



№10 2020

Annali d'Italia

VOL. 4

ISSN 3572-2436

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CONTENT

ECONOMIC SCIENCES

Mazur K.V., Hontaruk Y.V. ANALYSIS OF DEVELOPMENT OF FOREIGN ECONOMIC ACTIVITY OF VINNITSA REGION.....	3
Kolesnik T.V. MARKETING COMMUNICATION STRATEGIES ARE IN AGRICULTURAL BUSINESS MANAGEMENT	25
Fishchuk N., Mykhalchyshyna L. FORMATION OF COMPETITIVE ADVANTAGES IN THE AGRICULTURAL SECTOR OF THE ECONOMY	36
Pronko L., Kolesnik T., Samborska O. PECULIARITIES OF CONDUCTING BUSINESS NEGOTIATIONS IN DIFFERENT COUNTRIES OF THE WORLD	49
Volontyr L., Potapova N. ECONOMETRIC ANALYSIS OF THE INVESTMENT CHANGE MODEL IN THE FIXED CAPITAL OF UKRAINE.....	57
Yaremchuk N. ORGANIZATIONAL CULTURE AS A FUNDAMENTAL FACTOR IN IMPROVING THE COMPETITIVENESS OF AN ENTERPRISE	66
Yelikbayev K. FEATURES OF THE CONSTRUCTION SERVICES MARKET DEVELOPMENT IN THE WORLD AND RUSSIA	72
Yeter Gasimova Israyil, Boyukhanım Amirahova Akbar, Xadija Mammadova Yusif, Fikret Aliyev Bahman, Aysel Yolchuyeva Elshad ANALYSIS AND EVALUATION OF INVESTMENT IN THE DEVELOPMENT OF TOURISM INDUSTRY	79

довіра є наріжним каменем ділових стосунків. Будова особистих стосунків є невід'ємною частиною для успішних бізнес-угод, особливо якщо ви шукаєте довгострокові бізнес-стосунки.

Відомо, що поляки – дуже прямі співрозмовники, тобто вони кажуть те, що вони думають. Однак вони дуже чутливі до почуттів інших і саме це визначає як і що вони кажуть.

Незважаючи на те, що пряме спілкування дуже цінується у Польщі, існує також «покращення» того, що буде сказано, аби інформація подавалась більш дипломатичним способом. Рівень стосунків, в основному, визначає, наскільки прямим хтось може бути.

Для тільки-но встановлених та більш формальних стосунків, велика увага приділяється дипломатії. Коли стосунки пройшли початковий етап, люди почувають себе більш впевнено, говорячи відверто один з одним, а пожвавлене спілкування стає більш поширеним.

У діловій сфері польських партнерів також прийнято підносити подарунки. Підходящими моментами для подарунків є дні народження, іменини (дата народження святого, на честь якого та чи інша людина отримала своє ім'я) та Різдво. Доцільно не обирати подарунки, які є занадто дорогими; це може поставити людину у незручне становище. Якщо вас запросили додому на вечерю, принесіть із собою вино, квіти, випічку чи солодощі для хазяйки. Не даруйте жовті хризантеми, оскільки їх беруть для похорон, також уникайте червоних або білих квітів, особливо гвоздик та лілій.

Висновки. Дати рекомендації щодо проведення ділових переговорів (negotiations) з представником кожної конкретної нації чи країни практично неможливо, тому що окрім культуральних особливостей велику роль відіграють також фактори,

пов'язані із особистістю співрозмовника та специфікою бізнес-середовища. Однак для чіткішої орієнтації пропонуються деякі загальні характеристики ведення переговорів з представниками ряду країн західного світу.

Отже, для того, щоб досягти успіхів під час ділових переговорів, необхідно дотримуватися ділового етикету. Співбесідники повинні бути компетентними, ввічливими, професійно підготовленими та впевненими. Важливо також враховувати країну, у якій компанія чи особа має намір утворити партнерство, адже у кожній з них є свій особливий відтінок ділового етикету, що може відрізнятися від норм переговорів у рідній країні. Це допоможе показати себе з найкращої сторони і підвищить результативність переговорів.

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ECONOMETRIC ANALYSIS OF THE INVESTMENT CHANGE MODEL IN THE FIXED CAPITAL OF UKRAINE

Volontyr L.

*candidate of Technical Sciences, Associate Professor
Vinnytsia National Agrarian University, Vinnytsia, Ukraine*

Potapova N.

*candidate of economic sciences, associate professor
Vinnytsia National Agrarian University, Vinnytsia, Ukraine*

Abstract

Estimation of fixed capital investment using econometric models allows establishing many factors and their importance in the interaction with this factor. Based on this model, the minimum and maximum range of changes in the investment factor has been determined, which is further necessary for forecasting macroeconomic indicators.

The article deals with the development of an econometric model of dependencies and influence of factors on fixed capital investment in Ukraine. The object of the study is the systemic stochastic relationships that are instantiated during the formation of fixed capital investment. The research was performed based on the statistical data of the enterprises of Ukraine of the State Statistics Service of Ukraine.

A multifactor econometric model that demonstrates the dependence of the fixed capital investments of Ukraine against gross profit, the number of economically active population and the consumer price index in Ukraine is developed and investigated in the paper. Thus, with the growth of gross profit of Ukraine (x_1) by UAH 1 million, the value of investments in the fixed capital of Ukraine will increase by UAH 0.0005 billion; with the growth of the economically active population in Ukraine (x_2) per 1 thousand people, the value of investments in the fixed capital of Ukraine will increase by 0.067 billion UAH; with the growth of the consumer price index in

Ukraine (x_3) by 1%, the value of investments in the fixed capital of Ukraine will increase by UAH 1.704 billion.

With a gradual increase in the average expected value of the fixed capital investment of Ukraine by 25%, their number can be expected in the amount of UAH 347.0 billion under the following conditions: with the growth of gross profit up to the level of UAH 841721.8 million subject to constant other factors; with an increase in the number of employees up to 23682.8 thousand people subject to constant shares of other factors; with the growth of the consumer price index up to 142.9%.

The developed econometric model of changes in the fixed capital of Ukraine has a high level of multiple correlation and determination (about 99%), which is an evidence of the model high quality. The evaluation of the parameters has been confirmed by statistical significance based on Student t-statistics. The adequacy of the model was assessed using Fisher's ratio test with 0.05 significance level, 3 and 6 degrees of freedom according to the level of variances. The model is adequate, which is confirmed by comparing the actual and tabular values of the Fisher test.

Keywords: investments in fixed capital of Ukraine, Gross profit of Ukrainian enterprises, Number of economically active population, Consumer price index, econometric modeling, forecastin, estimation of factor influences, elasticity coefficient, beta coefficient/

Challenge problem. The economic growth of any economic and market participant is directly related to the reproduction of the fixed assets considering the fact that the satisfaction of emerged social requirements demands reconstruction, technical reequipment of the existing PP&E or creation of the new ones that make it possible to manufacture the necessary products. To reach this goal you may need the necessary additional investment resources to the fixed capital. Investment is a complex and meaningful concept, which integrates

different economic processes influencing over the production, distribution, exchange and consumption, thus they are the fundamental basis for the social economic reproduction. This being the case it is fair to say that there is a direct relationship between economic growth and the availability of investment resources.

The target of the research is investment to the fixed capital of Ukraine for 2008-2017 period. The finding of the analysis of changes in the fixed capital investment factor of Ukraine are shown in Table 1.

Table 1

Investments in fixed capital of Ukraine, 2008-2017, UAH billion

Period No.	Years	Investments in fixed capital of Ukraine, UAH billion
1	2008	272.1
2	2009	192.9
3	2010	189.1
4	2011	259.9
5	2012	293.7
6	2013	267.7
7	2014	219.4
8	2015	273.1
9	2016	359.2
10	2017	448.5
Basic estimators		
No.	Evaluation category	Value
1	amount	2775.6
2	average number	277.6
3	average absolute incrementation	19.6
4	average growth factor	1.057
5	variance	5498.0
6	mean-square deviation	74.1
7	coefficient of variation	26.7

Calculated on the basis of statistical data [12]

The results of the analysis of the investment behavior in fixed capital of Ukraine are shown in Table 1. According to these calculations (Table 1) during 2008-2017 period, the average expected value of investment was UAH 277.6 billion. The average absolute incrementation of this indicator has shown that during this period the average annual increase was UAH 19.6 bil-

lion. and amounted to 105.7% growth. The average deviation of the indicator from the average expected value amounted to UAH 74.1 billion, which is equal to 26.7%.

The results of the assessment of dynamic changes in the gross profit of Ukrainian enterprises are presented in Table 2.

Table 2

Gross profit of Ukrainian enterprises, 2008-2017, UAH million

Period No.	Years	Gross profit of Ukrainian enterprises, UAH million
1	2008	360810
2	2009	346676
3	2010	410579
4	2011	478783
5	2012	536461
6	2013	569640
7	2014	647781
8	2015	894987
9	2016	1142194
10	2017	1345863
Basic estimators		
No.	Evaluation category	Value
1	amount	6733774.0
2	average number	673377.4
3	average absolute incrementation	109450.3
4	average growth factor	1.158
5	variance	106266158975.4
6	mean-square deviation	325984.9
7	coefficient of variation	48.4

Calculated on the basis of statistical data [12]

According to these calculations (Table 2) during 2008-2017 period, the average anticipated value of the gross profit of Ukrainian enterprises was equal to UAH 673377.4 million. The average absolute incrementation of this indicator has shown that during this period the average annual drop was -0.7% and it amounted to 99.4% of growth. The average deviation of the indicator from the anticipated value is 10.9, which is equal to 9.2%.

According to these calculations (Table 3) during 2008-2017 period, the average anticipated value of the economically active population of Ukraine was 18946.2 thousand people. The average absolute incrementation [2] of this indicator has shown that during this period the average annual drop was 535.1 thousand people and amounted to 97.1% of growth. The average deviation from the average anticipated value was 1879.9 thousand people, which is equal to 9.9%.

Table 3

Number of economically active population in Ukraine, 2008-2017, thousand people

Period number	Years	Number of the economically active population, thou people
1	2008	20972.3
2	2009	20191.5
3	2010	20266
4	2011	20324.2
5	2012	20354.3
6	2013	20404.1
7	2014	18073.3
8	2015	16443.2
9	2016	16276.9
10	2017	16156.4
Basic estimators		
No.	Evaluation category	Value
1	amount	189462.2
2	average number	18946.2
3	average absolute incrementation	-535.1
4	average growth factor	0.971
5	variance	3533993.7
6	mean-square deviation	1879.9
7	coefficient of variation	9,9

Calculated on the basis of statistical data [12]

The results of the analysis of changes in the consumer price index of Ukraine are shown in Table 4.

According to these calculations (Table 4) during 2008-2017 period, the average anticipated value of the consumer price index in Ukraine [11] was 114.29. The average absolute incrementation of this indicator has shown that for this period the average annual growth rate was -0.96 points and amounts up to 99% of growth.

The average deviation of the indicator against the average anticipated value amounted to UAH 12.44 billion, which is equal to 10.88%. Note that the coefficient of variation characterizes the level of risk of deviations within the critical norm of financial risks. In general, the growth of the consumer price index is proportional to the growth of the economically active population and gross profit of Ukraine, which is characterized by a strong relationship between these factors.

Table 4

Consumer price index in Ukraine, 2008-2017

Period number	Years	Consumer price index
1	2008	122.3
2	2009	112.3
3	2010	109.1
4	2011	104.6
5	2012	99.8
6	2013	100.5
7	2014	124.9
8	2015	143.3
9	2016	112.4
10	2017	113.7
Basic estimators		
No.	Evaluation category	Value
1	amount	1142.90
2	average number	114.29
3	average absolute incrementation	-0.96
4	average growth factor	0.99
5	variance	154.71
6	mean-square deviation	12.44
7	coefficient of variation	10.88

Calculated on the basis of statistical data [12]

According to the analysis, it should be noted that all factors influencing over investments in fixed capital of Ukraine had a general tendency to over time decrease.

Analysis of recent research and publications

The problem of ensuring the efficient use of investment in the conditions of overcoming the consequences of the financial crisis is extremely important, not only for the national but also for the world economy. This relevance is primarily due to limited access to sources of investment resources and the available imbalance of their distribution, as well as the multi-vector development of sectoral components of the Ukrainian economy, including regional, under the influence of investment in fixed capital.

The main causes of problems in the investment process are primarily the structural discrepancy between the investment in certain economic activities and the financial result, as well as the lack of necessary resource level and high cost of investment resources. Under these circumstances, the further development of the economy requires qualitative changes in its structure, primarily against the real sector support, as it is the foundation on which, in particular, the budget system of the state is based. A key factor in the growth of the real sector of the economy is the gradual increase in production efficiency, which will help replace the price competitiveness of regional businesses with the non-price one. At the present stage of the national economy

development among the non-price means of gaining competitive advantage by domestic producers and maintaining their conquered segments in domestic and foreign markets are the following:

- timely renewal of production while reducing its material and energy consumption;
- diversification and creation of new types of products and services;
- carrying out technical re-equipment, first of all effective enterprises;
- introduction of technological and managerial innovations.

That is, the use of investment resources in enterprises should primarily be aimed at enhancing the innovation and, in particular, scientific and technological potential of the latter. Full fulfillment of such a potential requires active budget support through the coordination of state and local programs for the modernization of the fixed capital in the priority areas of government investment policy concerning the real sector of the economy. An effective mechanism for attracting investment resources including foreign ones, into the national economy is a public and private partnership, the practical form of which is the creation of a system of powerful industrial and innovative technology parks in the regions of Ukraine. The parks allow attracting foreign investors with their capital and innovations into the country's economy by providing certain subsidies in a way that does not contradict international rules.

Due to the creation of the industrial parks, the state gets a legitimate opportunity (in terms of WTO rules and regulations) to “subsidize” investment activities reducing the real costs of business, creating an investment climate favorable to foreign investors. Therefore, the industrial parks should become an integral part of the economic system of the country, as they are a tool to stimulate the modernization of industrial production, attract investment, increase employment, and equalize the economic development of the regions.

Direct foreign investment, which was attracted to the economy of Ukraine in the pre-crisis period, was constantly growing; the growth rate ranged 32.0 to 65.0%. However, during and after the economic crisis, the growth rate decreased significantly and ranged 10.0 to 4.0% [5].

The issue of forecasting the development of economic processes, in particular in the investment market, is especially important. This is an important element and function of public administration, the basis for designing future processes, the ability to predict the history of economic indicators, the investment support indicators of the country’s economy. The developed forecasts allow to check various scenarios of possible economic advancement on the basis of the involved investments aimed to choose regional economic policy of the state [3, p. 242; 4, p. 299-305; 5, p. 249-253; 8, p. 533-542].

The issues of assessing the effectiveness of investment, their impact on the consumer price index, employment and gross income in the context of the national economy transformation and their forecasting are of great importance and require research. Among the foreign authors who considered the issues are the following: I. Ansof, S. Beer, R. Brandenburg, P. Samuelson, D. Steiner, S. Welsh, I. Forrester, and others. Among domestic scientists and economists-practitioners who have made a significant contribution to the theory of investment policy, efficiency and forecasting of investments, we have noted V.P. Aleksandrova, O.M. Alimov, Yu.M. Bazhan, E.R. Bershed, V.M. Geets, M.S. Gerasimchuk, B.I. Yeleiko, O.M. Kirilenko, M.I. Krupka, O.V. Kuhlenko, I.I. Lukinov, O.M. Mertens, M.P. Pedan, A.A. Peresada, P.S. Rogozhin, V.M. Hobta, V.Ya. Shevchuk, E.Y. Shilov and others.

However, despite numerous scientific studies in the field of investment processes, the problems of assessing the effectiveness of investment and especially forecasting their levels have not been adequately addressed both in Ukraine and abroad, and therefore remain relevant and important and require appropriate research based on economic and mathematical and, consequently, econometric methods and models.

Forming the goals of the article

Estimation of fixed capital investment using econometric models allows to determine the array of factors and their importance in the interaction with this factor. Based on this model, it is possible to determine the minimum and maximum range of changes in the investment factor, which is further necessary for forecasting macroeconomic indicators.

The article deals with the development of an econometric dependency model and the influence of factors

on fixed capital investment in Ukraine. The target of research is the systemic stochastic relationships that are instantiated during the formation of fixed capital investment. In the course of the research, statistical data on the activities of enterprises of Ukraine of the State Statistics Service of Ukraine, regulations, and scientific works of domestic and foreign scientists, theoretical textbooks and manuals have been used.

Presenting the basic material

Model specification

Econometric models belong to functional models. They quantify the relationship between the initial indicators X of the economic system and the performance indicator Y . In general, the econometric model can be written as follows:

$$Y = f(X, u), \quad (1)$$

where X — initial economic indicators;

u — random, or stochastic component.

X indicators can be deterministic and stochastic. The additive component u is a random variable, and therefore, since the dependent variable Y depends on u , it is also stochastic. These indicates that the econometric model is stochastic.

Development and research of econometric models have certain features. These features are due to the fact that econometric models are stochastic. They describe the correlation and regression relationship between economic indicators. This relationship quantifies the available patterns of economic processes and phenomena. Therefore, to develop an econometric model, it is necessary:

- 1) to have a sufficiently large set of data observations;
- 2) to ensure the homogeneity of the set of observations;
- 3) to ensure the accuracy of the original data.

The econometric model contains a set of regression equations that describe the stochastic relationships between the studied economic indicators, as well as certain identities that characterize the relationship between economic indicators.

The most common mathematical type of relationships studied is linear (relative to parameters) and additive in form. At the same time, situations are possible when the same indicators in some equations play the role of interpretable variables and in others they act as explanatory ones (such models are called systems of simultaneous equations).

The main problems of econometric modeling include:

- identification of variables and hypothesis of model specification;
- specification of the econometric model;
- methods for estimating model parameters;
- model verification;
- forecast of interpretable variables based on the model.

The solution to these problems is largely based on mathematical and statistical tools. Much attention is paid to the methods of multidimensional analysis and, above all, to the methods of recognition of socio and economic characters, their typology.

Based on the main characteristics of the studied

economic area, the econometric model of changes in the number of the economically active population of Ukraine can be represented by the following specification:

$$y = f(x_1, x_2, x_3) \quad (2)$$

where

y – investments in fixed capital of Ukraine, UAH billion;

x_1 – gross profit, UAH million

x_2 – number of the economically active population, thou people

x_3 – consumer price index in Ukraine, %.

Estimation of the econometric model of changes in investment in the fixed capital of Ukraine

The information base for the development and evaluation of the econometric model of changes in fixed capital investment in Ukraine is given in Table 5.

Table 5

Information base for calculating investment in fixed capital of Ukraine

No.	Period	y	x_1	x_2	x_3
		Fixed capital investment, UAH billion	Gross profit, UAH million	Number of the economically active population, thou people	Consumer price index, %
1	2008	272.1	360810	20972.3	122.3
2	2009	192.9	346676	20191.5	112.3
3	2010	189.1	410579	20266	109.1
4	2011	259.9	478783	20324.2	104.6
5	2012	293.7	536461	20354.3	99.8
6	2013	267.7	569640	20404.1	100.5
7	2014	219.4	647781	18073.3	124.9
8	2015	273.1	894987	16443.2	143.3
9	2016	359.2	1142194	16276.9	112.4
10	2017	448.5	1345863	16156.4	113.7

Calculated on the basis of statistical data [12]

As is shown in Table 5, the consequent features are selected investments in fixed capital of Ukraine in billion UAH. The data sample is equal to 10 years, ie 2008 - 2017. ie, the estimated current period is equal to 1 year [1]. The main data set of macroeconomic indicators and the consolidated budget of Ukraine was obtained from public information of the State Statistics Service of Ukraine.

The model is evaluated on the basis of calculations of partial correlation ratios and regression parameters calculated by the least square method (LSM) [11].

Partial correlation ratios of the econometric model are obtained from the developed correlation matrix:

$r(yx_1) = 0.87$, the relationship between the ratios is strong, the direction is positive going.

$r(yx_2) = 0.63$, the relationship between the ratios is average, the direction is positive going.

$r(yx_3) = 0.04$, the relationship between the ratios is weak, the direction is positive going.

$r(x_1x_2) = -0.92$, the relationship between the ratios is strong, the direction is inverse.

$r(x_2x_3) = 0.23$, the relationship between the factors is weak, the direction is positive going.

$r(x_1x_3) = -0.52$, the relationship between the factors is average, the direction is inverse.

Estimates of the partial correlation ratios show that external connections prevail in the model, ie between the factors $y \leftarrow x$ (i). The internal interrelations between $x(i+1) \leftarrow x(i)$ have a small correlation effect, which does not confirm the presence of multicollinearity against the correlation matrix.

The general type of the regression equation is described by the equation:

$$y = \hat{y} + e \quad (3)$$

where

y is the actual value of investment in fixed capital of Ukraine,

\hat{y} is a theoretical (regression) value of investment in the fixed capital of Ukraine,

e - error of results.

The linear form of multifactor regression on a set of 3 factors in general is as follows:

$$\hat{y} = b_0 + b_1 \cdot x_1 + b_2 \cdot x_2 + b_3 \cdot x_3 \quad (4)$$

Where \hat{y} is a theoretical (regression) value of investment in the fixed capital of Ukraine, UAH billion, x_1 is gross profit, UAH million, x_2 - number of employed population, thousand people, x_3 - consumer price index in Ukraine, %.

b_i - the parameter of the regression equation is calculated by the method of least squares (MNC).

The calculation of the equation of the multifactor econometric model is performed using the application "Data Analysis", which is given in Annex B. The multifactor model of changes in the number of employed population of Ukraine has the form:

$$\hat{y} = -1550,2 + 0,0005x_1 + 0,067x_2 + 1,704x_3 \quad (5)$$

According to the model obtained, we have the characteristics of changes in the investment factor in fixed capital "y":

- with the growth of Ukraine's gross profit (x_1) by UAH 1 million, the value of investments in the fixed

capital of Ukraine will increase by UAH 0.0005 billion;

- with the growth of the employed population in Ukraine (x_2) per 1 thousand people, the value of investments in the fixed capital of Ukraine will increase by 0.067 billion UAH;

- with the growth of the consumer price index in Ukraine (x_3) by 1%, the value of investments in the fixed capital of Ukraine will increase by UAH 1.704 billion.

The model obtained is significant, which is confirmed by the value of the multiple coefficient of determination $R^2 = 0.954$. Factors x (i) have a 4.6% influence on the resulting "y", and the other 1.3% influence belongs to factors not taken into account in the model. The multiple correlation coefficient $r(y, x_1, x_2, x_3)$ is 0.976, which indicates a high level of closeness between the factors. The model is adequate, which is confirmed by the calculations of Fisher's F-statistics [11].

$F_{calc.} > F_{theor.}$ ($\alpha = 0.05$, $df_1 = 3$, $df_2 = 6$), ie $41.563 > 4.76$.

The significance of the regression parameters is confirmed by the evaluation of Student's t-statistics at degrees of freedom ($n-2$, $\alpha = 0.05$) $t_{theor} = 2.31$. The significance of the model parameters showed that they are all significant: $t_{theor} = 2.31$ [14]:

- b_0 : $t_{calc.} (-3.60) > t_{theor} (2.31)$ - significant;

- b_1 : $t_{calc.} (6,92) > t_{theor} (2,31)$ - significant;

- b_2 : $t_{calc.} (4,37) > t_{theor} (2,31)$ - significant;

- b_3 : $t_{calc.} (2,86) > t_{theor} (2,31)$ - significant.

Based on the high level of the multiple coefficient of determination and the significance of the model coefficients, we can conclude that there is no multicollinearity.

Estimation of anticipated fluctuations of theoretical and actual values of the model of changes in investment in the fixed capital of Ukraine is given in table 6.

Table 6

Estimation of factor influences in econometric model

Period number	Period	Fixed capital investment, UAH billion	Regression value of fixed capital investment, UAH billion	Deviation of the actual value from the regression one	Data lower range	Data upper range
1	2008	272.1	259.0	13.1	-1921.7	2439.7
2	2009	192.9	181.9	11.0	-1944.4	2308.3
3	2010	189.1	215.9	-26.8	-1918.2	2350.0
4	2011	259.9	248.8	11.1	-1890.4	2387.9
5	2012	293.7	273.6	20.1	-1866.8	2414.1
6	2013	267.7	296.0	-28.3	-1854.2	2446.2
7	2014	219.4	223.3	-3.9	-1909.0	2355.6
8	2015	273.1	278.4	-5.3	-1881.0	2437.7
9	2016	359.2	347.5	11.7	-1783.3	2478.3
10	2017	448.5	451.2	-2.7	-1716.7	2619.1
	amount	2775.6	2775.6	0.0	-18685.7	24236.9

Authors' own calculations

As the evaluation finding has shown, the range of changes in parameter values is within [11]:

$$b_{lower} < b_i < b_{upper}$$

$$-2601,86 < b_0 < -498,652$$

$$0,000348 < b_1 < 0,000728$$

$$0,029564 < b_2 < 0,104577$$

$$-0,53513 < b_3 < 3,945008$$

The diagram of the range of changes of regression values of the econometric model of changes in the number of the economically active population is shown in Fig. 1.

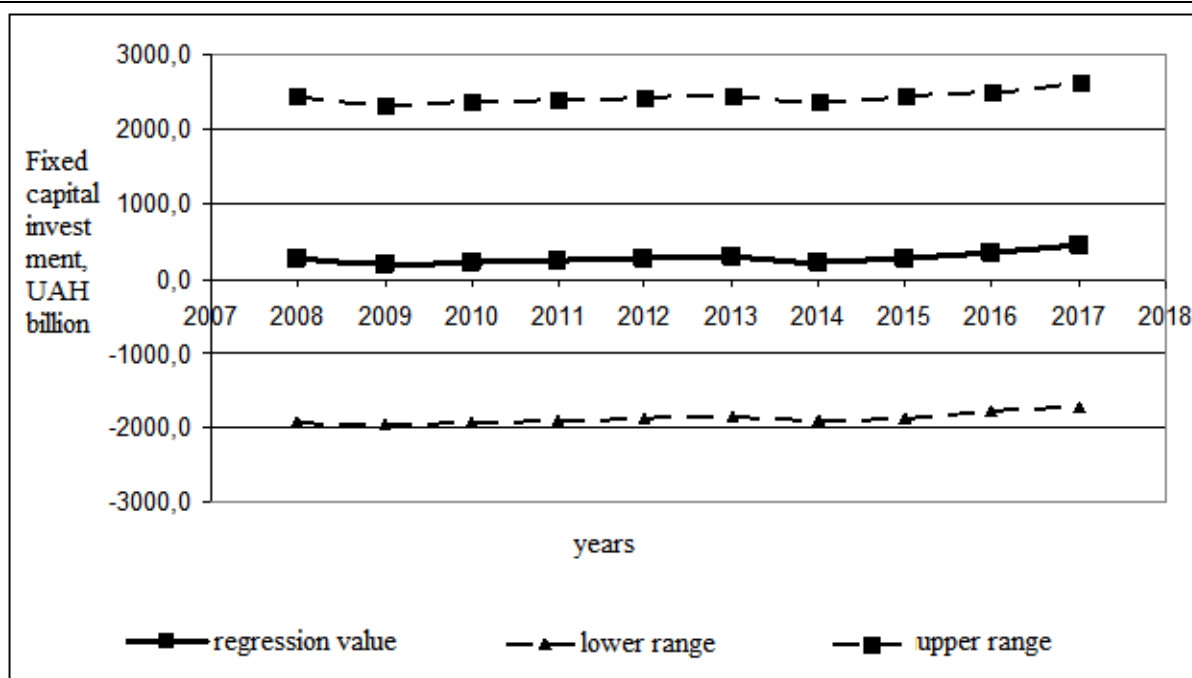


Fig. 1. Diagram of the range of changes in the regression values of the econometric model of changes in fixed capital investment in Ukraine

Authors' own calculations

In general, for 2008 - 2017 period, fixed capital investment of Ukraine are characterized by gradually increasing changes with slight fluctuations.

The analysis of deviations of the basic factors according to which the model of changes of the income of the population of Ukraine is developed is investigated on the grounds of averages (tab. 7).

Table 7

Estimation of average values changes of econometric model parameters

Parameter change	Coefficient	y	x ₁	x ₂	x ₃
average	1	277.6	673377.4	18946.2	114.29
5%	1.05	291.4	707046.3	19893.5	120.0
10%	1.1	305.3	740715.1	20840.8	125.7
15%	1.15	319.2	774384.0	21788.2	131.4
20%	1.2	333.1	808052.9	22735.5	137.1
25%	1.25	347.0	841721.8	23682.8	142.9

Authors' own calculations

As can be inferred from Table 7, with a gradual increase in the average anticipated value of the fixed capital investment of Ukraine by 25%, there amount can be expected equal to UAH 347.0 billion under the following conditions: with the growth of gross profit to the level of 841721.8 million UAH providing constant other factors; with an increase in the number of employees to the level of 23682.8 thousand people providing constant shares of other factors; with the growth of the consumer price index up to 142.9%.

The standardized regression coefficient indicates the share of influence of the i-th explanatory variable by y in comparison with the change of y. The larger $\hat{\beta}_k^s$ value, the more influential is the i-th factor. The estimated values of the standardized regression coefficients can be calculated by the following formula,

which can also be a definition:

$$\hat{\beta}_i^s = b_i \frac{\delta_{x_i}}{\delta_y} \quad (6)$$

Where: b_i is OLS-estimation of the regression coefficient b_i ; δ_{x_i} is the empirical standard (mean square) deviation of the i-th x_i regressor. δ_y is the empirical standard (mean square) deviation of y regressand.

The standard deviation of x_0 variable for a free member is zero, then $\hat{\beta}_0^s = 0$. It makes no sense to calculate a standardized free member. When interpreting the beta coefficient, it is assumed that the empirical standardized deviations δ_{x_i} and δ_y are typical (characteristic) changes of the studied variables.

The calculation of the factor elasticity of the studied model is shown in table 8

Table 8

Calculation of the elasticity coefficient of the studied model of changes in the number of economically active population of Ukraine

	beta coefficient	elasticity coefficient
b1	2.365	1.305
b2	1.700	4.578
b3	0.286	0.702

Authors' own calculations

Elasticity is a nondimensional indicator. The zero dimension of elasticity ϵ_k is an advantage: it facilitates interpretation. In the linear regression equation, the partial derivative dy/dx_i is equal to the regression coefficient b_i . In this case, the true elasticity is calculated as follows:

$$\epsilon_i = b_i \cdot \frac{\bar{x}_i}{\bar{y}} \quad (7)$$

The estimated elasticity ϵ_k is interpreted as follows: if, other things being equal, the i -th regressor changes by one percent, the regressand will change by ϵ_i percent as a result.

Elasticity is fully formulated as follows: "estimated elasticity in relation to x_i (for example, the estimated elasticity of demand relative to income or the estimated elasticity of turnover relative to shopping capacity).

The finding of the calculations has shown that the factors possess elasticity within the growth by 1% of the level of the corresponding factors $x(i)$:

- in the fixed capital of Ukraine it will increase by 1.305% with an increase of 1% in gross profit;
- investments in the fixed capital of Ukraine will increase by 1.305% with an increase in the number of employees by 1%;
- investments in the fixed capital of Ukraine will increase by 0.702% with an increase of 1% in the consumer price index.

According to the assessment of the factor elasticity, we can conclude that the greatest impact on fixed capital investment has a change in the number of employees.

Conclusions and prospects for further research

1. Econometric analysis allows us to investigate the economic system on the basis of stochastic equations, the formal form of which is renewed on the basis of the form and type of relationship between dependent and independent factors.

2. Investment are long-term placement of capital in various areas and sectors of the economy, infrastructure, social programs, environmental protection both within the country and abroad in order to develop production, social sphere, entrepreneurship, get profit. All this is justified by the study of changes in investment.

3. Econometric methods and models allow us to develop a stochastic model of estimation for which the nature of factors is defined by probabilistic statistical information and distribution of statistical data.

4. The constructed econometric model of changes in fixed capital investment in Ukraine has a high level of multiple correlation and determination (about 99%),

which indicates the high quality of the model. The evaluation of the parameters is confirmed by the statistical significance of the Student t-statistics.

5. The adequacy of the model was assessed using Fisher's ratio test at 0.05 significance levels, 3 and 6 degrees of freedom according to the level of variances. The model is adequate, which is confirmed by comparing the actual and tabular values of the Fisher's test.

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ORGANIZATIONAL CULTURE AS A FUNDAMENTAL FACTOR IN IMPROVING THE COMPETITIVENESS OF AN ENTERPRISE

Yaremchuk N.

Candidate of Economic Sciences,

Senior lecturer of the Administrative Management and Alternative

Energy Sources Department,

Vinnytsia National Agrarian University

Vinnytsia, Ukraine

Abstract

The article reveals the essence of the concept "organizational culture" and substantiates the importance of this factor in the development of competitiveness of the enterprise. Since as a result of underestimation of the value of organizational culture sometimes at the enterprise spontaneously may be formed not the most favorable atmosphere for business from the accompanying phenomena: indifferent and irresponsible attitude to business, high conflict and, as a consequence, a decrease in productivity, which leads to a decrease in economic efficiency of the enterprise.

Keywords: organizational culture, company competitiveness, personnel, control mechanism.

At the turn of the XX and XXI centuries, managers of developed countries note a new trend: the most important source of competitive advantages of firms and corporations, flourishing, become not so much financial and logistical factors, as the development and peculiarities of organizational culture, which are carried by the staff and the head of the enterprise. At the same time, the organizational culture of heads of enterprises began to be considered as an indicator of formation of progressive values and aspirations, norms and models of behavior, which are supported by subordinates and are effectively implemented in practice.

Processes of market transformations in Ukraine not only have caused a number of transformations in economy and management of the enterprises, but also have put heads of the enterprises before a choice: to adhere to old and inefficient forms of organizational culture, to border with extensive development, or to form more progressive organizational culture, demands activation of labour and creative efforts, development of competences, assimilation of new knowledge and skills, development and introduction of innovations.

Many enterprise managers do not yet realize the crucial importance of such a choice, underestimating the importance of organizational culture. As a consequence, there is a contradiction between the existing position of the organizational culture of enterprise managers and the requirements of the market environment, the needs of adaptation to market changes, accelerated economic and innovative development.

Shortcomings in the formation and development of organizational culture of managers have a negative impact on their organizational behavior, staff motivation, labor efficiency, the state of social and labor relations, which, in turn, prevents the effective operation of enterprises and the content of their competitive positions in the market. There was an urgent necessity in search of ways of formation and development of organizational culture of heads of the enterprises, adequate to new conditions of management in Ukraine [2].

As a concept, concentrates the most important postulates and treasures of management science, the theory of organizational culture has established itself as an important component of the modern management paradigm.

All components of the modern management paradigm are united by a common idea: ensuring the survival of the organization in the long term through the effective use of human resources, the formation and improvement of knowledge, stimulating creativity and innovation, and the degree of aspiration of staff to obtain new knowledge, the nature of behavior in non-standard situations, attitudes to work and consumers are largely determined by the parameters of organizational culture. Therefore, the successful implementation of the five basic concepts of modern management (knowledge and intellectual potential management, strategic management, quality management, strategic marketing and social responsibility of business) without substantial fill-

№10 2020

Annali d'Italia

VOL. 4

ISSN 3572-2436

The journal is registered and published in Italy.
Articles are accepted each month.
Frequency: 12 issues per year.
Format - A4 All articles are reviewed
Free access to the electronic version of journal

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