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## Sustainable Development of Rural Areas. Assessment of the Investment Appeal of the Region

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### Abstract

The article is devoted to the problem of sustainable development of rural areas as part of the investment policy. The investment appeal of the rural areas in Kazakhstan has been analyzed in the study, and the existing methods for assessing the investment appeal of the rural areas from the standpoint of their sustainable development have been considered. The authors focus on the method for assessing the factors contributing to the formation of investment appeal of the rural areas. A factor score of the investment appeal of the rural areas has been determined using a correlation regression analysis, which revealed the ease of use for a potential investor. Based on the assessment and analysis of the investment potential of the rural areas, proposals have been formulated to improve the method for assessing the investment appeal of the rural areas, taking into account a wide range of factors and monitoring the investment climate in the rural areas.

**Keywords:** sustainable development; rural areas; investment appeal; regional economy; fixed capital investment; development factors; assessment of the appeal of regions; investment.

**JEL Classification:** Q13; Q19; R19.

### Introduction

The economy of Kazakhstan is currently at the stage of formation of sustainable growth. The level of investment appeal is one of the most important indicators of the general economic situation and prospects for the development of economic sectors and the region as a whole. The growth in investments is one of the main factors for ensuring the economic development of agriculture, improving the quality of life of the rural population, updating the regional technical and technological base, as well as fixed assets in agriculture.

The economic concept of sustainable development of the rural areas was considered by the economists in numerous aspects.

For example, A. V. Glotko (2015) considers sustainable development of the rural areas as a targeted process of stable development of the rural community, providing economically and environmentally sound, socially oriented expanded reproduction, raising the level and improving the quality of life of the rural population, based on financial and investment strategies.

According to the researchers dealing with the problems of managing the competitiveness of the rural areas (Semenov *et al.* 2007, 366), this economic category includes a set of indices, criteria, and indicators of functioning and development of the mechanism for sustainable development of the rural areas, as well as systems for their support at the required level (human development index, environmental and institutional indicators, response indicators), which ensure their compliance with the requirements and criteria of economic efficiency, social justice, and environmental safety of the current and future generations and distinguish them from similar criteria for the development of the competitiveness potential of other regions.

V. K. Krutikov and O. V. Fedorova consider sustainable development of the rural areas in their work "Development of rural areas: innovation, diversification" as development that generates economic growth and equitably distributes its results. They understand the formation of sustainable development of the rural areas as an approach to the definition, description, and calculation of measures necessary to overcome disparities at different levels: household, community, and region (Krutikov and Fedorova 2011).

Investment appeal of the rural areas is an integral characteristic of individual rural settlements of the country from the standpoint of the investment climate, the level of development of investment infrastructure, opportunities for attracting investment resources, and other factors that significantly influence the formation of investment returns and investment risks (Mishenin *et al.* 2018, 329).

According to the studies of recent years, a variety of methods for assessing investment appeal cannot provide an investor with a complete picture of the investment appeal of the rural area. Due to this, it becomes necessary to analyze the investment appeal of the rural areas of Kazakhstan, as well as to consider the existing methods for assessing the investment appeal of the rural areas from the standpoint of their sustainable development.

## 1. Methods

The methods of the study are based on a systematic approach to the problems, on a comprehensive consideration of the main provisions of the rural area development, on the theory of economic interests and its applied value, and on the methods for assessing the investment appeal of the rural areas.

The methods and models of logic (induction, deduction) and general scientific methods (generalization, abstraction, comparative comparison, analysis, synthesis, and modeling) were used to substantiate the theoretical provisions and argumentation of the conclusions.

The methodological tools of economic development were used in the study and analysis of the processes and phenomena under consideration: economic and statistical grouping, correlation regression and factor analysis, methods of economic and mathematical modeling, software forecasting and analytical development, etc.

The combination and use of these methods in solving the problems of the study ensured the secured and substantiated assessment and the reliability of the results and conclusions.

## 2. Results

Kazakhstan is focused on creating favorable conditions for investors in its investment policy. An investor can invest money either in more profitable sectors located in a region with increased investment risks, or in less efficient projects but in more "calm" regions for the investor (Kaldiyarov *et al.* 2018, 126). To determine the "investment optimum", the authors divided the regions of Kazakhstan into groups (Table 1).

Table 1. Distribution of regions in the Republic of Kazakhstan by groups depending on the level of investment appeal

Group	Investment climate characteristics	Region
Group 1	High potential and high risk	Karaganda and East Kazakhstan regions
Group 2	Limited investment potential combined with the lowest risk	Nur-Sultan City, Shymkent City, Aktobe, Zhambyl, West Kazakhstan, North Kazakhstan, and Turkestan regions
Group 3	High investment potential combined with moderate risk	Pavlodar, Atyrau, and Almaty regions

Note: the table has been compiled by the authors

As can be seen from the table, all regions of Kazakhstan are divided into three main groups. Each of these groups is described by its unique investment climate. The group that includes Pavlodar, Atyrau, and Almaty regions has the best position in the conditions of Kazakhstan. They are described by a combination of a fairly high potential and moderate risk.

Despite signs of growth in Kazakhstan, regional development remains uneven, and there are no efficient regulators of concentration and distribution of investment resources. As a result, most regions of the Republic of Kazakhstan need both to attract large-scale investments and to have efficient mechanisms for managing investment processes, taking into account local business conditions and the potential in the region (Lukhmanova *et al.* 2019, 1801).

Let us consider the change in the volume of fixed capital investment in recent years (Table 2).

Table 2. Fixed capital investment by regions of the Republic of Kazakhstan (thous. tenge)

	Total		Growth to total		Share in the total amount of the Republic of Kazakhstan	
	2020/01	2019/01	2020/01	2019/01	2020/01	2019/01
<b>Republic of Kazakhstan</b>	644,577,620	636,881,437	97.5	165.4	100.0	100.0
Akmola region	16,113,414	8,726,620	175.9	116.4	2.5	1.4
Aktobe region	19,317,623	13,500,772	128.6	124.8	3.0	2.1
Almaty region	16,214,751	14,634,137	108.1	100.3	2.5	2.3
Atyrau region	306,371,127	273,127,459	106.3	230.8	47.6	42.7
West Kazakhstan region	22,679,980	16,389,353	132.1	89.8	3.5	2.6
Zhambyl region	9,645,752	8,772,044	106.3	100.8	1.5	1.4
Karaganda region	47,327,454	17,254,957	247.7	164.7	7.4	2.7
Kostanay region	16,058,410	10,037,915	148.2	113.8	2.5	1.6
Kyzylorda region	46,755,621	10,592,937	429.8	170.8	7.3	1.7
Mangystau region	25,968,556	20,143,133	124.0	81.8	4.0	3.2
Pavlodar region	5,926,807	8,764,350	63.7	173.7	0.9	23.7
North Kazakhstan region	6,035,827	150,737,377	111.4	259.5	0.9	1.4
Turkestan region	8,303,611	5,338,878	160.0	60.0	1.3	0.8
East Kazakhstan region	19,779,051	13,301,623	146.2	98.4	3.1	2.1
Nur-Sultan City	23,298,291	36,055,645	63.8	121.5	3.6	5.7
Almaty City	34,362,189	29,504,237	114.9	79.0	5.3	4.6
Shymkent City	20,419,156	-	13.7	-	3.2	-

Note: the table has been compiled using the data from the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan (Agency for Strategic planning and reforms of the Republic of Kazakhstan Bureau of National statistics n.d)

The Atyrau region, where the annual growth (from January 2019 to January 2020) amounted to 33.2 bln tenge, up to 306.4 bln tenge, which was equivalent to 47.6% of the total volume in the country, was the leader among the regions in Kazakhstan. The Karaganda region ranked second, with an annual growth of 30.1 bln tenge, up to 47.3 bln. The Kyzylorda region closed the top three with 10.6 bln tenge, up to 46.8 bln tenge (e.gov 2020).

The imbalance in regional investment is not unique in Kazakhstan. This issue must be solved using an integrated approach. Applying the methods of monitoring investment activity in the region and its investment appeal, one should proceed from the fact that investment appeal is an integral and multifactorial property of the territory. It has significant territorial differentiation (Kandilov and Renkow 2010, 165). As a result, the assessment should also be carried out at different territorial levels. Besides, investment appeal changes over time, and therefore, regular assessments and observations are required (Scutaru 2015, 147).

So far, no established and operating system for monitoring the investment appeal of any region exists (Dalevska *et al.* 2019, 1839). Expert assessments of the investment climate for individual territories of the Republic of Kazakhstan are published from time to time, but no specific methods are provided. Foreign investors are guided by the assessments of numerous firms that regularly monitor the investment climate in many countries, including Kazakhstan. However, assessments of the investment climate in the country given by foreign experts without the participation of the local experts do not always seem reliable. Occasional assessments of the investment climate of individual territories are carried out as part of the research.

### 3. Discussion

Statistical methods united by the general term "factor analysis" are used in practice to study the hidden phenomena and relationships in the regional economy, which are represented by sets of observed values (Danilov-Danilian 2003, 123). This analysis includes factorial and regression models.

The emphasis in factor analysis is made on the study of internal causes that form the specifics of the phenomenon under consideration. The regression analysis focuses on determining the weight of each attribute that contributes to the result, and on its impact (quantitatively), all other things being equal (Brada *et al.* 2006, 649).

The authors conduct a regression correlation analysis to determine the influence of factors on fixed capital investment in the context of the regions of the Republic of Kazakhstan, according to data as of January 2020, taking into account the available statistical base and using quantitative factors (Table 3).

Table 3. Influence of factors on fixed capital investment

Region	Fixed capital investment, thous. tenge, Y	Household cash expenditures, per capita per month/tenge, X <sub>1</sub>	Labor force share in the population, %, X <sub>2</sub>	Unemployment rate, %, X <sub>3</sub>	Commissioning of new fixed assets, thous. tenge, X <sub>4</sub>	Gross regional product per capita, thous. tenge, X <sub>5</sub>	External fixed capital investment thous. tenge, X <sub>6</sub>	Activity level in the field of innovation, %, X <sub>7</sub>
Akmola region	16,113,414	51,153	76.1	4.7	18,568,592	451.4	1,912,377	7.7
Aktobe region	19,317,623	44,159	70.7	4.8	15,811,297	710.6	5,132,301	10.6
Almaty region	16,214,751	51,820	74.3	4.6	11,190,363	276.0	4,693,134	8.3
Atyrau region	306,371,127	46,209	79.2	4.9	64,223,738	3,233.3	135,903,192	8.3
West Kazakhstan region	22,679,980	43,215	70.0	4.8	3,779,186	886.7	19,313,892	5.3
Zhambyl region	9,645,752	37,622	71.4	4.8	3,486,234	267.6	1,227,490	11.4
Karaganda region	47,327,454	62,489	64.7	4.4	53,194,568	692.7	22,658,804	14.7
Kostanay region	16,058,410	43,163	73.2	4.7	14,461,352	475.6	3,688,329	12.1
Kyzylorda region	46,755,621	39,804	66.0	4.8	3,796,061	442.1	2,919,402	12.2
Mangystau region	25,968,556	45,581	73.1	4.8	18,288,960	971.4	5,486,790	4.0
Pavlodar region	5,926,807	52,410	70.6	4.7	3,218,636	746.3	1,401,175	9.1
North Kazakhstan region	6,035,827	55,779	70.5	4.8	5,056,710	390.8	512,246	11.7
Turkestan region	8,303,611	31,417	66.7	5.1	3,893,381	187.5	2,725,246	6.5
East Kazakhstan region	19,779,051	58,920	67.1	4.8	24,191,183	580.0	12,029,273	15.5
Nur-Sultan City	23,298,291	62,359	74.2	4.5	97,812,852	1,116.0	1,009,004	14.7
Almaty City	34,362,189	77,338	68.7	5.1	22,258,120	1,460.4	8,817,877	9.6
Shymkent City	20,419,156	48,210	63.8	5.1	6,589,218	465.5	5,747,000	7.4

Note: the table has been compiled by the authors based on their own calculations

The authors carry out a correlation analysis (Table 4) and a regression analysis (Table 5) and interpret the results, based on the data collection.

Table 4. Results of the correlation analysis

	Y	X1	X2	X3	X4	X5	X6	X7
Y	1							
X1	-0.03308	1						
X2	0.462081	-0.04915	1					
X3	0.111277	-0.20556	-0.24732	1				
X4	0.465809	0.440356	0.35083	-0.44352	1			
X5	0.904038	0.232347	0.500653	0.127058	0.573624	1		
X6	0.984354	-0.03417	0.446754	0.106212	0.436934	0.894739	1	
X7	-0.08064	0.397331	-0.21282	-0.48194	0.417553	-0.11273	-0.10902	1

Note: the table has been compiled by the authors based on their own calculations

Based on the results of the correlation analysis, the authors exclude the factors with a negative relationship that do not influence the growth or decrease in fixed capital investment; these factors include household cash expenditures per capita and the activity level in the field of innovation.

The problem of multicollinearity between such factors as gross regional product per capita and external fixed capital investment is also revealed, because the correlation coefficient exceeds 0.7. External fixed capital investment to a greater extent explains the growth (decrease) in fixed capital investment, and therefore, the factor of gross regional product per capita is usually excluded.

Table 4. Results of the regression analysis

RESULTS				
Regression statistics		Analysis of variance		
Multivariate R	0.988361974		df	F
R-square	0.976859393	Regression	7	54.2752424
Normalized R-square	0.958861142	Remainder	9	
Standard error	14,248,233.5	Total	16	
Observations	17			
	Coefficients	Standard error	t-statistic	P-Value
Y-crossing	-89,242,554.47	200,495,801	-0.445109344	0.6667535
X1	-504.8003304	483.7175882	-1.043584816	0.32389702
X2	432,498.4159	1,212,649.204	0.356655836	0.72956823
X3	13,914,504.78	28,519,490.7	0.487894574	0.63728986
X4	0.060721904	0.249807588	0.243074696	0.81339702
X5	18,430.72416	18,827.44429	0.978928625	0.35319447
X6	1.744576487	0.330304826	5.281716621	0.00050595
X7	1,543,354.574	1,550,913.717	0.995126006	0.3456754

Note: the table has been compiled by the authors based on their own calculations

Table 6. Adjusted factors for assessing investment appeal

Region	Fixed capital investment, thous. tenge, Y	Household cash expenditures, per capita per month/tenge, X <sub>1</sub>	Labor force share in the population, %, X <sub>2</sub>	Unemployment rate, %, X <sub>3</sub>	Commissioning of new fixed assets, thous. tenge, X <sub>4</sub>	Gross regional product per capita, thous. tenge, X <sub>5</sub>	External fixed capital investment, thous. tenge, X <sub>6</sub>	Activity level in the field of innovation, %, X <sub>7</sub>	Length of roads, km, X <sub>8</sub>	Availability of a special economic zone Z <sub>1</sub> , 1 is available, 0 is not available
Akmola	16,113,414	51,153	76.1	4.7	451.4	18,568,592	102.9	2,715,372	7,942.7	1
Aktobe	19,317,623	44,159	70.7	4.8	710.6	15,811,297	105.1	23,454,296	6,906.8	0
Almaty	16,214,751	51,820	74.3	4.6	276.0	11,190,363	102.8	841,212	9,602.9	1
Atyrau	306,371,127	46,209	79.2	4.9	3,233.3	64,223,738	103.0	38,408,581	3,181.6	0
West Kazakhstan	22,679,980	43,215	70.0	4.8	886.7	3,779,186	96.6	9,659,834	6,497.0	0
Zhambyl	9,645,752	37,622	71.4	4.8	267.6	3,486,234	104.3	3,629,200	4,327.5	1
Karaganda	47,327,454	62,489	64.7	4.4	692.7	53,194,568	100.9	24,045,627	8,855.9	0
Kostanay	16,058,410	43,163	73.2	4.7	475.6	14,461,352	113.1	8,400,631	9,299.9	0
Kyzylorda	46,755,621	39,804	66.0	4.8	442.1	3,796,061	90.7	2,639,628	3,451.2	0
Mangystau	25,968,556	45,581	73.1	4.8	971.4	18,288,960	98.8	11,809,507	2,846.0	1
Pavlodar	5,926,807	52,410	70.6	4.7	746.3	3,218,636	101.1	29,016,058	5,441.0	1
North Kazakhstan	6,035,827	55,779	70.5	4.8	390.8	5,056,710	101.9	2,700,396	8,998.0	0
Turkestan	8,303,611	31,417	66.7	5.1	187.5	3,893,381	105.8	1,279,159	6,944.2	1
East Kazakhstan	19,779,051	58,920	67.1	4.8	580.0	24,191,183	110.7	21,125,691	11,951.0	0
Nur-Sultan City	23,298,291	62,359	74.2	4.5	1,116.0	97,812,852	115.8	2,032,590	1	1
Almaty City	34,362,189	77,338	68.7	5.1	1,460.4	22,258,120	105.8	3,918,314	1	1
Shymkent City	20,419,156	48,210	63.8	5.1	465.5	6,589,218	120.3	5,339,483	1	0

Note: the table has been compiled by the authors based on their own calculations

R-square value is 97, which means that this regression model explains 97% of the formation of the regions' fixed capital investment by the factors included in it.

P-value indicates the importance of only one factor – the external regions' fixed capital investment. According to the data obtained, an increase in the external regions' fixed capital investment by 1 bln tenge will entail an increase in the regions' fixed capital investment by 1.74 bln tenge.

As such, the approaches described in the theory for including groups of factors are not confirmed when selecting factors for assessing the investment appeal of rural areas, and a method should be developed that will allow analyzing the investment appeal of regions and rural areas at the local and republican levels.

The performed correlation regression analysis of the factors recommended for analysis when determining the investment appeal of regions and rural areas indicates the need to make adjustments to the factor assessment method.

To achieve this goal, the authors adjusted the quantitative factors and included a qualitative factor, nonnumeric data: the functioning of special economic zones (Table 6).

The authors carry out a correlation analysis (Table 7) and a regression analysis (Table 8) in Excel and interpret the results, based on the collected data.

Table 7. Results of the correlation analysis

	Y	X1	X2	X3	X4	X5	X6	X7	X8	Z1
Y	1									
X1	-0.03308	1								
X2	0.462081	-0.04915	1							
X3	0.111277	-0.20556	-0.24732	1						
X4	0.904038	0.232347	0.500653	0.127058	1					
X5	0.465809	0.440356	0.35083	-0.44352	0.573624	1				
X6	-0.11171	0.214102	-0.05511	0.155492	-0.0368	0.304761	1			
X7	0.608614	0.063666	0.166667	-0.1445	0.613274	0.281696	-0.1059	1		
X8	-0.21422	-0.14014	-0.00155	-0.36969	-0.39633	-0.28342	-0.17601	0.12996	1	
Z1	-0.28273	0.098308	0.298712	-0.0037	-0.13764	0.021744	-0.0027	-0.36446	-0.27089	1

Note: the table has been compiled by the authors based on their own calculations

Following the results of the correlation analysis, there is no multicollinearity problem. However, the influence of certain factors recommended for consideration still has a negative correlation with fixed capital investments; these are the included and important factors, such as average monthly wages, industrial production indices, the length of roads, as well as special economic zones.

Table 8. Results of the regression analysis

RESULTS				
Regression statistics		Analysis of variance		
Multivariate R	0.95934051		F	Significance of F
R-square	0.92033422	Regression	8.98523174	0.004254
Normalized R-square	0.81790679			
Standard error	29,976,559.8			
Observations	17			
	Coefficients	Standard error	t-statistic	P-Value
Y-crossing	549,436,012	728,238,320.7	0.754472809	0.475176
X1	-2,170.2766	1,008.001548	-2.153048901	0.068305
X2	-3,943,125.5	4,823,757.11	-0.817438647	0.440609
X3	-65,564,085	122,292,596.7	-0.536124724	0.608479
X4	138,169.134	56,115.58033	2.462224094	0.043324
X5	-0.2057271	0.917782539	-0.224156654	0.829037
X6	703,303.276	1,977,777.265	0.355602872	0.732613
X7	-1.3301811	1.535741664	-0.866148978	0.415107
X8	4,714.39467	3,576.715277	1.318079385	0.22897
Z1	255,612.275	24,448,122.06	0.010455293	0.99195

Note: the table has been compiled by the authors based on their own calculations

The close to unity value of the correlation index equal to 92% indicates that the resulting model adequately describes the relationship between fixed capital investment and the special economic zone functioning. According

to the obtained data, the commissioning of new fixed assets in the amount of 1 bln tenge will entail an increase in fixed capital investment by 703.3 mln tenge. In turn, the average increase in fixed capital investment in regions with functioning special economic zones is 255.6 mln tenge more than in regions without special economic zones.

## Conclusion

Summarizing the results, the authors emphasize that the quality monitoring of the investment climate in rural areas should be ensured at the regional and local levels, at the first place (Berzon 2009, 58; Law of the Republic of Kazakhstan 2011). Each investor will later be able to analyze the influence of factors of interest on the result, depending on the specifics and type of economic activities, relying on the same factor assessment method (Darin and Telyakov 2017, 1113). State authorities need to create their own methods for assessing the investment potential of regions and rural areas in order to attract external investment and ensure transparency of monitoring data for both investors and residents of the urban and rural areas (Dokholyan 2011, 25).

The following results have been obtained in the study:

1. A comparative quantitative analysis of fixed capital investment at the level of regions and rural areas has been carried out, which allows to describe their investment appeal in general terms.

2. It has been revealed that there is no established and functioning system for monitoring the investment appeal of any region so far. The investment climate in Kazakhstan does not always seem reliable when assessed by foreign experts without the participation of the local experts. Occasional assessments of the investment climate of individual territories are carried out as part of the research.

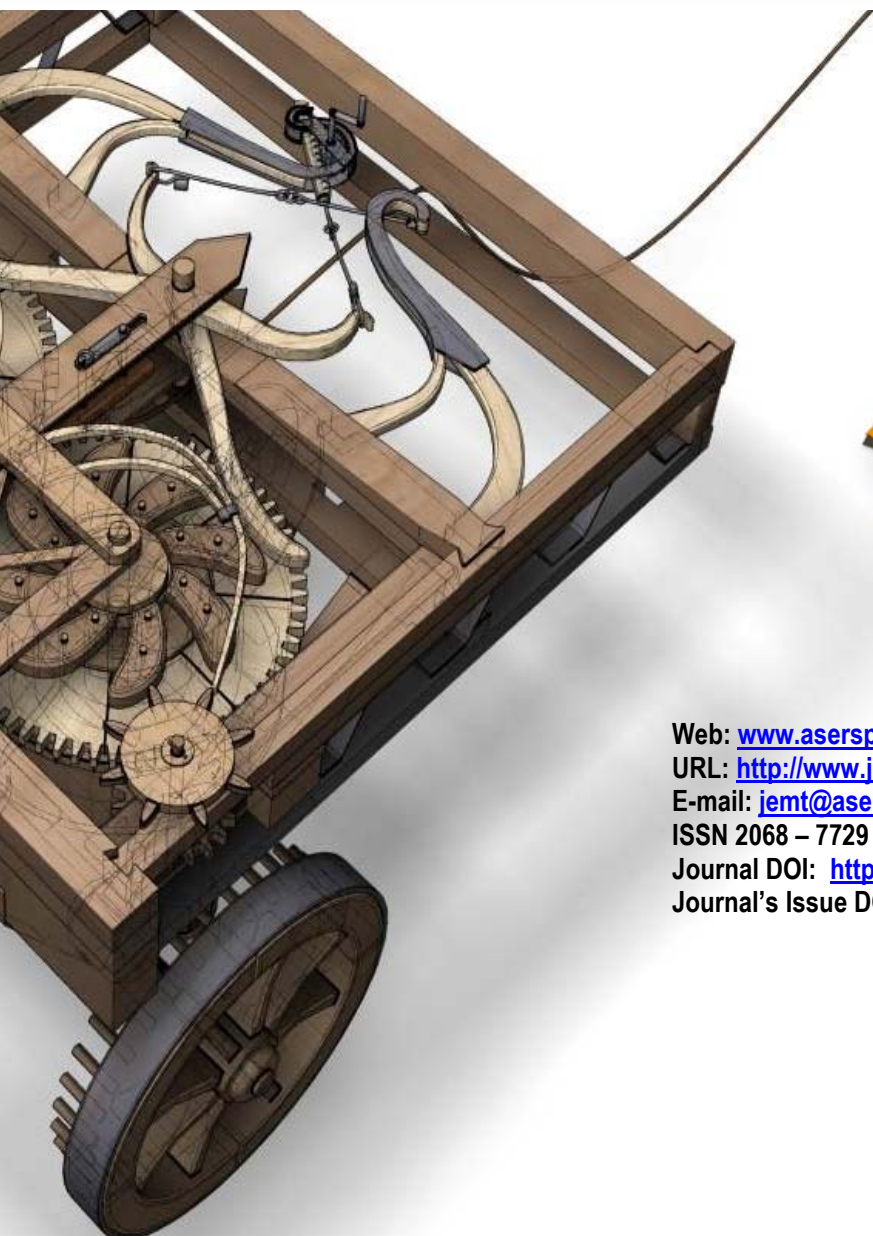
The authors have adjusted it based on the method of factor analysis, taking into account the available statistical base, and selected quantitative and qualitative factors to identify correlations and build a regression model in order to identify the influence of factors on the volume of fixed capital investment. The functioning of special economic zones is included as a qualitative factor, nonnumerical data, because the world experience reveals that the creation of special economic zones is a factor in accelerated economic growth due to the intensification of international trade, mobilization of investments, and deepening of integration economic processes.

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