

LABOR PRODUCTIVITY IN RA AGRARIAN SECTOR: DYNAMICS AND PROSPECTS

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Introduction: One of the widely used indicators of the efficiency of agricultural production is labor productivity. Increasing productivity in the agrarian sector and ensuring sustainable development of the industry on its basis is a priority task in the context of restrictions on the imports of products from countries. Only high productivity can ensure an increase in the volume of gross domestic product, achieving sustainable economic growth and a constant increase in the average per capita income.

Despite sufficient consideration in the economic literature of the issue of increasing labor efficiency in the agrarian sector of the economy, the issues of studying the productivity of labor as one of the main criteria for effectiveness, studying factors, and identifying potential for increasing the efficiency of the sector, where technological and economic-organizational features remain relevant. This determines the relevance and significance of further study of this issue.

This article **aims** to conduct an analysis of labor productivity in the agrarian sector of Armenia and identify the determinants of labor productivity. In the scope of the research goal following tasks were set:

- to study the labor resources in RA,
- to analyze the labor market in Armenia according to different spheres of economic activity,
- to study the dynamics of labor resources in the agrarian sector for past years,
- to analyze the dynamics of labor productivity in the agrarian sector.

Numerous studies are devoted to the issue of labor productivity as the main indicator of effectiveness in the agrarian sector. In the works of A.N. Lubkova, A.G. Suleymanova, V.F. Mashenkova, A.A. Paronyan, the main theoretical aspects of the categories “production efficiency”, “labor efficiency and productivity”, their essence, content, distinctive features and significance in the research and analysis of agricultural labor resources are considered. In relevant literature, the point of view of labor productivity as the main factor of expanded reproduction is of particular interest. Several studies are devoted to the analysis of factors and potential for agricultural productivity growth¹.

¹ Buraeva E., Labor productivity in agriculture Agro-oriented region: problems and growth factors (on the example of the Oryol region), Regional Economics: Theory and Practice, 37 (2015) 44-47.

Literature review. Labor productivity is an indicator defining the effectiveness, state, and development perspectives of a given economic activity¹. The difference in profitability between countries also depends on the difference in labor productivity, especially in the agrarian sector. This claim is manifested in two directions: the first is the high degree of population employment in the agrarian sector, and the second is that the difference in labor productivity in the agrarian sector in developed countries is greater compared to other sectors².

The efficiency of agricultural production is also expressed by labor productivity: based on its growth, crop yield increases, production costs decrease, and profitability increases³.

The study of the issues of labor productivity in the agricultural sector has a special relevance. The growth of labor productivity conditions the expanded rates of agricultural reproduction and the satisfaction of the population's needs for food products. In the context of deepening the policy of import substitution and ensuring the country's food security, labor productivity has a special significance⁴.

The purpose of any economic activity is to obtain some results, that is, the production of certain products, the sale of goods, and the provision of services. Moreover, the greater the total output, the smaller the costs/inputs per unit of product. In other words, in the case of high labor productivity, by increasing the volume of the production, the costs incurred on it decrease. The efficiency of labor use is measured by the labor productivity indicator.

Labor productivity is the productivity of a specific work process in a certain period, that is, the efficiency of a person's purposeful production activity. It represents the relationship between the amount of output produced and the labor spent on its production. Labor productivity represents the possibility of creating a certain amount of consumer value in a unit of working time with the specific work of a person⁵.

Methodology. The studies of foreign and domestic researchers were the theoretical basis for solving the tasks set in the scope of this article. The logical, statistical, and comparative analysis scientific methods were implemented during the research. For the calculation of labor productivity, we calculated the labor productivity coefficient, which

¹ Andrey Yu Gusev, Irina G Koshkina, Labour productivity in the agricultural sector of the national economy is a key factor in the rise of production efficiency, IOP Conf. Series: Earth and Environmental Science 949 (2022) 012037, doi:10.1088/1755-1315/949/1/012037

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doi:10.1088/1755-1315/949/1/012037

² Cesar Blanco, Xavier Raurich, Agricultural composition and labor productivity, Journal of Development Economics, Volume 158, 2022, <https://doi.org/10.1016/j.jdeveco.2022.102934>

³ Stolyarova O. A. Increasing labor productivity and efficiency of use of labor resources in agriculture of the Penza region, Magazine "Niva Povolzhya" No. 1 (46) February 2018, 75-82 pp., p. 75

⁴ Sokolov O., Labor productivity in agriculture, Journal Science and Education 2022, No. 2. https://www.elibrary.ru/download/elibrary_49458603_19484994.pdf

⁵ Hakobyan L., Chepechyan Sh., Agricultural Economics, Yerevan-2012-268 p., p. 10.

represents the gross agrarian product per unit of labor expenditure (in our case the value of Gross agrarian product (GP, million AMD) was divided by the number of employees in the agrarian sector (L, man)). The formula of labor productivity (LP) is the following:

$$LP = GP/L^1$$

Discussion. Today, one of the issues of the development of the modern economy is increasing the production efficiency in the agriculture sector. In obtaining that goal, increasing labor productivity is of great importance. Currently, the dynamics of labor productivity determines the degree of development and the stability of the agriculture sector. Without increasing labor productivity, agricultural products will be uncompetitive in both foreign and domestic markets. This issue is especially relevant for small, developing countries like Armenia.

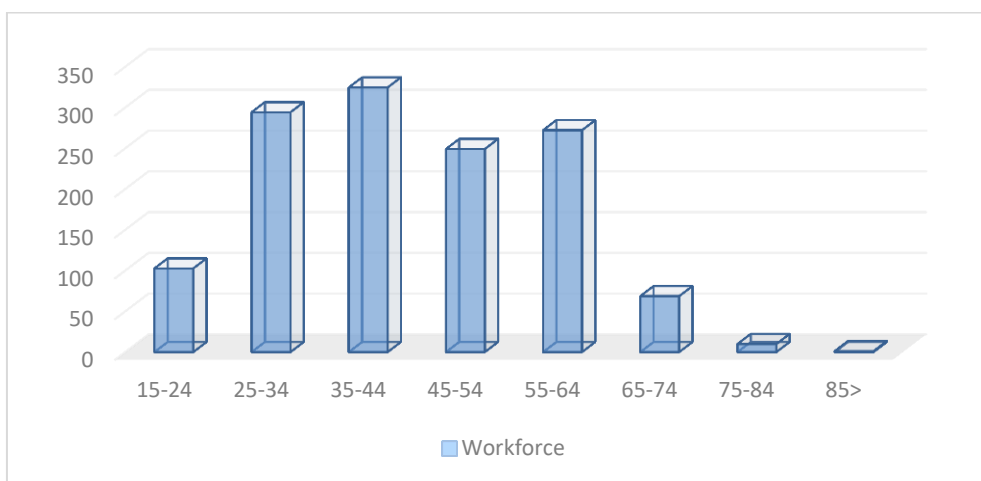


Figure 1. The RA workforce according to age groups, 2022, thousand man²

In 2022, 44.4% of the Armenian population, or 1322.3 thousand people were considered able to work³. The data in the Figure makes it clear that the majority of the workforce is in the 35-44 age group. According to official statistical data, the capital Yerevan has the largest share of the workforce (Figure 2).

¹ Same place, p. 104.

² RA Statistical Committee, Labor Market in Armenia, 2023, Labor, p. 89.

³ RA Statistical Committee, Labor Market in Armenia, 2023, Labor, p. 89.

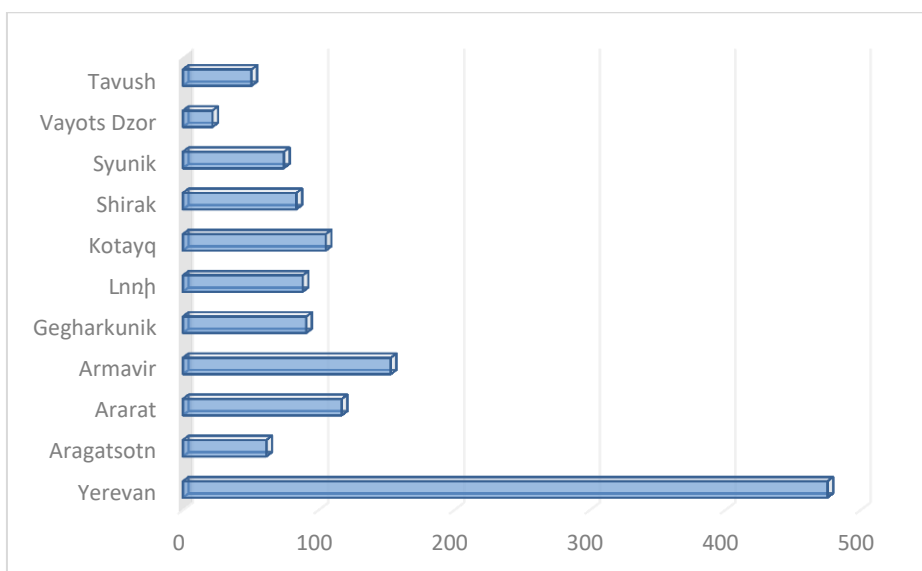


Figure 2. The workforce in different regions and Yerevan, 2022, thousand people¹

The largest part of the workforce is the urban population. However, there are fewer unemployed among the rural population than in the urban. In rural areas, 7.9% of the population is considered unemployed, the employed make up 92.1% of the rural population. Meanwhile, 16.9% of the urban population is unemployed (Figure 3).

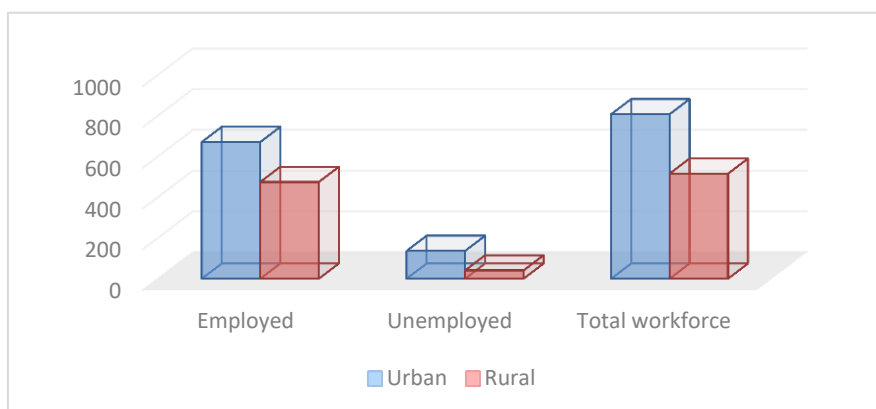


Figure 3. The RA workforce in urban and rural areas²

According to the official statistical data, the majority of the employed population in RA works in the field of services - 56% of the employed, industrial field employs 13% of the employed, agriculture - 22%, and construction sector - 9% (Figure 4).

¹ Same place, p. 100.

² Same place, p. 106.

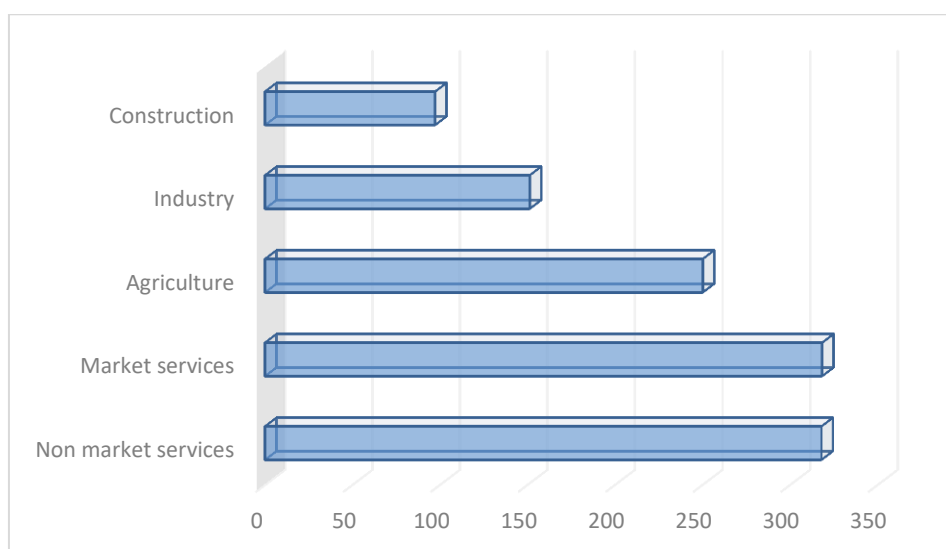


Figure 4. The employed in RA by economic activity groups, 2022, thousand man¹

Logically, the majority of those employed in agriculture are the population of rural areas - 95.4% or 238.5 thousand people and 4.6% or 11.5 thousand people employed in agriculture are urban population².

Based on the above-mentioned data, let's calculate the labor productivity in the agriculture sector of Armenia, for which we need the data on labor expenditure on agriculture production and corresponding agriculture output³. In agriculture, the output from labor activities is the GP (gross product) indicator, and the labor expenditure is consumed labor hours, man-hours, man-days, or, simply, the number of workers. To ensure the compatibility between indicators, as well as to obtain results that accurately reflect reality, the time series of the gross product indicator was adjusted by the Consumer Price Index (CPI). Based on the formula mentioned in the methodology section, let's calculate the labor productivity in the agriculture sector for the past decade and analyze the dynamics.

¹ RA Statistical Committee, Labor Market in Armenia, 2023, Employment, p. 219.

² Same place.

³ Buraeva E., Labor productivity in agriculture Agro-oriented region: problems and growth factors (on the example of the Oryol region), Regional Economics: Theory and Practice, 37 (2015) 44-47.

Table 1

The dynamics of labor productivity in RA agrarian sector, 2013-2022¹

	Gross product, Million AMD ²	Labor resources, Thousand people ³	CPI	Labor productivity, Million AMD/man
2013	919089,4	422,1	105.6	1.7
2014	982958,7	394,8	104.6	1.9
2015	945438,0	379,0	103,7	2.0
2016	878491,7	338,1	98.9	2.4
2017	908617,3	317,1	102.6	2.5
2018	892926,7	266,2	101.8	2.6
2019	853259,8	235,9	100.7	3.6
2020	833317,4	229,6	103.7	3.2
2021	934381,3	237,5	107.7	3.6
2022	1021367,2	250,0	108.3	3.4

In 2022, 3.4 million AMD of gross product was received per worker in agriculture (Table 1). Labor productivity in the agrarian sector is growing dynamically (Figure 5). Most specifically in 2022, compared to 2013, it increased by 1.7 million AMD/person. Such dynamics are determined by two main factors. The first is that the number of people employed in agriculture has decreased year by year. The second is the increase in machinery and equipment invested in agriculture and corresponding state support programs. In particular, the state support program for the construction or reconstruction of small and medium-sized "smart" farm buildings and their technological support in the field of animal husbandry, the programs for the implementation of hail protection nests in horticulture, the implementation of modern irrigation technologies, the state support programs for the leasing of agricultural machinery and equipment, etc.

According to the 2022 annual report of the "State Support Programs for Agriculture" in the scope of "Agricultural Machinery Leasing Support Project" alone from 2018-2022 period 2268 units of agriculture machinery was obtained (Figure 6)⁴.

¹ The table was composed by the authors based on the data of the Statistical Committee.

² Source: <https://armstat.am/am/?nid=12&id=03001>, last accessed on 10/02/2024.

³ The RA Statistical Committee, Labor Market in Armenia, 2014-2023, Employment.

⁴ "The annual report of the State Support Programs for Agriculture, 2022", source: <https://mineconomy.am/media/22735/2022.pdf>, last accessed on 16/04/2024.

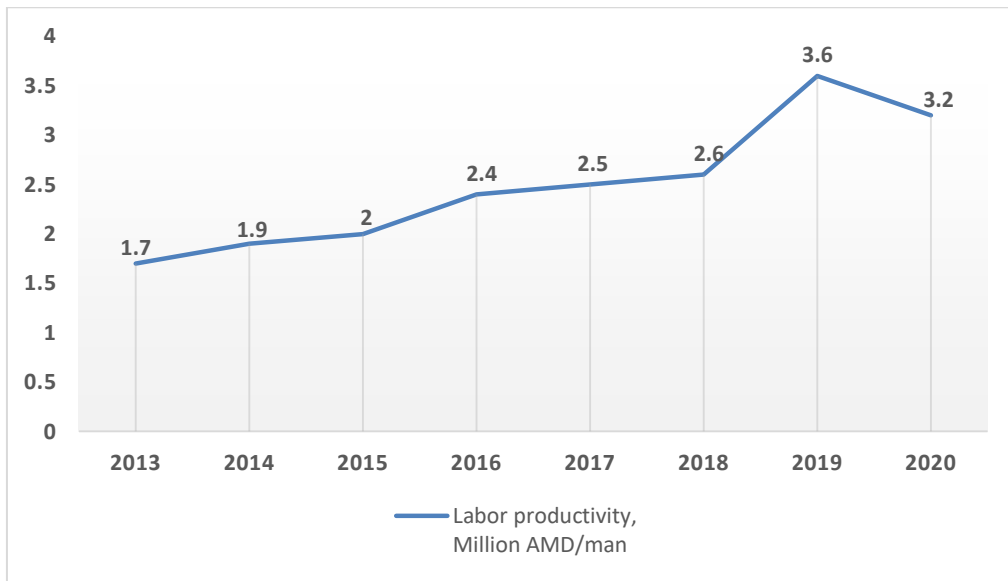


Figure 5. The dynamics of labor productivity in RA agrarian sector, 2013-2022¹

This implies that the level of mechanization in agrarian sector has risen resulting to a reduction in hand labor use. All these factors contributed to the growth of output and the reduction of labor expenditure.

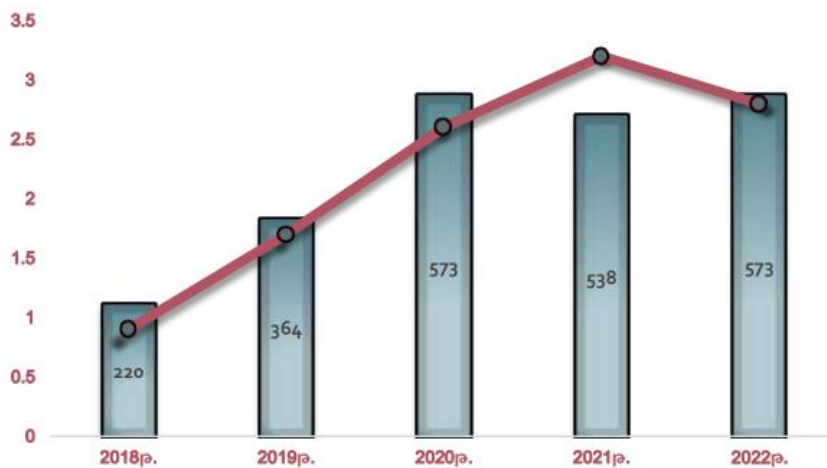


Figure 6. The number of agricultural equipment acquired in 2018-2022, units²

¹ The figure was composed by the authors based on the data of the Statistical Committee.

² Source: The official website of RA Ministry of Economy, <https://mineconomy.am/media/22735/2022.pdf>, last accessed on 16/04/2024.

In summary, we can state that the acceleration of labor productivity in agriculture is an objective necessity and is important for solving various economic and social issues. The role and importance of labor productivity growth lies in the fact that it is the main source of increasing the gross agricultural product and contributes to the food security of the country. It leads to a reduction of labor expenditure, thus reducing the number of employed in agriculture who find work in other sectors of the economy. Ultimately this leads to increasing the production efficiency in horticulture and animal husbandry.

Scientific novelty. The scientific novelty of the article lies in the fact that the effectiveness of the use of labor in the agriculture sector of the Republic of Armenia was evaluated through a quantitative assessment.

Conclusions. Labor productivity in agriculture is a complex economic category. It is determined by different methods, in this article we have chosen the method of the ratio of the gross product and the average annual employed in agriculture. This method expresses not only the level of annual labor productivity but also the degree of labor utilization during that year. This is the most important indicator of the efficiency of expressing the use of labor resources in agriculture.

By analyzing the dynamics of labor productivity in the RA agrarian sector, it was revealed that in 2022, 4.09 million AMD of output was received per unit of labor. According to our research findings, it became clear that the growth of labor productivity was conditioned by the decrease in the number of employed in the agriculture sector and the introduction of new machinery and equipment in the sector. The latter contributes to the reduction of labor expenditure and the increase of labor productivity per unit of output.

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**ԱՇԽԱՏԱՆՔԻ ԱՐՏԱԴՐՈՂԱԿԱՆՈՒԹՅՈՒՆԸ ՀՀ ԱԳՐԱՐԱՅԻՆ ՈԼՈՐՏՈՒՄ.
ԴԻՆԱՄԻԿԱՆ ԵՎ ՀԵՌԱՆԿԱՐՆԵՐԸ**

**Մերի Համբարձումի Մուրադյան
Լևոն Աշոտի Հովնանյան**

Համառոտագիր: Աշխատանքի արտադրողականության բարձրացումը հանդիսանում է առավել հրատապ խնդիր, որից կախված են գյուղատնտեսության ընդլայնված վերարտադրության տեմպերը և իր արտադրանքներով բնակչության պահանջմունքների լրիվ բավարարումը: Աշխատանքի արտադրողականության աճը հանդիսանում է համընդհանուր օրենք, ինչը յուրահատուկ է բոլոր տնտեսության բոլոր ոլորտներին: Սակայն ի տարբերություն տնտեսության մյուս ոլորտների, գյուղատնտեսության մեջ այն հաշվարկվում է որոշակի առանձնահատկություններից ելնելով: Վերջինս կապված է աշխատանքի արտադրողականության մակարդակի վրա կլիմայական պայմանների և ճյուղի սոցիալական կառուցվածքի ազդեցության հետ: Հոդվածի **նպատակն** է իրականացնել ՀՀ ագրարային ոլորտում աշխատանքի արտադրողականության վերլուծությունը՝ որոշելով այն պայմանավորող հիմնական գործոնները: Նպատակին հասնելու համար, դրվել են հետևյալ խնդիրները.

- ուսումնասիրել ՀՀ-ում աշխատուժը,
- Վերլուծել Հայաստանում զբաղվածությունը ըստ տնտեսության հիմնական ոլորտների,
- Ուսումնասիրել գյուղատնտեսության մեջ զբաղված բնակչության դինամիկան վերջին տարիներին,

- Հենվելով ուսումնասիրությունների վրա վերլուծել գյուղատնտեսության մեջ աշխատանքի արտադրողականության դինամիկան:

Հոդվածի **գլխական նորույթը** կայանում է նրանում, որ վեր է հանվել ՀՀ ագրարային ոլորտում աշխատուժի օգտագործման արդյունավետությունը՝ քանակական գնահատման միջոցով:

Հոդվածում կատարված ուսումնասիրությունների արդյունքում պարզ է դարձել, որ ՀՀ ագրարային ոլորտում վերջին տասնամյակում գրանցվել է աշխատանքի արտադրողականության աճ, ինչը մի կողմից պայմանավորված է եղել ոլորտում զբաղվածների թվի կրճատմամբ, իսկ մյուս կողմից մեքենայացման մակարդակի բարձրացմամբ:

Բանալի բառեր. Աշխատանքի արտադրողականություն, գյուղատնտեսություն, զբաղվածություն, աշխատուժ, արդյունավետություն:

ПРОИЗВОДИТЕЛЬНОСТЬ ТРУДА В АГРАРНОМ СЕКТОРЕ РА: ДИНАМИКА И ПЕРСПЕКТИВЫ.

Мери Амбарцумовна Мурадян
Левон Ашотович Овнанян

Аннотация. Повышение производительности труда острейшая задача, от которой зависят темпы расширенного воспроизводства сельского хозяйства, полное удовлетворение потребностей населения его продукцией. Рост производительности труда — это универсальный закон, единый для всех отраслей экономики. Однако, в отличие от других отраслей экономики, в сельском хозяйстве он рассчитывается исходя из определенных особенностей. Последнее связано с влиянием климатических условий и социальной структуры отрасли на уровень производительности труда. **Цель** статьи – провести анализ производительности труда в аграрном секторе РА, определив основные определяющие ее факторы. Для достижения цели были поставлены следующие задачи:

- изучить рабочую силу в РА,
- проанализировать занятость в Армении по основным секторам экономики,
- изучить динамику численности населения, занятого в сельском хозяйстве за последние годы,
- анализировать динамику производительности труда в сельском хозяйстве на основе исследований.

Научная новизна статьи заключается в том, что посредством количественной оценки выявлена эффективность использования рабочей силы в аграрном секторе Республики Армения.

В результате исследований, проведенных в статье, стало ясно, что в последнее десятилетие в аграрном секторе РА произошел рост производительности труда, что

произошло за счет сокращения численности занятых в отрасли на одну единицу с одной стороны, и повышение уровня механизации с другой стороны.

Ключевые слова: Производительность труда, сельское хозяйство, занятость, рабочая сила, эффективность.

LABOR PRODUCTIVITY IN RA AGRARIAN SECTOR: DYNAMICS AND PROSPECTS

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Abstract. Increasing labor productivity is a relevant economic issue, which determines the rates of expanded reproduction in agriculture and the satisfaction of the population's demand. The growth of labor productivity is a universal law, and it applies to all sectors of the economy. However, unlike other sectors of the economy, in the agriculture sector labor productivity has certain calculation features. The latter is related to the influence of climatic conditions and the social structure of the sector on the level of labor productivity. This article **aims** to conduct an analysis of labor productivity in the agrarian sector of Armenia and identify the determinants of labor productivity. In the scope of the research goal following tasks were set:

- to study the labor resources in RA,
- to analyze the labor market in Armenia according to different spheres of economic activity,
- to study the dynamics of labor resources in the agrarian sector for past years,
- to analyze the dynamics of labor productivity in the agrarian sector.

The scientific novelty of the article lies in the fact that the effectiveness of the use of labor in the agriculture sector of the Republic of Armenia was evaluated through a quantitative assessment.

As a result of the studies carried out in the scope of this article, it was revealed that in the past decade, an increase in labor productivity was recorded in the RA agriculture sector, which was conditioned by the reduction of the number of employed on the one hand, and by the increase in the level of mechanization on the other hand.

Keywords. Labor productivity, agriculture, employment, labor, efficiency.