

THE PERFORMANCE OF RESIDENTIAL REAL ESTATE INVESTING IN

UKRAINE

by

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LIST OF ABBREVIATIONS

ROI Return on investment

ADR Average daily rate

DCF Discounted cash flow(s)

IRR Internal rate of return

RE Real estate

GDP Gross domestic product

REIT Real estate investment trust

CPI Consumer price index

CHAPTER 1. INTRODUCTION

Real estate as an asset plays an important role in financial activity worldwide for both institutional and private investors. According to Savills World Research, global real estate value is more than USD 250 trillion as of 2017. This number is three times more than real global GDP of that year. Housing, as well as commercial premises is an irreplaceable part of our life, which makes demand for real estate almost eternal. In this study we will particularly focus on residential premises.

House or apartment is one of the most expensive purchases for a household during their financial life cycle. It is often costs multiple annual income for an average person. Even though many of residential object are owner-occupied, it is still huge market for investing activity.

Firstly, a household periodically sells its residential property to buy more comfortable or affordable one. The investor can act just like this. In the context of situation in Ukraine in late 2021, real estate investing is a stable and well-known way to protect and even significantly increase own capital. From 2016 to 2021, new housing price index in Ukraine increased by more than 30% in dollar terms. Numbers are even better for secondary market – almost 7% of annualized growth.

Secondly, there are many households which rent their place to leave. This fact opens another option for investor. According to various sources, real estate renting prices are increasing as well, by approximately 1.6% per year in dollar terms.

Combining these two options in one – buying a residential object, rent it out and then sell at a good price can create a profitable investment opportunity with relatively low risks.

The purpose of this study is to analyze attractiveness of residential real estate investment in Ukraine, highlight key benefits and flaws, assess risks associated with this type of investment and to setup a model which describes key financial indicators of this investment opportunity. It will create a framework which can be used to analyze investment performance given external conditions, tax regulation and other factors. It can also help to benchmark profitability and risks to other investment options.

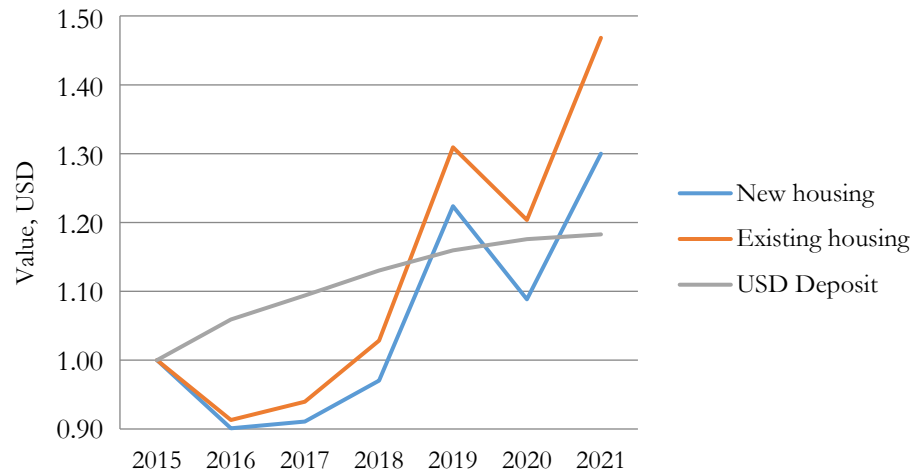
Besides this, this study will describe macroeconomic assessment of Ukraine real estate market in the context of influencing factors, equilibrium determination and market movement direction.

CHAPTER 2. INDUSTRY OVERVIEW AND RELATED STUDIES

For many Ukrainians, residential real estate investing is the best option considering its relatively high profitability versus low risks. There are several alternatives and factors which affect this trend.

At the time of this study (May-October of 2021), there are low rates for USD/UAH deposits in Ukraine. According to National Bank of Ukraine, weighted average annual deposit rate for foreign currency in October 2021 was 0.6%. This index was 7.6% for UAH (one can compare it with an official 10% - 11% inflation for the same period).

Figure 1. Return per dollar invested by different options



Source: State Statistics Service of Ukraine, National Bank of Ukraine

Another known way for private investor to invest their money is to acquire shares of stock on stock exchange. Unfortunately, this option is not widespread. According to Ukrainian Exchange (UX), in 2020, the total volume of trades amounted to less than UAH 2.5 bln, and the total number of transactions was 2,550. This amounts to

approximately 0.00006 transactions per capita per year. It can be explained by the dominance of LLC over publicly-traded companies in Ukraine, as well as with the gaps in legislative framework.

Another factor is the unstable political and social situation. Ukrainian citizens tend to invest in own real estate property instead of investing in businesses. It can be explained with a high unbelief in possibility of sustainable growth. With the arrival of a new ruling force, many businesses are forced to close due to pressure. Many entrepreneurs state that it is almost impossible to develop their businesses without being involved in corruption and other illegal activities. During the times of this instability, people decide to invest in real estate object – to save their capital for better times.

It is also important to mention cryptocurrency transactions market as one of alternative investment options for Ukraine. Some sources claim that Ukraine is ranked first for the adoption of cryptocurrencies as of October 2021, with 12.7% of population owning cryptocurrency. It can be seen that lot of Ukrainians consider cryptocurrency as a good investment and/or hedging instrument. However, due to lack of official data and possible regulatory changes, it can be hard to assess this market and make conclusions.

However, Ukrainians decide to invest in real estate not only because of small choice of investment opportunities. Real estate market, as well as market for rents shows significant growth over the last 5 years. Many private and institutional investors consider real estate as a good investment opportunity, due to several advantages; some of them are listed below:

1. **Low risk of bankruptcy.** Real estate prices can be volatile, investor can suffer losses but real estate object would unlikely turn into zero.
2. **Relatively high returns.** Return on Investment (ROI) is fluctuating between 5% and 7% in dollar terms, which will be shown below in this study.
3. **Good hedging against inflation.** Real estate prices tend to grow with other prices, which makes a real estate object, even idle, a value-returning asset.
4. **Possibility to receive passive income.** With the right skill, investor can put a minimum of time and effort to receive income (finding long-lasting tenant, outsourcing operational activities, etc.)

However, it should be mentioned that this type of investment also has its disadvantages, including, but not limited to:

1. **Relatively high initial investment.** Without considering exotic options like time-share, initial investment for renting out a real estate object starts from ~USD 10,000, which is a high number for a country, where average annual salary is equal to USD 5,929.
2. **Low liquidity.** Buying a real estate object, as well as selling it could be a tough job for private investor. In addition, despite real estate prices tend to grow, there could be big periods of declining, so investor will have to wait a lot of time before converting his object into cash for affordable price.

Ukraine “has one of the highest rates of owner-occupation (over 90%)”, as mentioned in *Public Housing Policy in Ukraine: Current State and Prospects for Reform* by Cedoss. However, even 10% of Ukraine’s population, which is approximately equal to 41.5 million of people, is 4.15 million of people. These people mostly renting their

place to live, which creates high organic demand for residential real estate renting in Ukraine.

According to the data provided by the website agent.ua, Kyiv, on average, has the most expensive apartments, both with one living room, and with more than one living room. Ukraine's capital also has the highest population. "In large cities, the volume of both demand and supply is significantly higher than in other settlements. This ensures a greater dynamism of the market, expressed both in the number of transactions and in the speed of reaction to changing market conditions," said the director of the consulting company City Development Solutions Roman Gerasimchuk. Considering these facts, this research will be heavily focused on Kyiv and Kyiv oblast and top-5 big cities of Ukraine. However, other cities, in particular touristic, will be considered.

Apartments are often divided into four subcategories (prices are according to lun.ua):

1. Economy, with average price UAH 20,787 per square meter
2. Comfort, with average price UAH 24,162 per square meter
3. Business, with average price UAH 38,343 per square meter
4. Premium, with average price UAH 73,975 per square meter

There is another huge cluster of real estate besides residential – commercial real estate. Commercial property includes, but not limited to, industrial, warehouse and logistics premises, retail spaces, hotel complexes. Key players on Ukraine's investment market, such as Dragon Capital and Concorde Capital are showing growing interest to the commercial real estate, proved with their latest transactions.

According to inventure.com.ua, situation in commercial real estate markets is as follows:

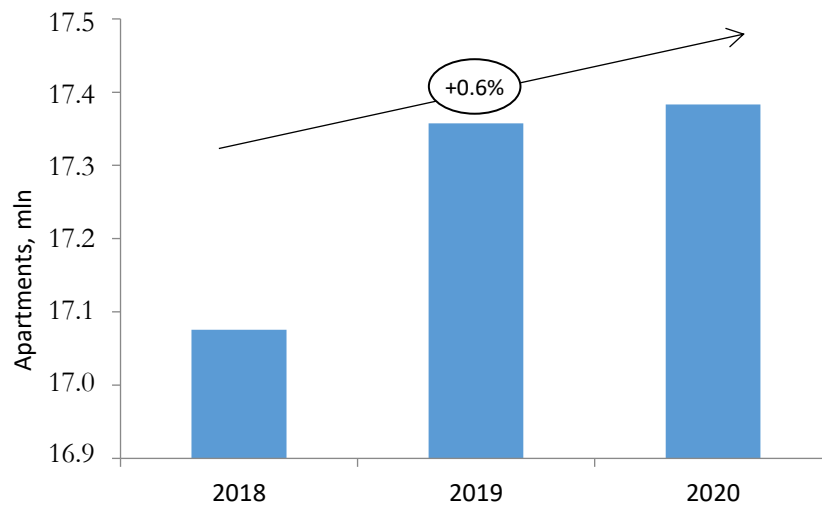
1. Office real estate: there are 649 square meters of office real estate per 1000 people in Ukraine. This is relatively low indicator, which can signalize that there is a potential of sector growth in Ukraine. Average price per square meter per month for class A is USD 20-30, for class B – USD 20-30, for class C – USD 12-20, for class D – USD 8-12.
2. Retail property: there are 535 square meters of office real estate per 1000 people in Ukraine. This indicator is low as well, creating the same situation as with office real estate. Average price is about USD 80-110.
3. Hotel property: according to thepage.ua, average daily rate (ADR) is as follows: 5-star – USD 150, 4-star – USD 90, 3-star – USD 50.
4. Logistic and industrial properties: prices varies highly depending on many factors including, but not limited to, location, destination and market expectations.

It is important to note that COVID-19 pandemic strongly affected the commercial real estate market. In times of robust lockdown, more than half of offices became empty, and many of companies are now operating on-line, without any dependency from the offices. Lockdown also affected hotel business, as well as normal and advanced manufacturing. According to the research made by JLL, overall volume of commercial real estate investment decreased by 28% in first quarter of 2020, compared to the same period of the previous year. Commercial real estate investment decreased as well, compared to 2019 year. However, despite these changes, situation with commercial real estate market is now more or less stable, even showing potential for growth.

There are two main types of investment in residential properties. First one is to invest money at the early stage of construction and then to resell finished project. The second one is renting, which is much more popular in Ukraine.

There are also other real estate investment opportunities, which are not very popular in Ukraine. Real Estate Investment Trust (REIT) is one of them. Nowadays, REIT turned into globally recognized and accepted form of investment (Parker, 2011) Economical and financial conditions, as well as legal aspects should be considered to evaluate market opportunities for this type of investment.

Figure 2: Number of apartments by year



Source: State Statistics Service of Ukraine

CHAPTER 3. METHODOLOGY

This study is divided into several parts. List of key techniques, which are used:

- ROI model setup, which will include initial investment and annual return considering assumptions made on the growth of the residential real estate objects and rent market, as well as tax legislation
- Two-factor sensitivity analysis on several key factors/variables, showing dependency of ROI on those factors
- Manual web scraping
- Descriptive statistics
- DCF model.
- Financial analysis
- Benchmarking

At the beginning, it is necessary to setup a macroeconomic framework for additional analysis.

One of the core models to understand macroeconomics of real estate market was developed by Denise DiPasquale and William C. Wheaton in 1992. It is called “4 quadrants model” or “DW model”. This model is a good choice to understand and analyze the financial performance of RE as an asset.

This model describes the real estate object from two perspectives: real estate as a space and real estate as an asset. According to DW model, market equilibrium for real estate as a space is achieved when the demand (D) is equal to stock of space (S), where demand is a function of rent (R) and economic conditions (Economy).

$$D(R, \text{Economy}) = S \quad (1)$$

It is important for this study to look on another equation of this model:

$$\Delta S = C - dS \quad (2)$$

, where ΔS stands for changes in stock of space, C stands for new construction, and d stands for depreciation rate. Luckily there is a data at the State Statistic Service of Ukraine to assess these equations.

This model also describes links between key real estate market and macroeconomic variables such as rent, price, construction and stock of space.

The next step is data collection. For setting up a DCF model it is important to obtain a data on all key revenue streams, cost streams, and risks. More information about the data will be provided in Chapter 4 of this study. Two main sources of the data on real estate objects and rents – domik.ua and flatfy.ua. One of the possible ways to collect the data is an automatic web-scraping. However, manual web-scraping was chosen for this study because of specificity of the web-sites: these are the bulletin boards, and information gathered should be filtered before taking into work. However, one can build a well-working algorithm for this type of scrapping. The main 2 variables of this dataset for the purpose of this study are rent per sq. m. and price per sq. m. However, it is almost impossible to see both of these variables in one observation. To deal with this issue, author was looking for apartments for sale and apartments for rent in the same house, with the same number of room. The assumption here is that quality of these apartments is distributed normally, so there is no such possible error in this model. Besides these key variables, there is a data on number of rooms, floor, etc. Descriptive statistics on these variables along with data visualization is provided in Chapter 4.

Country-wide data on real estate objects, construction, and disposal was taken from the web-site of State Statistical Service of Ukraine. Most of this data covers years 2018-2020. CPI of residential premises was chosen to describe the residential real estate object price growth. However, there is only data in UAH on the State Statistic Service of Ukraine. To adjust in dollar terms, author collected data on dollar rate in Ukraine for years 2016-2021 (excluding Q4).

(graph on dollar rate)

Next, each UAH quarter residential premises CPI was multiplied by the corresponding dollar rate. After this, real estate objects price growth can be seen and analyzed.

The next step is to calculate volatility of the return to assess price risks.

$$\text{Volatility} = \sigma(r_1 \dots r_n) \quad (3)$$

, where

$$r_n = \frac{p_{t+1}}{p_t} - 1 \quad (4)$$

, where p_t is a price of the object (or, in this case value of dollar invested in zero period) at time period t . For the mentioned price growth, volatility was 5% for existing housing and 6% for new housing.

After these calculations, there is a ready-made tool for high-level attractiveness analysis of simply holding a real estate asset. One can also benchmark this result versus other investment options. Author compared this type of investment and bank deposits in Ukraine. To do this, dataset named “Interest rates on time deposits, involved by banks from individuals” from the web-site of National Bank of Ukraine is used. It consists of time series of annualized weighted average deposit rates (in %) for both UAH and USD deposits from 2007 to 2021. For this study, time period 1Q2016 – 3Q2021 was chosen. The next big step is setting up a DCF model based on the collected data. As the value for rent prices growth, analysis provided by GlobalPropertyGuide is used. As inputs for price of the object and price of the rent, mean values of those variables in the dataset will be used, weighted by area. For the versatility of the study and analysis, all these prices are converted into prices per square meter.

Another important input for this model is the tax rate. At the time of this study, it is possible to pay 5% tax as a sole proprietor (“ФОП”) of the third group. There are discussions in Ukrainian parliament to increase taxes for personal commercial activity.

Considering that, this study will provide sensitivity analysis of tax impacting ROI.

The next assumption is overhead and idle costs and of the object. According to the author’s interviews and analysis, the average overhead and idle costs lie between 8% and 18% of the income from the renting. This assumption will be considered when

conducting a sensitivity analysis. Along with overhead costs, it is possible to mitigate some of risks associated with owning a real estate project. Author collected data from 5 insurance companies on their prices of insurance per square meter. There are various types of insurance provided by these companies. For the analysis purpose, author uses basic one. It is crucial to note that risk management is not always included in such models. For purpose of comparability, adding the insurance costs is optional, and is not included in the main model.

The time horizon for this model is defined as 10 years, with further terminal value of the object. This number was chosen because of several reasons:

1. Real estate investment is almost always a long-term investment, so it is better to measure it in terms higher than several years.
2. Considering unstable political and business environment of the Ukraine, it is risky to build such models with big time horizon (10+ years). One of the possible models to use without time horizon (perpetuity) is a version of the Gordon's growth model. However, considering the reasons above, it is not the choice for this study.
3. 10 years horizon is one of the most common in such models, and it is easy to compare results from this study's model to other calculations on relative investment types.

After declaring these assumptions, it becomes possible to build a DCF model, which looks as follows:

$$IPV = -OP + \sum_{n=1}^{10} \frac{12 * MRP * (1 - OCR) * (1 - t) * (1 + r)^n}{(1 + d)^n} + OP * (1 + R)^{10} \quad (5)$$

, where:

IPV – investor's present value;

OP – object price;

MRP – monthly rate price;

OCR – average overhead/idle costs rate;

t – effective tax rate;

r – residential rent prices growth rate;

R – apartment prices growth rate;

d – discount rate;

Other options to set up the model are as follows:

$$IPV = -OP + \sum_{n=1}^p \frac{12 * MRP * (1 - OCR) * (1 - t) * (1 + r)^n}{(1 + d)^n} + OP * (1 + R)^p \quad (6)$$

, where p is the investment horizon, or

$$IPV = -OP + \sum_{n=1}^{10} \frac{12 * MRP * (1 - OCR - IC) * (1 - t) * (1 + r)^n}{(1 + d)^n} + OP * (1 + R)^{10} \quad (7)$$

, where IC are the insurance costs

Having the model set up, the next iteration of this study is finding the IRR of these cash flows. One can use IRR formula in Excel or do it manually.

After IRR is calculated, this annual return can be compared and benchmarked against the most popular Ukraine investment opportunities, such as bank deposits and private equity loans. It can also be proven (or disproved) that such type of investment at least beats the inflation of Ukraine in dollar terms.

The next step is a sensitivity analysis. This study includes two two-factor sensitivity analyses: first will include overhead costs rate and effective tax rate, while the second one will include the apartment prices growth rate and residential rent prices growth rate. It will provide more clear understanding on which factors affect the annual return on such types of investments and how they do it.

Finally, mentioned findings and values will be used to check whether Ukrainian real estate market is in equilibrium. To do this, DW model will be used. It will require information on construction, rent and spaces prices and disposal of residential premises.

The methodology is mostly based on real data and logical assumptions. This fact makes derived model relevant to analyze the Ukrainian real estate market. It is also agile to meet new market conditions or tax regulation changes.

CHAPTER 4. DATA

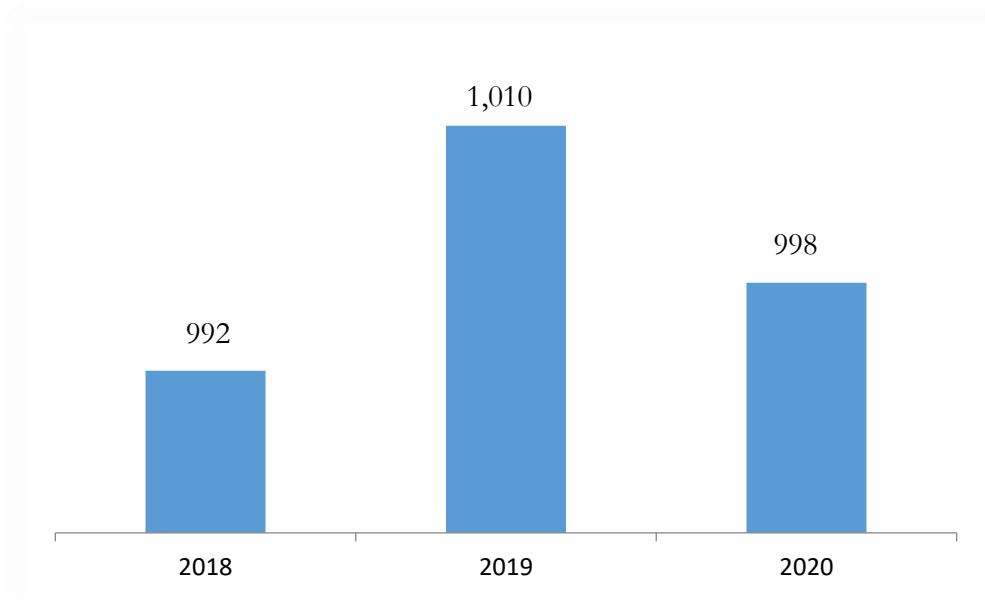
Main source of statistical data was the State Statistic Service of Ukraine and National Bank of Ukraine.

The first dataset is on residential area by regions, made of 3 datasets of years 2018, 2019, and 2020.

Values didn't change dramatically y-o-y with CAGR of only 0.65%.

This and 3 next datasets are derived in the similar way from the data collected from the State Statistic Service of Ukraine web-site. Besides the total indicators, it also includes breakdown by region. It can also be a source of important information. For example, Lviv Oblast is Ukraine-wide leader in residential premises are annual growth rate, which is 5.83%. At that time, surprisingly, Kyiv has the worst indicator – 9.91% decrease per year. Despite this information is outside of the focus of this study, it can be analyzed to find the affecting factors.

Figure 3: Total residential area, mln sq. m.

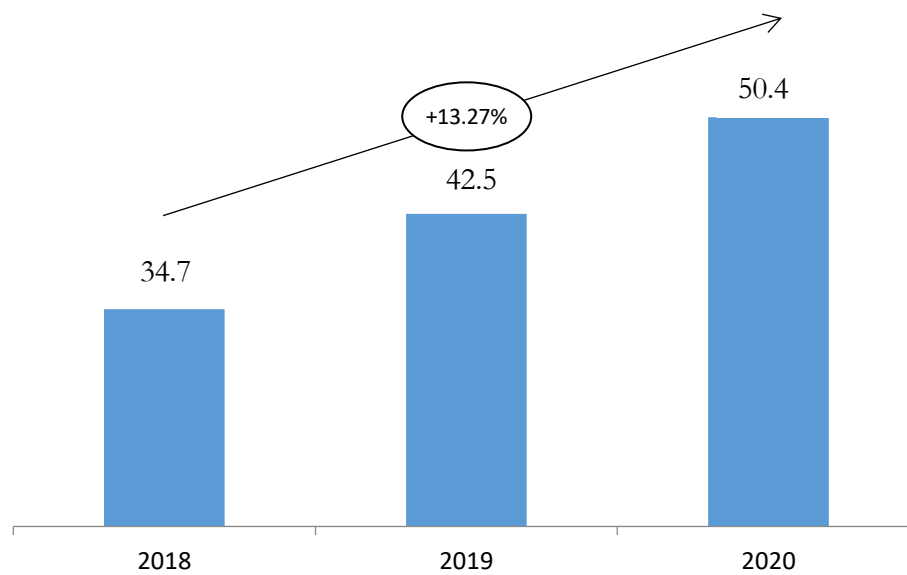


Source: State Statistic Service of Ukraine

The next dataset provides information about number of apartments by regions, made from 3 datasets for 2018-2020. CAGR for country-wide number of apartments is equal to 0.6%.

Using the same logic, author collected data on revenues of residential premises and residential area disposal.

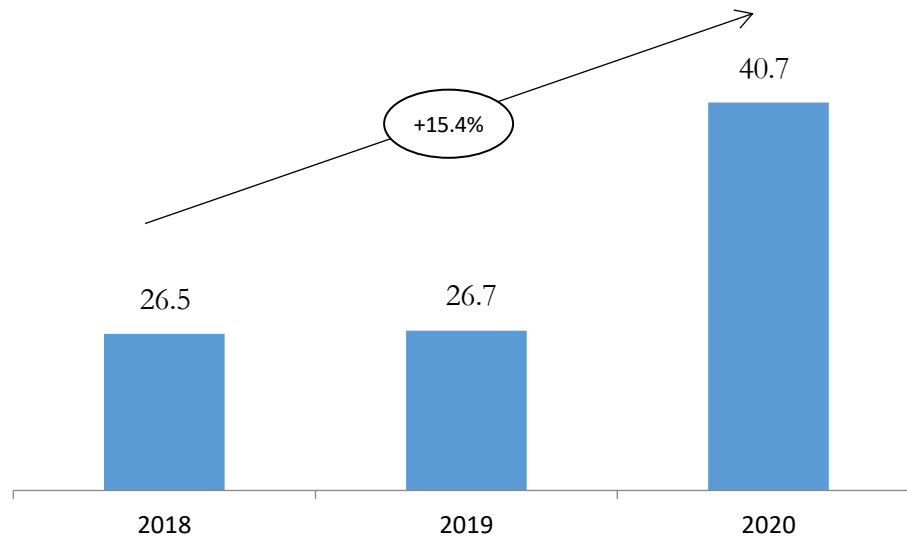
Figure 4: Total residential premises revenues, mln sq. m.



Source: State Statistic Service of Ukraine

Total residential premises revenues are not the same indicator as construction. This indicator also includes other forms of acquisition. For example, in 2018, only 4.9 millions of square meters were acquired as a result of constructing and constituted only for 14% of annual acquisition. 25.9 mln square meters were accepted from other enterprises, institutions, organizations.

Figure 5: Total residential area disposal, mln sq. m.



Source: State Statistic Service of Ukraine

Dataset on apartments was collected via manual web scraping consists of 168 observations of 9 variables. Variables are defined as follows:

- rent – price of rent, USD per square meter;
mean value – 606, standard deviation – 450;
- dist – distance to the nearest underground station, meters;
mean value – 1304, standard deviation – 1271;
- area – area of the apartment, square meters;
mean value – 62.5, standard deviation – 39;
- nrooms – number of rooms in the apartment;
mean value – 1.8, standard deviation – 1;
- wtype – type of walls, qualitative variable;
mode – “brick”
- ybuilt – year when house was built;
mean value – 1996, standard deviation – 21;

- floor – the floor where apartment is located;
mean value – 7, standard deviation – 5;
- address – the address of the apartment;
- sqmpr – price of the apartment, USD per square meters;
mean value – 1601, standard deviation – 651;
- link – the link on the ad for the rent;

The collected data mainly consists of Kyiv objects; however, it includes observations from Lviv, Kharkiv and Odessa.

Surprisingly, the mean value for price per square meter is equal to USD 1601, which contradicts with some studies on this topic. Author's explanation for this is that it is important to distinguish between prices, for which that people *want to sell*, and prices for which people *actually sell*. This study does not cover last, however, first is the one of the best proxies for second. Several graphs on descriptive statistics of the data are in the appendix.

CHAPTER 5. RESULTS

It can be seen from the data, that annualized return for new housing is equal to 4.67%, and to 6.91% for existing housing.

As can be seen, existing housing has higher annualized return as well as smaller volatility.

Using the same approach, it can be calculated that from 1Q2016 to 3Q2021, USD deposits had 2% annualized return with

Average annual return (IRR) from the formula mentioned in the model is 6.1%.

5.2 Two-factor sensitivity analysis on overhead costs and tax rate is in the appendix. It shows dependence of annual return on effective tax rate and overhead costs. As we see, costs and tax optimizing may lead to even better rate of return.

5.3. Two-factor sensitivity analysis on rent prices growth rate and apartment growth rate is in the appendix.

Based on the dataset and using the mentioned model, the calculated IRR was equal to 6.1%. It is important to note that this number is expressed in relation to dollar terms. It is a significant number, however, it is based on different assumptions. For example, many renters doesn't pay income tax, or have contracts/evidences to expect long-term uninterrupted renting, which can raise this number even higher.

Sensitivity analysis shows that is possible to achieve 7.3% annual return or even higher.

CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS

The main conclusion of this study is that RE residential renting has significant and relatively big annual return, while being low-risk opportunity. It is also more profitable than majority of the bank deposits.

Second big conclusion is that annual return from such type of investment depend on many factors: both micro- and macroeconomic. It is important to keep track of those factors, especially on those, on which investor has no control, to make the right decisions of buying or selling.

Another conclusion is that this study proves all of the real estate investment benefits mentioned in first chapter. The important one – such type of investment beats the dollar inflation in Ukraine, so it simply helps to save the money, and also brings significant income.

The main recommendations of this study are as follows:

1. Consider residential RE investment as a profitable investment opportunity.
2. Try to optimize the overhead costs: they highly affect the annual return.
3. Use the 5% tax rate when it is possible – it makes such type of the investment very attractive. If it is not possible, one should try to optimize the effective tax rate.
4. Keep track on relative macroeconomic factors such as RE object price growth/decline and RE residential renting price growth/decline.

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APPENDIX

Table 1. Histogram of rent price.

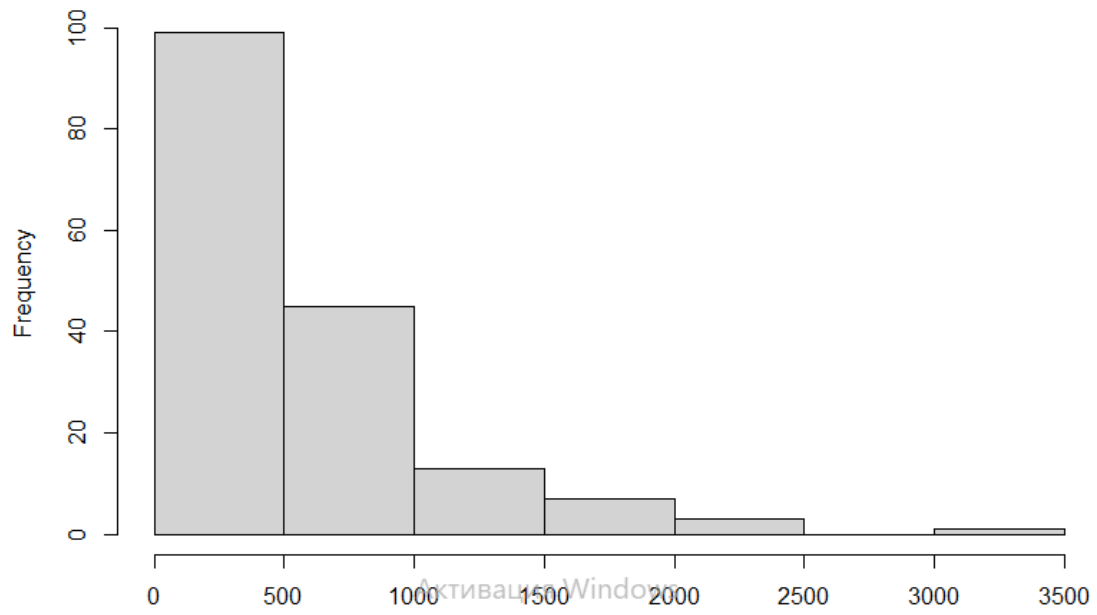


Table 2. Distribution of wall types.

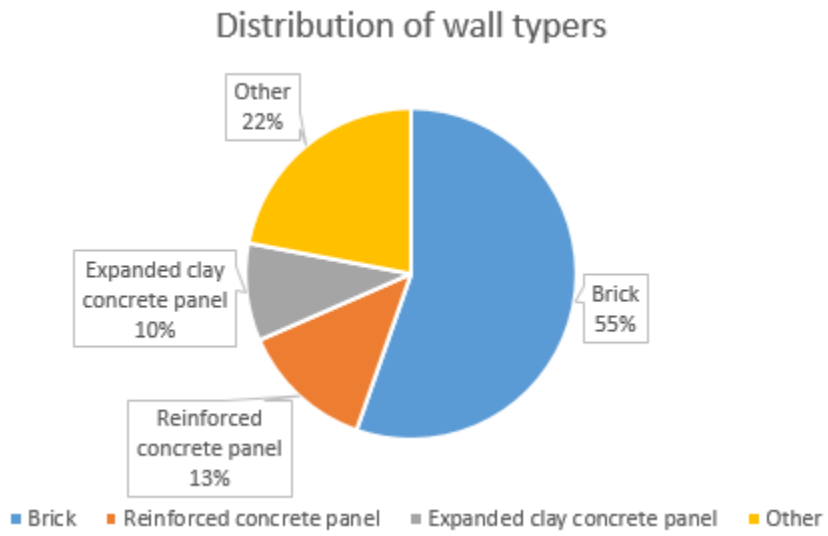


Table 3. Two-factor sensitivity analysis on overhead costs and tax rate.

	Effective income tax					
	6,1%	5,00%	12%	19,50%	27,00%	34,0%
Overhead costs	4%	7,3%	6,8%	6,3%	5,8%	5,4%
	6%	7,2%	6,7%	6,2%	5,7%	5,3%
	8%	7,1%	6,6%	6,1%	5,6%	5,2%
	10%	6,9%	6,5%	6,0%	5,5%	5,1%
	13%	6,8%	6,3%	5,9%	5,4%	5,0%

Table 4. Two-factor sensitivity analysis on rent prices growth rate and apartment growth rate.

		Appatment price growth rate						
		6,11%	1,75%	1,50%	1,25%	1,00%	0,75%	0,50%
Rent price growth rate	6,11%	6,97%	6,79%	6,62%	6,62%	6,27%	6,10%	5,93%
	3,50%	6,86%	6,68%	6,50%	6,50%	6,15%	5,98%	5,81%
	3,00%	6,75%	6,57%	6,39%	6,39%	6,04%	5,87%	5,69%
	2,50%	6,75%	6,57%	6,39%	6,39%	6,04%	5,87%	5,69%
	2,00%	6,54%	6,36%	6,18%	6,18%	5,82%	5,65%	5,47%
	1,50%	6,44%	6,26%	6,08%	6,08%	5,72%	5,54%	5,36%
	1,00%	6,34%	6,16%	5,98%	5,98%	5,61%	5,43%	5,25%
	0,50%							