance of the 30 largest companies in the United States of America.

In this figure**,** we can clearly observe that investing in stock has been always a good thing in the long run since the Dow Jones has had a good performance historically. Besides that, we can also observe that stock prices are volatile, since we can observe that the stock market during economic recessions has suffered huge drops. For instance, in 2008 we had the Financial Recession where the Dow Jones index decreased a lot. Also, we can observe this volatility in 1995, when the stock market experienced one of the great bull markets with the dotcom bubble where the Dow Jones reached 12000 points and then with the burst of the bubble in 2000, the stock market decreased over 30%, says (Mishkin, & Eakins, 2018). Finally, remark that the volatility of the stock market can also be seen in the WWI and WWII but we will talk about this later.

Source: (Mishkin, & Eakins,2018).

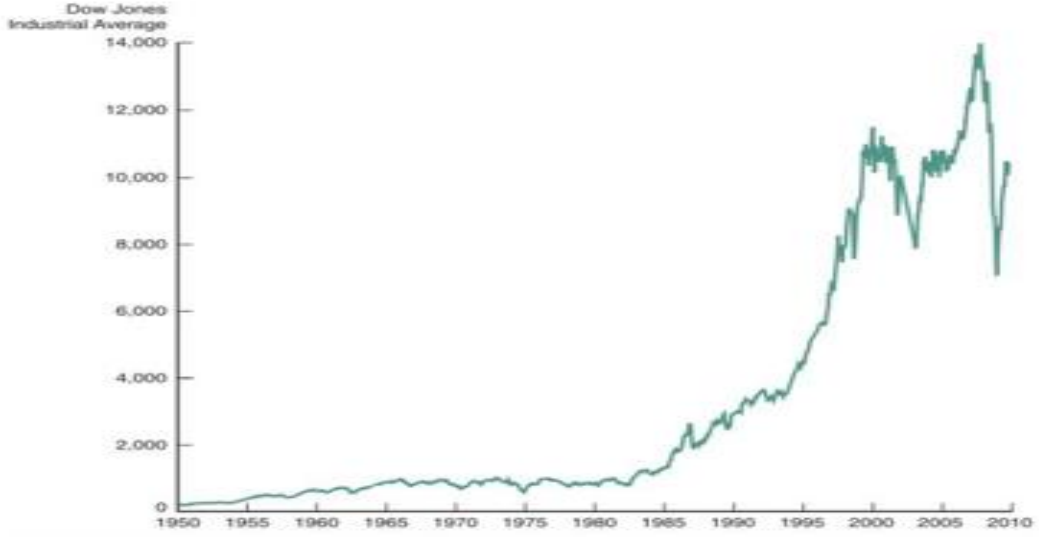

Figure 2: Dow jones performance 1950-2010

Therefore, once seen the real state performance and the stock performance in this project we are going to assess the fluctuations on the returns and prices of equities, but also, we are going to assess the prices and the returns fluctuations of real estate and hence compare which asset is better for an investor to invest. However, before doing that we have to talk about the recessions that have affected our world during the last century.

3. Global Recessions

In this section we are going to talk about the most important periods of recession that the world has suffered from the First World War until the COVID 19 pandemic.

3.1 First World War (1914-1918)

The First World War was the first war where several countries were actively participating in a global war. The war began in 1914 and finished in 1918, this global war happened across various regions, with the Allied Powers (France, United Kingdom, Russia, the United States, Italy, and Japan) confronting the Axis Powers (Germany, Austria-Hungary empire, the Ottoman Empire and Bulgary) in a battle that reshaped the course of history, according to (Viswanath, 2021).

The First World War started with the assassination of the Austro-Hungarian heir Archduke Franz Ferdinand the 28th of June of 1914 in Sarajevo. In response to that event, the Austro-Hungarian empire declared the war to Serbia and as consequence Russia decided to attack the Austro-Hungarian empire. Moreover, Germany declared the war to Russia and France and as consequence the UK declared the war to Germany, mentions (Viswanath, 2021).

The War led to the mobilization of more than 70 million soldiers where 10-20 million of soldiers and citizens died, says (Viswanath, 2021). Furthermore, the war caused a lot of monetary losses that amount to 186.3 billion dollars due to the destruction of the houses, roads and hospitals, according to (Viswanath, 2021).

Causes

As mentioned before, the detonator of the war was the **assassination** of the Austro-Hungarian Archduke Franz Ferdinand. However, this event was not the only reason why the war was originated, according to (Viswanath, 2021).

One cause of the First World War, was the establishment of military pacts and secret **alliances** that escalated conflicts, mentions (Viswanath, 2021).

Another cause of the First World War, was the **nationalism**. The annexation of Alsace and Lorraine by Germany in the Franco-Prussian War fuelled French nationalism. The Balkan Crisis further created tensions due to Pan-Slavic and German nationalistic sentiments, disrupting the balance of power in the region. Therefore, the 20th-century rise of powerful nation-states driven by nationalism set the stage for the war, according to (Viswanath ,2021).

Finally, the last cause of the war was **Imperialism**. Germany in the years before the war, experienced a period of growth in terms of industrialization and also in terms of its army. This growth led to the need for competition for colonies and resources. This drove major powers into local wars to protect their interests, raising tensions. The expansion of German colonies globally heightened European fears, contributing to an overall atmosphere of apprehension. Therefore, imperialism driven by the need for colonies and

resources, played a crucial role in escalating tensions and contributed to the complex set of factors that led to the initiation of the First World War, says (Viswanath, 2021).

Results and conclusion

The war started with the assassination of Austro-Hungarian heir Archduke Franz Ferdinand the 28th of June of 1914 in Sarajevo. In response to that event the Austro-Hungarian empire declared the war to Serbia.

Germany invaded Belgium to attach France but also decided to attack Russia. The Axis power was winning the war initially. However, the USA entered the war initially in 1917 making the Allied forces to win, says (Viswanath, 2021).

The war ended with the Treaty of Versailles where Germany was humiliated and penalised for the war. The Treaty obligated Germany to get disarmed, to give its colonies to the allied forces and to pay the reparation of the buildings that were destroyed, says (Viswanath, 2021).

Consequences

The war mobilised 70 MLN soldiers and caused the death of 10-20 MLLN people in the war. Furthermore, a lot of people were injured, mutilated and disappeared during the war, according to (Rodríguez, n.d.).

The economic aftermath of the war was hard. Numerous cities, industries, and infrastructures faced complete destruction. Europe found itself heavily indebted, both from the loans acquired during the conflict and the subsequent reconstruction efforts. The conclusion of the war brought about inflation and monetary problems in Europe as gold reserves, previously used as a medium of payment, decreased. That is why, from 1919 to 1922, the continent had a severe crisis marked by a huge inflation and a decline in the living standards of the workforce, says (Rodríguez, n.d.).

First World War impact in the housing market

The First World War had also an impact in the real estate market. For instance, in the US the real estate market had a small drop in 1915 but the value of real estate properties had an upward tendency due to the US was winning the war as we can see in **(Figure 15**). Remark that, in the practical part we are going to observe the effects in the real estate market in all the countries that were involved in WWI.

First World War impact in the stock market

When the First World war started the immediate impact was the closure of stock exchanges around the world due to share prices began to collapse and the only way to prevent the panic of the investors was to close stock exchanges and the trading of shares in the stock markets, says (Taylor, 2018). However, some exchanges like for example the London stock exchange or the stock exchange in France reopened months later but with some restrictions in the shares that could be traded, says (Taylor, 2018).

The stock market, for the countries who participated during the war, return did not well during the war as we can see in (**Figure 3).** France's Stock market (green line) behaved the best in comparison with the countries that participated in the war. Germany (blue line) was the country who performed the worst in its stock market due to the economic consequences that the country suffered after the war according to (Taylor, 2018).

Source:(Taylor, 2018).

Figure 3: Stock performance of the participants in the WWI

3.2 The Roaring 20s & the Great Depression (1920-1939)

The Roaring 20s (1920-1929)

In the 20s the United States of America and the winners of the First World War started to experience a huge period of expansion during this period, until 1929 with the great depression.

The Roaring 20s were defined this way because after the First World War a time of abundance emerged in the US, fuelled by full employment and new formulas for financing consumption. During this period there was almost full employment in the United States of America and thanks to that but also thanks to the new ways of financing the purchases of goods, there was a huge increase in the consumption of goods and services and therefore that boosted the economy of the US, according to (Ortega,2020).

Moreover, during that period the middle class discovered the stock market. The stock market in the Roaring 20s experimented a huge performance and as a consequence a big part of the population of the US invested in the stock market, because they had the faith that it would increase forever, says (Ortega,2020). However, this period of wealth came to an end with the Black Tuesday in 1929 that lead to a huge drop in the price of the shares and as consequence to one of the biggest recessions, that was known as the **Great Depression.**

The Great Depression (1929-1939)

The Great Depression is known as the worst recession that the United States has had. As mentioned before in the Roaring 20s the United States of America experimented a huge growth due to the increase of consumption, but also by the good performance of the stock market.

However, the middle class of the US started speculating in the stock market because they had the faith that the stock market would increase forever, says (Moncayo, 2019). The stock market reached unrealistic price levels in 1929. That is the reason why on the 24 of October 1929, the stock market in the US collapsed, see **(Figure 4)**.

The sale of more than 16 million shares evaporated the succulent profits of the investors and ruined speculators since a lot of citizens put their savings in the stock market, says (Moncayo, 2019).

Source: (Macrotrends.net, n.d.)

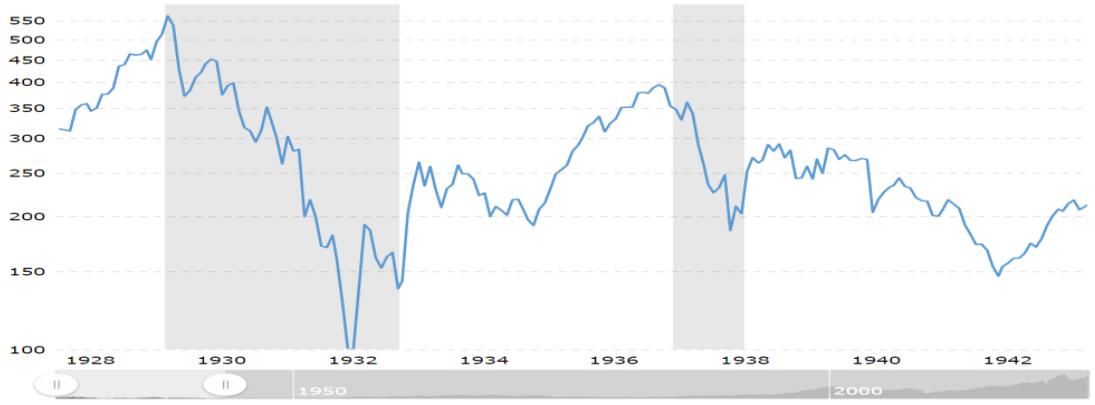

Figure 4: S&P 500 price level 1929-1942

The crash had a devastating effect on firms and consumer confidence. Their negative reaction accelerated an economic deterioration that led to the end of the Roaring 20s. Regarding the housing market, there was a decrease in the price of the houses. As we can see in **(Figure 19),** in the US the value appreciation of real estate properties, during those years, was -36 percent. Therefore, the **Great Depression** had a big impact in the real estate market.

Furthermore, during 1930 hundreds of illiquid companies closed, and those that survived cut their investments, leading to the destruction of countless jobs and a huge decline in production. The stock market continued its decline, agricultural prices sank, and the inability of clients to pay their loans put many banks in a bad situation. The number of bankruptcies increased and more than two thousand banks went bankrupt, with them, billions of dollars that their clients had deposited, mentions (Moncayo, 2019).

Furthermore, during the recession the US decreased its exports and imports and as a consequence the recession was extended to Europe with similar consequences to the citizens. The economic situation worsened even more in 1932 where a huge number of workers were unemployed (unemployment rate was 25%), says (Moncayo, 2019). Thousands of Americans could not afford to pay their mortgages and were evicted. Poverty appeared and millions of Americans saw their way of life disrupted, says (Moncayo, 2019).

Finally, after 10 years of recession and huge unemployment rates the economy started to grow again in 1940 thanks in part to the implementation of the Keynes policy. The president of the United States increased public spending on occupation programs and that boosted the economy due to the reduction of the unemployment rate, but it was the beginning of World War II that really brought the country sustained growth and a return to prosperity, says (Moncayo, 2019).

3.3 Second World War (1939-1945)

The Second World War (1939-1945) is considered to be deadliest war in human history. The Second World war fronted two blocks the Axis forces (Germany, Italy, Japan and Hungary) and Allied forces (UK, France, Russia, United States). According to (La Vanguardia, 2019) , more than 100 MLN soldiers participated in the war and 50 MLN soldiers and citizens were killed during the war. Moreover, between 19 MLN & 28 MLN persons died due to the diseases and famine as a consequence of the war.

Causes

The Second World War started the 1st of September of 1939 when the German army, under the guidelines of Adolf Hitler, invaded Poland. After the invasion, the UK and France declared the war to Germany.

However, the origin of hostilities was much earlier. The main cause of WWII was the way the First World War ended, since the Treaty of Versailles imposed hard measures against the Germans. With the Treaty of Versailles Germany lost part of its territories, had to pay a compensation of money to the countries who won the WWI and demilitarize the country, says (La Vanguardia, 2019) .

As a consequence, the Germans were accumulating great resentment against the rest of the countries. This discontent gave wings to Adolf Hitler and his fascist ideas to get revenge and therefore conquer countries, says (La Vanguardia, 2019) .

Chronology and conclusion

The war started in 1939 when Germany invaded Poland. In response to that event the UK and France declared the war to Germany. In 1940 Germany decided to invade Denmark, Belgium, Norway, The Netherlands and Luxemburg with no resistance practically, according to (United States Holocaust Memorial, 2022).

The 22 of June 1940 France signs an armistice, whereby the Germans occupy the northern half and the entire Atlantic coast of the country. In the south of France, a collaborationist regime was established with capital in Vichy, says (United States Holocaust Memorial, 2022).

In 1941 Germany Invaded Yugoslavia and decided to attack the URS. The Germans quickly invaded the Baltic republics and a big part of Rusia. However, the soviet's counteroffensive expulsed Germans from Moscow outskirts, says (United States Holocaust Memorial, 2022). Also, that year Japan decided to attack Pearl Harbour (military base of the US army) and as a consequence of that attack the US entered in the war. With the entry of the US in the war Germany started to lose its territories. The war ended in 1945 with the suicide of Hitler and with the arrival of the soviet soldiers to Berlin. This event caused the surrender of the German soldiers, says (United States Holocaust Memorial, 2022).

Consequences

The war mobilised 100 MLN soldiers and caused the death of 50 MLLN people in the war. Furthermore, a lot of people were injured, mutilated and a lot of people disappeared during the war, according to (La Vanguardia,2019) .

The economic aftermath of the war was profound. Numerous cities, industries, and infrastructures faced complete destruction. Agriculture also suffered since many crops were lost and in some territories the fields were even riddled with mines. This generated famine and caused an even higher number of deaths, mentions (La Vanguardia,2019) . Fortunately, the United States approved the so-called Marshall Plan in 1947, which helped alleviate the state of post-war in Europe and regenerate its economy, mentions (La Vanguardia,2019) .

Second World War impact in the stock market

The Second World War had an impact in the stock market. In **(Figure 5)**, we can see that the Dow Jones experimented a fall of 47%. However, with the entry of the United States of America in the war the stock market started to increase and by the end of the war the index recovered its previous level before the war.

Source: (Biggs, 2008).

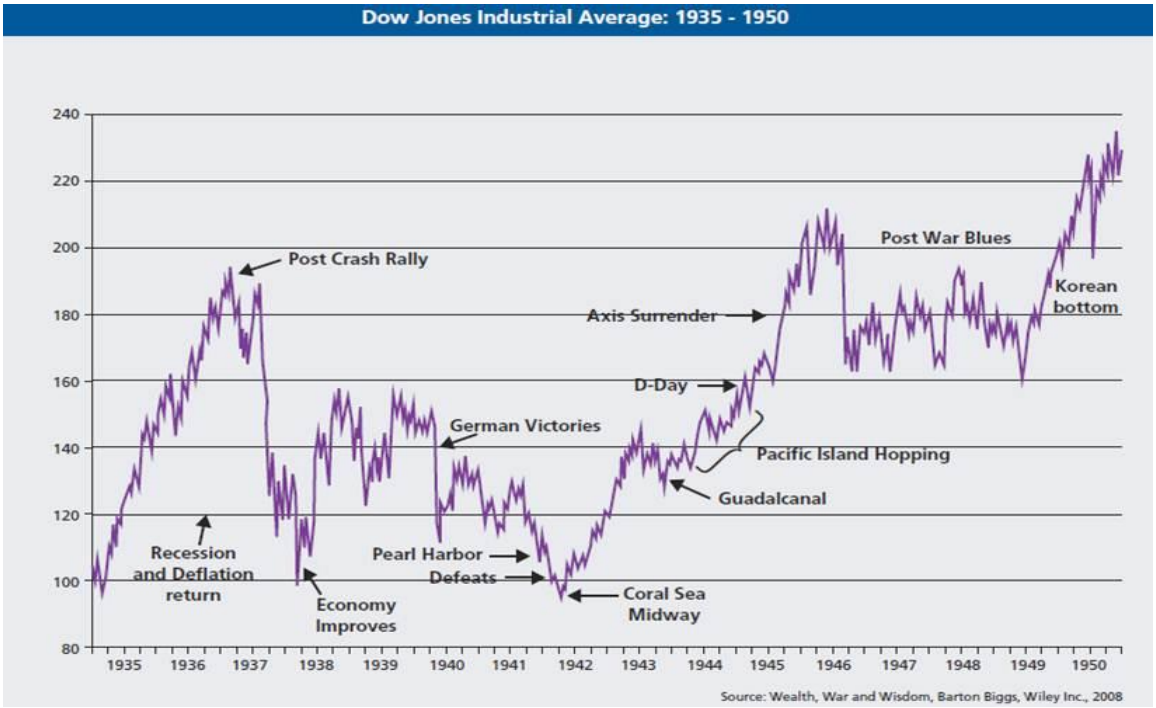

Figure 5: Dow jones performance between 1935-1950

Second World War impact in the housing market

As we can see in **(Figure 21)** the Second World War had also an impact in the real estate market. For instance, in the US, the value of real estate properties decreased a -15 percent between 1940-1941. However, the value appreciation of real estate, between 1939-1945, was 30,58 percent due to the win of the US in WW2.

3.4 1973-1975 Recession

The 1973-1975 recession was a period of economic stagnation in the western world that ended the economic boom that followed World War II. This recession was characterized by having stagnation which means a decrease in the GDP growth of an economy, but with an increase in prices (inflation), says (Euronews, 2022).

Causes

The reason why we had a global recession is because we had a huge increase in the oil price as we can see in **(Figure 6).** Remark that in that time the oil was the main commodity that was used to produce goods, but also to generate energy in the industries.

Source: (Macrotrends.net, n.d.)

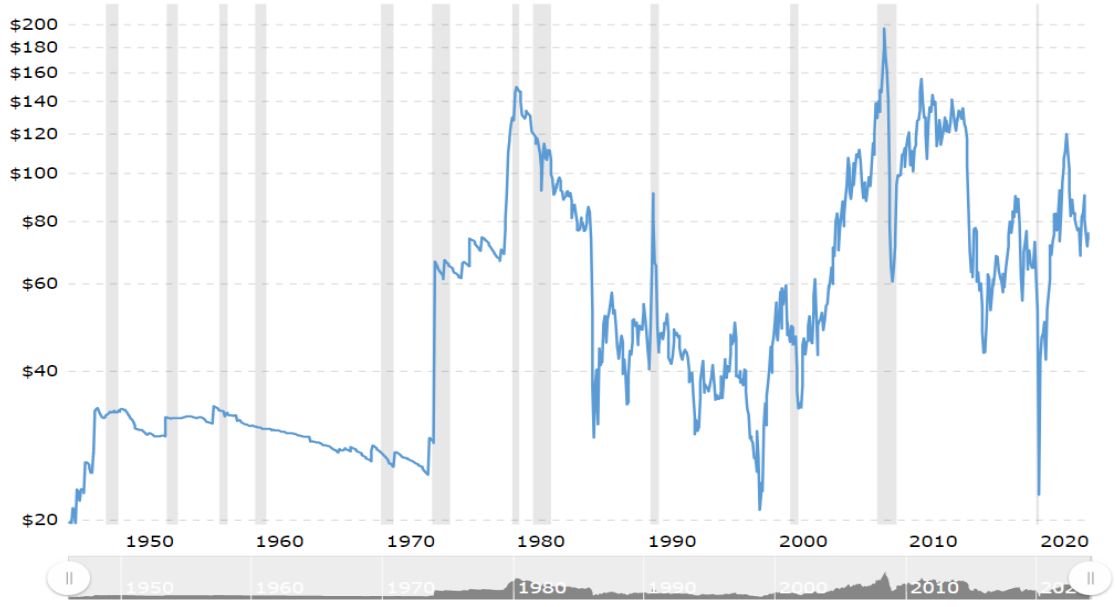

Figure 6: Oil price evolution over the last 70 years

The reasons of the increase of the oil price were the following:

- Firstly, the Arabic producers of oil decided to cut its supply to the majority of countries of Europe and also to the United States. The Arabic producer did this because the United States during the Yom Kipur War [3]gave support to Israel and not to the Arabic countries including also Syria and Egypt, says (Study Smarter, n.d.).

- Secondly, the president of the United States, Richard Nixon, decided to desvinculate the dollar with the gold and as a consequence the dollar could not be converted to gold units. Moreover, the value of dollars and also the value of other currencies decreased and therefore more dollars were required to pay the oil, according to (Study Smarter, n.d.).

[3] War that started in 1973 that fronted the Arabic countries.

In conclusion, the cause of the 1973-1975 recession was the oil price increase due to the exit of the gold standard and also due to the supply cut of oil done by the Arabic countries.

Consequences

According to (Study Smarter, n.d.) , the western world depended on oil for almost 70% of its energy supply. In 1973-1974 saw oil prices quadruple. That made that the industries had to reduce the supply of goods because the costs to produce them increased significantly due to the increase of the oil prices. The increase of the price of the oil supposed an increase of the prices of almost all goods (inflation).

Secondly, the oil crisis recession supposed an increase of the unemployment rate in the industrialized economies, as we can see in **(Figure 7)**, and as consequence a drop in the GDP of the most important economies.

Source: (World Bank, n.d.)

Figure 7: Global unemployment rate (%) in 1975

Remark that thanks to that, the Western World started to look for new sources to reduce the dependency to the oil. However, in 1979 this dependency rose again with the Iranian Revolution between 1978-1979 (see **Figure 6)** and the western world suffered again a new recession due to this new oil price increase, says (Study Smarter, n.d.).

Nowadays, this dependency still exists but much less than in the 70s since we have found new sources of energy.

Consequences in the housing market

In the US the recession did not have a negative impact in the real estate market. In **(Figure 23)**, we can observe that the value of the properties in the US did not decrease. In fact, in 3 years the value of properties increased a 20 percent. Remark that, in the practical part we are going to observe the effects in the real estate market in all the countries during this period of time.

Consequences in the stock market

The Oil prices recession war had an impact in the stock market. In **(Figure 8)** we can observe that the Dow Jones experimented a fall of from 7500 points in 1972 to 3500 points in 1975 (more than -50%). Furthermore, if we take into consideration the second oil recession that happened in 1979, we observe that the Dow Jones reached the 3000 points. Therefore, in seven years the stock market in the US decreased a 60%.

Source: (Macrotrends.net, n.d.)

Figure 8: Dow jones performance between 1972-1980

3.5 The Dotcom Bubble

The Dotcom Bubble is not considered as a global recession, but it had important effects in the stock market, and not in the housing market, as we can see in the US in (**Figure 25)**. The dotcom bubble is considered to be a stock market bubble that was caused by investors who were speculating in dotcom or internet-based businesses from 1995 until 2000, according to (Corporate Finance institute, n.d.).

During that period the stock of internet companies experienced a huge increase due to a speculative fervour fuelled by the emergence of the internet in the 90s, says (Corporate Finance institute, n.d.). The companies that were internet-based experiment a huge increase in the stock market, although they were not generating profits. We can see this increase in (**Figure 9)** were a share in the Nasdaq index in 1996 was 1000 $ and in 2000 the share price was 5000$.

Five years later, in 2000 the market noticed that most of the companies were overvalued and as a consequence the Nasdaq index dropped and by 2002, investor losses were estimated to be 5 trillion USD, according to (Corporate Finance institute, n.d.).

Source: (Macrotrends.net, n.d.)

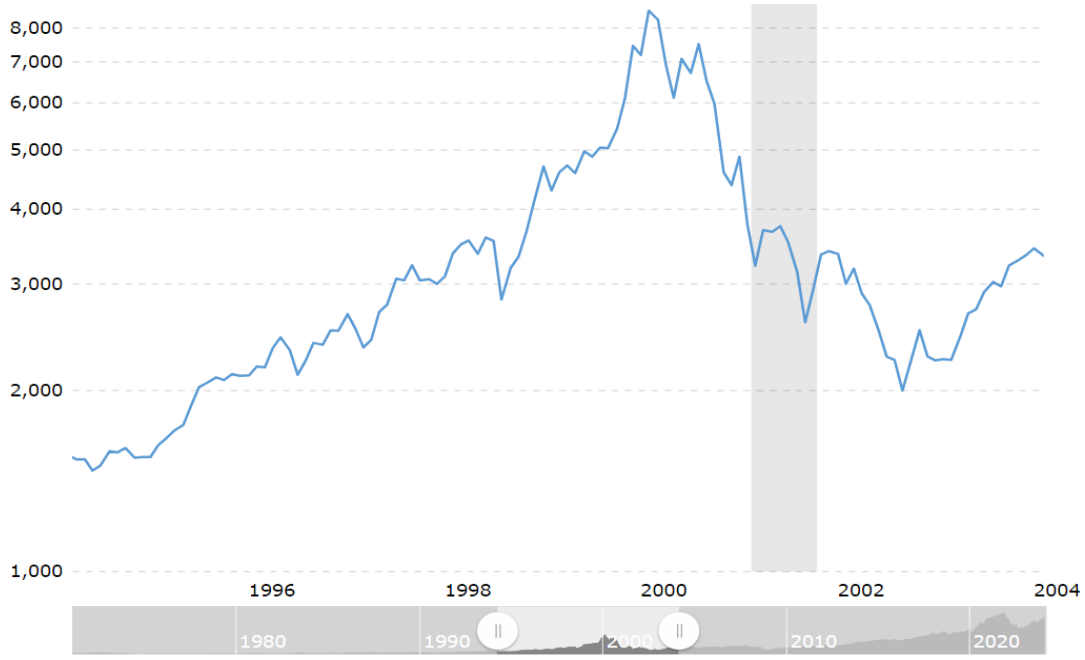

Figure 9: Nasdaq index between 1994-2004

3.6 Financial crisis 2008 (Lehman Brothers)

The Financial recession of 2008 is known as the worst recession that the world has suffered after the Second World War. The recession was originated in the United States of America, but this recession was expanded rapidly across almost all countries around the world, with the bankruptcy of the bank Lehman Brothers.

Causes

During the first years of the XXI century the United States experimented a period of economic growth due to the expansionary monetary policy that FED (Federal reserve) applied. The FED reduced the interest rates and that caused an increase in the demand to acquire houses and other goods in the US and therefore house prices in the US started to increase exponentially, says (Mishkin & Eakins, 2018).

The problem was that during the years prior to the crisis, mortgage loans were granted to people with poor or insufficient credit histories, known as subprime mortgages. These subprime mortgages were grouped into packages and created mortgage-backed securities (MBS) [4]that were sold to different banks and investors around the world, says (Mishkin & Eakins, 2018).

These mortgage-backed securities received a specific rating from the rating agencies. However, the rating agencies made a huge mistake rating the mortgages since subprime mortgages were rated as AAA rating (safe mortgage), but the reality is that most of the mortgages were risky since lots of mortgages were given to the NINJAS (people with no income, no jobs and no assets), says (Mishkin & Eakins, 2018).

The problem then started when housing prices peaked and began to decline in 2006, many subprime mortgage borrowers were unable to meet their monthly payments. This led to an increase in mortgage foreclosures and a decrease in the value of mortgage-backed assets, says (Mishkin & Eakins, 2018).

The losses in the mortgage market due to the subprime mortgages caused the destabilization of many banks and the bankruptcy of Lehman Brothers, one of the most important banks in the US, that was affected by the non-payment of the mortgages.

Consequences

The Financial Recession in the United States extended rapidly internationally and the world economies started to enter in recession with a paralysation in production, global trade and consumption around the world. Moreover, a problem of trust among banks emerged since banks became reluctant to lend money to other banks, says (Mishkin & Eakins, 2018).

[4] MBS: Is a debt security that is collateralized by a mortgage or collection of mortgages. The owner of a MBS receives an interest from the monthly payments of the mortgage.

The stock market was affected a lot since many investors decided to sell their shares. We can see this in **(Figure 10)** where the Dow Jones decreased a -50%. However, the stock market recovered its previous value some years later.

Source: (Macrotrends.net, n.d.)

Figure 10: Evolution of Dow Jones index between 2000-2016

Secondly, the unemployment rate in the whole world increased as we can see in **(Figure 11)** the unemployment rate in 2009 in the world was 6.5%.

Source: (Statista, n.d.)

Figure 11: Global unemployment rate between 2007-2024

Thirdly, as we can see in (**Figure 27)** the Financial Recession of 2008 had also an impact in the real estate market. The value of the properties in the US from 2008-2009 decreased a -10 percent and the following years continued decreasing. Remark that, in the practical part we are going to observe the effects in the real estate market in all the countries during this period of time.

In conclusion, the financial crisis of 2008 was a huge recession that had a big impact at a global level. The recession generated some consequences globally like for example the collapse of financial institutions, the rise of the unemployment, the decline of international trade and finally a drop in the prices of the real estate market. Furthermore, the crisis led to a fundamental reassessment of regulatory and economic policies, with reforms aimed at strengthening financial stability and preventing similar future recessions of this type.

3.7 Covid-19 Pandemic

In 2020 the world suffered a global pandemic caused by the SARS-COV-2. This pandemic obligated to the whole world to stop the economy in order to stop the deaths and infections generated by this virus.

The paralysation of the economy caused some economic consequences around the world:

- **Increase of the unemployment rate:** In **(Figure 11)**, we can see that the global unemployment rate was 7% and the temporal unemployment was 70%, according to (Jones, Palumbo & Brown, 2021).

- **Reduction of the GDP for all the countries:** In (**Figure 12)** we can observe that the pandemic caused a decrease in the GDP in all the countries. In Europe and South America, the GDP dropped between -5% and -15%. In the US de GPD dropped a 5%. Finally, in China de reduction in GDP was close to 0%, according to (Jones, Palumbo & Brown, 2021).

Source: (Jones, Palumbo & Brown, 2021).

Figure 12: GDP variation between 2020-2021

- **Reduction of international trade:** International trade collapsed since the industries stopped producing goods an as a consequence the shipping of commercial goods dropped drastically, says (Jones, Palumbo & Brown, 2021).

- **Increase of the public debt:** The majority of the countries had to increase their public expenditure in order to rescue to the firms who had to stop their production, but also to rescue economically the citizens by means of furlough schemes says (Jones, Palumbo & Brown, 2021).

Moreover, the stock market crashed as we can see in (**Figure 13).** The stock market in the US (Dow jones) in 2020 decreased a -35%, the stock market in Italy (ITALIA MIB) decreased almost a -40% in 2020, the stock market in Japan (Nikkei) decreased almost a -30% and the London Stock market decreased a -35% according to (Jones, Palumbo & Brown, 2021).

Source: (Jones, Palumbo & Brown, 2021).

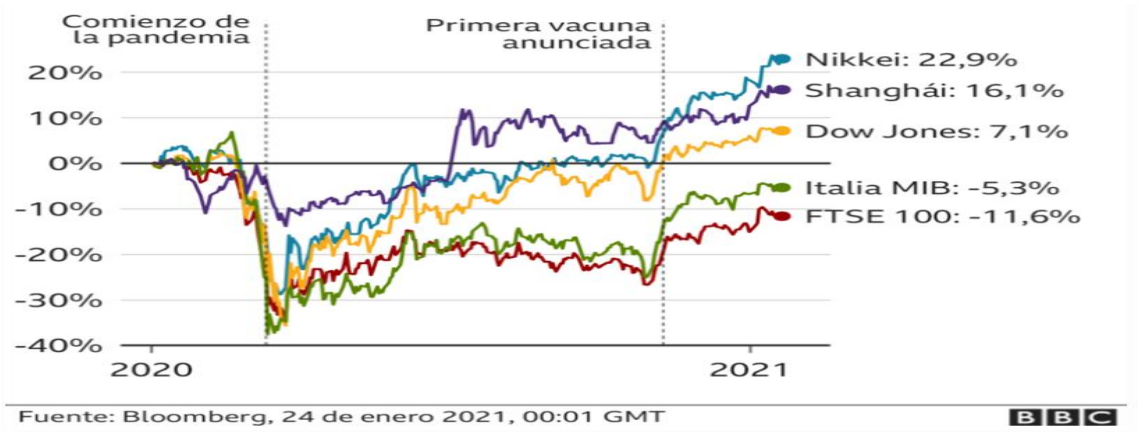

Figure 13: Stock market Indexes variation between 2020-2021

The house market prices were not affected by the pandemic since as we can see in **(Figure 14)** the house prices had a clear tendency to increase. The prices of houses increased, because the monetary policy of the FED was expansionary since they lowered the interest rates and as a consequence the demand to buy houses increased.

Source: (Fred, n.d.)

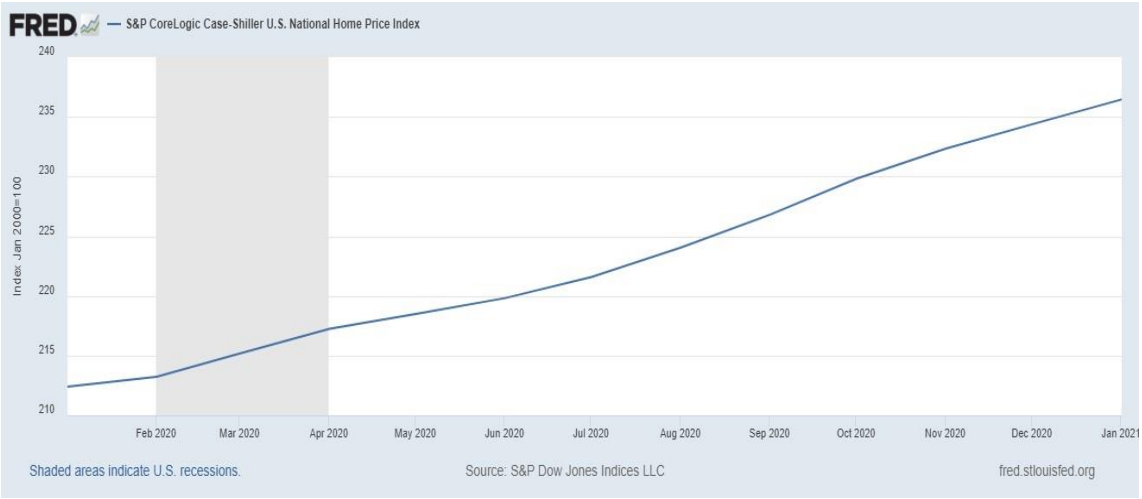

Figure 14: Shiller index US between 2020-2021

In conclusion, the Covid-19 pandemic was a huge global recession that affected socially with the death of a lot of people but also economically since pandemic caused an increase of the unemployment rate, a decrease of the GDP of most of the economies, the collapse of the international trade and a decrease of the prices in the stock market. However, due to the expansionary monetary policy the house prices did not decrease and also the recovery of this recession was faster.

4. Methodology approach

In the theoretical part of the thesis, the concepts about assets, stocks and real estate were explained as well as the factors that cause value changes in stocks and real estate properties. Moreover, a clear idea of the causes and consequences of the most important recessions, that the world has suffered, was obtained.

Now, in the practical part, the fluctuations in the returns and prices of equities and real estate will be analysed in order to know which asset has performed better during the recessions and therefore give answer to the research question of the thesis.

Concretely, it has been exanimated the performance and price dynamics of both assets from the First World War until the COVID 19 pandemic. The countries that have been analysed are the US, Spain, France, UK, Germany, Japan and Italy due to these countries have had an important weight in the world history. Furthermore, the periods that were analysed are; First World War, Roaring 20s, Great Depression, Second World War, 1973-1975 recession, Dotcom Bubble, Financial Recession and the COVID 19 pandemic.

Finally, all this has been done by means of doing an exhaustive analysis of the performance of both assets using the data elaborated by (Jordà, Ò., Knoll, K., Kuvshinov, D., Schularick, M., & Taylor, A. M., 2019) and available in the **MACROFINANCE & MACROHISTORY LAB.** The analysis has been done by using the data of both assets in order to create graphs and therefore see the price dynamics and returns of both assets during recessions.

5. Analysis of returns and prices of equities and real estate assets during recessions

5.1 United States of America

A) First World War (1914-1918)

In **(Figure 15)**, we can observe the fluctuations of the value of equities and real estate in the US during **WWI**. In this figure, we can observe that during WWI the equities had a huge volatility. This volatility can be seen in 1915 when the value of equities increased a 29 percent and then in 1917 it decreased more than -30 percent. Meanwhile, in the real estate market during the WW1 there was less volatility. The real estate market had a small drop in 1915 but the value of real estate properties had an upward tendency. Moreover, during those years, the value appreciation of real estate properties was 20,51 percent and the value appreciation of equities was 9 percent. **Therefore, real estate properties performed better in terms of value appreciation.**

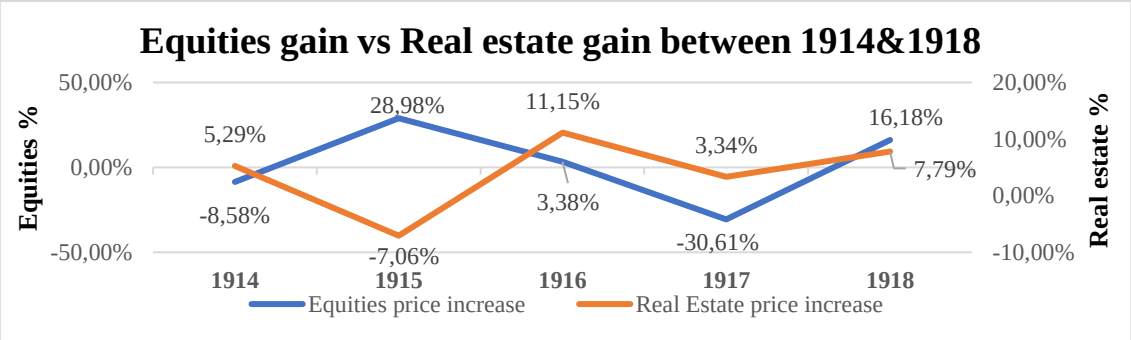

Figure 15: Equities gain vs Real estate gain between 1914&1918 in the US

In **(Figure 16)**, we can observe the fluctuations of the dividend returns and rent returns in the US during **WWI**. In this figure, we can observe that the dividend return was bigger than the real estate rent return. Moreover, the dividend returns, in 1917 and 1918, were between a 3 percent and 4 percent bigger than real estate rent returns. However, the rest of the years the difference was smaller.

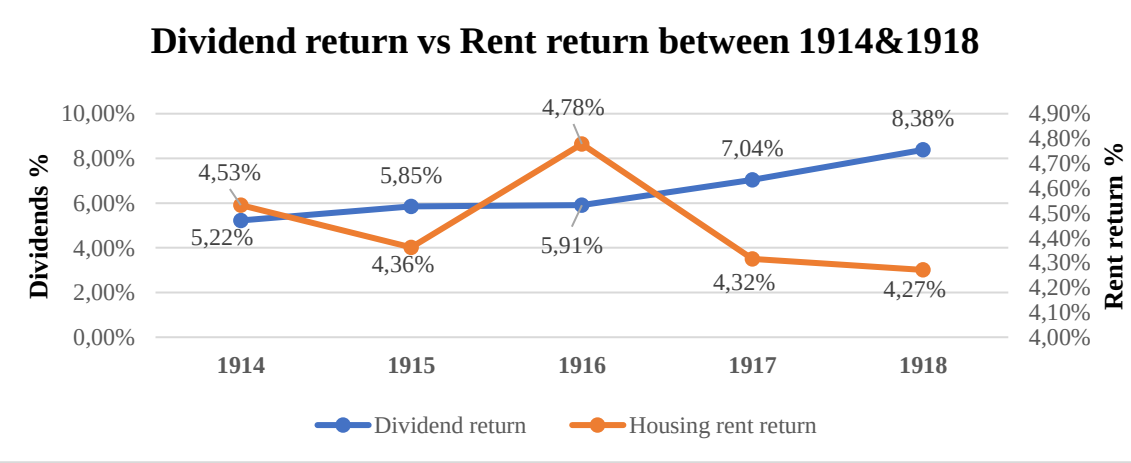

Figure 16: Dividend return vs Rent return between 1914&1918 in the US

B) Roaring Twenties (1920-1929)

In **(Figure 17)**, we can observe the fluctuations of the value of equities and real estate in the US during the **Roaring 20s**. In this figure, we can observe that the equities were volatile. This volatility can be seen in 1920 when the value of equities decreased a -23 percent and then in 1922 it increased more than 20 percent. However, we can clearly observe that, during the 20s, the equities had an upward trend since during those years this market was growing between a 7 percent and 20 percent. Meanwhile, during those years, the real estate market had less volatility but it had a downward trend, since the value of real estate properties was decreasing. **Therefore, equities performed better than real estate properties in terms of value appreciation.**

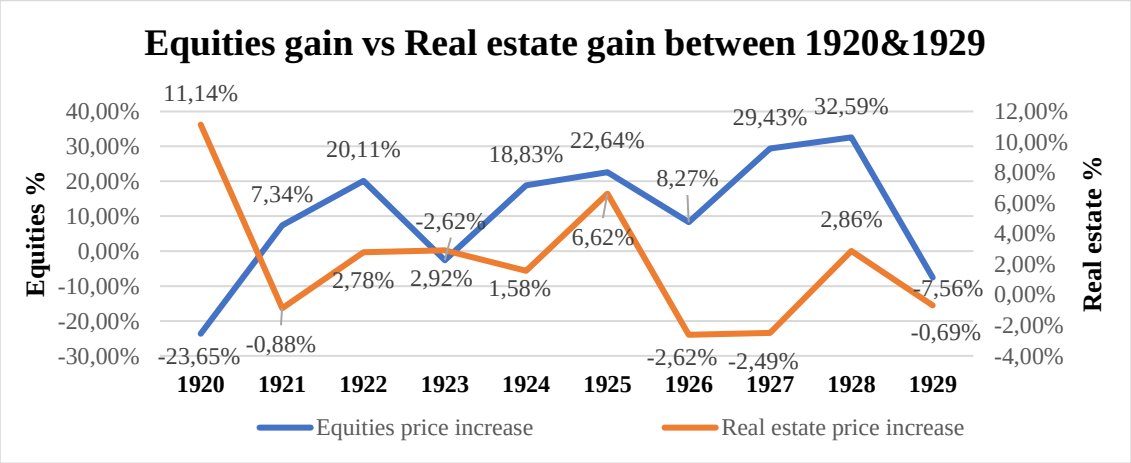

Figure 17: Equities gain vs Real estate gain between 1920&1929 in the US

In **(Figure 18)**, we can observe the fluctuations of the dividend returns and rent returns in the US during the **Roaring 20s**. In this figure, we can observe that, during those years, the dividend return was higher than the real estate rent return. However, the difference between both returns was between 0,5 percent and 2 percent per year.

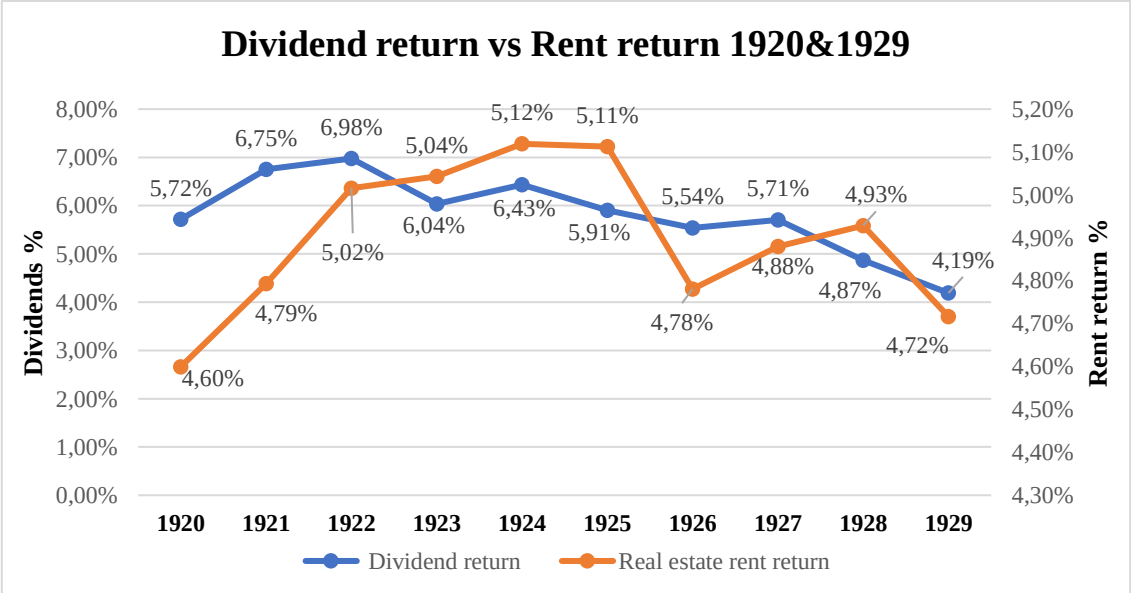

Figure 18: Dividend return vs Rent return 1920&1929 in the US

C) Great Depression (1929-1939)

In **(Figure 19)**, we can observe the fluctuations of the value of equities and real estate in the US during the **Great Depression**. In this figure, we can observe the equities had a huge volatility. This volatility can be seen for example in 1931 when the stock market decreased a -45 percent and then in 1933 it increased a 46 percent. Meanwhile, the real estate market had less volatility but it had a downward trend, since during those years the value of real estate properties was decreasing. Furthermore, during those years, the value appreciation of real estate properties was -36 percent and the value appreciation of equities was -12 percent. **Therefore, equities performed better than real estate properties in terms of value appreciation.**

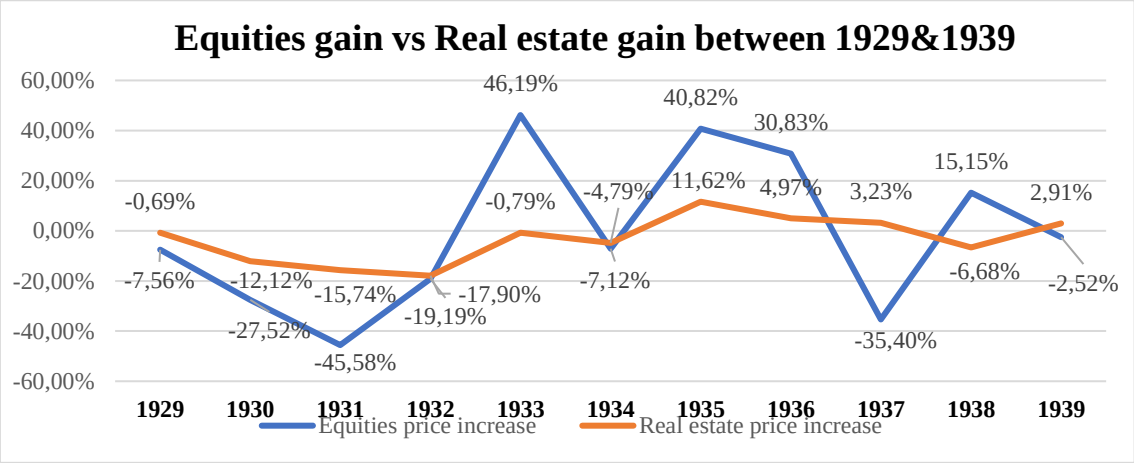

Figure 19: Equities gain vs Real estate gain between 1929&1939 in the US

In **(Figure 20)**, we can observe the fluctuations of the dividend returns and rent returns in the US during the **Great Depression**. In this figure, we can observe that the dividend return was from 1929-1930 and from 1934 to 1939 smaller than the real estate rent return. but the difference between both returns was near 1 percent.

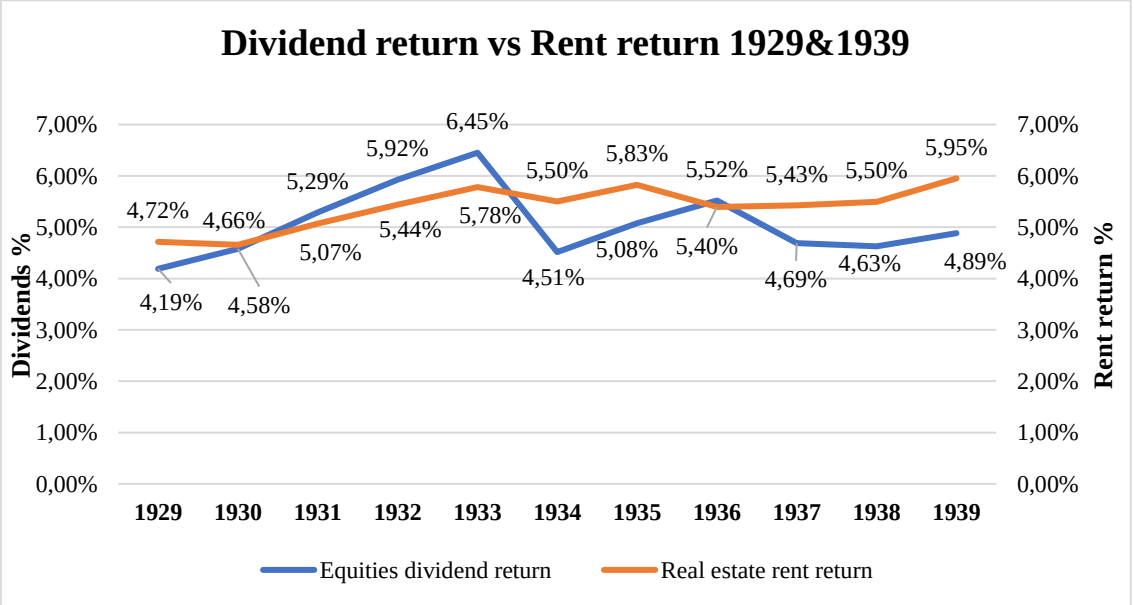

Figure 20: Dividend return vs Rent return between 1929&1939 in the US

D) Second World War (1939-1945)

In **(Figure 21)**, we can observe the fluctuations of the value of equities and real estate in the US during the **WWII**. In this figure, we can observe that the equities, during the first years of the war, decreased a lot. However, in the final years of the war the stock market increased considerably due to the US was winning the war. Meanwhile, the real estate market had less volatility since the price of real estate properties decreased in a fewer proportion than the stock market, but also increased in a fewer proportion in the final years of the war. Furthermore, during those years, the value appreciation of equities was 41,47 percent and in real estate properties was 30,58 percent. **Therefore, equities performed better than real estate properties in terms of value appreciation.**

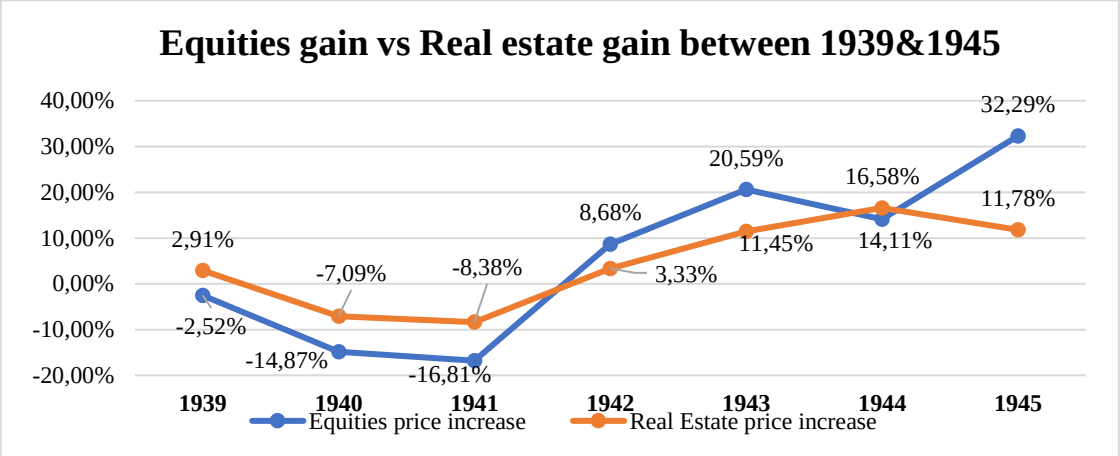

Figure 21: Equities gain vs Real estate gain between 1939&1945 in the US

In (**Figure 22)**, we can observe the fluctuations of the dividend returns and rent returns in the US during **WW2.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. However, the difference between both returns was near 1 percent per year.

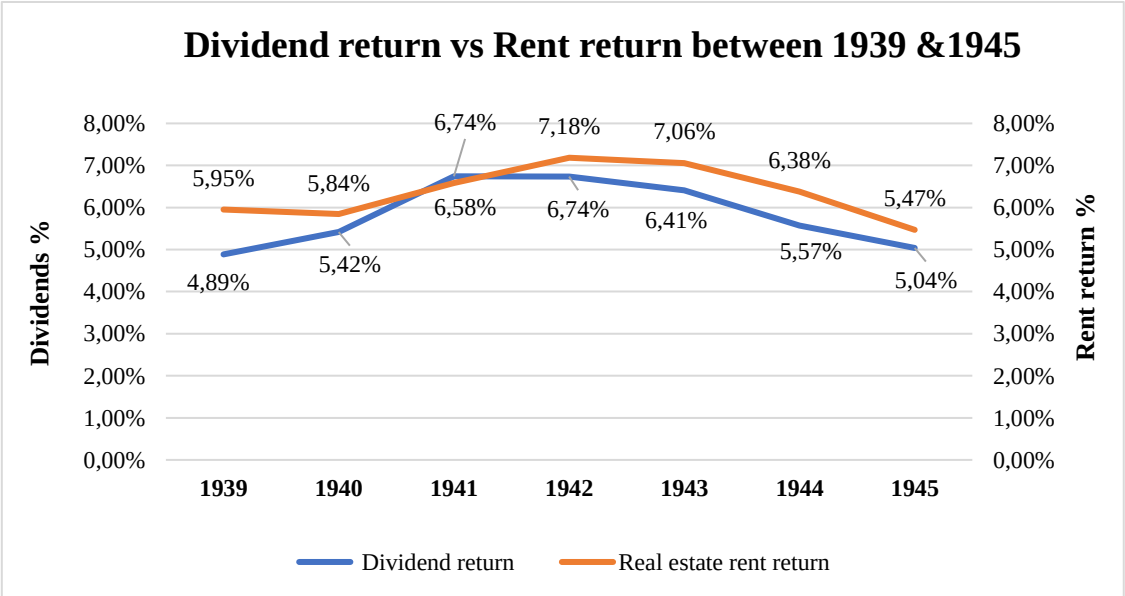

Figure 22: Dividend return vs Rent Return 1929&1939 in the US

E) The 1973-1975 recession

In **(Figure 23)**, we can observe the fluctuations of the value of equities and real estate in the US during the **1973-1975 Recession**. In this figure, we can observe that the equities during the first years of the recession decreased a lot, but in the final year the stock market increased considerably. However, during those years, the value appreciation of equities was -16,33 percent. Regarding the real estate market, the value of the properties in the US did not decrease, in fact in 3 years the value of properties increased a 20 percent. **Therefore, real estate properties performed better than equities in terms of value appreciation.**

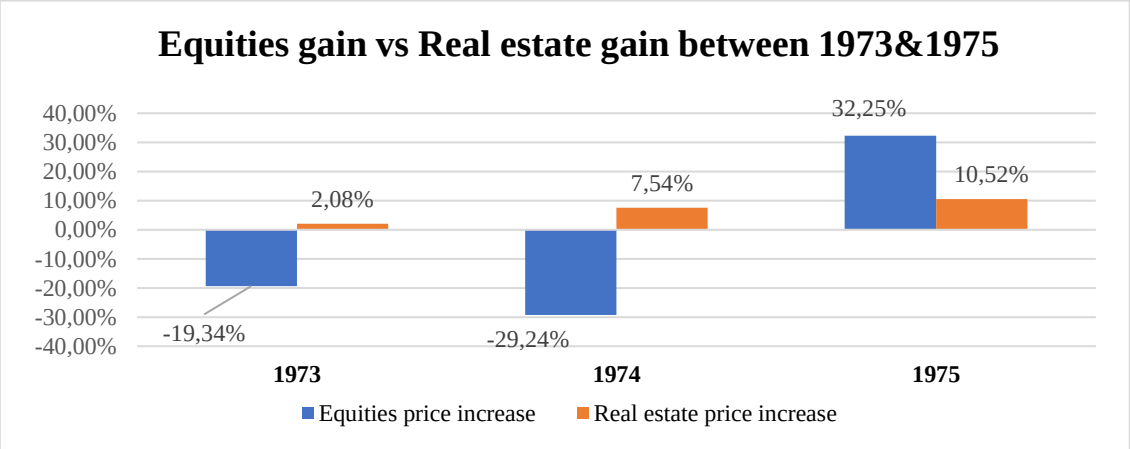

Figure 23: Equities gain vs Real estate gain between 1973&1975 in the US

In **(Figure 24),** we can observe the fluctuations of the dividend returns and rent returns in the US during the **1973-1975 Recession.** In this figure, we can observe that during those years the dividend return was smaller than the real estate rent return. However, we have to say that the difference between both returns was between 1 percent and 2 percent per year, except in 1975 where the difference was smaller than 1 percent.

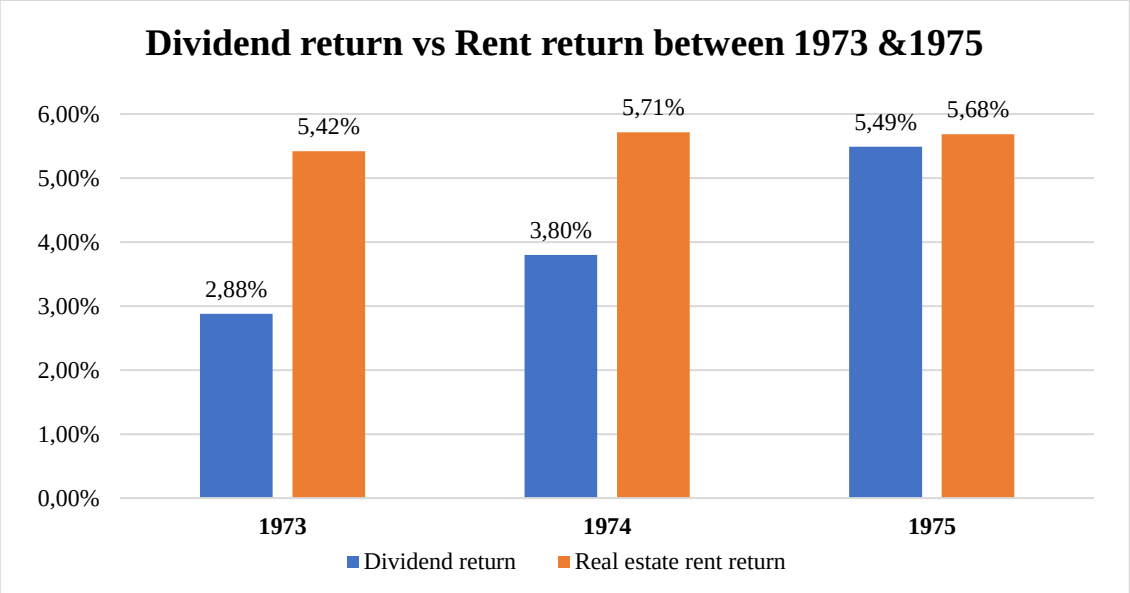

Figure 24: Dividend return vs Rent return between 1973 &1975 in the US

F) The Dotcom Bubble

In **(Figure 25)**, we can observe the fluctuations of the value of equities and real estate in the US during the **Dotcom Bubble**. In this figure, we can observe that the value of equities, during the last years of the 20th century, increased a lot due to the overvaluation of internet companies. However, the bubble by the beginning of 2000 it burst and the stock market crashed. Meanwhile, the real estate market was not affected by the **Dotcom Bubble** due the price of real estate properties increased during those years, but the percentage of increase was smaller in comparison to the increase of the stock market. Moreover, during those years, the value appreciation of equities was 86,86 percent and in the case of real estate properties was 40,13 percent. **Therefore, equities performed better than real estate properties in terms of value appreciation.**

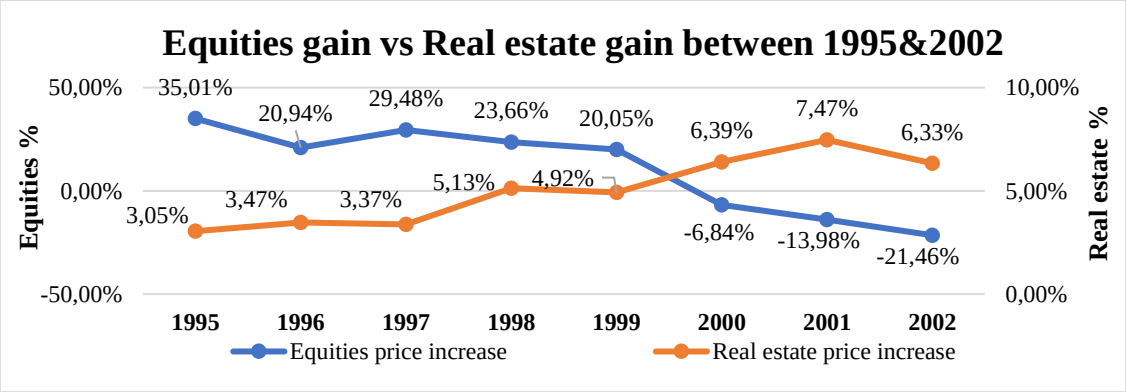

Figure 25: Equities gain vs Real estate gain between 1995&2002 in the US

In **(Figure 26)**, we can observe the fluctuations of the dividend returns and rent returns in the US during the **Dotcom Bubble.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. Moreover, we have to say that the difference between both returns was more than 2 percent per year.

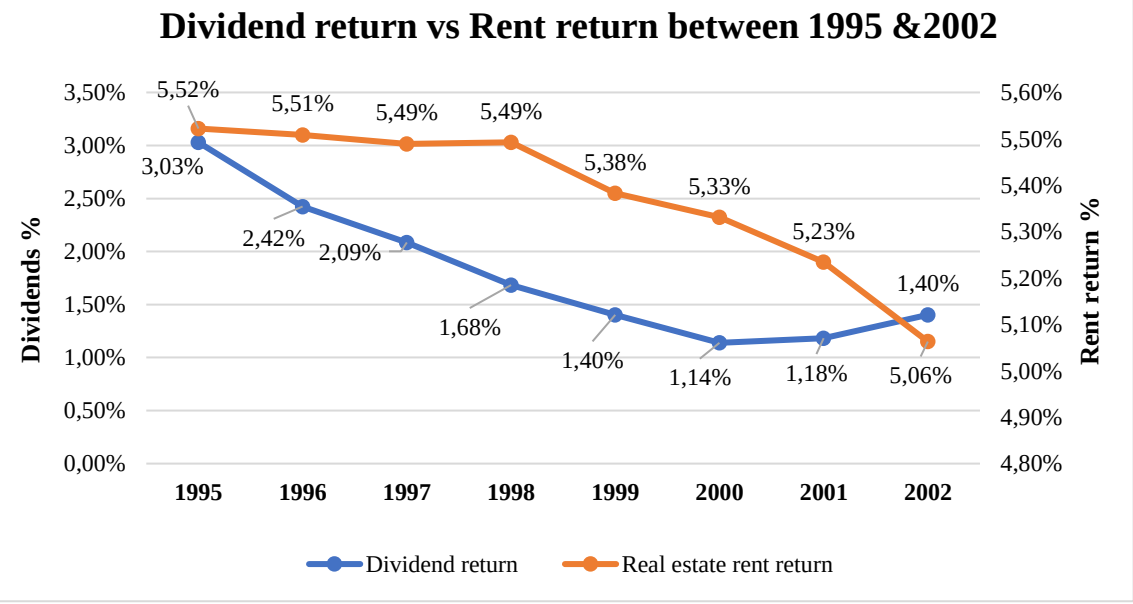

Figure 26: Dividend return vs Rent return between 1995 &2002 in the US

G) Financial Recession

In **(Figure 27)**, we can observe the fluctuations of the value of equities and real estate in the US during the **Financial Recession**. In this figure, we can observe that the equities, during the first years of the recession, decreased a -40 percent. Moreover, it took 4 years to recover the value before the recession. Regarding, the real estate market the value of the properties in the US decreased, but not as the same proportion as the stock market did. However, during those years, the value appreciation of real estate properties was -9,21 percent and in equities was 28,86 percent. **Therefore, equities performed better than real estate properties in terms of value appreciation.**

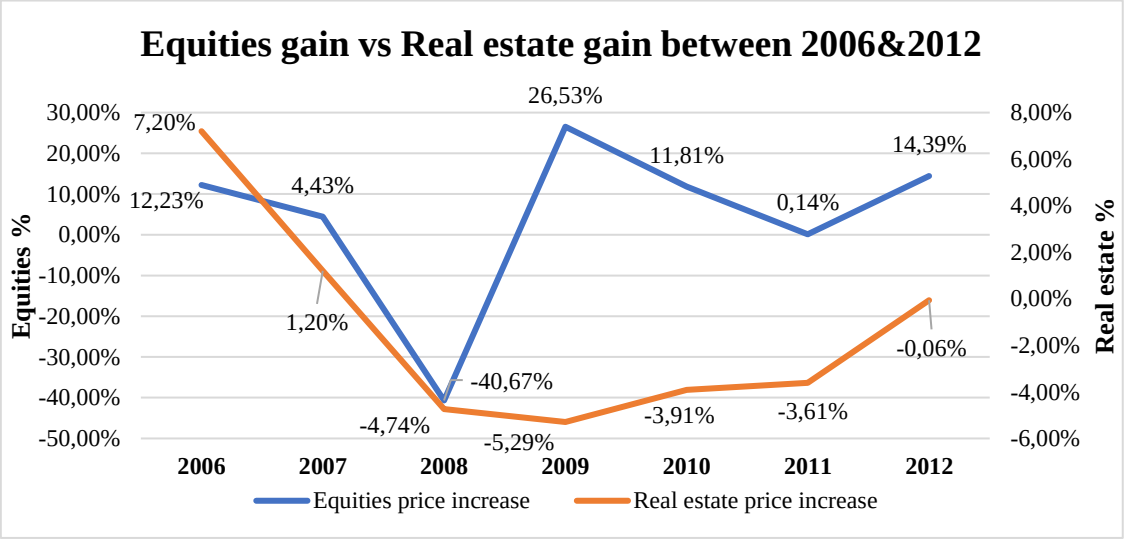

Figure 27: Equities gain vs Real estate gain between 2006&2012 in the US

In **(Figure 28)**, we can observe the fluctuations of the dividend returns and rent returns in the US during the **Financial Recession.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. Moreover, we have to say that the difference between both returns was more than 2% per year.

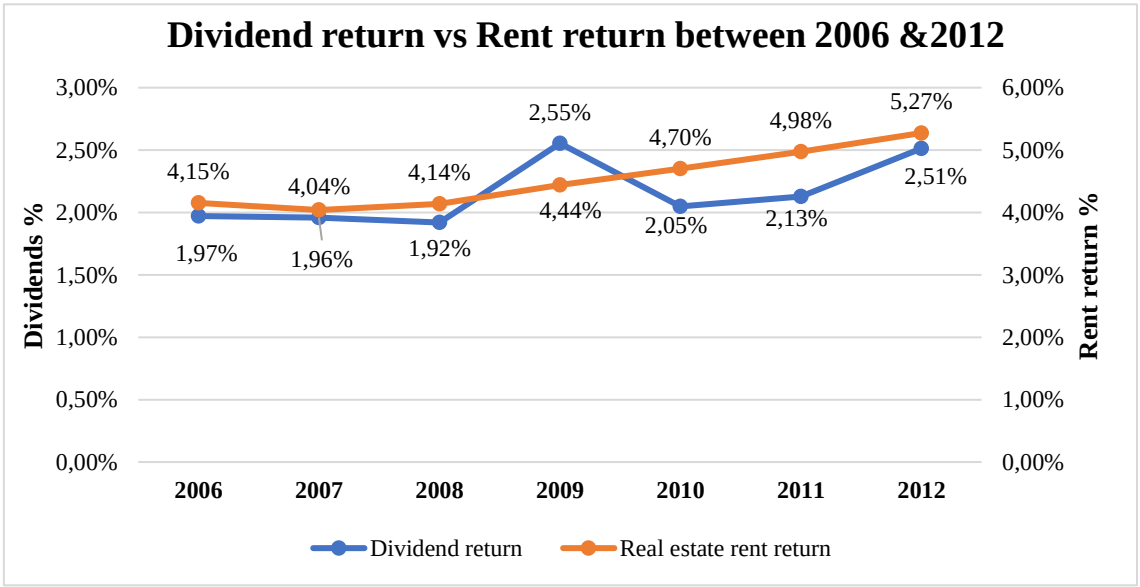

Figure 28: Dividend return vs Rent return between 2006 &2012 in the US

H) Covid-19 Pandemic

In **(Figure 29)**, we can observe the fluctuations of the value of equities and real estate in the US during the **Covid Pandemic**. In this figure, we can observe that the value of equities in 2020 increased a 10 percent. Remark that the stock market suffered a huge drop with the first months of the pandemic. However, the expansionary monetary policy of the FED stimulated the stock market and as consequence the stock market in that year increased a 10 percent. Regarding the real estate market, the value of properties in the US increased an 7,86%, that is 2 percentage points lower than the stock market. **Therefore, equities performed better than real estate in terms of value appreciation.**

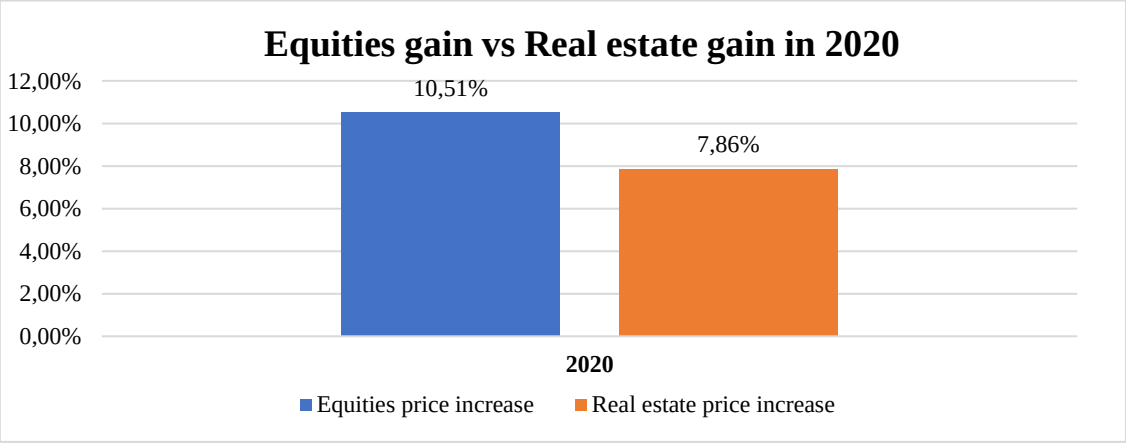

Figure 29: Equities gain vs Real estate gain in 2020 in the US

In **(Figure 30),** we can observe the fluctuations of the dividend returns and rent returns in the US during the **Covid Pandemic.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. Moreover, we have to say that the difference between both returns was more than 2 percentage points.

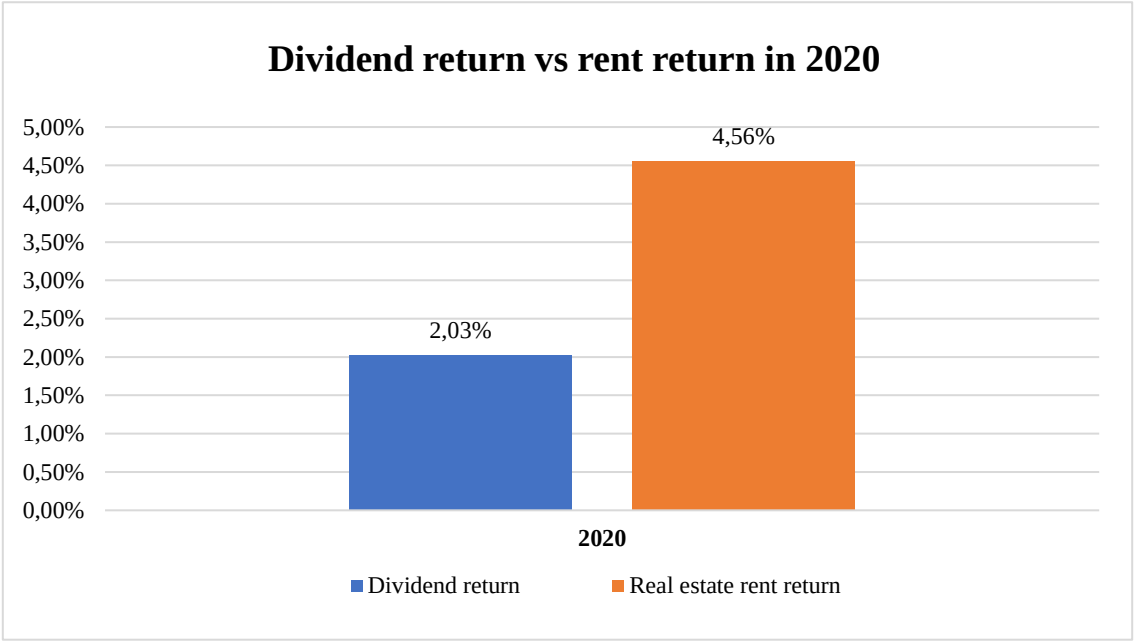

Figure 30: Dividend return vs rent return in 2020 in the US

I) Historical trend

In **(Figure 31),** we can observe the fluctuations of the value of equities and real estate in the US between 1914 and 2020. In this figure, we can clearly observe that the stock market has been always more volatile than the real estate market. Despite its volatility equities have performed better than real estate properties since in all the recessions analysed the stock market performed better, except during WWI and the 1973-1975 recession. Furthermore, if we analyse the value appreciation of both assets, during this period of time, we see that the value appreciation of equities was a 798 percent and 400 percent in real estate properties, (**see Appendix1**). **Therefore, equities performed better than real estate in terms of value appreciation.**

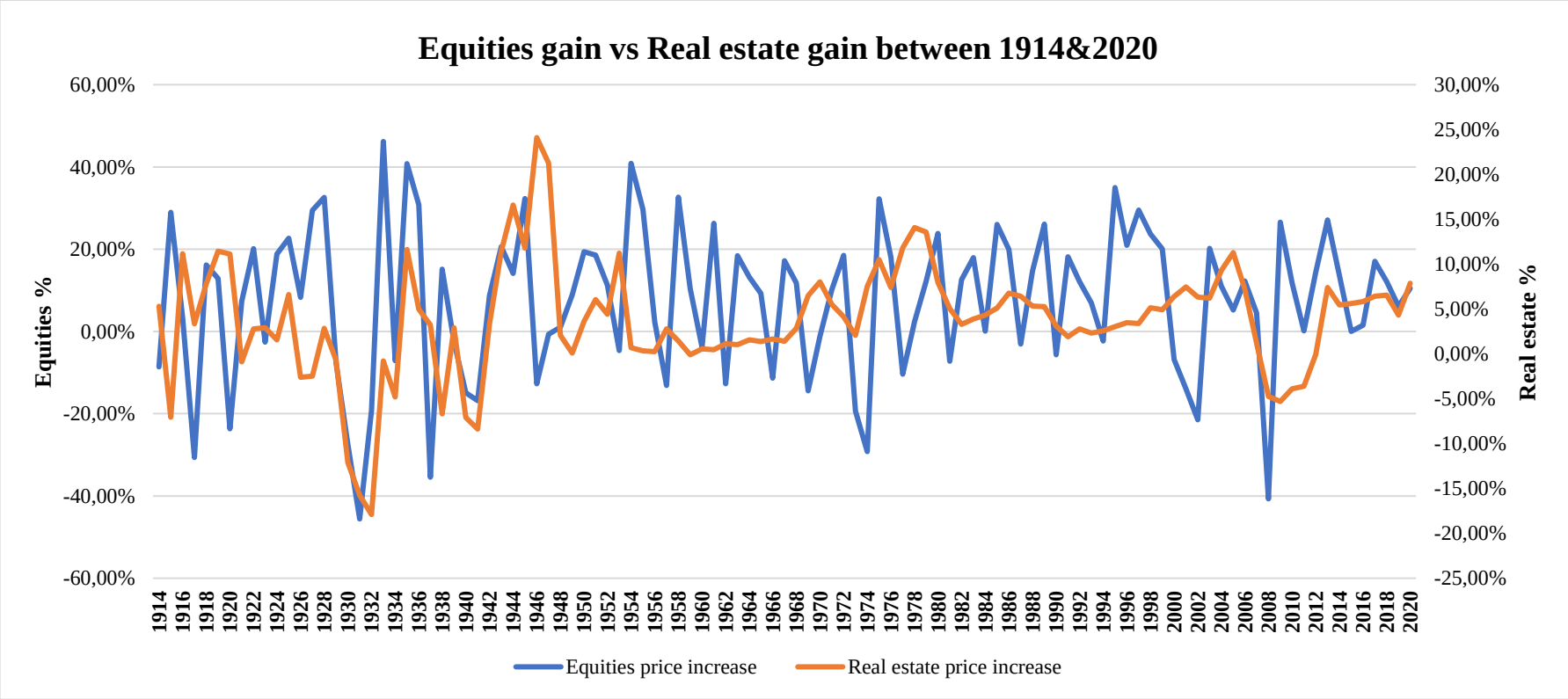

Figure 31: Equities gain vs Real estate gain between 1914&2020 in the US

In **(Figure 32),** we can observe the fluctuations of the dividend returns and rent returns in the US between 1914 and 2020. In this figure, we can observe that the dividend return was bigger than the rent return from 1914 until 1928 and from 1947 until 1955. However, the difference between both returns was not significant since their percentage of return was very similar, except in 1918 and 1950.In addition, we can observe that the rent return was bigger than the dividend returns from 1928 until 1946 and from 1956 until 2020. Furthermore, we can see that the difference between both returns was not significant from 1919 to 1944. However, the difference was significant from 1956 until 2020, due to the rent return was more than a 2 percent bigger than the dividend return.

In conclusion, rent returns outperformed dividend returns, particularly from 1956 onwards. However, before 1956 the difference between both assets was not big. Moreover, in most of the recessions that we analysed previously, real estate offered a better return than equities.

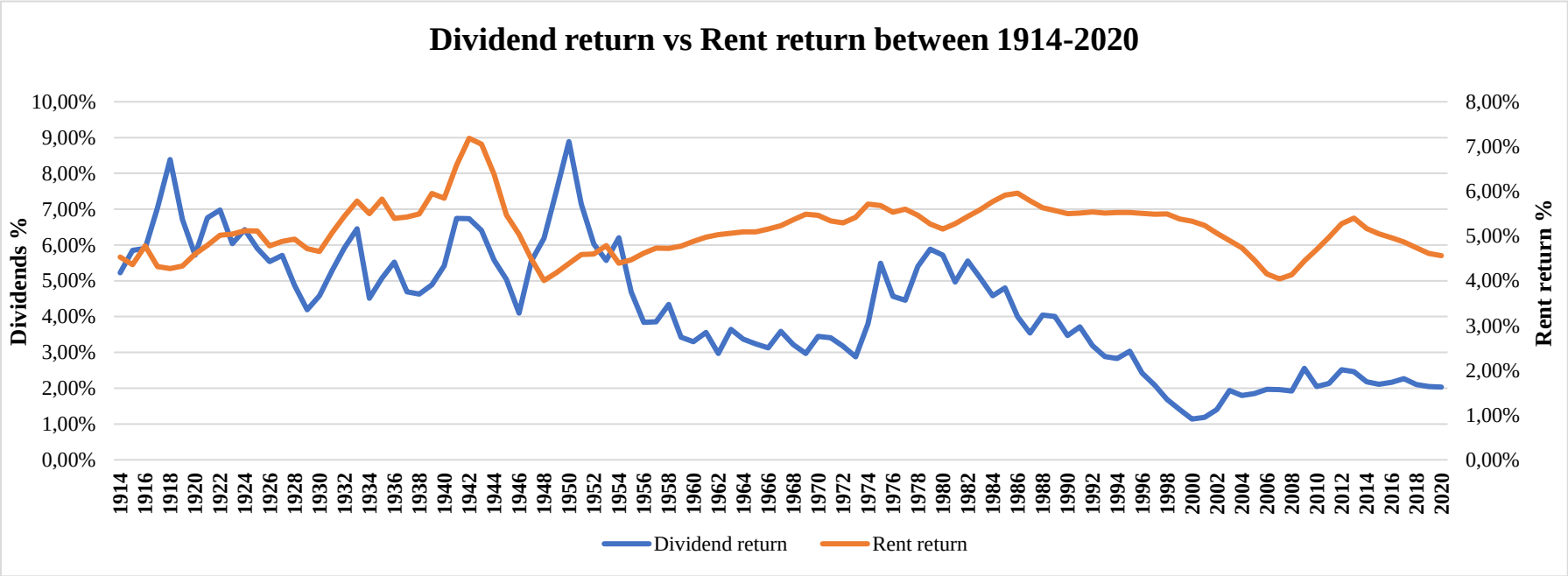

Figure 32: Dividend return vs Rent return between 1914-2020 in the US

5.2 Spain

A) First World War (1914-1918)

In **(Figure 33),** we can observe the fluctuations of the value of equities and real estate in Spain during **WWI**. In this figure, we can observe that during the war the stock market decreased in 1914 a -11 percent, but then the following years the stock market increased and had an upward trend. The real estate market also a had small drop in 1915, but also had an upward trend. Furthermore, during those years, the value appreciation of real estate properties was 46,33 percent and in the equities was 19,44 percent. **Therefore, real estate properties performed better than equities in terms of value appreciation.**

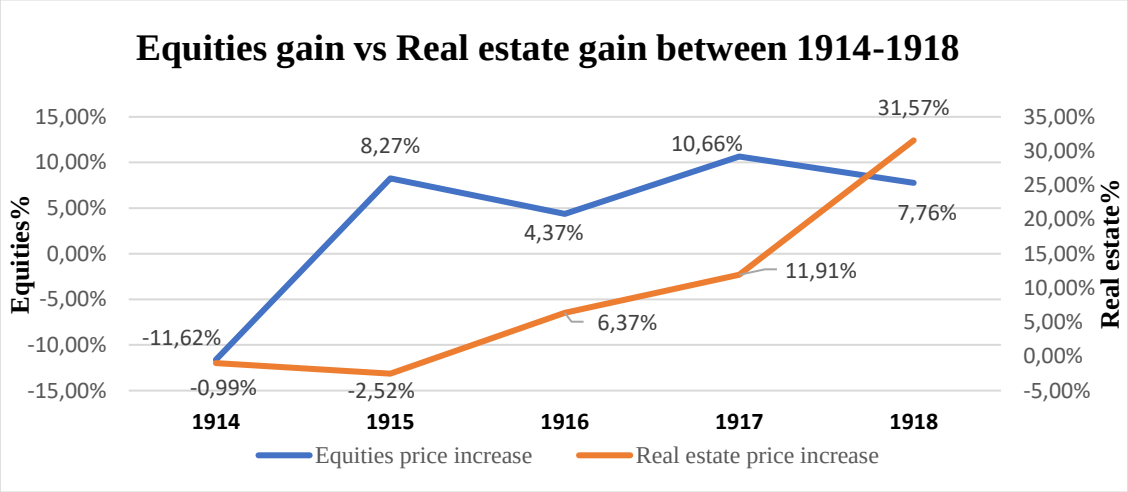

Figure 33: Equities gain vs Real estate gain between 1914-1918 in Spain

In **(Figure 34)**, we can observe the fluctuations of the dividend returns and rent returns in Spain during the **WWI.** In this figure, we can observe that, during those years, the dividend return was bigger than the real estate rent return. However, the difference between both returns was not significant.

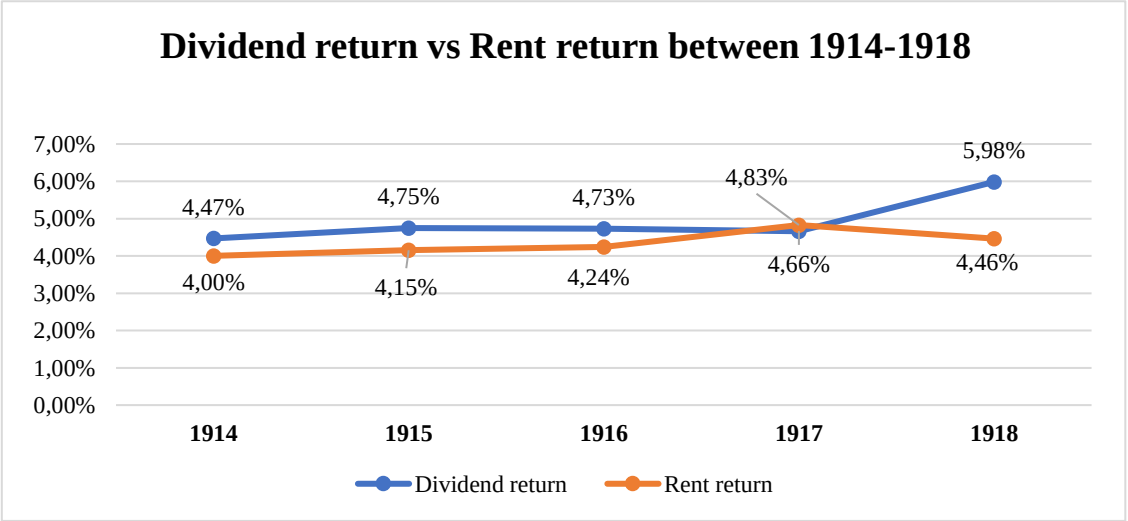

Figure 34: Dividend return vs Rent return between 1914-1918 in Spain

B) Roaring Twenties (1920-1929)

In **(Figure 35),** we can observe the fluctuations of the value of equities and real estate in Spain during the **Roaring 20s.** In this figure, we can observe that the equities had a good performance since the stock market was increasing a lot those years, but with the exception of 1921 where the value of equities decreased a -10 percent. However, we can clearly observe that during those years the equities had an upward trend. Meanwhile, the real estate market, during those years, had a bad performance. We can clearly observe a downward trend since, during those years, the value of real estate properties was decreasing a lot. Furthermore, during those years, the value appreciation of real estate properties was -14,75 percent and in the equities was 81,93 percent. **Therefore, equities performed better than real estate properties in terms of value appreciation.**

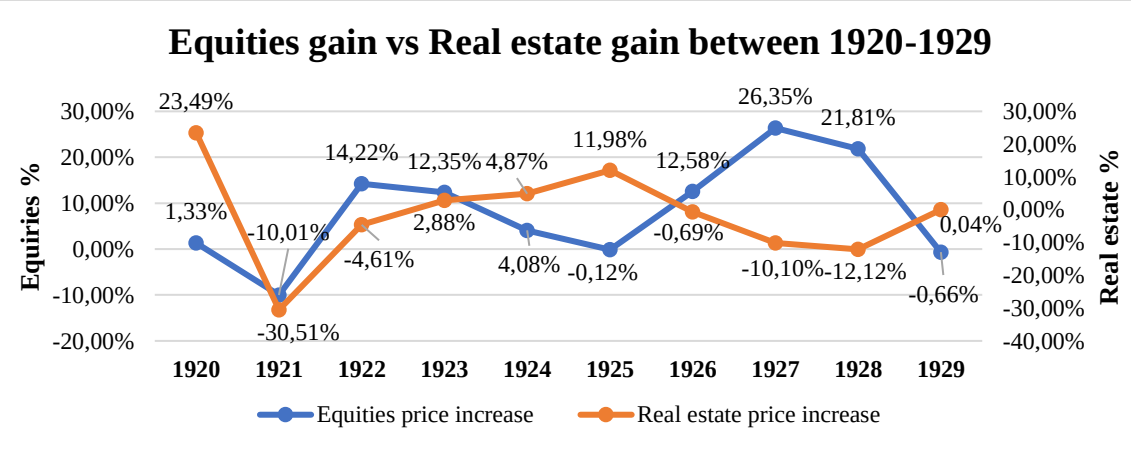

Figure 35: Equities gain vs Real estate gain between 1920-1929 in Spain

In **(Figure 36),** we can observe the fluctuations of the dividend returns and rent returns in Spain during the **Roaring 20s.** In this figure, we can observe that, during those years, the dividend return and the real estate rent return were very similar, However, from 1927 to 1929 the rent return was bigger than the dividend return, the difference was more than 2 percent.

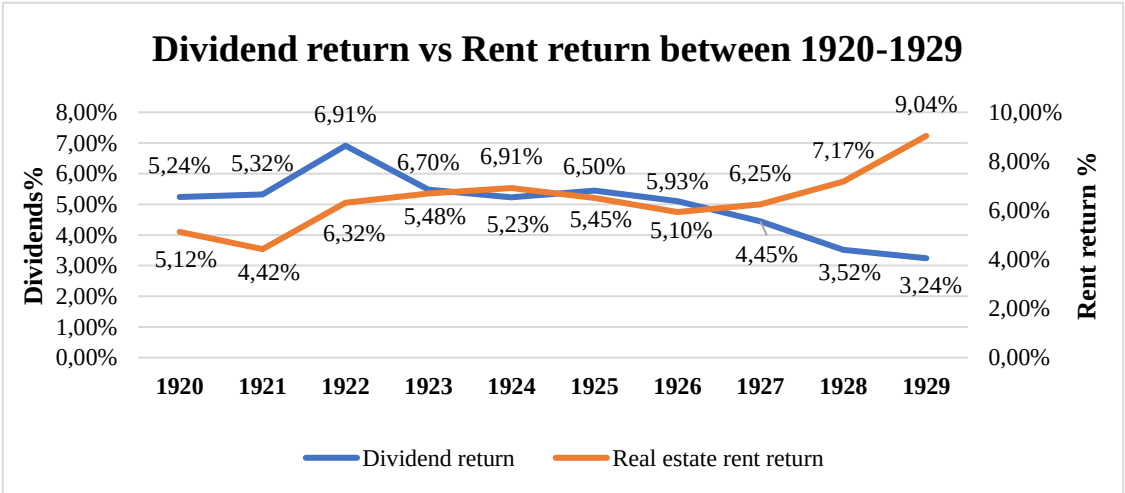

Figure 36: Dividend return vs Rent return between 1920-1929 in Spain

C) The Great Depression (1929-1939)

In **(Figure 37)**, we can observe the fluctuations of the value of equities and real estate in Spain during the **Great Depression.** In this figure, we can observe that the equities had a bad performance during the first years of the recession. However, we can clearly observe that during those years the equities had an upward trend. With respect the real estate market, we can clearly observe that also had a bad performance in the first years of the recession. However, from 1934 until 1939 the value of real estate properties increased considerably. Moreover, during those years, the value appreciation of real estate properties was 101 percent and in the equities was 35,13 percent. **Therefore, real estate properties performed better than equities in terms of value appreciation.**

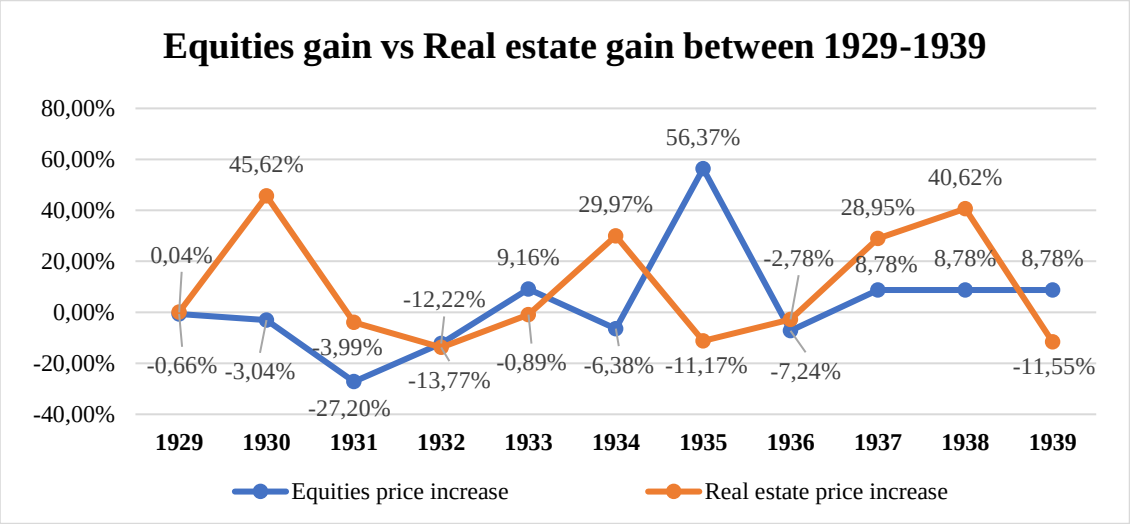

Figure 37: Equities gain vs Real estate gain between 1929-1939 in Spain

In **(Figure 38)**, we can observe the fluctuations of the dividend returns and rent returns in Spain during the **Great Depression**. In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both assets was between 2 percent and 7 percent per year.

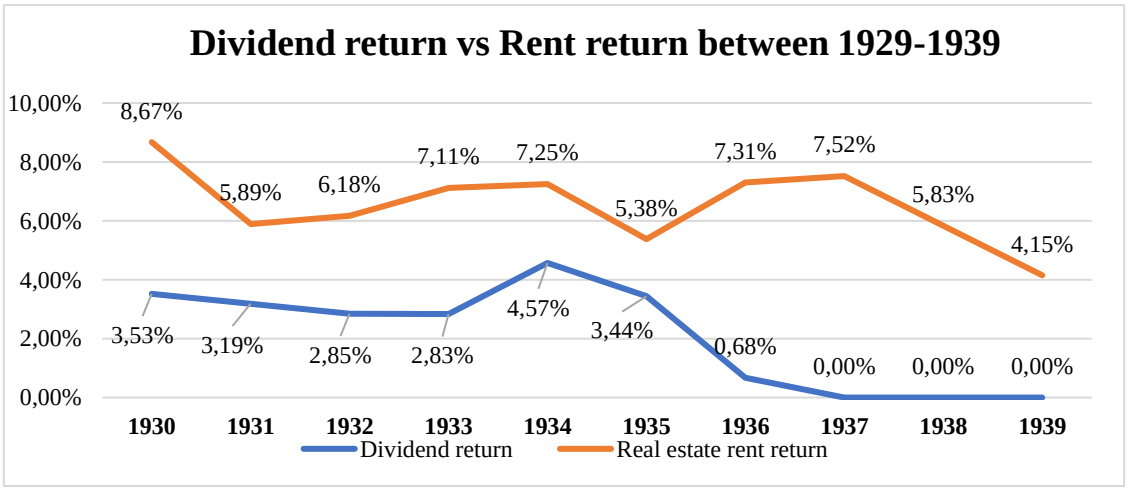

Figure 38: Dividend return vs Rent return between 1929-1939 in Spain

D) Second World War (1939-1945)

In **(Figure 39)**, we can observe the fluctuations of the value of equities and real estate in Spain during **WWII.** In this figure, we can observe that the value of equities increased all the years, except in 1943 and 1944. With respect the real estate market, we can clearly observe that also had a good performance, due to the value of real estate properties increased during those years, but in 1939 and 1944 the value of real estate properties decreased a -11 percent and -12 percent respectively. In addition, during those years, the value appreciation of real estate properties was 52,84 percent and in the equities was 59,96 percent. **Therefore, equities performed better than real estate properties in terms of value appreciation.**

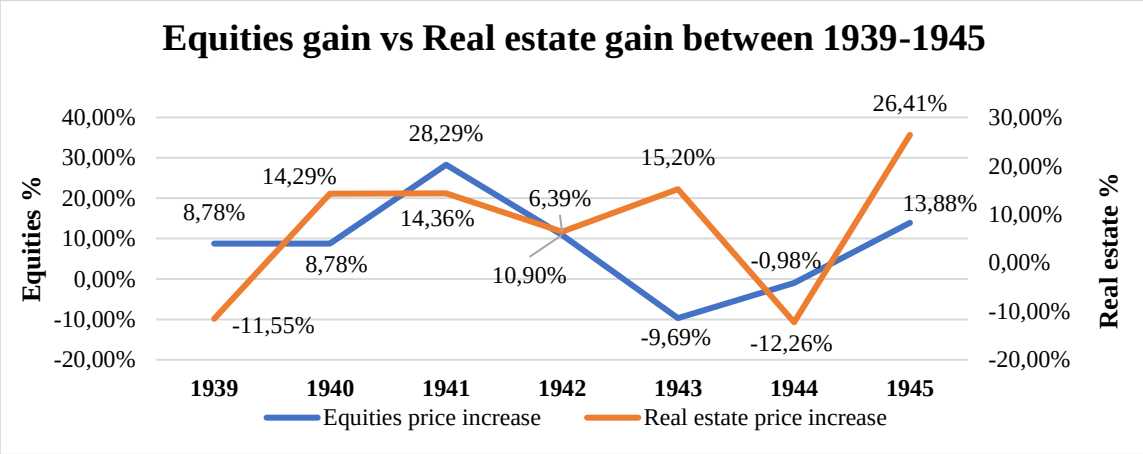

Figure 39: Equities gain vs Real estate gain between 1939-1945 in Spain

In (**Figure 40)**, we can observe the fluctuations of the dividend returns and rent returns in Spain during **WWII**. In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both assets was significant during 1939 and 1940, but the rest of the years the difference of both returns was close to 1 percent per year.

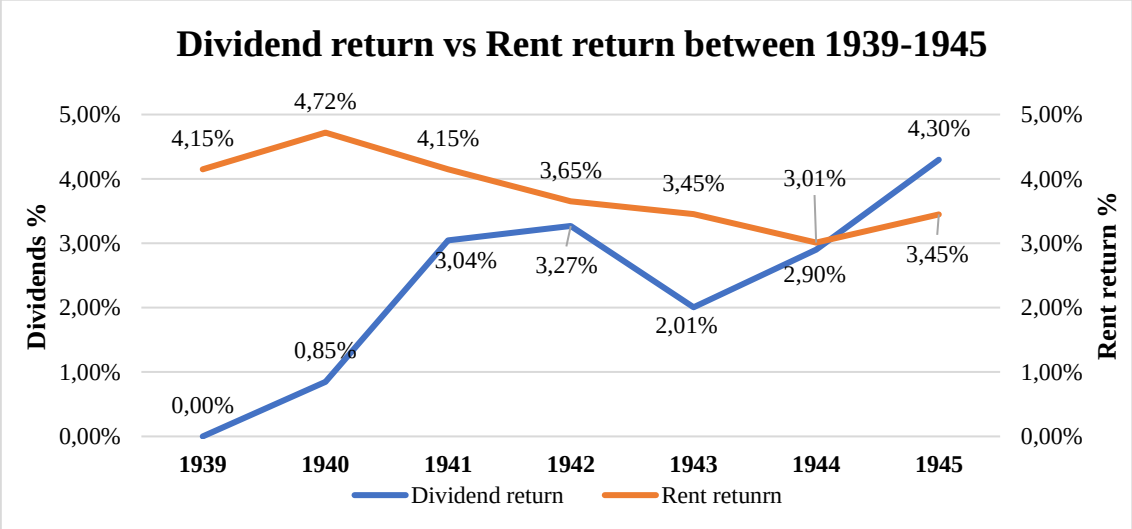

Figure 40: Dividend return vs Rent return between 1939-1945 in Spain

E) The 1973-1975 Recession

In **(Figure 41)**, we can observe the fluctuations of the value of equities and real estate in Spain during the **1973-1975 recession.** In this figure, we can observe that the value of equities decreased all the years, except in 1973. With respect the real estate market, we can clearly observe that had a good performance due to the value of real estate properties increased during those years. **In conclusion**, **the real estate market performed better than the equity market, during those years, in terms of value appreciation.**

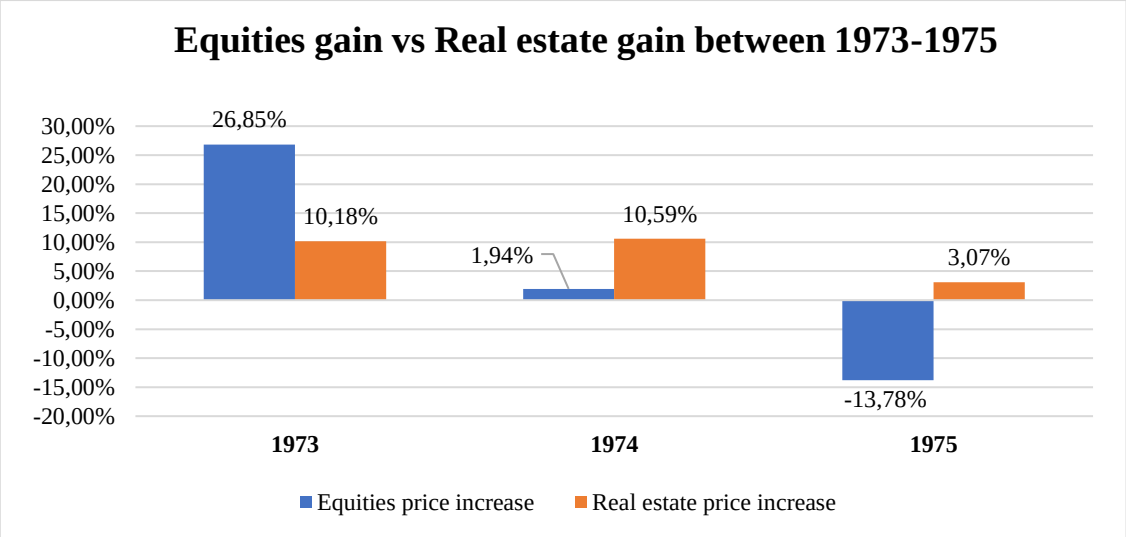

Figure 41: Equities gain vs Real estate gain between 1973-1975 in Spain

In **(Figure 42),** we can observe the fluctuations of the dividend returns and rent returns in Spain during the **1973-1975 recession**. In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both assets was between 2 and 3 percent per year.

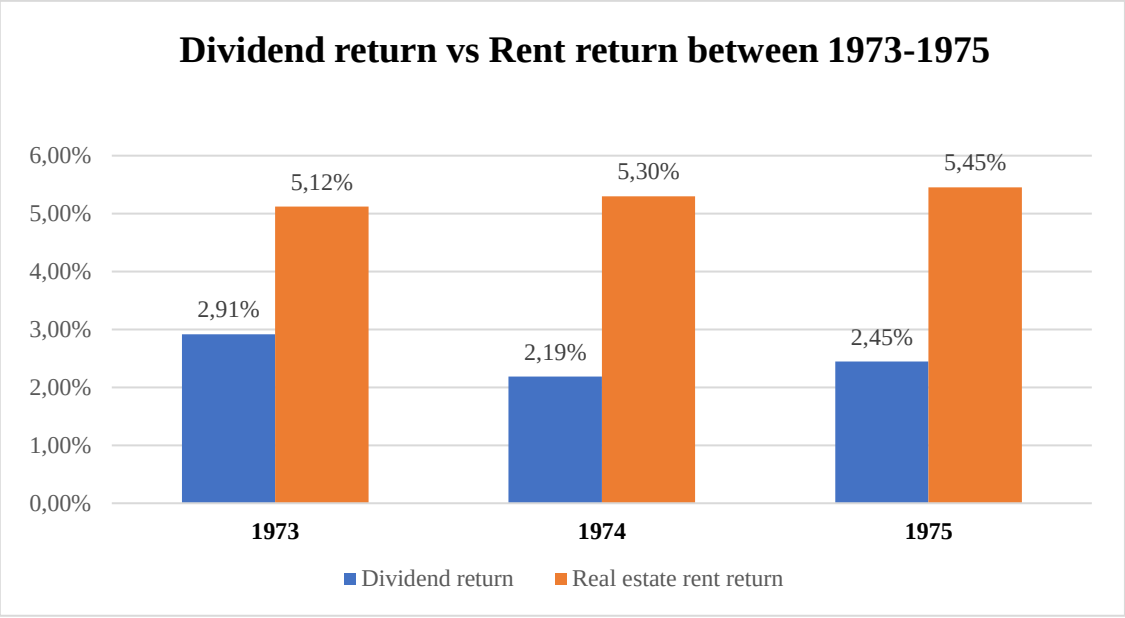

Figure 42: Dividend return vs Rent return between 1973-1975 in Spain

F) The Dotcom Bubble

In **(Figure 43),** we can observe the fluctuations of the value of equities and real estate in Spain during the **Dotcom Bubble**. In this figure, we can observe that the value of equities, during the last years of the 20th century, increased a lot due to the overvaluation of internet companies. However, the bubble by the beginning of 2000 it burst and the stock market crashed. Meanwhile, the real estate market was not affected by the **Dotcom Bubble** since the price of real estate properties increased during those years, but the percentage of increase was smaller in comparison to the increase of the stock market. In addition, during those years, the value appreciation of real estate properties was 55,74 percent and in the equities was 104 percent. **Therefore, equities performed better than real estate properties in terms of value appreciation.**

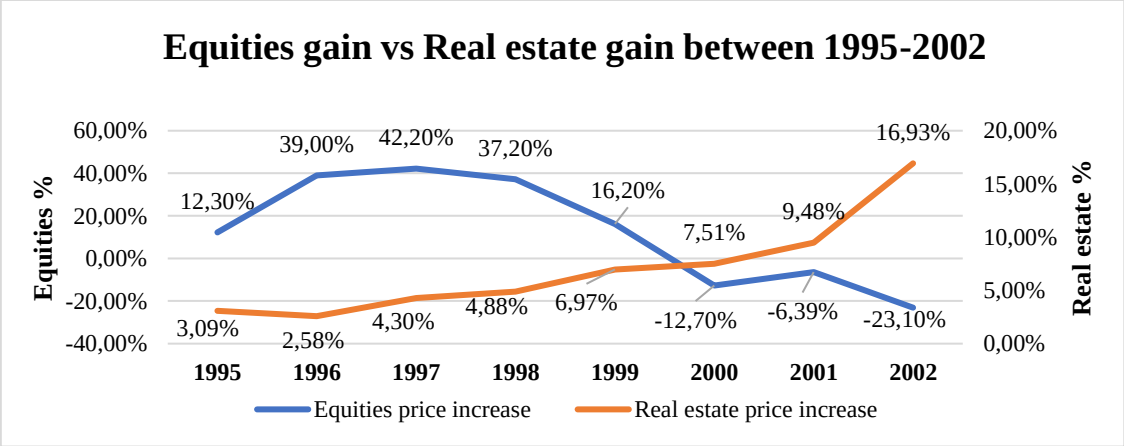

Figure 43: Equities gain vs Real estate gain between 1995-2002 in Spain

In **(Figure 44),** we can observe the fluctuations of the dividend returns and rent returns in Spain during the **Dotcom Bubble.** In this figure, we can observe that the dividend return was, between 1995-1999 bigger than the real estate rent return. However, between 2000-2002 the real estate rent return was bigger, but the difference between both returns was not significant during those years.

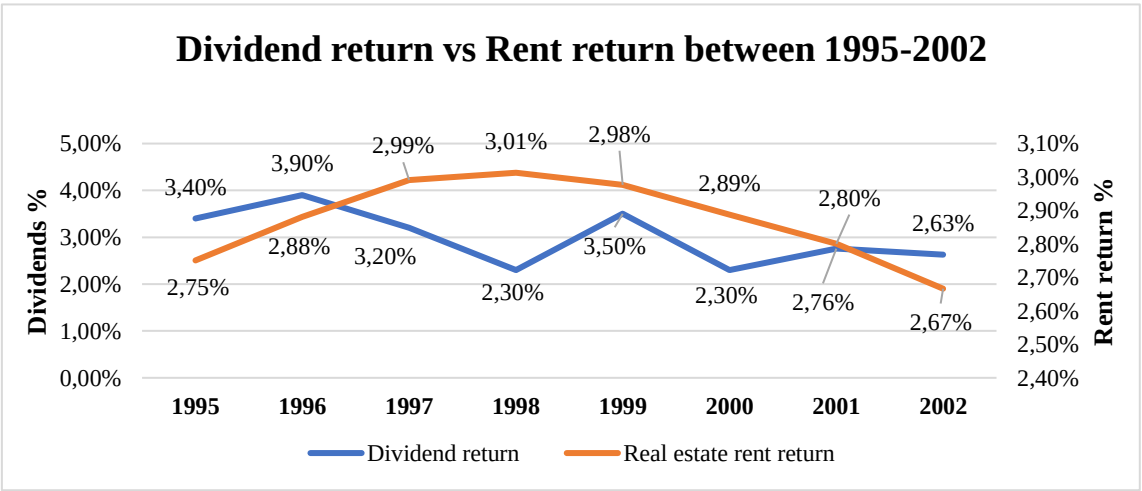

Figure 44: Dividend return vs Rent return between 1995-2002 in Spain

G) Financial Recession

In **(Figure 45)**, we can observe the fluctuations of the value of equities and real estate in Spain during the **Financial Recession**. In this figure, we can observe that the equities, during the first years of the recession, decreased a- 40 percent. The stock market had a correction in 2009, but then in 2010 decreased a -20 percent and continued decreasing the following years, due to the effects of the financial recession in Spain. Regarding the real estate market, the value of the properties decreased, but not as the same proportion as the equities did. Moreover, during those years, the value appreciation of real estate properties was -8,77 percent and in the equities was -10,8 percent. **Therefore, during the Financial Recession, the real estate market performed better in terms of value appreciation.**

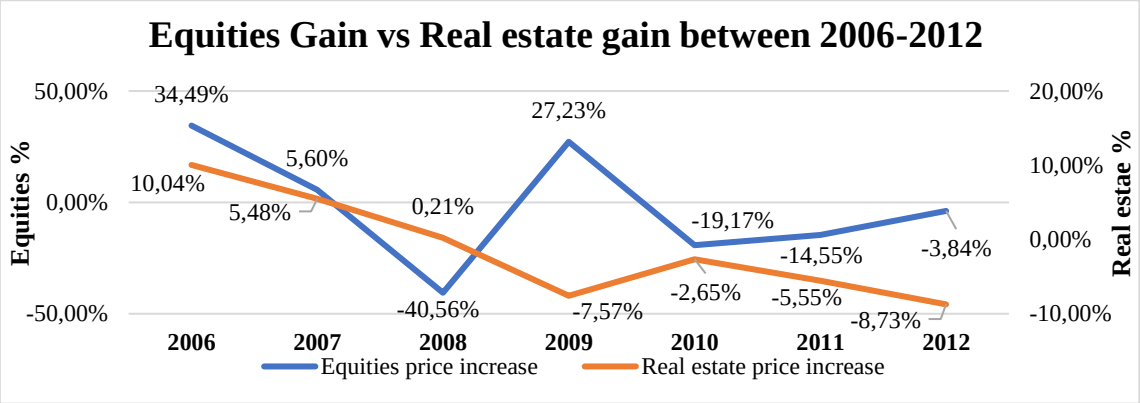

Figure 45: Equities gain vs Real estate gain between 2006-2012 in Spain

In **(Figure 46)**, we can observe the fluctuations of the dividend returns and rent returns in Spain during the **Financial Recession.** In this figure, we can observe that, during those years, the dividend return was bigger than the real estate rent return. Moreover, we have to say that the difference between both returns was between 2 percent and 7 percent per year.

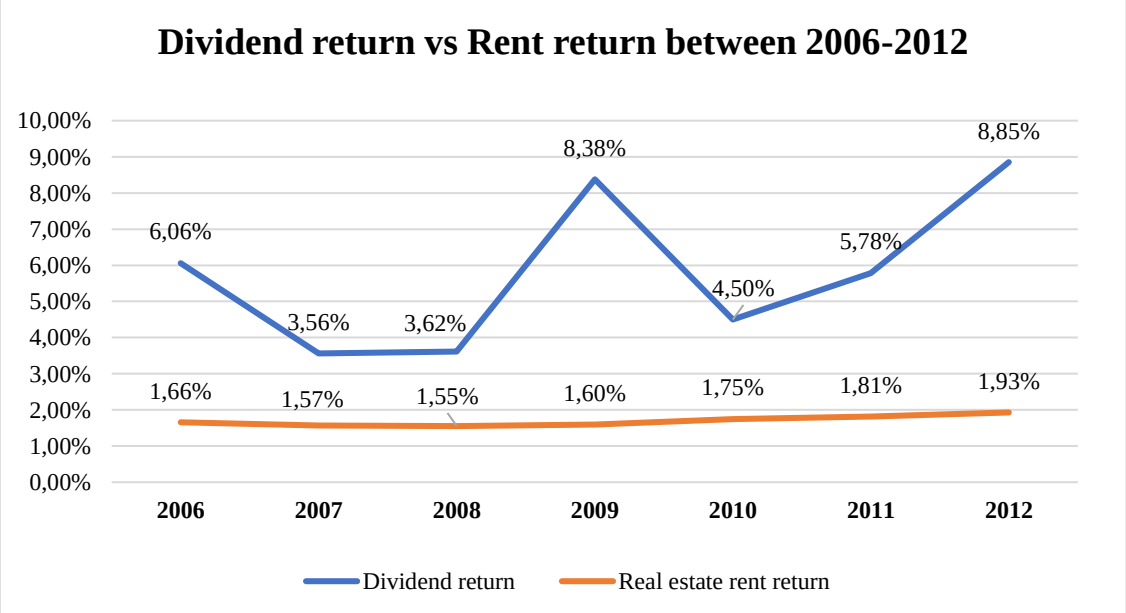

Figure 46: Dividend return vs Rent return between 2006-2012 in Spain

H) Covid-19 Pandemic

In **(Figure 47)**, we can observe the fluctuations of the value of equities and real estate in Spain during the **Covid Pandemic**. In this figure, we can observe that the equities in 2020 decreased a -12 percent. Regarding the real estate market, the value of the properties in Spain increased a 2 percent. **Therefore, the real estate properties performed better than equities in terms of value appreciation.**

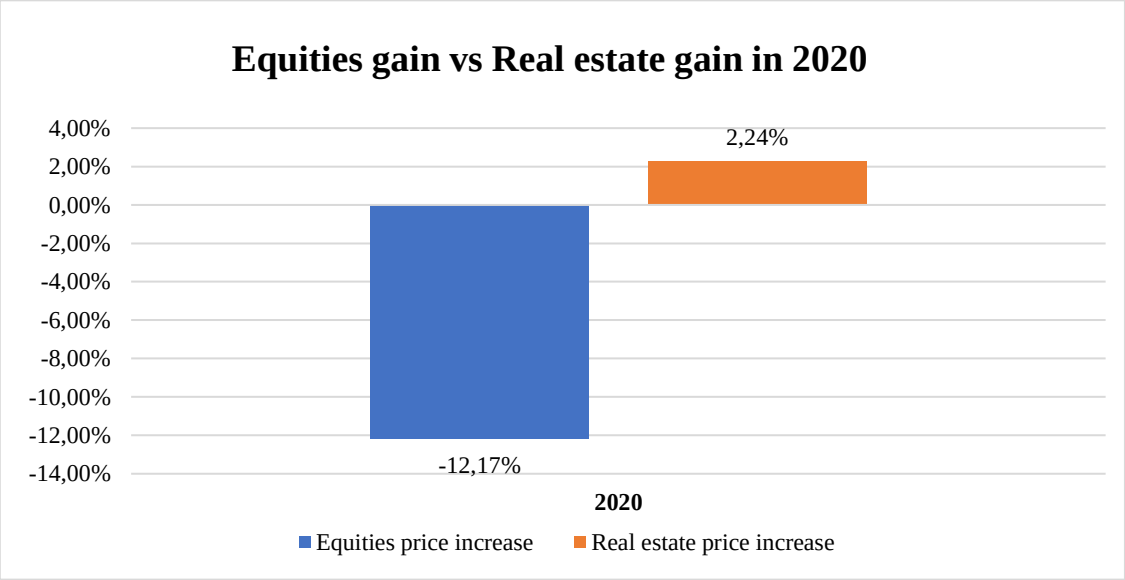

Figure 47: Equities gain vs Real estate gain in 2020 in Spain

In **(Figure 48)**, we can observe the fluctuations of the dividend returns and rent returns in Spain during the **Covid Pandemic.** In this figure, we can observe that, during those years, the dividend return was bigger than the real estate rent return.

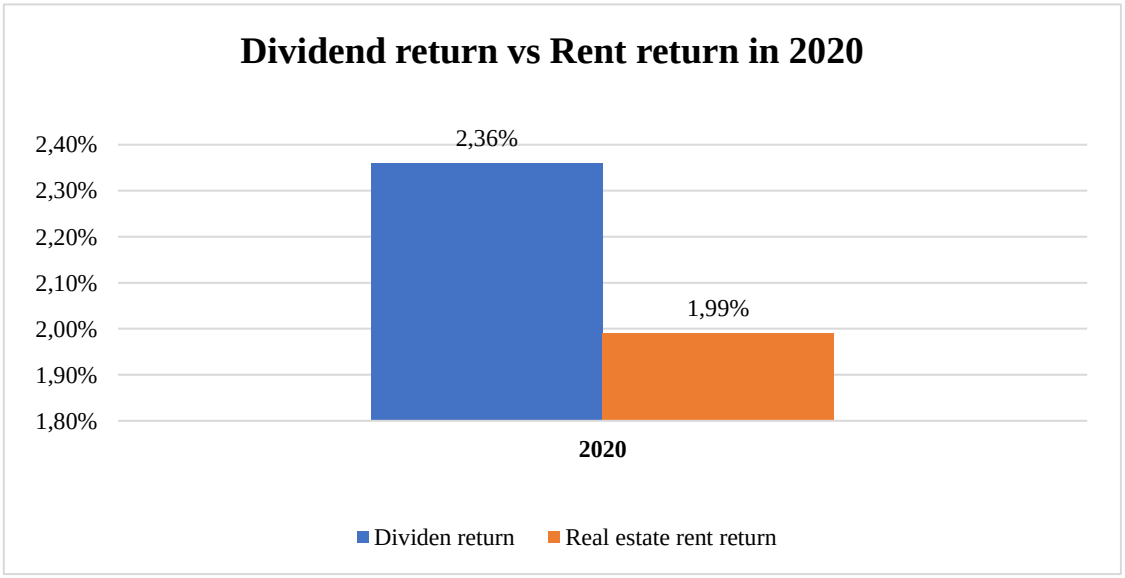

Figure 48: Dividend return vs Rent return in 2020 in Spain

I) Historical trend

In **(Figure 49)**, we can observe the fluctuations of the value of equities and real estate in Spain between 1914 and 2020. In this figure, we can clearly observe that the stock market has been always more volatile than the real estate market. Moreover, we can observe that in some period's equities performed better than real estate and also the opposite. For instance, the real estate performed better during WWI, the Great Depression, the 1973-1975 recession, the Financial Recession and during the Covid Pandemic and the stock market performed better during the Roaring 20s, WWII and the Dotcom Bubble. Finally, if we analyse the value appreciation of both assets, during this period of time, we see that the value appreciation of equities was 851 percent and 856 percent in real estate properties, (**see Appendix 2**). **Therefore, real estate properties performed better in terms of value appreciation.**

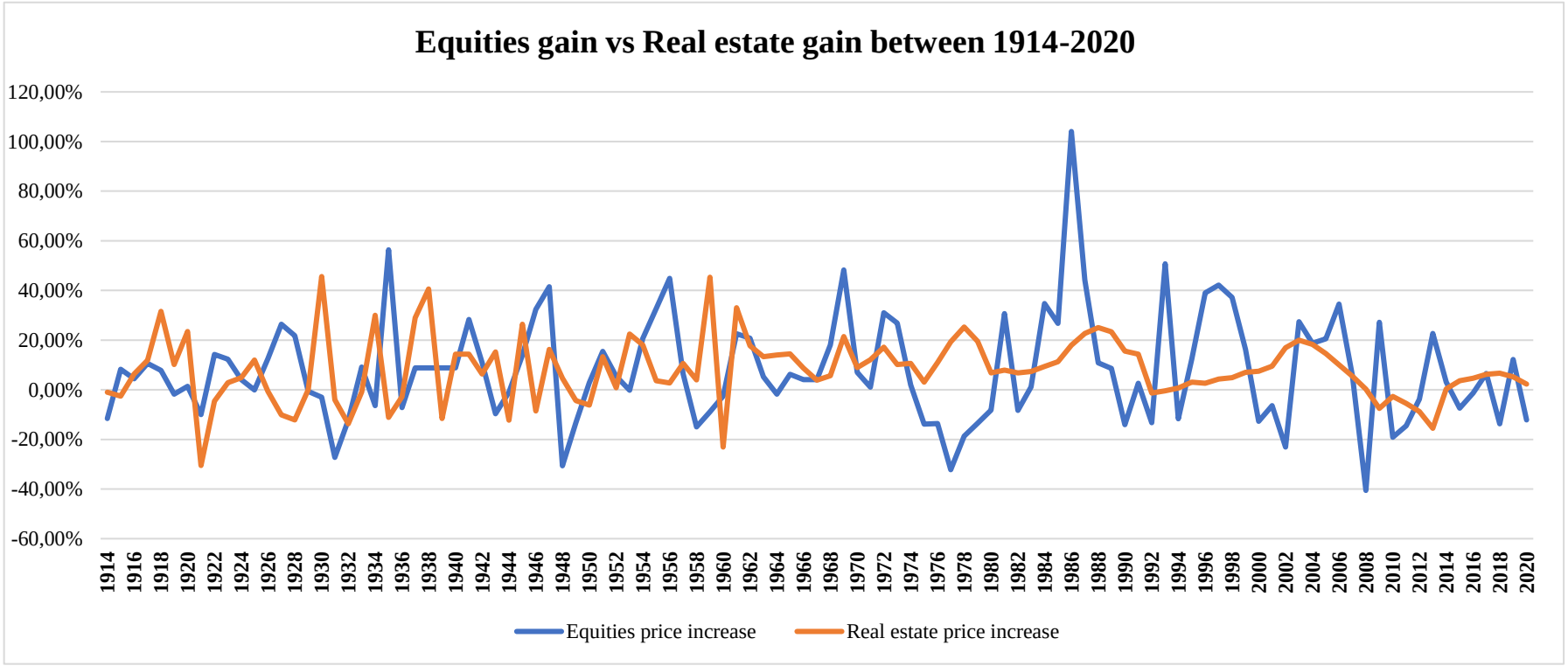

Figure 49: Equities gain vs Real estate gain between 1914-2020 in Spain

In **(Figure 50),** we can observe the fluctuations of the dividend returns and rent returns in Spain between 1914 and 2020. In this figure, we can observe that the dividend return was bigger than the rent return from 1945 until 1965 and from 1978 until 2020. Moreover, the difference between both returns, during those years, was between 1 percent and 8 percent per year. In addition, we can observe that the rent return was bigger than the dividend returns from 1922 until 1944 but also from 1965 until 1978 and the difference between both returns was between a 1 percent and 7 percent per year.

In conclusion, dividend returns outperformed rent returns from 1945-1965 and from 1978 onwards. The rest of the years the rent return was bigger but the difference was not very big. Moreover, in most of the recession's analysed previously equities offered better returns than real estate. Therefore, historically and during recessions equities have offered better returns than real estate.

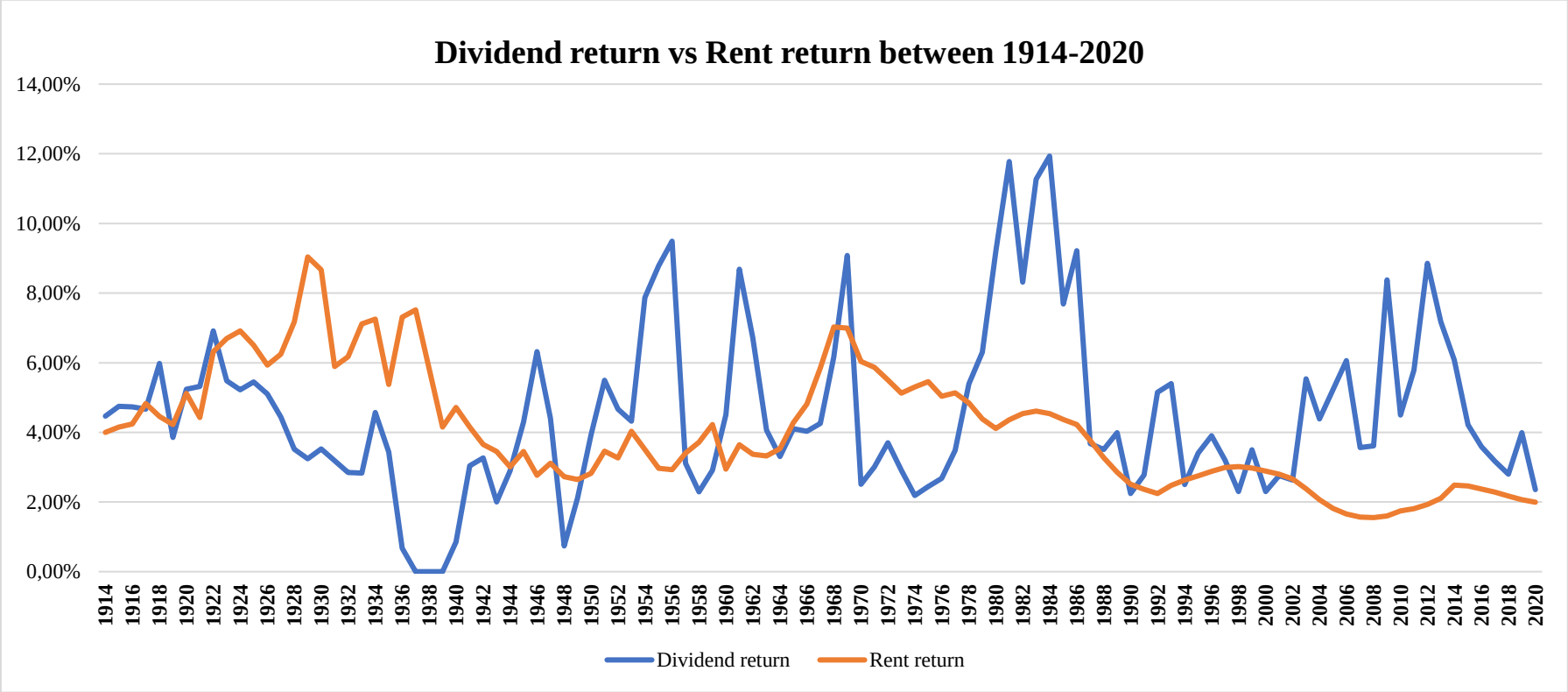

Figure 50: Dividend return vs Rent return between 1914-2020 in Spain

5.3 France

A) First World War (1914-1918)

In **(Figure 51)**, we can observe the fluctuations of the value of equities and real estate in France during **WWI**. In this figure, we can observe that during the war the stock market decreased in 1914 a -14 percent and also in 1915 by a -12 percent. However, the following years the stock market increased and had an upward trend. Regarding the value of real estate properties, we can observe that its value increased during the first years of the war, but it decreased a -5 percent in 1917 and a -2 percent in 1918. Despite that, we have to mention that the real estate outperformed equities, during the war, since the loss of value was bigger in the equities than in real estate properties. **Therefore, real estate performed better than equities in terms of value appreciation.**

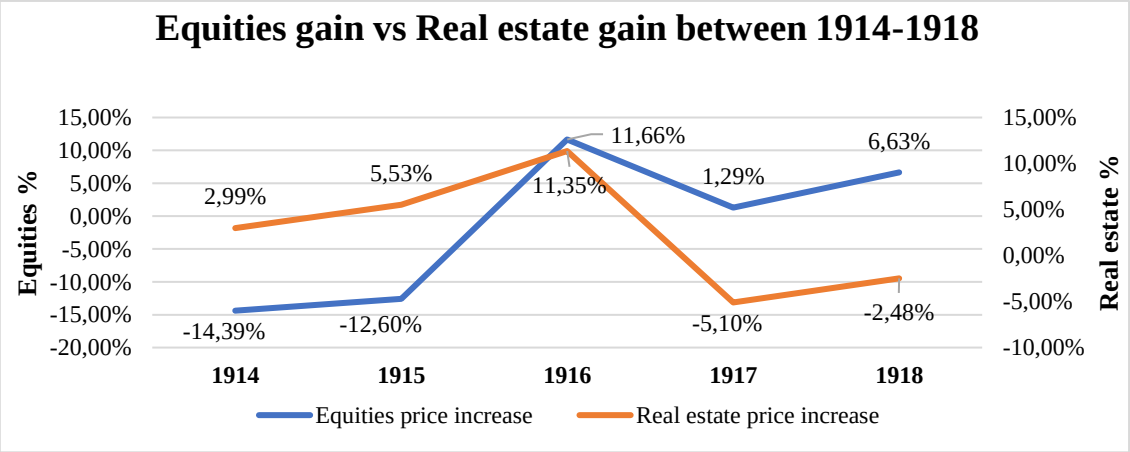

Figure 51: Equities gain vs Real estate gain between 1914-1918 in France

In **Figure 52**, we can observe the fluctuations of the dividend returns and rent returns in France during **WWI.** In this figure, we can observe that both returns were very similar in all the years except in 1914 and 1915, due to the rent return was 1 percent bigger than the dividend return.

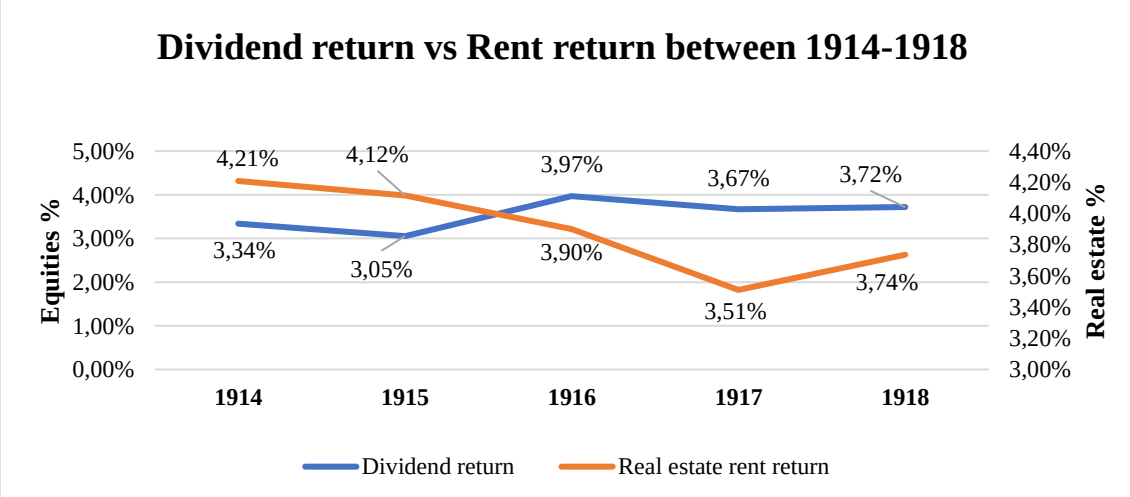

Figure 52: Dividend return vs Rent return between 1914-1918 in France

B) Roaring Twenties (1920-1929)

In **(Figure 53)**, we can observe the fluctuations of the value of equities and real estate in France during the **Roaring 20s.** In this figure, we can observe that the equities had a good performance since the stock market was increasing a lot those years, but with the exception of 1920 and 1921 where the value of equities, in both years, decreased a -10 percent. However, we can clearly observe that, during those years, the equities had an upward trend. Regarding the real estate market, during those years, had also a good performance. The value of real estate properties increased every year, except in 1920. However, during those years, the value appreciation of real estate properties was 77,13 percent and in the equities was 112,86 percent. **Therefore, equities performed better in terms of value appreciation.**

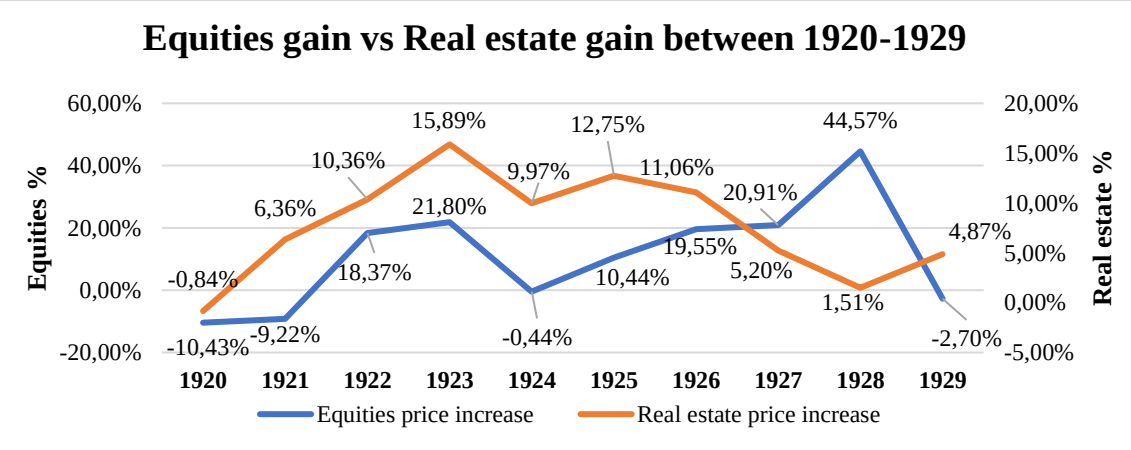

Figure 53: Equities gain vs Real estate gain between 1920-1929 in France

In **(Figure 54)**, we can observe the fluctuations of the dividend returns and rent returns in France during the **Roaring 20s.** In this figure, we can observe that both returns were very similar in all the years except in 1929 due to the rent return was more than 2 percent bigger than the dividend return.

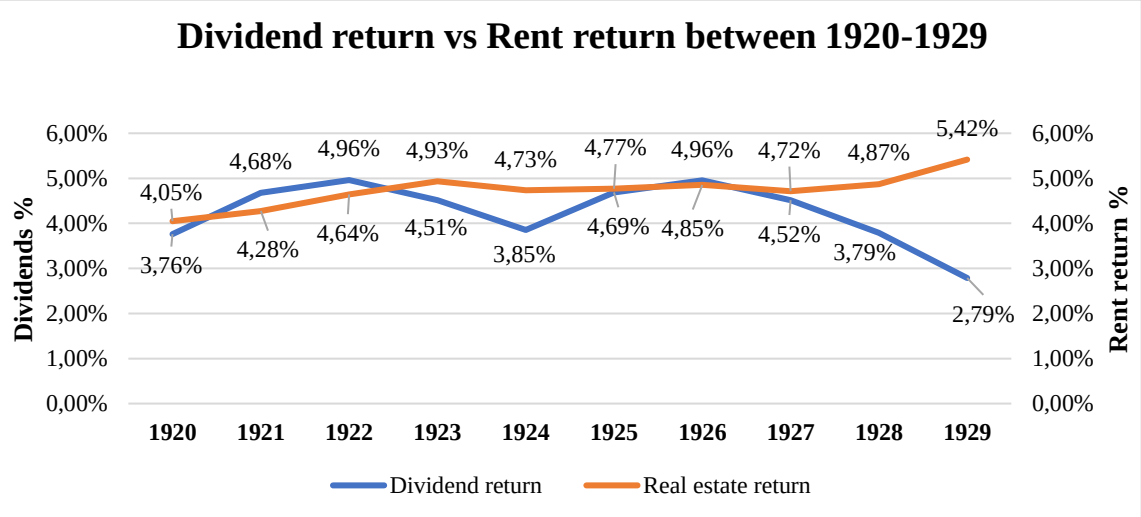

Figure 54: Dividend return vs Rent return between 1920-1929

C) Great Depression (1929-1939)

In **(Figure 55),** we can observe the fluctuations of the value of equities and real estate in France during the **Great Depression.** In this figure, we can observe that the equities had a bad performance during the first years of the recession, due to in 1930 and 1931 the value of equities decreased a -29 percent and -35 percent respectively. Regarding the real estate market, we can clearly observe that had a better performance in the first years of the recession due to in 1929 and 1930 the value of real estate properties increased a 15 percent and a 6 percent respectively. However, during those years, the value appreciation of real estate properties was 31,66 percent and in the equities was -49,22 percent. **Therefore, real estate performed better in terms of value appreciation.**

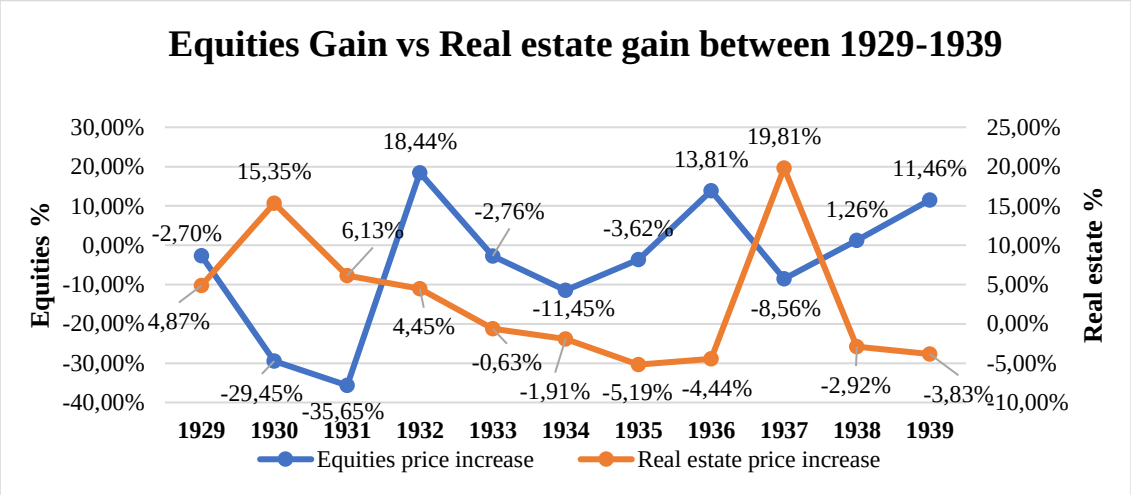

Figure 55: Equities gain vs Real estate gain between 1929-1939 in France

In **(Figure 56)**, we can observe the fluctuations of the dividend returns and rent returns in France during the **Great Depression**. In this figure, we can observe that, during those years, the dividend return was smaller or similar to the real estate rent return.

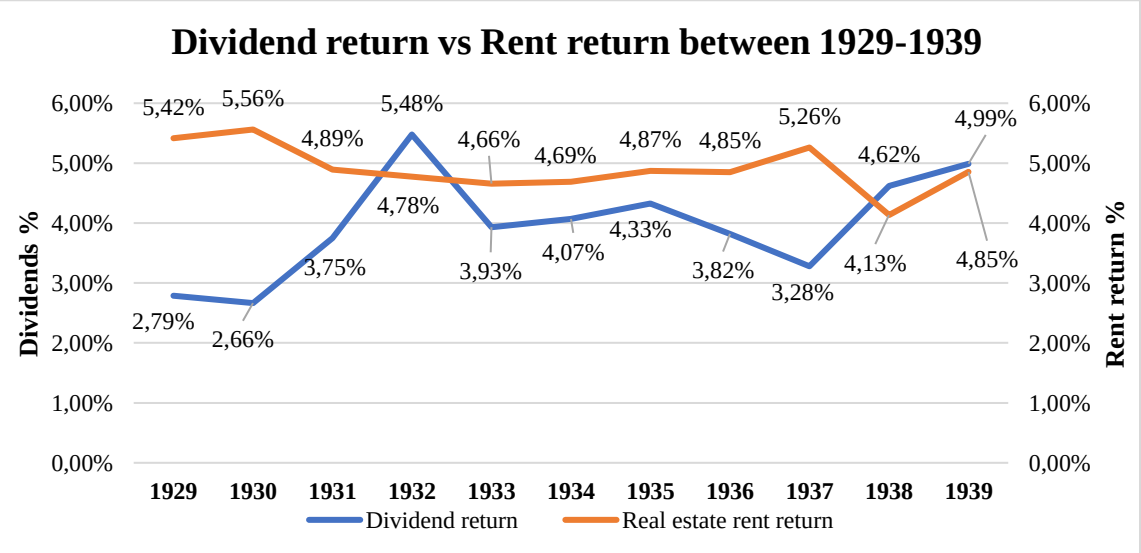

Figure 56: Dividend return vs Rent return between 1929-1939 in France

D) Second World War (1939-1945)

In **(Figure 57)**, we can observe the fluctuations of the value of equities and real estate in France during **WWII.** In this figure, we can observe that the value of equities increased all the years, except in 1943-1945 where the value of equities, in those 3 years, decreased a -51 %. With respect the real estate market we can clearly observe that also had a good performance due to the value of real estate properties increased during those years, except in 1939 where the value of real estate properties decreased a -3.83 percent. Moreover, during those years, the value appreciation of real estate properties was 118,12 percent and in the equities was 106,67 percent. **In conclusion, both assets performed well but the one that performed better was real estate due to the increase of value was bigger than equities**.

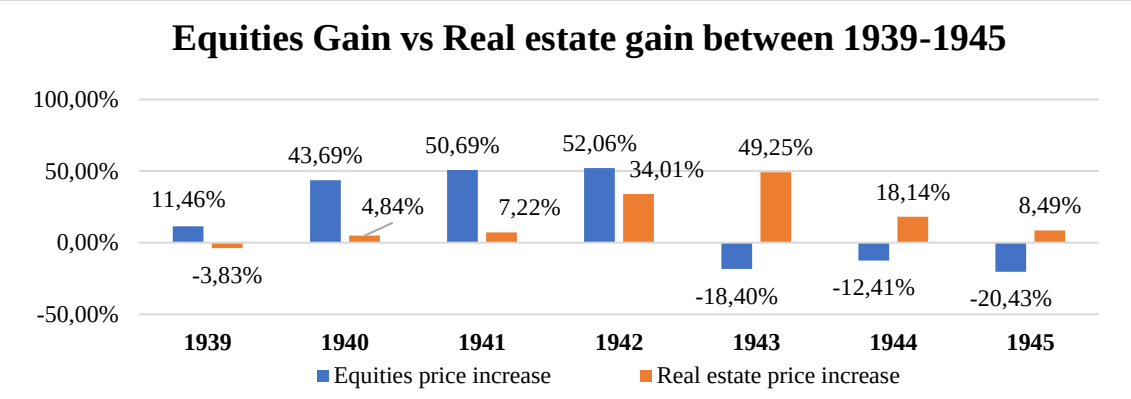

Figure 57: Equities gain vs Real estate gain between 1939-1945 in France

In **(Figure 58)**, we can observe the fluctuations of the dividend returns and rent returns in France during **WWII.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was between 0 percent and 5 percent per year.

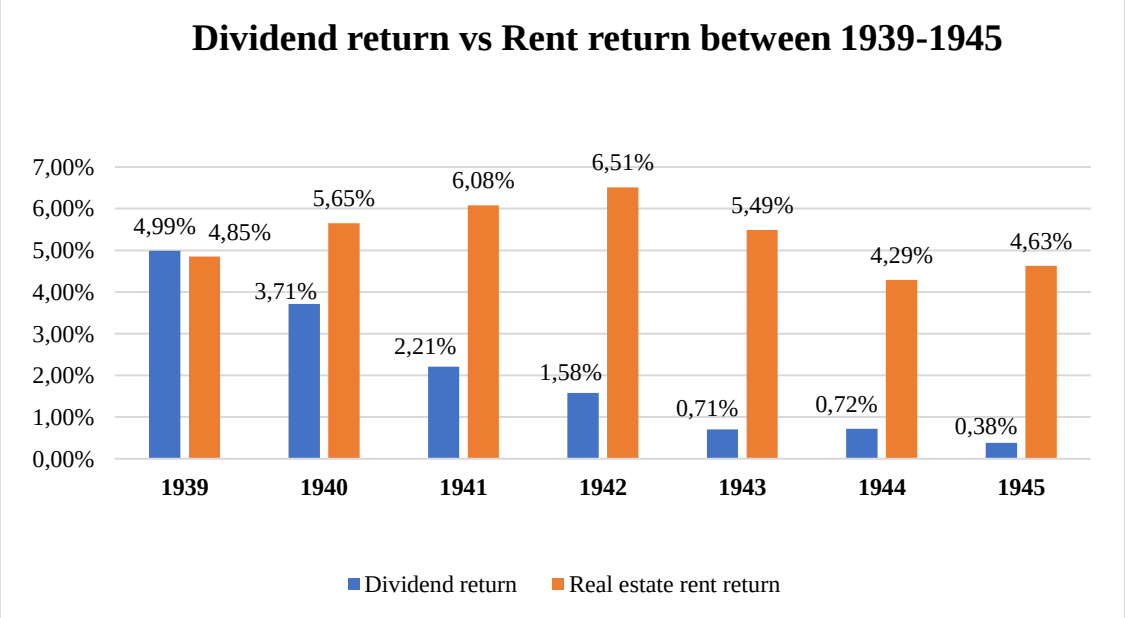

Figure 58: Dividend return vs Rent return between 1939-1945 in France

E) The 1973-1975 Recession

In **(Figure 59)**, we can observe the fluctuations of the value of equities and real estate in France during the **1973-1975 recession.** In this figure, we can observe that the value of equities decreased in 1973 and 1974 a -7 percent and -31 percent respectively. With respect the real estate market we can clearly observe that had a good performance due to the value of real estate properties increased during those years. **In conclusion, the real estate market performed better than the equity market in terms of value appreciation.**

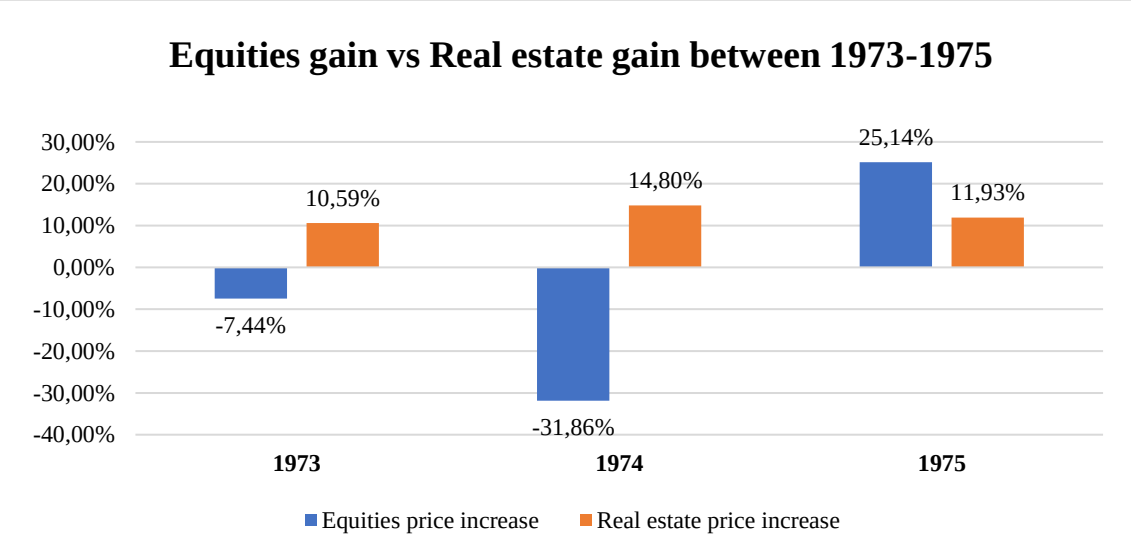

Figure 59: Equities gain vs Real estate gain between 1973-1975 in France

In **(Figure 60)**, we can observe the fluctuations of the dividend returns and rent returns in France during the **1973-1975 recession.** In this figure, we can observe that, during those years, the dividend return was smaller than real estate rent return. However, in 1975 the dividend return was 1 percent bigger than the rent return.

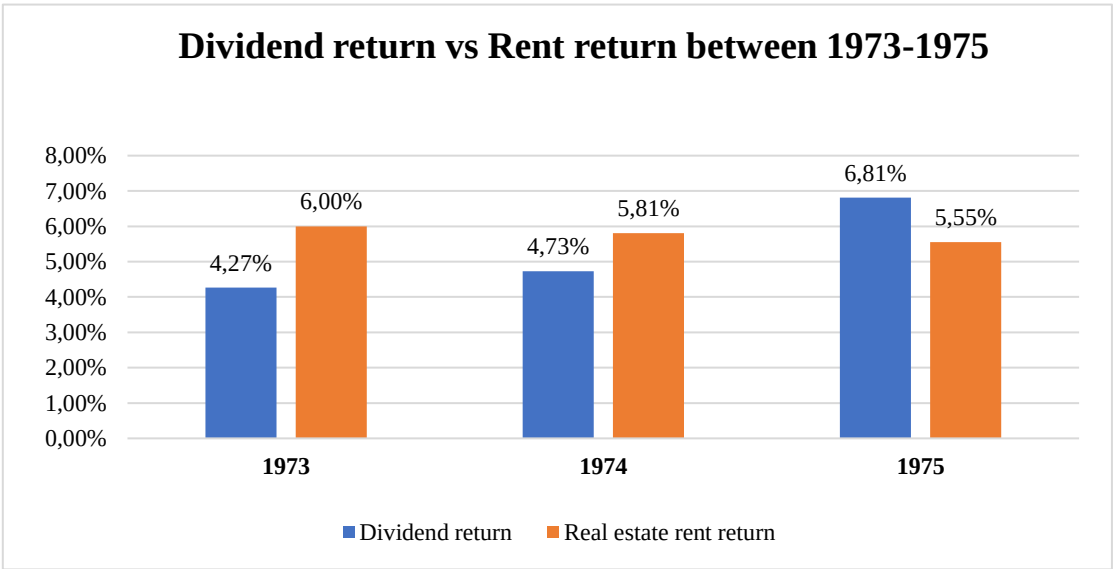

Figure 60: Dividend return vs Rent return between 1973-1975 in France

F) The Dotcom Bubble

In **(Figure 61)**, we can observe the fluctuations of the value of equities and real estate in France during the **Dotcom Bubble**. In the graph, we can observe that the value of equities, during the last years of the 20th century, increased a lot due to the overvaluation of internet companies. However, the bubble by the beginning of 2000 it burst and the stock market crashed. Meanwhile, the real estate market was not affected by the **Dotcom Bubble**, since the price of real estate properties increased during those years, but the percentage of increase was smaller in comparison to the increase of the stock market. Finally, we can see that the increase of value of the stock market was bigger than its fall, **therefore the stock market performed better than the real estate market.**

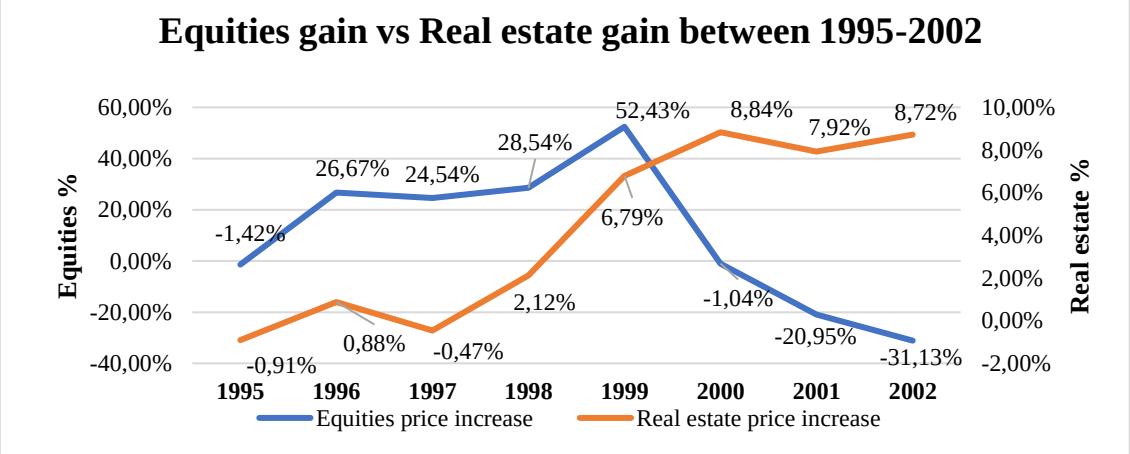

Figure 61: Equities gain vs Real estate gain between 1995-2002 in France

In **(Figure 62)**, we can observe the fluctuations of the dividend returns and rent returns in France during the **Dotcom Bubble.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was between 1 percent and 4 percent per year.

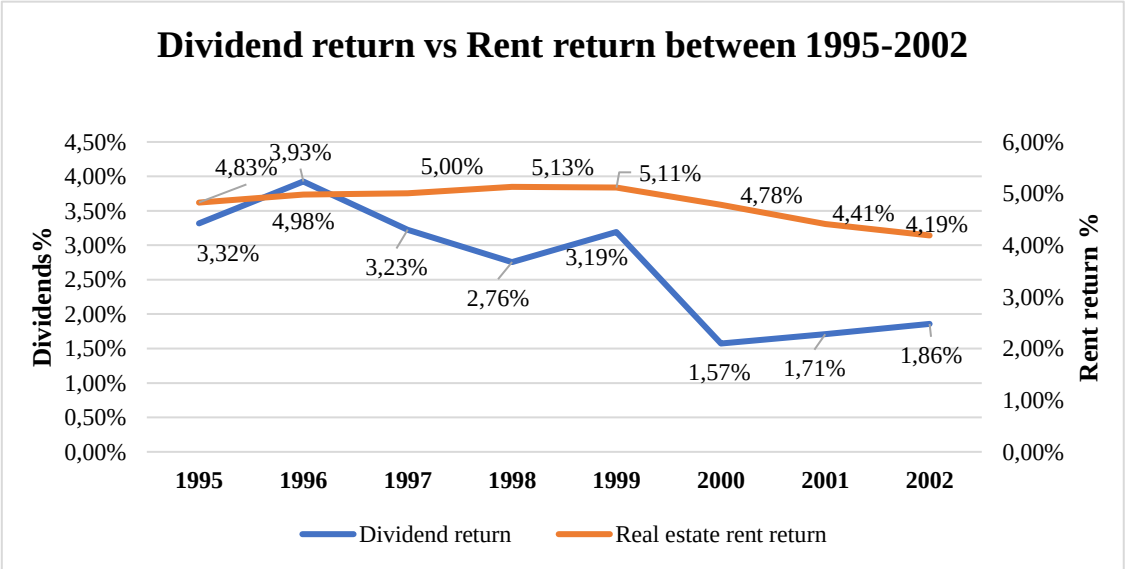

Figure 62: Dividend return vs Rent return between 1995-2002 in France

G) Financial Recession

In **(Figure 63)**, we can observe the fluctuations of the value of equities and real estate in France during the **Financial Recession**. In this figure, we can observe that the equities, during the first years of the recession, decreased a -43 percent. The stock market had a correction in 2009, but then in 2011 decreased a -17 percent due to the effects of the Financial Recession in France. Regarding, the real estate market the value of the properties decreased but not the as the same proportion as the equities did. Moreover, during those years, the value appreciation of real estate properties was 22,96 percent and in the equities was -0,72 percent. **Therefore, during the Financial Recession, the real estate market performed better in terms of value appreciation.**

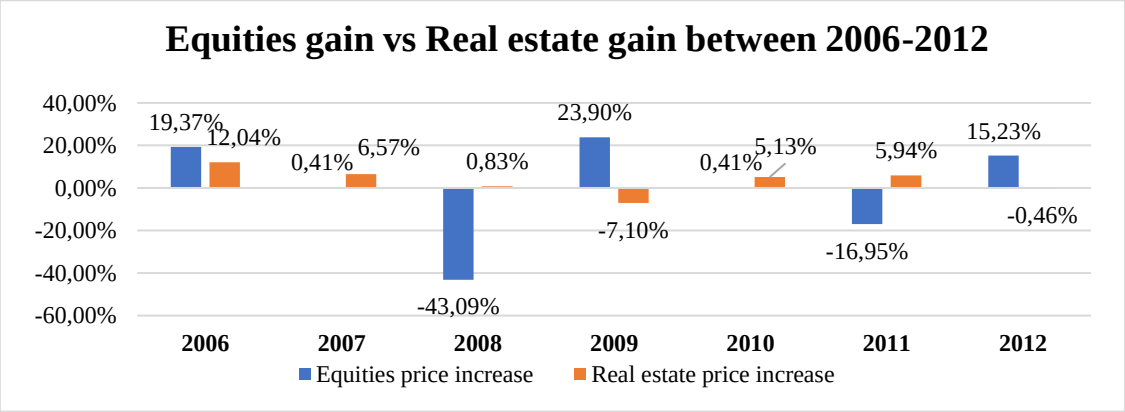

Figure 63: Equities gain vs Real estate gain between 2006-2012 in France

In **(Figure 64)**, we can observe the fluctuations of the dividend returns and rent returns in France during the **Financial Recession.** In the graph, we can observe that the dividend return was, during those years, bigger than the real estate rent return. The difference between both returns was not significant between 2006-2008, but between 2008-2012 the difference between both returns was more or less between 1 percent and 2 percent per year.

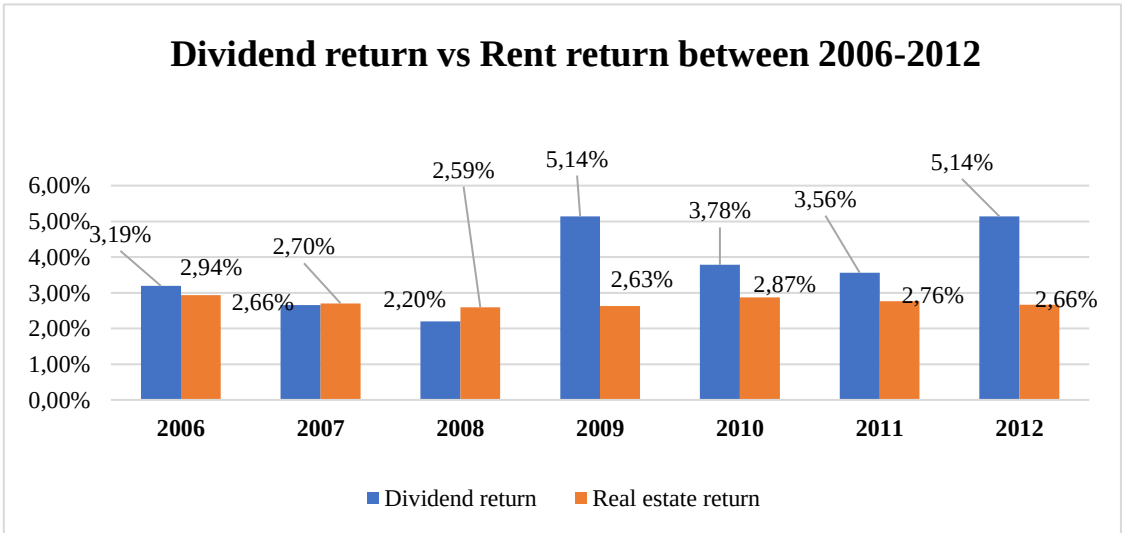

Figure 64: Dividend return vs Rent return between 2006-2012 in France

H) Covid-19 Pandemic

In **(Figure 65)**, we can observe the fluctuations of the value of the stocks and equities in France during the **Covid Pandemic**. In this figure, we can observe that the equities in 2020 decreased a -2 percent. Regarding the real estate market, the value of the properties in France increased a 5 percent. **Therefore, the real estate, during the pandemic, performed better than the equities in terms of value appreciation.**

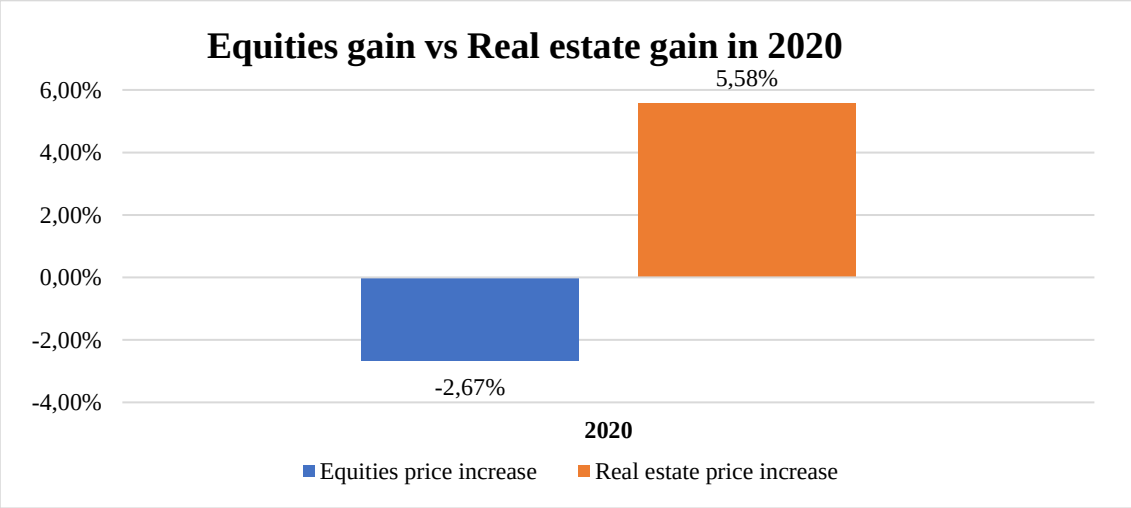

Figure 65: Equities gain vs Real estate gain in 2020 in France

In **(Figure 66)**, we can observe the fluctuations of the dividend returns and rent returns in France during the **Covid Pandemic.** In the graph, we can observe that during those years, the dividend return was smaller than the real estate rent return. Moreover, we have to say that the difference between both returns was not significant.

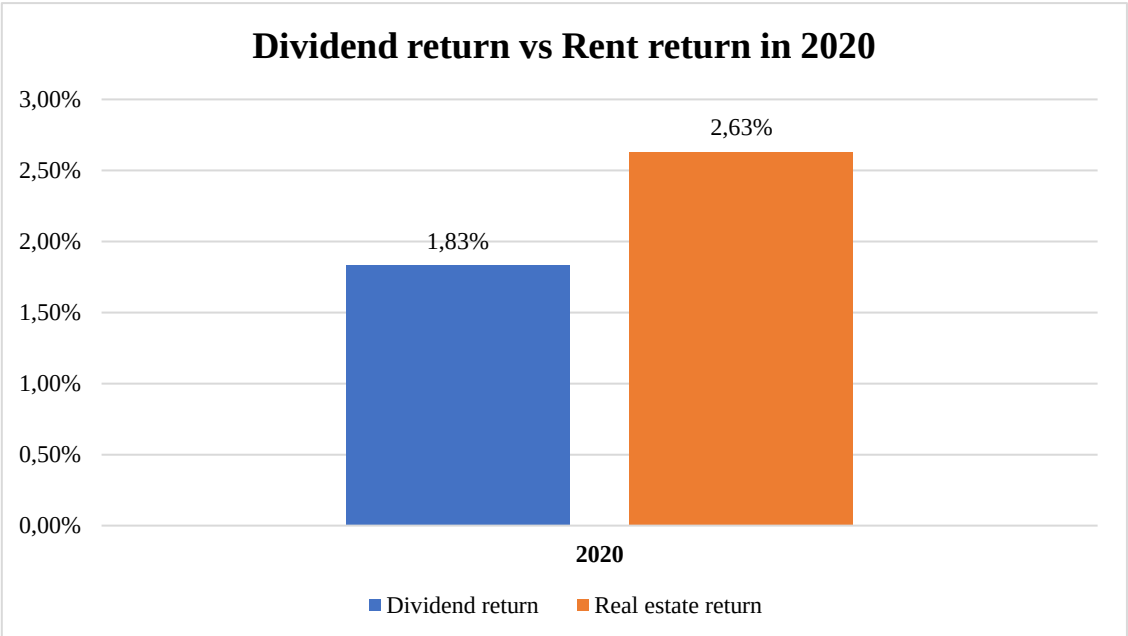

Figure 66: Dividend return vs Rent return in 2020 in France

I) Historical trend

In (**Figure 67)**, we can observe the fluctuations of the value of equities and real estate in France between 1914 and 2020. In this figure, we can clearly observe that the stock market has been always more volatile than the real estate market. Moreover, we can observe that in some period's equities performed better than real estate and also the opposite. For instance, the real estate performed better during the WWI, the Great Depression, WWII, the 1973-1975 recession, the Financial Recession and during the Covid Pandemic and the stock market performed better during the Roaring 20s and the Dotcom Bubble. Finally, if we analyse the value appreciation of both assets during this period of time, we see that the value appreciation of equities was 634,56 percent and 993 percent in real estate properties, (**see Appendix 3**). **Therefore, real estate properties performed better in terms of value appreciation.**

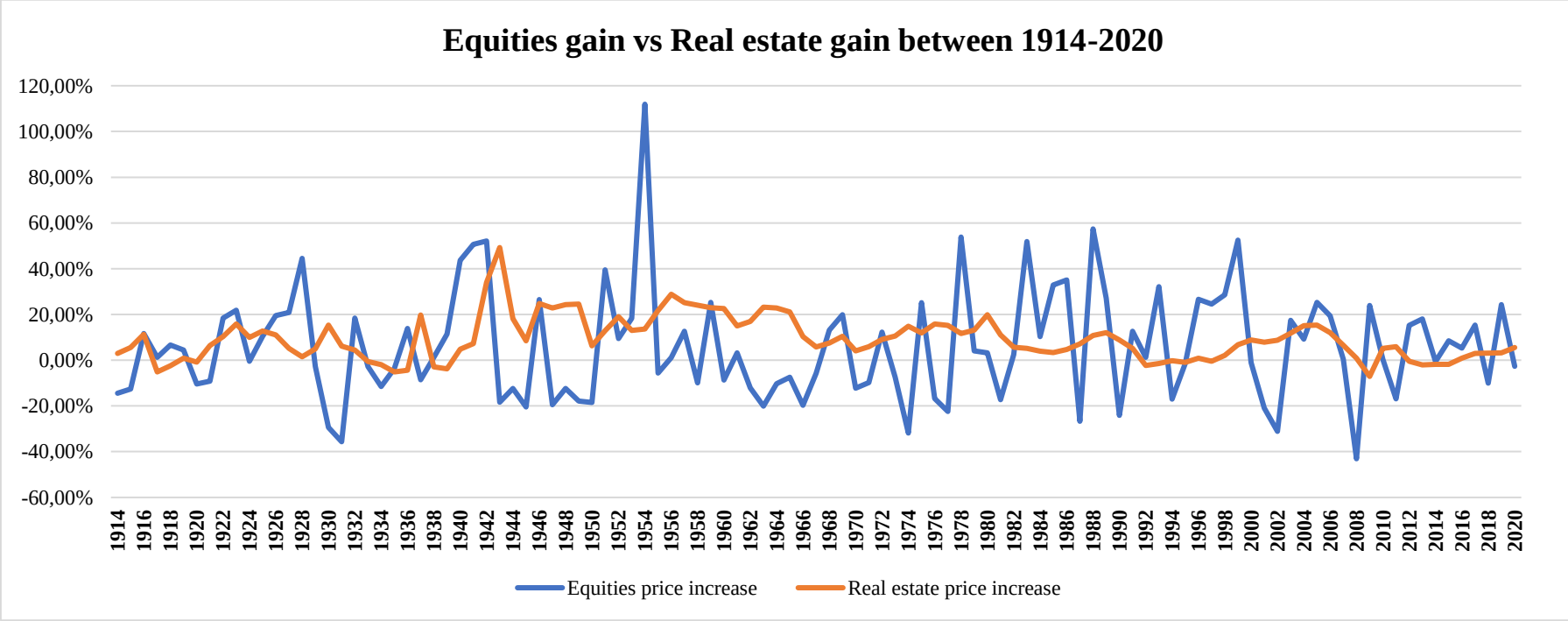

Figure 67: Equities gain vs Real estate gain between 1914-2020 in France

In **(Figure 68)**, we can observe the fluctuations of the dividend returns and rent returns in France between 1914 and 2020. In this figure, we can observe that, from 1914 until 1939, the rent return and the dividend return were very similar, but the rent return was bigger during those years. In addition, from 1939 until 1975 the rent return was between a 0 percent and 6 percent bigger than the dividend return. With respect the dividend return, we can observe that from 1975 until 1984 the dividend return was between a 0 percent and 3 percent bigger than rent return. Another thing that we can observe, is that from 1984 until 2009 the dividend return was between a 0 percent and 3 percent smaller than the rent return. Finally, we can observe that from 2009 to 2019 the dividend return was between a 1 percent and 3 percent bigger than the rent return.

In conclusion, rent returns outperformed dividend returns, particularly from 1914 till 1975 and from 1984 to 2009. However, dividend returns were bigger than rent returns in some periods like for example from 1975 to 1984, but historically and also in the majority of recessions that we analysed previously, real estate properties offered higher returns than equities.

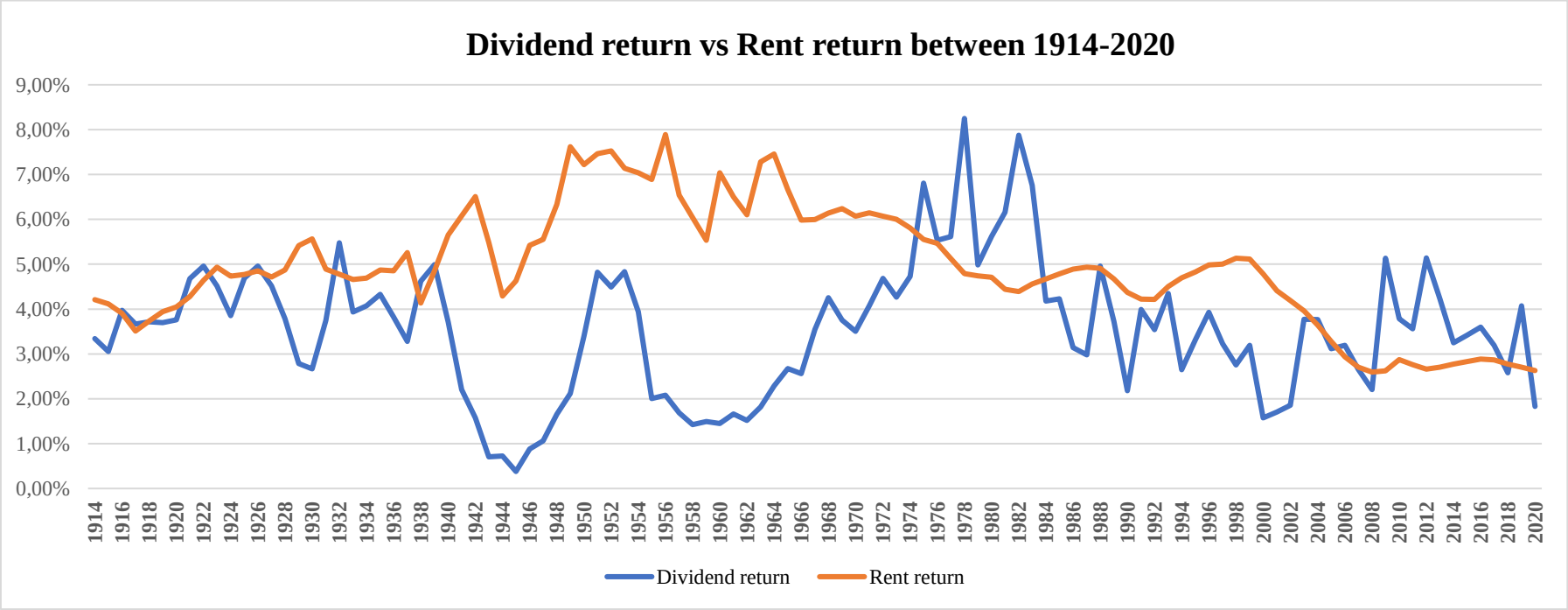

Figure 68: Dividend return vs Rent return between 1914-2020 in France

5.4 United Kingdom

A) First World War (1914-1918)

In **(Figure 69),** we can observe the fluctuations of the value of equities and real estate in the UK during **WWI**. In this figure, we can observe that during the war the stock market decreased in 1914 a -4 percent and also in 1916 by a -7 percent. However, the following years the stock market increased and had an upward trend. Regarding the value of real estate properties, we can observe that its value decreased a -13 percent in 1914. However, during those years, the value appreciation of real estate properties was 64,89 percent and in the equities was 9,33 percent. **Therefore, during WWI, the real estate market performed better in terms of value appreciation.**

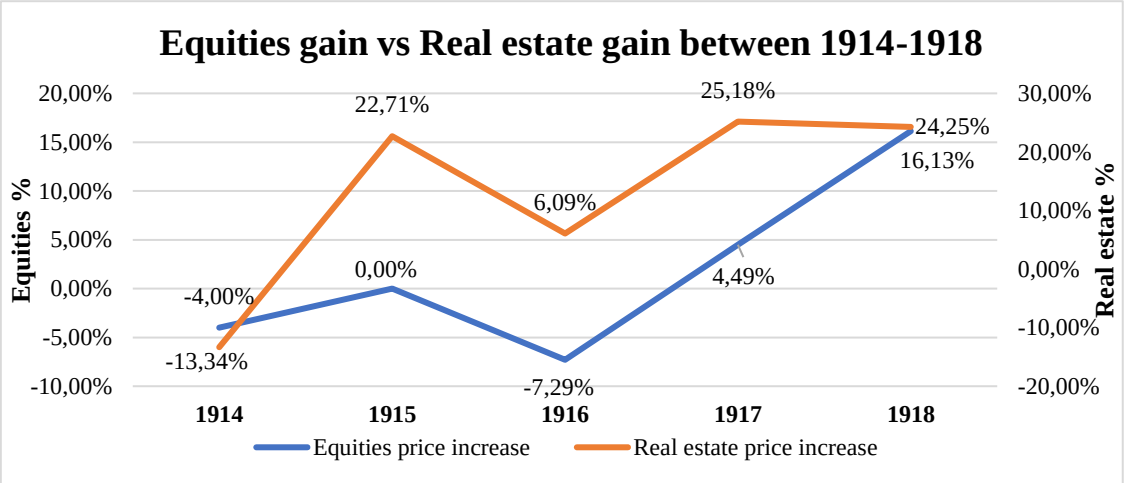

Figure 69: Equities gain vs Real estate gain between 1914-1918 in the UK

In **(Figure 70)**, we can observe the fluctuations of the dividend returns and rent returns in the UK during **WWI**. In this figure, we can observe that, during those years, the dividend return was very similar to the real estate rent return. The dividend return was smaller between 1914-1915, but bigger between 1916-1918.

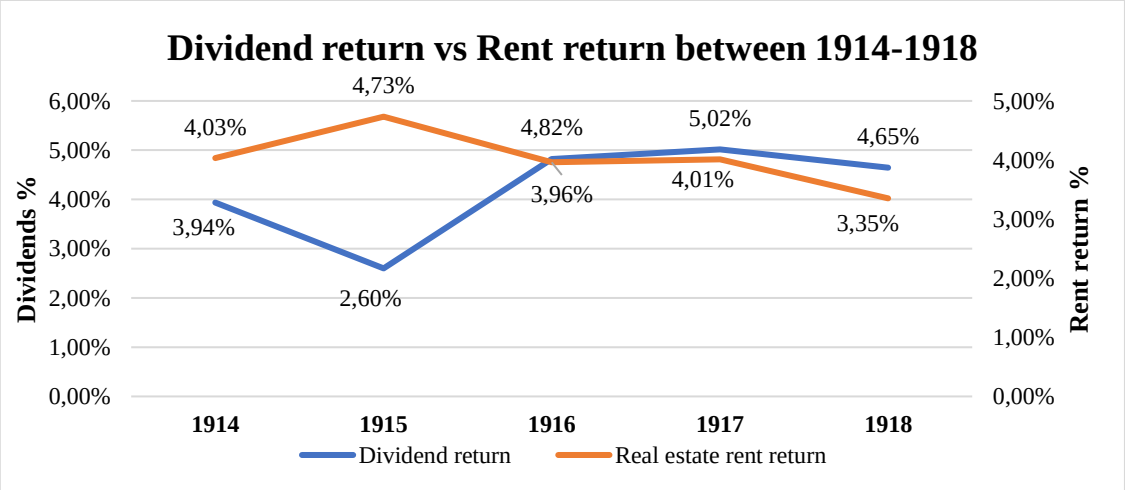

Figure 70: Dividend return vs Rent return between 1914-1918 in the UK

B) Roaring Twenties (1920-1929)

In **(Figure 71)**, we can observe the fluctuations of the value of equities and real estate in the UK during the **Roaring 20s.** In this figure, we can observe that the equities suffered a decrease in value during the Roaring Twenties due to in 1920 and 1921 the value of equities decreased a -25 percent and a -7 percent respectively. Furthermore, in 1923 and 1929 the value of equities decreased a -4 percent and -18 percent respectively. However, we can clearly observe that during those years the equities also suffered increases of value like for example in 1922 or 1924. Regarding the real estate market, during those years, the value of real estate properties decreased almost every year, except between 1922-1926. However, during those years, the value appreciation of real estate properties was 0,03 percent and in the equities was 7,89 percent. **Therefore, equities performed better in terms of value appreciation.**

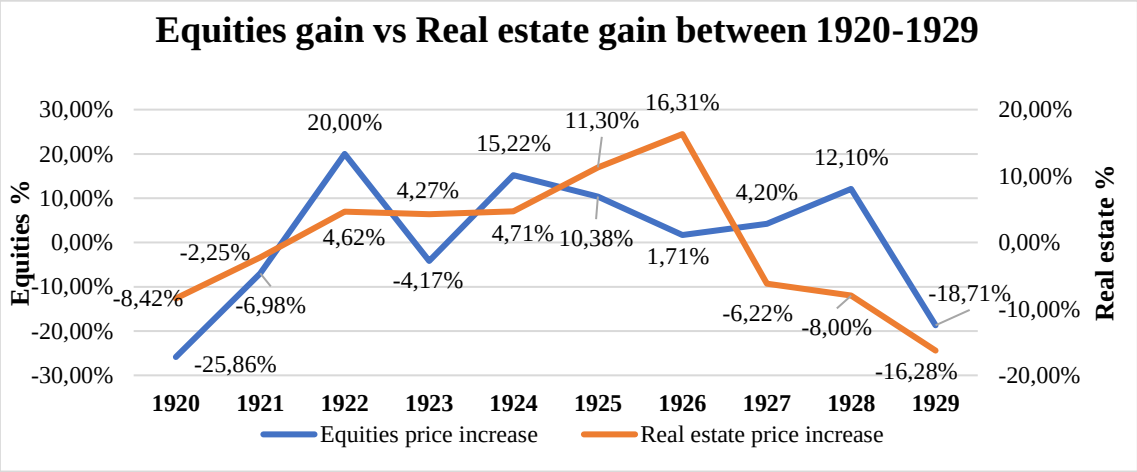

Figure 71: Equities Gain vs Real estate gain between 1920-1929 in the UK

In **(Figure 72)**, we can observe the fluctuations of the dividend returns and rent returns in the UK during the **Roaring 20s.** In this figure, we can observe that, during those years, the dividend return was bigger than the real estate rent return. The difference between both returns was more or less a 2 percent per year.

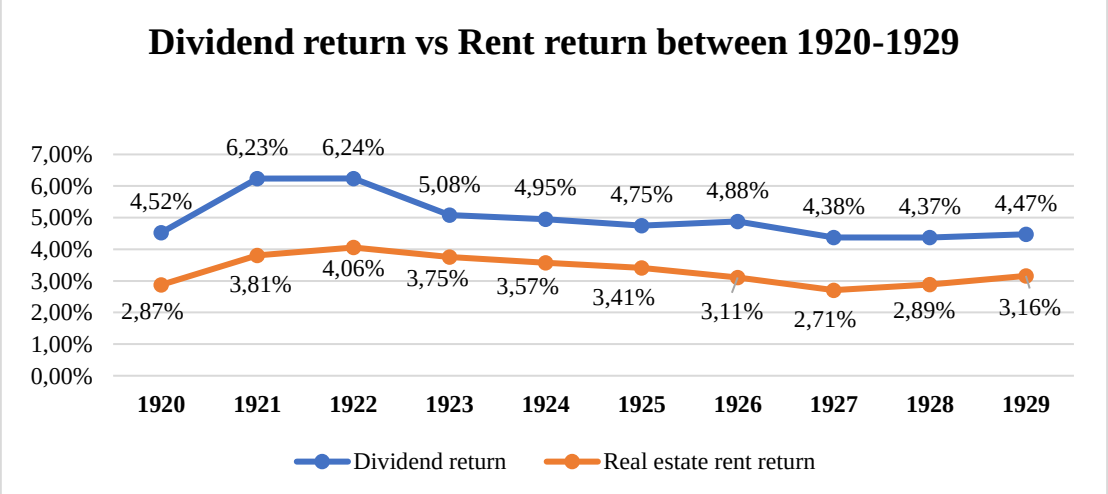

Figure 72: Dividend return vs Rent return between 1920-1929 in the UK

C) Great Depression (1929-1939)

In **(Figure 73),** we can observe the fluctuations of the value of the stocks and equities in France during the **Great Depression.** In this figure, we can observe that the equities had a bad performance during the first years of the recession, due to in 1929, 1930 and 1931 the value of equities decreased a -18 percent a -9 percent and a -24 respectively. However, from 1932 until 1936 the value of equities increased a lot. Regarding the real estate market, we can clearly observe that had a bad performance, due to in 1929 and 1930 the value of real estate properties decreased a -16 percent and a -3 percent respectively. Moreover, the following years the value of properties did not increase. In addition, during those years, the value appreciation of real estate properties was -26,79 percent and in the equities was -3,65 percent. **Therefore, during the Great Depression, equities performed better in terms of value appreciation.**

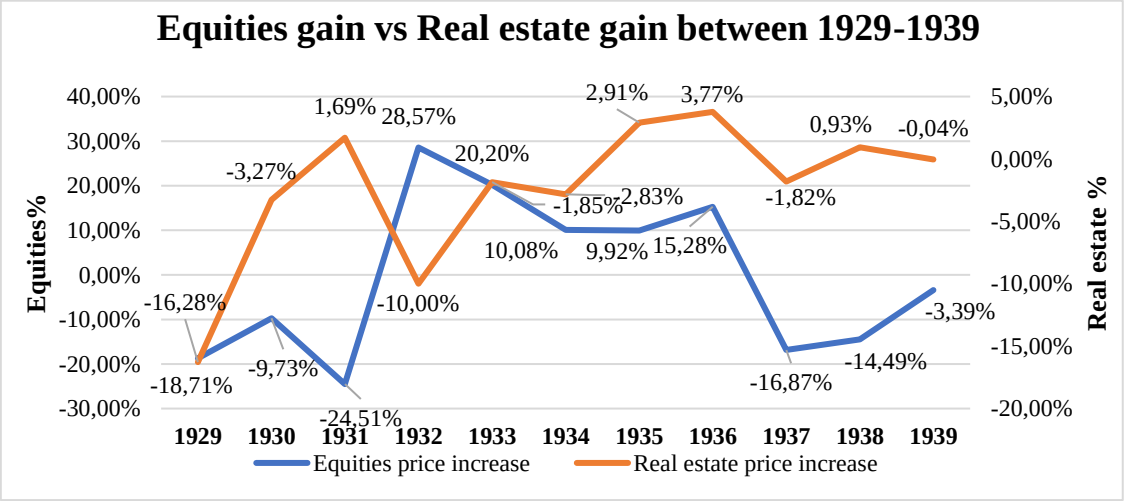

Figure 73: Equities gain vs Real estate gain between 1929-1939 in the UK

In **(Figure 74)**, we can observe the fluctuations of the dividend returns and rent returns in the UK during the **Great Depression**. In this figure, we can observe that, during those years, the dividend return was very similar to the real estate rent return.

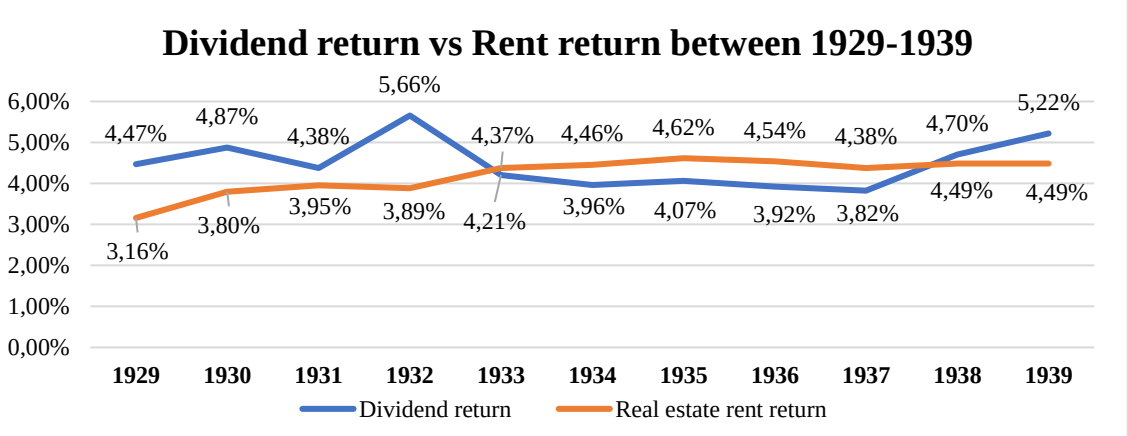

Figure 74: Dividend return vs Rent return between 1929-1939 in the UK

D) Second World War (1939-1945)

In (**Figure 75)**, we can observe the fluctuations of the value of equities during **WWII** in the UK**.** In this figure, we can observe that the value of equities increased all the years, except in 1939-1940 where the value of equities decreased a -3 percent and a -10 percent respectively. Remark that, the stock market started to increase in 1941 due to the allied forces started to obtain better results in the war. Regarding the real estate there is no information about its capital gain.

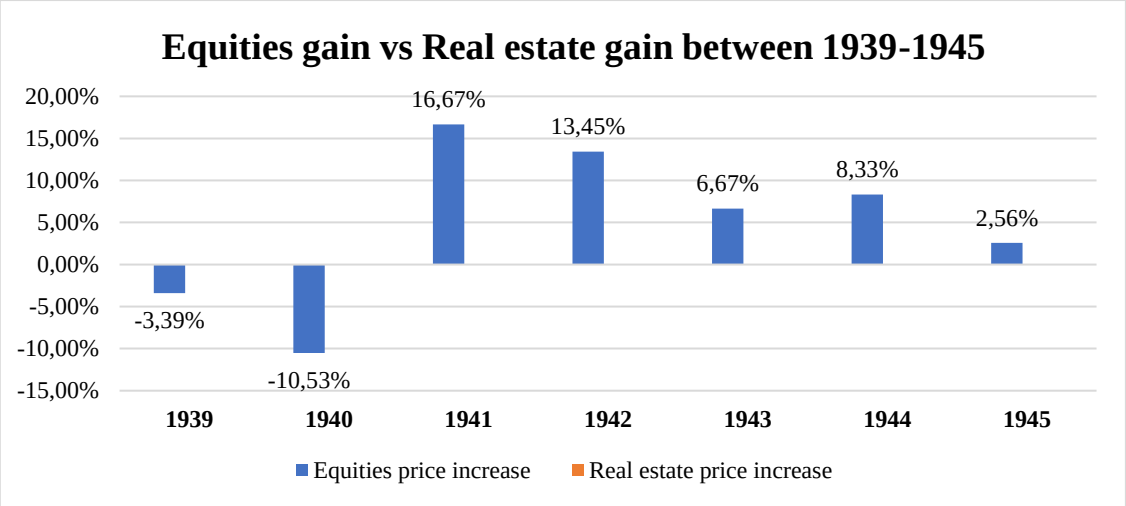

Figure 75: Equities gain vs Real estate gain between 1939-1945 in the UK

In (**Figure 76)**, we can observe the fluctuations of the dividend returns in the UK during **WWII**. In this figure, we can observe that, during those years, the dividend return was between 4 percent and 6 percent. Remark that, there is not information about rent returns therefore, we cannot compare it.

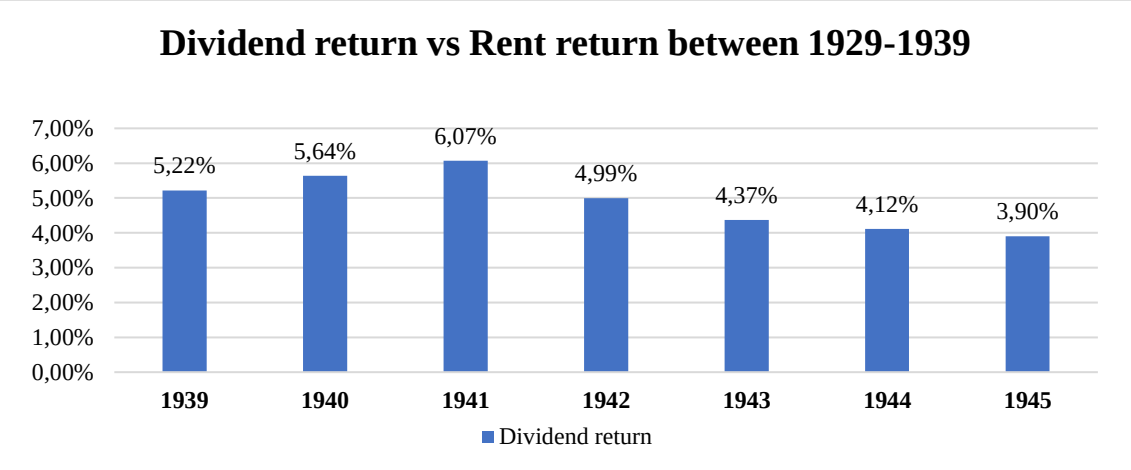

Figure 76: Dividend return vs Rent return between 1939-1945 in the UK

E) The 1973-1975 Recession

In **(Figure 77),** we can observe the fluctuations of the value of equities and real estate in the UK during the **1973-1975 Recession**. In this figure, we can observe that equities during the first years of the recession decreased a lot but in 1975 final year the stock market increased considerably, in fact the value appreciation of equities during those years was 49,88 percent. Regarding the real estate market, the value of the properties in the UK did not decrease, in fact in 3 years the value of properties increased a 50,83 percent. **Therefore, real estate performed better than equities in terms of value appreciation.**

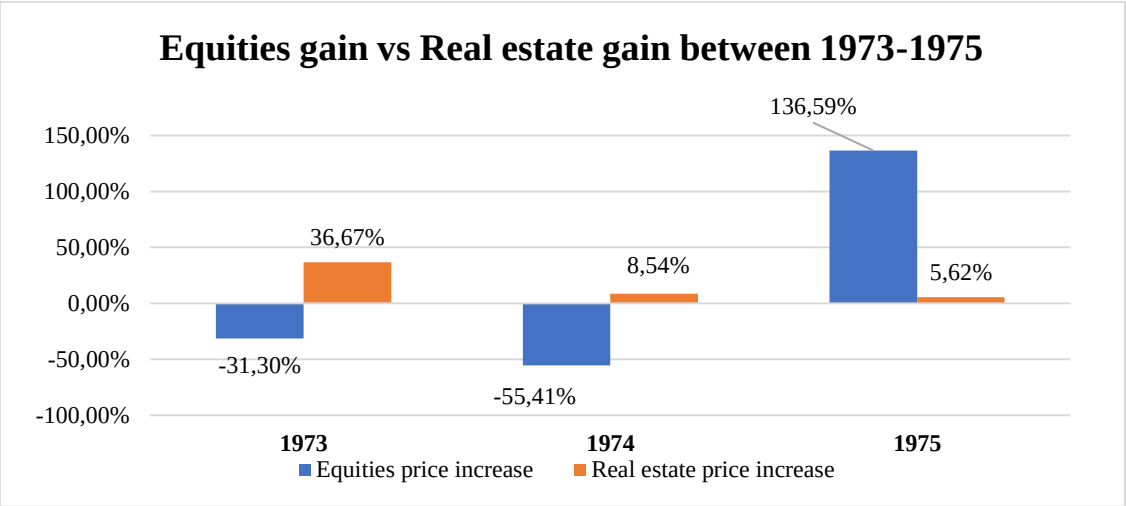

Figure 77: Equities gain vs Real estate gain between 1973-1975 in the UK

In **(Figure 78)**, we can observe the fluctuations of the dividend returns and rent returns in the UK during the **1973-1975 Recession.** In this figure, we can observe that, during those years, the dividend return was bigger than the real estate rent return. The difference between both returns was more or less a 2 percent. However, in 1975 the difference was more than 9 percent. Finally, remark that in 1973 both returns were similar.

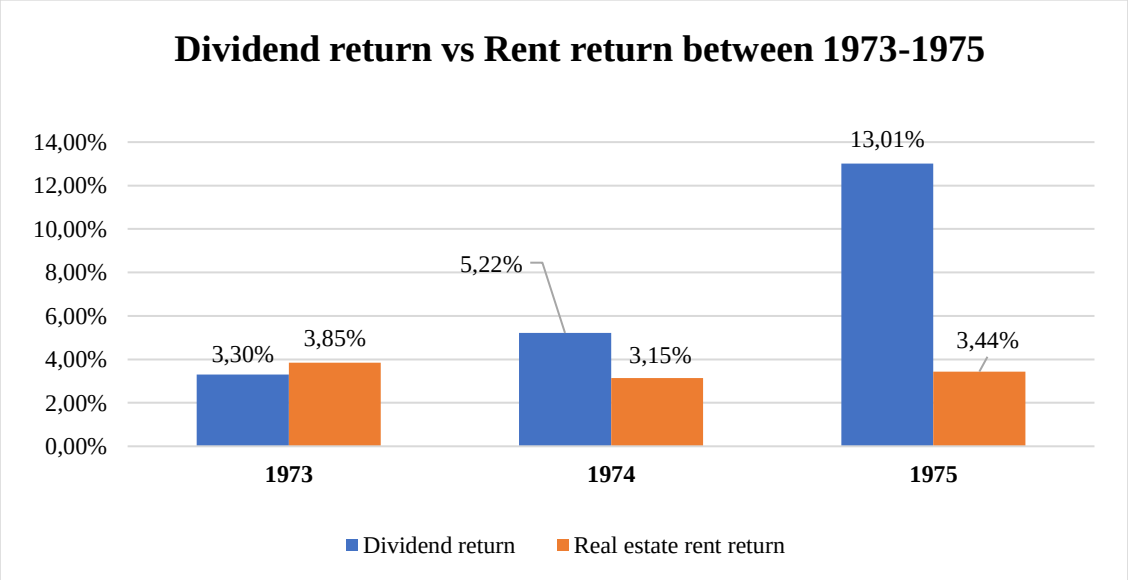

Figure 78: Dividend return vs Rent return between 1973-1975 in the UK

F) The Dotcom Bubble

In **(Figure 79)**, we can observe the fluctuations of the value of equities and real estate in the UK during the **Dotcom Bubble**. In this figure, we can observe that the value of equities, during the last years of the 20th century, increased a lot due to the overvaluation of internet companies. However, the bubble by the beginning of 2000 it burst and the stock market crashed. Meanwhile, the real estate market was not affected by the **Dotcom Bubble**, since the price of real estate properties increased during those years, but the percentage of increase was smaller in comparison to the increase of the stock market. However, during those years the value appreciation of real estate properties was 60,69 percent and in the equities was 33,74 percent. **Therefore, real estate properties performed better than equities in terms of value appreciation.**

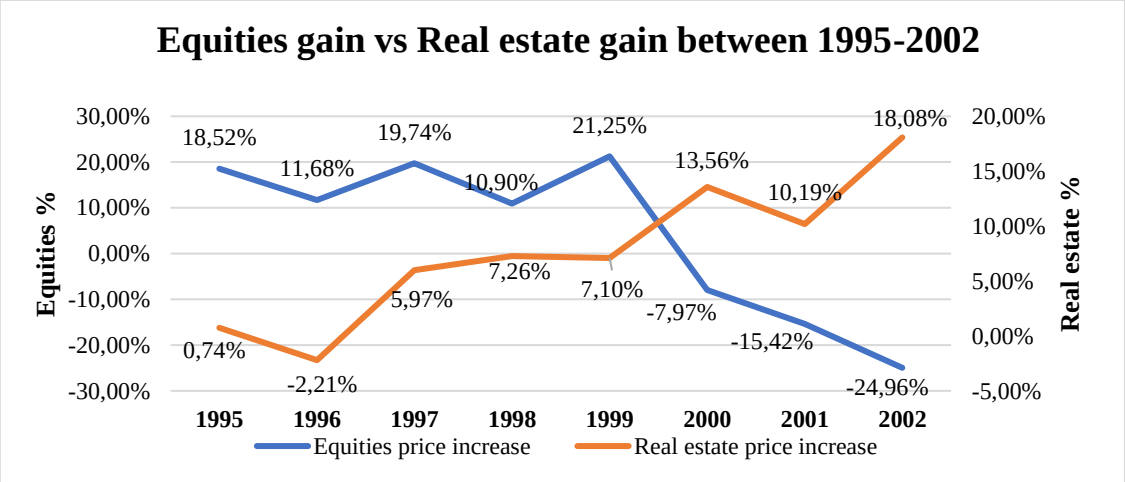

Figure 79: Equities gain vs Real estate gain between 1995-2002 in the UK

In **(Figure 80)**, we can observe the fluctuations of the dividend returns and rent returns in the UK during the **Dotcom Bubble.** In the graph, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was more or less a 2 percent.

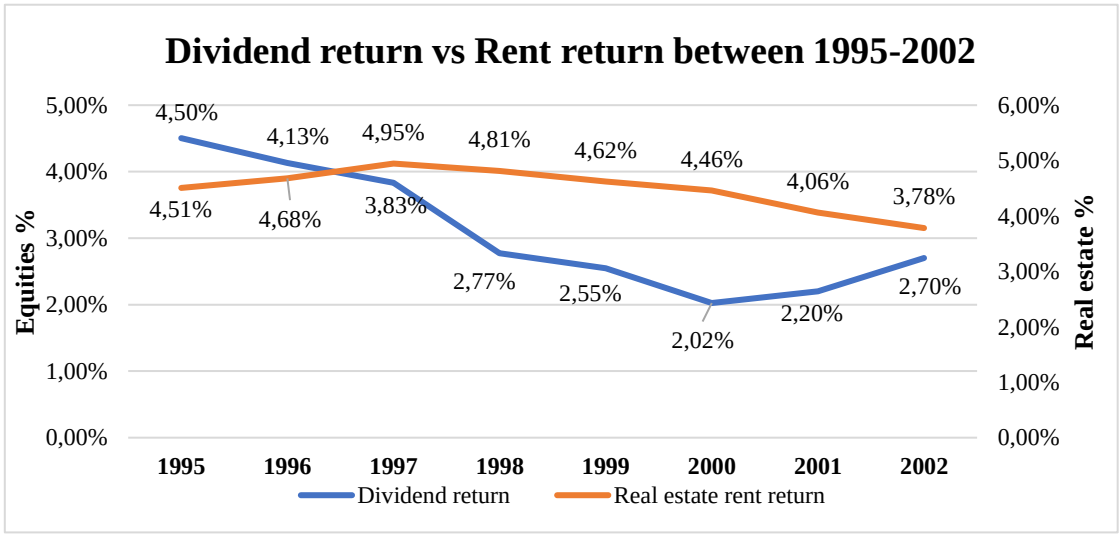

Figure 80: Dividend return vs Rent return between 1995-2002 in the UK

G) Financial Recession

In **(Figure 81)**, we can observe the fluctuations of the value of equities and real estate in the UK during the **Financial Recession**. In this figure, we can observe that the equities, during the first years of the recession, decreased a -32 percent. The stock market had a correction in 2009, but then in 2011 decreased a -6,69 percent due to the effects of the financial recession. Regarding the real estate market, the value of the properties in the UK decreased but not as the same proportion as the equities did. However, during those years, the value appreciation of real estate properties was 3,78 percent and in the equities was 19,84 percent. **Therefore, during the Financial Recession, equities performed better in terms of value appreciation.**

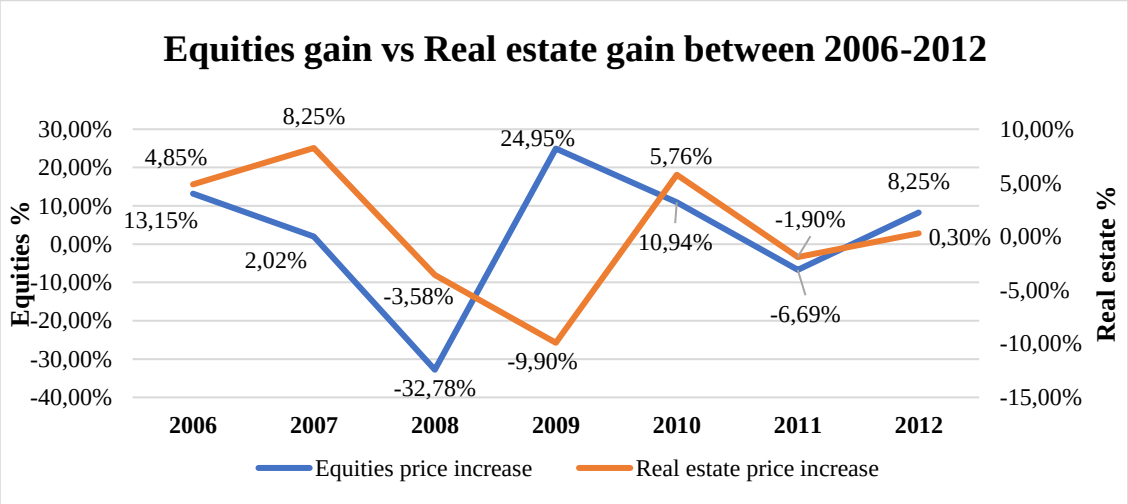

Figure 81: Equities gain vs Real estate gain between 2006-2012 in the UK

In **(Figure 82)**, we can observe the fluctuations of the dividend returns and rent returns in the UK during the **Financial Recession.** In this figure, we can observe that, during those years, the dividend return was bigger than the real estate rent return. The difference between both returns was more or less between 0,5 percent and 2 percent.

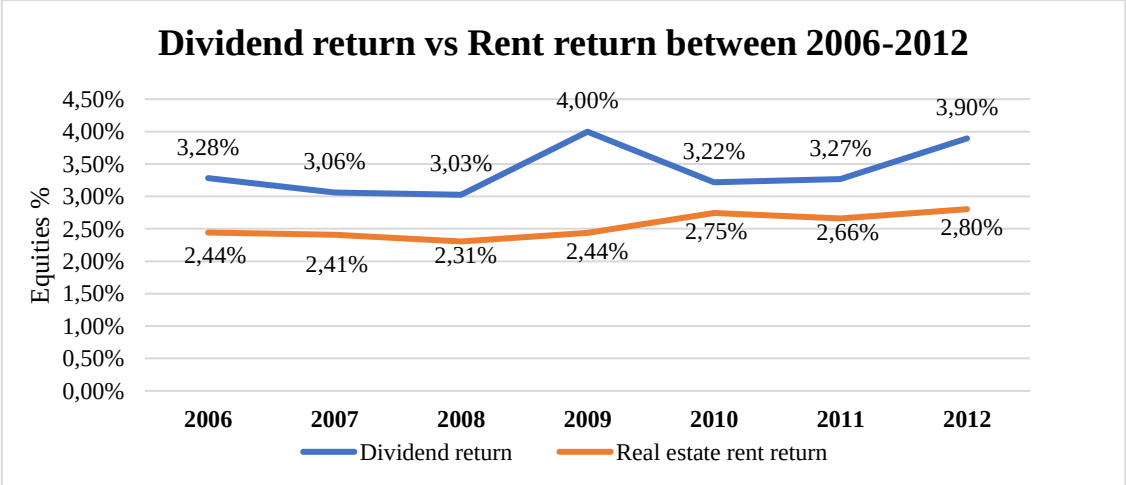

Figure 82: Dividend return vs Rent return between 2006-2012 in the UK

H) Covid-19 Pandemic

In **(Figure 83)**, we can observe the fluctuations of the value of the equities and real estate in the UK during the **Covid Pandemic**. In this figure, we can observe that the equities in 2020 decreased a -12 percent. Regarding the real estate market, the value of the properties in the UK increased a 2.83 percent. **Therefore, the real estate during the pandemic performed better than the equities in terms of value appreciation.**

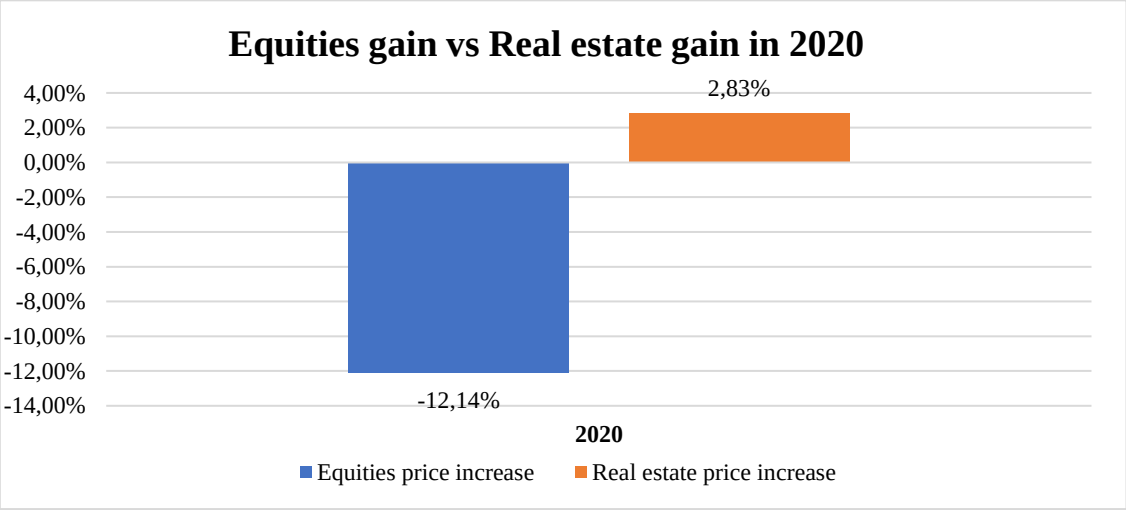

Figure 83: Equities gain vs Real estate gain in 2020 in the UK

In **(Figure 84)**, we can observe the fluctuations of the dividend returns and rent returns in the UK during the **Covid Pandemic.** In this figure, we can observe that during those years the dividend return was bigger than the real estate rent return. However, we have to say that the difference between both returns was not significant.

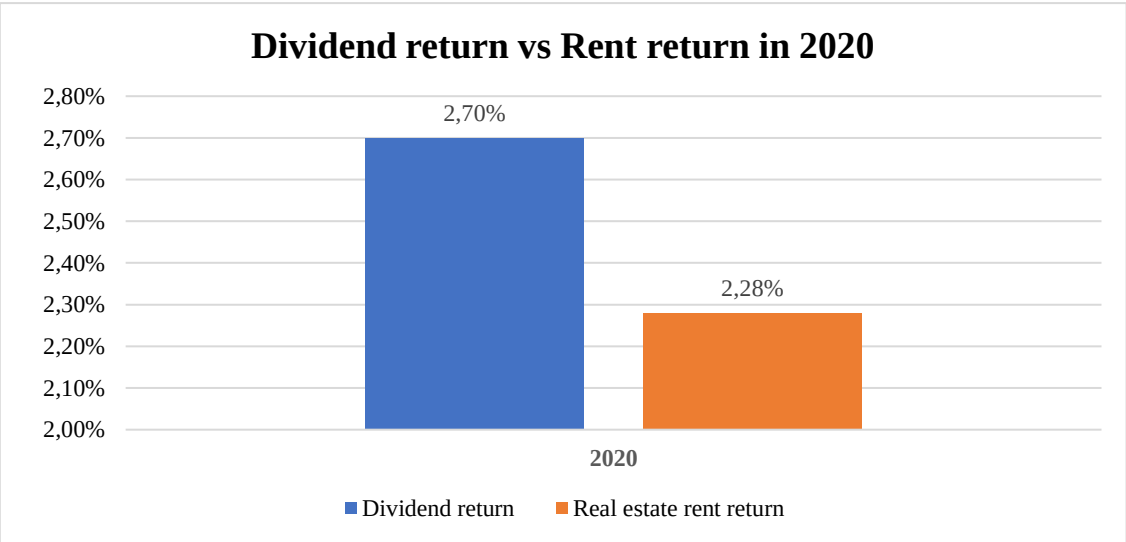

Figure 84: Dividend return vs Rent return in 2020 in the UK

I) Historical trend

In **(Figure 85),** we can observe the fluctuations of the value of equities and real estate in the UK between 1914 and 2020, except from 1939 until 1945 due to there is no data about the value appreciation of real estate properties. In this figure, we can clearly observe that the stock market has been always more volatile than the real estate market. Moreover, we can observe that in some period's equities performed better than real estate and also the opposite. For instance, real estate performed better during WWI, the 1973-1975 recession and during the Covid Pandemic and the stock market performed better during the Roaring 20s, the Great Depression, the Financial Recession and the Dotcom bubble. Finally, if we analyse the value appreciation of both assets during this period of time, we see that the value appreciation of equities was 725,15 percent and 610 percent in real estate properties, (**see Appendix 4**). **Therefore, equities performed better in terms of value appreciation.**

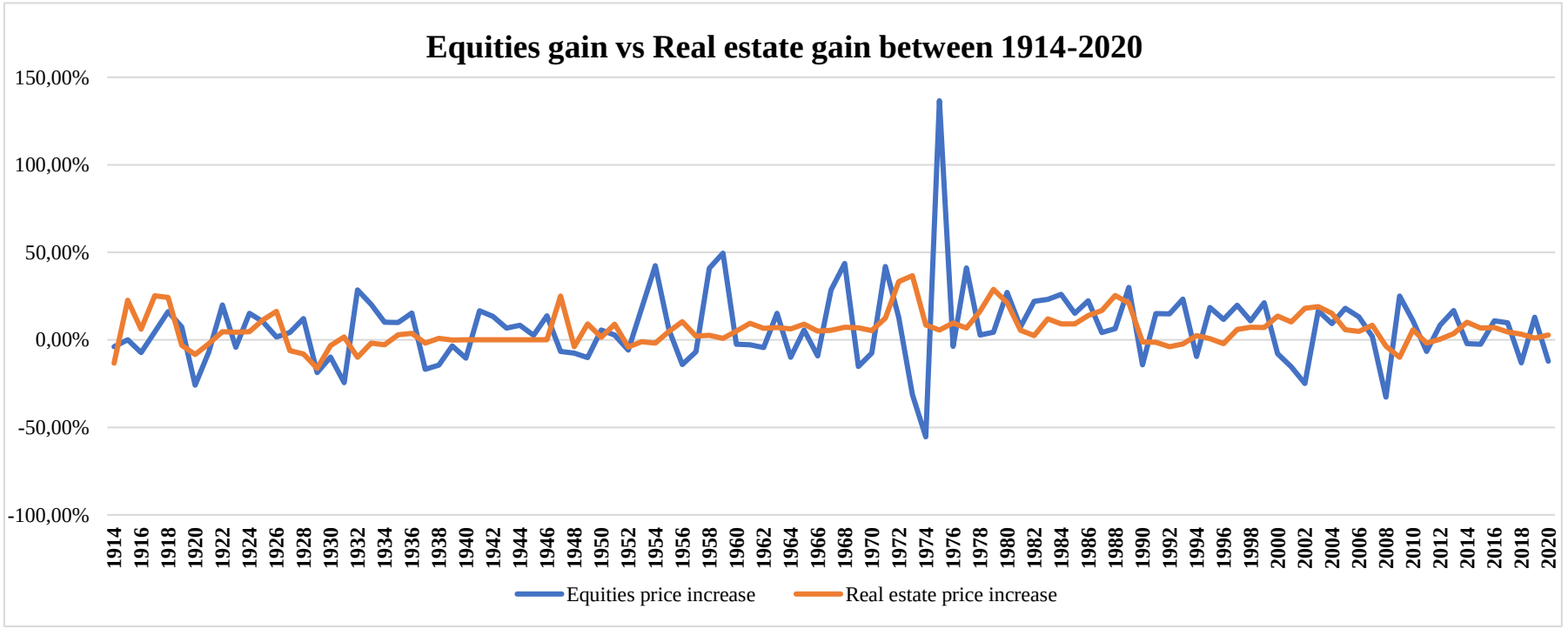

Figure 85: Equities gain vs Real estate gain between 1914-2020 in the UK

In **(Figure 86)**, we can observe the fluctuations of the dividend returns and rent returns in the UK between 1914 and 2020, but from 1940 until 1946 there is no information about rent returns. In this figure, we can observe that, from 1914 until 1974, the rent return and the dividend return were very similar due to in some years the dividend return was bigger than the rent return and, in some years, smaller. Another thing that we can observe is that from 1974 until 1993 and from 2003 until 2020 the dividend return was between a 0,10 percent and 9 percent bigger than the rent return. Finally, we can observe that from 1995 to 2003 the rent return was between a 1 percent and 2 percent bigger than the dividend return.

In conclusion, rent returns and dividend returns were very similar from 1914 till 1975. However, dividend returns were bigger than rent returns from 1974 until 1993 and from 2003 until 2020. Moreover, in the majority of recessions that we analysed above, equities offered higher returns. Therefore, historically both returns have been very similar but in the last years and during recessions, equities have offered better returns than real estate properties.

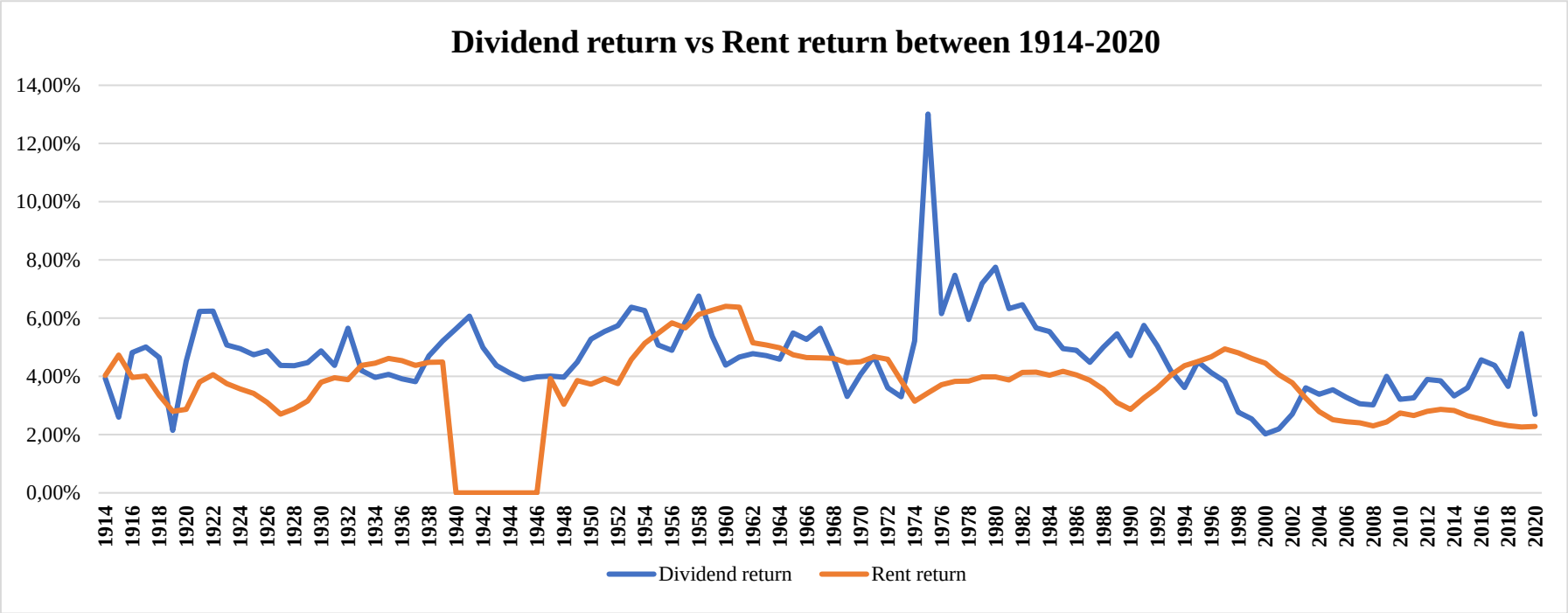

Figure 86: Dividend return vs Rent return between 1914-2020 in the UK

5.5 Germany

A) First World War (1914-1918)

In **(Figure 87)**, we can observe the fluctuations of the value of equities and real estate in Germany during **WWI**. In this figure, we can observe that during the war the stock market decreased in 1914 a -15 percent and also in 1918 by a -33 percent. However, the rest of the years the stock market increased. Regarding the value of real estate properties, we can observe that its value decreased a -28 percent in 1914 and a -20 percent in 1916. However, during those years, the value appreciation of real estate properties was -3,57 percent and in the equities was -16,29 percent. **Therefore, during WWI, the real estate market performed better than equities in terms of value appreciation.**

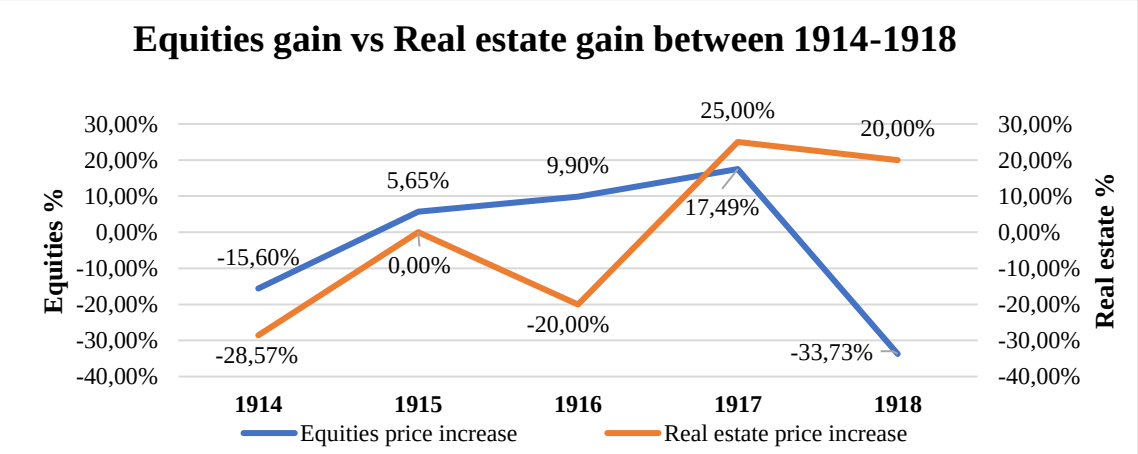

Figure 87: Equities gain vs Real estate gain between 1914-1918 in Germany

In **(Figure 88),** we can observe the fluctuations of the dividend returns in Germany during **WWI**. In this figure, we can observe that, during those years, the dividend return was between 4 percent and 5 percent. Remark that, there is not data about rent returns during WWI, we only know that the rent return in 1914 was a 4 percent.

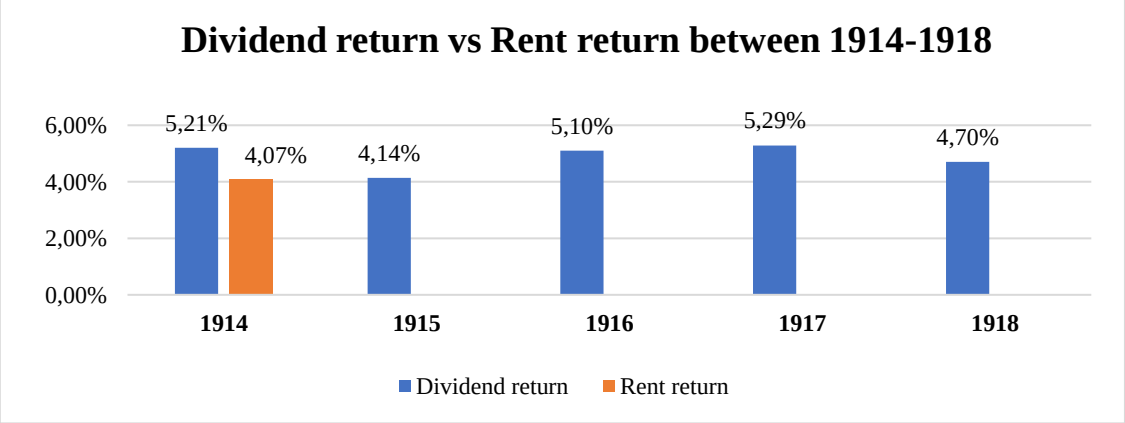

Figure 88: Dividend return vs Rent return between 1914-1918 in Germany

B) Roaring Twenties (1920-1929)

In **(Figure 89),** we can observe the fluctuations of the value of equities and real estate in Germany during the **Roaring 20s.** In this figure, we can observe that the equities had a good performance since the stock market was increasing a lot those years. Regarding, the real estate market we can observe that real estate properties had a value appreciation However, the percentage of increase was bigger in equities than in real estate properties. **Therefore, equities performed better than real estate in terms of value appreciation.**

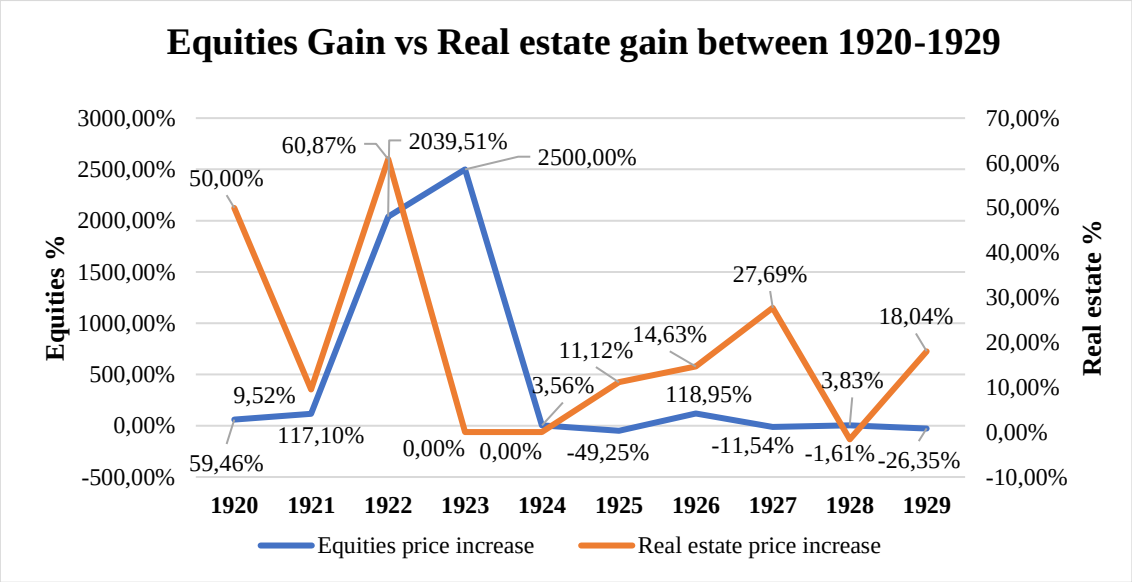

Figure 89: Equities Gain vs Real estate gain between 1920-1929 in Germany

In **(Figure 90)**, we can observe the fluctuations of the dividend returns and rent returns in Germany during the **Roaring 20s**. In this figure, we can observe that during those years the dividend return was smaller than the real estate rent return from 1925-1929. Remark that we cannot compare both returns from 1920-1924, due to there is no data regarding the rent returns.

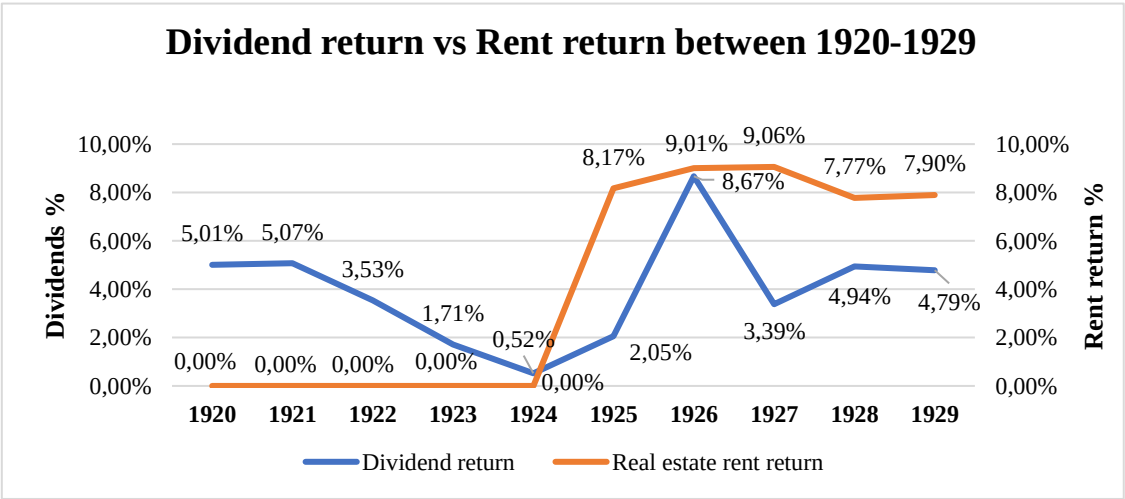

Figure 90: Dividend return vs Rent return between 1920-1929 in Germany

C) The Great Depression (1929-1939)

In **(Figure 91)**, we can observe the fluctuations of the value of equities and real estate in Germany during the **Great Depression.** In this figure, we can observe that the equities had a bad performance during the first years of the recession, due to in 1929, 1930 and 1931 the value of equities decreased a -26 percent a -31 percent and a -37 respectively. However, from 1932 until 1936 the value of equities increased a lot. Regarding the real estate market, we can clearly observe that had a bad performance, due to in 1930 and 1931 the value of real estate properties decreased a -30 percent and a -6 percent respectively. Moreover, the following years the value of properties was not increasing a lot. However, during those years, the value appreciation of real estate properties was -28,19 percent and in the equities was -36,41 percent. **Therefore, during WW1, the real estate market performed better in terms of value appreciation.**

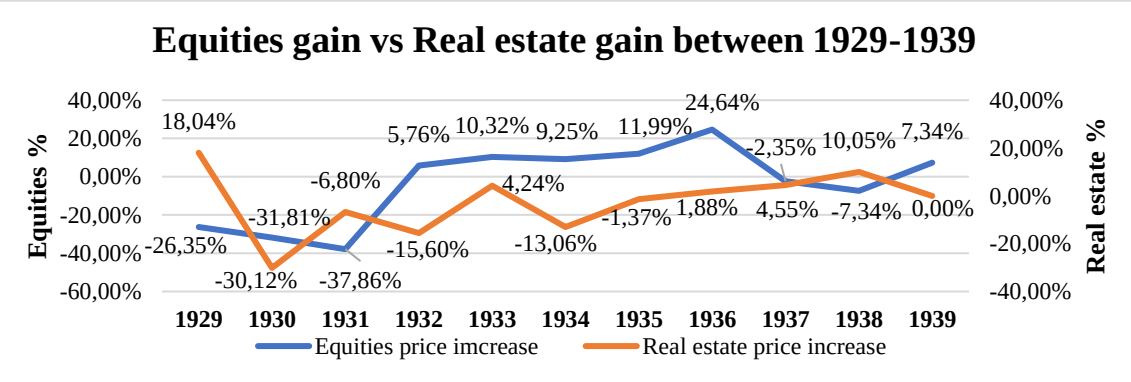

Figure 91: Equities gain vs Real estate gain between 1929-1939 in Germany

In **(Figure 92)**, we can observe the fluctuations of the dividend returns and rent returns in Germany during the **Great Depression**. In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference in some years was bigger than 10 percent.

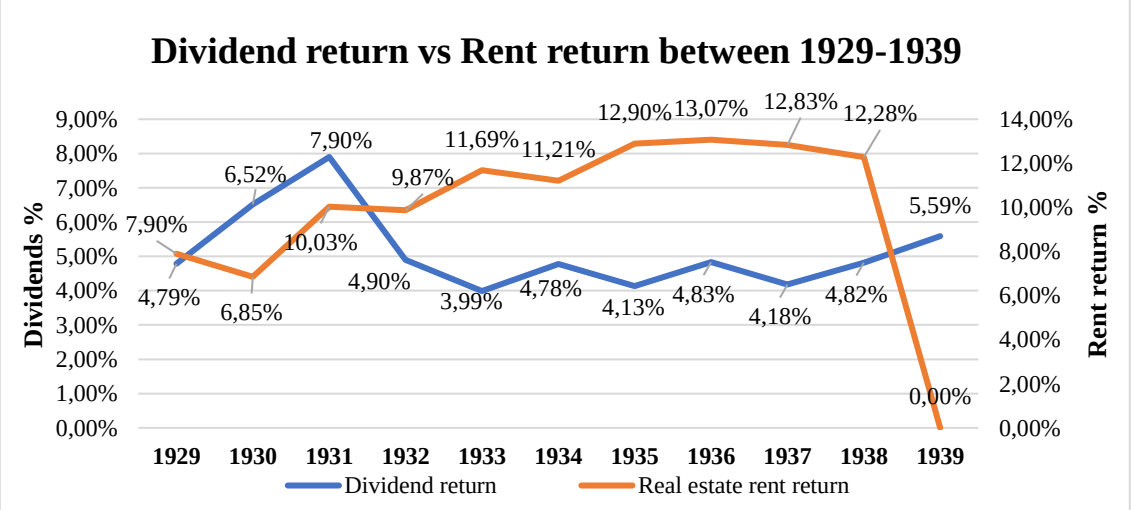

Figure 92: Dividend return vs Rent return between 1929-1939 in Germany

D) Second World War (1939-1945)

In **(Figure 93)**, we can observe the fluctuations of the value of equities during **WWII** in Germany. In this figure, we can observe that the value of equities increased all the years, except in 1945 where the value of equities decreased a -13 percent. Remark that the stock market started to decrease in 1945 due to the allied forces started to obtain better results in the war. Regarding the real estate there is no information about its capital gain.

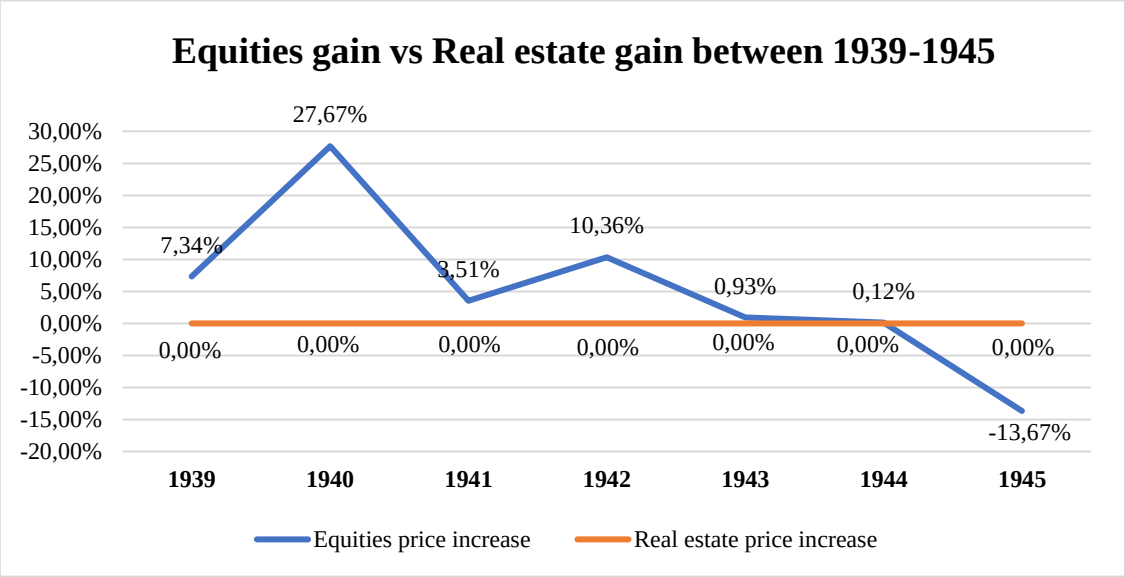

Figure 93: Equities gain vs Real estate gain between 1939-1945 in Germany

In **(Figure 94)**, we can observe the fluctuations of the dividend returns in Germany during **WWII**. In this figure, we can observe that, during those years, the dividend return was between 0,30 percent and 5,59 percent. Remark that, there is not information about rent returns therefore we cannot compare it.

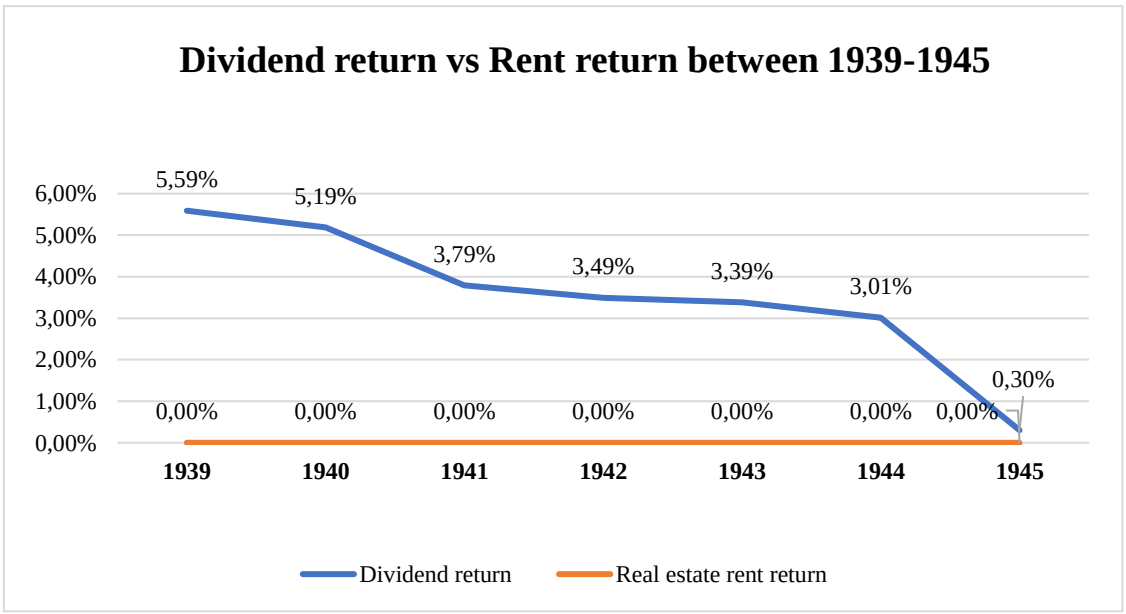

Figure 94: Dividend return vs Rent return between 1939-1945 in Germany

E) The 1973-1975 Recession

In **(Figure 95)**, we can observe the fluctuations of the value of equities and real estate in Germany during the **1973-1975 Recession**. In this figure, we can observe that the equities, during the first years of the recession, decreased a -20 percent, but in 1975 the stock market increased a 26 percent. However, during the recession the value appreciation of equities was 6,72 percent. Regarding the real estate market, the value of the properties in Germany did not decrease. In fact, in 3 years the value of properties increased a 15,87 percent. **Therefore, the real estate market performed better in terms of value appreciation.**

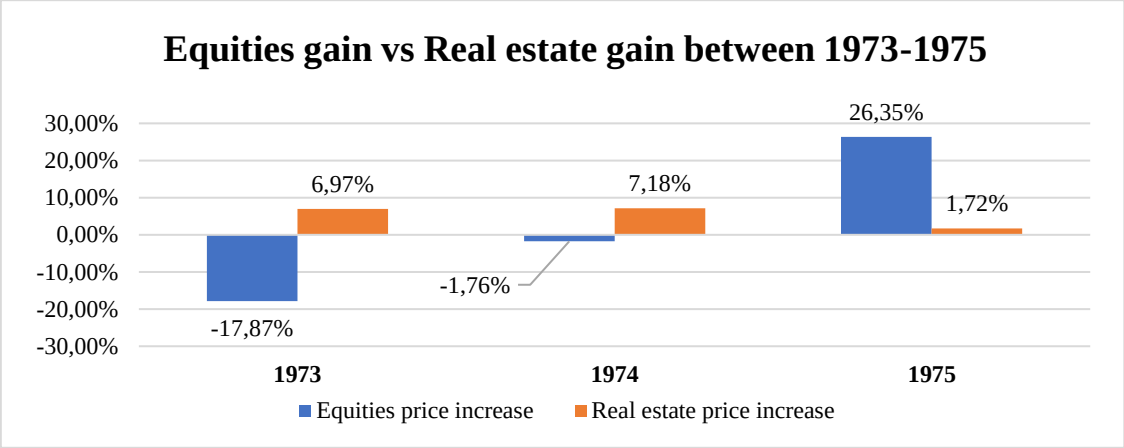

Figure 95: Equities gain vs Real estate gain between 1973-1975 in Germany

In **(Figure 96)**, we can observe the fluctuations of the dividend returns and rent returns in Germany during the **1973-1975 Recession**. In this figure, we can observe that, during those years, the dividend return was very similar to the real estate rent return. However, in 1974 and 1975 the dividend return was more or less 1 percent bigger than the rent return.

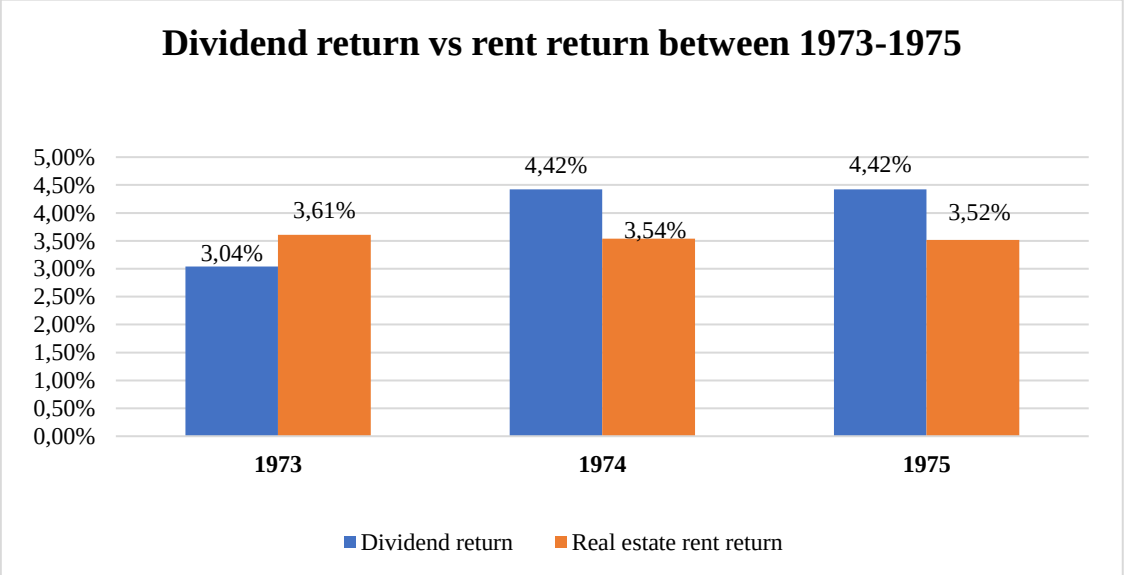

Figure 96: Dividend return vs rent return between 1973-1975 in Germany

F) The Dotcom Bubble

In **(Figure 97)**, we can observe the fluctuations of the value of equities and real estate in Germany during the **Dotcom Bubble**. In this figure, we can observe that the value of equities, during the last years of the 20th century, increased a lot due to the overvaluation of internet companies. However, the bubble by the beginning of 2000 it burst and the stock market crashed. Meanwhile, the real estate market was not affected by the **Dotcom Bubble** since the price of real estate properties did not decrease during those years, but the percentage of increase was smaller in comparison to the increase of the stock market. Moreover, during those years, the value appreciation of real estate properties was -4,46 percent and in the equities was 35,34 percent. **Therefore, during the Dotcom Bubble, equities performed better in terms of value appreciation.**

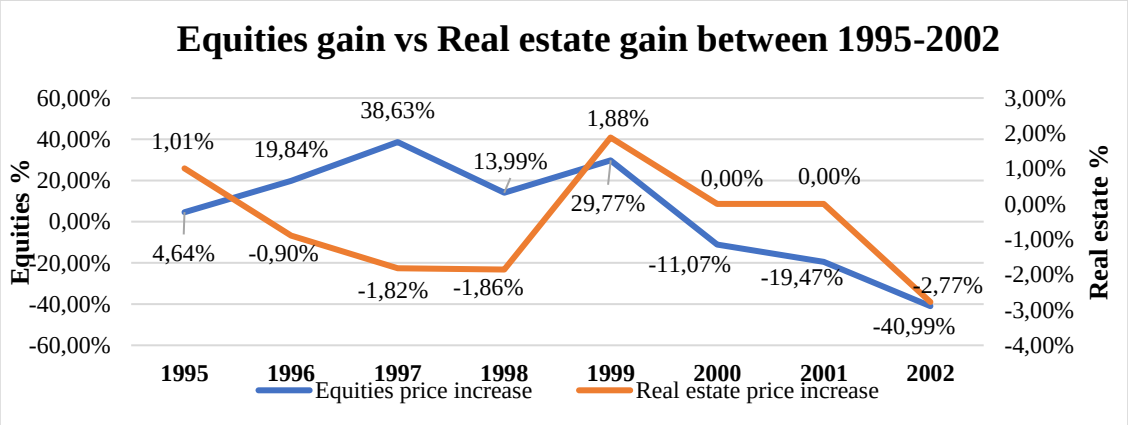

Figure 97: Equities gain vs Real estate gain between 1995-2002 in Germany

In **(Figure 98)**, we can observe the fluctuations of the dividend returns in Germany during the **Dotcom Bubble**. In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was more or less between 2 percent and 3 percent per year.

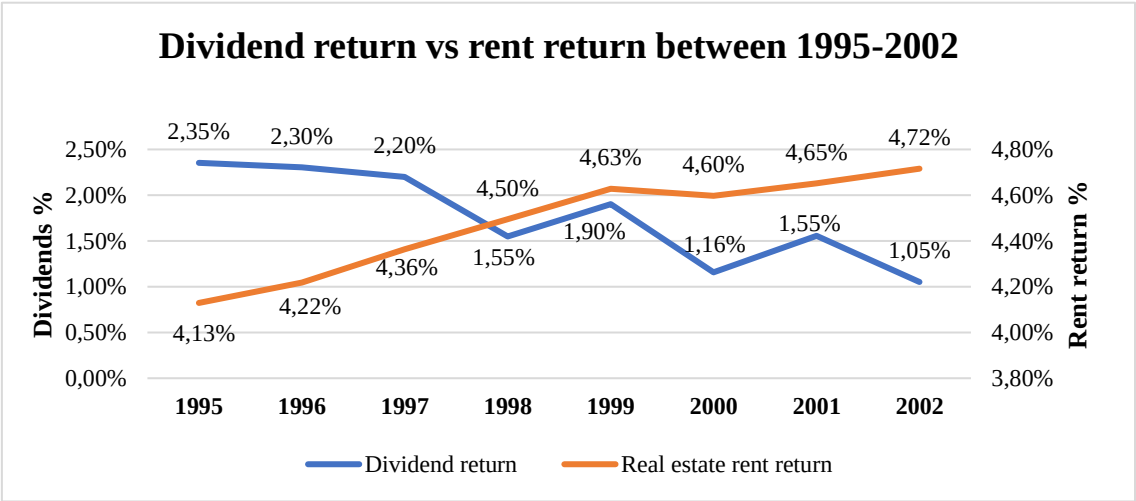

Figure 98: Dividend return vs rent return between 1995-2002 in Germany

G) Financial Recession

In **(Figure 99)**, we can observe the fluctuations of the value of equities and real estate in Germany during the **Financial Recession**. In this figure, we can observe that the equities, in 2008, decreased -44 percent. The stock market had a correction in 2009 of 20 percent, but then in 2011 decreased a -17 percent, due to the effects of the Financial Recession in Germany. With respect, the real estate market the value of the properties in Germany increased, but the value appreciation of real estate properties was smaller than the value appreciation of equities during those years. The value appreciation of equities was a 37,28 percent and the value appreciation of real estate was 19,68 percent. **Therefore, during the Financial Recession, the equities performed better in terms of value appreciation.**

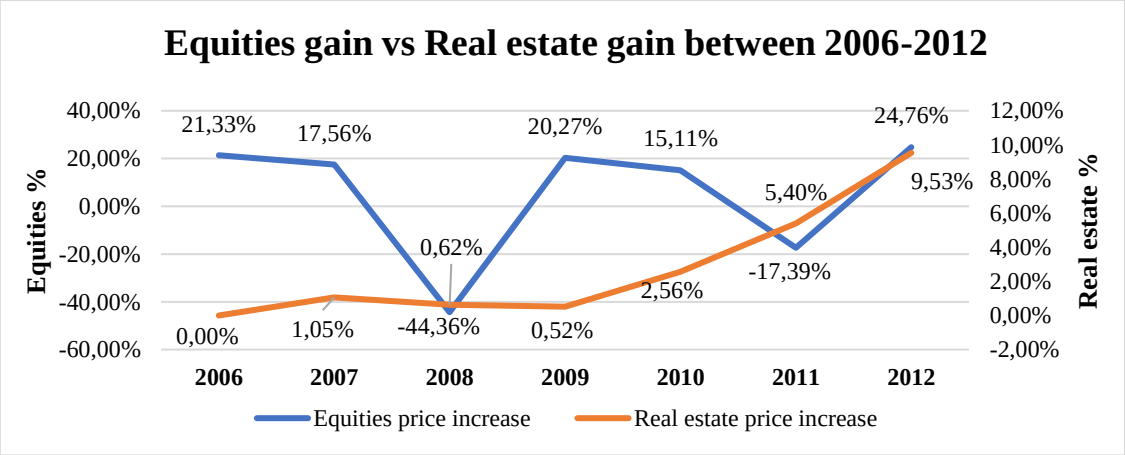

Figure 99: Equities gain vs Real estate gain between 2006-2012 in Germany

In **(Figure 100)**, we can observe the fluctuations of the dividend returns and rent returns in Germany during the **Financial Recession.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was more or less between 1 percent and 3 percent.

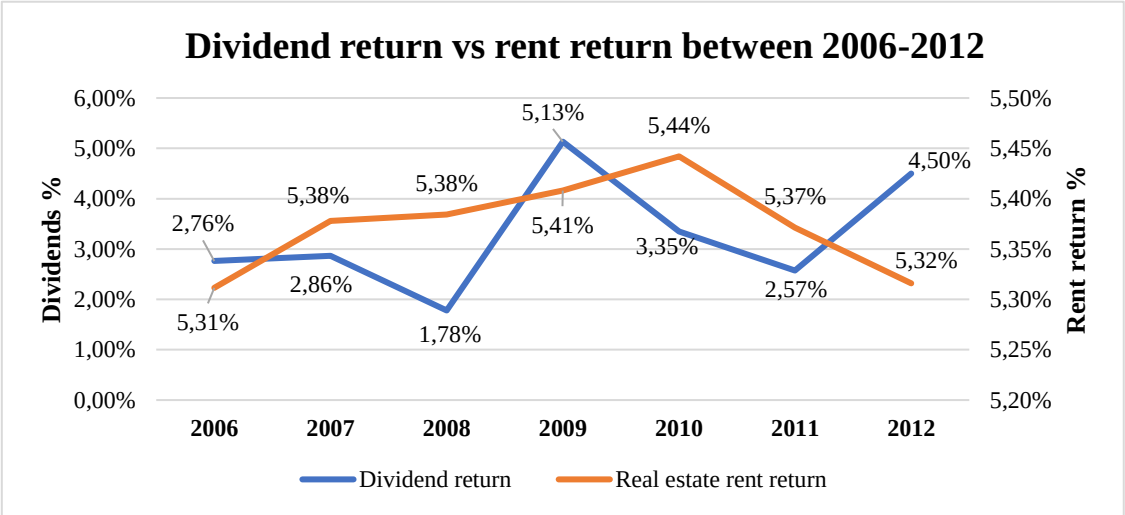

Figure 100: Dividend return vs rent return between 2006-2012 in Germany

H) Covid-19 Pandemic

In **(Figure 101)**, we can observe the fluctuations of the value of the equities and real estate in Germany during the **Covid Pandemic**. In this figure, we can observe that the equities in 2020 increased a 5 percent. Regarding the real estate market, the value of the properties increased a 7,75 percent. **Therefore, real estate, during the pandemic, performed better than the equities in terms of value appreciation.**

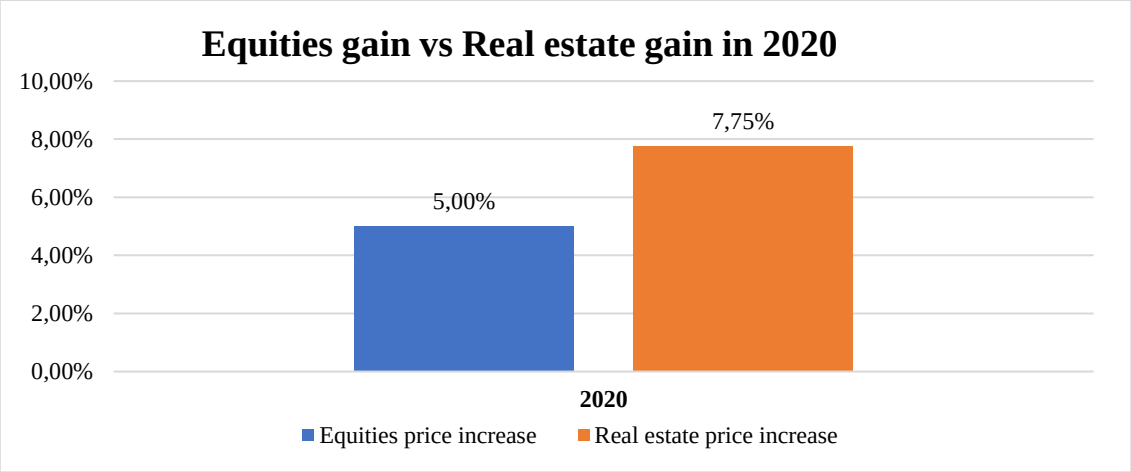

Figure 101: Equities gain vs Real estate gain in 2020 in Germany

In **(Figure 102),** we can observe the fluctuations of the dividend returns and rent returns in Germany during the **Covid Pandemic.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was 1 percent.

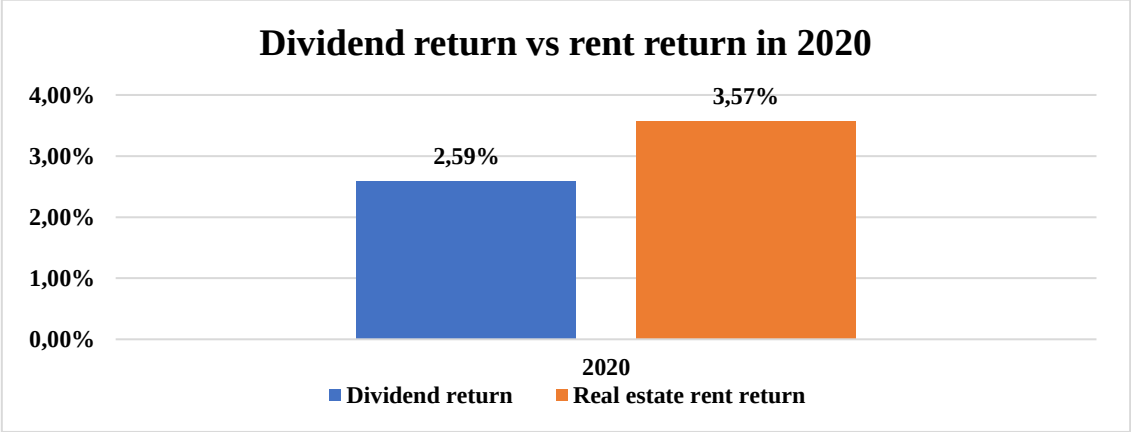

Figure 102: Dividend return vs rent return in 2020 in Germany

I) Historical trend

In **(Figure 103)**, we can observe the fluctuations of the value of equities and real estate in Germany between 1914 and 2020, but from 1939 until 1962 there is no information about the value appreciation of real estate properties. In this figure, we can clearly observe that the stock market and the real estate market have been volatile in the last century. Moreover, we can observe that in some period's equities performed better than real estate and also the opposite. For instance, the real estate performed better during the WWI, the Great Depression, the 1973-1975 recession and during the Covid Pandemic and the stock market performed better during the Roaring 20s, the Dotcom Bubble and the Financial Recession. Finally, if we analyse the value appreciation of both assets during this period of time, we see that the value appreciation of equities was 5600 percent and 400 percent in real estate properties, (**see Appendix 5**). **Therefore, equities performed better in terms of value appreciation.**

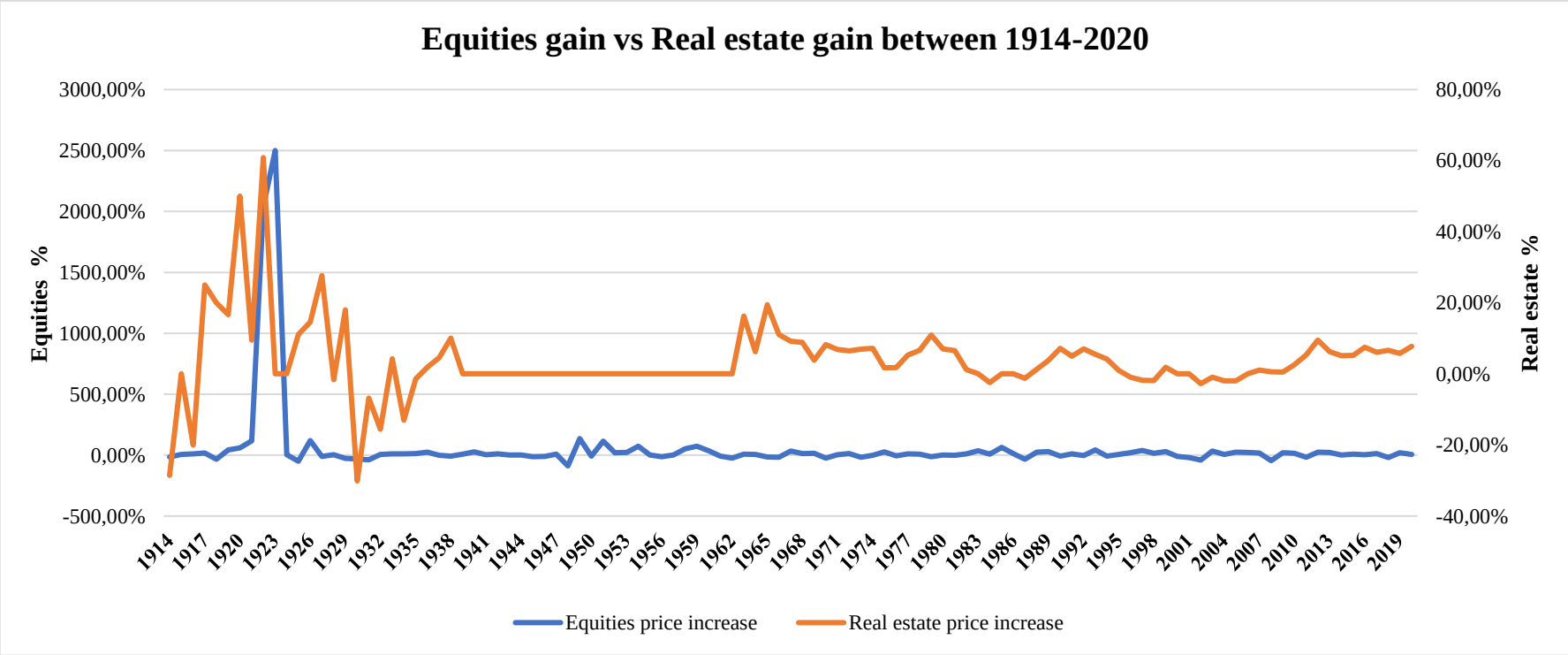

Figure 103: Equities gain vs Real estate gain between 1914-2020 in Germany

In **(Figure 104)**, we can observe the fluctuations of the dividend returns and rent returns in Germany between 1914 and 2020, but from 1915 until 1924 and from 1939 until 1962 there is no information about rent returns. In this figure, we can observe that, from 1925 until 1938, the rent return was between a 0 percent and 9 percent bigger than the dividend return. Another thing that we can observe is that from 1963 until 1982 the rent return and the dividend return were very similar, due to in some years the dividend return was bigger than the rent return and, in some years, smaller. Finally, from 1983 until 2020 the rent return was between a 0 percent and 3 percent bigger than the dividend return.

In conclusion, rent returns and dividend returns were very similar from 1963 till 1982. However, rent returns were bigger than dividend returns from 1925 until 1938 and 1983 until 2020. Moreover, in most of the recessions analysed previously, rent returns were bigger than dividend returns. Therefore, historically and during recessions, real estate properties have offered better returns than equities.

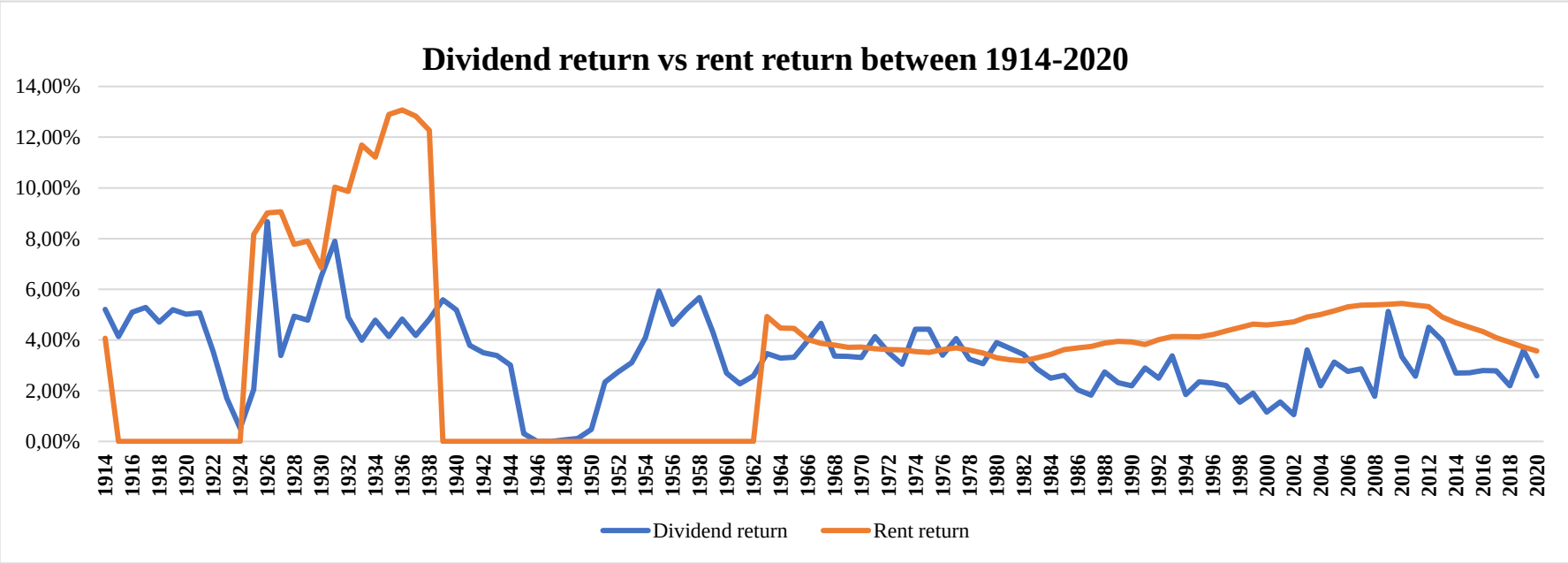

Figure 104: Dividend return vs rent return between 1914-2020 in Germany

5.6 Japan

A) First World War (1914-1918)

In **(Figure 105)**, we can observe the fluctuations of the value of equities and real estate in Japan during **WWI**. In this figure, we can observe that during the war the stock market decreased in 1914 a -9,75 percent and also in 1917 by a -17 percent. However, in 1915 and 1916 the stock market increased in a 24 percent and a 77 percent respectively. Regarding the value of real estate properties, we can observe that its value decreased a -16 percent in 1915 and a -22 percent in 1917. Despite that, the value of real estate properties increased a lot the rest of the years. Moreover, during those years, the value appreciation of real estate properties was 145,78 percent and the value appreciation of equities was 73,89 percent. **Therefore, real estate properties outperformed equities in terms of value appreciation.**

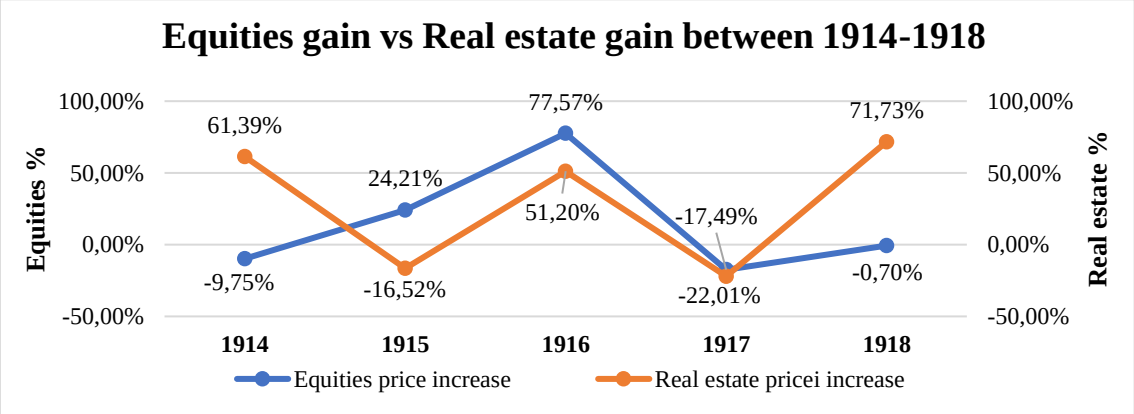

Figure 105: Equities gain vs Real estate gain between 1914-1918 in Japan

In **(Figure 106)**, we can observe the fluctuations of the dividend returns in Japan during **WWI**. In this figure, we can observe that, during those years, the dividend return was between 5 percent and 9 percent. Remark that, there is not information about rent returns therefore, we cannot compare it.

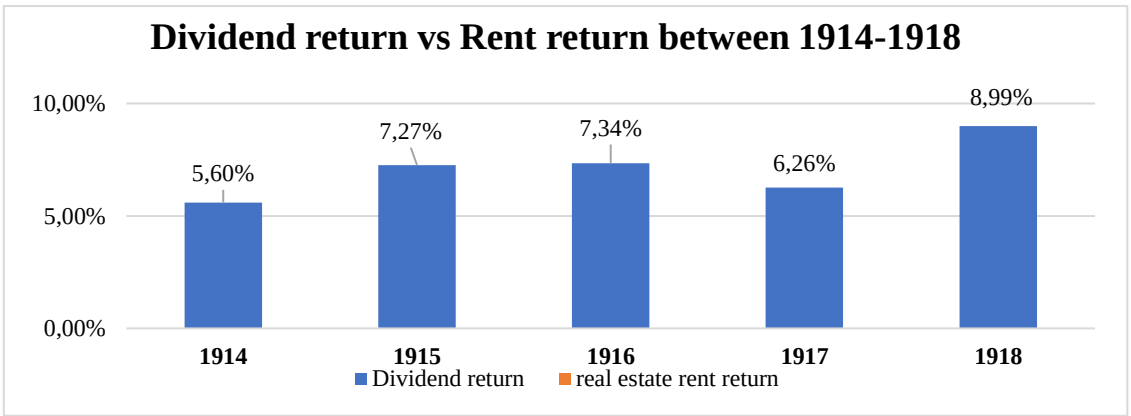

Figure 106: Dividend return vs Rent return between 1914-1918 in Japan

B) Roaring Twenties (1920-1929)

In **(Figure 107)**, we can observe the fluctuations of the value of equities and real estate in Japan during the **Roaring 20s.** In this figure, we can observe that the equities suffered a decrease in value during the roaring twenties due to in 1920, 1921 and 1922 the value of equities decreased a -17 percent a -20 percent and a -11 percent respectively. Furthermore, in 1927 and 1929 the value of equities decreased a -11.89 percent and -16 percent respectively. However, we can clearly observe that, during those years, the equities also suffered increases of value like for example in 1922 or 1924, but the loss of value was bigger than its increase. Regarding the real estate market, during those years, the value of real estate properties decreased in a fewer proportion. Moreover, during those years, the value appreciation of real estate properties was -8,2 percent and the value appreciation of equities was -62,35 percent. **Therefore, real estate properties outperformed equities in terms of value appreciation.**

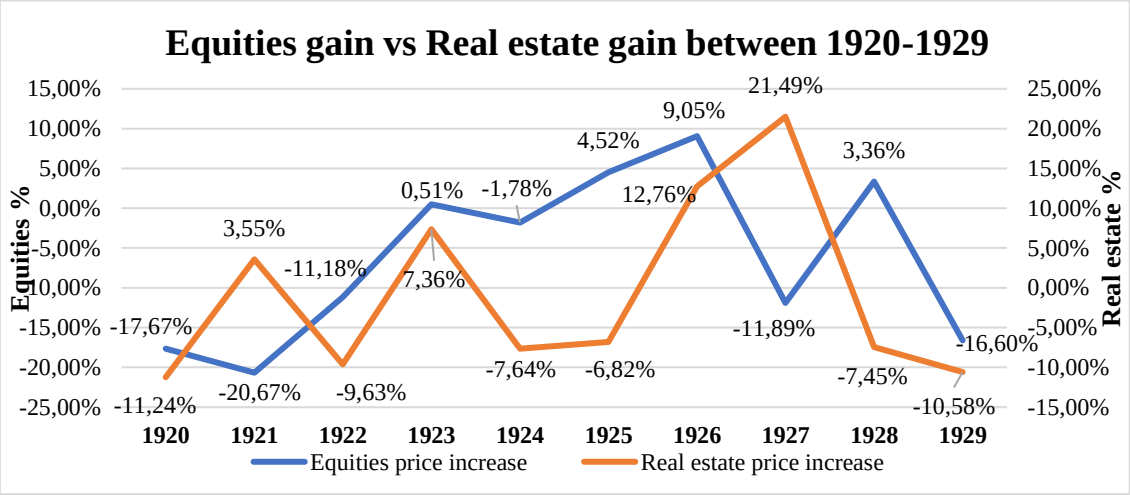

Figure 107: Equities gain vs Real estate gain between 1920-1929 in Japan

In **(Figure 108)**, we can observe the fluctuations of the dividend returns in Japan during the **Roaring 20s**. In this figure, we can observe that, during those years, the dividend return was between 4 percent and 7 percent. Remark that there is not information about rent returns therefore, we cannot compare it.

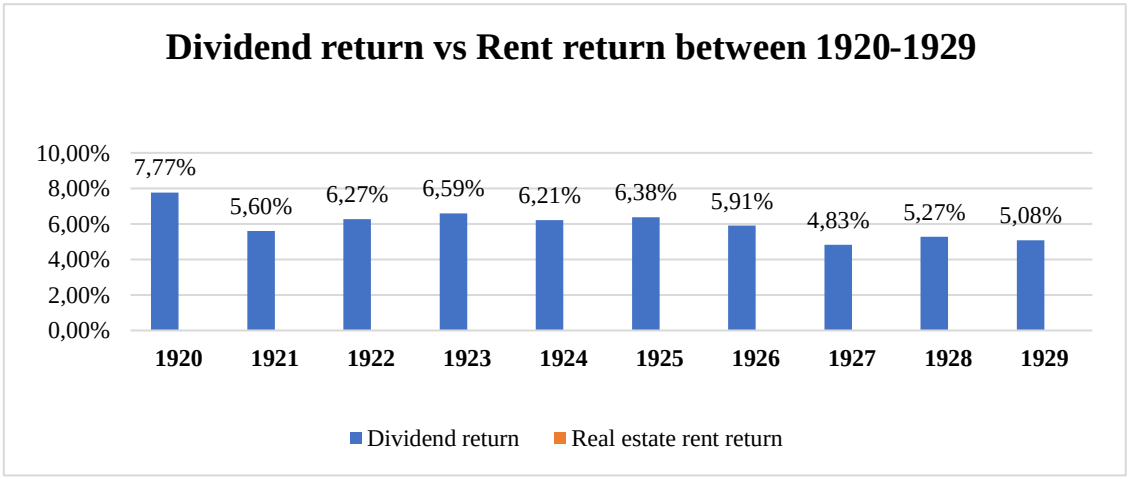

Figure 108: Dividend return vs Rent return between 1920-1929 in Japan

C) The Great Depression (1929-1939)

In **(Figure 109)**, we can observe the fluctuations of the value of equities and real estate in Japan during the **Great Depression.** In this figure, we can observe that the equities had a bad performance during the first years of the recession, due to in 1929 and 1930 the value of equities decreased a -16 percent and a -32 percent respectively. However, from 1931 until 1937 the value of equities increased a lot. Regarding the real estate market, we can clearly observe that had a bad performance, due to in 1930 and 1931 the value of real estate properties decreased a -10 percent and a -15 percent respectively. Moreover, the following years the value of properties was not increasing a lot. However, during those years, the value appreciation of real estate properties was 0,29 percent and the value appreciation of equities was -4,58 percent. **Therefore, real estate properties outperformed equities in terms of value appreciation.**

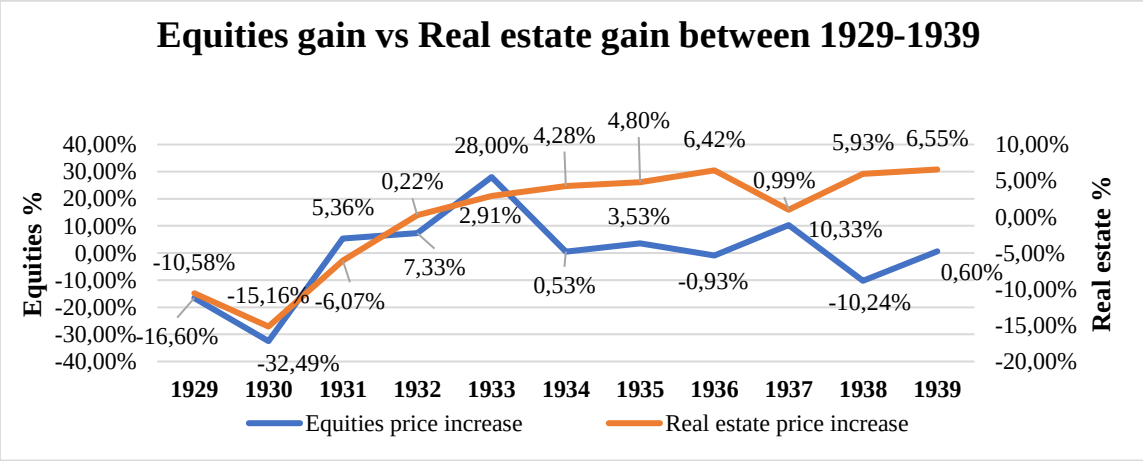

Figure 109: Equities gain vs Real estate gain between 1929-1939 in Japan

In **(Figure 110)**, we can observe the fluctuations of the dividend returns and rent returns Japan during the **Great Depression**. In this figure, we can observe that, during those years, the dividend return was smaller than the rent return. The difference between both returns was between 0,4 percent and 3 percent. Remark that we cannot compare the years of 1929 and 1930 due to there is not data available.

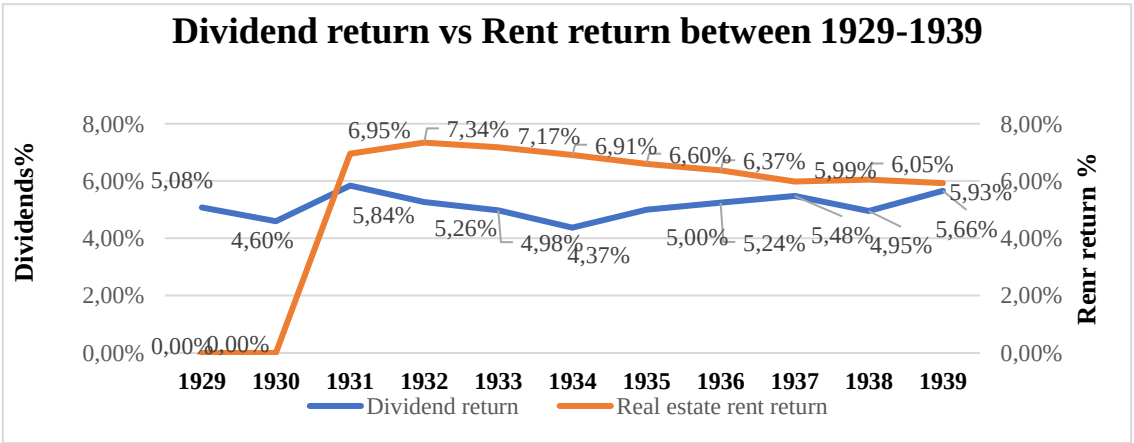

Figure 110: Dividend return vs Rent return between 1929-1939 in Japan

D) Second World War (1939-1945)

In **(Figure 111)**, we can observe the fluctuations of the value of equities and real estate properties during **WWII** in Japan. In this figure, we can observe that the value of equities increased all the years, except in 1941 where the value of equities decreased a -22 percent. With respect the real estate market, we can clearly observe that also had a good performance due to the value of real estate properties increased all years. Moreover, during those years, the value appreciation of real estate properties was 91.01 percent and the value appreciation of equities was 22.03 percent. **Therefore, real estate properties outperformed equities.**

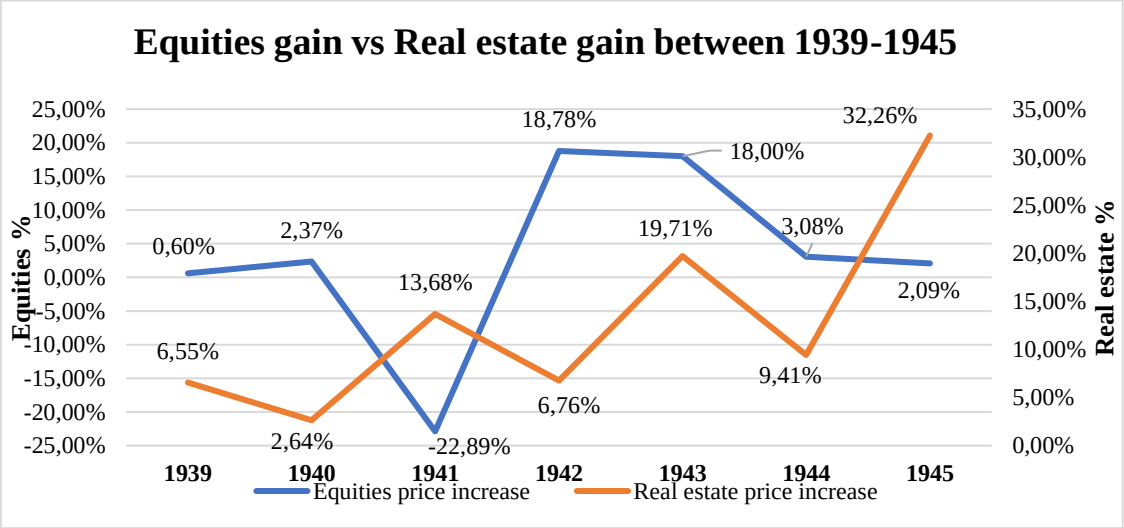

Figure 111: Equities gain vs Real estate gain between 1939-1945 in Japan

In **(Figure 112)**, we can observe the fluctuations of the dividend returns and rent returns in Japan during **WWII**. In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return in fact the difference between both returns was less than 1 percent. Remark that, there is not information about rent returns in 1945.

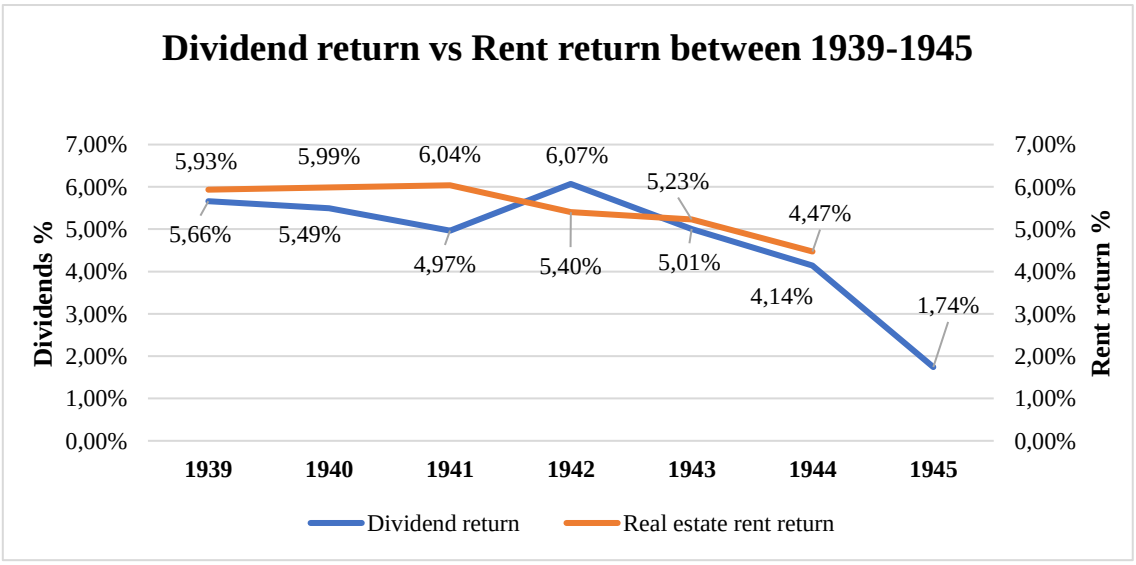

Figure 112: Dividend return vs Rent return between 1939-1945 in Japan

E) The 1973-1975 Recession

In **(Figure 113)**, we can observe the fluctuations of the value of equities and real estate properties during the **1973-1975 recession** in Japan. In this figure, we can observe that the value of equities increased all the years, except in 1974 where the value of equities decreased a -14 percent. With respect the real estate market we can clearly observe that had a good performance due to the value of real estate properties increased all years, except in 1975 that decreased a -4 percent. Moreover, the value appreciation of real estate properties was 50,88 percent and the value appreciation of equities was 14,27 percent. **Therefore, real estate properties outperformed equities in terms of value appreciation.**

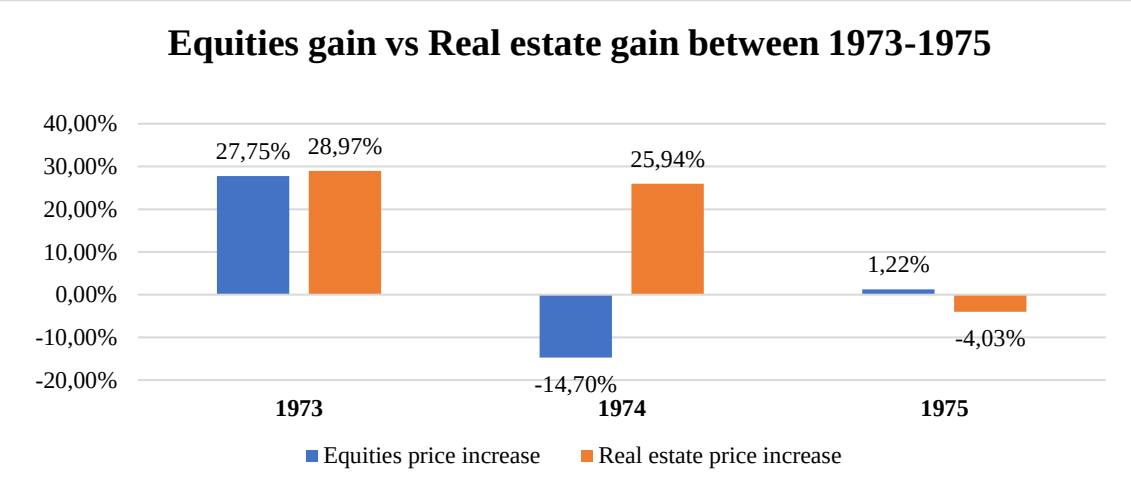

Figure 113: Equities gain vs Real estate gain between 1973-1975 in Japan

In **(Figure 114)**, we can observe the fluctuations of the dividend returns and rent returns in Japan during the **1973-1975 recession.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was between 1 percent and 2 percent per year.

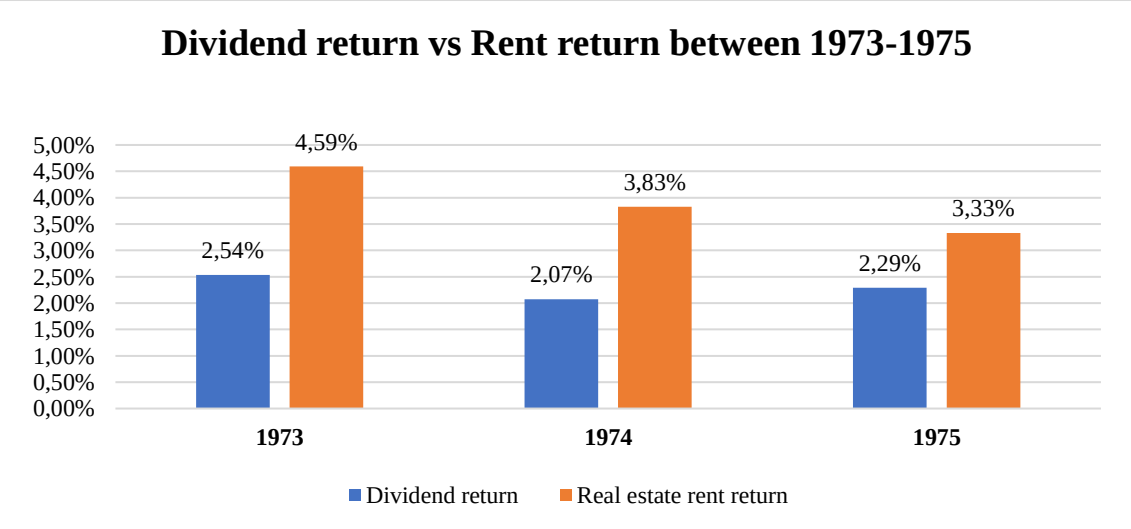

Figure 114: Dividend return vs Rent return between 1973-1975 in Japan

F) The Dotcom Bubble

In **(Figure 115)**, we can observe the fluctuations of the value of equities and real estate in Japan during the **Dotcom Bubble**. In this figure, we can observe that the value of equities, during the last years of the 20th century, decreased a lot. Furthermore, there was not an overvaluation of the stock market as we saw in other countries. Regarding the real estate market, we can see that the value properties did not increase during those years, but the percentage of decrease was smaller in comparison to the decrease of the stock market. Moreover, during those years, the value appreciation of real estate properties was -21 percent and the value appreciation of equities was -37,93 percent. **Therefore, real estate performed better than equities in terms of value appreciation.**

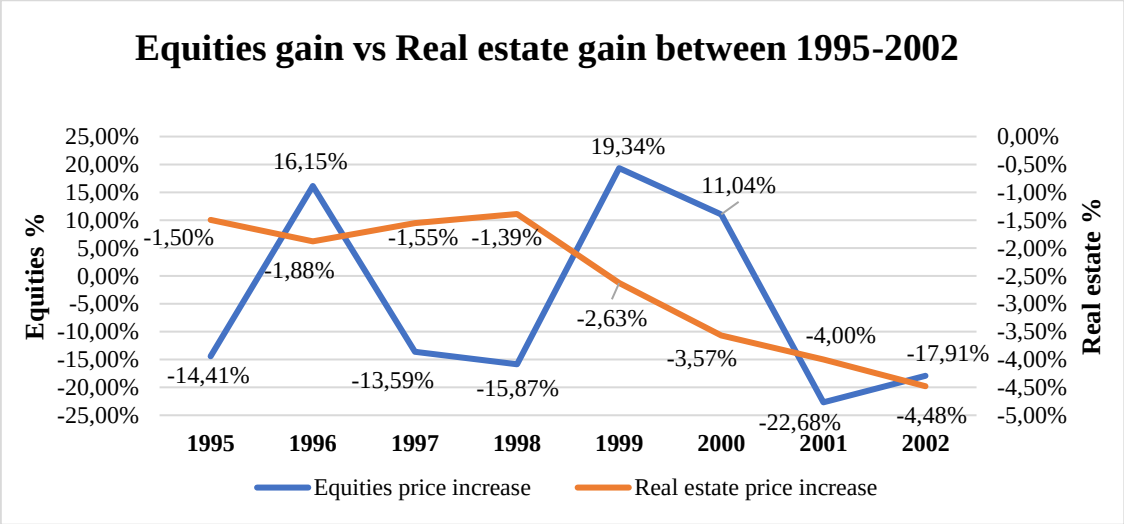

Figure 115: Equities gain vs Real estate gain between 1995-2002 in Japan

In **(Figure 116)**, we can observe the fluctuations of the dividend returns and rent returns in Japan during the **Dotcom Bubble.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was between 2 percent and 3 percent per year.

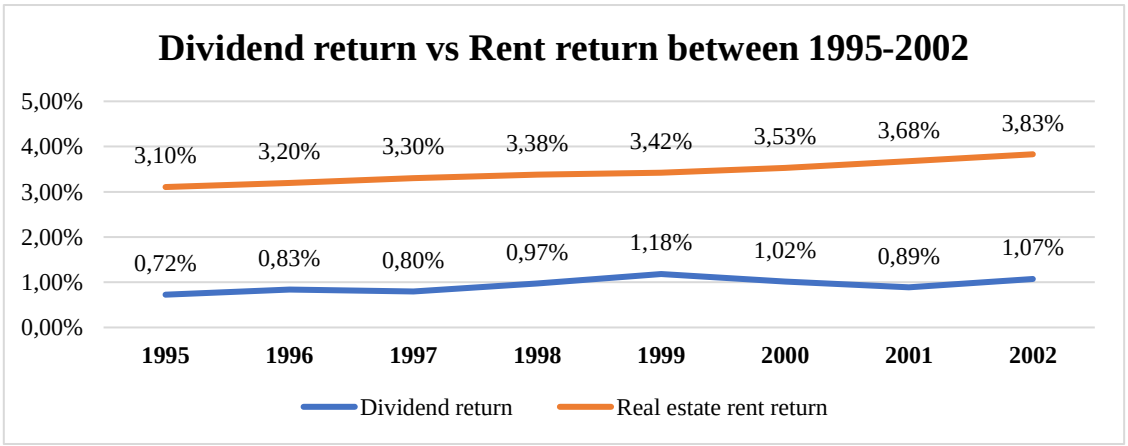

Figure 116: Dividend return vs Rent return between 1995-2002 in Japan

G) The Financial Recession

In **(Figure 117)**, we can observe the fluctuations of the value of equities and real estate in Japan during the **Financial Recession.** In this figure, we can observe that the equities, in 2008, decreased -28 percent and in 2009 decreased a -26 percent. Furthermore, the rest of the years the value of equities continued decreasing. With respect, the real estate market the value of the properties in Japan decreased but the value depreciation of real estate properties was smaller than the value depreciation of equities during those years. In fact, during those years, the value appreciation of real estate properties was -19,64 percent and the value appreciation of equities was -39,40 percent. **Therefore, real estate properties performed better than equities in terms of value appreciation.**

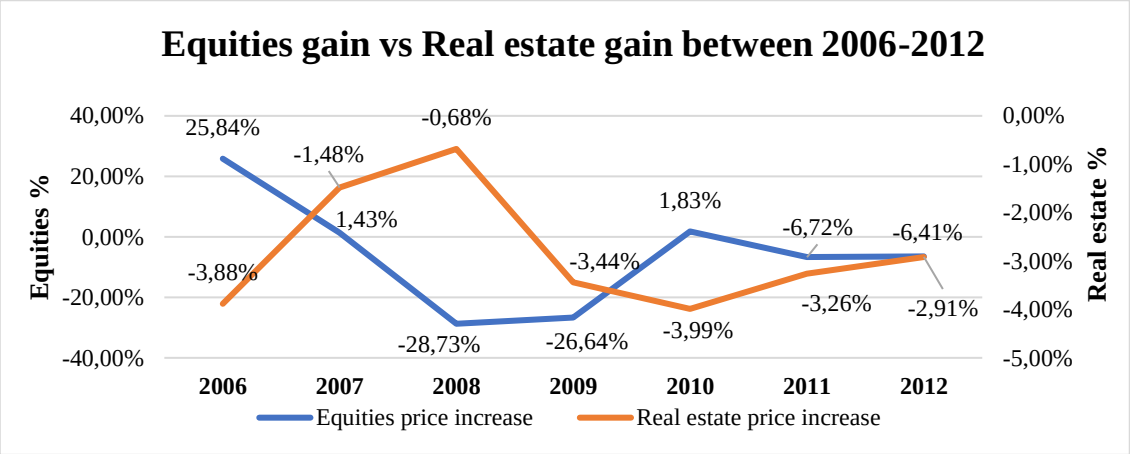

Figure 117: Equities gain vs Real estate gain between 2006-2012 in Japan

In **(Figure 118)**, we can observe the fluctuations of the dividend returns and rent returns in Japan during the **Financial Recession.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was between 2 percent and 5 percent per year.

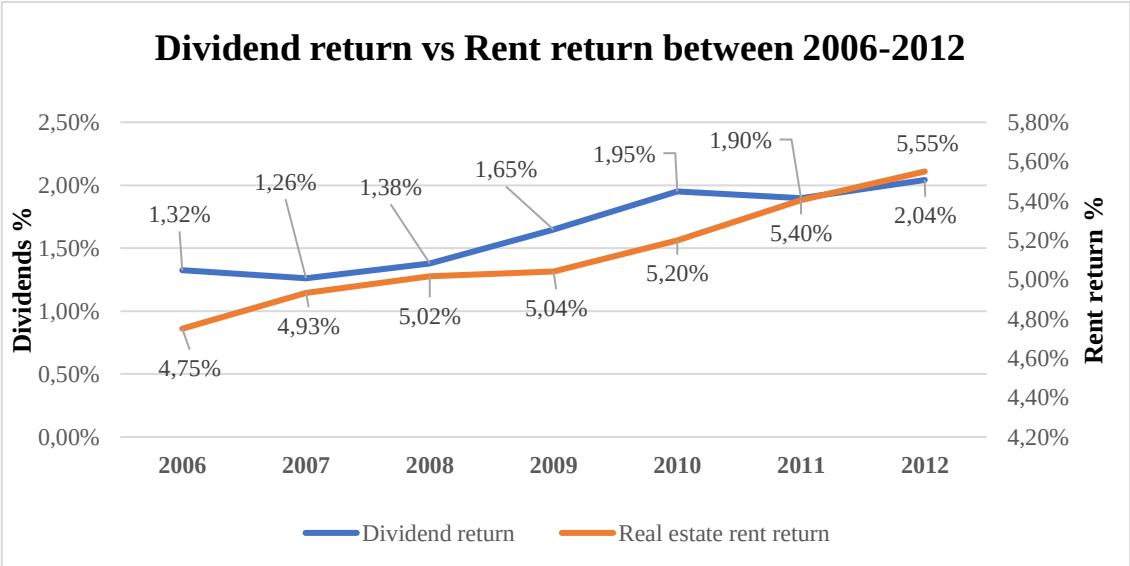

Figure 118: Dividend return vs Rent return between 2006-2012 in Japan

H) Covid-19 Pandemic

In **(Figure 119)**, we can observe the fluctuations of the value of the equities and real estate in Japan during the **Covid Pandemic**. In this figure, we can observe that the equities in 2020 increased a 5 percent. Regarding the real estate market, the value of the properties increased a 0,09 percent. **Therefore, equities, during the pandemic, performed better than real estate.**

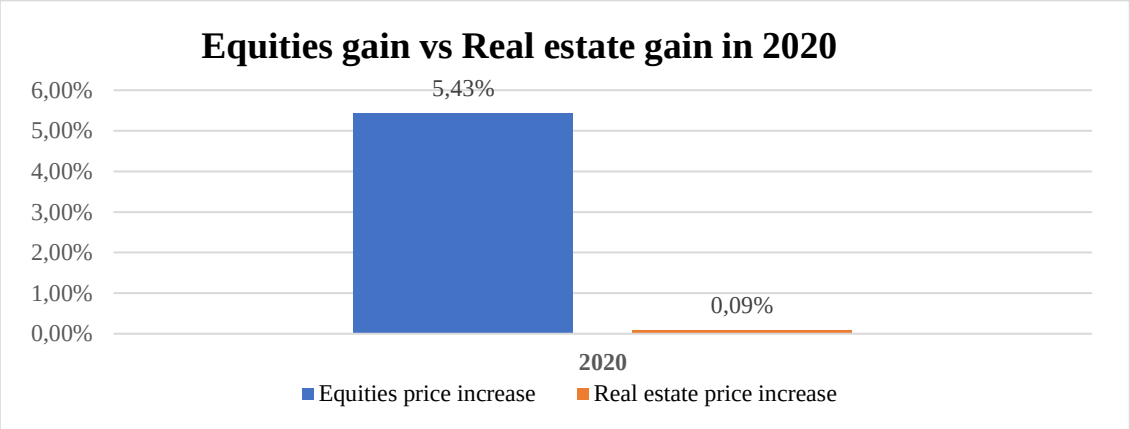

Figure 119: Equities gain vs Real estate gain in 2020 in Japan

In **(Figure 120)**, we can observe the fluctuations of the dividend returns and rent returns in Japan during the **Covid Pandemic.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was 2 percent.

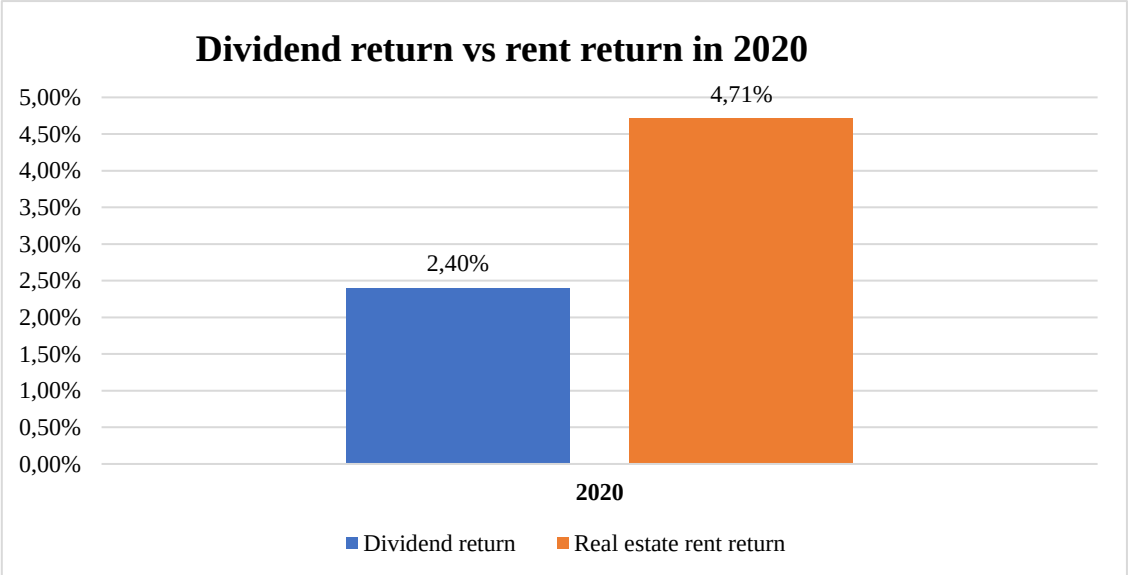

Figure 120: Dividend return vs rent return in 2020 in Japan

I) Historical trend

In **(Figure 121)**, we can observe the fluctuations of the value of equities and real estate in Japan between 1914 and 2020. In this figure, we can clearly observe that the stock market has been always more volatile than the real estate market. Moreover, we can observe that in some period's equities performed better than real estate and also the opposite. For instance, the real estate performed better during the WWI, the Great Depression, WWII, the 1973-1975 recession, Dotcom Bubble and the Financial Recession. Meanwhile, the stock market performed better during the Roaring 20s and the Covid Pandemic. Finally, if we analyse the value appreciation of both assets during this period of time, we see that the value appreciation of equities was 857 percent and 1425 percent in real estate properties, (**see Appendix 6**). **Therefore, real estate properties performed better in terms of value appreciation.**

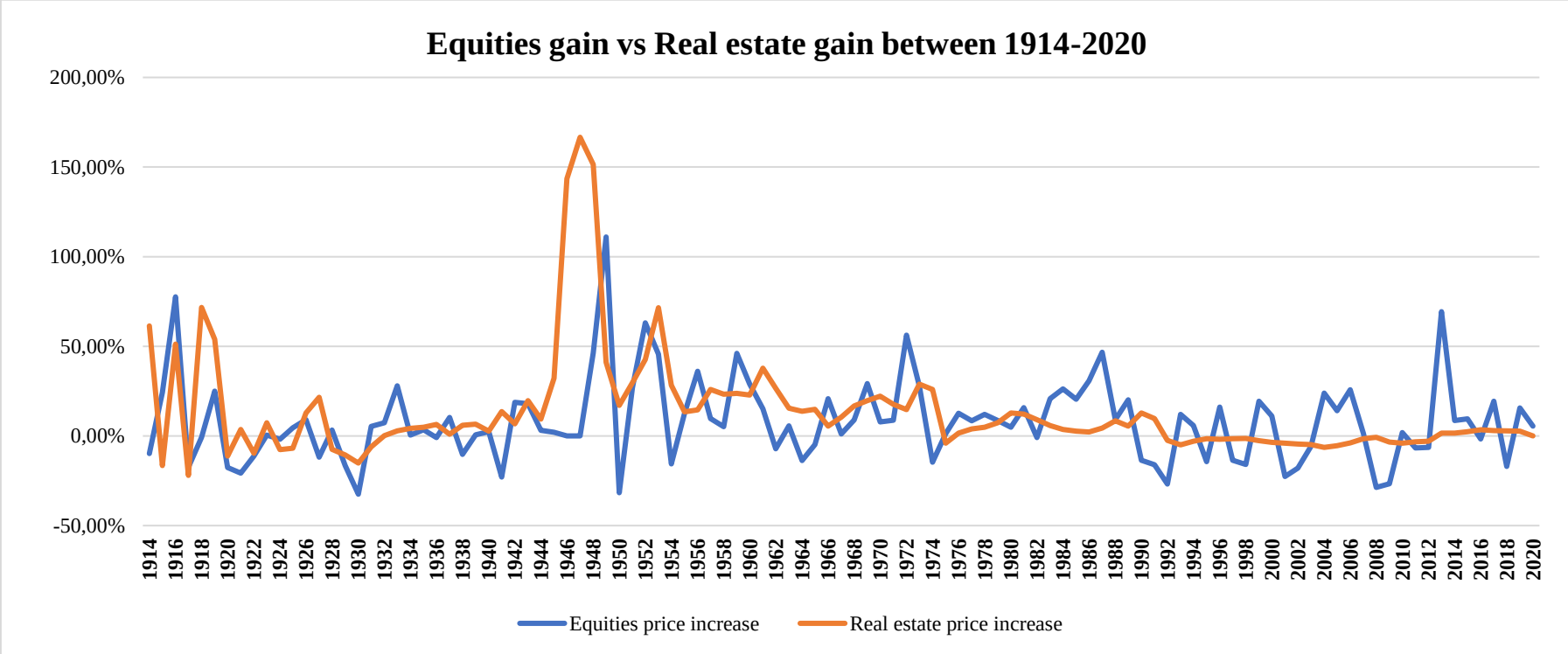

Figure 121: Equities gain vs Real estate gain between 1914-2020 in Japan

In **(Figure 122)**, we can observe the fluctuations of the dividend returns and rent returns in Japan between 1914 and 2020, but from 1914 until 1930 and from 1945 until 1959 there is no information about rent returns. In this figure, we can observe that, from 1930 until 1938, the rent return was a between 0 percent and 2 percent bigger than the dividend returns. Another thing that we can observe is that from 1960 until 2020 the rent return was between a 1 percent and 3 percent bigger than dividend returns.

In conclusion, rent returns outperformed dividend returns. Moreover, in the recessions analysed and historically, real estate properties have offered better returns than equities.

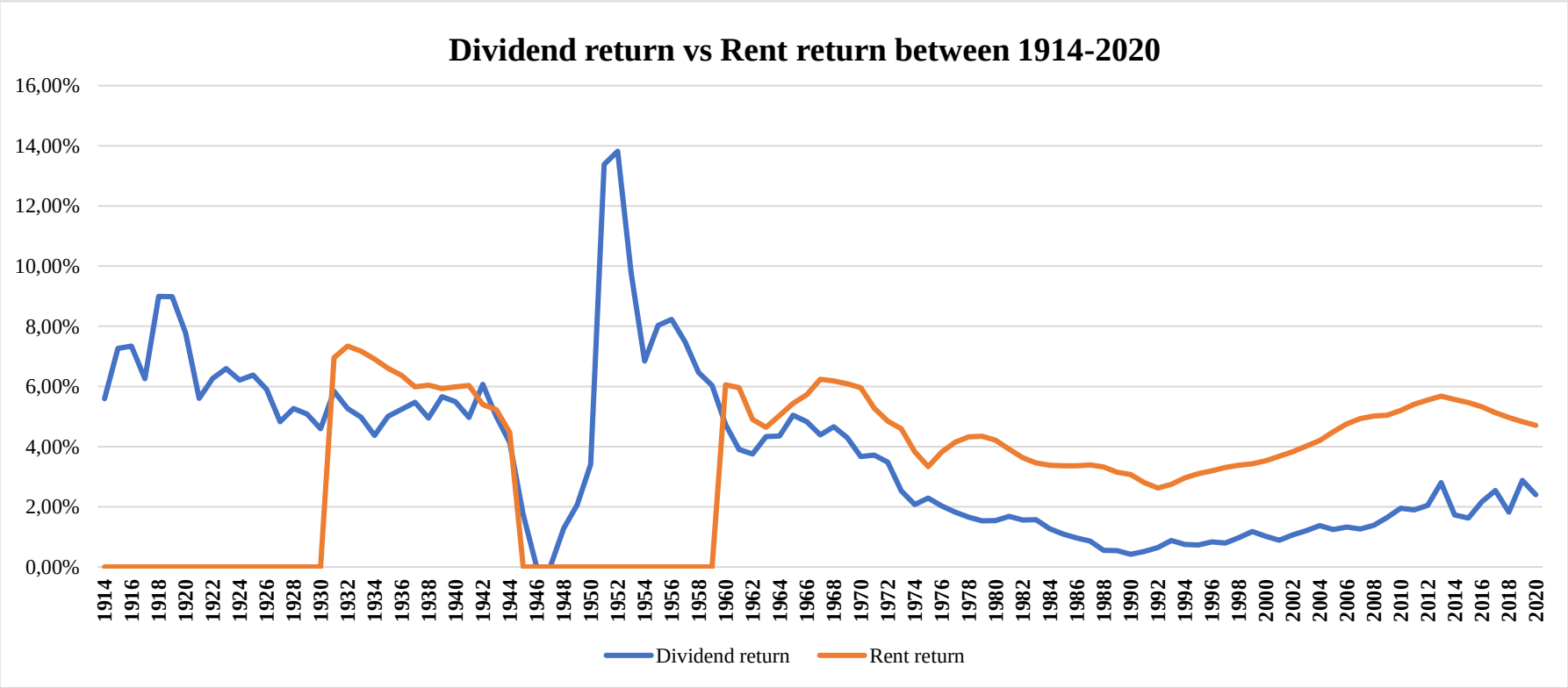

Figure 122: Dividend return vs Rent return between 1914-2020 in Japan

5.7 Italy

A) First World War (1914-1918)

In **(Figure 123)**, we can observe the fluctuations of the value of equities during **WWI** in Italy. In this figure, we can observe that the value of equities increased all the years, except in 1914 where the value of equities decreased a -20 percent. However, the value appreciation of equities during WWI was 37,7 percent. Remark that, we cannot compare it with the value of real estate properties due to there is not information available.

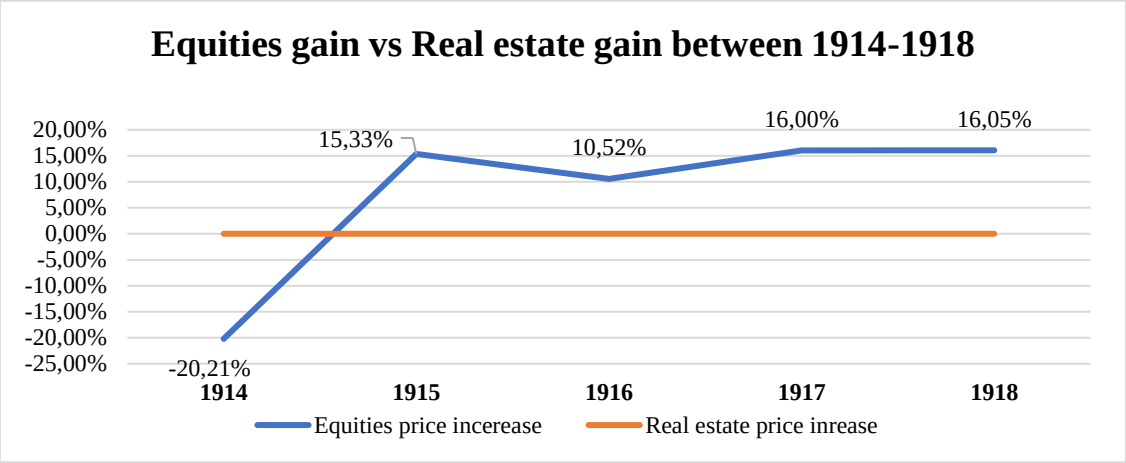

Figure 123: Equities gain vs Real estate gain between 1914-1918 in Italy

In **(Figure 124)**, we can observe the fluctuations of the dividend returns in Italy during **WWI**. In this figure, we can observe that, during those years, the dividend return was between 4 percent and 6 percent. Remark that there is not information about rent returns therefore we cannot compare it.

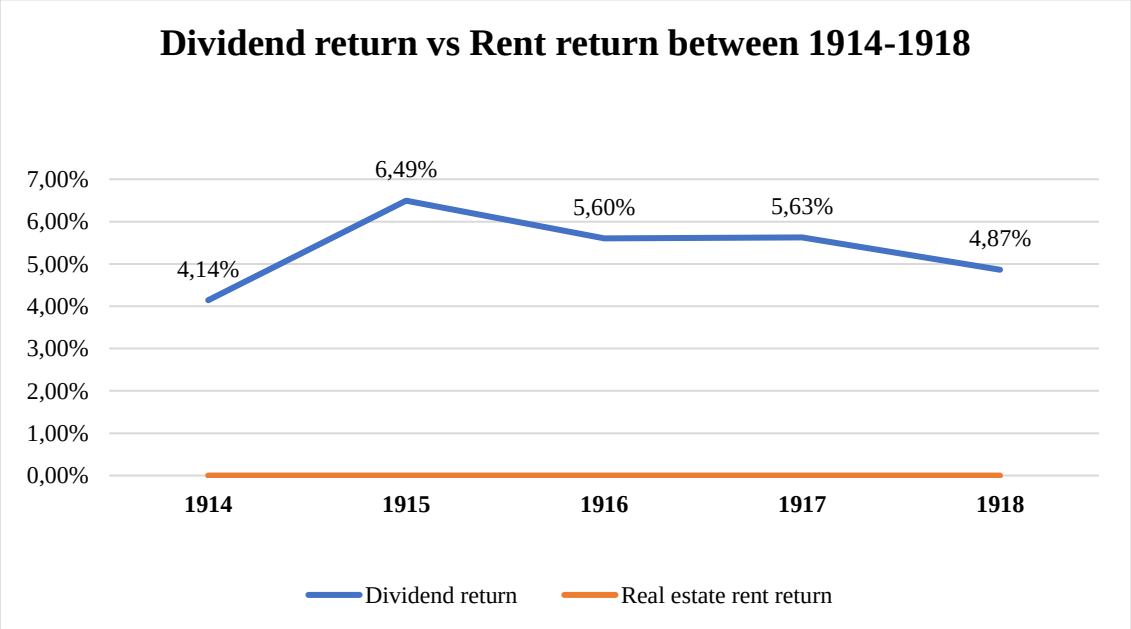

Figure 124: Dividend return vs Rent return between 1914-1918 in Italy

B) Roaring Twenties (1920-1929)

In **(Figure 125)**, we can observe the fluctuations of the value of equities during the **Roaring 20 s** in Italy. In this figure, we can observe that the equities had a huge volatility. This volatility can be seen for example in 1920 when the value of equities decreased a -22 percent and then in 1924 the value of equities increased a 72 percent. However, we can clearly observe that during the 20s the equities had an upward trend since during those years the value appreciation of equities was 66,66 percent. Remark that, we cannot compare this data with the value of real estate properties since this data is not available.

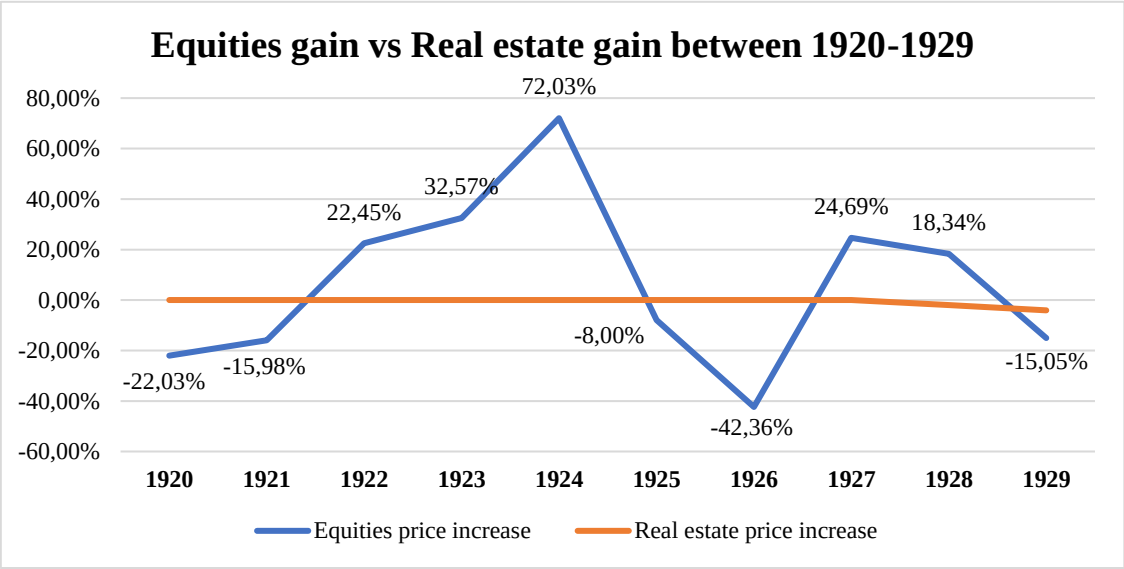

Figure 125: Equities gain vs Real estate gain between 1920-1929 in Italy

In **(Figure 126)**, we can observe the fluctuations of the dividend returns in Italy during the **Roaring 20s**. In this figure, we can observe that, during those years, the dividend return was between 3 percent and 8 percent. Remark there is not information about rent returns therefore we cannot compare it

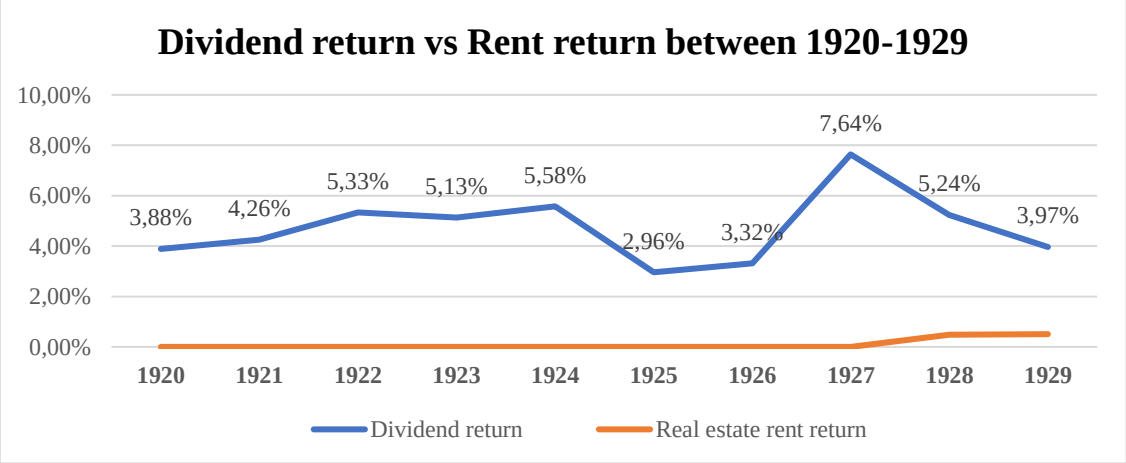

Figure 126: Dividend return vs Rent return between 1920-1929 in Italy

C) The Great Depression (1929-1939)

In **(Figure 127),** we can observe the fluctuations of the value of equities and real estate in Italy during **the Great Depression.** In this figure, we can observe that the equities had a bad performance during the first years of the recession, due to between 1929-1932 value of equities decreased more than a -70 percent. However, from 1932 until 1939 the value of equities increased a 117 percent. Regarding the real estate market, we can clearly observe that had a bad performance, due to the value of real estate properties decreased during those years a -31,6 percent. **Therefore, the equities outperformed real estate properties since real estate experienced a more substantial decline in value compared to equities**.

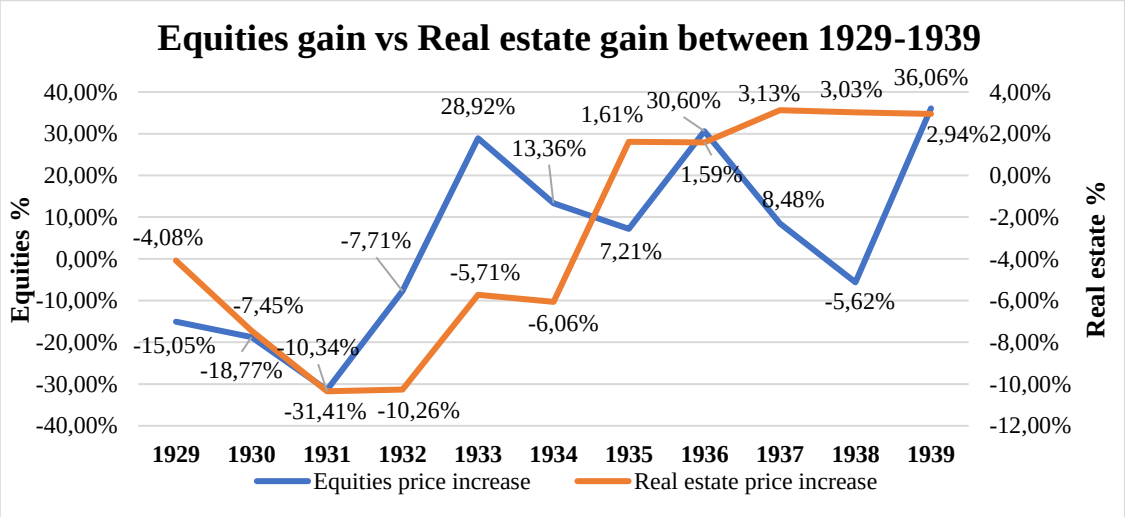

Figure 127: Equities gain vs Real estate gain between 1929-1939 in Italy

In **(Figure 128)**, we can observe the fluctuations of the dividend returns and rent returns in Italy during the **Great Depression.** In this figure, we can observe that, during those years, the dividend return was bigger than the real estate rent return. The difference between both returns was between 3 percent and 6 percent.

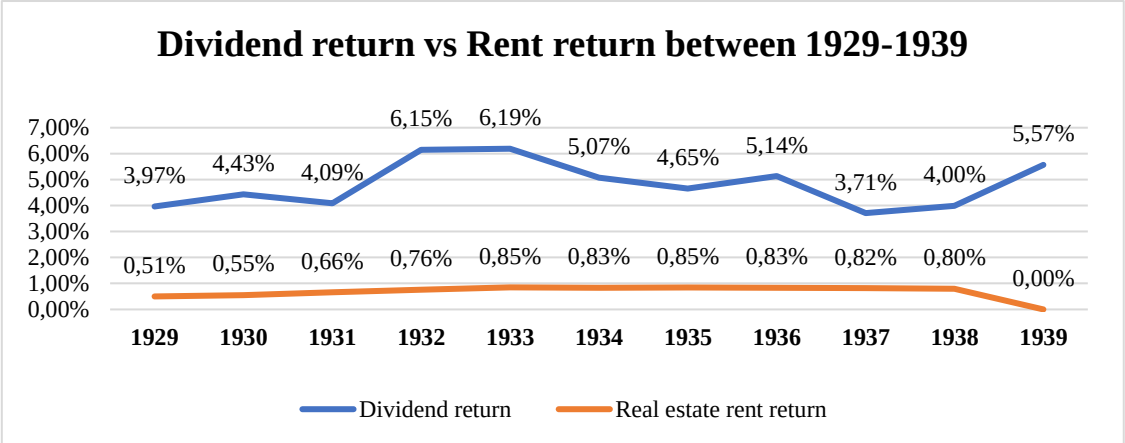

Figure 128: Dividend return vs Rent return between 1929-1939 in Italy

D) Second World War (1939-1945)

In **(Figure 129)**, we can observe the fluctuations of the value of equities and real estate properties during **WWII** in Italy. In this figure, we can observe that the value of equities increased all the years, except in 1945 where the value of equities decreased a -46 percent. With respect the real estate market we can clearly observe that also had a good performance due to the value of real estate properties increased all years. Moreover, during those years the value appreciation of real estate properties was 610 percent and the value appreciation of equities was 294 percent. **In conclusion, both assets performed well but the real estate performed better in terms of value appreciation.**

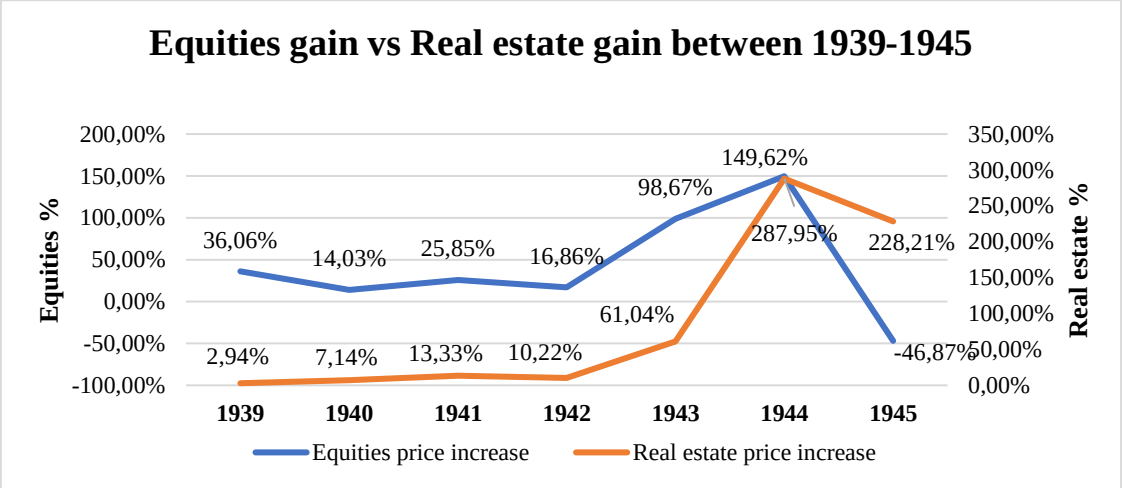

Figure 129: Equities gain vs Real estate gain between 1939-1945 in Italy

In **(Figure 130)**, we can observe the fluctuations of the dividend returns in Italy during **WWII.** In this figure, we can observe that, during those years, the dividend return was between 0,27 percent and 5,57 percent. Moreover, the dividend return had a downward trend. Remark that, there is not information about rent returns therefore, we cannot compare it.

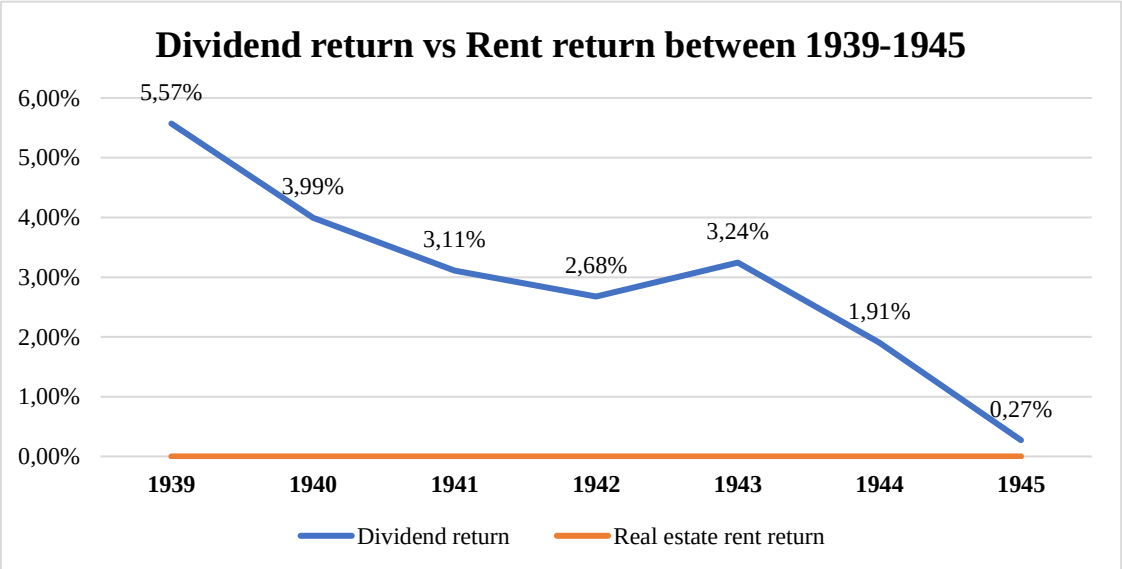

Figure 130: Dividend return vs Rent return between 1939-1945 in Italy

E) The 1973-1975 Recession

In **(Figure 131)**, we can observe the fluctuations of the value of equities and real estate in Italy during the **1973-1975 Recession**. In this figure, we can observe the equities during the recession decreased a -17,09 percent. However, the value of real estate the properties increased a lot. In fact, in 3 years the value of properties increased more than 100 percent. **Therefore, real estate properties performed better real estate properties offered better in terms of value appreciation.**

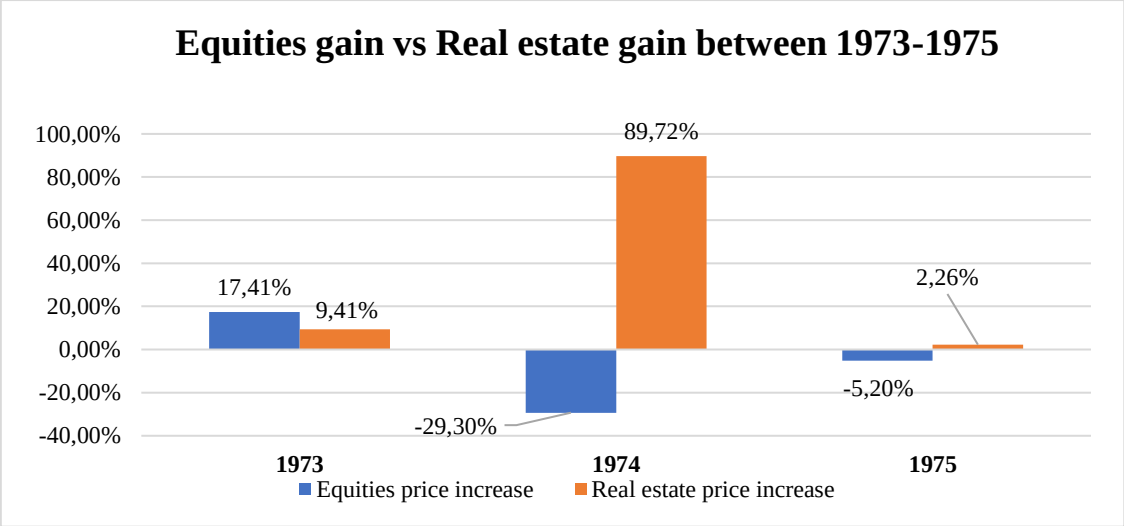

Figure 131: Equities Gain vs Real estate gain between 1973-1975 in Italy

In **(Figure 132)**, we can observe the fluctuations of the dividend returns and rent returns in Italy during the **1973-1975 Recession.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was between 3 and 4 percent in 1973 and 1974. However, the difference was smaller in 1975.

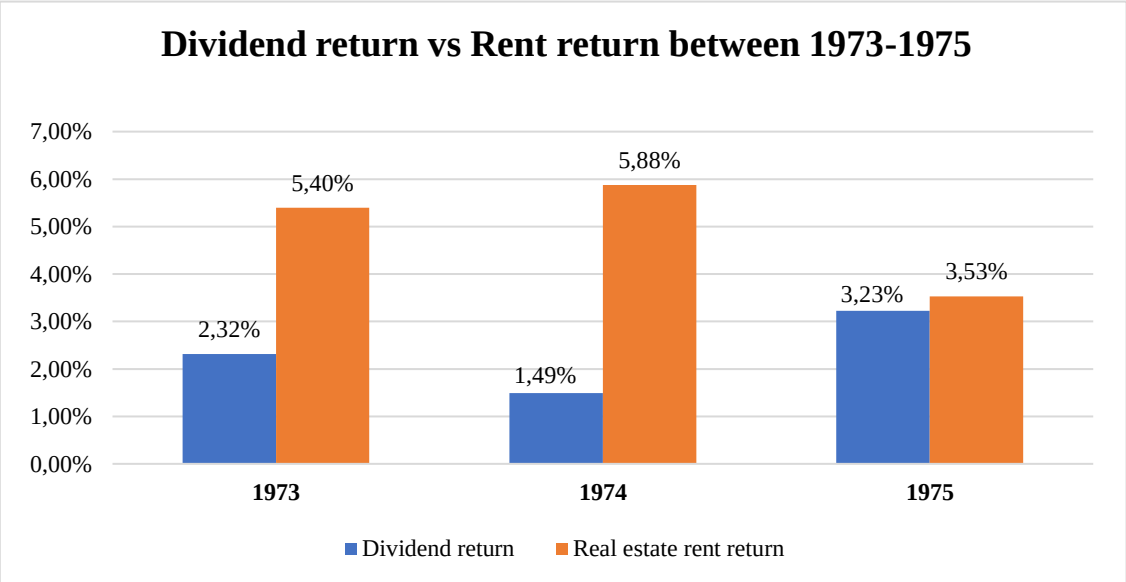

Figure 132: Dividend return vs Rent return between 1973-1975 in Italy

F) The Dotcom Bubble

In **(Figure 133)**, we can observe the fluctuations of the value of equities and real estate in Italy during the **Dotcom Bubble**. In this figure, we can observe that the value of equities, during the last years of the 20th century, increased a lot due to the overvaluation of internet companies. However, the bubble by the beginning of 2001 it burst and the stock market crashed. Meanwhile, the real estate market was not affected by the **Dotcom Bubble** since the price of real estate properties did not decrease during those years, but the percentage of increase was smaller in comparison to the increase of the stock market. Moreover, the value appreciation of real estate properties was 31,84 percent and the value appreciation of equities was 84,85 percent. In conclusion, we can see that the increase of the stock market was bigger than its fall. **Therefore, the stock market performed better than the real estate market in terms of value appreciation.**

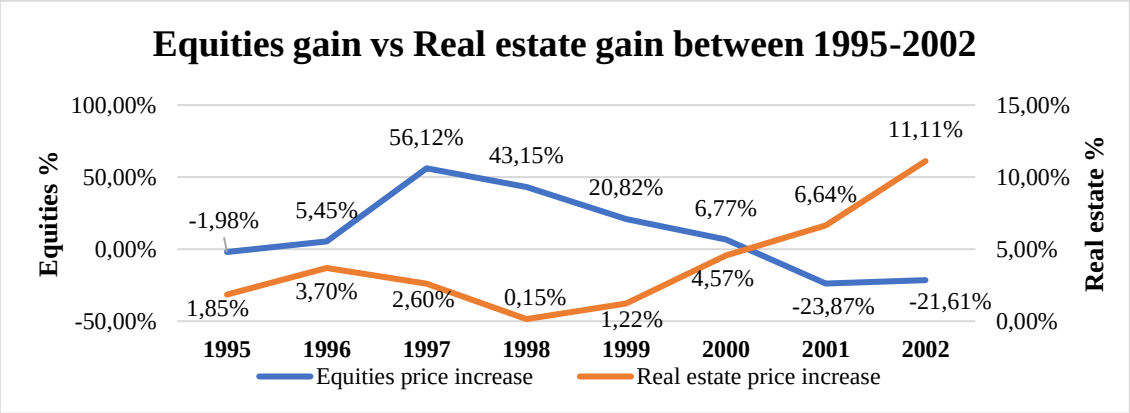

Figure 133: Equities gain vs Real estate gain between 1995-2002 in Italy

In **(Figure 134)**, we can observe the fluctuations of the dividend returns in Italy during the **Dotcom Bubble**. In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was more or less 2 percent, but in some years was smaller like for example in 1997 or 2002.

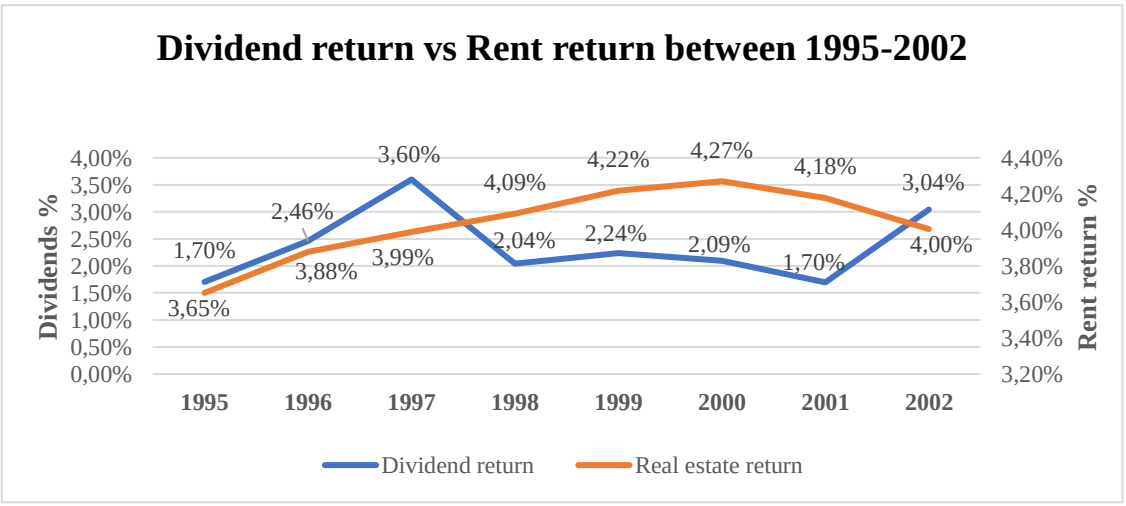

Figure 134: Dividend return vs Rent return between 1995-2002 in Italy

G) Financial Recession

In **(Figure 135),** we can observe the fluctuations of the value of equities and real estate in Italy during the **Financial Recession**. In this figure, we can observe that the equities, during the first years of the recession, decreased a -57 percent. The stock market had a correction in 2009, but then in 2010 decreased a -11 percent and continued decreasing the following years, due to the effects of the Financial Recession in Italy. Regarding, the real estate market the value of the properties in the Italy decreased but not as the same proportion as the equities did. Moreover, the value appreciation of real estate properties was 6,44 percent and the value appreciation of equities was -50,3 percent. **Therefore, during the Financial Recession, the real estate market performed better in terms of value appreciation.**

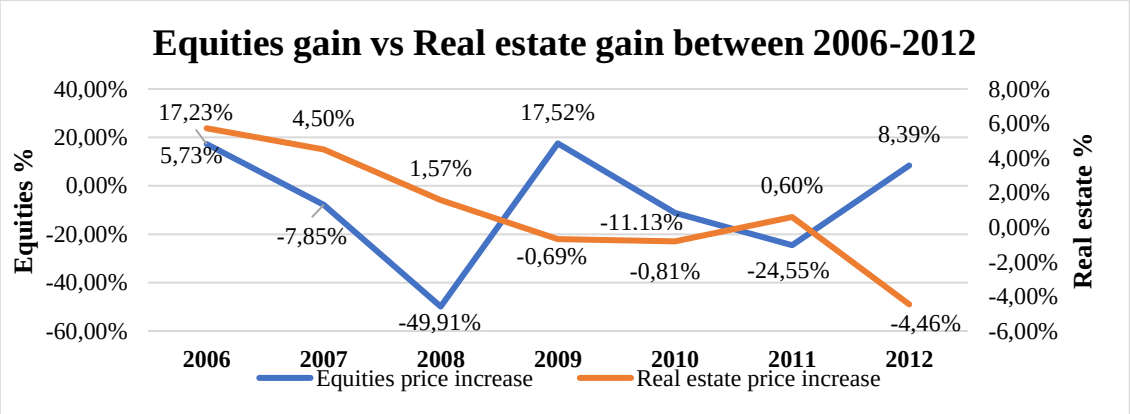

Figure 135: Equities gain vs Real estate gain between 2006-2012 in Italy

In **(Figure 136)**, we can observe the fluctuations of the dividend returns and rent returns in Italy during the **Financial Recession.** In this figure, we can observe that, during those years, the dividend return was bigger than the real estate rent return. Moreover, we have to say that the difference between both returns was near to 2 percent. However, in some years like for example 2008 the difference was smaller.

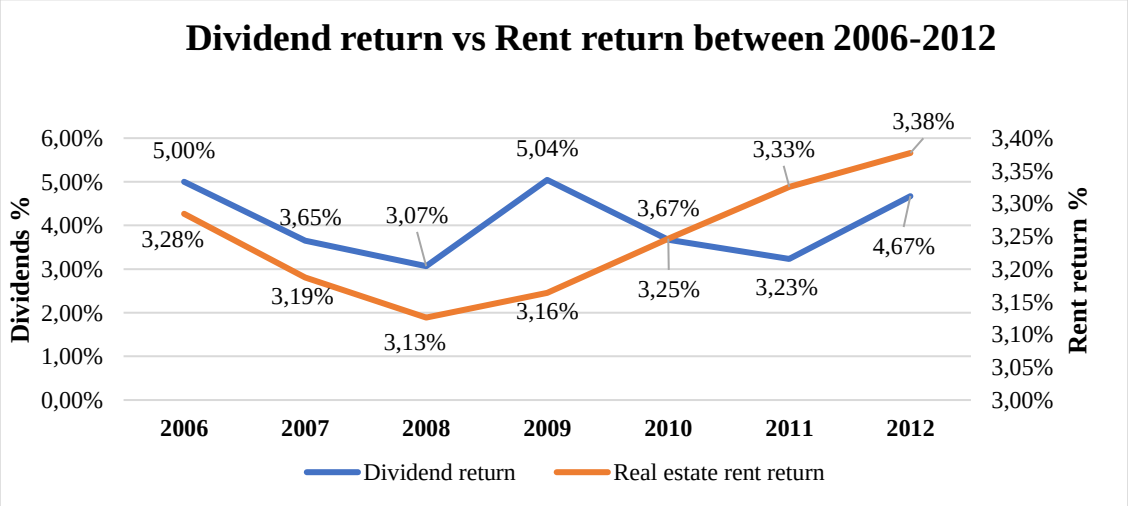

Figure 136: Dividend return vs Rent return between 2006-2012 in Italy

H) Covid-19 Pandemic

In **(Figure 137)**, we can observe the fluctuations of the value of the stocks and equities in Italy during the **Covid Pandemic**. In this figure, we can observe that the equities in 2020 decreased a -6 percent. Regarding the real estate market, the value of the properties increased a 2 percent. Therefore, the real estate, during the pandemic, performed better than the equities in terms of value appreciation.

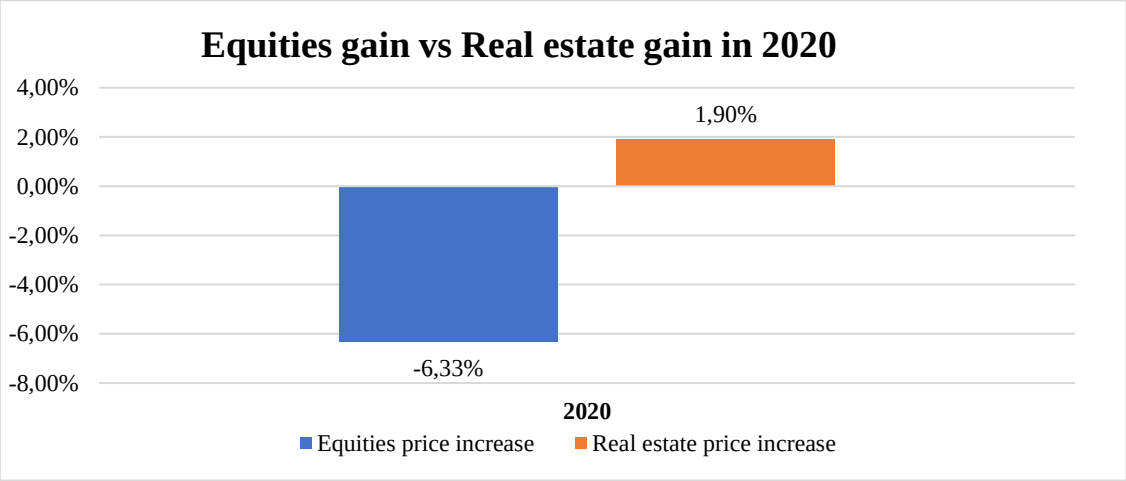

Figure 137: Equities gain vs Real estate gain in 2020 in Italy

In **(Figure 138)**, we can observe the fluctuations of the dividend returns and rent returns in Germany during the **Covid Pandemic.** In this figure, we can observe that, during those years, the dividend return was smaller than the real estate rent return. The difference between both returns was 2 percent.

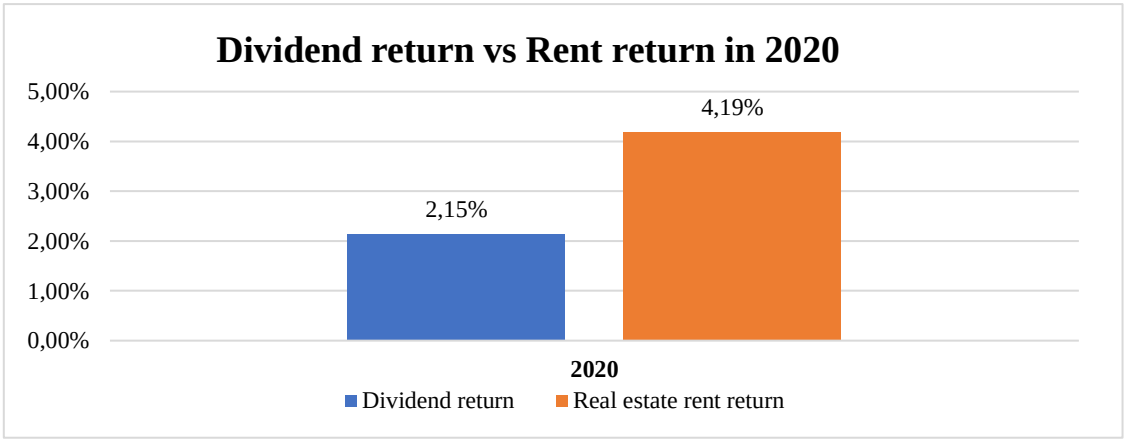

Figure 138: Dividend return vs Rent return in 2020 in Italy

I) Historical trend

In **(Figure 139)**, we can observe the fluctuations of the value of equities and real estate in Italy between 1914 and 2020, but from 1914 until 1927 there is no information about real estate prices. In this figure, we can clearly observe that the stock market has been always more volatile than the real estate market. Moreover, we can observe that in some period's equities performed better than real estate and also the opposite. For instance, the real estate performed better during WWII, the 1973-1975 recession, Financial Recession and the Covid Pandemic. Meanwhile, the stock market performed better during the Great Depression and the Dotcom Bubble. Finally, if we analyse the value appreciation of both assets during this period of time, we see that the value appreciation of equities was 1140 percent and 1201 percent in real estate properties, (**see Appendix 7**). **Therefore, real estate properties performed better in terms of value appreciation.**

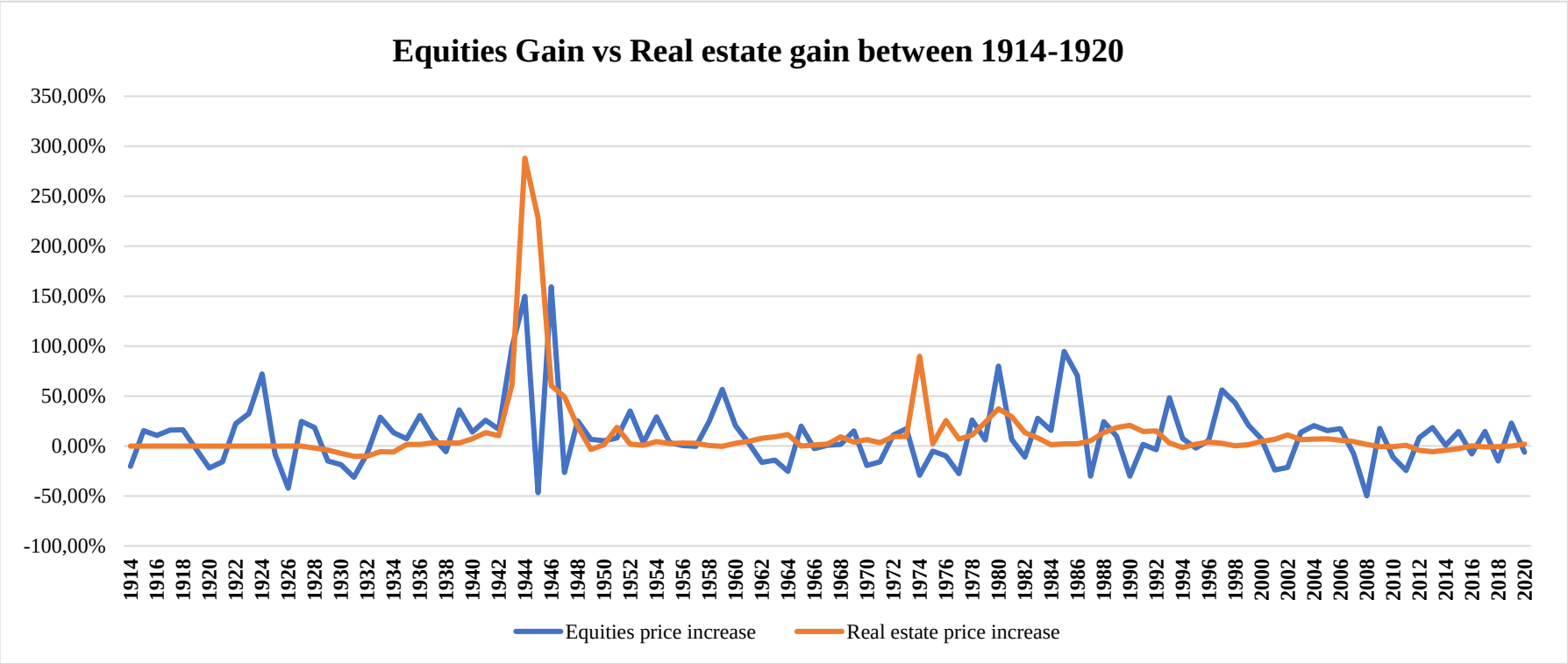

Figure 139: Equities Gain vs Real estate gain between 1914-1920 in Italy

In **(Figure 140)**, we can observe the fluctuations of the dividend returns and rent returns in Italy between 1914 and 2020, but from 1914 until 1927 and from 1939 until 1945 there is no information about rent returns. In this figure, we can observe that, from 1958 until 1978, the rent return was a between 0 percent and 4 percent bigger than the dividend returns. Moreover, we can observe that from 1986 until 2003 and from 2014 until 2019 the rent return was between a 1 percent and 3 percent bigger than dividend returns. Regarding dividend returns, we can observe that from 1928-1938, from 1947-1958, from 1977 till 1986 and from 2003 till 2013 its return was between a 0 percent and 4 percent bigger than rent returns

In conclusion, in some years equities offered better returns than real estate and in some years was the opposite. Moreover, in most of the recessions analysed previously real estate offered better returns than equities. But historically and during recessions, real estate properties have offered better returns than equities in Italy

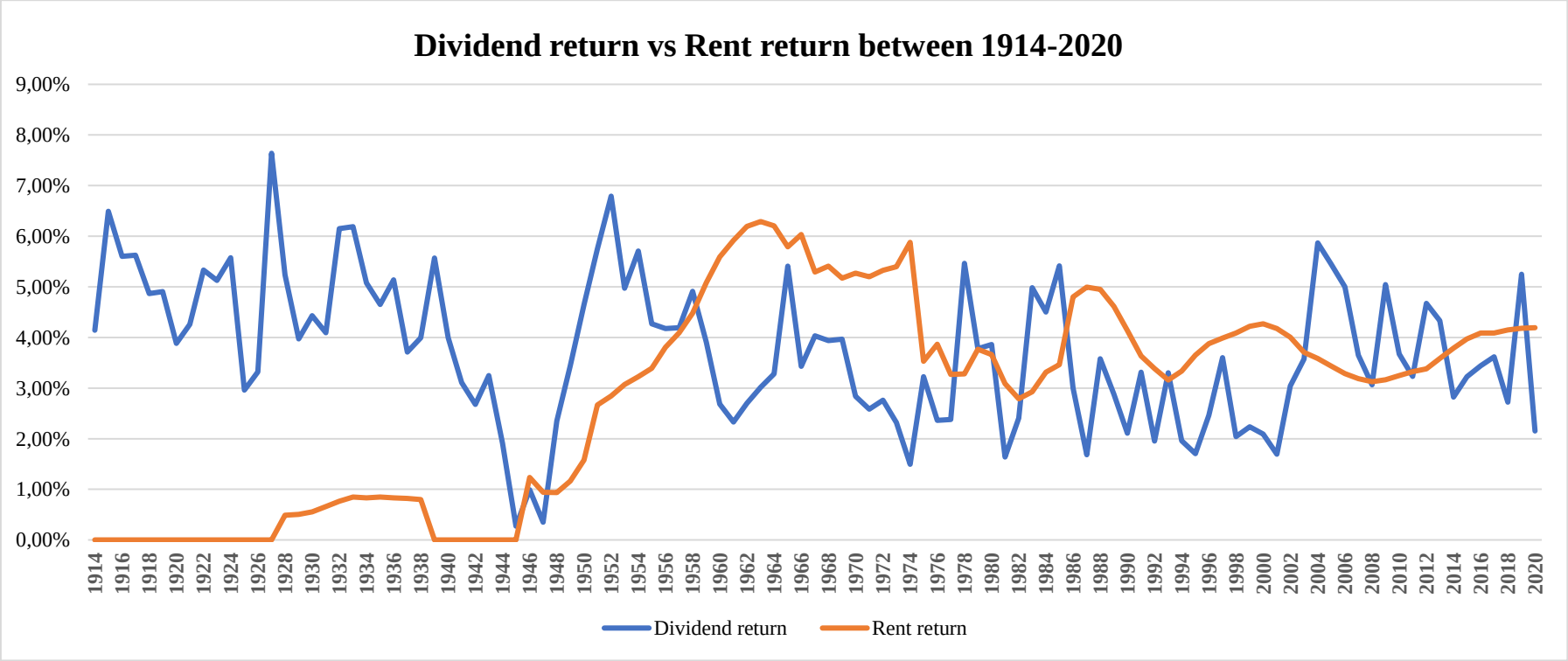

Figure 140: Dividend return vs Rent return between 1914-2020 in Italy

6. Discussion of the results

After analysing the performance and dynamics of equities and real estate properties, during recessions, we obtained the following results for the following countries.

A) USA

In the US we observed that, in terms of value appreciation, equities performed better than real estate properties, due to in all the recessions that we have analysed the stock market performed better, except during WWI and the 1973-1975 recession. Moreover, we observed that, in the last century the value appreciation of equities has been 798 percent and 400 percent in real estate properties.

With respect the returns of both assets we have to say that historically in the US rent returns outperformed dividend returns, particularly from 1956 onwards. However, before 1955 the difference between both assets was not big. Furthermore, we observed that the real estate offered better returns than equities in all the recessions analysed, except during WW1 and the Roaring 20s.

Therefore, in terms of value appreciation equities performed better, but if we analyse the returns, we observed thar real estate offered better returns than equities.

B) Spain

In Spain we observed that, in terms of value appreciation, the real estate performed better during the WWI, the Great Depression, the 1973-1975 recession, the Financial Recession and during the Covid Pandemic and the stock market performed better during the Roaring 20s, WW2 and the Dotcom Bubble. Moreover, we observed that in the last century the value appreciation of both assets was 851 percent in equities and 856 percent in real estate properties.

With respect the returns of both assets we observed that in some years, real estate offered better returns than equities, however historically dividend returns outperformed rent returns, particularly from 1945-1965 and from 1978 onwards.

In addition, we observed that equities offered higher returns than real estate in most of the recessions analysed. The recessions where equities offered better returns are: WW1, the Dotcom Bubble, the Financial Recession and the Covid Pandemic. In the case of real estate, we observed that only offered better returns during the Great Depression, WWII and the 1973-1975 recession. Finally, remark that it was observed that during the Roaring 20s both returns were very similar.

Hence, in terms of value appreciation real estate performed better, but if we analyse the returns, we observed that equities offered better returns than real estate.

C) France

In France we observed that, in terms of value appreciation, the real estate performed better during the WW1, the Great Depression, WWII, the 1973-1975 recession, the Financial Recession and during the Covid Pandemic and the stock market performed better during the Roaring 20s and the Dotcom bubble. Moreover, we observed that, in the last century the value appreciation of equities was 634,56 percent and 993 percent in real estate properties.

With respect the returns of both assets, we observed that rent returns outperformed dividend returns, particularly from 1914 till 1975 and from 1984 to 2009. However, dividend returns were bigger than rent returns in some periods like for example from 1975 to 1984, but historically real estate properties offered higher returns than equities.

In addition, we observed that real estate offered higher returns than equities in most of the recessions analysed. The recessions where real estate offered better returns are: the Great Depression, WW2, the 1973-1975 recession, the Dotcom Bubble and the Covid Pandemic. Furthermore, equities only offered better returns during the Financial Recession. And during WW1 and the Roaring 20s both returns were very similar. Therefore, historically and during most of the recessions analysed real estate properties have offered better returns than equities.

In conclusion, in terms of value appreciation and returns real estate performed better than equities in France.

D) UK[5]

In the case of the UK, we observed that in terms of value appreciation the real estate performed better during the WWI, the 1973-1975 recession and during the Covid Pandemic and the stock market performed better during the Roaring 20s, the Great depression, the Financial Recession and the Dotcom Bubble. Moreover, we observed that, in the last century the value appreciation of equities was 725,15 percent and 610 percent in real estate properties.

With respect the returns of both assets we observed that rent returns and dividend returns were very similar from 1914 till 1975. However, dividend returns were bigger than rent returns from 1975 until 1993 and from 2003 until 2020. Moreover, we observed that equities offered better returns during most the recessions analysed. The recessions where equities offered better returns are: the Roaring 20s, the 1973-1975 recession, the Financial Recession and the Covid Pandemic. Also, it was observed that during the Dotcom Bubble the real estate offered a better return than equities and also that during WW1 and the Great Depression both returns were very similar. Therefore, historically, in the UK, both returns have been very similar but in the last years and also in most of the recessions analysed, equities have offered better returns than real estate properties.

[5] Remark that there is not information about rent returns during WWII. Moreover, there is not information about real estate prices in WWII.

In conclusion, in terms of value appreciation and returns equities performed better than real estate in the United Kingdom.

E) Germany [6]

In the case of Germany, we observed that in terms of value appreciation, the real estate performed better during the WWI, the Great Depression, the 1973-1975 recession and during the Covid Pandemic and the stock market performed better during the roaring 20s, the Dotcom Bubble and the Financial Recession. Moreover, we observed that, in the last century the value appreciation of equities was 5600 percent and 400 percent in real estate properties.

With respect the returns of both assets we observed that rent returns and dividend returns were very similar from 1963 till 1975. However, rent returns were bigger than dividend returns from 1925 until 1938 and from1983 until 2020. In addition, we observed that real estate offered higher returns than equities in most of the recessions analysed. The recessions where real estate offered better returns are: the Roaring 20s, the Great Depression, the Dotcom Bubble, the Financial Recession and the Covid Pandemic. In the case of equities, it was observed that only offered better returns during the 1973-1975 recession. Therefore, historically and during most of the recessions analysed, real estate properties have offered better returns than equities.

Hence, in terms of value appreciation equities performed better, but if we analyse the returns, we observed that real estate offered better returns than equities.

F) Japan [7]

In the case of Japan, we observed that, in terms of value appreciation the real estate performed better during the WW1, the Great Depression, WWII, the 1973-1975 recession, the Financial Recession, the Dotcom Bubble. Meanwhile, the stock market performed better during the Roaring 20s and the Covid pandemic. Furthermore, we observed that, in the last century the value appreciation of equities was 857 percent and 1425 percent in real estate properties.

With respect the returns of both assets we observed that historically and during all the recessions analysed rent returns outperformed dividend returns.

In conclusion, in terms of value appreciation and returns real estate performed better than equities in Japan.

[6] Remark that there is not information about rent returns during WWI and WWII. Moreover, there is not information about real estate prices in WWII.

[7] Remark that there is not information about rent returns during WWI and the Roaring 20s.

G) Italy[8]

In the case of Italy, we observed that real estate performed better during the 1973-1975 recession, the Financial Recession, WW2 and the Covid Pandemic Meanwhile, the stock market performed better during the Great Depression and the Dotcom Bubble. Moreover, we observed that in the last century the value appreciation of equities was 1140 percent and 1201 percent in real estate properties.

With respect the returns of both assets we observed that from 1958 until 1978, the rent return was bigger than the dividend return. Moreover, we observed that from 1986 until 2003 and from 2014 bigger than dividend returns. Meanwhile, dividend returns were bigger than rent returns from 1928-1938, from 1947-1958, from 1977 till 1986 and from 2003 till 2013, but historically real estate properties have offered better returns than equities.

Moreover, we observed that real estate offered higher returns than equities in most of the recessions analysed. The recessions where real estate offered better returns are: 1973-1975 recession, the Dotcom Bubble and the Covid Pandemic. In the case of equities, it was observed that only offered better returns than real estate during the Great Depression and the Financial Recession. Therefore, historically and during most of the recessions analysed, real estate properties have offered better returns than equities.

In conclusion, in terms of value appreciation and returns real estate performed better than equities in Italy.

[8] Remark that there is not information about rent returns during WWI, Roaring 20s and WWII. Moreover, there is not information about real estate prices during WWI and the Roaring 20s.

7. Conclusions

The purpose of this thesis was to analyse the dynamics of asset prices (real estate and stocks) during economic recessions in order to know which asset performs better in periods of global instability. After doing an exhaustive analysis of the evolution of prices and returns of both assets in the most important countries in the western world, the following conclusions were reached.

First of all, it was observed that in all the countries analysed equities tend to be more volatile than real estate during in periods of instability. Therefore, real estate properties tend to be a more stable investment due to its price fluctuates less than equities.

Secondly, it was observed that in Japan, Italy and France the value depreciation of real estate properties was smaller in most of the periods of global instability. Moreover, the value appreciation of real estate properties was bigger than the value appreciation of equities and also that the returns obtained from real estate properties were bigger than the dividend returns in those countries. Another thing that was observed is that in the case of Spain the value appreciation of real estate properties was bigger than the one of equities, but the returns obtained from stocks were bigger than the real estate rent returns.

Thirdly, we observed that in the United States of America and in Germany the value depreciation of equities was smaller in most of the periods of global instability. Furthermore, we observed that the value appreciation of equities was bigger than the value appreciation of real estate properties. However, the returns obtained from rents of real estate properties were bigger than the dividend returns in those counties.

Finally, we observed that in the United Kingdom the value depreciation of equities was smaller in most of the periods of global instability. Moreover, the value appreciation of equities was bigger than the value appreciation of real estate. Apart from that, the returns obtained from stocks were bigger than the real estate rent returns in the UK.

To sum up, in four of the seven countries analysed the value depreciation of real estate properties was smaller than in the case of equities. Furthermore, in five of the seven countries analysed real estate offered better returns than equities. Therefore, the general conclusion of this thesis is that real estate (safe assets) has performed better than equities (risky assets) in most of the countries analysed. As a consequence, the hypothesis that risky assets (equities) offer higher returns and a better performance than safe assets (real estate) is false, hence investors should invest in real estate rather than in equities.

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Appendices

Appendix 1: Database with prices and returns of equities and real estate in the USA

Year	Equities capital gain	Real estate capital gain	Dividend return	Housing rent return
1914	-8,58%	5,29%	5,22%	4,53%
1915	28,98%	-7,06%	5,85%	4,36%
1916	3,38%	11,15%	5,91%	4,78%
1917	-30,61%	3,34%	7,04%	4,32%
1918	16,18%	7,79%	8,38%	4,27%
1919	12,91%	11,46%	6,71%	4,33%
1920	-23,65%	11,14%	5,72%	4,60%
1921	7,34%	-0,88%	6,75%	4,79%
1922	20,11%	2,78%	6,98%	5,02%
1923	-2,62%	2,92%	6,04%	5,04%
1924	18,83%	1,58%	6,43%	5,12%
1925	22,64%	6,62%	5,91%	5,11%
1926	8,27%	-2,62%	5,54%	4,78%
1927	29,43%	-2,49%	5,71%	4,88%
1928	32,59%	2,86%	4,87%	4,93%
1929	-7,56%	-0,69%	4,19%	4,72%
1930	-27,52%	-12,12%	4,58%	4,66%
1931	-45,58%	-15,74%	5,29%	5,07%
1932	-19,19%	-17,90%	5,92%	5,44%
1933	46,19%	-0,79%	6,45%	5,78%
1934	-7,12%	-4,79%	4,51%	5,50%
1935	40,82%	11,62%	5,08%	5,83%
1936	30,83%	4,97%	5,52%	5,40%
1937	-35,40%	3,23%	4,69%	5,43%
1938	15,15%	-6,68%	4,63%	5,50%
1939	-2,52%	2,91%	4,89%	5,95%
1940	-14,87%	-7,09%	5,42%	5,84%
1941	-16,81%	-8,38%	6,74%	6,58%
1942	8,68%	3,33%	6,74%	7,18%
1943	20,59%	11,45%	6,41%	7,06%
1944	14,11%	16,58%	5,57%	6,38%
1945	32,29%	11,78%	5,04%	5,47%
1946	-12,69%	24,10%	4,10%	5,04%
1947	-0,66%	21,26%	5,55%	4,49%
1948	1,06%	2,06%	6,19%	4,01%
1949	8,89%	0,09%	7,50%	4,18%
1950	19,41%	3,64%	8,89%	4,38%
1951	18,53%	6,05%	7,14%	4,58%
1952	11,23%	4,41%	6,02%	4,60%
1953	-4,65%	11,23%	5,57%	4,78%
1954	40,84%	0,67%	6,20%	4,39%
1955	29,74%	0,35%	4,69%	4,47%
1956	2,36%	0,25%	3,84%	4,62%
1957	-13,16%	2,79%	3,85%	4,73%
1958	32,63%	1,45%	4,34%	4,72%
1959	10,41%	-0,08%	3,42%	4,77%
1960	-3,83%	0,57%	3,30%	4,88%
1961	26,30%	0,48%	3,56%	4,97%
1962	-12,68%	1,11%	2,97%	5,03%
1963	18,41%	1,05%	3,64%	5,06%
1964	13,20%	1,56%	3,37%	5,09%
1965	9,25%	1,37%	3,24%	5,10%
1966	-11,34%	1,66%	3,13%	5,16%
1967	17,18%	1,39%	3,59%	5,23%
1968	11,75%	2,86%	3,22%	5,36%
1969	-14,45%	6,50%	2,97%	5,49%
1970	-1,16%	8,03%	3,45%	5,47%
1971	10,13%	5,52%	3,41%	5,34%
1972	18,48%	4,13%	3,18%	5,30%
1973	-19,34%	2,08%	2,88%	5,42%
1974	-29,24%	7,54%	3,80%	5,71%
1975	32,25%	10,52%	5,49%	5,68%
1976	18,04%	7,39%	4,57%	5,53%
1977	-10,39%	11,83%	4,46%	5,60%
1978	2,44%	14,08%	5,40%	5,46%
1979	12,16%	13,57%	5,88%	5,27%
1980	23,84%	7,97%	5,71%	5,15%
1981	-7,27%	5,03%	4,97%	5,27%
1982	12,60%	3,28%	5,55%	5,44%
1983	17,93%	3,88%	5,09%	5,59%
1984	0,06%	4,31%	4,58%	5,77%
1985	26,02%	5,11%	4,80%	5,91%
1986	19,92%	6,77%	3,99%	5,96%
1987	-3,06%	6,42%	3,54%	5,79%
1988	14,73%	5,34%	4,05%	5,63%
1989	26,08%	5,28%	4,00%	5,57%
1990	-5,69%	3,11%	3,47%	5,50%
1991	18,18%	1,90%	3,71%	5,51%
1992	12,13%	2,78%	3,19%	5,54%
1993	6,96%	2,33%	2,89%	5,51%
1994	-2,31%	2,56%	2,83%	5,53%
1995	35,01%	3,05%	3,03%	5,52%
1996	20,94%	3,47%	2,42%	5,51%
1997	29,48%	3,37%	2,09%	5,49%
1998	23,66%	5,13%	1,68%	5,49%
1999	20,05%	4,92%	1,40%	5,38%
2000	-6,84%	6,39%	1,14%	5,33%
2001	-13,98%	7,47%	1,18%	5,23%
2002	-21,46%	6,33%	1,40%	5,06%
2003	20,18%	6,22%	1,93%	4,90%
2004	10,97%	9,32%	1,80%	4,74%
2005	5,24%	11,30%	1,85%	4,46%
2006	12,23%	7,20%	1,97%	4,15%
2007	4,43%	1,20%	1,96%	4,04%
2008	-40,67%	-4,74%	1,92%	4,14%
2009	26,53%	-5,29%	2,55%	4,44%
2010	11,81%	-3,91%	2,05%	4,70%
2011	0,14%	-3,61%	2,13%	4,98%
2012	14,39%	-0,06%	2,51%	5,27%
2013	27,10%	7,40%	2,46%	5,40%
2014	13,63%	5,46%	2,18%	5,17%
2015	-0,01%	5,60%	2,11%	5,05%
2016	1,49%	5,83%	2,16%	4,96%
2017	17,04%	6,44%	2,27%	4,87%
2018	12,11%	6,55%	2,10%	4,74%
2019	6,11%	4,32%	2,05%	4,61%
2020	10,51%	7,86%	2,03%	4,56%
Total	**798,59%**	**400,34%**	**452,25%**	**550,41%**

Data obtained from: (Jordà, Ò., Knoll, K., Kuvshinov, D., Schularick, M., & Taylor, A. M., 2019).

Appendix 2: Database prices and returns of equities and real estate in Spain

Year	Equities capital gain	Real estate capital gain	Dividend return	Housing rent return
1914	-11,62%	-0,99%	4,47%	4,00%
1915	8,27%	-2,52%	4,75%	4,15%
1916	4,37%	6,37%	4,73%	4,24%
1917	10,66%	11,91%	4,66%	4,83%
1918	7,76%	31,57%	5,98%	4,46%
1919	-1,74%	10,22%	3,86%	4,22%
1920	1,33%	23,49%	5,24%	5,12%
1921	-10,01%	-30,51%	5,32%	4,42%
1922	14,22%	-4,61%	6,91%	6,32%
1923	12,35%	2,88%	5,48%	6,70%
1924	4,08%	4,87%	5,23%	6,91%
1925	-0,12%	11,98%	5,45%	6,50%
1926	12,58%	-0,69%	5,10%	5,93%
1927	26,35%	-10,10%	4,45%	6,25%
1928	21,81%	-12,12%	3,52%	7,17%
1929	-0,66%	0,04%	3,24%	9,04%
1930	-3,04%	45,62%	3,53%	8,67%
1931	-27,20%	-3,99%	3,19%	5,89%
1932	-12,22%	-13,77%	2,85%	6,18%
1933	9,16%	-0,89%	2,83%	7,11%
1934	-6,38%	29,97%	4,57%	7,25%
1935	56,37%	-11,17%	3,44%	5,38%
1936	-7,24%	-2,78%	0,68%	7,31%
1937	8,78%	28,95%	0,00%	7,52%
1938	8,78%	40,62%	0,00%	5,83%
1939	8,78%	-11,55%	0,00%	4,15%
1940	8,78%	14,29%	0,85%	4,72%
1941	28,29%	14,36%	3,04%	4,15%
1942	10,90%	6,39%	3,27%	3,65%
1943	-9,69%	15,20%	2,01%	3,45%
1944	-0,98%	-12,26%	2,90%	3,01%
1945	13,88%	26,41%	4,30%	3,45%
1946	32,34%	-8,58%	6,32%	2,77%
1947	41,47%	16,26%	4,40%	3,12%
1948	-30,59%	4,70%	0,74%	2,72%
1949	-13,23%	-4,38%	2,12%	2,65%
1950	2,90%	-6,18%	3,94%	2,83%
1951	15,42%	13,35%	5,50%	3,46%
1952	5,43%	0,78%	4,67%	3,27%
1953	-0,21%	22,46%	4,32%	4,03%
1954	20,63%	18,05%	7,88%	3,50%
1955	32,73%	3,66%	8,78%	2,97%
1956	44,89%	2,72%	9,49%	2,93%
1957	6,47%	10,61%	3,11%	3,40%
1958	-14,99%	4,00%	2,30%	3,72%
1959	-8,90%	45,30%	2,91%	4,22%
1960	-2,54%	-23,14%	4,51%	2,94%
1961	22,59%	33,01%	8,69%	3,64%
1962	20,72%	17,69%	6,72%	3,37%
1963	5,22%	13,38%	4,06%	3,32%
1964	-1,83%	14,02%	3,31%	3,53%
1965	6,28%	14,49%	4,11%	4,28%
1966	4,12%	8,65%	4,03%	4,81%
1967	4,10%	3,87%	4,26%	5,85%
1968	18,05%	5,61%	6,17%	7,03%
1969	48,32%	21,42%	9,08%	6,99%
1970	7,02%	8,97%	2,51%	6,03%
1971	1,04%	12,12%	3,01%	5,87%
1972	31,05%	17,21%	3,70%	5,50%
1973	26,85%	10,18%	2,91%	5,12%
1974	1,94%	10,59%	2,19%	5,30%
1975	-13,78%	3,07%	2,45%	5,45%
1976	-13,62%	10,96%	2,68%	5,04%
1977	-32,25%	19,30%	3,49%	5,13%
1978	-18,66%	25,30%	5,39%	4,84%
1979	-13,46%	19,56%	6,30%	4,39%
1980	-8,23%	6,74%	9,19%	4,11%
1981	30,64%	7,86%	11,78%	4,37%
1982	-8,31%	6,83%	8,32%	4,54%
1983	1,15%	7,36%	11,27%	4,61%
1984	34,77%	9,36%	11,93%	4,54%
1985	26,77%	11,28%	7,69%	4,37%
1986	104,05%	17,99%	9,21%	4,22%
1987	44,25%	22,63%	3,68%	3,77%
1988	10,88%	25,00%	3,51%	3,27%
1989	8,64%	23,30%	3,99%	2,86%
1990	-14,05%	15,62%	2,25%	2,51%
1991	2,64%	14,32%	2,77%	2,37%
1992	-13,23%	-1,34%	5,15%	2,24%
1993	50,70%	-0,41%	5,40%	2,47%
1994	-11,70%	0,70%	2,50%	2,63%
1995	12,30%	3,09%	3,40%	2,75%
1996	39,00%	2,58%	3,90%	2,88%
1997	42,20%	4,30%	3,20%	2,99%
1998	37,20%	4,88%	2,30%	3,01%
1999	16,20%	6,97%	3,50%	2,98%
2000	-12,70%	7,51%	2,30%	2,89%
2001	-6,39%	9,48%	2,76%	2,80%
2002	-23,10%	16,93%	2,63%	2,67%
2003	27,44%	19,97%	5,53%	2,38%
2004	18,70%	18,31%	4,38%	2,06%
2005	20,56%	14,57%	5,23%	1,82%
2006	34,49%	10,04%	6,06%	1,66%
2007	5,60%	5,48%	3,56%	1,57%
2008	-40,56%	0,21%	3,62%	1,55%
2009	27,23%	-7,57%	8,38%	1,60%
2010	-19,17%	-2,65%	4,50%	1,75%
2011	-14,55%	-5,55%	5,78%	1,81%
2012	-3,84%	-8,73%	8,85%	1,93%
2013	22,71%	-15,57%	7,17%	2,11%
2014	3,01%	0,31%	6,07%	2,48%
2015	-7,42%	3,59%	4,22%	2,46%
2016	-1,32%	4,62%	3,59%	2,38%
2017	6,55%	6,20%	3,17%	2,28%
2018	-13,68%	6,73%	2,80%	2,18%
2019	12,24%	5,17%	3,99%	2,07%
2020	-12,17%	2,24%	2,36%	1,99%
Total	**851,58%**	**856,55%**	**483,75%**	**433,97%**

Data obtained from: (Jordà, Ò., Knoll, K., Kuvshinov, D., Schularick, M., & Taylor, A. M., 2019).

Appendix 3: Database with prices and returns of equities and real estate in France

Year	Equities capital gain	Real estate capital gain	Dividend return	Housing rent return
1914	-14,39%	2,99%	3,34%	4,21%
1915	-12,60%	5,53%	3,05%	4,12%
1916	11,66%	11,35%	3,97%	3,90%
1917	1,29%	-5,10%	3,67%	3,51%
1918	6,63%	-2,48%	3,72%	3,74%
1919	4,38%	0,85%	3,70%	3,94%
1920	-10,43%	-0,84%	3,76%	4,05%
1921	-9,22%	6,36%	4,68%	4,28%
1922	18,37%	10,36%	4,96%	4,64%
1923	21,80%	15,89%	4,51%	4,93%
1924	-0,44%	9,97%	3,85%	4,73%
1925	10,44%	12,75%	4,69%	4,77%
1926	19,55%	11,06%	4,96%	4,85%
1927	20,91%	5,20%	4,52%	4,72%
1928	44,57%	1,51%	3,79%	4,87%
1929	-2,70%	4,87%	2,79%	5,42%
1930	-29,45%	15,35%	2,66%	5,56%
1931	-35,65%	6,13%	3,75%	4,89%
1932	18,44%	4,45%	5,48%	4,78%
1933	-2,76%	-0,63%	3,93%	4,66%
1934	-11,45%	-1,91%	4,07%	4,69%
1935	-3,62%	-5,19%	4,33%	4,87%
1936	13,81%	-4,44%	3,82%	4,85%
1937	-8,56%	19,81%	3,28%	5,26%
1938	1,26%	-2,92%	4,62%	4,13%
1939	11,46%	-3,83%	4,99%	4,85%
1940	43,69%	4,84%	3,71%	5,65%
1941	50,69%	7,22%	2,21%	6,08%
1942	52,06%	34,01%	1,58%	6,51%
1943	-18,40%	49,25%	0,71%	5,49%
1944	-12,41%	18,14%	0,72%	4,29%
1945	-20,43%	8,49%	0,38%	4,63%
1946	26,44%	24,75%	0,88%	5,42%
1947	-19,52%	22,86%	1,06%	5,55%
1948	-12,40%	24,32%	1,66%	6,34%
1949	-17,90%	24,54%	2,12%	7,62%
1950	-18,47%	6,31%	3,39%	7,22%
1951	39,47%	12,87%	4,82%	7,46%
1952	9,45%	19,08%	4,49%	7,52%
1953	18,33%	13,03%	4,83%	7,14%
1954	111,91%	13,66%	3,94%	7,04%
1955	-5,67%	21,67%	2,00%	6,89%
1956	1,07%	28,79%	2,08%	7,89%
1957	12,61%	25,15%	1,69%	6,54%
1958	-9,94%	24,09%	1,42%	6,04%
1959	25,24%	22,89%	1,49%	5,54%
1960	-8,63%	22,55%	1,45%	7,04%
1961	3,24%	14,96%	1,66%	6,50%
1962	-12,11%	16,89%	1,52%	6,10%
1963	-20,07%	23,18%	1,82%	7,28%
1964	-10,27%	22,82%	2,29%	7,45%
1965	-7,45%	21,06%	2,67%	6,66%
1966	-19,72%	10,30%	2,56%	5,98%
1967	-5,74%	5,75%	3,55%	6,00%
1968	13,14%	7,54%	4,25%	6,14%
1969	19,91%	10,46%	3,76%	6,24%
1970	-12,27%	4,09%	3,51%	6,07%
1971	-9,75%	5,96%	4,07%	6,15%
1972	12,27%	9,07%	4,68%	6,07%
1973	-7,44%	10,59%	4,27%	6,00%
1974	-31,86%	14,80%	4,73%	5,81%
1975	25,14%	11,93%	6,81%	5,55%
1976	-16,82%	15,88%	5,53%	5,47%
1977	-22,42%	15,23%	5,61%	5,12%
1978	53,85%	11,66%	8,25%	4,79%
1979	4,03%	13,13%	4,98%	4,74%
1980	3,18%	19,82%	5,62%	4,71%
1981	-17,32%	11,01%	6,16%	4,44%
1982	2,53%	5,61%	7,87%	4,39%
1983	51,91%	5,11%	6,76%	4,56%
1984	10,31%	3,90%	4,18%	4,67%
1985	32,88%	3,30%	4,23%	4,79%
1986	35,10%	4,64%	3,14%	4,89%
1987	-26,74%	7,11%	2,98%	4,94%
1988	57,39%	10,79%	4,96%	4,91%
1989	27,14%	12,06%	3,72%	4,67%
1990	-24,14%	8,81%	2,18%	4,37%
1991	12,64%	5,20%	3,99%	4,22%
1992	1,22%	-2,37%	3,54%	4,22%
1993	32,10%	-1,44%	4,34%	4,50%
1994	-16,96%	-0,18%	2,65%	4,70%
1995	-1,42%	-0,91%	3,32%	4,83%
1996	26,67%	0,88%	3,93%	4,98%
1997	24,54%	-0,47%	3,23%	5,00%
1998	28,54%	2,12%	2,76%	5,13%
1999	52,43%	6,79%	3,19%	5,11%
2000	-1,04%	8,84%	1,57%	4,78%
2001	-20,95%	7,92%	1,71%	4,41%
2002	-31,13%	8,72%	1,86%	4,19%
2003	17,45%	11,81%	3,77%	3,96%
2004	9,23%	15,13%	3,77%	3,64%
2005	25,31%	15,40%	3,12%	3,28%
2006	19,37%	12,04%	3,19%	2,94%
2007	0,41%	6,57%	2,66%	2,70%
2008	-43,09%	0,83%	2,20%	2,59%
2009	23,90%	-7,10%	5,14%	2,63%
2010	0,41%	5,13%	3,78%	2,87%
2011	-16,95%	5,94%	3,56%	2,76%
2012	15,23%	-0,46%	5,14%	2,66%
2013	17,99%	-2,11%	4,23%	2,70%
2014	-0,54%	-1,76%	3,25%	2,78%
2015	8,53%	-1,76%	3,42%	2,83%
2016	5,34%	0,93%	3,60%	2,89%
2017	15,32%	3,02%	3,19%	2,87%
2018	-10,03%	3,10%	2,58%	2,77%
2019	24,30%	3,24%	4,07%	2,70%
2020	-2,67%	5,58%	1,83%	2,63%
Total	**634,56%**	**993,71%**	**378,38%**	**526,83%**

Data obtained from: (Jordà, Ò., Knoll, K., Kuvshinov, D., Schularick, M., & Taylor, A. M., 2019).

Appendix 4: Database with prices and returns of equities and real estate in the UK

Year	Equities capital gain	Real estate capital gain	Dividend return	Housing rent return
1914	-4,00%	-13,34%	3,94%	4,03%
1915	0,00%	22,71%	2,60%	4,73%
1916	-7,29%	6,09%	4,82%	3,96%
1917	4,49%	25,18%	5,02%	4,01%
1918	16,13%	24,25%	4,65%	3,35%
1919	7,41%	-3,18%	2,15%	2,80%
1920	-25,86%	-8,42%	4,52%	2,87%
1921	-6,98%	-2,25%	6,23%	3,81%
1922	20,00%	4,62%	6,24%	4,06%
1923	-4,17%	4,27%	5,08%	3,75%
1924	15,22%	4,71%	4,95%	3,57%
1925	10,38%	11,30%	4,75%	3,41%
1926	1,71%	16,31%	4,88%	3,11%
1927	4,20%	-6,22%	4,38%	2,71%
1928	12,10%	-8,00%	4,37%	2,89%
1929	-18,71%	-16,28%	4,47%	3,16%
1930	-9,73%	-3,27%	4,87%	3,80%
1931	-24,51%	1,69%	4,38%	3,95%
1932	28,57%	-10,00%	5,66%	3,89%
1933	20,20%	-1,85%	4,21%	4,37%
1934	10,08%	-2,83%	3,96%	4,46%
1935	9,92%	2,91%	4,07%	4,62%
1936	15,28%	3,77%	3,92%	4,54%
1937	-16,87%	-1,82%	3,82%	4,38%
1938	-14,49%	0,93%	4,70%	4,49%
1939	-3,39%	-0,04%	5,22%	4,49%
1940	-10,53%	NA	5,64%	NA
1941	16,67%	NA	6,07%	NA
1942	13,45%	NA	4,99%	NA
1943	6,67%	NA	4,37%	NA
1944	8,33%	NA	4,12%	NA
1945	2,56%	NA	3,90%	NA
1946	13,75%	NA	3,98%	NA
1947	-6,59%	25,00%	4,02%	3,93%
1948	-7,65%	-4,00%	3,97%	3,04%
1949	-10,19%	9,17%	4,49%	3,85%
1950	5,67%	1,53%	5,28%	3,74%
1951	2,68%	9,02%	5,54%	3,93%
1952	-5,88%	-4,14%	5,74%	3,76%
1953	18,06%	-1,08%	6,37%	4,58%
1954	42,35%	-1,79%	6,26%	5,14%
1955	5,79%	4,77%	5,08%	5,48%
1956	-14,06%	10,47%	4,90%	5,84%
1957	-6,82%	2,19%	5,87%	5,67%
1958	40,98%	2,58%	6,77%	6,13%
1959	49,48%	0,84%	5,38%	6,27%
1960	-2,55%	4,98%	4,39%	6,41%
1961	-2,85%	9,49%	4,66%	6,38%
1962	-4,40%	6,50%	4,78%	5,15%
1963	15,09%	7,12%	4,72%	5,08%
1964	-10,00%	6,33%	4,59%	4,99%
1965	5,68%	8,93%	5,50%	4,74%
1966	-9,11%	4,92%	5,27%	4,64%
1967	28,53%	5,47%	5,66%	4,63%
1968	43,60%	7,26%	4,60%	4,61%
1969	-15,18%	6,81%	3,31%	4,48%
1970	-7,55%	5,26%	4,07%	4,51%
1971	41,92%	12,50%	4,68%	4,67%
1972	12,77%	33,33%	3,61%	4,59%
1973	-31,30%	36,67%	3,30%	3,85%
1974	-55,41%	8,54%	5,22%	3,15%
1975	136,59%	5,62%	13,01%	3,44%
1976	-3,83%	9,57%	6,15%	3,71%
1977	41,08%	6,80%	7,48%	3,83%
1978	2,71%	16,36%	5,96%	3,84%
1979	4,29%	28,91%	7,20%	3,98%
1980	27,08%	21,21%	7,75%	3,98%
1981	7,30%	5,50%	6,33%	3,88%
1982	22,02%	2,37%	6,47%	4,14%
1983	23,12%	12,04%	5,66%	4,14%
1984	26,03%	9,09%	5,55%	4,04%
1985	15,18%	9,09%	4,95%	4,18%
1986	22,32%	13,89%	4,89%	4,05%
1987	4,17%	16,77%	4,48%	3,87%
1988	6,48%	25,33%	5,00%	3,56%
1989	30,01%	21,04%	5,46%	3,10%
1990	-14,32%	-1,21%	4,71%	2,87%
1991	15,05%	-1,39%	5,75%	3,26%
1992	14,84%	-3,89%	5,05%	3,61%
1993	23,35%	-2,39%	4,19%	4,04%
1994	-9,57%	2,45%	3,62%	4,37%
1995	18,52%	0,74%	4,50%	4,51%
1996	11,68%	-2,21%	4,13%	4,68%
1997	19,74%	5,97%	3,83%	4,95%
1998	10,90%	7,26%	2,77%	4,81%
1999	21,25%	7,10%	2,55%	4,62%
2000	-7,97%	13,56%	2,02%	4,46%
2001	-15,42%	10,19%	2,20%	4,06%
2002	-24,96%	18,08%	2,70%	3,78%
2003	16,56%	18,96%	3,61%	3,25%
2004	9,21%	15,14%	3,39%	2,79%
2005	18,10%	5,74%	3,54%	2,51%
2006	13,15%	4,85%	3,28%	2,44%
2007	2,02%	8,25%	3,06%	2,41%
2008	-32,78%	-3,58%	3,03%	2,31%
2009	24,95%	-9,90%	4,00%	2,44%
2010	10,94%	5,76%	3,22%	2,75%
2011	-6,69%	-1,90%	3,27%	2,66%
2012	8,25%	0,30%	3,90%	2,80%
2013	16,69%	3,55%	3,85%	2,86%
2014	-2,13%	10,00%	3,33%	2,83%
2015	-2,51%	6,68%	3,61%	2,65%
2016	10,84%	6,98%	4,57%	2,53%
2017	9,69%	4,54%	4,38%	2,39%
2018	-13,21%	3,21%	3,66%	2,31%
2019	12,91%	1,01%	5,47%	2,26%
2020	-12,14%	2,83%	2,70%	2,28%
Total	**725,15%**	**610,14%**	**499,17%**	**390,66%**

Data obtained from: (Jordà, Ò., Knoll, K., Kuvshinov, D., Schularick, M., & Taylor, A. M., 2019).

Appendix 5: Database with prices and returns of equities and real estate in Germany

Year	Equities capital gain	Real estate capital gain	Dividend return	Housing rent return
1914	-15,60%	-28,57%	5,21%	4,07%
1915	5,65%	0,00%	4,14%	NA
1916	9,90%	-20,00%	5,10%	NA
1917	17,49%	25,00%	5,29%	NA
1918	-33,73%	20,00%	4,70%	NA
1919	43,64%	16,67%	5,19%	NA
1920	59,46%	50,00%	5,01%	NA
1921	117,10%	9,52%	5,07%	NA
1922	2039,51%	60,87%	3,53%	NA
1923	2500,00%	NA	1,71%	NA
1924	3,56%	NA	0,52%	NA
1925	-49,25%	11,12%	2,05%	8,17%
1926	118,95%	14,63%	8,67%	9,01%
1927	-11,54%	27,69%	3,39%	9,06%
1928	3,83%	-1,61%	4,94%	7,77%
1929	-26,35%	18,04%	4,79%	7,90%
1930	-31,81%	-30,12%	6,52%	6,85%
1931	-37,86%	-6,80%	7,90%	10,03%
1932	5,76%	-15,60%	4,90%	9,87%
1933	10,32%	4,24%	3,99%	11,69%
1934	9,25%	-13,06%	4,78%	11,21%
1935	11,99%	-1,37%	4,13%	12,90%
1936	24,64%	1,88%	4,83%	13,07%
1937	-2,35%	4,55%	4,18%	12,83%
1938	-7,34%	10,05%	4,82%	12,28%
1939	7,34%	NA	5,59%	NA
1940	27,67%	NA	5,19%	NA
1941	3,51%	NA	3,79%	NA
1942	10,36%	NA	3,49%	NA
1943	0,93%	NA	3,39%	NA
1944	0,12%	NA	3,01%	NA
1945	-13,67%	NA	0,30%	NA
1946	-9,70%	NA	0,00%	NA
1947	8,54%	NA	0,00%	NA
1948	-88,42%	NA	0,07%	NA
1949	136,42%	NA	0,11%	NA
1950	-8,76%	NA	0,48%	NA
1951	115,58%	NA	2,34%	NA
1952	19,30%	NA	2,75%	NA
1953	22,96%	NA	3,11%	NA
1954	73,77%	NA	4,09%	NA
1955	2,02%	NA	5,93%	NA
1956	-12,48%	NA	4,62%	NA
1957	1,34%	NA	5,19%	NA
1958	52,31%	NA	5,67%	NA
1959	73,03%	NA	4,31%	NA
1960	34,81%	NA	2,70%	NA
1961	-9,02%	NA	2,27%	NA
1962	-23,87%	NA	2,59%	NA
1963	8,28%	16,27%	3,47%	4,92%
1964	6,01%	6,27%	3,29%	4,48%
1965	-14,95%	19,48%	3,32%	4,45%
1966	-17,58%	11,14%	3,96%	4,03%
1967	33,09%	9,19%	4,66%	3,87%
1968	12,15%	8,89%	3,36%	3,80%
1969	15,76%	3,82%	3,36%	3,71%
1970	-24,68%	8,20%	3,31%	3,73%
1971	3,39%	6,88%	4,14%	3,66%
1972	13,11%	6,45%	3,51%	3,63%
1973	-17,87%	6,97%	3,04%	3,61%
1974	-1,76%	7,18%	4,42%	3,54%
1975	26,35%	1,72%	4,42%	3,52%
1976	-5,69%	1,77%	3,40%	3,63%
1977	9,55%	5,26%	4,05%	3,68%
1978	8,26%	6,65%	3,25%	3,61%
1979	-12,29%	10,94%	3,07%	3,49%
1980	0,00%	7,05%	3,90%	3,30%
1981	-0,97%	6,58%	3,66%	3,22%
1982	10,73%	1,25%	3,43%	3,17%
1983	36,12%	0,00%	2,86%	3,30%
1984	8,41%	-2,44%	2,49%	3,43%
1985	62,69%	0,00%	2,60%	3,62%
1986	13,21%	0,00%	2,04%	3,69%
1987	-34,85%	-1,25%	1,82%	3,75%
1988	24,63%	1,26%	2,74%	3,88%
1989	28,74%	3,75%	2,32%	3,94%
1990	-8,68%	7,22%	2,19%	3,93%
1991	9,96%	4,94%	2,89%	3,82%
1992	-4,58%	7,06%	2,49%	4,02%
1993	43,33%	5,49%	3,37%	4,14%
1994	-8,91%	4,17%	1,85%	4,13%
1995	4,64%	1,01%	2,35%	4,13%
1996	19,84%	-0,90%	2,30%	4,22%
1997	38,63%	-1,82%	2,20%	4,36%
1998	13,99%	-1,86%	1,55%	4,50%
1999	29,77%	1,88%	1,90%	4,63%
2000	-11,07%	0,00%	1,16%	4,60%
2001	-19,47%	0,00%	1,55%	4,65%
2002	-40,99%	-2,77%	1,05%	4,72%
2003	33,97%	-0,96%	3,61%	4,91%
2004	6,27%	-1,92%	2,19%	5,00%
2005	25,07%	-1,96%	3,13%	5,15%
2006	21,33%	0,00%	2,76%	5,31%
2007	17,56%	1,05%	2,86%	5,38%
2008	-44,36%	0,62%	1,78%	5,38%
2009	20,27%	0,52%	5,13%	5,41%
2010	15,11%	2,56%	3,35%	5,44%
2011	-17,39%	5,40%	2,57%	5,37%
2012	24,76%	9,53%	4,50%	5,32%
2013	22,76%	6,23%	3,98%	4,91%
2014	0,40%	5,11%	2,70%	4,68%
2015	8,63%	5,17%	2,70%	4,51%
2016	2,88%	7,53%	2,80%	4,33%
2017	13,59%	6,12%	2,79%	4,09%
2018	-19,04%	6,64%	2,19%	3,91%
2019	19,17%	5,77%	3,60%	3,72%
2020	5,00%	7,75%	2,59%	3,57%
Total	**5601,59%**	**400,02%**	**358,35%**	**389,56%**

Data obtained from: (Jordà, Ò., Knoll, K., Kuvshinov, D., Schularick, M., & Taylor, A. M., 2019).

Appendix 6: Database with prices and returns of equities and real estate in Japan

Year	Equities capital gain	Real estate capital gain	Dividend return	Housing rent return
1914	-9,75%	61,39%	5,60%	NA
1915	24,21%	-16,52%	7,27%	NA
1916	77,57%	51,20%	7,34%	NA
1917	-17,49%	-22,01%	6,26%	NA
1918	-0,70%	71,73%	8,99%	NA
1919	24,97%	53,88%	8,99%	NA
1920	-17,67%	-11,24%	7,77%	NA
1921	-20,67%	3,55%	5,60%	NA
1922	-11,18%	-9,63%	6,27%	NA
1923	0,51%	7,36%	6,59%	NA
1924	-1,78%	-7,64%	6,21%	NA
1925	4,52%	-6,82%	6,38%	NA
1926	9,05%	12,76%	5,91%	NA
1927	-11,89%	21,49%	4,83%	NA
1928	3,36%	-7,45%	5,27%	NA
1929	-16,60%	-10,58%	5,08%	NA
1930	-32,49%	-15,16%	4,60%	NA
1931	5,36%	-6,07%	5,84%	6,95%
1932	7,33%	0,22%	5,26%	7,34%
1933	28,00%	2,91%	4,98%	7,17%
1934	0,53%	4,28%	4,37%	6,91%
1935	3,53%	4,80%	5,00%	6,60%
1936	-0,93%	6,42%	5,24%	6,37%
1937	10,33%	0,99%	5,48%	5,99%
1938	-10,24%	5,93%	4,95%	6,05%
1939	0,60%	6,55%	5,66%	5,93%
1940	2,37%	2,64%	5,49%	5,99%
1941	-22,89%	13,68%	4,97%	6,04%
1942	18,78%	6,76%	6,07%	5,40%
1943	18,00%	19,71%	5,01%	5,23%
1944	3,08%	9,41%	4,14%	4,47%
1945	2,09%	32,26%	1,74%	NA
1946	NA	143,50%	NA	NA
1947	NA	166,61%	NA	NA
1948	46,23%	151,41%	1,28%	NA
1949	111,00%	41,12%	2,07%	NA
1950	-31,73%	17,00%	3,41%	NA
1951	26,85%	29,67%	13,39%	NA
1952	63,15%	42,57%	13,82%	NA
1953	45,59%	71,59%	9,77%	NA
1954	-15,51%	28,26%	6,84%	NA
1955	12,53%	13,44%	8,03%	NA
1956	36,03%	14,47%	8,23%	NA
1957	9,68%	25,86%	7,48%	NA
1958	5,10%	23,29%	6,46%	NA
1959	46,02%	23,70%	6,03%	NA
1960	28,96%	22,75%	4,73%	6,05%
1961	15,15%	37,80%	3,90%	5,96%
1962	-7,13%	26,55%	3,75%	4,90%
1963	5,71%	15,52%	4,34%	4,64%
1964	-13,67%	13,80%	4,36%	5,04%
1965	-4,75%	14,89%	5,04%	5,44%
1966	20,85%	5,56%	4,83%	5,72%
1967	1,07%	10,53%	4,39%	6,24%
1968	8,95%	16,67%	4,66%	6,18%
1969	29,20%	19,73%	4,29%	6,09%
1970	7,88%	22,16%	3,67%	5,96%
1971	8,83%	17,67%	3,72%	5,28%
1972	56,16%	14,62%	3,48%	4,85%
1973	27,75%	28,97%	2,54%	4,59%
1974	-14,70%	25,94%	2,07%	3,83%
1975	1,22%	-4,03%	2,29%	3,33%
1976	12,61%	1,55%	2,03%	3,82%
1977	8,40%	3,92%	1,82%	4,15%
1978	12,10%	4,82%	1,66%	4,32%
1979	8,61%	7,40%	1,53%	4,34%
1980	4,84%	12,85%	1,55%	4,22%
1981	15,86%	12,21%	1,69%	3,92%
1982	-0,95%	9,12%	1,56%	3,63%
1983	20,74%	5,80%	1,57%	3,46%
1984	26,20%	3,57%	1,27%	3,38%
1985	20,43%	2,71%	1,10%	3,36%
1986	30,73%	2,16%	0,96%	3,36%
1987	46,66%	4,45%	0,86%	3,39%
1988	9,11%	8,42%	0,55%	3,32%
1989	20,15%	5,49%	0,54%	3,15%
1990	-13,59%	12,76%	0,42%	3,07%
1991	-16,03%	9,75%	0,52%	2,80%
1992	-26,76%	-2,46%	0,64%	2,62%
1993	12,09%	-4,96%	0,88%	2,75%
1994	5,80%	-2,91%	0,75%	2,96%
1995	-14,41%	-1,50%	0,72%	3,10%
1996	16,15%	-1,88%	0,83%	3,20%
1997	-13,59%	-1,55%	0,80%	3,30%
1998	-15,87%	-1,39%	0,97%	3,38%
1999	19,34%	-2,63%	1,18%	3,42%
2000	11,04%	-3,57%	1,02%	3,53%
2001	-22,68%	-4,00%	0,89%	3,68%
2002	-17,91%	-4,48%	1,07%	3,83%
2003	-5,76%	-4,80%	1,21%	4,01%
2004	23,92%	-6,41%	1,37%	4,21%
2005	14,15%	-5,39%	1,24%	4,49%
2006	25,84%	-3,88%	1,32%	4,75%
2007	1,43%	-1,48%	1,26%	4,93%
2008	-28,73%	-0,68%	1,38%	5,02%
2009	-26,64%	-3,44%	1,65%	5,04%
2010	1,83%	-3,99%	1,95%	5,20%
2011	-6,72%	-3,26%	1,90%	5,40%
2012	-6,41%	-2,91%	2,04%	5,55%
2013	69,37%	1,64%	2,80%	5,68%
2014	8,66%	1,55%	1,73%	5,57%
2015	9,54%	2,43%	1,62%	5,47%
2016	-1,65%	3,53%	2,17%	5,32%
2017	19,40%	3,03%	2,54%	5,13%
2018	-16,99%	2,76%	1,82%	4,96%
2019	15,60%	2,75%	2,88%	4,83%
2020	5,43%	0,09%	2,40%	4,71%
Total	**857,64%**	**1425,63%**		

Data obtained from: (Jordà, Ò., Knoll, K., Kuvshinov, D., Schularick, M., & Taylor, A. M., 2019).

Appendix 7: Database with prices and returns of equities and real estate in Italy

Year	Equities capital gain	Real estate capital gain	Dividend return	Housing rent return
1914	-20,21%	NA	4,14%	NA
1915	15,33%	NA	6,49%	NA
1916	10,52%	NA	5,60%	NA
1917	16,00%	NA	5,63%	NA
1918	16,05%	NA	4,87%	NA
1919	-3,34%	NA	4,91%	NA
1920	-22,03%	NA	3,88%	NA
1921	-15,98%	NA	4,26%	NA
1922	22,45%	NA	5,33%	NA
1923	32,57%	NA	5,13%	NA
1924	72,03%	NA	5,58%	NA
1925	-8,00%	NA	2,96%	NA
1926	-42,36%	NA	3,32%	NA
1927	24,69%	NA	7,64%	NA
1928	18,34%	-2,00%	5,24%	0,49%
1929	-15,05%	-4,08%	3,97%	0,51%
1930	-18,77%	-7,45%	4,43%	0,55%
1931	-31,41%	-10,34%	4,09%	0,66%
1932	-7,71%	-10,26%	6,15%	0,76%
1933	28,92%	-5,71%	6,19%	0,85%
1934	13,36%	-6,06%	5,07%	0,83%
1935	7,21%	1,61%	4,65%	0,85%
1936	30,60%	1,59%	5,14%	0,83%
1937	8,48%	3,13%	3,71%	0,82%
1938	-5,62%	3,03%	4,00%	0,80%
1939	36,06%	2,94%	5,57%	NA
1940	14,03%	7,14%	3,99%	NA
1941	25,85%	13,33%	3,11%	NA
1942	16,86%	10,22%	2,68%	NA
1943	98,67%	61,04%	3,24%	NA
1944	149,62%	287,95%	1,91%	NA
1945	-46,87%	228,21%	0,27%	NA
1946	159,21%	60,22%	0,99%	1,24%
1947	-26,62%	49,27%	0,35%	0,94%
1948	25,16%	19,64%	2,35%	0,94%
1949	6,66%	-3,40%	3,44%	1,16%
1950	5,15%	1,40%	4,65%	1,58%
1951	7,92%	18,56%	5,75%	2,67%
1952	35,09%	1,91%	6,79%	2,85%
1953	3,21%	0,82%	4,97%	3,07%
1954	29,23%	4,35%	5,71%	3,23%
1955	3,21%	2,35%	4,27%	3,39%
1956	0,43%	2,91%	4,18%	3,80%
1957	-0,53%	2,64%	4,19%	4,09%
1958	24,30%	0,53%	4,91%	4,48%
1959	56,49%	-0,38%	3,91%	5,08%
1960	20,35%	2,79%	2,68%	5,59%
1961	3,05%	4,69%	2,33%	5,92%
1962	-16,48%	7,73%	2,70%	6,19%
1963	-14,29%	9,19%	3,01%	6,29%
1964	-25,55%	11,33%	3,28%	6,20%
1965	19,95%	-0,23%	5,41%	5,79%
1966	-2,53%	0,87%	3,43%	6,03%
1967	0,66%	1,95%	4,03%	5,29%
1968	1,57%	9,17%	3,94%	5,41%
1969	14,91%	3,87%	3,96%	5,17%
1970	-19,47%	6,33%	2,84%	5,27%
1971	-15,79%	3,15%	2,58%	5,20%
1972	10,92%	9,37%	2,76%	5,33%
1973	17,41%	9,41%	2,32%	5,40%
1974	-29,30%	89,72%	1,49%	5,88%
1975	-5,20%	2,26%	3,23%	3,53%
1976	-9,90%	25,54%	2,36%	3,87%
1977	-27,55%	6,87%	2,38%	3,27%
1978	26,14%	10,80%	5,47%	3,28%
1979	6,16%	23,74%	3,78%	3,76%
1980	79,99%	37,18%	3,86%	3,66%
1981	6,65%	29,26%	1,64%	3,09%
1982	-11,19%	13,25%	2,41%	2,79%
1983	27,57%	7,92%	4,98%	2,92%
1984	15,63%	1,42%	4,50%	3,31%
1985	94,52%	2,22%	5,41%	3,46%
1986	70,32%	2,06%	3,00%	4,80%
1987	-30,18%	5,27%	1,68%	5,00%
1988	24,41%	13,25%	3,58%	4,95%
1989	9,63%	18,36%	2,88%	4,62%
1990	-30,11%	20,56%	2,11%	4,14%
1991	1,68%	14,42%	3,31%	3,63%
1992	-3,81%	14,92%	1,95%	3,39%
1993	48,10%	2,92%	3,30%	3,16%
1994	7,51%	-1,60%	1,96%	3,34%
1995	-1,98%	1,85%	1,70%	3,65%
1996	5,45%	3,70%	2,46%	3,88%
1997	56,12%	2,60%	3,60%	3,99%
1998	43,15%	0,15%	2,04%	4,09%
1999	20,82%	1,22%	2,24%	4,22%
2000	6,77%	4,57%	2,09%	4,27%
2001	-23,87%	6,64%	1,70%	4,18%
2002	-21,61%	11,11%	3,04%	4,00%
2003	13,64%	6,27%	3,58%	3,70%
2004	20,51%	6,92%	5,87%	3,58%
2005	15,45%	7,10%	5,45%	3,43%
2006	17,23%	5,73%	5,00%	3,28%
2007	-7,85%	4,50%	3,65%	3,19%
2008	-49,91%	1,57%	3,07%	3,13%
2009	17,52%	-0,69%	5,04%	3,16%
2010	-11,13%	-0,81%	3,67%	3,25%
2011	-24,55%	0,60%	3,23%	3,33%
2012	8,39%	-4,46%	4,67%	3,38%
2013	18,51%	-5,72%	4,33%	3,58%
2014	0,64%	-4,33%	2,82%	3,79%
2015	14,37%	-2,60%	3,22%	3,97%
2016	-8,07%	0,25%	3,44%	4,09%
2017	14,37%	-1,07%	3,62%	4,08%
2018	-15,14%	-0,55%	2,72%	4,15%
2019	22,92%	-0,10%	5,25%	4,18%
2020	-6,33%	1,90%	2,15%	4,19%
Total	**1140,41%**	**1201,38%**		

Data obtained from: (Jordà, Ò., Knoll, K., Kuvshinov, D., Schularick, M., & Taylor, A. M.,2019).