

The impact of Human capital on Engineering Innovations

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ABSTRACT

Goal: To identify the relationship between the intensive economic growth of the state and human capital. **Design/Methodology/Approach:** The following methods were used: statistical-economic, monographic, and economic-statistical. **Conclusions:** The authors revealed that the quality of life of the population had a close relationship with the economic growth of the state. The practical implications. The study revealed that the fundamental factor affecting the growth of fundamental macroeconomic indicators was an increase in the welfare of the population. **Originality/value:** The article considers a number of factors that directly and indirectly affect economic growth.

Key words: agriculture, economics, factors of production, economic growth, system of national accounts.

1. INTRODUCTION

Agriculture is a strategic business sector that provides the most important function of the state, that is, providing the country's population with high-quality food. However, a long period of economic reforms has led to the fact that the agricultural sector has residual financing and is experiencing significant difficulties in ensuring the quality of a full-fledged life for workers.

In the authors' opinion, an increase in economic demand as a fundamental factor in economic growth is possible due to a more even income in the economy.

The more evenly distributed the income in the economy, the more actively it uses such a factor of economic growth as aggregate demand. It is noted that the Russian population is still forced to spend a large part of its funds on the purchase of grocery goods; therefore, agriculture, as a multifunctional industry, provides a huge impact on aggregate demand, consumption, savings, the quality of life of citizens and, as a consequence, on economic growth.

As part of its import substitution policy, Russia has reached and exceeded the threshold values of the food security doctrine for a number of key food products. It is concluded that the further development of agricultural production, similarly to other sectors of the national economy, is possible due to post-industrial factors, such as information, knowledge, technology, and entrepreneurial ability. They contribute to the growth of the added value of the industry and, as a result, increase its share in the structure of GDP [1].

2. LITERATURE REVIEW

Currently, there are both supporters and opponents of economic growth. The arguments against growth are: environmental pollution, neglect of human values, lack of guarantees, and the fact that economic growth does not solve all problems. However, most economists, nevertheless, consider growth a necessary condition for existence and development. In this regard, it is required to study the structure and dynamics of GDP, assess the importance of agriculture, identify negative factors limiting the growth potential of the economy [7], and also suggest promising directions that will promote the development of a new post-industrial growth model that is not associated with fluctuations in prices in world commodity markets and with other traditional factors [2], [8]-[12].

3. METHODS

In the process of scientific research, the following general scientific research methods were used: statistical, monographic, design, and others.

The subject of study is the economic and social relations associated with the formation of human resources in the agricultural sector.

The methodological basis of the study is the theoretical and methodological conclusions and provisions of the economic theory as a whole, as well as the works of scientific economists on the formation of human resources in agriculture [13]-[19]. The research information base is the

official statistical information provided by the Federal State Statistics Service of the Russian Federation.

4. RESULTS

The Siberian Federal District is one of those regions that play an important role in the formation of food reserves for the entire state. This plays a significant role in planning potential opportunities in the implementation of the Food Security Doctrine.

At the same time, the period of lengthy economic reforms significantly affected agricultural production, which was reflected in a decrease in agricultural production and the weakening economic potential of agricultural producers located in the Siberian Federal District. The main reason for the decline in agricultural production is the lack of efficient use of existing economic resources, such as land and labor [6]. The authors would like to note that during the economic reforms of the last few decades, the main damage was suffered by the enterprises engaged in crop production. In particular, this affected the Republic of Buryatia, the Trans-Baikal Territory, the Novosibirsk and Kemerovo Regions. The largest sown areas are located in the Altai Territory – 5,409.3, the Omsk Region – 3,029.9 and the Novosibirsk Region – 2,353.3 thousand ha.

Table 1: Sown area of agricultural crops (thousand ha).

Regions	Sown area				Sown areas for grain			
	2000	2015	2016	2018	2000	2015	2016	2018
Siberian Federal District	16,740	15,027	15,073	15,125	10,179	9,884	9,888	9,889
Republic of Altai	106	108	104	103	19	7	6	5
Republic of Buryatia	362	154	147	143	253	86	84	83
Republic of Tuva	44	27	36	345	29	6	6	6
Republic of Khakassia	281	242	243	242	141	93	92	92
Altai Territory	5,345	5,395	5,409	5,407	3,415	3,633	3,634	3,757
Trans-Baikal Territory	1,927	208	200	200	1,084	1,044	1,112	1,213
Krasnoyarsk Territory	340	1539	1560	1597	244	140	140	136
Irkutsk Region	939	675	676	679	559	411	413	415
Kemerovo Region	1,142	972	962	964	644	606	608	610
Novosibirsk Region	2,719	2,340	2,354	2,359	1,744	1,518	1,579	1,645
Omsk Region	2,965	3,030	3,023	3,031.1	1,778	2,147	2,149	2,202
Tomsk Region	489	340	356	358.8	271	198	197	199

On average, across the country and the Siberian Federal District, a decrease in agricultural land occurred by more than one and a half times, which negatively affected the sown areas of grain crops.

In order to evaluate the efficiency of the agricultural sector from an economic point of view, it is necessary to evaluate the profitability of production. In order to assess the economic efficiency of agriculture, Table 2 considers the profitability of the sold final products of crop and livestock production by regions of the district. The table shows that the crop sector is by 19.8% more efficient than livestock, in which the proportion of profitable organizations is 9.8%.

It is noteworthy that in the Trans-Baikal Territory, the Irkutsk and Kemerovo Regions, as well as in the Republic of Khakassia, crop production organizations are unprofitable. This is primarily due to the reduction of agricultural land and the dependence of the industry on the "vagaries" of nature. The most profitable, due to favorable natural and climatic conditions, this industry is in the Altai Territory – 10.5, the Republic of Buryatia – 12.3 and the Novosibirsk Region –14.9%.

Table 2: Profitability of agricultural sectors of the Siberian Federal District, %

Regions	Profitability of livestock products sold			Profitability of crop products sold		
	2013	2015	2018	2013	2015	2018
Siberian Federal District	4.5	12.9	10	5.8	21.0	19.3
Republic of Altai	-12.0	1.5	9.8	33.8	29.5	12.8
Republic of Buryatia	-7.0	21.9	12.4	-0.2	17.9	1.9
Republic of Tuva	-28.9	-13.2	-3.8	8.0	12.5	10.6
Republic of Khakassia	-7.8	-2.9	-2.5	-10.7	-8.3	-1.0
Altai Territory	2.3	10.3	10.7	11.0	31.5	36.2
Trans-Baikal Territory	-12.1	-16.5	-24.3	8.0	11.6	-5.0
Krasnoyarsk Territory	4.5	8.3	10.9	8.2	24.5	22
Irkutsk Region	12.3	14.3	10.8	-3.5	-9.2	-7.8
Kemerovo Region	-1.9	7.3	3.9	-5.6	8.6	-4.3
Novosibirsk Region	10.7	19.4	15.9	5.7	17.2	19.9
Omsk Region	2.0	16.8	8.5	4.3	17.7	7.2
Tomsk Region	5.2	11.7	4.2	-10.3	9.0	35

Significant volatility in crop production profitability indicates that agriculture is heavily influenced by the climatic conditions associated with the geographical location of the district. In addition, one of the reasons for the decrease in crop production is a decrease in the fertility of agricultural land, due to the lack of replenishment of nutrients of mineral fertilizers, as well as the lack of measures to protect plants. The equipment of the industry with agricultural machinery has significantly decreased over the years of reform, which leads to an increase in the load on 1 unit of equipment by 2-2.5 times. This leads to an increase in harvesting time, resulting in the loss of a significant number of agricultural products [5].

As for livestock, the most profitable agricultural organizations are located in the Tomsk Region – 34%, the

Altai Territory – 36.2, the Krasnoyarsk Territory – 21.5 and the Novosibirsk Region – 19.8%.

In order to make the use of arable land more efficient, the work of skilled personnel is required. However, difficult working conditions, seasonality, poor quality of social infrastructure and low incomes of workers led to the migration of skilled workers from rural areas.

Confirmation that agriculture is not a sufficiently attractive industry for specialists is the data presented in Figure 1.

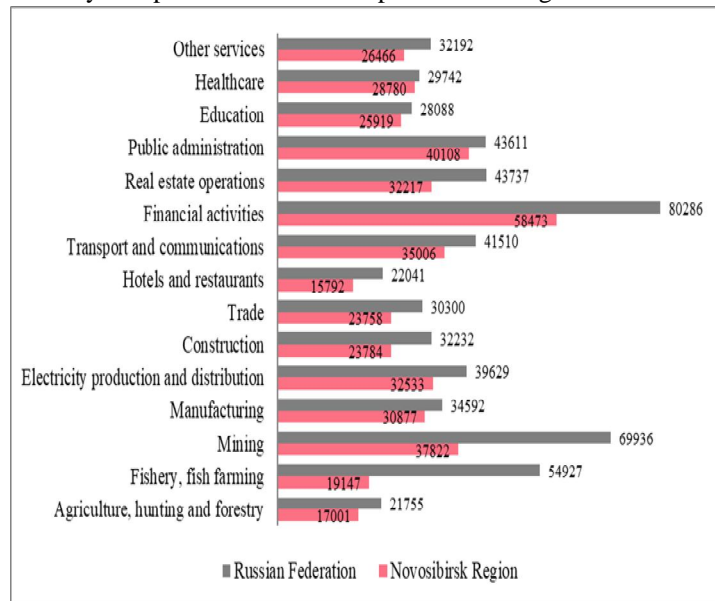


Figure 1: Average wage by type of economic activity in the Novosibirsk Region, 2018

The analysis of statistical indicators shows that the cash income of the rural population is significantly inferior to the income of the urban population. During the period under review, stabilization of the cash income of the rural population was observed. In 2018, the excess of urban income over the income of the rural population was 13%. The low level of socio-economic development and the lack of developed social infrastructure limit the ability of the population to receive alternative types of income.

Consumer spending, which primarily depends on income, is considered as a macroeconomic indicator showing the amount of household spending on personal consumption of goods and services, which is the main gross domestic product and a component of aggregate demand [20]-[25].

It is worth paying attention to the fact that expenditures of rural residents are 1.5 times lower than urban ones. Over the past few years in rural areas, there has been a positive trend of cost reduction of 17%. The reduction in cash costs is primarily due to savings.

In the definition of gross domestic product, key expenditures are consumer spending, investment, public investment, and net exports. According to numerous studies, the size of real GDP should not necessarily increase every year; this refers

only to the direction of the economy, the so-called "trend"; In domestic economic literature, GDP growth leads to economic growth, which is a quantitative and qualitative improvement of the social product and factors of its production [26]-[31]. One of the important indicators characterizing consumer spending as an important component of gross domestic product is the standard of living, i.e. the share of food expenditures in the general structure of household expenditures [32]. The population of Russia is still forced to spend a large part of its funds on the purchase of groceries, so by the end of 2018, the share of expenditures on the purchase of food products in the structure of household spending amounted to 33.5%. The maximum for this indicator was observed in the structure of consumer spending of households in the North Caucasian (41.8%) and Southern (38.1%) Federal Districts.

In turn, in order to satisfy the growing needs of the population in food products, the development of agro-industrial sectors is required [33]. The development of agriculture and agribusiness as a whole gives a significant multiplier effect in the growth of national income. Unfortunately, little attention was paid to this promising industry, until the introduction of sanctions by Western countries forced the state and business to intensify the efforts in this direction [34]-[37]. It should be noted that this industry provides a huge impact on the aggregate demand, consumption and savings of citizens. World experience shows that the development of agriculture, given its animated effect, made it possible to overcome the depression in the United States and ensure economic development in Europe and China. According to the World Bank, the average share of agriculture in GDP for 2018 amounted to 9.36%: Kazakhstan – 4.18%, Belarus – 6.4%, Ukraine – 10.14%, China – 7.19%

The availability of high-quality food products is of great importance for the formation of the living standards of the population, and since economic growth is not only a quantitative, but also a qualitative improvement of the public product, special attention should be paid to the import, production, and consumption of ultra-processed foods, palm oil, tobacco, alcohol, sugar in order to reduce the spread of noncommunicable diseases to which they lead. Since the health of a nation is a productive resource, the main wealth of any social system. The quality of health determines the competitiveness of the workforce and the development of the economy as a whole [4].

Table 3:- The structure of imports of basic food products of the Russian Federation

Name of goods	2016		2017		2018	
	thousand ton	million USD	thousand ton	million USD	thousand ton	million USD
meat, fresh and frozen	625.9	1,766.4	643.1	2,064.9	409.2	1,454.0
poultry, fresh and frozen	223.7	316.2	227.4	359.9	221.7	362.5
fish, fresh and frozen	358.4	979.8	428.8	1139.7	407.2	1,269.4
milk and cream, concentrate	230.2	497.3	239.3	520.2	166.8	304.7
butter	102.1	387.2	98.8	530.1	89.3	425.9
butter and other fats and oils made from milk; milk pastes	104.9	400.1	99.7	534.5	90.5	431.6
coconut oil (copra), palm kernel or babassu oil and their fractions	90.4	131.4	72.9	120.3	74.4	99.7
palm oil and its fractions	885.2	647.1	891.6	702.1	1060.1	748.8
citrus	1,526.8	1,160.8	1,564.9	1,189.2	1,682.8	1,231.5
coffee	171.5	516.5	189.6	639.0	195.5	592.8
tea	164.4	548.3	168.8	525.0	163.8	497.0
grain crop	-	343.9	-	357.9	-	327.6
products and canned meat	20.3	64.8	17.7	75.0	18.3	77.8
raw sugar	259.5	110.4	14.4	9.3	6.5	4.9
white sugar	269.9	143.8	246.3	116.9	315.3	134.5
cocoa bean	47.8	158.6	53.7	136.9	55.2	145.0
products containing coco	75.1	343.8	99.3	461.2	119.9	540.4
alcoholic and non-alcoholic beverages	-	1,824.6	-	2,492.7	-	2,681.7

Overseas in 2018, food was delivered in the amount of \$25.8 billion, compared with \$16.8 billion in 2013. Russia took the first place in the world in wheat supplies. The medium-term development plans include the ten largest world exporters of agricultural products. According to the information provided on the website of the Ministry of Agriculture, the state will allocate 406.8 billion rubles to achieve this goal, which will be used to develop production and agrolgy, remove trade barriers and promote Russian products abroad.

5. CONCLUSION

To summarize, it can be stated that the increase in rural incomes is an important component of the main macroeconomic indicator – the gross domestic product of the state. Without a quantitative increase in this indicator, it is not possible to achieve the economic growth of the state. Therefore, given the effective mechanism for the distribution of cash income between economic sectors, it must be remembered that economic growth implies an increase in the living standards of the population, and that is why it is considered as one of the most important characteristics of the country's economic development. The growing needs of the population in high-quality food products require the development of agro-industrial sectors, which are able to demonstrate a significant revival in the growth of national income. In this connection, it is necessary to strengthen the support measures and increase the prestige of agriculture through the introduction of digital technologies, create jobs and increase employment.

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