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RETURN ON INVESTING IN RESIDENTIAL REAL ESTATE	

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1. Introduction

Real estate research is becoming more and more international and relevant by attracting various researchers in different parts of the world. According to the scientific literature, the most researched questions are: 1) the role of real estate in a mixed-asset portfolio, 2) real estate and portfolio risk management, 3) performance measures and 4) diversification within real estate portfolios.[1] Another article identifies 1) performance measures, 2) macroeconomic factors, 3) diversification in valuation and 4) property investment strategies as most researched topics and priorities.[2] Also, when someone takes a glance at the low correlation of real estate with other asset classes, **the relevance of the topic** becomes evident. In general, the cyclical fluctuation in stock prices or returns on fixed-income securities seem to be independent from the performance of real estate investments. In general, direct investing in real properties can provide a steady stream of income, a meaningful price appreciation and an opportunity to mitigate risk. At the same time, indirect investing can contribute to portfolio diversification, while also providing meaningful returns. This is why it is so important to investors to be aware of the possible effects of inserting real estate into their portfolios.

The level of exploration of the topic in the scientific literature is thorough regarding the most researched areas. At the same time, most of the studies focus on specific fields of investing in real estate, while this thesis will explore both theoretical and practical aspects and will include a standalone and a comparative analysis. In terms of theory, the study will focus on intrinsic and extrinsic factors affecting real property investing, be it its special characteristics or the major macroeconomic factors. When it comes to practical analysis, the level of exploration will be detailed. The standalone analysis requires a focused approach that also involves some iterative elements and will resemble a vertical assessment. This is going to be followed by a comparative analysis, where a wider approach will be used to reflect on other asset classes and their impact on investment decision-making (by having a more horizontal nature). All in all, the primary aim is to keep the study concise, make it thorough yet wide enough to reflect on the key aspects of profitability.

Having said that, **the aim and objectives of the thesis** slightly differ from the mainstream research, although they build on the findings of the most researched areas. The reason behind this is that the study examines the possible view of an investor to investigate the topic in detail. Although it

[1] Graeme Newell, Elaine M. Worzala, Patrick McAllister and Karl-Werner Schulte, *An International Perspective on Real Estate Research Priorities,* Journal of Real Estate Portfolio Management 10(3)

2 Thi Kim Nguyen, Cheng-Po Lai, Hoai Vu Phan & Muhammad Najib Razali (2021): *Real estate research trends and most impact real estate journals: a co-citation analysis,* Pacific Rim Property Research Journal, DOI: 10.1080/14445921.2021.1964196

is important for an investor to understand theoretical level argument, in this study, the focus will be on the decision-making process. The primary aim of this study is to answer the question whether one should invest in real estate (problem question 1) and if so, under what circumstances (problem question 2). To answer these, first, one should take a closer look at the theory (objective 1) and only then apply calculations, formulas and ratios, based on the theoretical foundation developed earlier in the process (objective 2). The calculations are twofold, focusing on both direct and indirect investing. There is also an introduction to the practical part of the study in the form of mortgage calculations and real estate valuation.

The novelty of the thesis comes with its comprehensive nature. Most of the mainstream studies select one specific aspect of investing, either more theoretical or more practical. However, an investor should be aware of theory and practice and be able to reflect on the most relevant aspects of both. This is why this thesis takes a look at the big picture: the theory-practice dimension of a deal by delivering real-life calculations. This comprehensive method covers all aspects of analyzing a deal and equips investors with the necessary tools to recognize good deals and to make right decisions. The theoretical foundation will lay the ground for further technical analysis. The whole work is designed in a way to focus on the special characteristics of real estate investing and the macroeconomic factors affecting real property investing first, before turning to actual calculations and estimates. These estimates start with the financing part of the deal, followed by real property valuation in order to give a solid foundation for understanding both the environment and the specifics of a deal. Investors should feel more comfortable by familiarizing themselves with both aspects of investing. This comprehesive study is meant to serve investors in their decision-making.

With respect to methodology and methods at the theoretical level, this type of research is qualitative with significant quantitative elements. Even with extra practical considerations, according to the traditional classification, this research considered to be fundamental (pure). Throughout the literature review, many exciting articles that grasp several aspects of investing in real estate will be scrutinized. Then, these theoretical studies will be used to support the base line of argument in a quest for answers regarding the problem questions. The way of conducting this research is to glean information from available books, articles and online sources, and then analyze, systematize them. The next step is a structured results analysis. The second part of the research focuses on applicability by making calculations and estimates. According to expectations, this method will provide enough insight to draw reasonable and meaningful conclusions.[3]

[3] C. R. Kothari, *Research Methodology, Methods and Techniques* (second, revised edition)

With respect to methods at the practical level, first comes mortgage calculations in order to understand the financing part of a deal. Financial leverage is one of the specific features of real estate deals and can make things happen that otherwise would be unattainable. This is a powerful tool that must be understood by investors thoroughly, including its risks. This section is followed by real property valuation. A lot of frustration stems from the difficulty of determining the value of a property. Both sellers and buyers are uncomfortable in the negotation when the correct market price cannot be determined. Three of the techniques are mentioned in this study and a selected one is used to estimate the value of a specific property. As it will be clear, this calculation will alter the whole course of exercise and will prove itself to be really useful. Within the realm of direct investing, a complete analysis comes next in the thesis on a standalone basis. This is going to be an iterative process in order to keep the underlying figures realistic. Finally, indirect investing should also be covered. It is reasonable to conduct a comparative analysis in order to approach portfolio investing correctly. The result is going to be a clear view on how to position real estate in a portfolio with respect to its profitability and risk profile.

The structure of the thesis is shaped in the following way. First comes the special characteristics of real estate investing, followed by macroeconomic considerations and identifying potential advantages and disadvantages in investing. This part of the study is theoretical. This is followed by practical aspects: mortgage calculations, real estate valuation, standalone and comparative analyses, then correlation among asset classes and portfolio considerations. The whole structure is designed to turn theory into practice and the titles of the chapters are selected based on relevance to the main line of argument. Also, it will be built up from the basics to the more advanced topics of real estate finance and economics. The definitions will set a solid foundation for the inevitably more complex parts of the thesis. The primary aim here is to build a stronger reference to the concepts that follow suit.

So, without further ado, let us turn to the special characteristics of investing in real estate.

2. Return on Investing in Residential Properties

2.1 Special Characteristics and Basic Definitions

Let us start our journey by clarifying some of the basic definitions and fundamental characteristics of real estate investing. To begin with, the most prominent feature of real estate is its **fixed location**. As the old cliché goes, when it comes to real estate, there are three things that really matter: location, location, location! It is certainly true that one thing that cannot be changed when investing in real property is its given location. With that comes many relating issues, such as legislation and economic environment at the local level and as a consequence of these: tax considerations. Also, from an investor's perspective, whether the management of a rental property is done personally or through service providers, done remotely or within the same area/district are just as important. Seemingly tiny changes can make a real difference when it comes to profitability of the business. Henceforth, when someone considers investing in real estate, it is worthwhile to go into the specifics. So much so as checking the overall state of the building, the area where the land is located, local services, criminal statistics and many other factors, such as the macroeconomic environment, financing opportunities, potential financial distress of the seller, or estimates regarding the performance of other investment opportunities. Overall, this is why the uniqueness of real estate cannot be overemphasized.

Before moving on to the main benefits of investing in real estate, it is useful to clarify some of the basic **definitions**. When talking about real estate, one generally should think of the land and all things attached to it. Real property is more of a legal term and generally represents the legal interests in land and all related things. Legal terms do not end there, since the three most commonly used concepts are title, deed and lease. First, title is the ownership right to a real property, while deed is a document used to convey rights from one party to another. Lease is only different from the latter with regard to its nature as a document that is used to convey rights to a leased property. Regulation is another aspect that must be reflected on. Land use is regulated in every part of the world. In an industrial area, it is not possible to build residential buildings and vice versa. Zoning problems can cause serious headaches for investors. Here, due diligence and a necessary research before taking a

step is absolutely of the essence. Common regulatory changes can be frustrating to investors because of the long-term comittment nature of the investment. This could add so much to the overall riskiness of a project that it often makes it better not to make a move at all.

Generally speaking, when buying a property for investment purposes, the aim is twofold: either to make a long-life investment in order to generate significant current income and achieving price appreciation, or buying a relatively cheap property, making a rehab at a reasonable price and sell it for a hefty profit. These two ways, of course, can be combined, giving a longer life to the whole project while trying to reap most of the benefits at every step of the process. The basic idea here is to buy at below market price, rehab the property by using special knowledge and connections to builders, then get rental income and sell at a point when it makes most sense.[4] However, many landlords forget that the primary aim of owning a property is to make money out of it. Overinvesting, micro-managing and elongated vacancy periods are all killers of expected profit. Again, it is a very fundamental characteristic of this type of income-generation that funds are comitted for long-term. Furthermore, transactions involve large amounts of money spent at one time, while the returns are going to be generated over an elongated period, if at all. In other words, a circumspect approach is needed to achieve a positive outcome.[5] This constant monitoring, evaluating and balancing exercise what can make a real difference in terms of outcome.

Now, it is worthwhile to take a look at a possible real estate **classification** before entering into deeper economic discussions. First, there is a difference between residential and commercial real estate. Apart from the obvious separation in everyday use of the words, according to some classifications, commercial real estate also includes residential properties when these are owned with the intent of generating rental income. At the same time, commercial real estate includes office and retail properties as well. In a more simplified way, the categorization is based more on physical differences between the two. In general, the category of residential properties consists of single-family and multifamily homes. Within the former class, one can distinguish among detached, cluster developments and zero lot line developments. The multifamily catogory has high rise, low rise and garden apartment subcategories. Condominiums and co-ops also belong to the residential property class. This study will focus on residential properties when analyzing direct investments, including single-family and multi-family. Note that the difference between the two is that the former is usually

[4] David M. Greene, *Buy, Rehab, Rent, Refinance, Repeat: The BRRRR Rental Property Investment Strategy Made Simple*, May 16, 2019

[5] Heather and Brandon Turner, *The Book on Managing Rental Properties; Find, Screen and Manage Tenants with Fewer Headaches and Maximum Profits*

owner-occupied (that might be rented), while multi-family is the basic form of income-generating rental investment.

Another, wider classification could differentiate between single-family, multifamily, condominiums, townhouses, foreclosures and fixer-uppers. Since the former two are already discussed to some detail, let us turn to the last three types. A condominium is a property type where there is a whole structure with common areas and separate units are owned by different people. Certainly, it does not mean that an individual cannot own two or more units at the time, and as one should think about investors, this is more likely to be the default option. Townhouses are similar to condos in nature, while having a detached home-like atmosphere. So, the legal structure is similar to condominiums, but they look more like single-family homes. Foreclosures, as the name suggests, are owned by banks. These are probably distressed properties that are cheaper to buy than under normal circumstances, therefore giving it a more business-like character. With a fixer-upper the investor needs to channel additional funds into renovating the property. The actual shape and condition of the building can vary but usually the would be owner should calculate with substantial additional rehab costs.[6] Please find below a possible classification of real properties.

[6] Brandon Turner, *The Book on Rental Property Investing, How to Create Wealth with Intelligent Buy and Hold Real Estate Investing*

Exhibit 1 – Classification of Real Properties[7]

Non-residential			Residential
Commercial	**Timberland**	**Farmland**	
Detached			Single-family
Cluster developments			Multifamily
Zero lot line developments			Condominiums
Multifamily (income-producing)			Co-ops
Office			Townhouses
Industrial			Foreclosures
Warehouse			Distressed properties
Retail			
Hospitality			
Mixed-use			

It is just as important to make a differentiation among **real estate investment types**. The first dimension of this separation is made between investing in private or public markets. One can also differentiate between direct and indirect investments. Traditional examples are purchasing a real property or providing funding for mortgage lending (private, direct) and investments done through an investment vehicle like a real estate fund (private, indirect). The classical form of public, indirect investing is real estate investment trusts (REITs). Another way to classify the investment side of real property investing is to focus on ownership interest. In this respect we can differentiate between equity and debt investors. While equity investors have an ownership interest, debt investors can be considered as lenders. The dynamics of risks and return characteristics follow the logic of the base classification made here.[8]

Real estate investing is done through a multitude of **experts**. Real estate agents, brokers and realtors are sometimes used interchangeably, improperly. The similarity stops with the fact that all of

[7] Based on 1) CFA Program Curriculum and, 2) Brandon Turner, *The Book on Rental Property Investing, How to Create Wealth with Intelligent Buy and Hold Real Estate Investing,* 3) Malgorzata Renigier-Bilozor, *Modern Classification System of Real Estate Markets*, September 2017, Geodetski Vestnik 61(3): 441-460

[8] CFA Program Curriculum 2020 Level II Reading 39 Private Real Estate Investments

them have to have a license to conduct business in the field. Real estate agents are qualified to help buyers in buying, selling or renting a property, but they have to work for a broker. Brokers are also agents, but they have the ability to conduct business on their own and also to recruit other agents working for them.[9] It comes as no surprise that additional licensing is needed in order to take on additional responsibilities. Realtor is a wider category that includes members of the National Association of Realtors (in the US), and they must comply with a set of ethical codes.

The consideration in return for the services provided is called the **commission**, and usually represents 3-6% of the purchase price. The commission is then going to be split among the listing and buyer's agents and brokers, so divided basically into four. While a real estate broker does not have to share this amount with the other brokers at the firm, real estate agents have to share it with the brokerage firm they are working for. The split between the firm and the agent is up to negotiation, but the agent related to a specific transaction can usually keep a higher percentage compared to the firm. A typical split can be like 90%-10% or 80%-20%.[10] Having every players share calculated in the process, in the following section the focus is going to be on real returns of residential properties. The literature is so plentiful, it allows us to narrow down the research to this segment.[11]

[9] https://www.realtor.com/advice/buy/whats-difference-real-estate-salesperson-broker/

[10] https://www.realtor.com/advice/sell/real-estate-commission-explained/

[11] Malgorzata Renigier-Bilozor, *Modern Classification System of Real Estate Markets*, September 2017, Geodetski Vestnik 61(3): 441-460

2.2 Macroeconomic Considerations

Macroeconomics deals with aggregate economic quantities, investigates all variables that are relevant to the economy as a whole, therefore being important to the analysis. These variables are often called macroeconomic factors and many of them should be carefully analyzed and put into perspective when investing in real estate. Inflation is naturally one of these, and rightly so, since an overall increase in price levels is an important indicator of many aspects of the economy. Its effect on real investments can be twofold: on the one hand, it can fuel demand by serving as an inflation hedge; on the other hand, it should provide investors with some sense of certainty. Any unpredictability over future inflation can hinder savings and investments; investors are risk averse, so uncertainty is not much welcomed by lenders and borrowers.

Another important variable is exchange rate.[12] The relationship among interest rate, money supply, inflation and exchange rate is clearly and widely researched by many. Generally speaking, these variables have a predictable movement in the short and in the long run. So, for example, if the interest rate increases, money supply decreases and the cost of borrowing increases. This will inevitably lower demand for real estate and according to the law of demand prices will drop. Lower prices will increase demand at one point. Eventually, the whole cycle repeats. To put it in another way, an interest rate increase diminishes the demand for residential properties that ultimately leads to property devaluation while at the same time the funding side is becoming more and more expensive. What is more, the opportunity to sell the property at an advantegous price, decreases. This will lead to increased liquidity risk.

The major line of research also focuses on other determinants such as GDP growth, the vitality of the construction sector, the marginal propensity to consume (MPC), the banking sector (through mortgage lending) and labor productivity. This is strengthened by other studies emphasizing the importance of economic activity, interest rate effects, private and public consumption and investment, inflation, exchange rates, even stock or oil prices. From a supply side standpoint, the housing stock and the overall health and vitality of the construction sector with all its spillover effects, while from the demand side, rents, market structure and positive externalities of the infrastructure can all play a crucial role in determining prices.

[12] Ifebi Ogonna, Tabansi Callistus Okeke and Arc Oluchi Ifedi, *Macroeconomic Factors and Real Estate Investment in Nigeria,* August 2021, International Journal of Management and Enrepreneurship (IJME) Vol. 3. No. 1, COOU 2021

The construction sector determines the supply side of the equation. In an overheated housing market, prices will increase, fuelled by accelerated construction, entailing elevated costs of construction. More workers are needed and when the labor market starts to be highly exploited, real wages are going to increase. With the higher demand for raw materials and equipment a cost-push inflationary pressure will build up. Demand will determine the level at which the higher supply can be effectively utilized. To find equilibrium, the oversupply will lead to a price decrease, in line with market forces. Nevertheless, a booming real estate market can definitely add much to GDP figures. At the same time, overheating and market bubbles must be closely monitored, as it is supported by historical evidence.

In a market bubble, the price of an asset will exceed its intrinsic value. What it means in case of real estate is that properties are not simply overpriced but have lost any connection to real values. A real estate market bubble is a so called asset market bubble as opposed to stock market, credit or commodity bubbles. A characteristic is that they all stay hidden, since it is never a clear-cut case if market pricing is accurate or not. There are still certain ways to realize them. One is when prices are deviating from local income or rent levels. Another is the case of an excessive construction activity, many times in tandem with supported extended lending. In practice, for example, the European Commission in its regular economic forecasts pays attention to price-to-income and price-to-rent deviations from their long-term average and also to some other deviations from benchmarks in demand and supply fundamentals.[13] The price-to-rent ratio is calculated as the median home price divided by the median annual rent and can be used as an indicator for the housing market.[14]

Rents are the result of equilibrium in the market, driven by supply and demand side factors. This can vary in different areas and locations. One thing to rely on is a thorough understanding of the market into which one is planning to enter. If the overall picture seems bright than timing is going to be the only crucial factor. When searching for good deals, one should look for the properties' key location, amenities, positive reputation and available services, be it medical, social or educational. If all the arrows point in the same direction the financing part will also be easier. Banks might feel more comfortable with an accurately valued property in a perfect condition in addition to a strong credit record.[15]

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[13] https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts/autumn-2021-economic-forecast_en

[14] https://tradingeconomics.com/country-list/price-to-rent-ratio

[15] Ryan Rivas, Dinesh Patil, Vegelis Hrisidis, Joseph R. Barr and Nani Narayanan Srinivasan, *The Impact of Colleges and Hospitals to Local Real Estate Markets*, January 2019, Journal of Big Data

The credit record per se does not belong to macroeconomic considerations as long as there is no systemic risk involved, where non performing loans may accumulate so much so that the whole financial system might be endangered. Supervision, monitoring, evaluation and the mortgage concept in general should provide enough protection against such situation. However, the stock of non performing loans and an overestimated portfolio quality on the financial institutions' side can lead to serious consequences. Fortunately, since the 2008 financial crisis, the monitoring and evaluation of the vitality of financial markets and bank performances has been significantly reinforced.[16]

In the narrow sense of residential real estate markets, one should predominantly think about both new and existing dwelling units. Not all are going to be rented though, therefore a fraction of them are destined to enter the market as possible income-generating properties. At the market equilibrium, the quantity of the goods and services will equal the demand for those. In other words, the market will find the equilibrium price where landlords are already willing to rent and tenants are still ready to pay for the housing. In case of oversupply, prices will drop, while in case of excess demand, prices must increase. Of course, shocks can happen at both sides of the equation and the more unexpected, the more painful they are for market players (Charles F. Floyd and Marcus T. Allen, 2015).[17]

The primary way one can mitigate a possible negative outcome is through preparation. Being aware of the most common challenges, building on the expertise accumulated by professionals in the field and drawing the right conclusions can save enthusiasts from falling accidentally into traps. In this respect, it is important to mention that in building up a balanced portfolio, other factors can also impact the decision-making. Diversification is definitely one of them, so as the attractiveness of a steady stream of income that a residential real estate can generate. Still, when financial markets are under constant pressure, as we have seen it time and again, a more reliable investment option can be attractive to investors.

Regarding the attractiveness of investment opportunities, any increase in the following can have a positive impact on demand: population growth, employment, household income, tax benefits, household formations. Income and employment are also important drivers of demand. Growth in population is a prerequisite for an increase in housing needs, while employment and income together determine the relative affordability of housing. There is also positive correlation between housing and

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[16] Working Group on Real Estate Methodologies, *Methodologies for the Assessment of Real Estate Vulnerabilities and Macroprudential Policies: Commercial Real Estate*, December 2019

[17] Charles F. Floyd and Marcus T. Allen, *Real Estate Principles, eleventh edition* (Understanding Real Estate Market Dynamics)

employment, since the desirability of regions to attract employers can affect demand for housing for those who want to live in the neighborhood because of better employment prospects. This will have an impact on house prices as well.

Also, interest rates are relevant in this respect. These are determined by the supply and demand for loanable funds based on the business cycle in the economy and the central bank's policy in managing the monetary system. Interest rates have an impact on housing demand, since most of the purchases are done by using leverage (i.e. financing provided by banks). Monthly payments of these loans can vary significantly based on the actual interest rate. Not only this, but the spillover effect of changes in interest rates is also significant on construction, appraisals and financing in general. According to the fundamental relationship between housing and interest rates, one can conclude that an increase in interest rates tend to have a negative effect on home ownership.

While there is a consensus in the literature on the impact on demand, this cannot be said to the magnitude, i.e. yet to be discovered more in depth (Brueggeman and Fisher, 2018).[18] Another aspect of changes in interest rates is related to financing. When interest rates decline, borrowers are more keen on refinancing (i.e. paying back the original loan and looking for another at a lower interest rate). From the lender's perspective, this is called contraction risk or prepayment risk. On the flip side however, higher interest rates will lead to the so called extension risk (from the lender's standpoint), which occurs when borrowers are looking for options to maintain the favorable conditions of the actual loan by avoiding any early repayment.

Since the motivation behind purchasing a property for investment purposes is strongly related to targeting rental income, it makes sense to take a closer look at it. The rental price depends on the market rental rate, based on the available rentable space. As this rate rises, supply will go up, and when it decreases, more of the available space will be held vacant and the supply will decrease. The maximum amount of space is limited and the difference between equilibrium occupancy and the existing stock of space is equal to the vacancy rate. When additional buildings are constructed the supply curve shifts to the right, representing additional units of space and leading to lower rent/unit prices. Higher demand for space shifts the demand curve to the right, representing more units of space in need that will lead to higher rent/unit figures.

So, understanding the market is an essential element of a successful adventure. Job opportunities, wages, local conditions, energy prices and even the weather can impact market conditions. It is really very difficult to take all different aspects into consideration but still worthwhile to try to identify the

[18] Brueggeman and Fisher, *Real Estate Finance and Investments, Sixteenth Edition*, McGraw and Hill Education (Ch. 7)

most relevant ones. If a reasonable investor wants to keep track of changes in the market, first, it makes sense to try to follow the fluctuations in property values. If prices are decreasing, it might be a good time to build up a stronger real estate portfolio. Price fluctuations are unavoidable and partially this is the reason why relying only on price appreciation is simply speculation. An investor should also build on rental income that helps smoothing the fluctuation of the market. Even when prices drop, the incoming dollars can keep investors safe by covering the major costs and possibly leaving them with some profit as well. Another beneficial side effect of a price drop is that it lowers financing costs. Lower costs will make it easier to make a profit on the investment altogether.

Two widely used concepts regarding market conditions are worth to mention. One of them is the so called seller's market, which is a condition where demand exceeds supply (i.e. there is a shortage of available properties). In this case, sellers have more influence on setting house prices than buyers. As a consequence, buyers start to compete with each other for the short supply and this leads to higher puchase price at the end, sometimes even higher than the original asking price. The opposite of this is the buyer's market, where oversupply empowers buyers to bid more aggresively and set the market price at a lower level.[19]

Apart from the satisfaction from a strategically well-timed buy, broader refinancing options represent an additional benefit. When the property's value incresing, the possibility of refinancing into a better loan becomes reality. There are two major ways how this works. One is the option to negotiate a better-rate loan, while the other is simply to take some cash out and reinvest it. At the one end of the spectrum, prices can increase so much so that it does not make sense to hold on to the property anymore. At the other end, a substantial price drop, a trough in the real estate cycle may force investors to try to escape further financing, especially during times of vacancy. The strong feel to unload such burden may lead to below purchase price sales. While some may take advantage of a scenario like this, on the less fortunate side, other people would feel disappointed in their adventure in real estate investing altogether. It is important to remember that the nature of the cycle is to have its ups and downs and this will surely repeat over time.

[19] https://www.nar.realtor/search-results?qu=buyers%20market&qu=sellers%20market&p=1

Exhibit 2 – Selected List of Macroeconomic Factors Affecting Real Estate

a) Population growth
b) Unemplyment rate
c) Household income
d) Household formations
e) Tax benefits
f) Interest rate
g) Inflation rate
h) Exchange rate
i) GDP growth
j) Marginal propensity to consume (MPC)
k) Economic activity
l) Private and public investment
m) Housing stock
n) Construction sector performance
o) Stock prices
p) Energy prices

2.3 Advantages of Investing in Real Estate

Real estate generally considered to be an investment that keeps its value and even appreciates over time. The reason behind this is how cost-push inflation works: wages, materials and costs of production during normal times will increase. This will put an upward pressure on house prices as well. Of course, in some cases this increase might not happen, but even in a distressed market, house prices tend to keep their value. It is fair to say that long-term holding of real estate will most probably lead to **capital gains** during normal times.[20] Please note that total return includes both rental income and price appreciation. While the latter is a bit difficult to predict, rental income can be calculated with more precision. Also, **tax** on capital gains and rental income can differ significantly. This study includes a chapter on real estate valuation as well as a return calculation on a standalone basis (i.e. based on rental income from direct investing). While there is no guarantee that a particular investment property will always appreciate in value over time, one of the goals of investors is to try to invest in those that are doing so.

Another factor is **protection against inflation** (i.e. preserving purchasing power). The measurement of change in purchasing power has different methods, indexes and calculations. In general, inflation is a leading macroeconomic indicator that refers to the rate at which the overall level of prices for goods and services increase over time. GDP deflator and the consumer price index (CPI) are two indicators that are widely used to measure the actual level of increase in prices. From a analyst point of view, core inflation is an important indicator, since it leaves energy and food prices out of the calculation, thereby giving analysts a better understanding of the trend. Inflation has an impact on debt financing, unemployment, investments and savings.[21] Another interesting concept is to analyze real estate value in the light of deflationary environment, but since this does not seem to be an imminent threat nowadays, let us focus more on inflationary pressures.[22]

In a high inflationary environment there are limited options for investors to find a profitable investment. Direct real estate investing is one of those options and can be used as a hedge against

[20] Ken H. Johnson, Justin D. Benefield, Jonathan A. Wiley, *The Probability of Sale for Residential Real Estate*, January 2007 - Journal of Housing Research

[21] Ayendeji, Shola Mathew, *Inflation-Hedging Characteristics of Real Estate*, June 2017

[22] Benedikt Fleischmann, Carsten Fritz and Steffen P. Sebastian, *Real Estate, Stocks, Bonds as a Deflation Hedge,* May 2019 - International Real Estate Review

inflation. Avoiding the negative consequences of holding money and aiming for price appreciation is definitely something investors are looking for. One might look even further and enter in the equation the rental income that can be indexed, thereby transferring the negative effects of an increase in price levels to tenants. If the most terrifying vacancy fears can be overcome, an increase in **current income** will eventually be available. Nevertheless, it is important to keep in mind that operating income (in the form of rental income) generally destined to cover the debt service, maintenance and transaction costs. At the same time, capital gains can be realized at the end of a holding period.

A steady stream of income and a good credit record add up to more future opportunities.[23] This should be the perfect time to build up reserves, diversify and pay more attention to upcoming opportunities. In any case, being able to use **financial leverage** is undoubtedly another advantage that can elevate returns. However, it is a double-edged sword that can have both positive and negative consequences, so it must be dealt with caution. Still, financial leverage can make things happen that otherwise could stay unattainable. When used properly, this can be an extremely powerful tool to achieve one's financial goals. Still, there are other ways to generate income from a property without financial leverage. Here, the so called "house hacking" can serve as a good example, since it does not require the purchase of a new property. This concept involves renting your own place of living; basically, partially renting your residence.

In many places, a slightly different way of doing this occurs: that is developing a duplex, then occupying one side of the building while either leasing or selling the other. It is a powerful tool to cover one's construction costs just as successfully as easing the burden of maintaining a property. Also, the BRRRR strategy must be mentioned here. This is more of exploiting a strategic advantage stemming from the nature of the selected investment. [24] The abbreviation stands for buy, rehab, rent, refinance and repeat and is considered to be a strategy to build up a massive real estate portfolio over the years. One should build on the theoretical foundation of maximizing the benefits at every step of the process, meaning buying low, rehabbing at a low cost and renting out right away, preferably to reliable tenants. The opportunity of refinancing will occur when prices increase at the top of the real estate cycle with lower interest rates.

At the same time, bond investments are more associated with inflation risk. The fixed cash flow and repayment of capital at maturity (i.e. in case of a plain vanilla bond) locks in the return in advance. So, inflationary losses can become reality with little to no way to escape, while rents can

[23] Laraib Mohib, *Real Estate Investment Class*, February 2020

[24] Brandon Turner, *The Book on Rental Property Investing, How to Create Wealth with Intelligent Buy and Hold Real Estate Investing*

still be adjusted to inflation. Stocks on the other hand can serve as an excellent hedge against inflation, since the rise in stock prices are inclusive. An increase in money supply is carried out by credit injections and the impact on prices will occur in stock prices early. All the aforementioned aspects shed a light on possible positive sides of investing in real estate. Still, it is worth to mention that some of the benefits can also be associated with bond investing. In order to reflect on some of the key points in direct comparison to fixed-income securities let us consider the following.

For the sake of simplicity, let us examine the sources of income of a fixed-rate bond. These are 1) the scheduled coupon and principal payments, 2) the reinvestment of coupon payments and 3) potential capital gains or losses if selling before maturity. In other words, there is invested capital in light of promised interest payments and a capital repayment at the end of the maturity period. It looks very similar to direct real estate investing in terms of devoted capital and expected monthly income. Both of them are relatively easy to calculate with and seem to be safe investments. Nevertheless, these two options are not the same. First, liquidity risk is much higher in the case of real property investing. It is never guaranteed to pull off a sale at market price regardless of the economic and market situation at the time. However, investing in bonds also carry liquidity risk to a certain extent. Selling before maturity can very well result in capital loss. Still, the two in terms of intensity are not comparable. It is always going to be easier to sell a bond (especially government bond) than to sell an apartment, a house or a commercial building. Second, the nature of the risk exposure is also somewhat different. The capital at risk is much more related to the physical properties of the investment in the case of real estate. Also, other unfavorable circumstances can occur with financing (especially when highly leveraged): vacancy, natural disasters, regulatory changes, political shifts just to name a few.

While fixed-income investing is not riskless either, negative scenarios are much more rooted in either macroeconomic or microeconomic factors. In this respect, interest rate volatility, inflationary pressure and credit risk (default and loss severity) are to be mentioned first. There are of course options to hedge against these risks, but this can also be said to real estate. Real property investing, as reiterated in the literature and highlighted here as well, can serve as a hedge in a high inflationary environment. Nevertheless, this is not a special characteristic of this investment type, since inflation-linked bonds also exist and used by investors to overcome the negative consequences of inflation that targets all holders of money.

Finally, another aspect is **risk diversification**. Presumably, real estate investors are engaged in other income producing activities as well, be it business encounters or investing in other assets. According to portfolio management fundamentals, the overall picture of a portfolio (i.e. asset allocation) what matters the most. A diversified portfolio, in general, also includes real estate on top

of stocks and debt securities and other assets. Their riskiness is understood as bonds being the least and stocks being the most risky. Rental properties are positioned somewhere in between these two. The aim of portfolio diversification is enhancing returns and/or decreasing risks that derive from a single investment.

Including financial instruments in a portfolio that are capable of protecting real value (among them mutual funds, exchange-traded funds, Treasury Inflation-Protected Securities (TIPS), commodities, gold etc.) are also beneficial. Among these, mutual funds can represent a portfolio consisting both, bonds and stocks. Commodities, like oil or agricultural products are affected by many other factors in the economy. TIPS are inflation-linked government securities that are effective in inflation protection but their price fluctuates according to current and expected inflation levels, so they are not always available at a reasonable price. If there is a low correlation of returns of these assets than there are diversification benefits as well. Now, let us take a closer look at some of the risks and disadvantages.

2.4 Disadvantages and Risks

First and foremost, it is important to differentiate between uncertainty and risk. The major difference is that risk is measurable, while uncertainty is not.[25] Risk can be classified as **systematic and nonsystematic**. The former cannot be avoided and/or diversified, because it affects the whole market. Examples to this are the economic cycle, interest rates or inflation. Nonsystematic risk is limited in scope compared to systematic risks and affects only a specific industry or asset class. The latter form of risk can be diversified.[26] Further, according to general classification, **financial risk** includes market, credit and liquidity risks. **Non-financial risk** consists legal, regulatory, model, accounting and tax-related risks as well as operational risk.[27] Risk can be positive or negative, based on the expected result or outcome of a given situation.

Now, investing in real estate involves taking up a significant amount of risk. The list of risk factors cannot be exhaustively cited, since there can be countless possible hurdles, either in expected (calculated) or unexpected way. A number of risk factors have been identified and put into context in

[25] Benedetto Manganelli, *Real Estate Investing, Market Analysis, Valuation Techniques and Risk Management*, Springer

[26] CFA Curriculum, Level I, *Portfolio Risk and Return, Part II*

[27] CFA Curriculum Level I, *Introduction to Risk Management*

the scientific literature; many of them focus on a couple of key aspects, while others take a view from a broader perspective.[28] Still, in case of real estate, price appreciation/depreciation and long term rentability are the main factors to consider when talking about financial risk. Also, the economic environment and local conditions can be a significant source of risk. Here, macroeconomic conditions, such as GDP growth rate, household income, unemployment, interest and exchange rate and inflation should be highlighted **(market risk)**.

These factors can either increase or decrease the value of an asset, depending on the circumstances. Needless to say that not only the current income, but also the expected value appreciation side of it can be affected. Inflation (also known as **purchasing power risk**) should be mentioned separately in this respect because investors consider real estate as possible hedge against inflation. This can work in two ways. One is that rent itself can be indexed in order to follow the change in overall price levels. The other is cost-push inflation: an increase in construction costs that puts an upward pressure on real estate prices. These factors could certainly be altered by local subtleties, demand and supply side shocks or turns in the overall structure of the market. Please note that unexpected inflation poses a negative risk even in the case of direct real estate investing, because it takes time to adjust existing contracts to new price levels.

Financial leverage was listed among the many advantages of investing in real properties but its double-edged sword character has also been highlighted. Although, it makes it possible to magnify returns by using other people's money, it can also make negative outcomes more profound.[29] When making an investment decision, the wider financial aspects of the encounter must be thoroughly examined. On top of that, timing might be the most difficult to calculate with. The real estate cycle is hard to time well for many reasons. For one, although it has a correlation with the overall vitality of the economy, it is still very much influenced by local factors. Familiarity with local legal, economic, environmental and business conditions can be extremely beneficial in mitigating these kinds of risk. High transaction costs and low trading volume make it even more crucial to get the timing right.[30] Broadly speaking, in case of real estate investments, risk originates in the unique nature of the investment itself: its location, the property characteristics, design and contract details. These can be

[28] Mónica I. F. Ribeiro, Fernando A. F. Ferreira, Marjan S. Jalali, Ieva Meidute-Kavalaiauskiene, *A Fuzzy, Knowledge-Based Framework for Risk Assessment of Residential Real Estate Investments*, January 2017

[29] Piet Eichholtz, Matthijs Korevaar, Thies Lindenthal and Ronan Tallec, *The Total Return and Risk to Residential Real Estate*, April 2021, Review of Financial Studies

[30] Olufemi Adedamola Oyedele, *Challenges of Investing in Real Estate in Developing Nations*, November 2018, Project: Property Investment in Developing Nations

summarized as **business risk**. Further, another type of risk is related to the state of being highly leveraged that will lead to higher financial or default risk **(credit risk)**.

A reasonable investor will always try to cover all sources of risk with well-measured actions. One way to ease the pressure of illiquidity for example is to lessen the selling price, but this rarely resonates well with the intentions of owners. Having all the work done, money committed and nurturing activity invested, one definitely wants to avoid selling at below market price. Yet, in case of urgent liquidity needs, there is only limited room for manouvre. This is why **liquidity risk** is a major concern for real property investors. Overall, the characteristic of having large amounts committed besides additional transaction costs reiterates the concentrated risk profile.[31] This contrast can be even more visible when one tries to look for similarities with other forms of saving, such as deposits, stocks, fixed-income securities, life insurance, pension funds among others. Regarding liquidity risk, real estate seems to be riskier than stocks or bonds. Although the picture can be a bit more nuanced if we understand liquidity risk as the need to sell an asset below market price, not only as having the possibility to sell. When talking about riskiness from a return perspective, this type of investment stands somewhere in the middle (between stocks and bonds), with an important note about its concentrated risk profile.[32]

Turning to **risk analysis**, let us first try to identify some of the real estate specific risk factors. One of them originates in the need to take a more active role in management tasks. While bond or stock purchases need substantial mental effort before and throughout the holding period, no substantial physical activity is necessary in order to nurture the investment. On the other hand, in case of direct real estate investing, managing tenants, dealing with maintenance and repair issues, paying attention to the administrative side of the process can turn the adventure into a very demanding, energy-draining one. When considering transferring all these tasks to a professional, one should not forget that this move comes at a price and possibly a hefty one. Still, it can save an investor from negative experience with the building administration or with tenants, since disagreements sometimes are inevitable.

Overall, a significant amount of risk originates in the physical nature of direct property investing when it is compared to other investment vehicles. **Risk management** is a well-known process in the financial world and basically all investment involves some level of it. Even buying a US Treasury Bill, what is considered to be a risk-free option, is pertain to a certain level of risk. It is widely accepted

31 Benedetto Manganelli, *Real Estate Investing, Market Analysis, Valuation Techniques and Risk Management*, Springe

[32] William B. Brueggeman and Jeffrey D. Fisher, *Real Estate Finance and Investments*, sixteenth edition

that investors should rather focus on defining and measuring the level they are ready to take than trying to avoid it completely. This is why decisions should be calibrated according to the risk involved. Risk and return are strongly related, and the process of measuring it includes both, quantitative and qualitative elements. A commonly used tool for measurement is the so called standard deviation (a statistical measure of dispersion around a central tendency).[33]

All in all, many circumstances should coincide for a positive outcome from a investor's point of view. The real estate market, the business cycle, demographic and environmental factors, physical properties, natural disasters or even a pandemic can affect the market and one's success in the field. Not all can be calculated, forecasted, expected or even identified at the time of making a decision on a purchase or sale and not all of them financial in nature. This is why the most terrifying defect (structural problem) is the one that stays unnoticed when concluding a deal. Furthermore, real estate investing can be a risky adventure because of high transaction costs and long-term maturity. In the latter case, it is easy to see that the longer the holding period, the higher the risk, since so many challenges can come up in the meantime. Regarding other asset classes, higher expected returns are associated with longer term commitments and/or higher risk-taking.

[33] https://www.nar.realtor/risk-management

Exhibit 3 – Summary of the Main Advantages, Disadvantages and Risks

Advantages	Disadvantages	Risks
Current income	High transaction costs	Systematic risk (cannot be diversified)
Price appreciation	Long-term maturity	Non-systematic risk (can be diversified)
Inflation hedge	Illiquidity	Financial risk (market, credit, liquidity)
Diversification	Indivisibility	Non-financial risk (structural, legal)
Tax benefits	Management costs	

2.5 Financial Aspects

In most cases the purchase of a property happens through **debt financing**. In terms of loans, one can differentiate between amortizing and interest-only loans. While the former requires periodic payments that contain both interest and principal, the latter involves interest payments and a lump sum transfer at the end of the term. It is easy to figure the main difference between the two. In case of a fully amortizing loan, the periodic payments are equally recurring amounts and the whole payback period is smoothed throughout the timeframe. In case of an interest only concept, throughout the life of the payback period a smaller amount (i.e. equal to the interest) is paid regularly, plus there is a larger payout at the end of the period. Other classifications are also possible: there are fixed-rate mortgages, two-step mortgages and adjustable-rate mortgages. A fixed-rate mortgage sets the interest rate at the beginning of the contract. In a two-step mortgage, the interest rate can vary depending on the contract terms and the payment is recalculated mid-term. With an adjustable-rate mortgage, the interest rate depends on the interest rate level in the economy.[34] The main determinants of mortgage interest rates are 1) the real rate of interest, 2) interest rate risk, 3) inflation expectations, 4) prepayment risk and 5) some other risks.[35]

Mortgages are constructed in a way to ensure lenders to commit financing for the long-term. When a borrower defaults on a mortgage agreement, the so called foreclosure process will be initiated. This procedure also have many forms: judicial or nonjudicial, strict or deficiency. The first differentiates between court-ordered and other versions, while the latter two are somewhat different in terms of function. In a strict foreclosure the lender receives title right away on default. A deficiency foreclosure means that the additional costs must also be covered by the borrower, in case the proceeds does not cover the whole debt. Another important aspect of the mortgage concept is whether the loan is a recourse loan or a non-recourse loan. In the former case, the lender has a claim against the borrower for the shortfall in case the proceeds from the sale of the property did not cover the whole mortgage balance. When it comes to a non-recourse loan, a lender can only rely on the property for recovery. Mortgage designs can vary based on their maturity, the set interest rate, amortization schedule, prepayment options and foreclosure rights.

34 Charles F. Floyd and Marcus T. Allen, *Real Estate Principles*, eleventh edition (Mortgage Mechanics)

35 Md Uddin, Kutub Uddin, Ahmed Khondoker Mezbahuddin, Tanzil Mohammad, Rabindra Nath Mondal, *Residential Real Estate for Financing and Investments*, European Journal of Business and Management

When talking about a direct real estate investment, its nature stays more physical-like than financial-like. Rental income tends to be a consideration in return for a housing service. Its unique nature fixes it to a specific location. This characteristic makes it hard to make comparisons, estimates or forecasts regarding income-generating capabilities. The true value of an apartment or a house is determined by market forces, but these forces are carefully estimated on a case by case basis by appraisers. The appraisal process itself can take many forms, resulting in a relatively complex calculation methodology, giving various results thanks to the uniqueness of properties and the timing of the exercise.

Also, according to a number of experts, most money can be made in the beginning of the process, at the time of purchasing a property. This is why it is important to reflect on **price determinants**. There are several theories that direct the discussions in this respect. One line of research focuses more on macro level determinants such as GDP growth, the vitality of the construction sector in general, the marginal propensity to consume, the banking sector (through mortgage lending) or labor productivity. This path of exploration is strengthened by other studies emphasizing the importance of economic activity, interest rate effects, private consumption and investment, inflation, exchange rates and even stock or oil prices. From a supply side standpoint, the housing stock and the overall health and vitality of the construction sector with all of its spillover effect, while from the demand side, rents, market structure and positive externalities of the infrastructure can play a crucial role in determining prices.

It is also worthwile to reflect on some of the maintenance and vacancy-related **expenses**. This side of the equation lessens any return on the investment and the longer a property stays vacant or needs renovation, the deeper it bites into profit. Maintenance costs are inevitable and it is reasonable to keep them high on the agenda.[36] When renting a property, its condition is of paramount importance. If the health of the property is much deterioriated, than possible rental income will go down instantly, hand in hand with the possibilities to find a reliable tenant. This is why one should invest in upkeeping the architectural details of the building, cleaning, supervision and general management of the property. In case of an apartment building, repair and maintenance can be outsourced at a price. When talking about houses instead of apartments, the overall management costs can go even higher.

Insurance and taxes are two other major sources of cost. These can vary based on location and legal envrionment. Many investors pay special attention to the room for manouvre provided by the legislator, especially in case of taxation. Countries are now trying to harmonize the legal environment

[36] About online marketing: Mehmet Etlioglu and Hasan Gedik, *Real Estate Marketing on the Internet*, Turkish Studies, October 2018

in the field, in order to clear the system from any loopholes. Nonetheless, a comparative analysis can provide investors with useful insight on the main differences and opportunities. Insurance is another cost that must be covered. The amount payable here much more depends on the condition of the property. While it is not difficult to see how these factors can affect the outcome, it is still reasonable to take a look at the most basic concepts of the calculation process.[37]

In order to be able to do a quick financial analysis of a given project, the following **concepts** need to be clear. Net operating income (NOI) is equal to net property revenues minus operating expenses. When we deduct capital expenditures, tenant improvements and commissions from net operating income, we will end up with the cash flow from operations (CFO). When it comes to debt or mortgage payments, we usually think of financing costs (FC). Having these settled, it is easy to see that cash flow after financing (CFAF) is the result of cash flow from operations less financing costs. There are two more concepts that one should keep in mind when talking about real estate finances. The first one is return on assets (ROA), and the other is ROE or return on equity. These two concepts are calculated as follows: ROA can be determined as cash flow from operations divided by the purchase price, while return on equity is the ratio of cash flow after financing to cash invested, or cash on cash. Since net present value (NPV) and internal rate of return (IRR) calculations are widely used in finance anyway, let me just mention them here briefly in order to get a fuller picture of the abbreviations.[38]

[37] See the annex for a complete list of abbreviations

[38] William J. Poorvu and Jeffrey L. Cruikshank, *The Real Estate Game, The Intelligent Guide to Decision-Making and Investment*

Exhibit 4 – List of Basic Financial Abbreviations

CF: cash flow
CFAF: cash flow after financing
CFO: cash flow from operations
DSCR: debt service coverage ratio
FC: financing cost
FV: future value
IRR: internal rate of return
LTV ratio: loan-to-value ratio
NOI: net operating income
NPV: net present value
PV: present value
ROA: return on assets
ROE: return on equity
ROI: return on investment

When it comes to **rental income**, one can differentiate among flat, indexed and step-up rents. A flat rent, as the name suggests, stays the same in terms of amount throughout the whole renting period. A step-up rent includes reference to recurring increases within specific intervals. Indexed-rates are basically following changes in the consumer price index (CPI), but other indexes might also be used. Of course, negotiations between landlords and tenants make it flexible to use more complex, diversified methods or to make other adjustments according to the circumstances.[39]

Next, let us take a closer look at the measurement of **price appreciation**. Karl Case and Robert Schiller developed the famous Case-Schiller Home Price Index in the US in the early 2000s. This index is a very powerful tool to measure long-term price appreciation in residential real properties. Nevertheless, there is one drawback of the calculation, namely that it smoothes out short-term price fluctuations. What it means in practice is that it is impossible to differentiate between the effects of short-term price movements from the long-term change. Therefore, a significant increase in the

[39] William B. Brueggeman and Jeffrey D. Fisher, *Real Estate Finance and Investments*, sixteenth edition

market value of the property within a short period of time might be confused with a long-term effect. The overall effect may as well be equal only to the short-term fluctuation and what is seen as the overall change in the price over the holding period happened right after an actual sale.[40]

Further, an important aspect of investment returns is the way they affect returns of an existing **portfolio**. If the newly inserted asset returns move in the same direction as the ones already in the portfolio than the risk-profile of the portfolio will not be altered much. Two statistics are generally used in measuring how returns on individual investments move relative to each other: **covariance and correlation**. While covariance is an absolute measure of how the holding period returns (HPRs) move together, correlation is a relative measure. This is the reason why correlation is chosen in many instances to gain an insight of interrelatedness of returns. This statistic ranges between -1 and +1, meaning that a correlation of +1 represents perfect correlation. Therefore a change of one variable causes the same directional change in another variable. With a coefficient of -1 the two variables move in the opposite direction, and with zero, as mentioned earlier, there is no correlation between the two series.

So, when two investments are highly positively correlated, the risk reduction benefits must be lower than otherwise. An optimal scenario involves either a negative or a zero correlation. With zero correlation, the distribution of returns are not related to each other. A negative correlation on the other hand will result in a lower standard deviation, because the sum of the deviations from the mean will be lower. With all that in mind, it looks logical that any correlation below +1 has some level of risk reduction effect on the portfolio, although the lower the number the higher the risk reduction effect. All in all, any investment with a less than +1 correlation may be added to a portfolio in order for risk reduction purposes.[41]

However there are two important notes to make here. For one, it is useful to mention **correlation risk**. According to this, under extreme market stress, correlation among asset classes tend to diminish substantially, and a portfolio that used to be a well-diversified one can lose a significant portion of its risk protection.[42] Secondly, since financial resources are scarce, there is trade-off between risk mitigation and profit maximization in most instances. Finally, according to the scientific literature, other key determinants should also be taken into account when estimating risk and return: purchase

[40] Jack Clark Francis and Roger G. Ibbotson, *Real Estate Returns*, The Journal of Alternative Investments, 23(2):jai.2020.1.111, August 2020

[41] Brueggemann, W. B. and Fisher, J. D., *Real Estate Finance and Investment (seventh edition)*

[42] Alexander N. Gorban, Elena V. Smirnova and Tatiana A. Tyukina, *Correlations, Risk and Crisis: From Physiology to Finance*, August 2010, Physica A: Statistical Mechanics and its Application

price, income-generating capacity, operating costs, timing of the purchase and sale, holding period, transaction costs and the amount of money committed, tax and legal considerations.

So, how to measure success in the area? There are several ways to do it. Starting with the more traditional measures of **profitability**, let us recall the capitalisation rate. This is the ratio between net operating income and the market value of the real estate. ROA and ROE are two already analyzed concepts that can measure return on investment.[43] The multiplier of net income (the ratio between overall capital investment and net operating income) can be used to estimate property values. The minimum debt-service coverage ratio (i.e. the ratio between operating net income and debt-service coverage expenses, both capital and interest) and the operational expenses ratio (the ratio between operational expenses generated by the estate and real gross income) are useful in understanding the long-term sustainability of the business. Overall, talking about full profitability, the entire rate of return includes both, profit rate of return plus capital rate of return.

When it comes to **comparative analysis**, one should rely on security market indexes. These can be equity indexes, fixed-income indexes or indexes for alternative investments, such as real estate. The results analysis chapter of this study relies on historical returns of such indexes as the S&P 500 and the Bloomberg US Aggregate Bond Index. Real estate indexes are either appraisal-based, REIT or repeat sales indexes. The selected NCREIF is appraisal based, while both the FTSE NAREIT and the MSCI REIT are REIT indexes. An appraisal index rates the performance of the real estate industry based on recent property valuations. A repeat sales index assessment is based on house valuations change over time. Real Estate Investment Trust (REIT) Indexes are constructed of publicly traded REITs. According to expectations, historical data will shed a light on the performance of different asset classes, making it possible to draw conclusions on risk and return at a broader perspective. When it comes to return calculations, the baseline scenario is often represented by the US 10-Year Treasury Yield as a risk-free option.

[43] Karol Klimcyak, *Determinants of Real Estate Investment*, November 2010, Economics and Sociology

3. Research Methodology and Methods

This chapter is about **research methodology and methods**. According to the scientific literature, methodology is being a broader term that relates to the study of a whole academic field, therefore being both wider and deeper concept. Within one methodology, all kinds of method can be used. In terms of scientific approach, this study is realist: it relies on the belief that it is possible to get a more or less accurate picture of reality. However, to get closer to this reality, one should look for patterns, make associations and eventually draw conclusions based on logical reasoning and evidence.[44] This type of research is qualitative in nature with quantitative elements. According to traditional classifications, it is fundamental (pure), because it deals with abstract concepts that make it possible to draw conclusions based on observation. Theoretical studies are selected to support the major line of argument when looking for plausible answers to the problem questions. The way to conduct this research is to collect information from the latest and most relevant scientific literature, databases and available sources, before analyzing and systematizing them and making calculations.[45]

That being said, the main **purpose of the thesis** is to answer the question whether it is reasonable to dedicate significant amounts to this specific investment type or not (especially when other investment vehicles are also available); and if so, under what circumstances. The thesis also provides the reader with financial tools to analyze deals and make sense of the readily available information. In order to be able to fully answer the problem questions, there is a need to take a glance at a number of factors, such as the economic and legal environment or the differences in other investment options. The applied framework comes from the approach of analyzing investment profitability through the eyes of an investor. By using detailed financial tools, it will be possible to answer the question when it is advisable to invest in real estate. While exploring, some of the formulas and ratios elaborated beforehand will be used, and a comparative analysis is also added. The latter is absolutely needed, mainly because of the starting point, i.e. aiding investors' decision-making.

The calculations are twofold, there is a **standalone and a comparative analysis** included in the study. The practical side is reinforced by real-life examples. These examples build on the theoretical foundation elaborated beforehand. All the financial tools and concepts explained in this

[44] Colin Fisher, *Researching and Writing a Dissertation, An Essential Guide for Business Students, Third Edition*

[45] C. R. Kothari, *Research Methodology, Methods and Techniques* (second, revised edition)

work help in answering the problem questions. Also, all the formulas and ratios mentioned and applied are prerequisits of a comparative analysis. The analytical part of the paper makes a distinction among fixed-income securities, equities and alternative investments. Although, more complex financial vehicles could give an additional layer to the thesis, they would not alter the main line of argument; they would only fine-tune it, so it makes sense to keep the discussion about them limited. At the same time, the study aims to be comprehensive regarding the relevant aspects of investing. This is why there are calculations included in the work related to mortgage financing, property valuation, standalone direct investing and portfolio investing. These aspects are usually explored separately, given their complexity. What makes it possible to include all of them in one study is to focus only on their main aspects. The standalone analysis applies concepts such as ROE, ROA, CFO or CFAF, among others. The calculation also has an iterative element to it. More than one scenario is analyzed in order to keep the process and results realistic.

When it comes to comparative analysis, **indexes** are used to measure risk, return and profitability. So, in order to gauge risk and return, a number of indexes have been selected. For measuring the performance of stocks for example, the S&P 500 Index is used. In case of equities, additional information is included to consider both market-capitalization and growth classification. This will lead to a distinction of 6 categories: Large-, Mid- and Small-Cap, each either representing Value or Growth stocks. With regard to fixed-income securities, the Bloomberg US Aggregate Bond Index historical data is included in the data set. Regarding real estate, the NCREIF and the FTSE Nareit serve as a reference, since these indexes reflect on both direct and indirect investing. The MSCI US REIT Index is a market capitalization weighted index of REITs (comprised of equity). The securities included are classified according to the Global Industry Classification Standard. They have core real estate exposure and REIT tax status.The index is based on the MSCI USA Investable Market Index (IMI), its parent index that represents the vast majority of the US REIT universe. NCREIF Fund Open End Diversified Core Equity Index (NFI-ODCE Index) historical data is also analyzed to include a low-risk, low leverage strategy. At the same time, the 10-year treasury yield will serve as a benchmark for both, the standalone and comparative analyses by representing the risk-free option available for investors. Geographically, North America is covered by the analyses.

Further, this thesis is intentionally structured in a specific way. To begin with, defining the special characteristics of real estate first helps to analyze the entire topic. Also, focusing on the unique nature of real estate investing in the beginning of the study allows me to draw conlusions later on its effect on actual risk and return. Further, in order to make a distinction among fixed-income securities, equities and alternative investments in terms of risk and profitability, a solid foundation of

terminology is needed and provided. Different features entail different levels and types of risks; since risk and return are closely related, the characteristics section plans to reveal significant differences among these instruments. Grading them accordingly makes it possible to draw conclusions on their return characteristics in the results analysis section.

Now, let us take a peek at the **structure of the thesis** by reflecting on some methodological questions. So, the reason to start with the special characteristic of real estate is to take note of its effect on the entire topic. These are the features that make this type of alternative investment unique. All the distinctive aspects are then analyzed in terms of their possible positive or negative effect. These effects are not always clear-cut, but should be addressed to some extent so that make it easier to conduct a more thorough comparative analysis. Also, by focusing on risk and return in a separate chapter, it is possible to reveal the drivers of profitability more prominently and build a clear hierarchical structure of the financial instruments before sketching the contours of a diversified portfolio.

After taking a glance at the **unique nature of this type of investment**, it is easier to highlight some of the differences among equity, fixed-income and real estate investments. First and foremost a more active involvement on the side of the investor can be detected (in case of direct real estate investing). Also, most of the features of real estate investing points to its more rigid nature in terms of liquidity, fixed location, regulation and financial commitment. Any additional risk on the side of the investor must be met with sufficient financial compensation, otherwise the investment might not ever be made. Without the given structure it could be more difficult to shed a light on the importance of many of the factors influencing real estate investing. The theoretical part of the thesis is therefore absolutely needed to understand the practical side of it. It only makes sense to start actual calculations when the fundamentals of the theory are clearly explored.

The next thing is to focus on **macroeconomic considerations**. The macroeconomic factors part of the study is essential to understand the variables that affect real estate investing. The economic environment is constantly changing and bold investment decisions should respect this dynamic. This is why the study reflects on inflation, interest rates and GDP growth among others in a given subsection. This is a fundamental part of the whole conceptual framework. It serves as a natural interpretative grid and frames the discussions that follow suit. The focus is on the way variables interact with different asset classes. This is indeed an undeniably massive pillar of the thesis for many reasons: 1) it provides a solid foundation for a better understanding of the macroeconomic factors, while 2) reflects on their interaction with different investment vehicles and 3) elaborates on the risks that are stemming from the volatility of some of the variables. The effects are different and the proper way to develop a mixed-asset portfolio is to take all of these effects into consideration. Investments

are not made in a bubble, they are affected by all the factors revealed. Many opportunities that make sense at theoretical level can be disastrous if the surroundings are not explored in necessary detail.

The **financial aspects chapter** clarifies the terminology and many of the concepts that are used throughout the study. A clear understanding of all these terms are necessary to develop broader ideas on real properties, prices, risk, return and overall profitability. While there are countless ways to measure success in investing, we should be aware which ones to use and when. Also, each and every formula and ratio reflect on different sides of profitability. In order to be able to draw the right conclusions from an operational, functional or financial perspective, it is important to try to classify the basic information in a structured, easy-to-understand way. The method is simple: the financial aspects part of the thesis lays the groundwork for a more complex discussion on risk and return. Here, the fundamental concepts improve financial literacy by familiarizing the reader with the used jargon. The reader will not find calculations at this point, only the definitions, basic formulas and ratios without application.

Following this logic, in the **results analysis chapter** an analysis of the most relevant financial aspects of real estate investing appears. By starting with the mortgage concept, the aim is to clearly reflect on the possible positive/negative effects of using financial leverage. The subsection starts with the reason behind using financial leverage by reflecting on its positive and negative aspects. This is followed by a concrete calculation that will be used later on. The results analysis is built up brick by brick and all calculations will lead to a final comparative analysis. Also, previously clarified concepts, such as down payment, ROE, ROA, FC or CFAF are used here. Understanding the mortgage concept is a must before doing these calculations and moving on to real estate valuation.

There are different approaches to **real estate valuation**. The well-known ones are mentioned in a separate subsection but only one is picked for a specific calculation. The reasons behind this are a) the original idea of providing a concise study on calculations and b) the used methods are selected according to actual circumstances. The chosen method is the growth explicit appraisal that builds on the assumption of an identical NOI and property value growth rate. The foundation for the calculation is the NOI where realistic figures are used. These figures along with the mortgage calculations funnel into the next subsection (i.e. the standalone analysis). The whole results analysis part of the study is more practical and uses readily available information, accepting the actual economic and regulatory environment without questioning them.

Next, the **standalone analysis** where all previous theoretical and practical considerations come together. This is a fundamental concept for analyzing real estate deals. What makes it more attractive is the possibility to use excel for shortening the calculation time. First they may seem

confusing and complex, but with the help of basic technological tools, these calculations can be pretty easily done. In case of using an excel model, the variables can be modified later and the results will be visible immediately, helping the whole decision-making process. Examples to the variables are interest rates, all kinds of cost related to the property or properties, changes in tax rates and/or depreciation rules etc. The actual calculation is a fine-tuning exercise that is getting closer to a realistic estimate of a deal by modifying the variables to the desired accuracy. Here is an example for a standalone analysis table.

Exhibit 5 – Standalone Analysis Table (Template)

APR	%
Apartment size	sqft
Purchase price	$
Mortgage	$
Down payment	$
Rental price/sqft	$
Rental income/year	$
Rental income/month	$
Costs	%
CFO	$
Financing Costs	$
Mortgage interest	$
Depreciation (1st year)	$
CFAF	$
ROA	%
ROE	%
Taxable amount	$
Tax rate	%
Tax payable	$
Profit	$
Net yield	%

As we will see, the variables in the table can be modified by using excel, making life easier. Nevertheless, it is important to make estimates as realistic as possible; this will lead us to plausible

results. The whole exercise is a bit of an iterative process as the results analysis subsection will make it clear. As for purchase price and mortgage, separate calculations can be used to fill in the form. Costs are estimates based on current practice. Tax and depreciation rules are based on the regulatory environment.

This subsection is followed by a **comparative analysis**. It is fundamentally different from the previous part in terms of approach. Here, the basis for comparison is the NCREIF (National Council of Real Estate Investment Fiduciaries) index that includes a sample of commercial properties owned by institutions in the US. The FTSE Nareit US Real Estate Index measures the performance of indirect investing and the performance of the overall REIT industry. Their websites and other statistical sources are used for a comparative analysis. The results tend to reinforce the theory of positioning real estate investing in between bonds (represented by the Bloomberg US Aggregate Bond Index) and stocks (represented by the S&P 500 Index) in terms of risk and return. All subsection is followed by a brief analysis of the findings by reflecting on the results of the calculations. The US 10-Year Treasury Yield serves as a reference to a risk-free option.

Exhibit 6 – Comparative Analysis Table (Template)

Year	3-M T-Bill	10-Y Treasury Yield	Bloomberg US Aggregate Bond Index	S&P 500 Total Returns	NCREIF Index Returns	FTSE Nareit All REITs	REIT Total Residential	MSCI US REIT	MSCI US IMI
2012									
2013									
2014									
2015									
2016									
2017									
2018									
2019									
2020									
2021									
AM									
GM									
Median									
SD									

AM = Arithmetic Mean

GM = Geometric Mean

SD = Standard Deviation

The above table will be filled with information that is readily available on the internet by using appropriate websites. This information will result in a clear overview of return possibilities of different asset classes (stocks, bonds and real estate). The standard deviation data serves to reflect on the risk aspect of the quoted categories. Another layer of this research is to provide an interpretative grid for the in-depth analysis of profitability. Importantly, stock-bond correlation has been widely investigated by researchers and there are many useful studies available on the topic. Analyzing the correlation among different instruments is absolutely necessary in order to be able to conclude on risk and return. Obviously, one needs to have a comparative analytical tool to interpret a term like profitability. An investment can be profitable in general when the outcome is positive financially, but the overall picture might be slightly different when we consider other options. Therefore, stock-bond

correlation and their relationship with real estate investments should be considered in the fixed-income, equity and real estate context.

Next, **correlation coefficients** are examined. These are indicators of a linear relationship between variables. When the coefficient is greater than zero, it indicates a positive relationship, while a value that is less than zero represents a negative one. In case of zero as a value, there is no relationship between the variables. Also, correlation between 0.0-0.4 considered to be low, while in the range of 0.4-0.7 moderate, and finally between 0.7-1.0 high. The same scale goes for negative correlation. When calculating, first one needs to determine covariance and the standard deviation of the variables. Standard deviation measures the dispersion from avarage in the calculation.[46] Also, in searching for supporting evidence regarding portfolio legitimacy, an analysis of the risk and return characteristics of fixed-income, equity and real estate investing is needed to be able to elaborate more on their interaction. When testing the hypothesis, one should take a closer look at two things: 1) the given asset class and its risk profile and 2) its possible return.

There are both a direct reference to a **correlation matrix** and an own calculation included in the thesis. Both of them are using US T-bills, Bloomberg US Aggregat Bond Index, S&P 500 and NAREIT information as data input. The own calculation also encapsulates the NCREIF index in order to make direct real estate investing part of the analysis. The directly referred matrix encompasses data from 2011 to 2021, while the study's table is based on collected data from 2012-2021. This subsection of the thesis is a logical consequence of the comparative analysis part and placed in the study accordingly. All in all, if the risk-return characteristic fits a portfolio, while providing additional diversification benefits, the original question of real estate investments legitimacy in a portfolio can be answered positively. Moreover, there must be a higher return expectation when investing in real estate compared to fixed-income securities at an individual basis. Without a higher return, it might not be reasonable to dedicate extra time, effort and money to a project that could lead someone to the same level of profitability as a risk free or low-risk investment. However, there is a caveat to that, namely when diversification benefits outweigh the costs. This is why 6 model portfolios are created in the study to reflect on risk and return characteristics of asset classes in their interaction.

[46] https://mathworld.wolfram.com/CorrelationCoefficient.html

Exhibit 7 – Correlation Matrix (Template)

	Cash	Bonds	Stocks	Direct RE	Indirect RE
Cash	1,00				
Bonds		1,00			
Stocks			1,00		
Direct RE				1,00	
Indirect RE					1,00

Finally, research **conclusions** summarize the interpretation of the findings, the underlying processes, the dynamics and the interrelatedness of the elements. Hand in hand with **recommendations**, they should be able to reflect on the context of the reading and the reasons for the chosen interpretation of the findings. This means that the answers to the research questions should not only be provided, but also explained and justified. At the same time, the drivers behind making conclusions should also be visible by completing the reading.

4. Results Analysis

4.1 Mortgage Calculations

In most cases residential property purchasing happens through mortgage financing (see the theory of the mortgage concept in the financial aspects chapter). A mortgage loan is secured by the collateral of a specific real estate property that obliges the borrower to make predetermined payments to the lender in due time. At the same time, the lender can foreclose on the property in case of a borrower default. The amount of the loan is typically less than the purchase price of the property and the so called loan-to-value ratio is used as a reference point to measure risk exposure. The lower the ratio, the less likely the borrower will default on the mortgage. What it means in practice is that borrowers get financing for their purchases by using secured loans and the property being purchased will be pledged as collateral for debt. If the scheduled repayment of debt is not happening, the lender has some legal options to choose from (among those selling the property).

It is important to understand how financing works before moving on to property valuation and more advanced calculations. Financial resources are limited and must be used with the outmost care. With a certain amount of money, one may be able to buy one property, while financial leverage could allow investors to buy more than one investment property (or a more expensive one), therefore increasing their return. The same amount of money could lead to a different outcome in terms of profitability. At the same time, risk exposure will also be higher, since a downturn can easily turn extra profit into extra loss. As we have seen in the theoretical analysis there are several types of mortgages. Here is a list of the major types of mortgages and their characteristics.

Exhibit 8 – Mortgage Types and Characteristics

Mortgage type	Characteristic
Amortizing	Periodic payments of both interest and principal
Interest only	Interest payments and a lump sum transfer at the end of the term
Fixed-rate	Set interest rate at the beginning of the contract
Two-step	Recalculated payment (mid-term)
Adjustable rate	Interest rate depends on the interest rate in the economy
Recourse	The lender has a claim against the borrower for a shortfall
Non-recourse	A lender can only rely on the property for recovery

The reason for using financial leverage is to enhance investment returns. Suppose an investor has $125,000 to invest and rental properties in the area are generating 8% return on average (before income taxes and debt service). This scenario will result in $10,000 return. By using financial leverage, this amount can be increased significantly: $125,000 can be used as down payment (25%) and an additional $375,000 can be borrowed (75%) to make a purchase. The same 8% average return on the market will result in $40,000 before tax and debt service return in this scenario. When calculating with financing costs (let us say 5% of the $375,000 that is equal to $18,750), the return is still higher than without leverage ($21,250 or 17%). This example illustrates the power of financial leverage. It is important to note that the risk is also higher and with a lower average return (below financing costs), the whole investment could yield a negative return.

Example 1 – The Mortgage Concept

Let us now go through a more detailed example with the mortgage concept. Assume there is a $500,000 property that an investor is considering buying. Assume also that the existing tenant pays $42,000 in rent annually (i.e. $33,600 net rental income if calculating with 20% costs). The "would be" landlord is planning to buy this property by using leverage. In order to finance the operation, the investor needs to provide 25% of the financing (i.e. $125,000) and the other $375,000 will be covered by a mortgage-backed loan. Let us say the mortgage payment equals 5% over 30 years, what in absolute term equals $24,157 a year.[47] So, in this specific case ROA will be 33,600/500,000 = 6.72%. Financing cost equals 24,157/375,000 = 6.44%, while the ROE will be equal to 9,443/125,000 = 7.55%. Here, the $9,443 represents cash flow after financing (CFAF), which is the difference of the net annual rental income (or cash flow from operations) and the yearly mortgage payment.[48] The table below summerizes the calculations.

[47] https://www.mortgagecalculator.org

[48] William J. Poorvu and Jeffrey L. Cruikshank, *The Real Estate Game, The Intelligent Guide to Decision-Making and Investment*

Exhibit 9 – Mortgage Calculations

Purchase price	$500,000
Mortgage	$375,000
Down payment	$125,000
Mortgage payment/year	$24,157
Gross rental income/year	$42,000
Costs	20%
Net rental income/year	$33,600
Financing Costs	6.44%
CFAF	$9,443
ROA	6.72%
ROE	7.55%

Overall, the above calculation represents a starting point for financing estimates. It is important to know the financing side of a deal before entering into any contractual liability. By analyzing differing financial conditions, one can develop some sensitivity for detecting good financing options. An investor familiarized with ROA, ROE and CFAF can quickly make a preliminary estimate of a real estate deal. Although, this brief calculation can truly shed some light on profitability, it is important to note that it is only an estimate. So, since the deal is promising at first sight, let us now take a closer look at property valuation in order to get closer to a final estimate.

4.2 Real Estate Valuation

Real estate valuation is an important step in the direct investing process because it really can make or break a deal. Usually sellers are keen on selling their property at the highest possible price, while buyers certainly prefer a reasonable solution. Property valuation can help investors navigate in the realm of market prices. There are different methods how to do this, but the final price is certainly determined via negotiation. The following estimation methods can serve as an anchor in determining market prices. Each method has a different starting point and a different reason for application. These methods oftentimes used simultaneously. Since the theoretical foundation of real estate valuation can be found in previous chapters of this study, here the emphasis will be put on practical aspects.

There are three main approaches to real estate valuation: 1) cost-based, 2) sales comparison and 3) income. First, the cost-based approach basically calculates the price of building a new property from square one. It includes the costs of materials, equipment, working hours, licenses and others. So, this method starts with estimating the value of the site while vacant, then it takes into account the cost of production before subtracts depreciation. At the end, the site value is added to the equation in its actual form, what leads us to the market value. One definitely has to be an expert in the field in order to be able to do all these. Not only familiarity with the location, but various construction methods, the costs of labor and materials must also be known by the appraiser.

Second, with a sales comparison approach, the appraiser takes a snapshot of the market, searches for similar properties, makes some corrections based on apparent differences in either the exact location, fixtures or any other characteristics and then comes up with a final price. The advantage of this approach is that it is more market-based, but one should never forget that the actual price might as well differ from the listing price, based on the parties' negotiating power and actual circumstances. It can be difficult to apply this method without enough transactions, therefore a stronger market is a prerequisite to use this approach.

The last approach to be mentioned is the method where the price is calculated based on the income-generating capability of the property. This is a somewhat more business-oriented way that preserves its stricter profit maximizing stance. The technique involves finding the income-generating capabilities of the property and turning this income stream into an actual present value calculation. The two most well-known income approaches are the direct capitalization and the discounted cash flow methods. This approach can be a good solution when the market is weak, there are only few transactions and the discount rate can easily be determined. The starting point for calculations is the NOI (net operating income). This calculation will make the quick estimate more precise regarding costs and will also help in judging the asking price (property value).

Example 2 – Net Operating Income

Net Operating Income	
Rental income (full occupancy)	$42,000
Plus other income	$0
Potential gross income	$42,000
Less vacancy (10%)	$4,200
Effective gross income	$37,800
Less property management (10%)	$3,780
Less operating expenses (30%)	$11,340
Net operating income	**$22,680**

Now, based on the above calculation, it is possible to determince the price of a specific property. Please note that the cited growth explicit appraisal is based on the assumption that both rental income and property value have a constant growth rate.

Example 3 – Growth Explicit Appraisal

NOI = $22,680
NOI growth rate = 3%
Property value increase = 3%
Expected IRR = 8%
Discount rate = 8%
Property's value = $453,600

Therefore, according to the calculation the property is a bit overvalued, since the asking price is higher than what the income approach indicates ($453,600 instead of $500,000). Nevertheless, the weakest point of this calculation is the use of assumptions. Basically all, rental income, vacancy rates, operating expenses, repair costs and resale values are based on assumptions. A significant mistake in

the estimate can easily lead to a completely different outcome. Also, an appraisal often includes more than one of the abovementioned techniques. Combining them into one final estimate is the art part of the overall exercise. With all these in mind, it is still possible that different appraisers are estimating the price of a real property differently, leaving the final word with the buyer and the seller.[49]

All in all, real estate valuation is an invaluable tool in analyzing real estate deals. It is a common fear of both buyers and sellers to conclude an agreement with an over/undervalued property. Although all aspects need to be taken into consideration when assessing the price of a specific property, it is not always possible. Some deals require a more specific approach that depends on the market sentiment, the location or a specific situation on either side of the deal. When making a final estimate, these soft factors must also be paid attention to. Again, at the end of the day, the buyer and the seller are the ones, who are going to live with their decisions, possibly and most probably for a longer period of time.

4.3 Return Analysis on a Standalone Basis

A standalone analysis can be used in the case of direct investing. A risk-free investment option can serve as an anchor to detect possible extra profitability and a good reason for investing in a specific property. As we have established earlier, the reason behind investing is to gain both a steady stream of income and price appreciation over the investment horizon. By projecting possible returns, one can calculate the difference in income producing capability compared to risk-free investing. Nevertheless, there are a couple of formulas, ratios and calculation methods that should be paid attention to. Also, it is important to stay realistic when identifying baseline figures for the estimates. Please note that previously detailed financial concepts are used in this chapter.

So, how can one judge whether it makes sense to buy or not? In order to answer this question, one should take a closer look at actual interest rates. Let us use a US, 4.5%, 30-year fixed mortgage rate with a 4.57% APR (Annual Percentage Rate).[50] Assuming the aforementioned apartment/studio is a 500 sqft property located in Manhattan and priced at $500,000. By using the “formula” explained

[49] Charles F. Floyd and Marcus T. Allen, *Real Estate Principles*, eleventh edition (The Appraisal Process)

[50] https://www.usbank.com/home-loans/mortgage/mortgage-rates.html

earlier we are targeting a $375,000 mortgage loan with $22,988 annual payment.[51] Suppose, it is possible to rent this apartment for $7 per sqft. This would leave the investor with a gross monthly rental income of $3,500 ($42,000 annually). This result is strictly related to rental income and does not include any additional costs, such as operating expenses, vacancy allowance, rehab costs, improvements and reserves. If we dedicate 15% of rental income to all these, we end up with a $35,700 cash flow from operations ($2,975 monthly). Since the mortgage payment is equal to 22,988 USD, the cash flow after financing would be equal to $12,712. In this case, ROA would be 7.14%, while ROE 10.17%.

If the investor belongs to the 22% marginal tax bracket than the rental income to report will be $9,530 USD (after the deduction of mortgage interest and depreciation)[52] with a tax amount of $2,096.6. This would leave the investor with $10,615.4 in the pocket (8.49% of the down payment). Certainly, it is only an estimate but still could be considered as a starting point for an analysis. Now, at the time of writing, the risk free rate is about 2.9% (US 10 Year Treasury Rate).[53] Therefore, the possible additional income seems to be commensurate with the added risk of holding the property. It has already been covered in the study what types of additional risks should be considered when making an investment decision like this.[54]

Exhibit 10 summerizes the above calculations.

[51] https://www.mortgagecalculator.org

[52] https://www.accruit.com/depreciation-calculator

[53] https://ycharts.com/indicators/10_year_treasury_rate

[54] https://www.realtor.com/realestateandhomes-search/Manhattan_NY

Exhibit 10 – Summary of Results (Scenario A)

APR	4.57%
Apartment size	500 sqft
Purchase price	$500,000
Mortgage	$375,000
Down payment	$125,000
Rental price/sqft	$7
Rental income/year	$42,000
Rental income/month	$3,500
Costs	15%
CFO	$35,700
Financing Costs	$22,988
Mortgage interest	$10,488
Depreciation (1st year)	$15,682
CFAF	$12,712
ROA	7.14%
ROE	10.17%
Taxable amount	$9,530
Tax rate	22%
Tax payable	$2,096.6
Profit	$10,615.4
Net yield	8.49%

Now, this seems to be an optimistic scenario for many reasons. To begin with, according to the current price-to-rent ratio in Manhattan, renting seems to be the cheaper option as opposed to buying.[55] By using analogy and applying the formula to an individual property, one can find a price-to-rent ratio of around 16.7 (with gross annual rent) that resonates well with the US avarage (that was around 16.6 in 2020). However, the above example might be overly optimistic in terms of property prices, operating and capital expenses. So, what happens if one calculates with a more realistic, higher cost ratio, let us say 25%. Assume, it is possible to stick to the gross monthly rental income of $3,500 (i.e. $42,000 annual). 25% allocation of gross rental income to operating, capital and other costs would lead to $31,500 CFO. Since the mortgage payment still equals 22,988 USD, the CFAF would drop to

[55] https://tradingeconomics.com/united-states/price-to-rent-ratio

$8,512. In this case, ROA would be lower at 6.3% and ROE would also drop to 6.8%. Within the same 22% marginal tax bracket, the payable tax amount would be $1,173 that resulted in $7,339 net income (5.87% of the down payment). The sensitivity of the calculation to changes in any of the variables has now become visible. Please note the changes in ROA, ROE and net yield.

Exhibit 11 summerizes the results of this calculation.

Exhibit 11 – Summary of Results (Scenario B)

APR	4,57%
Apartment size	500 sqft
Purchase price	$500,000
Mortgage	$375,000
Down payment	$125,000
Rental price/sqft	$7
Rental income/year	$42,000
Rental income/month	$3,500
Costs	25%
CFO	$31,500
Financing Costs	$22,988
Mortgage interest	$10,488
Depreciation (1st year)	$15,682
CFAF	$8,512
ROA	6.3%
ROE	6.8%
Taxable amount	$5,330
Tax rate	22%
Tax payable	$1,173
Profit	$7,339
Net yield	5.87%

The result is still higher than the aforementioned risk-free rate and resonates well with the preliminary calculations that suggested a lower property value. Now, this is an iterative process. Even if the lower purchase price yields a positive result, the seller can very well clinch to a higher property value, even if it is not supported by any of the real estate valuation methods. However, by using these

methods, an investor can avoid any overpay for a property. It is important to rely on proper estimates instead of the sellers' opinion about their own property. Therefore, in order to make the most out of the techniques developed, let us now use the lower (calculated) purchase price and cost structure for the final estimate.

Exhibit 12 – Summary of Results (Scenario C)

APR	4,57%
Apartment size	500 sqft
Purchase price	$453,600
Mortgage	$340,200
Down payment	$113,400
Rental price/sqft	$7
Rental income/year	$42,000
Rental income/month	$3,500
Less vacancy/year	$4,200
Effective gross income	$37,800
Costs	20%
CFO	$30,240
Financing Costs	$20,855
Mortgage interest	$9,515
Depreciation (1st year)	$14,227
CFAF	$9,385
ROA	6.67%
ROE	8.28%
Taxable amount	$6,498
Tax rate	22%
Tax payable	$1,429.56
Profit	$7,955.44
Net yield	7.02%

With the fresh estimate, one can conclude that this investment opportunity can be profitable. However, to get to this point either the rental income should be increased or the costs need to be cut. Please note that ROA, ROE and net yield would be the same with $8 rental price per square foot (instead of $7) and 30% operating cost (instead of 20%). The above calculations move from basics to

more refined ones: the last includes a separate line for 10% vacancy rate. Overall, by taking up a certain level of risk in executing this project, a higher return is attainable. Leverage can enhance both positive and negative returns. At the same time, investors only have a few options to improve the outcome without taking up additional risk: 1) raise rental prices and/or 2) cut costs. Nevertheless, it is important to note that these options are only available if the market conditions are favorable for investors.

Slight corrections in any of the variables can have significant impact on the overall outcome. Preliminary calculations were based on rough figures that gradually transformed into realistic calculations. Throughout the process, both the underlying numbers and the ratios have been fine-tuned. This is considered to be the proper approach for a standalone analysis that can keep its iterative nature. By building an excel sheet for calculations, the whole process can be transformed to a less time consuming one. It is important however not to take lightly any aspects of the calculation just because the variables can be easily modified. Underlying figures and ratios must be kept at reasonable levels, having one eye always on the economic environment and actual circumstences. In order to complete the quantitative part of the analysis, let us now turn to another dimension of the calculations and conduct a comparative analysis.

4.4 Return Calculations Based on Comparative Analysis

Let us now take a closer look at the returns of different asset classes with the established research methodology and methods by using indexes. Broadly speaking, indexes are used to 1) gauge market sentiment, 2) serve as a proxy for measuring and modeling returns, systemic risk and risk-adjusted performance or 3) for asset classes in asset allocation models, 4) model portfolios for index funds and exchange-traded funds or 4) be benchmarks for actively managed portfolios.[56] As it can be seen below, in terms of returns, there is a clear line from safer to riskier options. The 10-year treasury bond provides a low rate of return with a predictable outcome. This can be considered a risk-free option. By moving to stocks, the difference between the two becomes evident: a higher return with significant volatility. The collected historical data resonates well with the preliminary findings. Please note that total return includes both dividends and price changes in the index. Finally, real estate lies in between

[56] CFA Curriculum Level I, *Security Market Indexes*

the two in terms of possible returns: higher than bonds but lower than stocks. In this comparison, direct investment is represented by the NCREIF Index.

Exhibit 13 – Return Comparison[57]

Year	US T-Bills	10-Y Treasury Yield*	Bloom-berg US Agg. BI	S&P 500 Total Returns **	NCREIF Index Returns	FTSE Nareit All REITs	REIT Total Resid.	MSCI US REIT	MSCI US IMI
2012	0,09%	1,80%	4,21%	16,00%	2,54%	20,14%	6,94%	13,56%	13,90%
2013	0,06%	2,35%	-2,02%	32,39%	2,53%	3,21%	-5,36%	-1,39%	30,74%
2014	0,03%	2,54%	5,97%	13,69%	3,04%	27,15%	40,04%	25,28%	10,36%
2015	0,05%	2,14%	1,14%	1,38%	2,91%	2,29%	17,07%	-1,51%	-1,36%
2016	0,32%	1,84%	3,25%	11,96%	1,73%	9,28%	4,54%	4,22%	10,31%
2017	0,93%	2,33%	3,54%	21,83%	1,80%	9,27%	6,63%	0,86%	18,97%
2018	1,94%	2,91%	0,01%	-4,38%	1,37%	-4,10%	3,09%	-8,64%	-6,97%
2019	1,55%	2,14%	8,72%	31,49%	1,55%	28,07%	30,89%	20,94%	28,63%
2020	0,09%	0,89%	3,76%	18,40%	1,15%	5,86%	-10,69%	-11,11%	18,99%
2021	0,06%	1,45%	-1,50%	28,71%	6,15%	39,88%	58,29%	38,77%	24,43%
AM	*0,51%*	*2,04%*	*2,71%*	*17,15%*	*2,48%*	*14,11%*	*15,14%*	*8,10%*	*14,80%*
GM	*0,51%*	*1,95%*	*2,66%*	*16,55%*	*2,47%*	*13,35%*	*13,44%*	*7,07%*	*14,19%*
Median	*0,09%*	*2,14%*	*3,40%*	*17,20%*	*2,17%*	*9,28%*	*6,79%*	*2,54%*	*16,44%*
SD	*0,71%*	*0,57%*	*3,35%*	*12,24%*	*1,45%*	*14,03%*	*21,65%*	*16,09%*	*12,24%*

* Annual average yield

** Includes dividends and price changes in the index

AM = Arithmetic Mean

GM = Geometric Mean

SD = Standard Deviation

[57] Online sources:
https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histretSP.html
https://www.macrotrends.net/2016/10-year-treasury-bond-rate-yield-chart
https://www.thebalancemoney.com/stocks-and-bonds-calendar-year-performance-417028
https://am.jpmorgan.com/content/dam/jpm-am-aem/global/en/insights/market-insights/guide-to-the-markets/mi-guide-to-the-markets-us.pdf
https://www.slickcharts.com/sp500/returns
https://www.statista.com/statistics/376854/ncreif-index-returns-usa/
https://www.reit.com/sites/default/files/returns/AnnualReturns.xls
https://www.reit.com/sites/default/files/returns/AnnualSectorReturns.xls
https://www.msci.com/documents/10199/df0b182b-f3ca-4dab-83cd-1a3268140654

The NCREIF (National Council of Real Estate Investment Fiduciaries) index covers a sample of commercial properties owned by institutions in the US. It includes sub-indexes such as office, retail, apartment or industrial. It is important to note that this is an appraisal-based index. The FTSE Nareit US Real Estate Index measures the performance of indirect investing and the performance of the overall REIT industry (free-float market cap-weighted). The REIT residential returns are narrowed down to sector. The MSCI US REIT Index is also a free float-adjusted market capitalization weighted index comprised of equity. The securities are classified according to the Global Industry Classification Standard. Its parent index is the MSCI US Investable Market Index (IMI) that covers almost the entire US REIT category. Both the FTSE NAREIT and the MSCI US REIT indexes follow a similar trend, as it can be seen in the table above.

In the case of direct investing, the returns are lower with less volatility compared to indirect investing. In the latter case, standard deviation is even higher than in the case of the S&P 500 index. Direct investing returns resemble more to bonds as represented by the Bloomberg US Aggregate Bond Index, both of them are above the risk-free options (T-Bills and 10-Year Treasury Bonds) in terms of mean returns and standard deviation. Median information is added because of its robustness to outlier data. To sum it up, over the years, stocks could provide the most promising returns, followed by indirect real estate investing. Then comes direct real estate and bond investing in terms of profitability. At the same time, riskiness follows the opposite direction. With regard to return comparison to direct real estate investing, let us recall the results of the standalone calculation: ROA = 6.67%, ROE = 8.28% and net yield = 7.02% with the final income and cost structure.

The above results are in line with the analysis of the scientific literature. By creating a benchmark portfolio that follows the index returns of the comparative table (S&P 500, Bloomberg US Aggregate Bond Index and T-Bills), one can make a full comparison of returns (see in the correlation chapter). There are major forces that can still affect the results (e.g. taxation and inflation). With regard to taxation, the major difference comes with the tax rate on interest, dividends, capital gains and rental income. All these can differ based on jurisdiction and personal circumstances. On the other hand, inflation affects all investors equally, and this is where a major separation of direct and indirect investing can be made. When it comes to direct investing, rents can be indexed to inflation rates. At the same time, as it can be seen in exhibit 14, inflation significantly alters index returns.

Exhibit 14 – Real Returns Comparison[58]

Year	US T-Bills	10-Y Treasury Yield	Bloom-berg US Agg. BI	S&P 500 Total Returns	NCREIF Index Returns	FTSE Nareit All REITs	REIT Total Resid.	MSCI US REIT	MSCI US IMI	*US CPI*
2012	-1,62%	0,06%	2,43%	14,02%	0,79%	18,09%	5,11%	11,62%	11,95%	*1,74%*
2013	-1,42%	0,84%	-3,47%	30,43%	1,01%	1,68%	-6,76%	-2,85%	28,81%	*1,50%*
2014	-0,72%	1,77%	5,17%	12,83%	2,26%	26,19%	38,98%	24,34%	9,53%	*0,76%*
2015	-0,68%	1,40%	0,41%	0,65%	2,16%	1,55%	16,22%	-2,22%	-2,07%	*0,73%*
2016	-1,71%	-0,23%	1,16%	9,69%	-0,33%	7,06%	2,42%	2,11%	8,07%	*2,07%*
2017	-1,16%	0,22%	1,40%	19,31%	-0,30%	7,01%	4,43%	-1,22%	16,51%	*2,11%*
2018	0,03%	0,98%	-1,86%	-6,17%	-0,53%	-5,90%	1,16%	-10,35%	-8,71%	*1,91%*
2019	-0,72%	-0,15%	6,29%	28,55%	-0,72%	25,20%	27,96%	18,23%	25,75%	*2,29%*
2020	-1,25%	-0,46%	2,37%	16,81%	-0,21%	4,44%	-11,89%	-12,30%	17,39%	*1,36%*
2021	-6,49%	-5,19%	-7,94%	20,29%	-0,79%	30,73%	47,93%	29,69%	16,29%	*7,00%*
AM	***-1,57%***	***-0,08%***	***0,59%***	***14,64%***	***0,33%***	***11,61%***	***12,56%***	***5,70%***	***12,35%***	

AM = Arithmetic Mean

In addition, inflation related aspects of stocks and real estate are very similar, namely both of them can serve as an inflation hedge. This adds an additional layer to the interpretative grid, namely an aspect of the major asset classes' (stocks, bonds and real property) resonance with inflation, real returns and risk.[59] It is important to note that inflation can be either expected or unexpected and its effect on stocks, bonds and real estate varies.[60] Higher inflation affects bonds negatively, because a predetermined fixed stream of income becomes less attractive. This will result in higher yields and lower bond prices in order to attract capital. The effect on stocks is less straightforward because rising

[58] Online sources:
https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histretSP.html
https://www.macrotrends.net/2016/10-year-treasury-bond-rate-yield-chart
https://www.thebalancemoney.com/stocks-and-bonds-calendar-year-performance-417028
https://am.jpmorgan.com/content/dam/jpm-am-aem/global/en/insights/market-insights/guide-to-the-markets/mi-guide-to-the-markets-us.pdf
https://www.slickcharts.com/sp500/returns
https://www.statista.com/statistics/376854/ncreif-index-returns-usa/
https://www.reit.com/sites/default/files/returns/AnnualReturns.xls
https://www.reit.com/sites/default/files/returns/AnnualSectorReturns.xls
https://www.msci.com/documents/10199/df0b182b-f3ca-4dab-83cd-1a3268140654

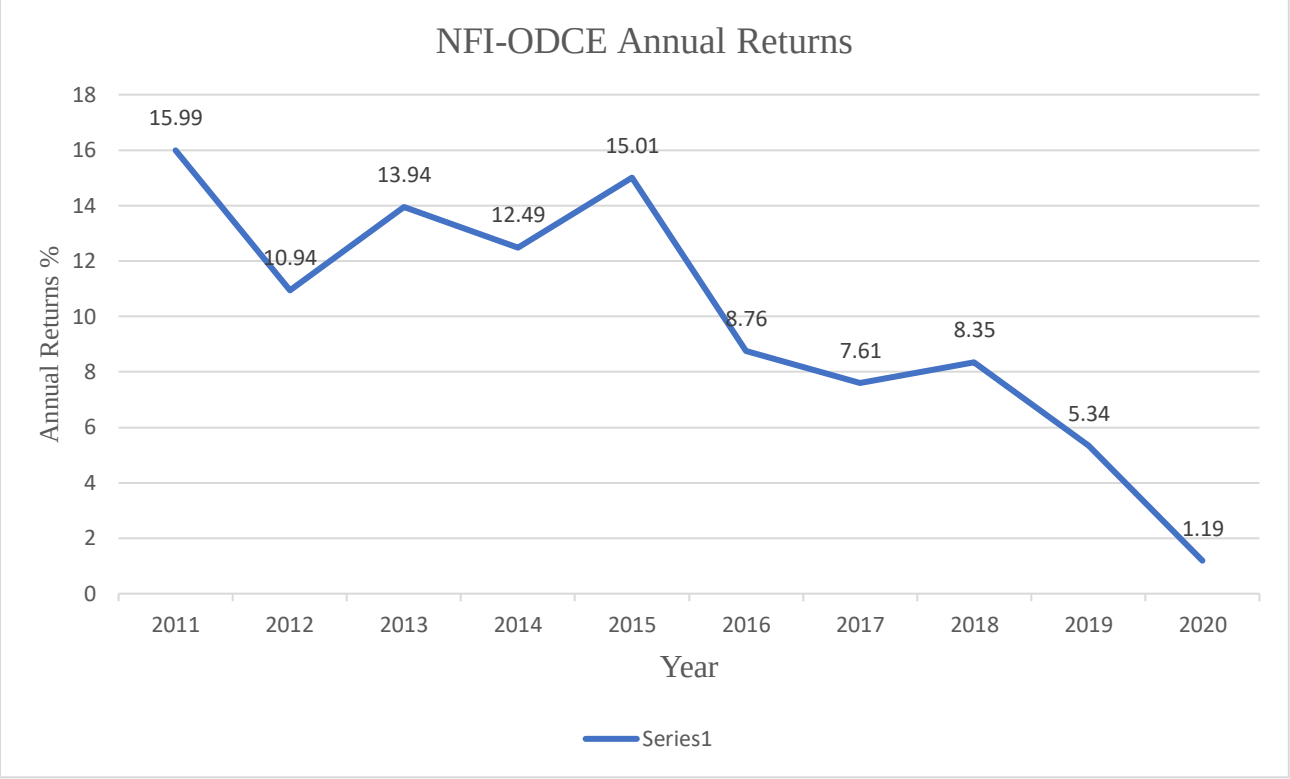
[59] Bing Sun, Hongyu Liu and Siqi Zheng, *A Comparative Sturdy on the Investment Value of Residential Property and Stocks*, International Journal of Strategic Property Management (2004)

[60] https://docs.prea.org/pub/45CA1E42-A07F-E5EA-C448-19C346183AAF

prices should result in higher revenues, but then these revenues must be discounted at a higher rate. Inflation is discussed in previous chapters from a theoretical point of view.

The NCREIF Fund Open End Diversified Core Equity Index (NFI-ODCE Index) historical data can be seen below to reflect on trends. This index measures investment returns of private real estate funds that are following a core investment strategy (low risk, low leverage and gross of fees). The more stable outcome is the result of careful diversification and selection of class A properties in primary markets with high occupancy rates.[61] The NCREIF Fund Open End Diversified Core Equity Index (NFI-ODCE Index) historical data shows a clearly negative trend over the data horizon (see the table below). Even with prudent diversification and selection of class A properties, the macroeconomic environment and market conditions cannot be beaten.

Exhibit 15 – NFI-ODCE Annual Returns



[61] https://www.fplcapital.com/odce/

To sum up, the aforementioned tables are capable of reflecting on both, trends and comparative aspects of the examined asset classes. These figures reinforced the theoretical part of the study by placing real estate in between stock and bond investing in terms of risk and return characteristics. Real estate itself is further divided into direct and indirect categories, moving the former closer to bonds and the latter closer to stocks when it comes to investment characteristics. The performance of the selected asset classes resonates well with the theory: stocks perform better overall with more volatility than bonds, while real estate lies in between the two in risk and return dimensions. The comparative part of the study can help portfolio investors to make a decision, depending on their own financial situation and risk tolerance. It clearly adds value to the standalone analysis, which gives another layer to estimating profitability and mitigating risk. Let us finally take a closer look at the correlation aspects.

4.5 Correlation With Other Asset Classes

First, stock-bond correlation is analyzed. Generally speaking, stocks may offer higher returns to investors, but these returns are more volatile. It is so common to see funds escaping equity positions in difficult times, funneling into the bond market, which is considered to be safer. With a lower risk appetite, investors are seeking the downward risk protection provided by bond investing. Correlation between these two asset classes has been examined by researchers extensively.[62] The starting point is that there is low correlation between these two asset classes and this low correlation can contribute to diversification benefits. The level of correlation is not a fixed variable however and tend to change over time. Also, it is important to note that during times of financial turbulance, correlation between asset classes increases altogether.

Correlation studies between stocks and real estate go back a long time and the findings are pointing in a similar direction. According to these researches, rental income and capital gains stemming from residential property investing have a low or even negative correlation with stocks. If so, we can draw the conclusion that residential properties can be included in well-diversified portfolios for the sake of risk diversification. Another aspect is that money tends to move from stocks to bonds in times of economic difficulties, since bonds considered to be a safer option. When market expectations and

[62] Muhammad Airil Syafiq Mohd Khalid, *A Literature Review of Stock-Bond Correlation*, October 2020, Conference: 13th Asian Academy of Management International Conference 2019

sentiment is higher, financial resources often move in the opposite direction. This migration of sources affect both bond and stock prices.[63] Finally, in times of severe economic difficulties, the correlation between these asset classes also becomes higher. A correlation matrix can be used to make an overall comparison easier.

Exhibit 16 – Correlation Matrix 1 (Excerpt)[64]

	Investment Grade Bonds	Cash	Commodities	International Equity	Long/Short Equity	REITs	S&P 500 Index
Investment Grade Bonds	1.00						
Cash	0.17	1.00					
Commodities	(0.19)	(0.15)	1.00				
International Equity	0.02	(0.19)	0.58	1.00			
Long/Short Equity	(0.01)	(0.25)	0.54	0.83	1.00		
REITs	0.39	(0.18)	0.31	0.60	0.58	1.00	
S&P 500 Index	(0.02)	(0.20)	0.51	0.85	0.84	0.68	1.00

The above table is based on historical data between January, 2011 and December, 2021. Again, correlation is a measurement between -1 and 1 that indicates a linear relationship between two variables. If there is no relationship between the variables, the correlation coefficient is 0, and if there is a perfect relationship, the correlation is 1. Correlation -1 indicates a perfect inverse relationship. Between 0.7 and 1.0 it is usually considered high correlation. Moderate correlation belongs to the 0.4-0.7 territory. Between 0.0 and 0.4 it is said to be low correlation. These are also true to negative correlation. In the table, investment grade bonds represents the Bloomberg US Aggregate Bond Index, while under cash the table shows the 3-month treasury bills. The category of currencies refer to US dollar index. Commodities equals to the S&P GSCI and international equity represents the MSCI EAFE index. REITs data is based on NAREIT information while the S&P 500 index speaks for itself. All data is based on Bloomberg and Standard and Poors information; the excerpt is from Guggenheim Investments. The correlation table reinforces all previous findings: stock-bond correlation, REITs' resonance with stocks and bonds, based on the direct-indirect investment differentiation.

The correlation matrix below is used for further calculations. Cash is represented by US T-bills, while bonds by the Bloomberg US Aggregate Bond Index. Stocks figures are based on S&P 500 data.

[63] https://www.schroders.com/en/us/insurance/insights/equities/what-drives-the-equity-bond-correlation/

[64] https://www.guggenheiminvestments.com/mutual-funds/resources/interactive-tools/asset-class-correlation-map

Direct real estate correlation coefficients are calculated based on the NCREIF Index movement with other asset classes. Indirect real estate is represented by the NAREIT Index.

Exhibit 17 – Correlation Matrix[65]

	Cash	Bonds	Stocks	Direct RE	Indirect RE
Cash	1.00	0.22	-0.21	-0.47	-0.21
Bonds	0.22	1.00	0.10	-0.44	0.31
Stocks	-0.21	0.10	1.00	0.28	0.55
Direct RE	-0.47	-0.44	0.28	1.00	0.67
Indirect RE	-0.21	0.31	0.55	0.67	1.00

RE = real estate

The next question is asset allocation. Since correlation of real estate ranges from negative to moderate with other asset classes, it is reasonable to include it in a portfolio. Having the scientific literature analyzed, there seems to be no perfect asset allocation strategy, and the range of real estate exposure in a portfolio lies somewhere between 10%-70% depending on the actual circumstances (macroeconomic and market conditions, investment horizon, etc.). Other studies put these figures around 25%-40%.[66] All in all, the goal is to maximize portfolio stabilizing properties without sacrificing too much growth (that lies with stock investing primarily). Either way, according to the scientific literature, the deals analyzed, the comparative assessment and the correlation matrix, real estate investing remains an excellent choice for investors, if they want to enhance their returns and/or decrease their risk exposure.

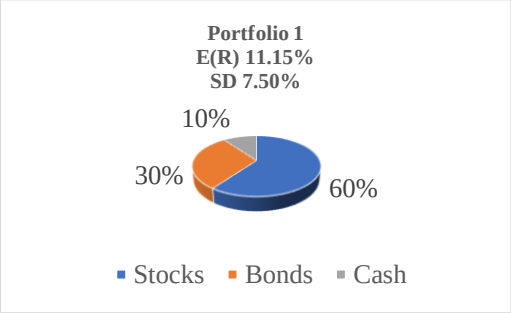
Based on the comparative and correlation tables, six portfolios are detailed below, with different weights in stocks, bonds, cash and real estate. Portfolio 1 and Portfolio 3 put predominantly more weight to stock investing and their expected returns are significantly higher than the returns of Portfolio 2 and Portfolio 4. The higher returns come with higher standard deviation (higher risk). By substituting cash holdings to REIT investments, both portfolios return capability can be enhanced. The results are in line with the analysis of the scientific literature: higher returns come with higher

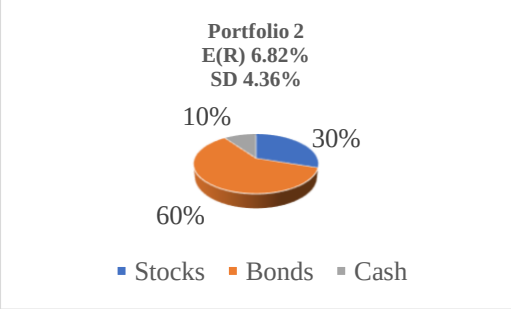
[65] Based on data from exhibit 13

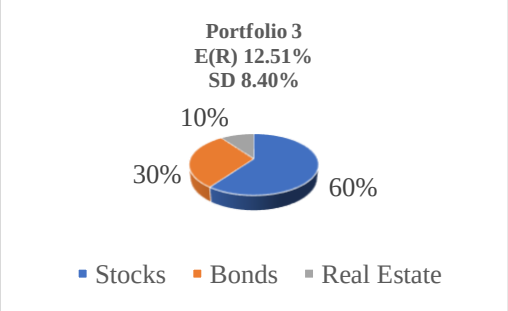
[66] Diversifying With Real Estate and Infrastructure (investopedia.com)

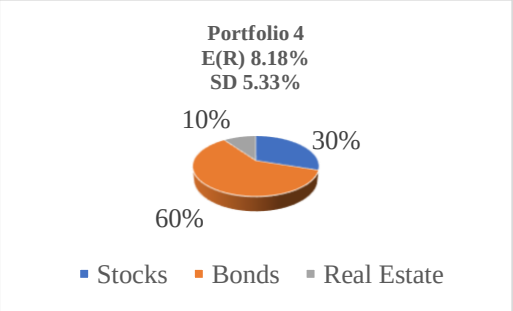
associated risk. More precisely, real estate has return enhancing added value to Portfolio 3 compared to the benchmark portfolio (12.51% return instead of 11.15%). However, the higher return comes at the expense of higher risk (8.40% standard deviation as opposed to 7.50%). The results of asset selection in Portfolio 2 and Portfolio 4 follow similar logic.

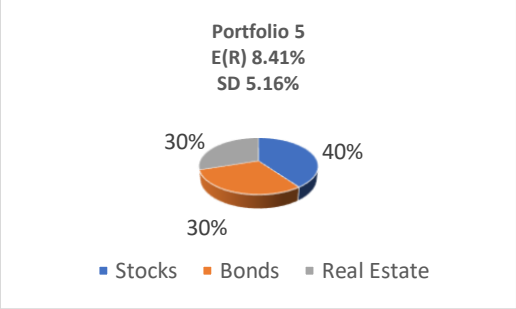
Exhibit 18 – Model Portfolios

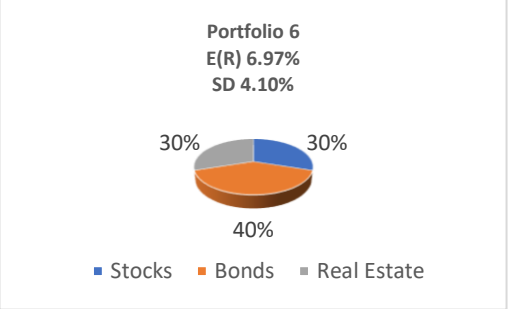












In case of Portfolio 5 and Portfolio 6, the real estate component is represented by the NCREIF Index as opposed to the NAREIT Index. This index is more representative of direct investing with lower return and risk characteristics. These two model portfolios are capable of reflecting on both the risk reduction and return enhancing effects of entering real estate into a portfolio. Please note that Portfolio 6 (with higher direct real estate exposure) is the least risky among the model portfolios, while providing higher returns than Portfolio 2 (with the second lowest standard deviation). Portfolio 5 (also with higher real estate exposure) beats Portfolio 4 (60% bonds, 30% stocks and 10% REITS) in both dimensions. Portfolio 3 (predominantly stocks) can yield the highest return, but of course, this comes also with the highest risk. A summary table below presents risk and return of individual stock, bond, cash and real estate investing in addition to the results of model portfolios using the same measures. For a full comparative analysis, please recall the 6.67% ROA, the 8.28% ROE and the 7.02% net yield in the case of a standalone investment.

Exhibit 19 – Model Portfolios (Summary)

	E(R)	*SD*	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Stocks	*17.15%*	*12.24%*	60%	30%	60%	30%	40%	30%
Bonds	*2.71%*	*3.35%*	30%	60%	30%	60%	30%	40%
Cash	*0.51%*	*0.71%*	10%	10%	0%	0%	0%	0%
RE NAREIT	*14.11%*	*14.03%*	0%	0%	10%	10%	0%	0%
RE NCREIF	*2.48%*	*1.45%*	0%	0%	0%	0%	30%	30%
E(R)			*11.15%*	*6.82%*	*12.51%*	*8.18%*	*8.41%*	*6.97%*
SD			*7.50%*	*4.36%*	*8.40%*	*5.33%*	*5.16%*	*4.10%*

P1-P6 = model portfolios

RE = Real Estate

The portfolios above from left to right: P6, P2, P5, P4, P1 and P3. As it was highlighted in the comparative analysis subsection, there is a hierarchy among the instruments in terms of return and risk. At one end of the spectrum there are stocks, being the riskiest but providing the highest possible returns and bonds at the other end providing stable but lower returns. Real estate investments lie between these two, and depending on the form of investing, they have different characteristics. Direct investing tend to behave more like bond investing, while indirect investing behaves similarly to stocks. With a utility function expressed as U = E(r) – (0.5)(A)(SD^2), where A = 2, the utility of portfolios for risk averse investors are the following: P1 U = 0.1059, P2 U = 0.0663, P3 U = 0.1180, P4 U = 0.0790, P5 U = 0.0828 and P6 U = 0.0680. Therefore, examining similar portfolio composition, risk avarse investors are going to prefer P3 over P1 and P4 over P2. Please note that both of the preferred options contain a 10% REIT component.[67]

Still, the scientific literature is somewhat divided by the best overall strategies in investing in real estate. On the one hand, some of the authors emphasize the longer maturity period and also the longer term price appreciation possibilities, while some others emphasize the chance of using momentum strategies in the sector.[68] In theory, both of these can work, but require a different mindset. Long-term strategists should focus on liquidity more, since money will be committed for the long-haul. On the other hand, specific knowledge and skillset is needed for exploiting price discrepancies, especially

[67] CFA Curriculum, Level I, Portfolio Risk and Return I.

[68] Gianluca Marcato and Tony Key, *Direct Investment in Real Estate*, The Journal of Portfolio Management, September 2005

when applying flip strategies. In the latter case, connection to developers, builders and designers can be priceless.

It is easy to see merits in both concepts. Depending also on the characteristics of the investors, whether they are more passive or active strategists, different approaches might benefit different people. Momentum strategies definitely put more emphasis on timing and shorter term considerations, while building long-term strategies one can elude many mistakes throughout the life cycle of an investment. One important note however is that value portfolios tend to outperform growth portfolios over time in case of real estate as well.[69] According to the findings of this study, diversification and property selection is key for stable returns. As long as there is less than perfect correlation between these instruments, it makes sense to include them all in a portfolio. What makes direct investing (owning a rental property) more distinct from other forms of real estate investing is a steady stream of income that can be extremely beneficial in times of financial turbulence.[70] All in all, when it comes to an overall analysis, portfolio investing offers the most appealing outcome with a clear place of real estate investment in it.

[69] Kwame Addae-Dapaah, Ho, Kim Hin/David and Chua, Yong Hua, *Contrarian Real Estate Investment*, Paper Presented at the 21th Annual Meeting of American Real Estate Society, Santa Fe, New Mexico, April 13-16, 2005

[70] https://www.cbreim.com/-/media/project/cbre/bussectors/cbreim/insights/articles/perspectives-the-case-for-core-real-estate-in-hnw-portfolio-november-2020/core-real-estate-in-hnw.pdf

Conclusions and Recommendations

In conclusion, whether it is worthwhile to invest in real estate or not cannot be answered with a clear yes or no. The correct answer is that it depends on the factors collected, analyzed and synthesized. In other words, it depends on the actual circumstances. At the theoretical level, a thorough look at the special characteristics of real estate investing, a clear vision of the macroeconomic environment and a balanced examination of pros and cons of an actual deal are needed for a well-founded decision. In practical terms, a research of the major financial aspects, a proper real estate valuation, standalone (in case of direct investing) and comparative analyses (in case of portfolio investing) are both necessary to make a good decision.

First, the special characteristics are summarized in the thesis. The following characteristics are considered to be disadvantages: 1) long-term commitment, 2) high transaction amount and costs, 3) high illiquidity, 4) interdependency to land use and indivisibility, 5) more active involvement in the management of properties. On the positive side: 1) a steady stream of income, 2) a possibly significant price appreciation, 3) an inflation hedge function, 4) diversification and 5) tax considerations can be mentioned. As we have seen with concrete examples, real estate can yield significant returns in the form of rent and/or price appreciation. **Therefore, one can conclude that real estate is capable of increasing returns and/or decreasing risks of a portfolio.**

With regard to macroeconomic factors, there are numerous variables that one should pay close attention to. Having analyzed the scientific literature, one can come to the conclusion that the interrelatedness of these variables are very much prevalent in real property investing. The close relationship of this investment type has been revealed with such variables as interest rates and inflation among others. The abundant literature made it possible to get a fuller picture of both, the demand and supply side of the equation. When estimating the effects of internal and external factors, one could also take a glance at the effects of possible shocks and market anomalies. **All in all, the thesis reinforces the risk-reduction benefits of entering real estate into a portfolio.**

In the scientific literatue there is agreement regarding the legitimacy of real estate in a mixed-asset portfolio.[71] Also, there are some characteristics mentioned that can contribute to higher returns for direct investing. One of those is the closeness of the landlord to the rental (Walter D'Lima and

71 David Chambers, Christophe Spaenjers and Eva Steiner, *The Rate of Return on Real Estate: Long-Run Micro-Level Evidence*, The Review of Financial Studies, March 2021

Paul Schultz, 2021) or to be able to pay in cash. It is important to note that out-of-state investing is also very popular and highly profitable under certain conditions.[72] So, the difference between these asset classes starts with the investment itself, where additional costs occure early on, in the form of extra time, effort and money in searching for a good deal. Investors should also be getting ready for expenses throughout the holding period. On the other hand, all investment classes have transaction costs, although the amounts and settlement varies widely. In the case of stocks or bonds, transactions executed through accounts and there is no need for a lawyer to write a sales or lease contract. **Overall, extra time and effort invested in real properties can result in enhanced returns.**

Real returns have many layers though. In order to find actual rental income, one should calculate with maintenance costs, tenant improvements, vacancy and unexpected expenses. There are additional factors to pay attention to, such as information availability, differences in contractual figures, property defections, depreciation, changes in the local environment, trends and the investment horizon. Mortgage calculations, appraisal methods, cash flow calculations, ROA, ROE and comparative tables are added to the study in order to examine the topic in detail. When analyzing a direct investment, one should find that income, appreciation estimates and rental rates are determined by the market and the actual property.[73] **Nevertheless, direct real estate investing is less sensitive to inflation risk than indirect investing. At the same time, the stock element of a portfolio can also mitigate the negative effect of inflation.**

With regard to comparing real estate investments to other options, such as fixed-income securities or stocks, the literature review clearly highlighted two main aspects. For one, there is a more active investor involvement in real property investing, mainly because of the fact that some of the managing tasks cannot be properly delegated. Another thing is the use of leverage that can make things happen that would stay unattainable otherwise. With that comes a substantial amount of risk: leverage can make an investment more profitable, but it can also make it more disastrous. Still, according to studies, real investors clearly outperform real estate indexes and all the listed traits can contribute to higher returns to some extent.[74] **In line with the overall analysis, direct investing has bond-like risk and return characteristics, while indirect investing resembles more to equity investing.**

[72] David Greene, *Long-Distance Real Estate Investing; How to Buy, Rehab, and Manage Out-of-State Rental Properties*

[73] Brandon Turner, *The Book on Rental Property Investing, How to Create Wealth with Intelligent Buy and Hold Real Estate Investing*

[74] Walter D'Lima and Paul Schultz, *Residential Real Estate Investments and Investor Characteristics*, October 2021 – The Journal of Real Estate Finance and Economics 63(3):1-40

So, real estate as an asset class can be positioned somewhere between stocks and bonds in terms of profitability. There is no need to take up additional risk, if there is no possiblity to earn extra profit. The higher expected return compared to bonds is of course also linked to higher risks involved. At the same time, capital gain and rental income have weak or negative correlation with stocks, therefore it is capable of offsetting the higher volatility characteristics (hence higher risk profile) of stock investing at the portfolio level. Having all three asset classes included in a portfolio may yield the best result. All in all, according to the findings, **a balanced portfolio mix can significantly mitigate risks**.

The practical side of the study can be used to analyze specific deals. In this respect, detailing the mortgage concept and the appraisal process served as starting points, since most of the money can be made early on, with an advantegous buy. This step by itself can make up for most of the upcoming challenges, be it economic downturns or late realization of property defects. From an investor's perspective: if risks are identified, they can be calculated, and if calculated, they can be mitigated. The practical part of the study can also help an investor to make a standalone analysis of a specific investment by analyzing a property's income generating capacity. At this point it makes sense to apply trial and error as a method to get to a more accurate picture of future prospects, while the comparative analysis can serve as a basis for asset allocation decisions. In both cases, **specific analysis is necessary to get an accurate estimate of future profitability.**

In terms of recommendations, one might focus on the following key points. (1) When conducting an analysis, it is important to reflect on both external and internal factors by focusing on the macroeconomic environment and the specifics of a deal (while also reflecting on the investor's own financial situation and risk tolerance). (2) In case of practical analysis, correct input data and appropriate models are to be applied in order to get to an accurate result. (3) Identifying the dynamics of the economic environment and the stage of the business cycle are crucial factors. (4) At the same time, a multitude of experts have to be relied on to manage both direct and indirect investments in practice (though not to the same extent). (5) Also, solid judgement of the situation and thorough understanding of the detailed financial concepts are just as important. (6) Finally, personal (specific) tax considerations can have a significant impact on the actual outcome. **In conclusion, there is a clear strategy to make real estate investing really profitable, be it on a standalone or portfolio basis.**

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Annex 1

RETURN ON INVESTING IN RESIDENTIAL REAL ESTATE

dr. Istvan FARKAS

Master Thesis

Finance and Banking Master Program
Faculty of Economics and Business Administration, Vilnius University
Supervisor Doc. Antanas Laurinavičius, Vilnius, 2021

SUMMARY IN ENGLISH

Thesis project, 78 pages, 78 references, 19 exhibits and 3 examples.

The main purpose of the thesis is to find answers regarding some of the fundamental questions in investing in real estate. The first consideration is whether one should invest in real estate or not, and if so, under what circumstances. In order to answer these questions investors can conduct an analysis on a standalone basis or compare the performance of different investment vehicles.

The main body of the text is divided in the following way. First, the special characteristics of investing in real estate are presented by which I am setting the tone for the rest of the study. This section is followed by macroeconomic considerations that one should keep in mind when entering the real estate market. At this point of reading it is already possible to identify many of the advantages and disadvantages of investing in real estate. Further, I elaborate on research methdology and methods before moving on to results analysis.

Throughout my literature review I have discovered many insightful studies in the area. In my collection of the most relevant ones, I focused on the risk and return aspects of investing in real estate. On the one hand, the scientific literature is abundant in terms of comparative analysis, including stocks

and bonds. On the other hand, standalone analyses are not so common. Within the results analysis part of the thesis, I am sequencing the information from real estate valuation to profitability analysis while building on the results of the literature review. The result is tool for analyzing real estate deals from scratch.

In terms of methodology I used a realist research approach. The whole exercise is done in a structured manner that builds on preconceptions in order to form a clear conceptual framework. The selected research method is twofold: qualitative and quantitative. The whole study resonates well with fundamental (pure) research methods but has practical implications and applicability.

My findings and results focus on the risk and return characteristics and overall profitability of real estate investing. The practical part of the study can serve as a tool analyze real estate deals.

Annex 2

RETURN ON INVESTING IN RESIDENTIAL REAL ESTATE

dr. Istvan FARKAS

Master Thesis

Finance and Banking Master Program
Faculty of Economics and Business Administration, Vilnius University
Supervisor Doc. Antanas Laurinavičius, Vilnius, 2021

SUMMARY IN LITHUANIAN

Baigiamojo darbo projektas - 78 puslapiai, 78 literatūros šaltiniai, 19 eksponatų ir 3 pavyzdžiai.

Pagrindinis baigiamojo darbo tikslas – rasti atsakymus į kai kuriuos esminius klausimus investuojant į nekilnojamąjį turtą. Pirmiausia reikia apmąstyti, ar reikia investuoti į nekilnojamąjį turtą, ar ne, ir jeigu taip, kokiomis aplinkybėmis. Norėdami atsakyti į šį klausimą, investuotojai gali atlikti atskirą analizę arba palyginti skirtingų investicinių priemonių rezultatus.

Pagrindinė teksto dalis yra padalinta taip. Pirma, pateikiamos ypatingos investavimo į nekilnojamąjį turtą ypatybės, kuriomis aš nustatau toną likusiai tyrimo daliai. Po šios dalies pateikiami makroekonominiai svarstymai, kurių reikėtų nepamiršti einant į nekilnojamojo turto rinką. Šioje darbo vietoje jau galima nustatyti daugelį investavimo į nekilnojamąjį turtą privalumų ir trūkumų. Be to, prieš pereidamas prie rezultatų analizės, plačiau nagrinėju tyrimo metodologiją ir metodus.

Per savo literatūros apžvalgą atradau daug įžvalgių šios srities tyrimų. Savo aktualiausių rinkinyje daugiausia dėmesio skyriau investavimo į nekilnojamąjį turtą rizikos ir grąžos aspektams. Viena vertus, mokslinėje literatūroje gausu lyginamosios analizės, įskaitant akcijas ir obligacijas. Kita

vertus, atskiros analizės nėra tokios dažnos. Darbo rezultatų analizės dalyje, remdamasis literatūros apžvalgos rezultatais, suskirstau informaciją nuo nekilnojamojo turto vertinimo iki pelningumo analizės.

Kalbant apie metodologiją, darbe taikiau realistinį tyrimo metodą. Visas pratimas atliekamas struktūriškai, remiantis išankstinėmis nuostatomis, siekiant suformuoti aiškią sąvokų sistemą. Pasirinktas tyrimo metodas yra dvejopas: kokybinis ir kiekybinis. Visas tyrimas gerai rezonuoja su fundamentaliais (grynaisiais) tyrimo metodais, tačiau turi praktinių pasekmių.

Mano išvados ir rezultatai sutelkti į rizikos ir grąžos charakteristikas bei bendrą investavimo į nekilnojamąjį turtą pelningumą.

Annex 3

LIST OF ABBREVIATIONS

AM: arithmetic mean

BRRR: buy, rehab, rent, refinance, repeat
BTCF: before tax cash flow

CAM: common area maintenance
CC&Rs: covenants, conditions and restrictions
CF: cash flow
CR: capitalization rate
CFAF: cash flow after financing
CFO: cash flow from operations

DSCR: debt service coverage ratio

E(R): expected return

FC: financing cost
FV: future value

GM: geometric mean

HPR: holding period return

IRR: internal rate of return

LTV ratio: loan-to-value ratio

NOI: net operating income

NPV: net present value

PMI: private mortgage insurance

PPSF: price per square foot

PV: present value

RE: real estate

REIT: real estate investment trust

ROA: return on assets

ROE: return on equity

ROI: return on investment

SD: standard deviation