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Залежність між волатильністю цін акцій та їх дохідністю на прикладі компаній з індексу WIG-Ukraine Варшавської біржі цінних паперів

Мета дослідження - представлення можливостей використання концепції дохід-ризик для оцінки зв'язків між волатильністю цін та дохідністю акцій компаній, що є учасниками індексу WIG-Ukraine Варшавської біржі цінних паперів. Проведено порівняльний аналіз індексів WIG Ukraine та WIG20. В аналізованому періоді індекс WIG-Ukraine показав зниження капіталізації компаній та підвищення волатильності в порівнянні з індексом WIG20. Рівень ефективності інвестицій в українські компанії характеризувався негативною кореляцією з індексом WIG-Ukraine: зниження коефіцієнту кореляції між цінами акцій та значеннями індексу призводило до зменшення рівня волатильності цін та підвищення дохідності акцій. Консервативна стратегія інвестування в акції українських компаній із низькою волатильністю цін характеризувалася низькою дохідністю або малими збитками на акціях, у той час як агресивна стратегія призводила до значних фінансових збитків. Підтверджено можливість використання концепції дохід-ризик до оцінки інвестиційних стратегій в акції компаній.

Ключові слова: фінансові ринки, Варшавська біржа цінних паперів, індекс WIG-Ukraine, концепція дохід-ризик, волатильність.

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Зависимость между волатильностью цен акций и их доходностью на примере компаний с индекса WIG-Ukraine Варшавской фондовой биржи ценных бумаг

Цель исследования - представление возможностей использования концепции доход-риск для оценки связей между волатильностью цен и доходностью акций компаний, участвующих в индексе WIG-Ukraine Варшавской биржи ценных бумаг. Проведен сравнительный анализ индексов WIG Ukraine и WIG20. В анализируемом периоде индекс WIG-Ukraine показал снижение капитализации компаний и повышение волатильности по сравнению с индексом WIG20. Уровень эффективности инвестиций в украинские компании характеризовался отрицательной корреляцией с индексом WIG-Ukraine: снижение коэффициента корреляции между ценами акций и значениями индекса приводило к уменьшению уровня волатильности цен и повышению доходности акций. Консервативная стратегия инвестирования в акции украинских компаний с низкой волатильностью цен характеризовалась низкой доходностью или малыми убытками на акциях, в то время как агрессивная стратегия приводила к значительным финансовым убыткам. Подтверждено возможность использования концепции доход-риск к оценке инвестиционных стратегий в акции компаний.

Ключевые слова: финансовые рынки, Варшавская фондовая биржа, индекс WIG-Ukraine, концепция доход-риск, волатильность.

The Dependence Between Volatility of Share Prices and Shareholder Return of the Companies from WIG-Ukraine Index of Warsaw Stock Exchange

The goal of the research was to present the possibility of application of the risk-return concept for the estimation of the relations between volatility of share prices and shareholder return of the companies participating in WIG-Ukraine Index of Warsaw Stock Exchange. The comparative analysis of WIG Ukraine and WIG20 Indices was also conducted. In the analyzed period the WIG-Ukraine demonstrated decrease in capitalization of its companies and higher volatility comparing to WIG20 Index. The effectiveness of investment in particular Ukrainian firms was inversely correlated with WIG-Ukraine Index: the decrease in correlation coefficient between the share prices' and the Index value led to the reduction of volatility and growth of shareholder return. Generally, the conservative strategy of investment in low volatile shares of Ukrainian companies gave low positive or negative returns on stocks, while aggressive strategy resulted in significant financial losses. The compliance of the risk-return concept regarding the strategies of investment in shares was proved.

Keywords: financial markets, Warsaw Stock Exchange, WIG-Ukraine Index, risk-return concept, volatility.

Introduction.

In the financial literature the relation between the fundamental goals of a growth and continuity of an enterprise is often expressed by the risk-return concept [7]. To maximize the value and ensure growth of a company the manager accepts projects with a higher financial risk that implies the higher rate of return [4]. To minimize the level of risk and provide continuity of activities less profitable projects are often chosen. The rational entrepreneur seeks for an optimal relation between the profit and the risk of the projects' portfolio [1]. Such an approach can be also applied to investment in the instruments of financial market. Contrary to the enterprise, where the risk level of the project can be measured by the discount rate, in financial market the risk of investment in shares is often expressed by the volatility of their prices [5]. From one hand, increased volatility is the evidence of the substantial risk, because the uncertainty on the stock return is relatively higher. From the other hand, shares with decreased volatility of prices are perceived as a much safer instrument, because of their little sensitivity to internal and external economic factors. Hence, stability of share prices means that in the

periods of difficult market situation or negative information the losses of the investor can be reduced, but in favorable economic conditions this also limits the possibility to maximize the rate of return from investment. Regarding to such groups of investors as risk seekers and risk averters can be defined on financial markets. Risk seekers will prefer investment in shares with relatively high volatility, expecting higher profits but exposed to higher risk, while risk averters would buy the instruments which are more stable but less profitable. The vast majority of investors are risk averters. According to the risk-return concept preference for little volatility reflects conservative investment strategy, and acquiring highly volatile shares implies a use of an aggressive strategy. Moderate strategy is a compromise between these two approaches. Chart 1 illustrates the dependencies between the type of an investment strategy and the features of financial instruments. In author's opinion every investment strategy should be perceived from two perspectives: a positive scenario of the strategy which assumes gaining profit, and negative one resulting in financial losses [6]. At the same time the degree of profits and losses depends on the type of the strategy [8].

Chart 1

Investment strategies according to the risk-return concept

Strategy	Risk	Volatility of share prices	Scenario ¹	Shareholder return	Financial loss
Conservative	Low	Low	Positive	Low	-
			Negative	-	Low
Aggressive	High	High	Positive	High	-
			Negative	-	High
Moderate	Moderate	Moderate	Positive	Moderate	-
			Negative	-	Moderate

Source: own research

¹ It should be noticed that a negative scenario of financial loss can occur.

To chose the proper strategy and create an investment portfolio an investor usually analyzes a historical information on the volatility of share prices as well as on the return on shares of particular companies. Of course no strategy has the features of only aggressive or conservative one, but combines the elements of both approaches. There is evidence from business practice that often less volatile shares give an increased profit. In contrary, investment in high volatile shares sometimes results in low return on stock. Such signals question the risk-return concept and require more careful analysis in respect to particular companies, branches and market Indices.

Goal and methods of the research.

The first goal of the research was to identify the level of risk of investment in Ukrainian companies from WIG-Ukraine Index comparing to firms participating in WIG20 Index of Warsaw Stock Exchange. The second goal was to present the possibility of application of the risk-return concept for the estimation of the relations between volatility of share prices and shareholder return of Ukrainian companies listed on Warsaw Stock Exchange. To solve the problem the author studied the dependencies between the WIG20 and WIG-Ukraine Indices as well as relations between share prices' volatility and shareholders return of particular Ukrainian companies, with the use of statistical methods [3]. Volatility of share prices was described by variation coefficient of share prices in 2012. Shareholder return was calculated according to the formula:

$$SR = \frac{SP_{\text{end}} - SP_{\text{beg}}}{SP_{\text{beg}}}, \text{ where}$$

SP_{end} – share price at the end of the year;
 SP_{beg} – share price at the beginning of the year;
 Dividends were excluded from the ratio.

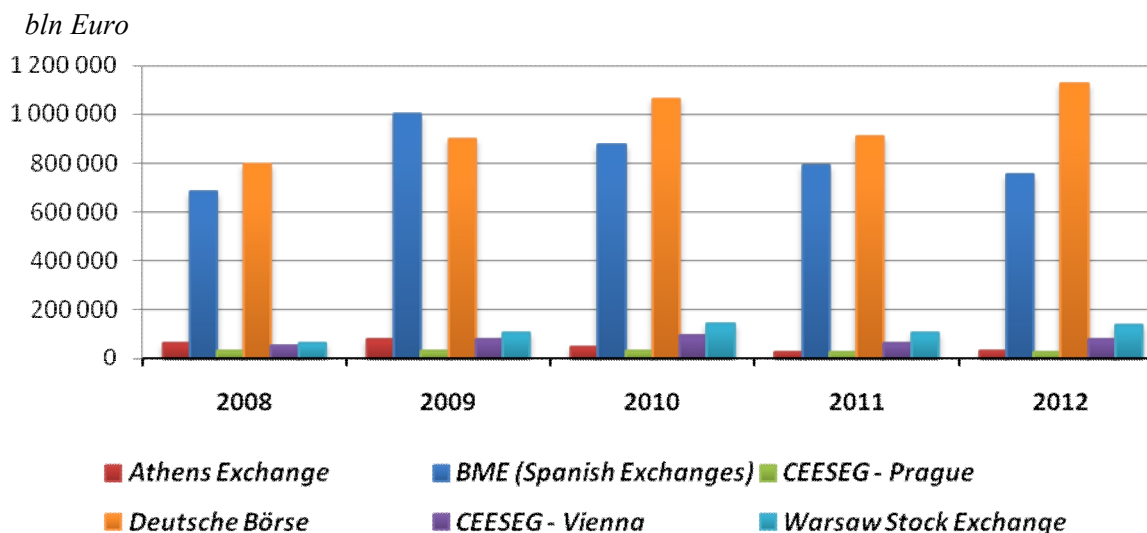
The author has also conducted the analysis of the degree of dependency between the WIG-Ukraine Index value and the performance of particular companies. Besides the place of Warsaw Stock Exchange in European financial markets has been defined.

Two hypotheses were tested in the article. First of them stated that according to the risk-return concept the WIG-Ukraine Index was characterized by higher volatility and higher shareholder return than the WIG20 Index. The second hypothesis claimed that there was a positive relation between the volatility of share prices and shareholder return in the companies of WIG-Ukraine Index. The study was conducted for the 2012 year. All the financial data was collected from the services of Warsaw Stock Exchange and Federation of European Securities Exchanges.

Results of the research.

The place of Warsaw Stock Exchange in European financial market.

Warsaw Stock Exchange (WSE) is the largest stock exchanges in the region of Central and Eastern Europe and one of the fastest-growing exchanges in Europe. The Exchange operates on financial market offering such services as trading in equities, derivatives, fixed-income and other financial instruments. Its business in commodity market includes trading in electricity and property rights in certificates of origin, operation of a register of certificates of origin, clearing, trade and technical trade operator services. The WSE also provides a broad range of services in market research and data collection [9]. Graph 1 illustrates the WSE capitalization comparing to selected European Stock Exchanges. The graph gives an evidence of high discrepancy of capital distribution in the particular markets of the European Union.



Source: Federation of European Stock Exchanges

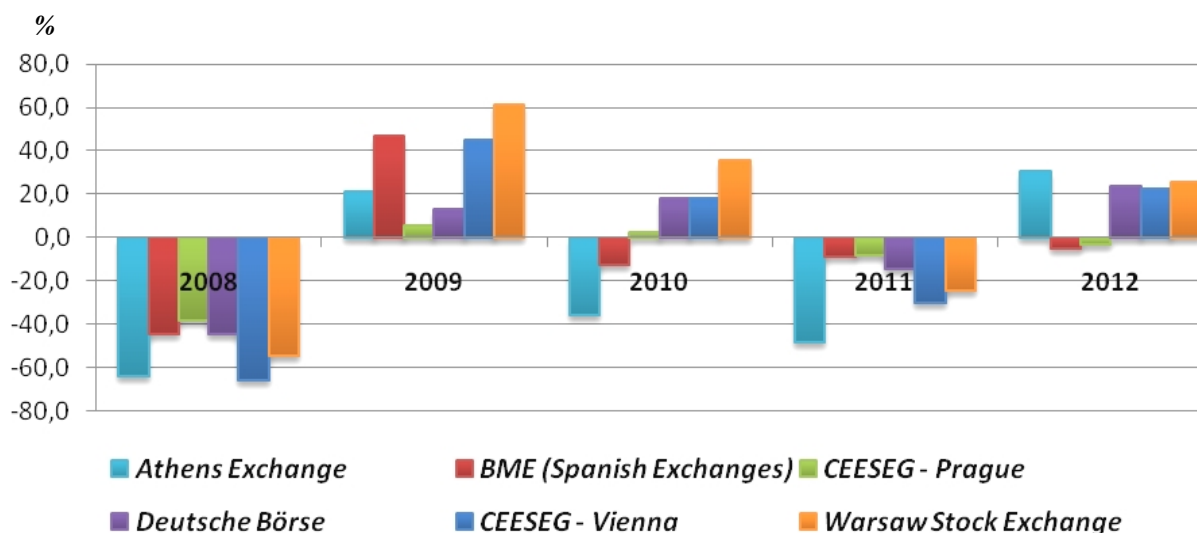
Graph 1. Market Capitalization of selected Stock Exchanges in Europe in 2008-2012¹

¹ According to the methodology of Federation of European Securities Exchanges the capitalization excludes the companies with dual listing

Фінанси та оподаткування

In the analyzed period the highest capitalization was shown in the German Stock Exchange which ranged from 797,1 bln Euro in 2008 to 1 127,4 bln Euro in 2012. The second largest financial market Spanish Exchange had the capitalization of 754,8 bln Euro in 2012. Prague Stock Exchange was characterized by the lowest capitalization value from 29,6 bln Euro in 2008 to 28,2 bln Euro in 2012. Warsaw Stock Exchange demonstrated the highest capitalization in the Central European Region with 65,2 mln Euro in 2008 and 134,8 bln Euro in 2012. This

values were higher than the capitalization of its closest rival Vienna Stock Exchange by 10,4 bln Euro and 54,3 bln Euro respectively. Nevertheless the difference in capitalization between the Warsaw Stock Exchange and the German Stock Exchange was 992,6 bln Euro that was higher than the capitalization of Spanish Exchange in 2012. In the graph 2 the change in market capitalization of selected stock exchanges in the analyzed period is presented.



Source: Federation of European Securities Exchanges

Graph 2. Change of Market Capitalization of selected European Stock Exchanges (Year over Year)

Financial crisis strongly influenced the performance of listed joint-stock companies on all European markets that was reflected in the decrease of their capitalization. The highest drop of market capitalization in 2008 was noticed in the Vienna Stock Exchange (-66,1 %) and relatively the most resistant to the recession was Prague Stock Exchange (-38,3 %). Hence, the main factor for increase in capitalization in 2009 was the low reference base of the previous year. Lasting recession resulted in the further decrease of capitalization in Greek and Spanish Stock Exchanges in 2010 and in all of the analyzed markets in 2011. It should be mentioned that in 2010 Warsaw Stock Exchange achieved the highest tempo of capitalization growth (35,3 %) and this could be caused by the relocation of the capital from Greek market to more stable companies operating in Poland. After the decrease in capitalization in all markets in 2011 Warsaw Stock Exchange showed a solid growth of 25,4 % in 2012. To sum up, in spite of Warsaw Stock Exchange remained the largest capital market of Central Europe, the values of its companies were very low comparing to the stock exchanges of Western Europe. This illustrated the fact that Poland and the whole CEE region was perceived as an outlying market by international corporations and global investors. It should be mentioned, that considering a relatively stable economic situation in Poland, less exposure to the global markets could be an advantage in the period of financial crisis. In particular this could result in the reduction of speculations on shares and

ensure positive return on stock in a long-term. The main disadvantage of little globalization was the lack of international capital that reflected in relatively low liquidity of this market.

WIG-Ukraine Index as the main indicator of the performance of Ukrainian companies listed on Warsaw Stock Exchange.

Stock market indices are used to measure the performance of the Companies classified according to particular criteria such as size, branch or national identity. Warsaw Stock Exchange publishes 22 indices the most important of which are WIG, WIG20, mWIG40 national and branch indices, including WIG-banks, WIG-building, WIG-energy and some others. The formula for basic indices calculation is as follows:

$$\text{Index} = \frac{\text{Current Capitalization}}{\text{Underlying Capitalization} \times \text{Adjustment Factor}} \times \text{Index Underlying Value}$$

The Warsaw Stock Exchange has been calculating WIG-Ukraine index since December 31, 2010. The index comprises exclusively shares of companies considered as Ukrainian and listed at Warsaw Stock Exchange that meet some eligibility criteria. The WIG-Ukraine index follows the diversification principle, aimed at the limiting the share of a single company. The weighting of the particular company in the index is to be not more than 40 %. The share of the companies exceeding these limits is decreased proportionally. WIG-Ukraine is a total return index and that means taking into account both prices of underlying shares and dividend as well as subscription

rights' income. The main criteria for participation in WIG-Ukraine Index for the company are the headquarters location, geographical region of the majority of operating activities as well as the place of the first public offer of

shares. All companies participating in WIG-Ukraine Index were Ukrainian companies according to these criteria. Chart 2 represents the main characteristics of the companies forming the WIG-Ukraine Index.

Chart 2

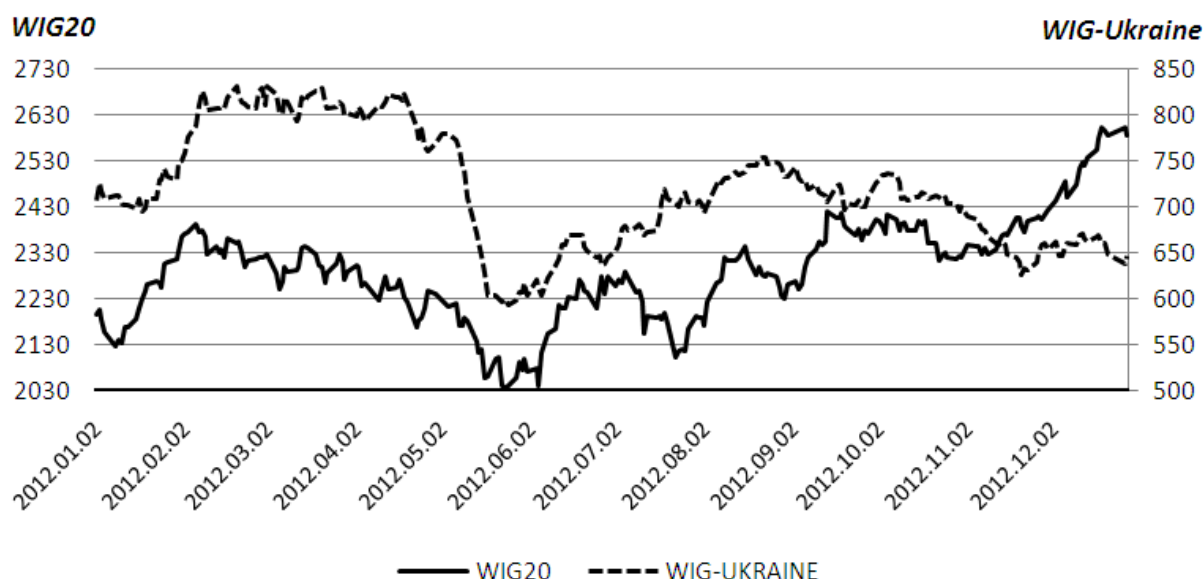
Portfolio of the WIG-Ukraine Index of Warsaw Stock Exchange

Nr	Instrument	Number of Shares In the INDEX	Value In the Basket (PLN)	Share in Index (%)	Average spread per session (in basic points)
1	KERNEL	13 807 000	800 806 000	38,77	37
2	ASTARTA	9 256 000	549 806 400	26,62	46
3	OVOSTAR	1 558 000	155 488 400	7,53	82
4	IMCOMPANY	9 809 000	147 135 000	7,12	145
5	MILKILAND	8 426 000	126 390 000	6,12	0
6	COALENERG	11 253 000	93 062 310	4,51	249
7	AGROTON	6 610 000	68 942 300	3,34	104
8	KSGAGRO	5 126 000	62 793 500	3,04	89
9	KDMSHIPNG	996 000	32 838 120	1,59	600
10	SADOVAYA	10 771 000	20 464 900	0,99	131
11	WESTAISIC	11 033 000	7 943 760	0,39	142
	TOTAL	-	2 065 670 690	100	148

Source: Warsaw Stock Exchange

To define the relative level of risk and profitability of investment in Ukrainian Index the comparative analysis between the WIG-Ukraine and WIG20 Indices was conducted. WIG20 index has been calculated since April 16, 1994 based on the value of portfolio with shares in 20 major and most liquid companies of the Warsaw Stock Exchange. The underlying (initial) value for both WIG20 and WIG Ukraine was 1000 points. The differences between the underlying and current value of indices demonstrate whether the participating companies

increased or decreased their market capitalization. Graph 3 illustrates the change in WIG20 and WIG-Ukraine Indices of Warsaw Stock Exchange in 2012. The companies of WIG20 Index had doubled their value since the starting date of the Index till the presented period showing the average of 2289,3 points in 2012. In particular WIG20 Index dropped from 2390,1 points in February to 2048,7 in June achieving new maxima in July (2198,2 points), October (2399,8 points) and in the end of December (2602,5 points).



Source: www.stockwatch.pl

Graph 3. Change of WIG20 and WIG-Ukraine Indices of Warsaw Stock Exchange in 2012

Фінанси та оподаткування

Contrary to this the WIG-Ukraine Index decreased to 717,6 in average in 2012 that meant the loss in capitalization of the Ukrainian companies by 282,4 points comparing to the initial value. Generally, in 2012 the WIG-Ukraine repeated the dynamics of WIG20 Index, with its lowest value of 602,5 points in June and gradual growth to 734,6 points in September. A decreasing trend was established in October and lasted till the end of the year closing 2012 with the value of 644,9 points.

Chart 3 presents detailed information on the relation between WIG20 and WIG Ukraine Indices. In 2012 WIG-Ukraine index demonstrated higher deviation than the WIG20 Index. The variation coefficient was higher by 3,94 p.p. for Ukrainian companies that meant the higher volatility of share prices. This proved the part of the first hypothesis of the article. Nevertheless investment in WIG Ukraine firms didn't lead to the increase of shareholder's value.

Chart 3

Descriptive statistics of WIG20 and WIG-Ukraine indices in 2012

Index	Variance	Standard Deviation	Variation coefficient (%)	Covariance	Correlation	Change in capitalization, %
WIG20	12334,3	111,1	4,85	773,3	0,11	17,7
WIG-Ukraine	3979,4	63,1	8,79			-8,66

Source: Own research

In spite of WIG20 Index growth by 17,72 % in 2012, the drop in the capitalization of Ukrainian companies from WIG Ukraine was 8,66 %. The negative scenario of an aggressive investment strategy was realized. The second part of the hypothesis was rejected. In other words the higher level of financial risk was accompanied by the higher losses on stock that made investments in Ukrainian shares ineffective. The correlation ratio between the WIG20 and WIG-Ukraine indices was 0,11 showing a weak positive relation. This gave an evidence of different behavior of share prices of Polish and Ukrainian companies.

Volatility of share prices versus effectiveness of investment in the companies from WIG-Ukraine Index.

To understand the peculiarities of investment in WIG-Ukraine Index the detailed analysis of its portfolio was made (chart 4). The chart demonstrates such main parameters as the variation coefficient of share prices, their correlation with WIG-Ukraine Index as well as the ratio of shareholder return on particular companies at the end of 2012.

Chart 4

Descriptive statistics of the shares of WIG-Ukraine companies

Company ¹	Variance	Standard Deviation	Variation coefficient (%)	Covariance	Correlation with WIG-Ukraine	Shareholder return ² , %
KERNEL	24,6	5,0	7,4	234,6	0,75	-2,8
ASTARTA	33,6	5,8	9,6	217,0	0,58	5,8
OVOSTAR	81,6	9,0	9,6	331,3	0,26	27,1
IMCOMPANY	6,4	2,5	20,2	-16,2	-0,10	101,9
MILKILAND	2,1	1,5	8,7	24,2	0,26	2,4
COALENERGY	25,8	5,1	27,0	248,7	0,77	-56,7
AGROTON	28,9	5,4	38,4	286,4	0,85	-47,0
KSAGRO	19,0	4,4	24,5	181,3	0,66	-46,0
KDMSHIPING	2,3	1,5	5,6	17,1	0,32	-23,9
SADOVAYA	6,8	2,6	51,2	113,7	0,69	-75,1
WESTAISIC	1,8	1,3	71,1	60,7	0,72	-76,0

Source: Own research

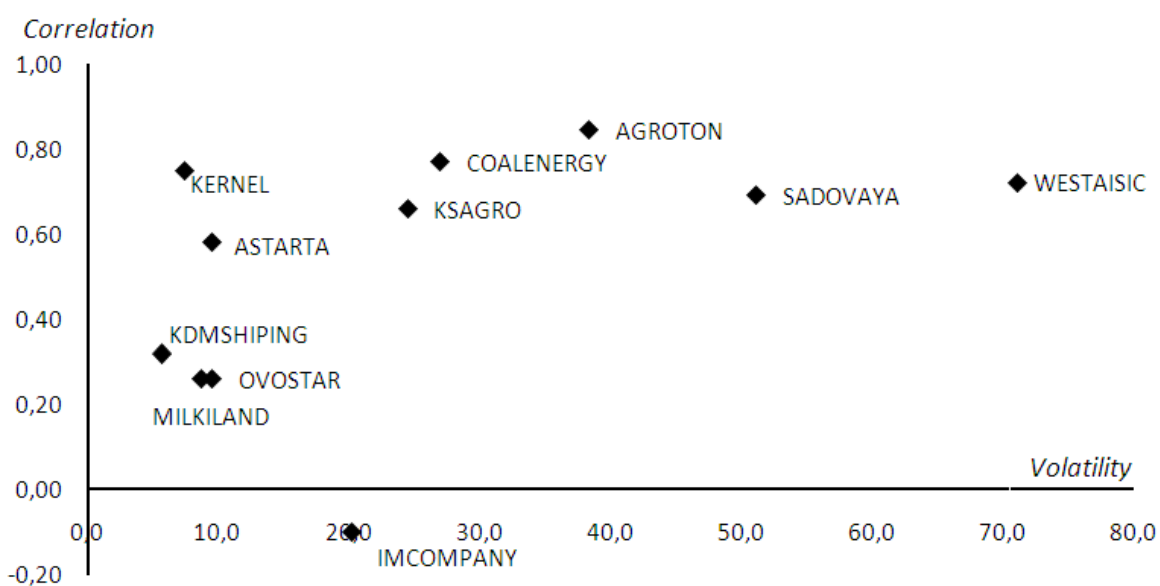
¹ Shortcuts of the companies' names were used as it was according to the WSE classification. To read full names please address the website of WSE.

² Annual shareholder return was calculated for the period from 2.01.2012 till 28.12.2012 according to the formula presented in the methodology of the research.

The share prices of the majority of Ukrainian companies showed a high level of volatility that was illustrated by the values of variation coefficient. The highest volatility measured by this coefficient was noticed in Westaisic (71,1 %), Sadovaya (51,2 %) and Agroton (38,4 %). The least deviation was noticed in the shares of Kdmshipping (5,6 %), Kernel (7,4 %), and Milkiland (8,7 %). Such companies as Astarta (9,6 %), Ovostar (9,6 %), Imcompany (20,2 %), Coalenergy (27,0 %) and Ksagro (24,5 %) showed a moderate level of share prices' volatility. Ukrainian companies also demonstrated a great spread in shareholder return ratios. Only 36 % of them were characterized by the growth of the share prices. The highest rate of return was noticed on the shares of Imcompany (101,9 %) and the significant losses in capitalization in such companies as Westaisic (-76,0 %), Sadovaya (-75,1 %), Agroton (-47,0 %) and Ksagro (-46,0 %). Share prices of the majority of the Companies were strongly correlated with the WIG-Ukraine Index. The most evident positive correlation appeared in the financial instruments of Kernel (0,75), Agroton (0,85) and Westaisic (0,72). The least positive interrelation was observed in Ovostar (0,26), Milkiland (0,26) and Kdmshipping (0,32). Shares of only one firm

Imcompany showed the negative relation with WIG-Ukraine Index (-0,10).

To illustrate the risk of the investment in particular Ukrainian companies in relation to WIG-Ukraine Index the dependency between the share prices' volatility of the selected companies and correlation coefficient with WIG-Ukraine Index was presented (graph 4). The graph demonstrated that the WIG-Ukraine Index had the strongest positive correlation with high and moderately volatile share prices' of such companies as Sadovaya, Westaisic, Agroton, Coalenergy and Ksagro. Two biggest companies from the Index, Kernel and Astarta, were characterized by a lower level of share prices' volatility and strong correlation with the Index. Only one company, a big producer of milk and milk-processed products Imcompany performed inversely to the WIG Ukraine Index showing moderate volatility accompanied by the negative correlation. Considering the loss in WIG-Ukraine capitalization this fact could be positively rated by the investors. A significant number of the high volatile companies' shares and their strong correlation with WIG-Ukraine Index gave an evidence of riskiness of investment in Ukrainian firms.



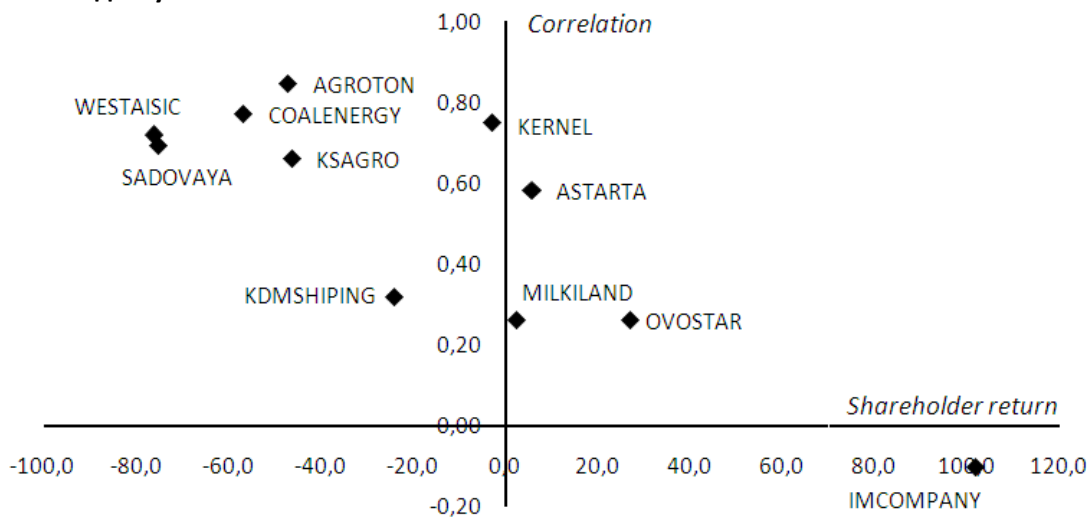
Source: Own research

Graph 4. Volatility of share prices of Ukrainian companies versus correlation with WIG Ukraine Index

Graph 5 illustrated the dependencies between the return on stock of particular Companies and their relation with the WIG-Ukraine Index. It was noticed that the companies with high and moderate coefficients of correlation, such as Westaisic, Sadovaya, Agroton, Coalenergy were characterized by the lower or negative values of shareholder return. This could be partly explained by the drop of capitalization of the whole WIG-Ukraine Index in the analyzed period. The most significant decrease in share prices was noticed among relatively smaller companies, which were more liable to unfavorable economic conditions in Ukraine in 2012. The biggest companies, such as Kernel and Astarta, managed

to perform better than the WIG-Ukraine Index in the analyzed period, mainly due to their large volumes of export and stable market position.

The weakest correlation with WIG Ukraine performed by Imcompany resulted in the highest shareholder return. To sum up the presented analysis proved that high riskiness of investment in the majority of Ukrainian companies was not accompanied by high returns on stock. Besides the effectiveness of investment in particular companies was inversely correlated with WIG-Ukraine Index: the decrease in correlation coefficient of the share prices' and WIG-Ukraine Index led to the reduction of volatility and growth of shareholder return.



Source: Own research

Graph 5. Return on share prices of Ukrainian companies versus correlation with WIG Ukraine Index

To verify whether the higher volatility was related to higher shareholder return the companies of WIG-Ukraine Index were divided into three groups regarding to the level of the volatility of their share prices according to a risk-return concept. It was assumed that shares with a variation coefficient over 50 % were characterized as

high volatile, up to 10 % as low volatile, and all the rest as moderately volatile instruments. Preference to high volatile shares was a feature of aggressive strategy while investing in low volatile instruments characterized a conservative strategy (chart 5).

Chart 5

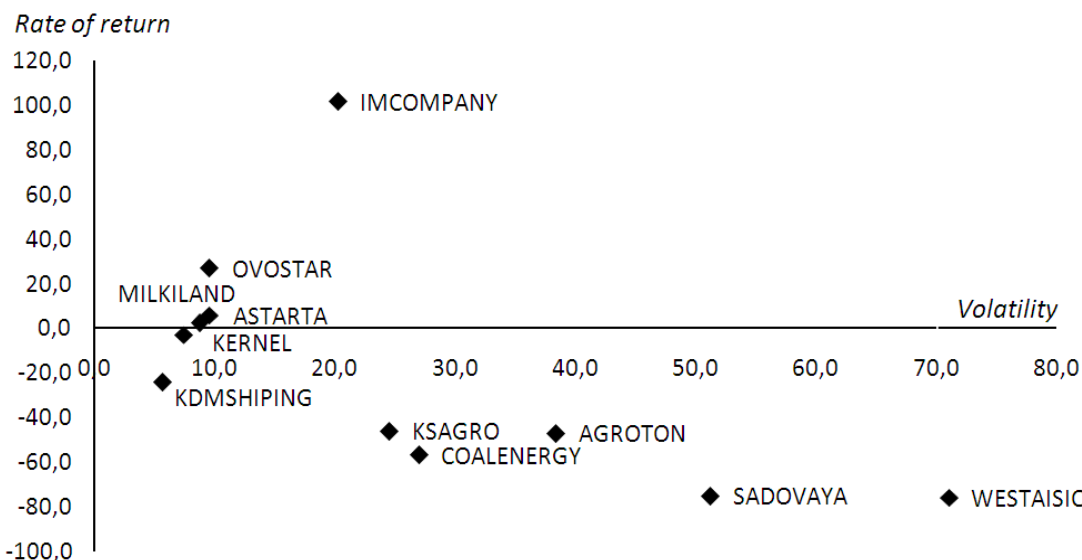
Type of investment strategy in WIG-Ukraine companies according to the criterion of share prices' volatility

Type of strategy	Company	Volatility of share prices
Conservative	Kernel, Astarta, Ovostar, Milkiland, Kdmshipping	Low
Moderate	Imcompany, Coalenergy, Agroton, Ksagro	Moderate
Aggressive	Sadovaya, Westaisic	High

Source: own research

Under the risk-return concept in positive scenario the conservative strategy was to result in low positive shareholder return ratios and aggressive strategy would lead to increased profits. Negative scenario of the conservative strategy would be characterized by low financial losses while in aggressive strategy high negative

ratios of return would appear. Graph 6 demonstrates the actual relation between the volatility of share prices and the rate of return of the companies within the WIG-Ukraine Index. Basing on the graph three groups of the companies were defined.



Source: own research

Graph 6. Volatility versus rate of return on shares of the Companies from WIG-Ukraine Index

The first group gave low positive or negative stock returns and low volatility of share prices. This group included such enterprises as Ovostar, Milkiland, Astarta, Kernel and KDMShiping. It should be mentioned that three of five companies from this group generated positive returns on stock that gave the 60% probability of gaining profit in 2012. Buying these shares could be an instrument to diversify the portfolio and reduce the risk of financial losses in the long-term period within a conservative investment strategy. Such a behaviour would be typical for risk-averters.

The second group included companies that generated significant losses and had a moderate or relatively high rate of volatility (Ksagro, Agroton, Coalenergy, Sadovaya and Westaisic). From one hand investment in shares of these companies was ineffective because all of them lost value in the analyzed period. From other hand higher volatility of share prices implied the faster discounting of positive market information that, if happened, could lead to the relatively higher increase in value. Risk-seekers would prefer these instruments within their aggressive strategies. They would buy and sell the shares in short periods of time to maximize their profits. The third group included only one company (Imcompany) that was characterized by an average level of volatility and a high rate of return. Comparing these results to the division of the companies according to the type of investment strategy (chart 5) the compliance of the risk-return concept was proved. The conservative strategy of investment in low volatile shares gave low returns on stocks or low financial losses. Aggressive strategy of investing in high volatile shares resulted in high financial losses. Moderate investment strategy also seemed to be ineffective because 3 of 4 companies from this group generated significant financial losses. Hence, the negative scenario of the investment strategy was realized in the majority of the companies from WIG-Ukraine Index. Only one company with moderate volatility of share prices and high profits (Imcompany) was an exception from this tendency. Nevertheless a weak correlation with the WIG20 Index made shares of the Ukrainian companies an attractive instrument for portfolio risk diversification. To sum up the second hypothesis was verified negatively because higher volatility of share prices didn't lead to the increase in the rates of return according to the positive scenario of the investment strategy.

Conclusion

In the paper the fundamentals of the risk-return concept in relation to the companies participating in WIG-Ukraine Index of Warsaw Stock Exchange were verified. Besides the role of Warsaw Stock Exchange in financial markets of Central Europe was defined. On the base of the results of the research the following conclusions have been formulated:

1. Warsaw Stock Exchange remains one of the leading financial markets in the Central and Eastern Europe with a capitalization of 134,2 bln Euro in 2012. It also became one of the fastest growing Exchanges in Central Europe with a market capitalization change of 25,2 % in 2012 comparing to 2011. Nevertheless low

level of capitalization comparing to Stock Exchanges in Western Europe characterized WSE as an outlying market for international corporations and investors. Considering a relatively stable situation of the Polish economy, less exposure to the global tendencies could be an advantage in the period of financial crisis.

2. In the analyzed period the WIG-Ukraine demonstrated decrease in capitalization of its companies and higher volatility comparing to WIG20 Index. The variation coefficient of WIG-Ukraine Index was 8,79 and the loss gave 8,66 %. The higher level of financial risk accompanied by high negative return on stock made investments in Ukrainian shares ineffective. The negative scenario of an aggressive investment strategy was realized. The first hypothesis of the article was partially proved. Nevertheless, the reversal in financial market trend could result in faster reaction on the shares of Ukrainian companies and give a chance of maximizing the shareholders' value. The correlation ratio between the WIG20 and WIG-Ukraine indices had a weak positive relation (0,11) that demonstrated the differences in behavior of share prices of Polish and Ukrainian companies. This made an investment in WIG-Ukraine Index an attractive possibility to diversify the portfolio risk.

3. The share prices of the majority of Ukrainian companies participating in WIG-Ukraine Index showed a high level of volatility that was illustrated by the variation coefficient. Ukrainian companies also demonstrated a great spread in shareholder return ratios. Only 36 % of them were characterized by the growth of the share prices at the end of 2012. From one hand, the WIG-Ukraine Index had the strongest positive correlation with highly and moderately volatile share prices' of such companies as Sadovaya, Westaisic, Agroton, Coalenergy and Ksagro. These firms were also characterized by lower or negative values of shareholder return. From other hand the companies with the highest rates of return and less volatility of prices showed comparatively weak correlation with WIG-Ukraine Index. Regarding to this the effectiveness of investment in particular companies was inversely correlated with WIG-Ukraine Index: the decrease in correlation coefficient of the share prices' and the Index led to the reduction of volatility and growth of shareholder return.

4. Division of the companies from WIG-Ukraine Index according to the volatility of their share prices enabled to define three types of investment strategies. Financial instruments with a variation coefficient of over 50 % characterized an aggressive strategy, up to 10 % - conservative, and all the rest were the shares describing the moderate investment strategy. Generally, the conservative strategy of investment in low volatile shares gave low positive or negative returns on stocks, while aggressive strategy resulted in significant financial losses. Hence, the negative scenario of the investment strategy was realized in the majority of the companies from WIG-Ukraine Index. Moderate investment strategy seemed to be less effective because 3 of 4 companies from this group generated significant financial losses. A company with moderate volatility of share prices and high profits

(Imcompany) was an exception from this tendency. The compliance of the risk-return concept was proved. At the same time the second hypothesis was verified negatively because higher volatility of share prices didn't lead to the increase in the rates of return assumed by the positive scenario of the investment strategy.

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Формування державної інвестиційної політики в аграрному секторі економіки України

Ефективна інвестиційна політика дозволяє державі впливати на ріст господарської активності, сприяє створенню сприятливої кон'юнктури на ринку, активізує розвиток пріоритетних галузей економіки. В статті розглядається роль держави в активізації інвестиційних процесів в аграрному секторі, визначаються цілі інвестиційної політики на даному етапі розвитку вітчизняної економіки. Уточнена головна мета державної політики в сфері інвестування. Як вважає автор, економічний механізм інвестування в аграрній сфері являє собою систему організаційно-економічних і правових дій впливу на перебіг інвестиційних процесів з очікуваним виробничим ефектом. Конкретизовано головні чинники, що викликали погіршення інвестиційного клімату в галузях агропромислового комплексу. Визначено основні напрями державного регулювання інвестиційної діяльності в агропромисловому комплексі та досліджено складові механізму оцінки впливу інвестиційної аграрної політики на розвиток інвестиційних процесів у регіоні. Проведено оцінку рівня економічної відповідальності інвесторів за результати реалізації інвестиційних проектів у сільському господарстві Київської області в 2013 році.

Ключові слова: інвестиції, інвестування, державна інвестиційна політика, економічна відповідальність інвестора, аграрний сектор економіки.

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Формирование государственной инвестиционной политики в аграрном секторе экономики Украины

Эффективная инвестиционная политика позволяет государству влиять на рост хозяйственной активности, способствует созданию благоприятной конъюнктуры на рынке, активизирует развитие приоритетных отраслей экономики. В статье рассматривается роль государства в активизации инвестиционных процессов в аграрном секторе, определяются цели инвестиционной политики на данном этапе развития отечественной экономики. Уточнена главная цель государственной политики в сфере инвестирования. Как считает автор, экономический механизм инвестирования в аграрной сфере