Strategy of Sustainable Development in Investment Portfolio Case

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Abstract:

Based on the analyzed scientific sources, the problematic of sustainable processes development in the financial system is examined in this article. A new approach to the concept of sustainability by the authorss of the article allows objectively to assess and by using the empirical study to verify the proposed strategy for sustainable development applicability in practice, in this case in the global capital market. As in the earlier works of the authorss (Lukasevcius et al 2014), in this article the great importance is attached to the selection of system components. The chosen sustainable development strategy is easily customized in investment – one of the most dynamic processes in the financial system. It is assumed that solving the optimal investment portfolio task, one of the elements of sustainable concepts – a selection, may play a decisive role in the final results of the research. A research would help to determine the value of each analyzed strategy element. In this case such investment portfolio could be selected that would let to accomplish the hypothesis of the research – to have a bigger than the market portfolio return.

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1. Introduction

Relevence of research. The correct choice of financial instruments is one of the most important criteria for a successful investment. Selection of companies plays an important role in whole capital investment chain. In such a turbulent enviroment of financial market to achieve specific goals investors are looking for new strategies, tools, and measures that would help to contain the increasing risk, while maintaining the same, or even greater than the market's profitability of the investment.

To satisfy the growing investment needs, already created and argued out methods are being improved, the classical synthesis strategies are being created, that in many cases the existing results would be improved. So it is clear, that constant monitoring of stock, an appropriate choice of stock selection strategy is the most important tool to achieve the desired return on the investment portfolio. Economists focus and the lack of published researchs led the authors to investigate the selection of companies in the investment portfolio, based on the discounted cash flow method strategy that has the theoretical basis and practical application to the global capital markets.

Research problem. How to select investments in the global capital markets, so that they won't exceed the tolerable level of risk, provide the highest return for such risks and guaranteed development of sustainable portfolio.

Research subject. Investments, consisting of the global capital markets quoted companies stock.

Research goal. To verify the individual financial assets as the financial elements of the system and to evaluate the benefits of the financial assets portfolio of those subjects who borrow this capital.

Hypothesis. Investment selection by discounted cash flow method constitutes a premise to obtain higher than the market's return.

2. Grounded Theory and the Concept of Sustainable Development of the Financial System

Emerging concept of sustainable development requires to take a look back at the failures of the financial system, pay attention not only to economic growth but also to pay the same attention to the ecological and social dimension. In the scientific literature (Ravichandran 2007, Stiglitz, 2009, Alfonso 2012, Castren 2010, Goodschild 2012, Sharma 2012, Thalassinos et al. 2013) sustainable development of financial system is often limited to the analysis of economic aspect problematic. For the authorss of the article, it became a challenge to find innovative concepts for

sustainable financial system, its evolution and improvement solutions. In fact, talking about the environmental dimension of the financial system is extremely difficult, but based on the Grounded Theory model, could be returned to the concept of sustainable element. This concept became popular after Bruntlandt Commission in 1987 published the report "Our Common Future". It is important to note that until now, this concept has not been fully disscused. Based on the fundamental concepts of the guidelines: enlargement of general level of these days and future generations welfare, minimization of these days level of risk, economic stability, efficient distribution of resources (capital), competitive and sustainable environment, the authorss proposed an innovative approach and a new concept of the global financial system's sustainability.

Thus, based on the application of grounded theory in the financial system, its sustainable development and taking into account all of the above listed theories of sustainability guidelines, without exception comprising three the most important aspects of this concept, combining but not distincting these components, we will be able to take advantage of the Grounded theory and its methods applied.

Grounded theory is important because it is extremely focused on finding the interpretation of the problem as a whole and of its parts. If going deeper into the origins of Grounded Theory, components of financial system and sustainability concept can be easily perceived, evaluated and combined. Grounded theory is a method of qualitative research which is dedicated for theory creation. This theory is considered to be a revolutionary method (Charmaz, 2000; Walker and Myrick 2006). It is based on a methodical approach that the researcher who is giving the exact sequence of test procedures, might systematically develop his own theoretical model, method or concept. It means, that during the systematic and rigorous study from the amount of data collected by the researcher it is easier to create a new conceptual theory.

Therefore an innovative approach to the study authorss to the structure of the financial system and its sustainable development created the preconditions for combining these concepts and to assess the economic, environmental and social dimension within the financial structure of the system components (Figure 1). A new approach to the sustainable development of the financial system problems prompted the authorss of the article to search for the complex variety of factors that influence sustainable development, stages of development and their implementation options. From the provided scheme the relationship between economic, ecological and social aspects and their elements can be seen.
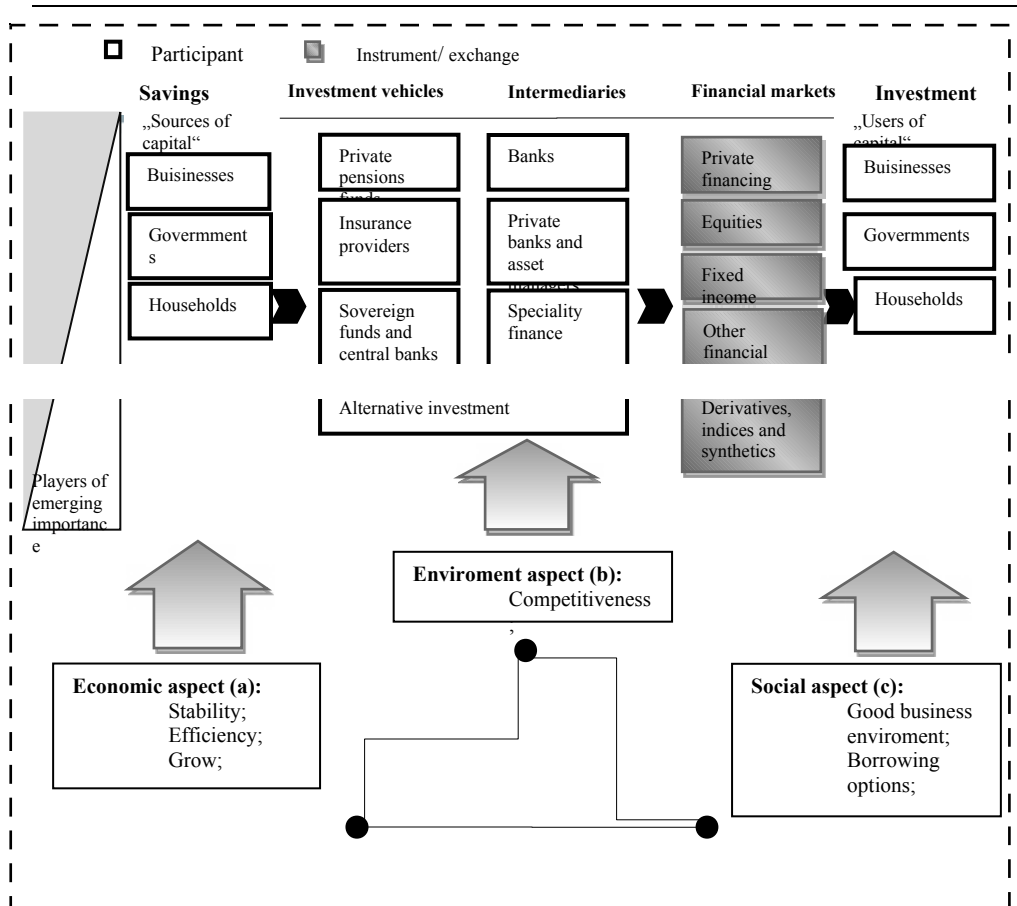
From Figure 1 the basic concept of the guidelines proposed by the authors of the article. The economic dimension correspond willing to lend the excess capital entities (a) and their available assets and the associated asset management

performance indicators. Sustainable economic development aspect of the financial system includes several very important problems: efficient asset management, financial system stability assurance and sustainable growth. Economic aspect of sustainable development ensures overall economic growth, makes it easier to deal with social problems, which by the financial system and sustainability concept authorss are perceived as the improvement of the borrowers' environment. Increasing opportunities to meet the needs and the principal of intergenerational equality is exactly the approach that unites all without exception sustainable development concepts. Obviously, the limitless needs of the resources needed for these elements are directly proportional. Proponents of the concept of sustainable development the resources or capital understand in a broad sense, as a material, social and environmental asset.

Figure 1 shows that sustainable ecological environment in which the financial system operators conduct their activities, consists of elements such as competitiveness.

3. Selection of Global Financial System Influencing Factors and Investment Portfolio

Using the results of this article in the future in order to build the global financial system model, one of the first steps would be the selection of system components. The authorss, evaluating the financial system as a whole of one influencing another elements, pay a special attention to the evaluation of the factors influencing the financial system (Thalassinos, 2007; Lukaševičius et al. 2013). This article analyzes in detail a small part of the authorss proposed concept of guidelines. The purpose of this article is to verify the selection importance of the individual financial assets as the financial elements of the system and to evaluate the portfolio efficiency and benefits for this financial capital borrowers. It is necessary to note that sustainability can be understood as a self-regulating and open system which functional purpose requires resources. These resources by becoming the input elements can influence not only changes in the internal dependencies, but in the individual subsystems as well and hence the effect generated by the whole system. Then it has to be agreed that the systems, whose content consists of in Figure 1. provided elements, require an adequate knowledge of the system and the creation of management options (Rutkauskas 2012).

Participant	Instrument/ exchange

Savings
„Sources of capital"

Investment vehicles

Intermediaries

Financial markets

Investment
„Users of capital"

Buisinesses	Private pensions funds	Banks	Private financing	Buisinesses
Govermments	Insurance providers	Private banks and asset managers	Equities	Govermments
Households	Sovereign funds and central banks	Speciality finance	Fixed income	Households

Alternative investment

Other financial

Derivatives, indices and synthetics

Players of emerging importance

Enviroment aspect (b):
Competitiveness
,

Economic aspect (a):
Stability;
Efficiency;
Grow;

Social aspect (c):
Good business enviroment;
Borrowing options;

Mainly due to this fact, behavior and modeling of the investment portfolio was chosen. Investment solutions strategy model is derived from the classical theory of strategic management, which is characterized by the versatility and wide application. For this reason, the behavior of the investment portfolio was selected to verify the article's authorss proposed strategy versatility and its influence on the final outcome. Further directions of the research should include all elements of the financial system, and, as we have seen before in the concept presented by the authorss, system elements include not only economic but also social and competitive aspects of the environment. As sustainability in the long-term context is an understandable the concept, it is necessary to choose a strategy that, in accordance with the principles of sustainability, would not be a one-day term and would have a long-term perspective.

The research will be based on the fundametal analysis of the companies, which is assigned to the long-term decisions of the investors. The value of individually listed companies in global capital market will be searched and will be selected according

to the likely value of the long-term growth potential of the selected investment portfolio.

It is important to note that the selection of the different stages of the investment portfolio at a given time are equally important throughout the research process. If the selection of the companies is performed not qualitatively, it is likely that borrowers will not reach the desired result.

When creating investment portfolio it is important to choose proper company's shares that will be used to reach the objectives of the research. It is important to mention that different stages have significant importance throughout the whole research process – the proper shares should be chosen in order to reach the objectives, otherwise, the stages like breakdown of the proportions or efficient management will not give the optimal final result. Historical data and accuracy of that data have important influence to the final results of the research. The authors draws attention to the fact if the companies possess at least 5 years market experience. Due to different market requirements in different countries the accessibility to data and reports used to complicate the first stage of the selection. Those companies whose data was not possible to access were not analyzed in this publication.

The research will contain two investment portfolios and the efficiency of companies' selection strategy will be evaluated. Evaluation of any result is the best when comparing to the results of the other similar method used. In order to compare the results of this research – alternative portfolio created by DCF method – its results will be compared with the market index. Strategic evaluations of companies' position according to sector differences and comparative advantages or disadvantages and different companies' development scenarios will not be made throughout this research.

Alternative investment portfolio selection will be made by using previously mentioned stages (see **1 Img.**).

2 Img. DCF method stages

Reference: made by authors according to I. Trumpaite 2006.

Authors evaluates the market liquidity position before selecting the investment regions for the research. Without this it might not be possible to control the investment portfolio in real time.

4. The Application of Detailed Selection Method in the Global Capital Market

First of all, the analysis of historical results is carried out during which the primary database is prepared for the further research. Correct evaluation of historical data is a precondition to obtain more accurate future prognoses and present value of the company. In the first step of the research the main financial statements of the company are analyzed. A detailed analysis of all companies in Bloomberg and Yahoo terminals' databases whose financial statements comply with the authors' raised criteria, to be more precise, they shall be not older than the second quarter of 2012 financial statements: profit (loss) statement, balance sheet and cash flow statement.

82 companies in three analyzed regions met the set conditions of the authors. The list includes the main DJIA, DAX and Hang Seng companies which occupy the first places among the most liquid listed companies, have investors' confidence and have the greatest impact on the index changes. Due to the large amount of data, financial statements and detailed calculations using discounted cash flows method of all 82 companies will not be presented in this paper work. Later, in the research the fair market value and the relationship with the current market price in the global capital market will be covered.

Analyzing the financial indicators of last 8 quarters (since 3-quarter in 2010 till 2-quarter in 2012) submitted in financial statements of the companies, the free cash

flow to firm was calculated. The most important operations rows of calculations are provided in Table 2.

Table 2. Operations Rows of Free Cash Flow Calculation

Financial accounts row	Comments
Change in sales	This indicator is being calculated according to quarterly results in the past
Sales	The main rows of profit (loss) statement which determine
Cost of goods	Historical and current condition of the company's activity. These financial indicators are grouped according to chosen criteria and required data for the analysis of the discounted cash flows method.
Gross profit	
Operating cost	
Net profit Gross investment	One of the main rows in the cash flow statement.
Corporate tax	On average paid corporate tax during the analyzed time period in percentage terms.
Cost margin	Was calculated as sales and a given separate financial row ratio.
Gross profit margin	
Operating cost margin	
Net profit margin	
Gross investment margin	

Source: prepared by the authors using the financial analysis of the companies

Data during the historical period of 82 analyzed companies were grouped as it is shown in Table 2. After the current situation of the companies was overviewed, their financial structure was identified, the future results forecast was made based on the analysis of profit (loss), cash flow statements and balance sheet.

Forecasting – one of the most important stages in investment portfolio selection. As for the analyzed companies' sales which received the special attention from the authors, the financial relationship between revenues and other indicators should be mentioned. Forecasting the following data (e.g. cost of goods, operational cost, net profit margin or working capital margin), their accuracy depends on the sales volume.

The principle of authors' forecasting – to evaluate the macro-economic factors (the potential of overall country and sector growth) and take into account the company's historical growth dynamics of individual rows.

From the before mentioned financial statements' data the free cash flows will be obtained and, by using the discount rate, the present value of the company will be determined.

Table 3. Operation Rows of Present Value Calculation

DCF method financial row	Comments
Net profit	One of the main rows in the profit (loss) statement.
Depreciation, amortization and value loss	One of the main rows in the cash flow statement.
Working capital margin	Margin was calculated as a sales and working capital ratio.
Working capital	Difference between current assets and current liabilities.
Change in working capital	Change is calculated taking into account the results of previous quarters.
FCFF	This indicator is important because using DCF method effectively working companies can be valued over the analyzed time period the best. It is important to note, that free cash flow should be positive but taking into account the current situation in economy, this condition will not be respected.
Equity/Capital	A ratio which shows the relationship between company's equity and its capital.
Debt/Capital	A ratio which shows at what rate the company's capital is financed by debt and equity.
Interest rate after Tax	For weighted average cost of capital calculation interest rate after tax was used because taxes must be evaluated as the cost of the company.
Risk free rate	For this rate calculation the 10-year governmental bond yield was used of analyzed countries.
Risk premium	Value is required to calculate WAC, it is obtained after the risk free asset yield is subtracted.
Beta (absolute)	Provides the relationship between individual company's share and that country's capital market.
Cost of equity	The sum of calculated risk free rate, levered beta and risk premium.
Weighted average cost of capital (WACC)	The cost of equity (company's or the shareholders') is calculated which is together with cost of debt become the basis for a discount rate determination.
Continuing FCFF growth (horizontal)	The standard growth rate of 2% was used because this number is close to historical inflation growth.
FCFF horizon value	Galima tęstinė bendrovės vertė ateityje.
Discount rate	Rate at which the free cash flows will be discounted.
Discounted cash flow	Free cash flows decreased by discount factor.

Source: *prepared by the authors using the financial analysis of the companies*

After a detailed analysis and calculation of free cash flows was made, it remains only to determine the present value. The calculation of companies' present value was performed by summing up the discounted forecasted cash flows and discounted terminal value after the final results of calculations were obtained. To the investment portfolios formed by the authors the companies with the best ratio (a ratio between the present value and the current market price) will be selected.

Table 4. Ratio between the Present Value and the Current Market Price Operation Rows

DCF method financial row	Comments
Present value of horizon, Lt	Forecasted value of the company in the long-term.
Present value of business, Lt	The sum of present value and forecasted future value.
Net debt, Lt	Long-term liabilities minus cash and cash equivalents.
Present value of equity, Lt	Present value of the company using the DCF method.
The value of 1 share, EUR	Determined the fair value of company's share.
Market price, EUR	Data for the analysis was used in September, 2012.
P/EV	The ratio between the present value and the current market price. According to this ratio the best difference having shares were chosen.

Source: prepared by the authors using the financial analysis of the companies.

In the final part of companies to investment portfolio selection, 18 companies will be chosen. The authors hopes that the chosen companies which have the biggest growth potential (the biggest ratio between the present value and the current market price) are in a good position to improve their results during the forecasted period, and this may result in the company's market value in the capital market should develop an increasing trend. According to the authors, by using the discounted cash flow method selected companies and their performance will improve (steadily grow not only in the short-term but in the long-term perspective). Each portfolio will consist of 6 companies from a separate capital market index (DAX, DJIA or Hang Seng). From the German capital market DAX these companies were selected (in brackets an individual stocks quote is indicated): "Bayer AG" (BAYN), "Bayerische Motoren Werke Aktiengesellschaft" (BMW), "Continental AG" (CON), "Deutsche Telekom AG" (DTE), "Lanxess AG" (LXS), "Volkswagen AG" (VOW).

From China's stock exchange the following companies were selected – "Sino Land Company Limited"(0083.HK), "CITIC Pacific Ltd. "(0267.HK), "China Overseas Land & Investment Ltd. " (0688.HK), "China Resources Power Holdings Co. Ltd." (0836.HK), "China Resources Land Ltd." (1109.HK), "China Coal Energy Company Limited" (1898.HK).

From the United States of America stock exchange the following companies were selected – "Alcoa Inc. " (AA), "Bank of America Corporation" (BAC), "General Electric" (GE), "Company Pfizer Inc." (PFE), "AT&T, Inc. "(T), "Verizon Communications Inc. "(VZ).

After the companies' ratios from 3 the most important regions in the world were analyzed and systematized using discounted cash flows method, the final data is represented in Table 5.

Table 5. Summary of Companies which were Selected Using DCF Method

Company	Quote	WACC	Fair value of the share	Market price*	P/EV
"Bayerische Motoren Werke AG"	BMW	79,37	89,32	60,99	46%
"Bayer AG"	BAYN	13,49	73,42	69,01	6%
"Continental AG"	CON	11,12	79,48	79,89	-1%
"Deutsche Telekom AG"	DTE	12,07	10,54	9,49	11%
"Lanxess AG"	LXS	16,57	65,47	61,59	6%
"Volkswagen AG"	VOW	41,80	216,79	148,1	46%
"Sino Land Company Limited"	0083	15,75	16,36	14,14	16%
"CITIC Pacific Ltd."	0267	261,20	16,47	9,72	70%
"China Overseas Land & Investment"	0688	12,04	24,54	19,94	23%
"China Resources Power Holdings"	0836	15,98	17,34	16,1	8%
"China Resources Land Ltd."	1109	11,09	17,92	17,24	4%
"China Coal Energy Company Ltd."	1898	13,00	7,63	7,56	1%
"Alcoa Inc."	AA	11,66	15,68	9,1	72%
"Bank of America Corporation"	BAC	10,77	39,92	9,38	326%
"General Electric"	GE	48,07	31,94	22,88	40%
"Company Pfizer Inc."	PFE	8,42	23,82	25,89	-8%
"AT&T, Inc."	T	8,59	30,83	35,74	-14%
"Verizon Communications Inc."	VZ	14,75	40,63	44,72	-9%

* Market price of shares were selected during the following time period: 10.10.2012-20.10.2012

Source: *prepared by the authors*

From the data in Table 5 it can be seen that the best ratio between the present value and the current market price in the U.S. capital market DJIA quoted companies
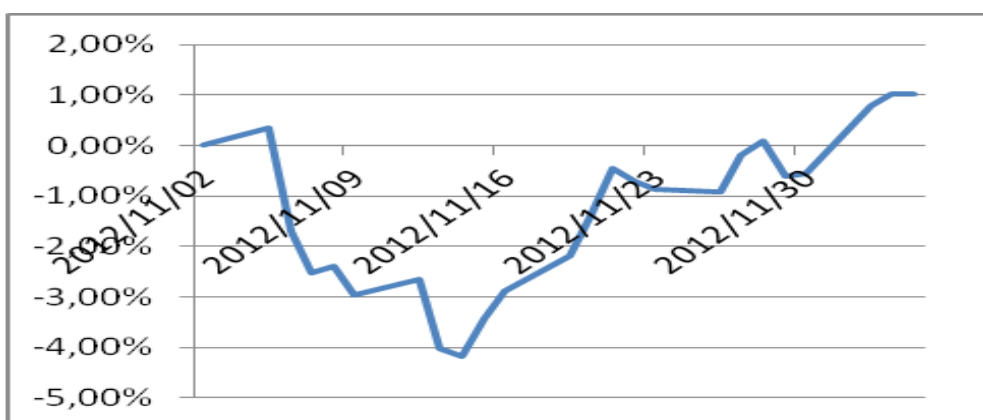
"Bank of America Corporation", "Alcoa Inc." – their P/EV ratio was 326% and 72%, respectively. In the German market, the best forecasted outcome during the analyzed time period should achieve companies "Bayerische Motoren Werke AG" (P/EV 46%) and "Volkswagen AG" (P/EV 46%). From the Hang Seng index selected companies the authors expects the best result from companies "CITIC Pacific Ltd. " (70%) and "China Overseas Land & Investment Ltd." (23%).

Concluding the information provided in the table and performed selection of the companies, it can be stated that investors puts their money into successful and perspective (in growth terms) companies when they buy by using discounted cash flows method selected shares. From this follows that at the end of the analyzed period investors can expect higher capital gains than only the market return.

5. Comparative Analysis of Portfolios and Performance Evaluation

As it was mentioned before, to achieve an adequate valuation of the portfolios, three portfolio valuation scenarios will be formed. Firstly, comparing the portfolios any factors that could affect portfolio returns should be eliminated. Comparing each stage separately it is possible to be more precise in answering the question: which of the selected portfolio is optimal? Perhaps after the prepared comparative analysis it will become clear that active management or distribution of investment proportions is not needed. So, consider the global, equally weighted capital market index formed by the main stock exchanges (DAX, DJIA ir Hang Seng) in Germany, the U.S. and China, respectively. The results are shown in Figure 2:
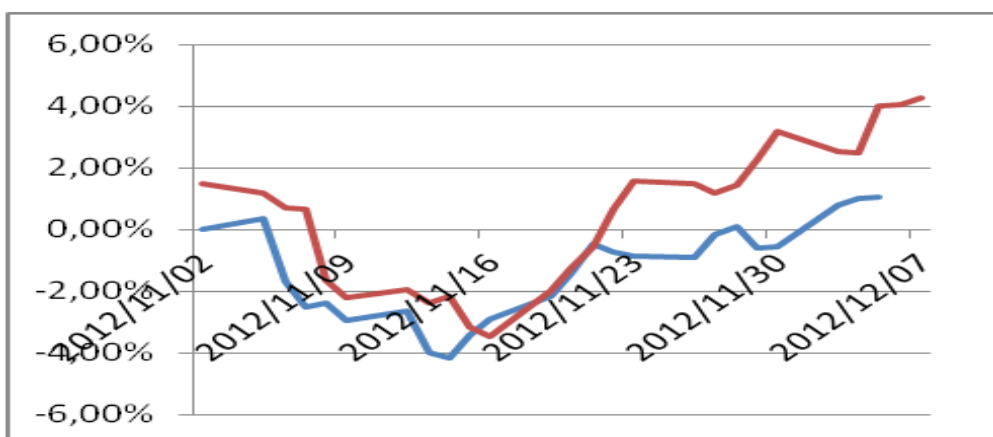
Figure 2. Global capital market index

Sources: *prepared by the authors.*

Figure 2 shows that over the analyzed time period the financial markets faced lots of fluctuations (since 5.11.2012 till 16.11.2012 a strongly descending correction can be noticed). It is obvious that the final result of a portfolio reflects the actual tendency in financial markets during that time (DAX, DJIA, and Hang Seng indexes cover the most important regions of the global economy). It is accepted to believe that the market portfolio has the lowest level of risk (0, 0156). It is obvious because in this type of portfolio all the shares of the companies are allocated in different weights and the portfolio covers a variety of national and regional sectors, thus a broad diversification of investments is achieved.

Concluding Figure 2 it can be said that high market fluctuations (over the analyzed time period) create a perfect opportunity for the authors to achieve his goals using active forms of strategy.

Secondly, portfolios will be compared by eliminating the possibility of active investment management. So, the global capital market index and a passively managed portfolio will be compared (the same companies are selected for the adequate and alternative investment portfolio) which was formed during the companies selection by using the discounted cash flows method. The situation is modeled as it is invested to the portfolio equal amount of money and the portions for each position is equally distributed. The change of both portfolios each working day is calculated in a way that that the dynamics of their profitability could be visuall seen in order to determine the influence of the disounted cash flows method impact on efetiveness and risk distribution of portfolios. The results are shown in Figure 3:

Figure 3. The Comparison of Global Capital Market Index and Passively Managed Investment Portfolio

Source: *prepared by the authors.*

From Figure 3 data it can be seen that a significant difference between the profitability of portfolios occurred only on 20.22.2012 when the financial markets became more optimistic. After the 12-day stock price drop, in the middle of November, 2012 the capital market has reached the bottom of the graphic, after which lasted obvious growing trend of several weeks. From the Figure 3 the total reflection of financial markets can be seen. It can also be seen that significantly better results were achieved by the authors' suggested investment portfolio which was formed by using discounted cash flows method. Most of the time the portfolio which was selected during the fundamental analysis, had higher than market returns. The portfolio reached its peak on 10.12.2012 when its profitability totalled in 4.29%. The worst result was recorded on 15.11.2012 when the total value of alternative portfolio was diminished by 3.15%. Portfolio indicators are presented in Table 6:

Table 6. Profitability and Risk of a Passively Managed Investment Portfolio over the Tested Time Period

Portfolio	Risk	Return
Market	0.0156	1.03%
Passive investment portfolio	0.0232	4.29%

Source: *prepared by the authors, according to "Bloomberg" and "Yahoo" terminals' data on shares prices.*

Concluding the second scenario of a comparative analysis it can be said that better results in the financial market were achieved by the passively managed investment portfolio which was selected by using the discounted cash flows method (4.29%). The risk of this portfolio was 0.0232 (higher than the market portfolio risk). The authorss goal to optimize the financial asset portfolio and choose an efficient investment method which could provide the highest return with the chosen risk is partially implemented. The current return of the portfolio during 1 month time period could satisfy the investors.

5. Conclusion

Based on the grounded theory method, the concept of the financial system and the sustainable development was developed, which is in contrast to many of the researchers bypassed the three most important aspects of sustainability. Complexity theory and observations of the real environmental confirm that all the processes and elements involved are tied in one relationship and influence each other in one way or another way. In particular, in the article a detailed research on behaviour of the

capital market was conducted (one of the financial element) investment portfolio efficiency valuation.

Selection is one of the most important phases in porfolio investment strategy for those subjects who borrow the capital. After the fundamental analysis of methods was made, it became clear that the most important role in the portfolio selection process should be given to the discounted cash flows method (DCF). Relatively high computing results' sensitivity to changes and the influence of the discount rate to the final results make no difficulties for the investors in the successful application of this method in the financial markets. The advantage of DCF method – the ability to apply it to any efficiently operating company and evaluate its current market value taking into account the time factor and the expectations of investors.

After the scientific literature was researched and analyzed, the authors suggested the correct solution to the portfolio construction by using the DCF method. The investment portfolio formation method was suggested by which it is necessary to perform a comprehensive macroeconomic, regional analysis which is interesting or the investor. The next step – selection of companies which is run by the discounted cash flows method, as well as a consistent portfolio management based on a passive investment strategy. The accuracy of the method depends largely on the level of uncertainty in predictions. This approach revealed a significant influence of the experts involved in the research. Corporate sales prediction was based on experts' opinion, which formed the basis for the further research direction.

Portfolios were managed since 5.11.2012 till 12.12.2012 and the decisions were based on the passive investment strategy principles. After the comprehensive comparative analysis of two investment scenarios was made, it was noticed that investment portfolio which was selected by DCF method, had an advantage over the other portfolio, for the tested time period the relative weight was formed as well.
An alternative investment portfolio formation method was constructed which lets to create a financial instruments set that gives an access to a larger investment profitability than the market return.

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