The Impact of Socio-Economic Volatility
on Business Value Growth in Ukraine

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Today, financial markets are undergoing transformation and change under the influence of economic turbulence, accelerating technological development and globalization. There is a demand for entrepreneurship, which aims to maximize market value, innovation and social development. However, the relative importance of various factors that determine the general state of the business and the possibility of its growth is not yet clear. In general, this study emphasizes the need to study the impact of macro- and microeconomic indicators of the environment on business profitability in dynamics.

To assess the impact of macroeconomic indicators on the profitability of small, medium and large businesses, based on the analysis of literature sources formed research hypotheses, which were tested by correlation and regression analysis. The research method used is based on the condition where the value of $p < 0.05$ is significant. Among the independent indicators, the initial data were selected unemployment rate, inflation index, capital investment in enterprises and sales. The value of net profit among small, medium and large enterprises during 2010−2020 was chosen as a dependent variable.

The regression coefficient $R = 0.8883$ indicates a high density of the relationship between net profit of enterprises and independent factors. Given the results obtained, it can be seen that the inflation rate was statistically significant for the model ($p = 0.0249$). The level of net profit and the overall level of business stability is growing due to the slowdown in inflation.

This new understanding should help to improve forecasts of the impact of macroeconomic factors on business development, as well as the ability to anticipate further actions of owners and shareholders of such enterprises in a market instability. For further research, indicators of social and intellectual capital can be used as factors in increasing the value of business.

Key words: business value, macroeconomic environment, profitability, volatility.

Introduction. The management of the enterprise, which is focused on increasing its business value, depends on the operational and strategic decisions [14]. Business value is an economic indicator that can be used to determine the integral effects of how decisions made by management affect all elements of a company's performance, namely market share, revenues, investment needs, tax burden, cash flows, level of risk, and the like. In today's world, the issue of business value is the focus of many academics and a basic factor influencing the success of an enterprise.

Emerging turbulence in the economy has recently intensified and is reducing the efficiency of enterprise management and negatively affecting the growth of its market value. Causing factors for this are a sharp deterioration in the political, economic situation, sharp volatility in stock indices, the emergence of viral infections, in particular the Covid-19 pandemic, which

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impede the free movement of goods and services. It can be argued that maximization of business value depends significantly on the stable functioning of the market environment, the ability of businesses to withstand disruptive external and internal variables.

For a detailed study of the impact of economic turbulence factors, a correlation and regression analysis are effective, in particular, to be able to better understand and predict the development of business processes. This method will allow for an empirical analysis of the selected indicators and check their statistical significance in the model.

One of the first scholars in this area of research Rappoport [10], identified several cost factors, which included the operational, investment, and financial components of cash flow. Author [1], followed a similar position regarding the components of business value but in a slightly different dimension. The scholar in his work presented the value factors in a more general way and combined them into four general: invested capital, actual and required rates of return, and forecast period. Establishing key factors of business value, according to [14], is the main factor in building a management system. Such factors, in addition to economic, market indicators, the efficiency of physical assets, its intellectual capital and the ability to use it for strategic purposes.

Regarding the causes of market turbulence and increased riskiness of trading operations by business entities authors [6], believe that unemployment and inflation rates, sharp fluctuations of which disturb economic stability and negatively affect business value growth.

The scientific literature has analyzed quite thoroughly the factors of environmental impact on the performance of enterprises, but the impact of internal microenvironment factors on the quality of strategic business value management has not been fully investigated.

This work consists of establishing the research topic and explaining its relevance. Based on an analysis of the issue and an analysis of the history of the research question, establishing the purpose of the research, which is supported by empirical calculations and an examination of the results.

Problem statement. Recently, research related to value-based management and value engineering of business processes, presented in various fields of science and dealing with decision-making, risk analysis in turbulent conditions, has been growing. Levchak [5], understand the value as a productive indicator of activity based on the analysis of financial indicators.

Among the negative factors that instantly affect the work of industrial enterprises, the author [7], notes the fluctuations of the world and national economies under the influence of progressive globalization and interdependence of economies, market factors, socio-political instability, natural and man-made emergencies. The most important signals for enterprises are the disruption of the banking system, sharp fluctuations in the national currency and stock indices. Among cost factors influencing the work of the enterprise [3], offers to divide them into stimulating, i.e. sales proceeds, production cost, administrative expenses, capital investments and constraining, i.e. long term financial investments, accounts payable, short term liabilities to banks.

Among empirical methods of analysis, particularly on the impact of macroeconomic indicators on the quality of enterprise value management, the method of correlation and regression analysis is widely used among scholars. Researchers [2], state a significant negative impact on the financial stability and growth of the value of the company of the index of consumer prices and public debt, negatively affect the growth of the capital stock of the enterprise. Luvihono et al. [6], find in the study a strong correlation between the value of company shares and the dynamics of the exchange rate of the national currency to the U.S.

dollar. An appreciation of the national currency against the U.S. dollar leads to positive investor expectations and, as a result, an increase in share prices.

Pagach D. P., and Warr R. S. [9], studied the impact of the introduction of a risk management system on the expansion of opportunities to increase the value of the enterprise and generate greater profits. After analyzing these samples from 106 companies before and after the implementation of the risk management system, researchers do not observe a significant increase in leverage, which allows diversifying sources of income.

The need to forecast risks and develop a specific management strategy to counter the decline in the financial stability of any economic entity is emphasized in the paper [11]. Effective risk management, according to scientists, is possible through the following sequential steps. Such steps include identifying the problem situation at the enterprise, analysis of potential hazards related to management decisions, choosing an alternative solution due to the unknown consequences and the inability to adequately assess them. The other steps are to reduce the costs of risky operations through the use of preventive methods of risk reduction, implementation of decisions, and post-crisis monitoring of the consequences for the enterprise.

Given the literature review, it is worth noting that market volatility and predictable volatility in macroeconomic factors have a significant impact on the quality of value management and the financial profitability of businesses. The underdevelopment of the stock market and financial institutions is also an area for further research.

The purpose of the research is to analyze the impact of the micro and macro environmental factors on the net profit of Ukrainian enterprises during the period from 2010 to 2020.

Results of the research. The net profit of enterprises is an indicator that allows to analyze the efficiency of the use of resources of the enterprise. The correlation and regression method applied will allow us to conduct an empirical analysis of the selected indicators and check their statistical significance in the model, as a result allowing us to provide reliable conclusions about the macroeconomic situation and predict further development.

The main idea tested in this study is that the effectiveness of enterprise value management, which in this case is reflected in the net profit of enterprises, decreases under the influence of macroeconomic changes, namely the inflation index and unemployment rate. In turn, macroeconomic changes affect the company's internal environment and its financial and economic activities. Due to this, it was formed two additional hypotheses which are presented below.

In unstable macroeconomic conditions, which, among other things, are accompanied by high inflation and unemployment, the company cannot provide itself with sufficient financial resources to overhaul production assets and reinvest. Ongoing macroeconomic instability creates a sense of business uncertainty in the long run. This is the reason for the reduction of foreign direct investment and the reduction of the net profit of enterprises [4]. Given this, was formed the following hypothesis (H1):

H1. Changes in the macroeconomic situation, concerning changes in unemployment and inflation, affect the net profit of an enterprise.

Own funds of enterprises, obtained from the sold products, are the main source of capital investment. The source [13], explains this by the fact that the unit cost of production includes the cost of restoring non-current assets of the enterprise. The company needs capital investment for the readjustment of economic processes through the introduction of new scientific and technological solutions, updating management approaches, increase sales

revenue, net profit, and market value. According to [16], in times of crisis the company is losing its competitive position in the market, the cost of production is rising sharply. The amount of net profit of the enterprise directly depends on the proceeds from sales. An important role in this process is played by the proceeds used to upgrade and modernize the means of production, that is capital investment. Strelnikov and Filatova [13], also notes that in addition to reinvestment, profits are used to repay loans and other indebtedness. Therefore, the formed hypothesis (H2) has the following form:

H2. Capital investments indirectly affect the net profit of enterprises through changes in the volumes of sold products.

Correlation and regression analysis is mathematical-statistical method, which is based on theoretical research and analysis of the macroeconomic situation in the country. As an initial data set, the dependent variable was the net profit of Ukrainian enterprises (Y), as it shows the efficiency of invested capital by investors and indicates the quality of business activities. The independent factors included macroeconomic indicators such as the inflation index (X1), unemployment rate (X2). Microeconomic indicators include capital investments (X3) and the volume of sold products (X4). The data was obtained from the official webpage [8] and [12].

This study used the method of multivariate correlation and regression analysis, which is one of the most effective in terms of assessing the relationships between factor variables. The method shows what changes the resultant indicator is subject to under the influence of external and internal factors. This method does not require a specific location, except for the use of computer software. Once the data set was generated, it was processed using the Excel analysis package. As this is a multivariate analysis at the beginning a correlation matrix was constructed which was checked for the presence of multicollinearity, which deteriorates the quality of the model. The multicollinearity was checked based on the Farrar-Glauber Test. This test involves calculating Chi-squared values X^2 to determine multicollinearity.

To determine which values in the matrix form multicollinearity the inverse matrix was constructed and on its basis F-values for each factor were calculated. If high F-values calculated will be higher than tabulated, such indicators are excluded from the matrix. Based on the new matrix, a regression analysis was carried out using the Excel analysis package.

To check the significance of the model was used the coefficient of determination that shows the existence of the relationship between the dependent variable and the factors influencing it (the closer to 1, the stronger the relationship). The p-value, which should not exceed 0.05, F (Fisher's) test and t (Student's) test was used as probability criteria. The significance of the model is confirmed when the calculated values of F and t exceed the table values [15]. Table 1 presents descriptive statistics of the investigated factor indicators, which are the objects of the investigated problematic issue outlined in the main hypothesis.

There are these results of descriptive statistics. Analyzing the macroeconomic indicators the mean value of the inflation rate is 111.56 %, the mean number of unemployed during the study period 2010-2020 is 1669.32 thousand people. For both values, the standard deviation is not significant, because sharp fluctuations in inflation and the number of unemployed were not observed. In addition to a significant increase in inflation during 2014-2015. The kurtosis for both values is above zero, i.e. the scatter of the data relative to the normal distribution plot is more spread out. The values of asymmetry have opposite values relative to zero, inflation has a right-sided positive slope relative to the average value of the data distribution, and the data on unemployment almost do not deviate from the average value.

The microeconomic indices of the enterprises show that the average level of the capital investments is 330098.82 UAH, level of proceeds from the produced industrial goods is

2030957.5 UAH. The value of the standard deviation is significant, indicating a significant change in financing and the volume of manufactured products during the period under study. The value of the kurtosis on micro-values is below zero and is -0.57316 on the capital investments, and -1.71914 on proceeds from sold industrial products. That is, the scatter of the data, relative to the normal distribution graph, is the opposite of narrower. The asymmetry indicator show values of 0.77399 and 0.392462, with no significant deviations from the mean.

Table 1.

Descriptive statistics of the investigated factor indicators.

Variable	Mean	Std. Dev.	Kurtosis	Asymmetry	Min	Max
Net profit	18995.081	296937.9	1.305492	-0.62894	-590067	523779
Inflation index	111.56363	12.67898	3.548927	1.817435	99.8	143.3
Unemployment rate	1669.3272	100.1400	0.284656	-0.03066	1486.9	1847.1
Capital investments	330098.82	137400.7	-0.57316	0.77399	164647.1	584448.6
Volume of sold products	2030957.5	808765.7	-1.71914	0.392462	1065108	3201914

Source: created by the authors.

To determine the relationship between the factor features and the dependent variable was constructed a correlation matrix in table 2.

Table 2.

Calculated correlation matrix

	Y	*X1*	*X2*	*X3*	*X4*
Y	1				
X1	-0.66054554	1			
X2	-0.70096292	0.307856	1		
X3	0.74527821	-0.23256	-0.72478	1	
X4	0.57305385	-0.08457	-0.5366	0.9291278	1

Source: created by the authors.

Given the resulting matrix, visually multicollinearity is present between the factors X3 and X4, and between the factors X2 and X3 because correlation exceed 0,7−0,9 modulo. Accuracy will be confirmed by a test according to Farrar-Glauber Test. Because the calculated value of Chi-square (25.6498) is higher than the table (12.5915) with a probability of 95 % it is possible to consider that between the independent factors is multicollinearity.

To determine the collinear factor, the inverse to the correlation matrix was calculated and statistical parameters were calculated on its basis. It was found a high correlation between factors X3 and X4, and since the correlation between X3 and the dependent variable Y is higher than between X4 and Y, it was decided to exclude factor X3 from the model.

After excluding the factor X3 from the model it was found out that the calculated value of Chi-Square (3.6693) is less than its tabular value (7.8147), it can be argued that there is no multicollinearity between the factors and no further action on the algorithm is required.

Based on this, it can proceed to regression analysis in table 3, and construction of the regression equation.

Table 3.

The results of regression analysis

Variables	Coefficients	Standard error	t-statistics	P-value
Net profit	2914753.813	1116312.531	2.61105535	0.03485977
Inflation index	-12206.3892	4292.986378	-2.84333285	0.02492530
Unemployment rate	-1068.80418	641.8302454	-1.66524433	0.13980754
Volume of sold products	0.123200217	0.075882589	1.62356370	0.14849793

Source: created by the authors.

The multiple regression coefficient R = 0.8883 indicates that there is a strong relationship between net profit of enterprises and the factors present in the model. The net profit of enterprises depends on the inflation index (X1), the number of unemployed people (X2), and the volume of sold industrial production (X4) by 78.92 %.

The calculated value of t statistics is significant for X1, because the calculated value are smaller than the tabular ones, and the marginal error rate does not exceed 5 %. The equation of the regression model is as follows:

$$Y = 2914753.813 – 12206.3892\, X1 – 1068.80418\, X2 + 0.1232\, X4 \qquad (1)$$

In writing this article, the aim was to investigate the impact of changes in the socio-economic situation on the net profit of enterprises by analyzing the impact of macro and microeconomic factors.

Discussion and prospects of further research. The resulting regression model shows that the profitability of enterprises in the current economic situation may increase due to the reduced inflation, as well as reducing the level of unemployment and increase volume of sold products, financing it through credit resources received on favorable terms for enterprises. As a result, this will have a positive effect on financial performance. Given the resulting regression equation, it can say the following. If the inflation index increases by 1 percentage point, the amount of net profit will decrease by 12206.38 monetary units, if the unemployment rate increases by 1 percentage point, net profit will decrease by 1068.80 monetary units. The reverse situation is observed in terms of sales, if the volume of sold products increases by 1 percentage point, the net profit of enterprises also increases by 0.1232 monetary units.

Thus, the hypothesis of the impact of the macroeconomic situation and the volume of sold products on the net profit of enterprises is not confirmed. It can be argued that hypothesis (H1) is partially fulfilled due to the statistically significant effect of changes in the inflation index on the change in net profit of enterprises. The impact of the unemployment rate is not noticeable given the results in the model. A change in the unemployment rate has no significant effect on changes in net profit of enterprises and affects changes in output.

The results of this research are natural and logical without unpredictable consequences. The resulting macro and microeconomic model can be useful to management in the enterprises, as it is possible to predict the possible development of the situation with the financial sector of the economy, make assumptions about how the state can influence the stabilization of the situation, and increase investment in small and medium-sized businesses.

This study has its limitations, because it takes into account only the most general and exclusively financial aspects without taking into account changes in the human, intellectual factor, which does not provide sufficient information about the quality of business value management. It is the non-financial components that should be used in further research.

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Вплив соціально-економічної нестабільності
на зростання вартості бізнесу в Україні

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Сьогодні фінансові ринки зазнають трансформації та змін під впливом економічної турбулентності, прискорення технологічного розвитку та глобалізації. Існує попит на підприємництво, яке спрямоване на максимізацію ринкової вартості, інновації та соціальний розвиток. Однак, поки що не зрозумілим є відносна важливість різних факторів, які визначають загальний стан бізнесу та можливість його зростання. Загалом, це дослідження підкреслює необхідність вивчення впливу макро- та мікроекономічних показників середовища на прибутковість бізнесу в динаміці.

Для оцінки впливу макроекономічних показників на прибутковість малого, середнього та великого бізнесу, на основі аналізу літературних джерел сформовано гіпотези дослідження, які перевірені методом кореляційно-регресійного аналізу. Використовуваний дослідницький метод базується на умові, де значення p <0.05 є значущим. Серед незалежних показників вихідними даними були обрані рівень безробіття, індекс інфляції, капітальні вкладення в підприємства та обсяг реалізованої продукції. В якості залежної змінної обрано значення чистого прибутку серед малих, середніх та великих підприємств протягом 2010−2020 років.

Коефіцієнт регресії R = 0.8883 свідчить про високу щільність зв'язку між чистим прибутком підприємств і незалежними факторами. З огляду на отримані результати видно, що статистично значущим для моделі був показник інфляції (p = 0.0249). Рівень чистого прибутку та загальний рівень стабільності бізнесу зростає через уповільнення інфляції.

Це нове розуміння має сприяти покращенню прогнозів впливу макроекономічних факторів на розвиток бізнесу, а також можливість передбачити подальші дії власників та акціонерів таких підприємств в умовах ринкової нестабільності. Для подальших досліджень можуть бути використані показники соціального та інтелектуального капіталу як чинники зростання вартості бізнесу.

Ключові слова: вартість бізнесу, макроекономічне середовище, прибутковість, волатильність.