

INVESTMENT RISK IN THE CONTEXT OF PRICE CHANGES ON THE REAL ESTATE AND STOCK MARKETS

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Abstract

The residential real estate market is thought to show a tendency for wide fluctuations in prices, as a result of which price bubbles appear. This element of risk has a direct bearing on investors interested in speculation and those seeking to meet their housing needs. Wide fluctuations in the values of real estate affect the investors' financial situation in many ways, by determining the possibility of meeting one's housing needs, reducing or sometimes raising creditworthiness, and by increasing investment risk measured by volatility. Omitting the obvious social dimension of the residential real estate market and concentrating on its financial aspects, the author of the article analyses to what degree wide swings in prices can be recognized as specific to this market. To this end, the volatility of prices in the stock market and in the secondary housing market in Poland is compared. An analysis is performed to establish which of them has higher average volatility measures or rates of return, i.e. which of them is more profitable or secure for investors. Statistical tests are used to find out whether average rates of return or measures of risk are equal or different between the two markets. The results of the research show that the secondary housing market and the stock market differ concerning cumulative average rates of return and standard deviations. In the first of them, they are respectively higher and lower.

Key words: capital market, real estate market, risk of investments, price changes.

JEL Classification: G11, G12, R31.

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1. Introduction

Investors may choose from a range of investment options, but their decisions determine future rates of return. The author assumed for the purposes of this article that the obstacles investors face were not a serious problem for them and so they could freely invest their resources. This assumption is unrealistic for most investors, but some of them can certainly afford investments big enough to allow them to ignore various limitations. The focus of this research is on two markets: the stock market and the secondary housing market. Investors can choose between them, but in making choices they must be aware of where the markets are different from each other. The basic difference seems to lie in the maturity of financial instruments quoted on them. Long-term investments are typical of the real estate market, whereas the stock market offers investments of various maturities. They are similar, however, in that long-term investments are possible in both of them. The author decided to analyze the two markets to establish in which of them greater stability of investments could be expected. The level of security was evaluated between the markets in terms of price changes. The research was inspired by the opinions of some researchers, according to whom dynamic changes in prices in the real estate market, especially in the housing market, make it susceptible to price bubbles and, consequently,

make investment riskier. The question that must be asked in this context is about which of the two markets – the secondary housing market or the dynamic stock market – is safer for investors. The author analyzed prices quoted in both of them and compared their variability by subjecting a range of financial indices to statistical analysis. The hypothesis formulated for the research was that the secondary housing market was a safer alternative.

2. Stock market vs. secondary housing market

The real estate market is one of the oldest markets known in the economy, like the labor market and the commodity market. It has been in existence since people started buying and leasing land and homes. While it may not have any physical form and may be merely an intention to make a transaction, the real estate market as we know it today, including the housing market, started to take shape with the economic development of the world. The market and its subtypes evolved in time, providing many opportunities for investment. Two of these subtypes are the buy-to-let market and the capital investment market (KUCHARSKA – STASIAK 2006, pp. 40, 41). Capital investments in real estate are the most important as far as the aim of this article is concerned, because they are made for similar reasons as those guiding certain investors in the capital market. Studies show that the main motivation for making a capital investment in real estate does not necessarily have to be the wish to meet one's housing needs. Which of the above-mentioned types of motivation for investment will predominate can be a matter of individual preferences, and in different regions of the same country one or the other may be given more importance (DUSANSKY et al. 2012). In Poland, too, investment of capital is indicated as a reason for buying a flat, but it is outside of investors' top preferences, or so was the case when concerning the Poznań housing market in the years 2004-2007 (STRĄCZKOWSKI 2009).

The financial market started expanding following the development of money and its increasing importance in the economy. Flows of capital from those who possessed it to those who needed it were directed into formal channels. The division of capital into different classes was acknowledged by the variety of instruments traded in the financial market, starting from currencies, through bank deposits to securities confirming the co-ownership of companies. Investors are usually interested in all segments of the financial market, but those of them who are sensitive to rates of return give special attention to the capital market where financial instruments of long maturity are available. Long maturity is usually understood as one longer than 1 year, but this division is purely arbitrary and only serves the purpose of theoretical clarity (DĘBSKI 2010, pp. 13-23). It is of no special significance to investors. The main criterion that the risk-averse investors apply to is the ratio between returns and risk. Aversion to risk should not be understood here as a dislike *sensu stricto*, but rather as an expectation of higher returns for higher risk. This context gives rise to the research problem. According to the available literature, the residential real estate market is susceptible to price bubbles that can appear for a whole range of reasons. One frequently mentioned is the increased supply of money, for instance the easy access to mortgages. Easy borrowing is closely related to the availability of money (JORDA et al. 2013, p.25). For the sake of illustration, the 2010-2014 boom in the US stock market is attributed to easier access to cash stimulated by the purchases of debt instruments (known as quantitative easing) by the Fed, the Bank of Japan, the Swiss National Bank, and the European (Central Bank OLSEN 2014). A similar mechanism has also been observed in the residential real estate market. A correlation has been established between easier access to mortgage loans and housing price rises, increasing the probability of price bubbles occurring (ANUNDSEN 2014). It has also been realized that the real estate market is no longer a place where people meet their housing needs, but that it has turned into a place for capital investments. This observation is not new, but researchers now perceive it as a factor of price increases. Additional demand and relatively easy access to mortgages disturb the balance in the housing market, contributing to wider swings in prices (COŞKUN 2013, p.53) and to distinct economic cycles resulting from them (ALLEN, CARLETTI 2013). A price bubble is defined as a situation in which the prices of assets rise rapidly above the assets' fundamental value and then, an equally sudden correction takes place. Apart from the aforementioned excessive supply of money resulting from the liberalization of financial markets, price bubbles in the housing market can also be caused by its inefficiencies, particularly by insufficiently fast adjustment between housing supply and the structure of demand. The behavior of investors and their herd instinct, which is inherent in all investment processes, is also of importance (ŻELAZOWSKI 2008, p.99). Against this background, the superiority of the capital market is revealed, the structure of which adjusts to investors' expectations

much more flexibly. But even this does not protect them from price bubbles, even though they are thought to be a less common phenomenon in this market. Price swings occur in all markets, including the real estate market and the capital market (TROJANEK 2008, p.86; ŻELAZOWSKI 2008, p.99). A spectacular price bubble in the capital market that ended in a dramatic correction of prices was inflated by the strong appreciation of dotcoms in the last decade of the 20th century. Studies show that in the bubble formation period, the fundamental valuations of dotcoms were, according to the price bubble theory, basically different from their market prices (MORRIS, ALAM 2012). The same mechanism is observed in the housing market. This similarity was realized when the expanding financial instruments market was found to induce price rises in both the housing market and the capital market (BASCO 2014). The fact that the residential real estate market and the capital market are different is of secondary importance in analyzing the causes of price bubbles. The question about which of them is better for investing one's savings still waits to be answered.

Investors perceive price fluctuations as risk, but assessing risk is not always possible. Risk assessment in the capital market is less of a problem because stock prices quoted on a regular basis and easily calculable rates of return allow for using volatility or sensitivity measures to this end. The real estate market is much more uncertain because of its interdisciplinary character and many factors that affect its condition. Uncertainty, unlike risk, is not measurable, so investors cannot exactly assess the amount uncertainty involved in their transactions. This situation is tantamount to having incomplete information or even to misinformation. Its sources should be sought in the unpredictability of players in the real estate market, the instability of real estate attributes, and the investors' emotional attitude to transactions and their objects (RADZEWICZ, WIŚNIEWSKI 2011, p. 55-56). Uncertainty draws a line between the real estate market and the capital market, which owes its transparency to the measurability of its phenomena. This fact is of a disadvantage to investors, who must consider risks related to particular types of assets before choosing a market.

The development of the residential real estate market is determined by economic and social factors. Interregional differences in real estate prices arise from the differences in incomes earned in individual regions and from the regions' social structure (ŻELAZOWSKI 2011, p.105). These factors appear to be crucial, but they are certainly not the only ones. The capital market is much more homogenous in this respect, mainly because of its supraregional character and the players interacting with each other and influencing prices at the countrywide level rather than in particular regions.

The real estate market shows substantial correlation with the state of the economy, the strength and vectors of which vary in time. Unfortunately, the real estate index is not available, and the real estate market tends to be out of step with the rest of the economy, so generally available indices of the economic cycle are useless (FORYS 2012, p.42). The capital market is also strongly dependent on the state of the economy (it is sometimes referred to as "the barometer of economic sentiments"), but it is more transparent and, most importantly, there are many indices for analyzing its condition. Its transparency, and hence higher security of investments, derives from the availability of reliable information and frequently updated price quotations (WALLACE 1996). The limited interest of investors on the demand side in residential real estate is probably due to the lack of relevant information on these assets (WOLSKI, ZAŁĘCZNA 2013, p. 63; CLAYTON et al. 2007). Compared with the capital market, residential real estate markets have distinct local characteristics which leave investors to consider which of them to choose. American studies point out that the markets may differ in risk levels, so it is not all the same where investors commit their assets (VOICU, SEILER 2013). According to Polish studies, however, local real estate markets in Poland tend to follow each another, so it is of secondary importance for domestic investors where they will place their capital (DITTMANN 2012, p. 84).

3. Comparison of risks and rates of return between the analyzed markets

The above points to the need for conducting a study to determine the degree to which the secondary residential real estate market and the stock market can be treated as alternative investment options. Is the risk arising from price swings or rates of returns significantly different? If so, which of the two markets is more effective.

3.1. Methodology

In seeking to establish which of the two markets is more secure and more stable, the means of their

descriptive statistics were compared. The comparison involved parameters such as average quarterly rates of return, cumulative rates of return over the sample period, standard deviations, beta coefficients, and minimum and maximum rates of return for particular segments of both markets. Using one-way ANOVA tests, the probability of both samples generating the same expected values was evaluated. The data series were divided into two sets, each containing all observations covered by the database. This means that the groups differed in the length of the data series. To determine whether inter-group variances were statistically significantly equal, Levene's test was additionally applied. Because of its results, a null hypothesis stating that the sample means were equal was tested with the Welch test and the less rigorous Brown-Forsythe test. Both of them yielded the same results each time, thus they have been presented together. The one-way ANOVA and the Welch and Brown-Forsythe tests were used to examine the null hypothesis about equal means against an alternative hypothesis stating otherwise. With Levene's test, a null hypothesis stating that the variances were statistically significantly different was tested against an alternative hypothesis predicting their equality. The tests were run using the SPSS software package.

3.2. Data

The data underpinning the study were acquired from the Warsaw Stock Exchange (WSE) and the National Bank of Poland (NBP). The WSE provided values of the selected stock indices (WIG, NCINDEX, WIG20, SWIG40, MWIG80, WIG-Budownictwo, WIG-Deweloperski) and the NBP's database was the source of the hedonic price index for the secondary housing market. Cities were sampled depending on the availability of the necessary data (Białystok, Bydgoszcz, Tricity, Katowice, Kielce, Kraków, Lublin, Łódź, Olsztyn, Opole, Poznań, Rzeszów, Szczecin, Warszawa, Wrocław, Zielona Góra). The data spanned the whole period for which housing prices were available in the database. As a result of calculations, quarterly rates of return between Q1 of 2007 and Q3 of 2014 amounting to 31 observations were obtained for all assets excluding NCINDEX and WIG-Deweloperski. In the case of the last two indices, the information contained in the database allowed for calculating 28 rates of return (from Q4 of 2007) and 29 observations (from Q3 of 2007), respectively. The percentage rates of return were used as inputs in further analysis. The data were also employed to estimate the rates of return, assuming that an investment was made in the first period of analysis and realized in the last period.

3.3. Research results

The next stages of analysis revealed differences between the markets under consideration. First, the mean quarterly rates of return were subjected to analysis. Its results were insufficient to confirm the research hypothesis, but they highlighted where the markets differed. One-way ANOVA rejected the null hypothesis about equal means, meaning that the markets were distinct from each other. The means turned out to be different in all of the analyzed cases.

Table 1
Results of one-way ANOVA for quarterly rates of returns

WIG	F-Stat	NCINDEX	F-Stat	WIG20	F-Stat	MWIG40	F-Stat
Białystok	0.002	Białystok	0.884	Białystok	0.401	Białystok	0
Bydgoszcz	0.028	Bydgoszcz	0.863	Bydgoszcz	0.567	Bydgoszcz	0.014
Tricity	0.066	Tricity	0.932	Tricity	0.1	Tricity	0.055
Katowice	0.249	Katowice	0.781	Katowice	0.89	Katowice	0.181
Kielce	0.033	Kielce	0.862	Kielce	0.621	Kielce	0.016
Krakow	0.182	Krakow	0.961	Krakow	0.015	Krakow	0.142
Lublin	0.061	Lublin	0.852	Lublin	0.752	Lublin	0.033
Lodz	0.033	Lodz	0.856	Lodz	0.495	Lodz	0.018
Olsztyn	0.051	Olsztyn	0.926	Olsztyn	0.142	Olsztyn	0.043
Opole	0.002	Opole	0.896	Opole	0.238	Opole	0.003
Poznan	0	Poznan	0.886	Poznan	0.296	Poznan	0
Rzeszow	0.036	Rzeszow	0.861	Rzeszow	0.664	Rzeszow	0.018

Szczecin	0.006	Szczecin	0.903	Szczecin	0.244	Szczecin	0.007
Warszawa	0.089	Warszawa	0.937	Warszawa	0.091	Warszawa	0.071
Wroclaw	0.152	Wroclaw	0.953	Wroclaw	0.031	Wroclaw	0.118
Zielona Gora		Zielona Gora	0.886	Zielona Gora	0.312	Zielona Gora	0

Table 1 cont.

SWIG80	F-Stat	WIG-Budownictwo	F-Stat	WIG-Deweloperski	F-Stat
Bialystok	0	Bialystok	1.315	Bialystok	1.926
Bydgoszcz	0.007	Bydgoszcz	1.509	Bydgoszcz	2.131
Tricity	0.066	Tricity	0.862	Tricity	1.417
Katowice	0.155	Katowice	1.803	Katowice	2.352
Kielce	0.009	Kielce	1.577	Kielce	2.214
Krakow	0.155	Krakow	0.625	Krakow	1.129
Lublin	0.021	Lublin	1.72	Lublin	2.371
Lodz	0.011	Lodz	1.392	Lodz	1.97
Olsztyn	0.054	Olsztyn	0.961	Olsztyn	1.543
Opole	0.007	Opole	1.053	Opole	1.604
Poznan	0.001	Poznan	1.138	Poznan	1.699
Rzeszow	0.01	Rzeszow	1.628	Rzeszow	2.276
Szczecin	0.012	Szczecin	1.094	Szczecin	1.674
Warszawa	0.083	Warszawa	0.868	Warszawa	1.437
Wroclaw	0.131	Wroclaw	0.698	Wroclaw	1.225
Zielona Gora	0.001	Zielona Gora	1.169	Zielona Gora	1.74

* Significance level of 0.05.

Source: developed by the author.

To validate the results, variances were tested for equality. If the equality condition had not been met or the data series for both markets had been found to differ in length, more tests would have been necessary. The null hypothesis about unequal variances was rejected each time the rate-of-return series for the capital market and the housing market in Katowice were analyzed. It was rejected again when the series of average rates of return from the WIG index and from the residential real estate market in Opole were examined. Because of the common presence of unequal variances, the author decided to run the Welch and Brown-Forsythe tests.

Table 2

The results of Levene's variance homogeneity test for quarterly rates of returns

WIG	W	NCINDEX	W	WIG20	W	MWIG40	W
Bialystok	13.463*	Bialystok	4.5*	Bialystok	10.119*	Bialystok	17.282*
Bydgoszcz	11.034*	Bydgoszcz	4.446*	Bydgoszcz	7.956*	Bydgoszcz	15.03*
Tricity	15.274*	Tricity	4.532*	Tricity	11.773*	Tricity	18.869*
Katowice	0.065	Katowice	3.69	Katowice	0.063	Katowice	1.241
Kielce	13.711*	Kielce	4.499*	Kielce	10.333*	Kielce	17.492*
Krakow	12.041*	Krakow	4.412*	Krakow	8.719*	Krakow	15.883*
Lublin	13.436*	Lublin	4.462*	Lublin	10.023*	Lublin	17.174*

Lodz	5.727*	Lodz	4.317*	Lodz	3.633	Lodz	9.429*
Olsztyn	23.461*	Olsztyn	4.71*	Olsztyn	19.722*	Olsztyn	25.747*
Opole	3.721	Opole	4.094*	Opole	1.786	Opole	7.391*
Poznan	4.808*	Poznan	4.19*	Poznan	2.705	Poznan	8.56*
Rzeszow	15.58*	Rzeszow	4.516*	Rzeszow	12.026*	Rzeszow	19.064*
Szczecin	11.582*	Szczecin	4.453*	Szczecin	8.424*	Szczecin	15.543*
Warszawa	25.189*	Warszawa	4.734*	Warszawa	21.46*	Warszawa	27.073*
Wroclaw	16.84*	Wroclaw	4.565*	Wroclaw	13.248*	Wroclaw	20.221*
Zielona Gora	4.876*	Zielona Gora	4.162*	Zielona Gora	2.664	Zielona Gora	8.714*

Table 2 cont.

SWIG80	W	WIG-Budownictwo	W	WIG-deweloperski	W
Bialystok	19.838*	Bialystok	17.11*	Bialystok	15.458*
Bydgoszcz	17.37*	Bydgoszcz	15.13*	Bydgoszcz	13.86*
Tricity	21.578*	Tricity	18.476*	Tricity	16.539*
Katowice	1.84	Katowice	1.779	Katowice	2.124
Kielce	20.079*	Kielce	17.279*	Kielce	15.58*
Krakow	18.418*	Krakow	15.757*	Krakow	14.255*
Lublin	19.791*	Lublin	16.928*	Lublin	15.235*
Lodz	11.104*	Lodz	10.053*	Lodz	9.675*
Olsztyn	28.938*	Olsztyn	24.444*	Olsztyn	21.331*
Opole	9.083*	Opole	8.019*	Opole	7.792*
Poznan	10.301*	Poznan	9.161*	Poznan	8.818*
Rzeszow	21.83*	Rzeszow	18.586*	Rzeszow	16.578*
Szczecin	17.945*	Szczecin	15.572*	Szczecin	14.207*
Warszawa	30.363*	Warszawa	25.55*	Warszawa	22.188*
Wroclaw	23.038*	Wroclaw	19.648*	Wroclaw	17.478*
Zielona Gora	10.542*	Zielona Gora	9.27*	Zielona Gora	8.872*

* Significance level 0.05.

Source: developed by the author.

The tests confirmed the results obtained from one-way ANOVA. The hypothesis about equal means was rejected in each case, meaning that the analyzed markets yielded different rates of return.

Table 3

Robust Welch and Brown-Forsythe tests of equality of means for quarterly rates of returns

WIG	F-Stat	NCINDEX	F-Stat	WIG20	F-Stat	MWIG40	F-Stat
Bialystok	0.002	Bialystok	0.797	Bialystok	0.401	Bialystok	0
Bydgoszcz	0.028	Bydgoszcz	0.778	Bydgoszcz	0.567	Bydgoszcz	0.014
Tricity	0.066	Tricity	0.841	Tricity	0.1	Tricity	0.055
Katowice	0.249	Katowice	0.705	Katowice	0.89	Katowice	0.181
Kielce	0.033	Kielce	0.777	Kielce	0.621	Kielce	0.016
Krakow	0.182	Krakow	0.866	Krakow	0.015	Krakow	0.142
Lublin	0.061	Lublin	0.768	Lublin	0.752	Lublin	0.033

Lodz	0.033	Lodz	0.772	Lodz	0.495	Lodz	0.018
Olsztyn	0.051	Olsztyn	0.835	Olsztyn	0.142	Olsztyn	0.043
Opole	0.002	Opole	0.808	Opole	0.238	Opole	0.003
Poznan	0	Poznan	0.8	Poznan	0.296	Poznan	0
Rzeszow	0.036	Rzeszow	0.777	Rzeszow	0.664	Rzeszow	0.018
Szczecin	0.006	Szczecin	0.814	Szczecin	0.244	Szczecin	0.007
Warszawa	0.089	Warszawa	0.845	Warszawa	0.091	Warszawa	0.071
Wroclaw	0.152	Wroclaw	0.86	Wroclaw	0.031	Wroclaw	0.118
Zielona Gora	0	Zielona Gora	0.8	Zielona Gora	0.312	Zielona Gora	0

Table 3 cont.

SWIG80	F-Stat	WIG-Budownictwo	F-Stat	WIG-deweloperski	F-Stat
Bialystok	0	Bialystok	1.315	Bialystok	1.822
Bydgoszcz	0.007	Bydgoszcz	1.509	Bydgoszcz	2.022
Tricity	0.066	Tricity	0.862	Tricity	1.338
Katowice	0.155	Katowice	1.803	Katowice	2.304
Kielce	0.009	Kielce	1.577	Kielce	2.093
Krakow	0.155	Krakow	0.625	Krakow	1.067
Lublin	0.021	Lublin	1.72	Lublin	2.239
Lodz	0.011	Lodz	1.392	Lodz	1.891
Olsztyn	0.054	Olsztyn	0.961	Olsztyn	1.45
Opole	0.007	Opole	1.053	Opole	1.534
Poznan	0.001	Poznan	1.138	Poznan	1.625
Rzeszow	0.01	Rzeszow	1.628	Rzeszow	2.146
Szczecin	0.012	Szczecin	1.094	Szczecin	1.587
Warszawa	0.083	Warszawa	0.868	Warszawa	1.349
Wroclaw	0.131	Wroclaw	0.698	Wroclaw	1.155
Zielona Gora	0.001	Zielona Gora	1.169	Zielona Gora	1.66

** Asymptotically distributed F.

* Significance level of 0.05.

Source: developed by the author.

The results obtained thus far pointed to differences between both investigated markets. Five descriptive statistics were calculated for each of them, as well as the rate of return showing investment efficiency in the whole analyzed period, assuming that it was made in the first quarter of 2007 (or later for NCINDEX and WIG-Deweloperski) and realized in the last quarter of the analysis (the third quarter of 2014). The standard deviation and beta coefficient were calculated for the whole available period, and the minimum and maximum quarterly rates of return for particular segments of the markets. The author believed that calculating the beta coefficient for the real estate market was of doubtful use, but decided to do so to enable comparisons WOLSKI (2014). The means of descriptive statistics were derived from the statistics calculated for the individual indices and cities. In this way, the tested observations were divided between the stock market and the secondary housing market. The results of these tests have been presented in Table 4.

Data series made up of the descriptive statistics of successive indices and of successive local housing markets were subjected to analysis to see if the means for the capital market and the housing market were equal

Table 4

Means of descriptive statistics for capital and real-estate markets

	Share market	Secondary real-estate housing market
Cumulated rate of return	0.075	0.296
Beta coefficient	1.000	0.070
Standard deviation	0.350	0.065
Minimum quarterly rate of return	-0.340	-0.096
Maximum quarterly rate of return	1.451	0.230

Source: developed by the author.

Table 5

Results of one-way ANOVA, Levene's variance homogeneity test and robust Welch and Brown-Forsythe tests of the equality of means of descriptive statistics

	One-way ANOVA F-Stat	Sig.	Levene's W	Sig.	Welch and Brown-Forsythe F-Stat**	Sig.
Cumulated R	0.732	0.402	5.189*	0.033	0.331	0.585
Beta coef.	169.015*	0	6.134*	0.022	88.341*	0
Standard dev.	4.78*	0.04	12.527*	0.002	1.972	0.21
Minimum q.R	93.398*	0	7.198*	0.014	60.078*	0
Maximum q.R	2.845	0.106	12.77*	0.002	1.172	0.321

** Asymptotically distributed F.

* Significance level of 0.05.

Source: developed by the author.

In two aspects that are important for the purpose of this article, i.e. the cumulative rate of return and standard deviation, the analysis failed to prove the equality of means. The alternative hypothesis that means were not equal was also confirmed in the case of the maximum quarterly rates of return. The hypothesis about equal means was not rejected for the beta coefficient and the quarterly minimum rates of return.

Figure 1 provides a graphic summary of the results of the study. The real estate market shows lower risk measured by standard deviation and, somewhat surprisingly, a higher cumulative rate of return. Statistically significant differences in the beta coefficient were not found, although the graph seems to point to major discrepancies in its values. It must be borne in mind, however, that the applicability of this coefficient to the real estate market is disputable (see above). The results of the analysis confirmed the research hypothesis. Investors wishing to use its outcomes to choose a type of investment must be cautioned, however, that they may have been distorted by substantial uncertainty involved in the real-estate market (RADZIEWICZ, WIŚNIEWSKI 2011).

4. Conclusions

The residential real estate market and the capital market are basically different from each other, but they are also similar in many ways. These similarities lead to the necessity of investors considering which of the markets is more appropriate for their purposes. It is important that the decision-making process includes an in-depth analysis of the differences between the two markets. The differences generate risk factors and thus, influence the investors' sense of security, the ease of getting information, the liquidity of the market-quoted assets, the capital intensity of investments, and the relationship between the rates of return and local circumstances. The decision that is ultimately reached by an investor therefore depends on the results of the investigation into the investment environment. Because the real estate market has many inconveniences, investors may want to weigh

whether to commit their resources to the capital market commonly perceived as riskier, or to seek shelter in the safer real estate market. In the present article, the markets were compared to determine which of them was more profitable and less risky. To evaluate the research hypothesis, a number of tests seeking to establish whether the markets' average rates of return and risk measures were different or equal were conducted. The analysis found differences between the secondary housing market and the stock market with respect to their cumulative average rates of return and standard deviations. In the first of the markets they were, respectively, higher and lower than in the latter market, thus the research hypothesis was confirmed. Investments in the secondary housing market proved less risky but also, contrary to expectations, more profitable.

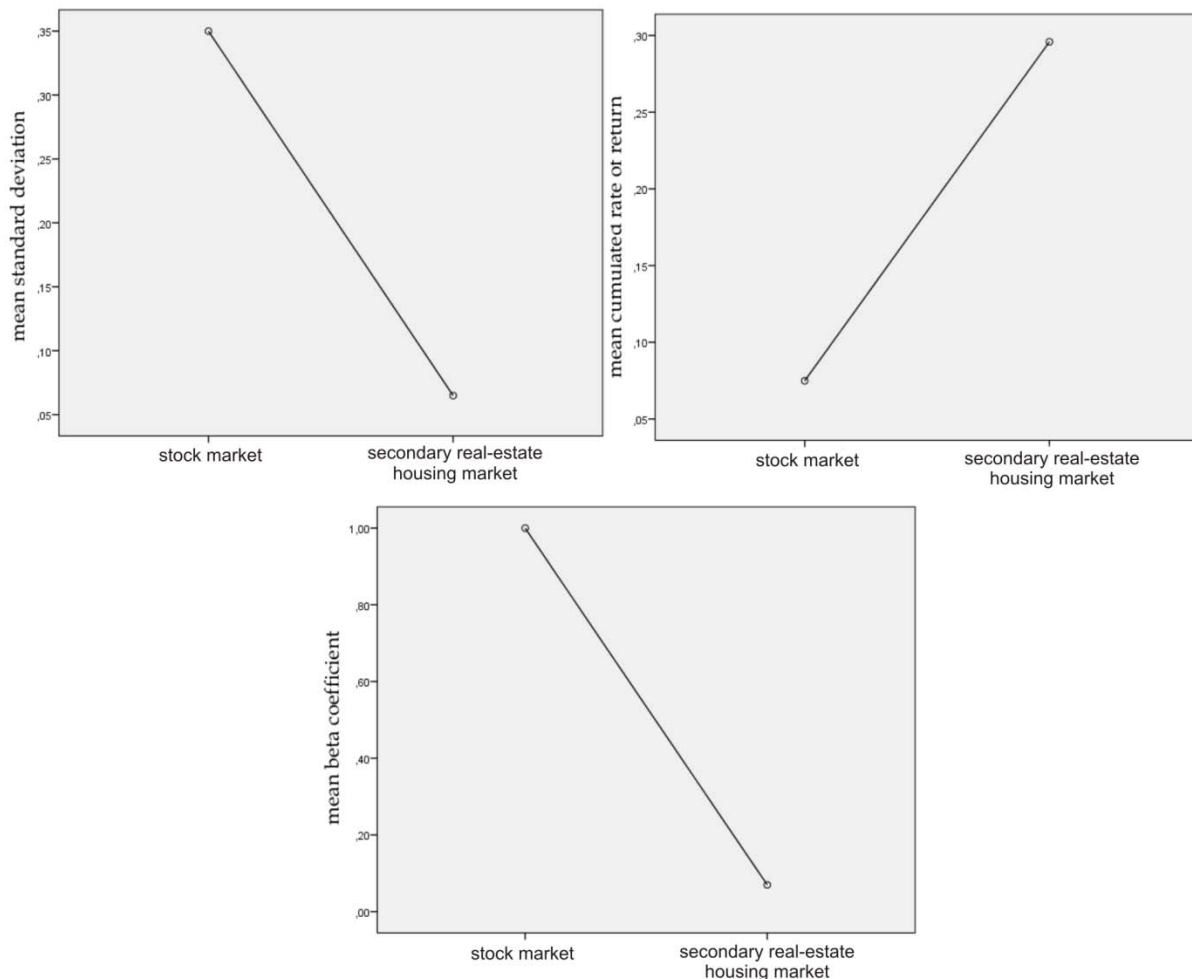


Fig. 1. Mean standard deviation, beta coefficients and rates of return for the stock market and the secondary housing market. *Source:* developed by the author, SPSS software.

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