THE IMPACT OF ECONOMIC GROWTH ON THE FINANCIAL AND CAPITAL MARKET

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Abstract

Sustainable development, in the light of the aimed objectives, has a key role in each country's economy, but also in the world. We have taken this initiative out of our wish to find a scientific explanation of how economic growth influences the capital market and the private insurance and pensions sector across the European Union (EU) member states. Economic growth is part of the indicators measuring the progress made in implementing the Sustainable Development Goal 8. Starting from the fact that in any country, savings and investment play a particularly important role, both at macroeconomic level and at company level, and from the existence of a set of factors that influence savings/investment decisions to the detriment of the current consumption of funds, thus generating a future advantage, this paper aims to study the influence of changing the real gross domestic product on the main ways of placing the sums available in the economy on the capital/financial market.

Keywords

Economic growth, capital market, private pensions, insurance, European Union.

JEL Classification

D53, D57.

Introduction

Although the world has witnessed significant progress in human development since the beginning of the century, given that the extreme poverty rate has been halved, young people's literacy has reached record levels, and child mortality continues to decline, there are still many significant challenges. In 2000, at the Millennium Summit, 191 countries, including Romania, adopted the Millennium Declaration. The Millennium Development Goals (MDGs) supported an unprecedented mobilization effort. At the

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end of 2015, the United Nations Organization proposed to continue the MDGs by adopting 17 Sustainable Development Goals (SDGs) to ensure the achievement of a universal program of global action on sustainable development.
Furthermore, the Organization for Economic Cooperation and Development (OECD) is warning the member states and not only them that, despite the achievements to date, sustainable development requires measures to be adopted to address the legacies of the most serious economic and financial crises in recent history. The implications of migration also need to be taken into account, and the current migrant crisis needs to be managed. The OECD also draws attention to the fact that economic progress measures are not sufficient, and that it is imperative that the adopted measures take into account all aspects of well-being and sustainable development. Global greenhouse gas emissions must be significantly reduced so as to protect the planet for future generations.

1. Review of the scientific literature

The 2030 Agenda for Sustainable Development aims to provide an appropriate universal framework for strengthening collective action to achieve common objectives. The major agreements reached in Addis Abeba (Financing for development), Paris (climate), Istanbul (humanitarian summit) and Sendai (disaster risk reduction) in 2015 further strengthen this framework. (http://www.oecd.com, 2021) Shared prosperity and meeting our responsibilities from generation to generation can only be achieved through collaborative partnerships involving all countries and stakeholders. Raising the stakeholders' awareness of sustainable development goals (SDGs) can improve pro-sustainable behavior. However, little is known as to the extent to which information on these influences stakeholders' preferences in supporting the achievement of SDGs. In carrying out a study to determine whether awareness of SDGs affects stakeholders' support for businesses contributing to the achievement of these objectives, in Japan the results showed that respondents in survey groups who received information on sustainable development, they have been more likely to support companies than the control group. However, the results also indicated that the preferences of stakeholders and the effects of the provision of information were heterogeneous and the impact of the awareness may therefore be complex. (Yamane, Kaneko, 2020)
The SDGs thus mark a shift from an outdated "North-South" goal for global progress to an agenda that is relevant for countries at all levels of development. At the same time, a continued focus on the specific needs of developing countries will be significant for the eradication of extreme poverty.
Responsibility for the implementation of the 2030 Agenda lies primarily with the countries and their governments. In this spirit, the OECD has announced its contribution to the SDGs, but its initiatives to provide existing expertise will be demand-driven only.
However, in order to achieve the SDGs in as many countries as possible, the Organization believes that it is necessary to measure and improve development funding, helping governments to mobilize financial resources (taxes, foreign and domestic investments, remittances, aid and philanthropy). Governments must also strengthen political and institutional coherence by identifying interactions, compromises and synergies across all economic, social and environmental areas. Economic growth

initiatives and sustainable development policies are needed to have an integrated and multidisciplinary approach to global progress. (http://www.oecd.com, 2021)

Sustainable development discourse is therefore very influential in global and national governance, although its significance and operationalization depend on the context and have evolved over the last decades. (Jong, Vijge, 2020)

The transition from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs) reflects the latest development in this speech.

During the MDGs era, the key to sustainable development was poverty reduction through economic growth and participation in the global trading system. The SDGs aim at a broader set of objectives across the spectrum of economic, social and environmental dimensions. This is reflected in the approach, firstly the conceptualization of social and environmental guarantees for economic growth, and later on with social and environmental sustainability as equally important objectives alongside poverty reduction. While the MDGs focus mainly on national and poorest environments, the SDGs target the most marginalized and vulnerable groups, focusing on disaggregated data.

However, both categories of objectives are aimed at economic growth, which implies the largely positive development of the national and global economy in the long and medium term, without excluding some conjunctural fluctuations or its temporary regression.

However, one of the biggest challenges the world faces today is the growing shortage of resources vital to sustainability. According to the United Nations, by 2030, people will need 30% more water, with 45% more energy, and 50% more food. Food, Energy and Water (FEW) sustainability has become a critical area of study in environmental science. The comparability of sustainability between different geographical areas has become a concern for researchers, therefore a nation-wide indicator, called LIFEWAY ("Linked Indicators for FEW Availability"), which is an integrated indicator measuring sustainability achievements for a country, has been proposed. After conducting a study to provide an overview of the sustainability of FEW for 42 developed and developing countries, the results confirmed that the LIFEWAY index is significantly associated with GDP (Gross Domestic Product) and it can be used to carry out an assessment of the FEW sustainability for a particular country. It can be used to analyze specific problems and allow the development of regional and national solutions (Yuan, LienLo, 2019).

Microenterprises, small and medium-sized enterprises play a very important role in the economic development of a country, which is why they are subject to so many studies and analyzes. In addition to the contribution to the creation of the gross domestic product, they also play a key social role, as they reduce unemployment. (Woźniak et al, 2019)

The stock market should finance promising enterprises, thus increasing competition, innovation and economic growth. However, in recent decades, the concentrated stock markets, dominated by a small number of successful firms, are, according to the studies, associated with the less efficient allocation of capital, a slow initial public supply, as well as with slower innovation activity and economic growth. The conclusion was that, paradoxically, the capital market of a competitive economy may prevent the continued competitiveness of this economy. (Bae et al, 2020)

Timely published GDP announcements seem to be a useful approach for communicating immediate macroeconomic conditions; however, according to studies, inaccuracy could trigger financial market disturbances. According to a study carried out in Japan, the securities market response to GDP announcements offers rather intuitive reactions in the compromise between opportunity and accuracy. First, the effect of the initial GDP announcement on the price of shares is at best fragile, suggesting little useful information in the provisional estimates. It was also found that the stock exchange responds carefully to the first revision, but poorly to the second revision. Finally, depending on the expenditure components of GDP, revisions cause over-reactions and, therefore, are destabilizing factors in share prices. (Funashima et al, 2019)

2. Research methodology

Starting from the general idea that a positive trend in the economy normally leads to a revival of the flows of financial resources, possible causal relationships between economic growth and the capital market will be analyzed in the following. Furthermore, where these are confirmed, we will investigate and quantify the impact of economic growth on relevant indicators of these markets. (Beca, Santos, 2014)

Thus, we will take into account stock market capitalization, the stock market turnover ratio, investments in shares/bonds, life insurance, non-life insurance and private pensions. For each of these indicators, the existence of a direct correlation with gross domestic product growth in the EU countries between 1998 and 2019, will be studied.

This approach relies on research consisting rather of an extensive verification, by which, after direct data collection, as quantitative variables, its distribution and the existence of causality and the level of impact will be analyzed, using complex statistical tools. The objectivity of this approach is given by the fact that research requires a distinction between human values and interests, being an independent observation, focused on generality and reproductibility. Also, universality has been considered, with the study based on data collected from 24-26 countries and over a long period of time, so that a large sample can be verified. (Rispal, 2002)

The representativeness of the sample is given by its homogeneity in terms of the issues addressed and of the membership of the same group of countries, whereas the variety of the sample is derived implicitly from the level of economic development of each of its components. The components of the sample have common features, as they belong to a theoretically identical but diverse population, as a cultural-geographical space, in terms of the country's development level, as well as in terms of time. The potential for discovery is derived from the selection of all the countries in the European Union, with a multiple case study, rich in data on the phenomenon being studied and linked to the subject of research, so as to enable both testing and validation of the theory. This sample meets the reliability condition since the data results from reports submitted by different countries, by various operators, on the same subject (economic growth and specific indicators of capital/financial markets).

With a hypothetical-deductive approach, the typical demarche is a diacronic one, taking into account a specific subject, with manifestations in time.

The codification of data involved its processing in order to establish average country-wide indicators for the period studied.
The data processing involved the application of statistical tests (Jarque-Bera) to verify the normal distribution of data and then to test causal relationships and to construct a simple linear regression model for the purpose of checking the impact.
In this respect, it was established whether the populations had a normal distribution and the Pearson coefficient and the determination coefficient were calculated, and the linear regression function was plotted using a Scatter chart in the context of knowing the predictions and residual values. Thus, the existence, but also the strength of a linear relationship between the variables described above has been investigated, and the influence of economic growth on the variation in capital and financial market specific indicators has been quantified.

3. Results and discussion

The average real GDP growth rate indicator, relenat to the EU countries for the period 1998-2019, was studied in conjunction with the following indicators (http:www.theglobaleconomy.com, 2021):

- Average country-wide stock market capitalization for the whole period (% of GDP);
- Average stock market turnover ratio;
- Average level of investment in shares/bonds;
- Average country-wide life insurance for the whole period (% of GDP);
- Average country-wide non-life insurance for the whole period (% of GDP);
- Average country-wide private pensions for the whole period (% of GDP).

The following pages will look at whether statistics can confirm that a country's economic growth can boost the capital or financial market. (Florackis et al., 2014).
To this end, data on the values achieved by the above indicators will be collected, processed and coded at EU member state level between 1998 and 2019.

3.1. Analysis of the correlation and impact of real economic growth on the stock market capitalization of EU member countries

The table below shows data on the variation of economic growth and the average stock market capitalization:

Table no. 1. Indexes of EU countries for market capitalization/economic growth

Country	Average GDP growth	Average market capitalization (% GDP)
Austria	1.81	26.8
Belgium	1.79	69.04
Bulgaria	3.13	13.18
Croatia	1.91	35.47
Cyprus	2.84	25.72

Czech Republic	2.69	19.76
Denmark	1.57	55.62
Finland	1.96	149.52
France	1.61	80.64
Germany	1.4	47.86
Greece	0.68	37.06
Hungary	2.73	20.35
Ireland	5.41	51.49
Italy	0.52	45.69
Latvia	3.89	138.07
Luxembourg	3.5	138.07
Malta	4.11	43
The Netherlands	1.85	97.95
Poland	3.9	27.98
Portugal	1.2	36.79
Romania	3.57	8.46
Slovakia	3.62	4.23
Slovenia	2.63	20.09
Spain	2.09	76.01
Sweden	2.48	102.57

Source: own processing.

In the studied sample of indicators, comprising 25 countries, the pairs of values (xi,yi), i=1,…,n, and the pairs (economic growth, market capitalization) can be determined for each of the EU member states. The association and relationship between them will be checked in the following.

A first assessment of the common distribution of these data will result from the value scatter chart, which involves the representation of points with x and y coordinates in a system of axes. The visual analysis on the organization and shape of the points cloud obtained can provide significant indications of the relationship between the variables. If the form of the points cloud looks like a functional curve, it can be said that the survey data can support the hypothesis of association between variables. In the following, there is the obtained chart, where it can be noticed that the points cloud has a predominant crowding trend to the left, which suggests a negative association with a linear trend. However, there are also some points outside of this association, so the existence of a correlation between the economic growth and the stock market capitalization level will be checked below.

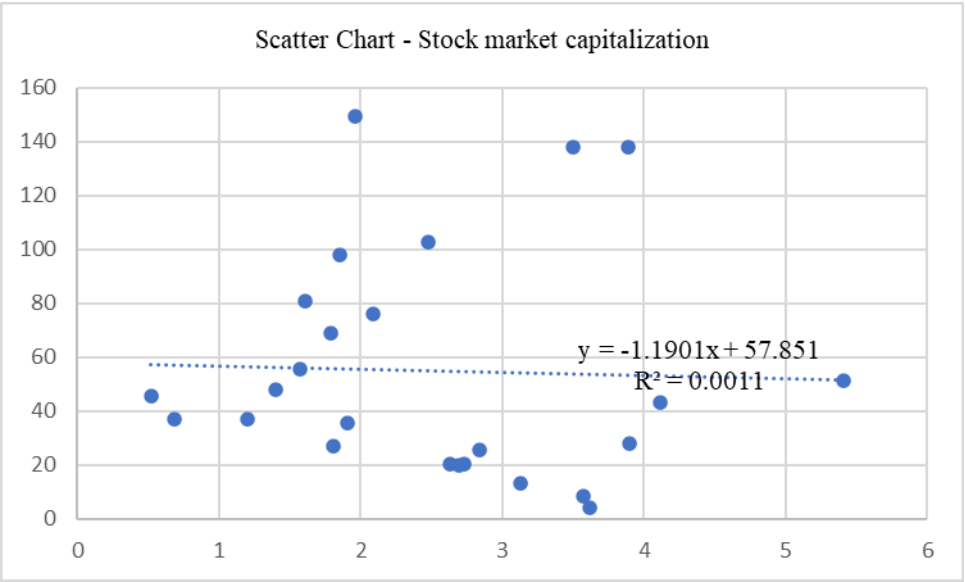

Figure no. 1: Chart of association of the stock market capitalization level with economic growth

Source: own processing

Market capitalization is the market value of all listed shares in a given country, so at the level of this case study, consideration will be given to how the average level of market capitalization in each EU country can be influenced by the economic growth of that country.

We are going to use the Jarque-Bera test, which involves the simultaneous verification of the asymmetry and peakedness properties of the data series. For normal distribution, the value of the Skewness (Sw) asymmetry coefficient should be zero, whereas the value of the Kurtosis (K) peakedness coefficient should also be zero.

Thus, the following statistical hypotheses are made:

H0: hypothesis of normality;

H1: the distribution of the errors does not follow a normal law.

The JB test statistic is defined as:

JB=(n/6) * (Sw2 + (K2/4)), where: (1)

n: number of remarks in the sample

Sw: asymmetry coefficient (Skewness)

K: peakedness coefficient (Kurtosis)

If the data has a normal distribution, the Jarque-Bera statistic will have, asymptomatically, a chi-square distribution with two degrees of freedom, so this statistic can be used to test the hypothesis that the data comes from a normal distribution.

By applying the Excell functions SKWE.P and KURT to the average economic growth/country, the following values were obtained:

n=25

Sw= 0.43
K=0.04.
Confidence interval 95%.
Materiality threshold α=0.05.
By applying the JB statistic, based on the above formula, JB=0.75 was obtained. The CHISQ.DIST.RT(JB,2) function was then applied and a probability = 0.68>0.05 was obtained, so the null hypothesis cannot be rejected as there is insufficient evidence that the data does not have a normal distribution.
By applying the Excel functions SKWE.P and KURT to the average level of market capitalization/country, the following values were obtained:
n=25
Sw= 0.98
K=0.19.
Confidence interval 95%; Materiality threshold α=0.05.
By applying the JB statistic, according to the above formula, JB=4.16 was obtained. We then applied the function CHISQ.DIST.RT(JB,2) and a probability of = 0.12>0.05 was obtained, so the null hypothesis cannot be rejected as there is insufficient evidence that the data does not have a normal distribution.
Starting from the fact that the mean is the point of balance of a varied distribution, it can be said that the regression line is also the point of balance in a bivariate distribution.
Its usefulness in the present case is that it serves as a basis for predicting the average market capitalization values associated with the values of real growth of the Gross Domestic Product.
A mathematical formula can be used to determine the quantities a and b in the equation Ye = a + b X, where:
• Ye (average market capitalization level) is the predicted (estimated) value of the dependant variable;
• a is the free term of the regression line (value for X=0);
• b is the regression coefficient (the amount by which Y changes when X changes by one unit);
• X (real economic growth) is the value of the independant variable.
For this study, using the Excel chart above, the linear regression equation shown on the data trend line in the points cloud was implicitly developed. It is thus noted that the average level of capitalization at EU level can be reduced 1.19 times when the economic growth dynamics advances by one unit.
But in statistics it is known that the estimated value is still only an average that we can expect. The accuracy of the determined information depends, in fact, on how well the regression line fits with the actual data.
Thus, given that the investigated data have a normal distribution, the Pearson coefficient will be determined below, by which the correlation between the analyzed indicators will be verified according to the formula:

$$r_{xy}=\frac{\frac{1}{n}\sum_i^n(X_i-\bar{X})*(Y_i-\bar{Y})}{Sx*Sy} \quad (2)$$

Thus, it will be taken into account that:

Sx (standard deviation of variable X)=1.19
Sy (standard deviation of variable Y)=42.32
Value of r_xy=-0.04.
According to Colton's rules, there is a very weak, negative correlation between the variables we have analyzed.
Testing of the statistical significance of the correlation coefficient:

$$t_{calc} = r\sqrt{\frac{n-2}{1-r^2}} \quad (3)$$

t_calc=0.19
df=5, α=0.05 => t_crit=0.7545
Hence, t_calc<t_crit , so the hypothesis that the average level of market capitalization is not linked to real economic growth is accepted.
The determination coefficient, which is the square of the Pearson coefficient r_xy, is then calculated as well. In our case, this is 0.001. As the determination coefficient quantifies the percentage of the total variation of the dependant variable that is explained by the independant variable, it follows that only 0.1% of the variation in the level of market capitalization at EU countries level could be explained by their real economic growth.

3.2. Analysis of the correlation and impact of real economic growth on the stock market turnover ratio

Below is the Scatter Chart of the values of the stock market turnover ratio, represented depending on the real economic growth.

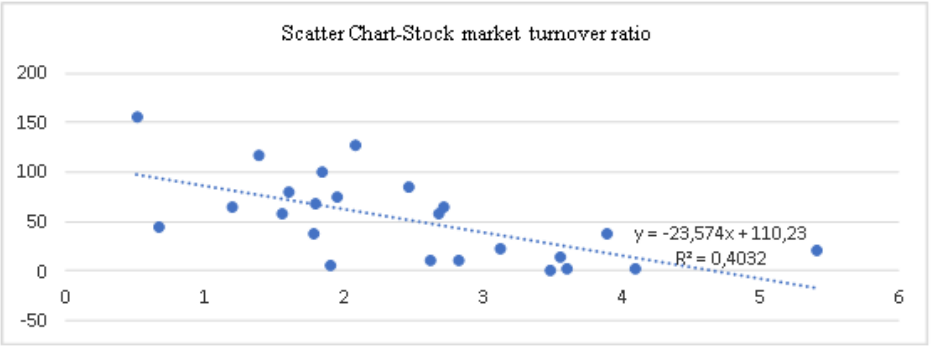

Figure no. 2: Chart of association of the stock market turnover ratio with economic growth
Source: own processing

On a visual analysis of the points cloud, it can be noticed that it can be inscribed in a left-oriented ellipse, which suggests a negative association with a linear trend.
By applying the JB statistics, according to the above formula, JB=1.80 was obtained. Then, by applying the function CHISQ.DIST.RT(JB,2), the probability = 0.4>0.05 was

obtained, so the null hypothesis cannot be rejected as there is insufficient evidence that the data does not have a normal distribution.
According to the linear regression equation, it can be noticed that the stock market turnover ratio across EU countries can be reduced by approx. 23.6 times when the economic growth dynamics advances by one unit. The accuracy of this information shall be established by determining the Pearson coefficient, according to the known formula:

$$r_{xy}=\frac{\frac{1}{n}\sum_i^n (X_i-\bar{X})*(Y_i-\bar{Y})}{Sx*Sy} \quad (4)$$

Thus, taking into account that:
Sx (standard deviation of variable X)=1.16
Sy (standard deviation of variable Y)=43.09
Value of r_xy=-0.61.
According to Colton's rules, there is a moderate to good correlation between the analyzed variables.
Testing of the significance of the correlation coefficient:

$$t_{calc} = r\sqrt{\frac{n-2}{1-r^2}} \quad (5)$$

t_calc=0.19
df=5, α=0.05 => t_crit=-3.6
Hence, t_calc>t_crit, so the hypothesis that the average ratio of the market turnover is not influenced by the real economic growth is rejected.
The determination coefficient, which is the square of the Pearson coefficient r_xy, is then calculated. In this case, it is 0.37. Since the determination coefficient indicates the percentage of the total variation of the dependant variable, which is explained by the independant variable, it follows that 37% of the variation in the average ratio of the stock market turnover across EU countries is determined by the variation by one unit in the real economic growth.

3.3. Analysis of the correlation and impact of real economic growth on investments in shares and bonds

By applying the JB statistic, according to the above formula, we obtained JB=2.93. We then applied the function CHISQ.DIST.RT(JB,2) and obtained a probability=0.23>0.05, so we cannot reject the null hypothesis since there is insufficient evidence that the data does not have a normal distribution.
In the following, we present the Spread Chart of the values of the average level of investment in shares and bonds, represented depending on the real economic growth.

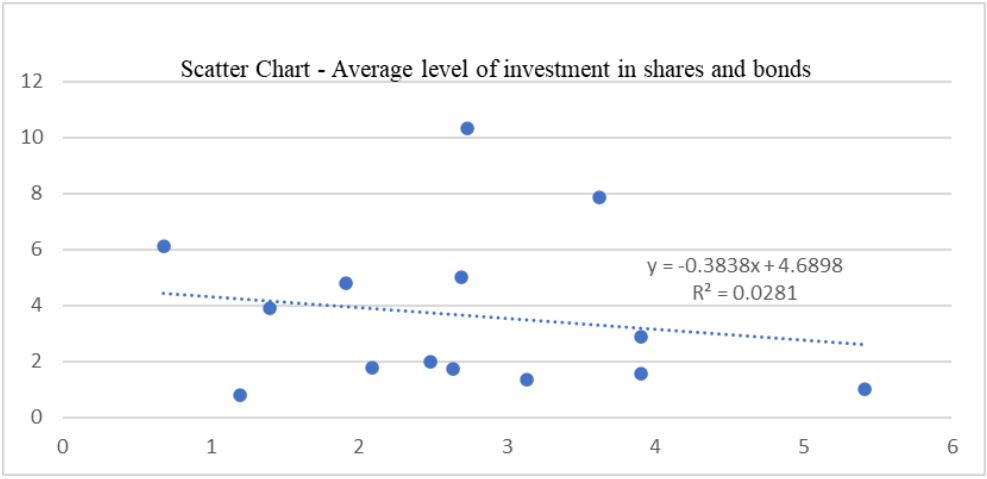

Figure no. 3: Chart of association of investments in primary securities with economic growth
Source: own processing

On a visual analysis of the points cloud, we notice that it can be inscribed, once again, in a left-oriented ellipse, which suggests again a negative association with a linear trend. According to the linear regression equation, we notice that the average level of equity/bond investments across EU countries can be reduced by approx. 0.3 times when the economic growth dynamics advances by one unit. We will determine the accuracy of this information by determining the Pearson coefficient, according to the known formula:

$$r_{xy}=\frac{\frac{1}{n}\sum_i^n(X_i-\bar{X})*(Y_i-\bar{Y})}{Sx*Sy} \quad (6)$$

Thus, taking into account that:
Sx (standard deviation of variable X)=1.25
Sy (standard deviation of variable Y)=2.86
Value of r_xy=-0.15.
According to Colton's rules, there is a weak negative correlation between the variables we have analyzed.
Testing of the significance of the correlation coefficient:

$$t_{calc} = r\sqrt{\frac{n-2}{1-r^2}} \quad (7)$$

t_calc=0.19
df=5, α=0.05 => t_crit=-0.59
Hence, t_calc>t_crit, so the hypothesis that the average level of investment in shares and bonds on the stock market is not directly influenced by real economic growth is rejected. We will then calculate the determination coefficient, which is the square of the

Pearson coefficient r_xy. In our case, it is 0.022. Since the determination factor shows the percentage of the total variation of the dependant variable that is explained by the independant variable, our conclusion is that only 2% of the variation in the level of investment in shares and bonds on the stock market across EU countries is explained by real economic growth.

3.4. Analysis of the correlation and impact of real economic growth on the life insurance volume

By applying the JB statistic, we obtained JB=1.87. We then applied the function CHISQ.DIST.RT(JB,2) and obtained a probability=0.39>0.05, so we cannot reject the null hypothesis as there is insufficient evidence that the data does not have a normal distribution.

Below, we present the Scatter Chart of the values of the average level of investments in shares and bonds, represented depending on the real economic growth.

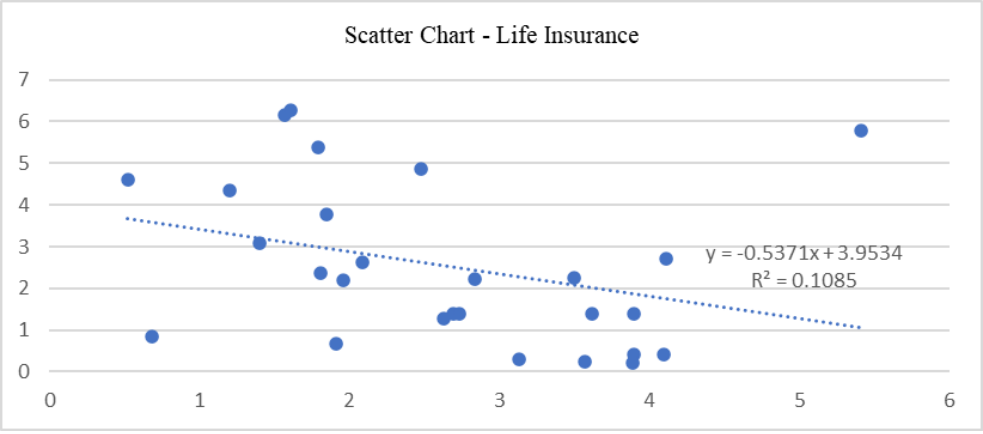

Figure no. 4: Chart of association of life insurance with economic growth
Source: own processing

On a visual analysis of the points cloud, we notice that it can be inscribed, once again, in a left-oriented ellipse, which suggests again a negative association with a linear trend. According to the linear regression equation, we notice that the average level of equity/bond investments across EU countries can be reduced by approx. 0.5 times when the economic growth dynamics advances by one unit. We will stablish the accuracy of this information by determining the Pearson coefficient, according to the known formula:

$$r_{xy} = \frac{\frac{1}{n}\sum_i^n (X_i - \bar{X}) * (Y_i - \bar{Y})}{Sx * Sy} \quad (8)$$

Thus, we take into account that:

Sx (standard deviation of variable X)=1.19
Sy (standard deviation of variable Y)=1.64
Value of r_xy=-0.27.
According to Colton's rules, there is a rather weak negative correlation between the variables we have analyzed.
Testing of the significance of the correlation coefficient:

$$t_{calc} = r\sqrt{\frac{n-2}{1-r^2}} \quad (9)$$

t_calc=0.19
df=5, α=0.05 => t_crit=-0.97
Hence, t_calc>t_crit, so the hypothesis that the average level of investment in shares and bonds on the stock market is not directly influenced by real economic growth is rejected.
We will then calculate the determination coefficient, which is the square of the Pearson coefficient r_xy. In our case, it is 0.07. Since the determination coefficient shows the percentage of the total variation of the dependant variable that is explained by the independant variable, our conclusion is that 7% of the variation in the level of life insurance volume purchased across EU countries is explained by real economic growth.

3.5. Analysis of the correlation and impact of real economic growth on the non-life insurance volume

By applying the JB statistic, according to the above formula, we obtained JB=1.17. We then applied the function CHISQ.DIST.RT(JB,2) and obtained a probability=0.55>0.05, so we cannot reject the null hypothesis as there is insufficient evidence that the data does not have a normal distribution.
Below, we present the Scatter Chart of the values of the average level of investments in shares and bonds, represented depending on the real economic growth.

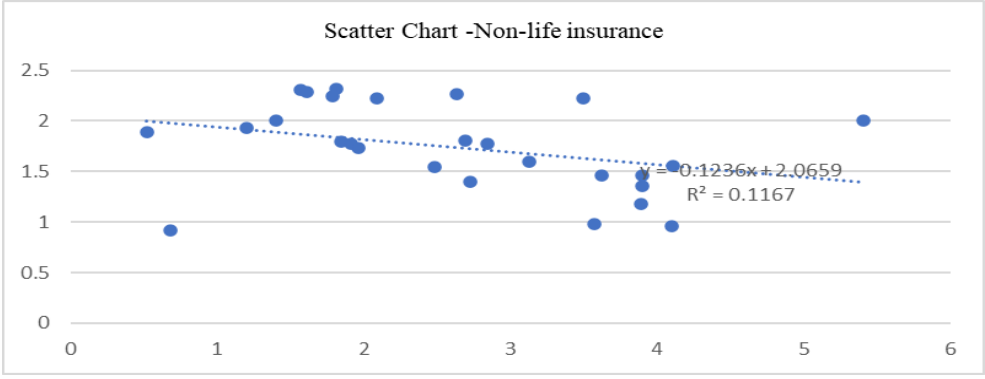

Figure no. 5: Chart of association of non-life insurance volume with economic growth
Source: own processing

According to the linear regression equation, we notice that the average non-life insurance volume across EU countries can be reduced by approx. 0.1 times when the economic growth dynamics advances by one unit. We will stablish the accuracy of this information by determining the Pearson coefficient, according to the known formula:

$$r_{xy}=\frac{\frac{1}{n}\sum_i^n(X_i-\bar{X})*(Y_i-\bar{Y})}{Sx*Sy}. \quad (10)$$

Thus, taking into account that:
Sx (standard deviation of variable X)=1.19
Sy (standard deviation of variable Y)=0.43
Value of r_xy=-0.33.
According to Colton's rules, there is a rather weak negative correlation between the variables we have analyzed.
Testing of the significance of the correlation coefficient:

$$t_{calc} = r\sqrt{\frac{n-2}{1-r^2}} \quad (11)$$

t_calc=0.19
df=5, α=0.05 => t_crit=-1.21
Hence, t_calc>t_crit, so the hypothesis that the non-life insurance volume purchased is not directly influenced by real economic growth is rejected. We will then calculate the determination coefficient, which is the square of the Pearson coefficient r_xy. In our case, it is 0.1089. Since the determination coefficient shows the percentage of the total variation of the dependant variable that is explained by the independant variable, our conclusion is that 11% of the variation in the level of life insurance volume purchased across EU countries is explained by real economic growth.

3.6. Analysis of the correlation and impact of real economic growth on the size of private pensions

By applying the JB statistic, according to the above formula, we obtained JB=145.12. Subsequently, the function CHISQ.DIST.RT(JB,2) was applied and we obtained a probability of=3.07>0.05, so the null hypothesis cannot be rejected as there is insufficient evidence that the data does not have a normal distribution.
Below we present the Scatter Chart of the values of the average level of private pensions purchased, represented depending on the real economic growth.

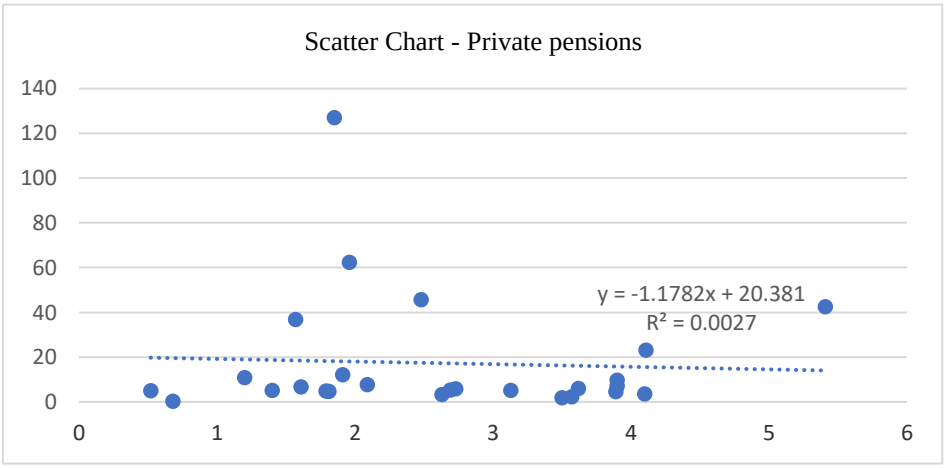

Figure no. 6: Chart of association of private pensions with economic growth
Source: own processing

According to the linear regression equation, we notice that the average volume of private pensions across the EU countries can be reduced by approx. 1.17 times when the economic growth dynamics advances by one unit. The accuracy of this information shall be stablished by determining the Pearson coefficient according to the known formula:

$$r_{xy}=\frac{\frac{1}{n}\sum_i^n(X_i-\bar{X})*(Y_i-\bar{Y})}{Sx*Sy} \quad (12)$$

Thus, taking into account that:
Sx (standard deviation of variable X)=1.22
Sy (standard deviation of variable Y)=27.43
as well as the calculation in the table below:
Value of r_xy=-0.05.
According to Colton's rules, there is a very weak, almost zero negative correlation between the variables analyzed.
Testing of the significance of the correlation coefficient:

$$t_{calc}=r\sqrt{\frac{n-2}{1-r^2}} \quad (13)$$

t_calc=0.19
df=5, α=0.05 => t_crit=-0.17
Hence, t_calc>t_crit, so the hypothesis that the volume of private pensions purchased is not directly influenced by real economic growth is rejected.
The determination coefficient, which is the square of the Pearson coefficient r_xy, is then calculated. In the analyzed case, this is 0.0025. Since the determination coefficient

shows the percentage from the total variation of the dependent variable that is explained by the independent variable, it can be concluded that 0.25% of the variation in the volume of private pensions purchased across EU countries is explained by real economic growth.

Conclusions

Drawing our conclusions from the case study, we can say that only with 34% of all indicators we can speak of a clear causal link between economic growth and the evolution of the financial and capital market, with an average impact of approx. 24%, meaning an unfavourable evolution of the stock market turnover and of the non-life insurance volume purchased during the reference period.

More than two-thirds of the specific indicators analyzed (66%) have been slightly or not at all influenced by the economic growth, with a slightly negative fluctuation. Thus, the average impact of economic growth over the last two decades on the development of the financial and capital market across all countries that are currently part of the European Union was less than 10%. With average economic growth over the period, the interest in primary securities, insurance, and private pensions at the EU level appears to have slightly decreased.

Thus, the financial and capital market has evolved rather as a result of the evolution of the information circuit, along with the development of the Internet environment and with the easier communication, with the existing market operators, or even with the development of financial know-how. The revival of these markets does not seem to be determined by the dynamics of the Gross Domestic Product, but rather by other factors, such as the degree of understanding of the mechanisms of these markets, corresponding to each separate country, determining the interest of the population in stock exchanges, insurance and private pensions.

We propose carrying out further research into the existence of a causal relationship and determining the influence on the financial and capital market at the level of each EU country, by extending the analysis to other indicators that could entail changes.

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