RUSSIAN–ARMENIAN UNIVERSITY

"CENTER FOR THE PROMOTION OF ECONOMIC EDUCATION AND RESEARCH" FOUNDATION

Implementation of Fiscal and Industrial Policies to Overcome the Economic Crisis and Ensure Sustainable Economic Growth in Armenia

PART 1

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The monograph is devoted to the analysis of economic drivers and industrial policy in the Republic of Armenia, taking into account international experience, as well as theoretical studies on the topic under discussion. Based on a retrospective analysis of the Armenian economy the authors highlight the issues of the industrial policy and give recommendations for its improvement.

The book will be of interest to researchers, policy-makers, teachers, undergraduate, graduate, and postgraduate students whose studies are focused on the issues of government regulation, industrial policy and economic growth.

The work reflects the results of a study implemented with financial support from the “Center for the promotion of economic education and research” foundation. The content of the study reflects the views of the authors.

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Content

1. Review of the international experience of anti-crisis regulation and the analysis and assessment of economic growth factors in Armenia.

1.1. Literature review of the anti-crisis regulation methods, 1929-1934, Great Depression

World history has seen many economic crises during the last two or three centuries, affecting individual countries and reflecting overall economic development. Schumpeter's work[1] that brings to the attention the idea of economic fluctuations in the short-term, medium-term and long-term can be considered the fundamental basis for describing the nature and essence of crisis phenomena in economics. Moreover, all three periods of economic instability are interdependent and interconnected economic fluctuations, which are similar in terms of stages but differ in their consequences and severity. A crisis is considered as the lowest point of economic fluctuations.

Haberler[2] defines the "crisis" as a transition from economic recovery to a recession, which, as a rule, is accompanied by a reduction in economic activity, an increase in prices, high unemployment, and negative social consequences.

We should note that if the crisis was considered a deviation from the potential long-term growth in the first stage of studying the economic cycles, then modern approaches consider the business cycle and growth in the same field. Such an approach implies a different vision of regulatory policy in individual business cycle phases. This thesis will be discussed in more detail in the following chapters of the current research.

Among the first economic crises, it is worth mentioning the economic crisis in Great Britain in 1825 and then the crises of 1836, 1847, 1873-1878, 1900-1903, 1907, and 1920, which already had a more systemic nature and included both the USA and almost all European countries. So, every new stage of development of the world economy and strengthening of trade and foreign economic relations between countries was inevitably accompanied by a period of further economic crisis.

However, the crisis of 1929 ("The Great Depression"), which started in the USA and affected the entire Western economy, was different from the previous crises in terms of the consequences for the world economy. In this sense, only the global financial crisis of 2007-2009 can be compared with the "Great Depression" regarding the negative consequences for the world economic system. Describing the "Great Depression" and its implications for the world economy, David Kennedy[3] documents the reduction of the gross volume of industrial production in the United States, Canada and Europe (primarily Great Britain, Germany and France) by 46% at that time the foreign trade turnover of market economies was reduced by 67%, the reduction in consumer demand led to a drop in agricultural prices by an average of 40-60%, unemployment level reached 25% leading to a reduction in real household income by 58%.

[1] Schumpeter J. A. Business cycles. A theoretical, historical and statistical analysis of the capitalist process. Vol. 1. N. Y.— L., 1939, P. 130—137.

[2] Gottfried von Haberler, Prosperity and Depression: A theoretical analysis of cyclical movements, 1937. (this is the 3rd edition pub. in 1946)

[3] Kennedy, David M. Freedom from Fear: the American People in Depression and War, 1929—1945: — New York; Oxford: Oxford University Press, 2001. — 988 p.

The primary data source of the US economic situation during the Great Depression is the collective work of American scientists, "Recent social trends in the United States"[4]. Thus, according to the results of 1930, the decline of the US GDP was -8.5% and two years later -12.9% (Figure 1.1.1).

Inflation and unemployment indicators also showed negative dynamics. Deflation was observed in all four years of recession in the US economy. The minimum index of CPI was recorded in 1932 and accounted for -10.3%.

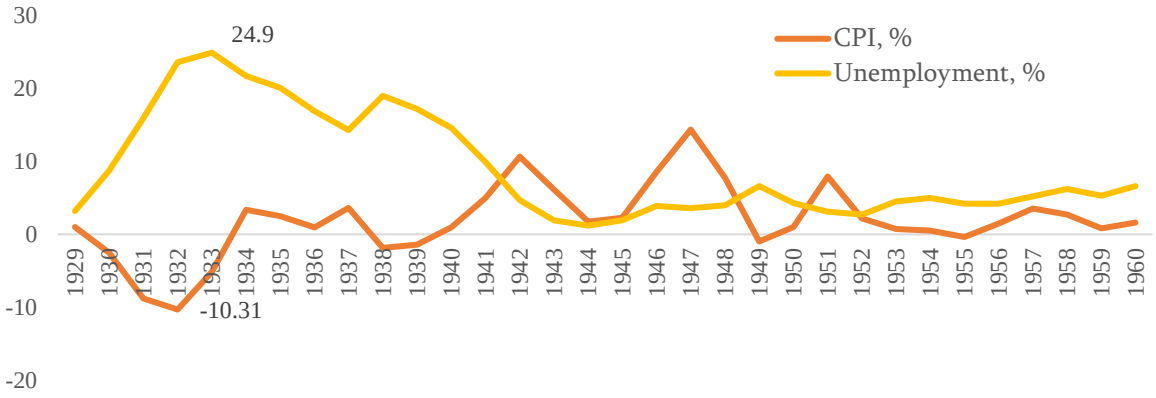

Figure 1.1.1. CPI (%, growth rate) and unemployment (%)

Source: US Federal Reserve System database - https://www.federalreserve.gov/

Amid deflation, the unemployment rate peaked in 1933 at 24.9%, which the US Bureau of labour statistics[5] estimated at 12.8 million people. In the early 19th century, there were no official statistics on unemployment in the United States, so unemployment data varies among authors.

Thus, some authors[6] rely on the estimations of Paul Douglas, according to which the unemployment rate in 1923-1926 was 9%. Others use the assessments of Irving Bernstein[7], who considers unemployment in the range of 10-13% for the same period. As a result, assessing the accurate scale of the disaster in the labour market during the years under consideration is quite challenging. Still, we can get an approximate picture of what happened.

As a result of long-term issues with high unemployment, the real income of the population was reduced, further exacerbating income inequality in the United States. According to some calculations, a high level of social inequality in the United States was recorded twice in the first half of the 20th century: in 1916 and 1929, on the eve of the "Great Depression"[8]. It is where the structural economic problems come from, eventually leading to the global crisis.

Many studies were devoted to the causes of the crisis of 1929. One of the most important works is Alan Greenspan's research[9], where he states that the origins of the "Great Depression" come from the deep systemic problems of the world economy, the change in the world order

[4] President's Research Committee on Social Trends: Recent Social Trends in the United States (Westport, Conn.: Greenwood, 1970).

[5] https://www.bls.gov/opub/mlr/1948/article/pdf/labor-force-employment-and-unemployment-1929-39-estimating-methods.pdf

[6] President's Research Committee on Social Trends: Recent Social Trends in the United States (Westport, Conn.: Greenwood, 1970).

[7] Kennedy, David M. Freedom from Fear: the American People in Depression and War, 1929—1945: — New York; Oxford: Oxford University Press, 2001. — 988 p. — (Oxford history of the United States, vol. 9)

[8] Gene Smiley "A Note on New Estimates of the Distribution of Income in the 1920s", "A Journal of Economic History", Vol. 60, Issue 4, Dec. 2000, Pp. 1120–1128.

[9] Alan Greenspan, Adrian Wooldridge. Capitalism in America. Penguin; 1st edition (October 16, 2018). P. 477

due to the rejection of fixed exchange rates, introduction of the "gold standard", as well as the First World War. The author emphasizes the inability of the world's leading economies to adapt to the changes in the global economic system and to adapt their own economies and regulation mechanisms to the emerging new global economic order. In this sense, we can draw parallels with the global financial crisis and the current crisis caused by the COVID-19 pandemic.

A detailed analysis of the causes of the Great Depression leads to an overview of fundamental macroeconomic regulation approaches. According to the Keynesian approach[10], in the 1920s, overproduction in the United States took place in the conditions of a severe money supply shortage (attachment to the gold standard limited the growth of the money supply), which in turn led to deflation and, as a consequence, a reduction in economic activity causing instability and crisis in the financial system. Monetarists assumed that one of the leading causes of the crisis was also the money shortage. Still, they also highlight that the lack of financial reserves was related to the restraining policy of the Federal Reserve System (FRS) during the period under consideration. The adoption of the "Prohibition" law also had a negative impact on the US economy. According to some estimates, the American treasury lost about 11 billion US dollars during the twelve years of the law's operation[11]. These measures could become an additional reserve to ensure liquidity in the banking system during the highest point of the crisis. The speculative operations in the stock exchanges, and as a consequence, the fall of the stock exchange in 1929, played a fatal role[12].

Among the factors deepening the economic recession in the late 1920s we can include the global tariff competition, accompanied by the devaluation of national currencies, as well as the banking crisis, caused by the increase in the refinancing rate despite the lack of liquidity in the financial systems. The Central Bank of Armenia also used such an approach during the 2008-2009 and 2014-2015 crises.

In the late 1920s, the situation in the USA required a radical change in the approaches to macroeconomic regulation, or rather, the creation of the necessary regulative tools, which would allow the government to timely and effectively neutralize internal and external shocks not only during the crisis but also in all phases of the economy's business activity. The reforms of the early 1930s attempted to overcome the development "trap", which allows us to draw parallels with the current stage of development of the world economy and the urgent need to review the existing approaches to macroeconomic regulation. We can argue that currently, as well as during the "Great Depression", there is a transformation of property relations, the structure and content of the labour market, the financial system, approaches to regulation and control, etc. The difference is that the reforms of the beginning of the 1930s were carried out in a stable institutional environment. In contrast, the institutional system is currently subject to modernization and changes.

It is necessary to examine the regulatory mechanisms that come from the Great Depression. Below is a list of the significant measures implemented in the United States during the Great Depression. Considering that the "Great Depression" required anti-crisis regulation, we will consider the mechanisms of

[10] Кейнс Дж.М. Общая теория занятости, процента и денег. (The general theory of employment, interest and money, 1935). Перевод с английского Н.Н. Любимова. (Москва: Государственное издательство Иностранной литературы, 1948)

[11] Lerner, Michael. “Prohibition: Unintended Consequences.” PBS, Public Broadcasting Service.

[12] Toni Turner. A Beginner`s Guide to Short Term Trading: Maximize Your Profits in 3 Days to 3 Weeks. Adams Media (June 1, 2008). P. 336

stimulating demand and supply in the conditions of GDP decline.

The first group of measures concerns monetary regulation (Table 1.1.1). We should note that according to many authors[13], the policy of the Federal Reserve System during the "Great Depression" was wrong, and according to various estimates, it deepened and prolonged the economic crisis in the United States.

To reduce speculative operations in the stock markets, the FRS continuously raised the refinancing rate, which resulted in a shortage of financial reserves in the real sector worsening the situation considering the decline in economic activity. In this context, FRS also raised the reserve requirement from 13% to 26% in 1935-1937.

Table 1.1.1. The main anti-crisis measures during the "Great Depression" in the USA. Monetary Policy

Instrument	*Description*	*Result*
Policy rate control	An increase in the policy rate and tight monetary policy.	Restraining the money supply
Reserve requirement	The reserve requirement was raised from 13% (1935) to 26% (1937).	Restraining the credit supply
Devaluation of US dollar	After confiscating gold from the population, based on the Gold Reserve Act passed in January 1934, Roosevelt issued a proclamation on January 31, 1934, reducing the gold base of the US dollar from 25.8 to 15 5/21 and setting the official price of gold per ounce at the 35 US dollar[14].	US dollar devalued by 41 %
Dollar devaluation policy	Two billion new dollars were issued	Increased export potential

Source: Compiled by the authors

Another mistake of the FRS was that the monetary policy aimed at ensuring the stability of the US dollar and maintaining the "gold standard", actually to the detriment of the banking system, which at that time was characterized by a high level of deposit outflows and was on the verge of collapse. As a result of monetary policy tightening, the FRS managed to maintain the stability of the US dollar and adhere to the "gold standard", leading to an even deeper decline in economic activity both in the short and medium term. The policy of devaluation of the US dollar was implemented only in 1934, which led to an easing of monetary policy to some degree.

FRS also applied a money supply expansion policy, which was implemented in mid-1932. The FRS was actively carrying out asset purchase operations in the open securities market, which expanded the money supply and thus eased monetary policy. These measures allowed lowering interest rates of government and corporate bonds, which was assumed to stop deflationary processes and stimulate economic activity.

[13] See Hamilton, James, (1987), Monetary factors in the great depression, Journal of Monetary Economics, 19, issue 2, p. 145-169, https://EconPapers.repec.org/RePEc:eee:moneco:v:19:y:1987:i:2:p:145-169; Ben S. Bernanke, 2002. "Deflation: making sure \"it\" doesn't happen here," Speech 530, Board of Governors of the Federal Reserve System (U.S.).

[14] Coode T. H., Bauman J. F. People, Poverty, and Politics: Pennsylvanians During the Great Depression. East Brunswick, N. J., Associated University Presses, 1981.

FRS also applied the policy of expanding the money supply, which was implemented in mid-1932. The FRS was actively carrying out asset purchase operations in the open securities market, which expanded the money supply and thus eased monetary policy. These measures allowed lowering government and corporate bonds' interest rates, which was assumed to stop deflationary processes and stimulate economic activity. However, as Meltzer[15] points out, deflation in the face of low nominal interest rates meant that the actual cost of borrowing was very high, as any loans needed to be repaid in US dollars, which had a much higher value. And as the FRS, focusing on reducing the economic recession, tightened monetary policy again, the US economy plunged again in late 1932.

Thus, the US monetary policy was contractionary during the decline in economic activity, and in practice, it showed the disadvantages of such an approach. Moreover, from the point of view of economic growth, the tight monetary policy in crisis conditions is restraining both from the aggregate demand side (increasing the value of money in the economy through the policy rate) and from the aggregate supply side (maintaining deflation in the economy).

Unlike monetary policy, fiscal regulation during the Great Depression became crucial for stimulating economic activity in the country. The main anti-crisis measures implemented within the fiscal policy are presented in Table 1.1.2.

At the same time, most measures aimed to stimulate aggregate demand by expanding the expenditure side of the state budget while the public debt was increasing. In particular, the share of the public sector in GDP significantly increased. The government introduced measures to subsidize agriculture, pursued a protectionist policy, focused on developing specific economic industries with high technology, and much more. Thus, the state directly intervened in market processes in the economy.

Table 1.1.2. The main anti-crisis measures during the "Great Depression" in the USA. Fiscal Policy

Instrument	*Description*	*Result*
Tax policy	Increasing the number and amount of taxes on large enterprises	Increase tax revenues of the state budget
Expenditure policy	Increase in state budget expenditures. Growth in social payments, benefits, and subsidies. Compensation for reduced consumer demand with government spending.	Federal government spending more than doubled between 1932 and 1940[16]:

[15] Bordo, Michael D., 2006. "Review of A History of the Federal Reserve. Volume I (2003) by Allan H. Meltzer," Journal of Monetary Economics, Elsevier, vol. 53(3), pages 633-657, April.

[16] Badger A. The New Deal: The Depression Years, 1933-1940. N. Y., Hill-Wang, 1989.

Instrument	*Description*	*Result*
Establishment of the Federal Emergency Relief Administration[17] (National Industrial Recovery Act, July 16, 1933[18]).	FERA's problems included[19]: a) construction, repair and improvement of highways, public structures and any other state enterprises and communal facilities b) Preservation of natural resources and development of their extraction, including water control, use and purification, prevention of soil and coastal erosion, development of hydro-energy, the transmission of electric power, construction of various river and port facilities and prevention of floods.	Creating new jobs at the expense of the budget and increasing consumer demand.
Limitation of Competition	557 basic and 189 additional so-called "Fair-trade acts"[20] in various fields were drawn up. The parties guaranteed a minimum wage as well as a united wage for all workers in a class. These codes covered 95% of all industrial workers.	The codes significantly restricted competition. Great Depression researchers Cole and Ohanian's[21] estimations showed that the 1939 recovery could have been reached five years earlier without the Roosevelt administration's anti-competitive measures.
Remunerated public works	In 1933-1939, under the authority of the Public Works Department (PWA) and the Civil Works Department (CWA), the number of people involved in public works (construction of canals, roads, and bridges, often in uninhabited and swampy areas) reached 4 million. About 4 billion USD has been spent helping the unemployed through public employment. The average monthly salary was around 50 dollars[22].	Increasing the number of people employed, the Civil Works Department provided employment to 4 million people who built 70% of the new schools, 35% of the new hospitals, and 20 reservoirs in addition to the existing 5, helping to make the river navigable, improving agriculture and other economic facilities, which allowed to increase the income of the population. Nine million trees were planted, and 1/3 of modern roads were built. The rail transportation system has been optimized and improved, connecting the various United States regions.
Industrial policy	Creation of aviation infrastructure.	The Department of Public Works alone ensured the construction of 547 runways and 100 other projects. Two other organizations implemented two thousand projects in aviation and aeronautics, spending half a billion US dollars (85% of all costs)[23].

[17] Federal Emergency Relief Administration, FERA - https://content.lib.washington.edu/feraweb/essay.html
[18] National Industrial Recovery Act of 1933, NIRA
[19] Badger A. The New Deal: The Depression Years, 1933-1940. N. Y., Hill-Wang, 1989.
[20] Leuchtenburg W. Franklin D. Roosevelt and the New Deal, 1932-1940. N. Y., Harper & Row, 1963
[21] Harold L. Cole & Lee E. Ohanian, 2000. "Re-examining the contributions of money and banking shocks to the U.S. Great Depression," Staff Report 270, Federal Reserve Bank of Minneapolis. P. 79
[22] Public Works Administration, America Builds: The Record of PWA, Washington, D.C., 1939, Table 16, P. 284, and Table 20, P. 290.
[23] Johnson M.H. “Laying Foundations: New Deal Public Works and Aviation Infrastructure”. The Journal of Policy History, Vol. 30, No. 4, 2018, P. 696.

Instrument	*Description*	*Result*
Stimulating agriculture	Adoption of the Agricultural Credit Law (May 12, 1933)	Restructuring of the 12-billion farm debt, reduction of mortgage interest, and extension of debt repayment terms. During the following four years, agrarian banks issued loans to half a million landowners for the total sum of 2.2 billion US dollars on preferential terms.
Protectionist policy	The Smoot-Hawley Tariff Act passed, imposing 405 duties on imported goods	Expansion of domestic production, restriction of imports.

Source: Compiled by the authors

We should note that modern anti-crisis measures are also mainly aimed at expanding the money supply by increasing the share of public spending in the economy. So, for example, the amount of additional budget expenses for emergency economic stimulation worldwide reached approximately 12% of world GDP in 2020[24].

The financial system regulation tools are the third group of anti-crisis measures (Table 1.1.3). The speculative development of the financial sector played a crucial role in the crisis of 1929, which repeated during the global financial crisis in 2007-2008. The Fed's tight monetary policy during the Great Depression led to a significant shortage of liquidity in the banking system, which was exacerbated by panic among

[24] World Economic Outlook IMF "A Long and Difficult Ascent", October 2020, P.1

depositors actively withdrawing their investments from the banking system[25].

Table 1.1.3. The main anti-crisis measures during the "Great Depression" in the USA. Financial system regulation

Instrument	*Description*	*Result*
Establishing a system of federal control over the financial system	The Glass-Steagall Act (1933) on the distinction between investment and commercial banks was approved. Approval of the Securities Commission Law.	Recovery of 75% of the activities of the banking system. Regulation over the operations in the securities market. Changes in the composition of loan portfolios of American banks. In 1913, commercial banks placed 53% of their assets in the form of loans to commercial enterprises, 33% invested in securities, and 14% in real estate; by 1929, these figures were already 45%, 38% and 17%, correspondingly[26].
Introduced bank deposit insurance	According to the Glass-Steagall Act (1933), the Federal Deposit Insurance Corporation was created (FDIC[27]): The primary purpose of the FDIC was to insure deposits in the accounts of banks and credit institutions.	Mandatory insurance of deposits up to 5000 USD was introduced.
Subsidizing the mortgage sector	A two-million-dollar loan was provided to homeowners to pay off the debt at a low interest rate.	A quarter of mortgaged houses were saved from an immediate sale.

Source: Compiled by the authors

However, if during the Great Depression, the FRS did not save the banking system by compensating for the lack of liquidity, then in the period 2008-2009, this became the main instrument of regulatory measures to stabilize the situation in the financial market[28].

The most effective measure was related to the protection of the banking system from speculative operations in the stock market. In 1933, the Glass-Steagall Act (Banking Act of 1933)[29] was passed, which limited the power of investment and commercial banks. The Gramm-Leach-Bliley Financial Services Modernization Act of 1999[30] nearly neutralized the Glass-Steagall Act by repealing its key points, particularly the ban on investment transactions. However, the Dodd-Frank Act was passed in 2010[31], restoring most of the Glass-Steagall Act

[25] Michael D. Bordo & John Landon-Lane, 2013. "Does expansionary monetary policy cause asset price booms? some historical and empirical evidence," Journal EconomÃa Chilena (The Chilean Economy), Central Bank of Chile, vol. 16(2), pages 04-52, August.

[26] Kennedy, David M. Freedom from Fear : the American People in Depression and War, 1929—1945: — New York; Oxford: Oxford University Press, 2001. — 988 p. — (Oxford history of the United States, vol. 9)

[27] The Federal Deposit Insurance Corporation (FDIC) - https://www.fdic.gov/

[28] Fishback P. "US monetary and fiscal policy in the 1930s", Oxford Review of Economic Policy, Volume 26, Number 3, 2010, Pp. 386–387

[29] Federal Reserve Bank of St. Louis. "Banking Act of 1933." June 16, 1933, https://fraser.stlouisfed.org/title/466/item/15952.

[30] Federal Reserve Bank of Minneapolis, The Region: Issue on Financial Modernization, March 2000.

[31] Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 929-Z, 124 Stat. 1376, 1871 (2010).

provisions and protecting the banking system from excessive stock market volatility. Also, the Federal Deposit Insurance Corporation was created, introducing the practice of deposit insurance. We should highlight that in the case of each new phase of the crisis in the US financial system, strict regulatory norms were adopted, and in each phase of stabilization, these measures were softened or cancelled. Many authors[32] emphasize a certain cyclicality of regulatory measures related to the financial system. Others[33] attribute this volatility in approaches to the financial system regulation to the political response to financial crises, which explains the cyclical nature of regulatory mechanisms in the financial system. Moreover, according to some estimations[34], such a frequent change leads to increased government spending during the crisis. Therefore, a more stable (cyclical) approach to regulating the financial system is preferable to the situational (countercyclical) approach[35].

Among the regulation mechanisms of the financial system, it is also necessary to highlight the policy of subsidizing mortgage loans, which was applied during the "Great Depression" to mitigate the social consequences of the crisis somewhat.

"The Great Depression" and J. Keynes's ideas during the anti-crisis policy became the basis for modern macroeconomic regulation. Many provisions of the theory of John. M. Keynes, in our opinion, is relevant to this day. The experience of anti-crisis policy in the period 1929-1933 formed the basis for the regulatory mechanisms both to maintain or ensure macroeconomic stability and to achieve economic growth and development in the medium and long term.

Today, by regulation, we mean, first of all, a mechanism that requires enterprises and other non-governmental organizations to comply with social goals in their activities[36]. Mitnick[37] distinguishes two main approaches in the theories of state regulation: public interest theory and private interest theory.

Public interest theory implies regulation primarily for the protection and benefit of society. At the same time, this approach is accompanied by a market fiasco since excessive state intervention in economic activity undermines the principles of perfect competition and leads to failures in the real sector[38]. On the other hand, the theory of private interests emphasises the interests of the real sector at the expense of public and social issues. These theories reflect the critical dilemma of economic development, which is based on the need to choose between "fairness" and "efficiency" and the search for the optimal balance between these two categories in implementing state regulation in the economy.

At the same time, state (macroeconomic) regulation generally assumes two key directions or approaches[39]. The first approach (anti-cyclical or countercyclical regulation) implies an active state intervention in economic processes during periods of crisis to neutralize or at least minimize the negative consequences of economic recession. The second approach (cyclical regulation) implies a policy of stimulating economic growth (or development)

[32] See Dagher, J (2018), "Regulatory Cycles: Revisiting the Political Economy of Financial Crises", IMF Working Paper, WP 18/8.; Goldstein, M (2009), "Reforming financial regulation, supervision, and oversight: What to do and who should do it", VoxEU.org, 24 February.

[33] Reinhart, C M, and K Rogoff (2009), *This time Is Different: Eight Centuries of Financial Folly*, Princeton University Press.

[34] Laeven, L, and F Valencia (2012), "Systemic banking crises database: An update".

[35] Almasi, P, J Dagher, and C Prato (2018), "Regulatory Cycles: A Political Economy Model", Working Paper.

[36] Lehne, R. (2006). Government and Business: American political economy in comparative perspective. Washington, DC: CQ Press.

[37] Barry M. Mitnick. The Political Economy of Regulation: Creating, Designing and Removing Regulatory Forms, New York: Columbia University Press, 1980.

[38] Bernstein, M. H. (1955). Regulating business by independent commissions. Princeton: Princeton University Press.

[39] Musgrave, R.A. Public Finance in Theory and Practice / R.A. Musgrave, P.B. Musgrave. − 5th ed. − NY: McGraw-Hill, 1989. – 664 p.

in the long-term perspective in a stable macroeconomic environment and achieving potential GDP. Both approaches can include demand stimulation mechanisms (neo-Keynesian approach) and supply stimulation mechanisms (neoconservative approach).

It is possible to distinguish approaches to macroeconomic regulation based on the strategic goal underlying the state policy. On the one hand, there is a high level of well-being in the population, which means focusing on economic development in the long term, which can be achieved only by increasing labour productivity. On the other hand, the government faces the task of ensuring macroeconomic stability through a stable price level. All other macroeconomic goals and objectives become secondary and can be ignored in case of conflict with the key aim of curbing inflationary pressures. This idea is the basis of inflation targeting policy.

Thus, we can distinguish two approaches to macroeconomic regulation: the policy of maintaining macroeconomic stability and increasing labour productivity.

Considering the versatility of the state's goals, we decided to take these four groups of approaches as a basis and to analyze both the theoretical base and the international experience of state regulation in conditions of both crisis and economic growth through their prism.

We have classified the regulatory mechanisms of various policies, considering the key instruments of state regulation. The main postulates of the classification proposed in this work are presented in Table 1.1.4.

Table 1.1.4. The main approaches to macroeconomic regulation

	Policy for Maintaining Macroeconomic Stability	***Policy to improve labour productivity***	***Cyclical policy***	***Countercyclical policy***
Approach (strategy)	Rein in inflation	Stimulating supply	Stimulating supply (in conditions of growth)	Rein in inflation
Type of policy by the impact on economic growth	Neutral policy (does not depend on economic cycles)	Expansionary policy	Expansionary policy (in conditions of growth) Contractionary Policy (in conditions of recession)	Contractionary Policy (in conditions of growth) Expansionary policy (in conditions of recession)
Goal	Prices level	Economic development	Smoothing of economic cycles	Smoothing of economic cycles
Period	Long-term	Long-term	Short-term	Short-term
Tools	Monetary policy Foreign exchange policy Fiscal policy	Innovation policy (science and technology) Investments in human capital Ensuring labour market flexibility Antitrust policy Tax policy Expenditure policy Policy to create an institutional environment	Monetary policy Fiscal policy	Monetary policy Fiscal policy Financial markets regulation policy
Application conditions	In conditions of economic growth. In conditions of recession.	In conditions of economic growth	In conditions of economic growth. In conditions of recession.	In conditions of economic growth. In conditions of recession.
Results	Prices stability	Improving the well-being of the population	Extension of periods of economic growth. Reducing structural imbalances in times of crisis.	Extension of periods of economic growth Reducing the duration of crisis periods

Source: Compiled by the authors

1.2. Policies to Improve Labour Productivity

The approach to macroeconomic regulation based on the policy of increasing labour productivity is based on the thesis that when the growth of savings cannot constantly stimulate economic growth, improving productivity growth comes to the forefront from the economic growth and development perspective. Only the increase in labour productivity ensures the potential GDP growth. It contributes to economic growth and development, causing an increase in the population's well-being and quality of life.

By increasing productivity, we mean, first of all, increasing production efficiency[40]. Productivity enables an economy to "use its physical and human resources to produce output and income"[41].

Among the key approaches to determining the growth of labour (economic) productivity, we can highlight the "neoclassical" model approach, based on growth due to exogenous factors (capital accumulation, domestic national savings) and the "new growth theory" approach assuming endogenous growth factors (scientific achievements, high technology, technological breakthrough). Paul Krugman[42] directly links the increase in the population wealth level with the economy's productivity growth rate.

Many classics[43], as well as modern authors,[44] show the importance of increasing productivity to ensure sustainable economic growth.

In the case of developing countries, the need to increase productivity growth is coming to the forefront as a decisive factor in sustainable and long-term growth. According to Lewis[45], Kuznets[46], and Chenery,[47] economic development is driven by a transformation in the economic structure where resources move from less productive to more productive sectors.

Among the key factors affecting productivity, we should highlight the development level and quality of human capital, science and technology, technological equipment of the economy, infrastructure, etc. Arrow[48] and Allen[49] give the most significant weight to investment in increasing the economy's productivity, as well as successful government regulation. The key arguments in favour of the investment component are that, as a rule, new achievements in science and technology occur precisely through attracting external or internal investments.

Bates[50] notes the importance of the soundness of institutional environment, property rights, and public policy in increasing

[40] Productivity Commission (PC), Submission no. 20, p. 1
[41] PC, A Quick Guide to the Productivity Commission, 2009. p.1.
[42] Krugman, P, The Age of Diminished Expectations: US Economic Policy in the 1980s, MIT Press, Cambridge, 1992, p. 9.
[43] See Hicks, J. R. (1946). Value and capital, 1939. Mathematical Appendix, 311312.
[44] See Hall, Robert E, and Charles I Jones. 1999. "Why Do Some Countries Produce so Much More Outper per Worker than Others?" Quarterly Journal of Economics 114 (1): 83–116. https://doi.org/10.1162/003355399555954.; Easterly, William, and Ross E. Levine. 2001. "It's Not Factor Accumulation: Stylized Facts and Growth Models." The World Bank Economic Review 15 (2): 177–219. https://doi.org/10.2139/ssrn.269108.; Caselli, Francesco. 2005. "Chapter 9 Accounting for Cross-Country Income Differences." Handbook of Economic Growth. https://doi.org/10.1016/S1574-0684(05)01009-9.
[45] Lewis, Arthur W. 1954. "Economic Development with Unlimited Supplies of Labour." The Manchester School 22 (2): 139–91. https://doi.org/10.1073/pnas.1006652108.
[46] Kuznets, Simon. 1957. "Quantitative Aspects of the Economic Growth of Nations: II. Industrial Distribution of National Product and Labor Force." Economic Development and Cultural Change 5 (S4): 1–111. https://doi.org/10.1086/449740.
[47] Chenery, Hollis B. 1960. "Patterns of Industrial Growth." The American Economic Review 50 (4): 624–54. https://doi.org/10.1257/jep.6.3.79.
[48] Arrow, K.J. (1969), "Classificatory Notes on the Production and Transmission of Technological Knowledge", American Economic Review 59 (May), 29-35.
[49] Allen, R.C. (1983), "Collective Invention", Journal of Economic Behavior and Organization 4, 1-24.
[50] Bates, W. R. (2001). How Much Government?: The Effects of High Government Spending on Economic Performance. New Zealand Business Roundtable.

productivity and achieving high and sustainable growth rates. In terms of creating a more favourable environment for improving productivity, Barro[51] and Barro et al.[52] propose to consider public investment in public goods, which will be supplemented by private capital and will lead to sustainable economic growth in the long term. Engerman, Sokoloff[53], and Acemoglu et al.[54] expand the concept of "public goods" to include political and economic institutions that are of fundamental importance for increasing economic productivity and growth. It is important to note that in this case, the emphasis is on endogenous growth factors allowing the state to pursue a more flexible macroeconomic policy.

Adam Smith[55] emphasizes the importance of improving transport and infrastructure, as well as the worker's personal initiative to improve his working conditions to ensure productivity growth. Smith argues that the routine specialized tasks of lower-level workers are more amenable to being replaced by more efficient machines. Marshall[56] and Young[57] come to similar conclusions. Modern authors, e.g. Nakamura,[58] argues that at the present stage of science and technology development, many middle and lower-level management positions are easily replaced by computer technology.

Romer[59], Grossman and Helpman[60], Aghion et al.[61] identify investment in a country's research and development potential as the driving force behind sustainable and long-term growth, which drives technological progress.

Among the important drivers for improving productivity, Marshall[62] and other authors[63] highlight population growth, primarily in terms of building up human capital and enhanced communications. Bates[64] highlights the labour services and capital, reducing taxes on goods, ensuring personal security and protecting property rights.

In the 1950s, Solow[65] and Swan[66] developed a growth model in which changes in physical capital, labour, and total factor productivity determine the economic growth rate. At the same time, direct investments are the key source of investments in human capital;

performance, New Zealand Business Roundtable, Wellington, August 2001.

[51] Barro, Robert J. 1990. "Government Spending in a Simple Model of Endogeneous Growth." Journal of Political Economy 98 (5): S103–25. https://doi.org/10.1086/261726.

[52] Barro, Robert J., and Xavier Sala-I-Martin. 1992. "Public Finance in Models of Economic Growth." The Review of Economic Studies 59 (4): 645. https://doi.org/10.2307/2297991.

[53] Engerman, S, and Kenneth L. Sokoloff. 2000. "Institutions, Factor Endowments, and Paths of Development in the New World." Journal of Economic Perspectives 14 (3): 217–32. http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Institutions+,+Factor+Endowments+,+and+Paths+of+Development+in+the+New+World#1.

[54] Acemoglu, Daron, Simon Johnson, and James A. Robinson. 2001. "The Colonial Origins of Comparative Development: An Empirical Investigation." American Economic Review 91 (5): 1369–1401. https://doi.org/10.1257/aer.91.5.1369.; Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as a fundamental cause of long-run growth. Handbook of economic growth, 1, 385-472.

[55] Smith, A. (1963), The Wealth of Nations, Volume 1 (first published in 1776), Homewood, Illinois: Richard D. Irwin.

[56] Marshall, A. (1898), Principles of Economics, Fourth Edition (first edition 1890, eighth edition 1920), London: The Macmillan Co

[57] Young, A.A. (1928), "Increasing Returns and Economic Progress", Economic Journal 38, 527-542.

[58] Nakamura, A.O. and P. Lawrence (1994), "Education, Training and Prosperity", John Deutsch Institute for the Study of Economic Policy (March), 235-279.

[59] Romer, Paul M. 1987. "Growth Based on Increasing Returns Due to Specialization." The American Economic Review 77 (2): 56–62. https://doi.org/10.2307/1805429.

[60] Grossman, Gene M., and Elhanan Helpman. 1991. "Quality Ladders in the Theory of Growth." The Review of Economic Studies 58 (1): 43. https://doi.org/10.2307/2298044.

[61] Aghion, Philippe, and Howitt. 1992. "A Model of Growth through Creative Destruction." Econometrica 60 (2): 323–51. https://doi.org/10.2307/2951599.

[62] Marshall, A. (1898), Principles of Economics, Fourth Edition (first edition 1890, eighth edition 1920), London: The Macmillan Co.

[63] Diewert, W. E., & Fox, K. J. (1999). Can measurement error explain the productivity paradox?. The Canadian Journal of Economics/Revue canadienne d'Economique, 32(2), 251-280.

[64] Bates, W. R. (2001). How Much Government?: The Effects of High Government Spending on Economic Performance. New Zealand Business Roundtable.

[65] Solow, R. M. 1956. "A Contribution to the Theory of Economic Growth." The Quarterly Journal of Economics 70 (1): 65–94. https://doi.org/10.2307/1884513.

[66] Swan, T. 1956. "Economic Growth and Capital Accumulation." Economic Record 32 (2): 334–61. https://doi.org/10.1111/j.1475-4932.1956.tb00434.x.

thus, the model assumes an exogenous factor of economic growth.

Lucas[67] studies the accumulation of human capital through the education perspective, which creates the necessary environment for stimulating productivity and economic growth. Rebelo[68] sees human capital as a supplement to physical capital and suggests that the combined use of both types of resources can increase economic productivity and provide sustainable economic growth.

The above allows us to summarize the key factors determining labour productivity growth. The most comprehensive classification of productivity growth factors is presented by Kim et al.[69] and includes the following closely related categories:

- innovation as a factor in the generation and implementation of new technologies;
- education as a transmitter of new technologies;
- development and flexibility of the labour market;
- the market environment, as a factor determining the efficient and flexible allocation of resources between economic sectors and firms;
- infrastructure (transport, telecommunications, energy, water supply, etc.) as a factor in ensuring the economic activity of households, enterprises and markets;
- institutions (in regulatory, judicial and political systems) as a factor in providing social and economic stability and protecting property and citizens' rights.

Harris suggested another classification of factors stimulating economic productivity growth[70]:

- increase in investments (in reproducible or physical capital);
- increasing investment in education, training and human capital;
- increase in primary resources;
- increase in production due to increased returns to scale;
- increase in Total Factor Productivity (TFP), usually due to the deepening of specialization;
- improvements in the functioning of markets;
- access to new knowledge about the development of new products and processes.

Considering the above, we should note the factors that will hinder economic productivity growth. In addition to the absence of the economic productivity growth factors mentioned above, such factors include:

- High taxes, a high tax burden on the economy.
- High and unstable inflation.

So, the task of state regulation focused on productivity growth should include the above factors in the country's economic activity. The essential tools and mechanisms for improving labour productivity are presented in Table 1.2.1.

The mechanisms listed above require implementation within the framework of an integrated (systemic) approach and cannot lead to a positive trend in economic growth and an increase in the level of well-being in the case of inconsistent implementations of the tasks set for macroeconomic regulation.

[67] Lucas, Robert E. 1988. “On the Mechanics of Economic Development.” Journal of Monetary Economics 22 (1): 3–42. https://doi.org/10.1016/0304-3932(88)90168-7.

[68] Rebelo, S. 1991. “Long-Run Policy Analysis and Long-Run Growth.” Journal of Political Economy 99 (3): 500– 521. https://doi.org/10.1086/261764.

[69] Kim, Young Eun, Norman Loayza, and Claudia Meza-Cuadra. 2016. “Productivity as the Key to Economic Growth and Development.” World Bank Research Policy Brief, no. 3. http://documents.worldbank.org/curated/en/314741472533203058/Productivity-as-the-key-to-economicgrowth-and-development.

[70] Harris, R.G. (2001), “Determinants of Canadian Productivity Growth: Issues and Prospects”, Forthcoming in Productivity Issues in a Canadian Context, A. Sharpe and S. Rao (eds.), Montreal: McGill-Queen’s Press.

Table 1.2.1. The main policy mechanisms for improving labour productivity

Tools	*Mechanism*	*Result*
Innovation policy (science and technology)	Attracting foreign and domestic investments in high-tech sectors. Tax incentives for high-tech sectors of the economy.	Introduction of high technology through FDI attraction. Development of high-tech industry.
Investments in human capital	Investments (public and private) in education and science. The connection between universities and the real sector through product design (product, service, personnel).	Human capital development. Generation of science and technology.
Ensuring labour market flexibility	Ensuring a close connection between the labour market and the market of educational services.	Low unemployment rate. Effectiveness of investments in education and human capital.
Tax policy	Low rates of profit tax for businesses.	Reducing the tax burden on the economy.
Expenditure policy	Investment in infrastructure and public goods.	Ensuring the economic activity of households, enterprises and markets. Increasing the quality of life.
Institutional environment formation policy	Legislative and normative base. Judicial independence. The rule of law. Anti-corruption policy.	Ensuring social and economic stability, protection of property rights and citizens' rights.

Source: Compiled by the authors

1.3. Policy of maintaining macroeconomic stability

The policy of maintaining macroeconomic stability is based on the thesis that by maintaining stability in the macroeconomic environment through a stable level of key indicators, it is possible to ensure economic growth in the long term. At the same time, maintaining a low level of inflation is the basis for ensuring macroeconomic stability.

The works of Keynes, Smith, Ricardo, Say, Pareto, Mill, Marx, Marshall, Fisher and a number of other economists are dedicated to the issue of macroeconomic stability. The theories of macroeconomic stability define it as sustainable economic development in the absence of crises. At the same time, stability means preserving or maintaining key macroeconomic indicators at a comparable level. Thus, the entire macroeconomic policy is about keeping these indicators stable both in the short and long term. In most cases, a stable prices level comes to the forefront as a guarantor of macroeconomic stability. Keynes presents macroeconomic stability as a combination of external and internal equilibrium, which determines the full employment of the population, sustainable economic growth and low inflation[71]. Therefore, the mechanisms for achieving economic growth are the provision of full employment on the part of fiscal policy and a low level of inflation on the part of monetary policy.

Modern theories[72] add to these criteria also indicators of the state budget (public debt and budget deficit) and foreign exchange policy. The critical factors of macroeconomic stability are reflected in the principles of creating integration unions. Indicators of macroeconomic stability ("Maastricht convergence criteria") were established during the Maastricht treaty, signed by EU members in 1992[73]. These include low and stable inflation; low long-term interest rate, which is necessary for the formation of stable inflationary expectations; a low level of public debt to GDP ratio (not higher than 60% of GDP); a low level of the state budget deficit (not higher than 3%), as well as a stable exchange rate[74].

The criteria for macroeconomic stability for the EAEU member states are reflected in Article 63 of the Treaty on the Eurasian Economic Union of May 29, 2014[75]: state budget deficit (not higher than 3%), public debt (not higher than 50% of GDP) and a stable prices level.

So, the key instruments for achieving macroeconomic stability are fiscal, monetary and foreign exchange policies. The main policy mechanisms for maintaining macroeconomic stability are summarized in Table 1.3.1. A contractionary policy is envisaged in the conditions of economic growth in all cases. The emphasis of such a policy is, first of all, the long-term perspective.

[71] Ocampo J.A., A Broad View of Macroeconomic Stability, DESA Working Paper No. 1, October 2005, p.3

[72] See Benassy-Quere A. et al. (2010) Economic policy. Theory and Practice. Oxford: Oxford University Press; Taylor J. B. (1995) 'Stabilization policy and long term economic growth', in G. Wright, R. Landau (eds.) Growth and development: The economics of the 21st century; Wolf R. D. and Resnick S. A. (2012) Contending Economic Theories. Neoclassical, Keynesian, and Marxian. Massachusetts: The MIT Press.

[73] Treaty on European Union – Final Act, 1992, The Euro: explanatory notes by Directoriate General II – Economic and Financial Affairs, Euro Papers, Number 17, February 1998.

[74] The experience of the member states of the EU currency zone shows that the lack of fiscal regulation harmonization in the context of the united monetary policy led to the general imbalance of macroeconomic regulation and deprived individual economies of the ability to respond effectively to external shocks during the crisis. In addition, the indicators underlying the economic criteria for EU membership currently do not reflect the real performance of fiscal policies in the euro area countries. Thus, the effectiveness of such criteria can be questioned.

[75] "Treaty on the Eurasian Economic Union" (Signed in Astana, 29.05.2014) - https://www.arlis.am/documentview.aspx?docID=95276

Table 1.3.1. The main policy mechanisms for maintaining macroeconomic stability

Tools	*Mechanism*	*Result*
Contractionary monetary policy (inflation targeting)	Refinancing rate, reserve requirement, open market operations	A reduction in the money supply Stable and low level of inflation
Foreign exchange policy	Currency interventions, currency restrictions	A reduction in the money supply. Stable exchange rate of the national currency.
Contractionary fiscal policy	Public debt management, budget deficit control.	Increase in the tax burden, a stable level of budget expenditure.

Source: Compiled by the authors

Contractionary monetary policy

The idea of applying contractionary monetary policy in growth conditions is based on the thesis of the negative impact of inflationary pressure on economic growth. According to Friedman, monetary policy can and should provide such conditions that money does not have a negative effect on the economy[76]. The equilibrium level of prices is a guarantor of macroeconomic stability, and this task should be essential for the monetary authorities. Hence, the theory of maintaining macroeconomic stability is based on providing a stable inflation level by the monetary authorities.

In the expert community, the impact of monetary regulation on economic growth in the context of maintaining a stable and low prices level is somewhat contradictory. The opinions are opposite: from the thesis that restraining the prices level in the long term causes economic growth to the thesis that such a policy leads to a recession and negative consequences for economic growth.

Among the arguments in favour of the first thesis, the following idea is highlighted: inflation is not a factor of macroeconomic destabilization, but it can be considered as such and pose a threat to economic growth in conditions of high inflation or prices volatility[77]. Many authors[78] note that prices stability determines economic growth as the creator of an appropriate stable macroeconomic environment. Other authors[79] express the thesis that with the help of monetary policy instruments aimed at reducing the inflation level in the country, the monetary authorities have the opportunity to stimulate economic growth.

Suppose monetary policy ensures equality between the inflation expectations of economic agents and real inflation. In that case, this policy will not have any impact on investment decisions, which in turn ensures sustainable economic growth in the long term[80]. At the same time, monetary policy cannot influence the potential level of gross output. Therefore, the policymakers can choose between expansionary and contractionary monetary policy depending on whether the economy is operating above or below potential. At the same time, recent

[76] Friedman M. "The Role of Monetary Policy" // The American Economic Review, Vol. 58, No. 1, 1968, pp.12.
[77] Corden M., Macroeconomic Policy and Growth: Some Lessons of Experience, Proceedings World Bank fifth Anaual Conference Qfl. Development Economics, 1990, pp. 59-84.
[78] Levine R., Zervos S., "What We Have Learned About Policy and Growth from Cross-Country Regressions?" The American Economic Review Vol. 83, No. 2, Papers and Proceedings of the Hundred and Fifth Annual Meeting of the American Economic Association, May, 1993, pp. 426-430
[79] Annicchiarico B., Rossi L. Monetary Policy in a New Keynesian Model with Endogenous Growth. Università deglistudidiPavia, # 167 (02-12), 2012, p. 11
[80] Same source, pp. 5-6

studies[81] have shown that indicators of long-term economic growth have a weak correlation with changes in inflation indicators.

More important is the impact of predictable and unpredictable inflation on economic development. Barro[82] argues that empirical evidence shows that high inflation levels are associated with volatile and, therefore, less predictable inflation. Friedman[83] also notes that economic growth is achievable in case of both rising and falling prices, provided that their expected changes are moderate and predictable. On the other hand, there is an opinion[84] that inflation has a negative effect in the long run. In contrast, in the medium and short term, the impact of inflation on economic growth has a contradictory effect. During periods of temporarily high inflation, economic growth slows down. However, after stabilising the price level, the economic growth rate returns to normal.

In their study on the impact of inflation on economic growth, Bruno and Easterly[85] note that in most cases, economic growth during the inflationary crisis was above the world average for this period and below the pre-crisis level. At the same time, the costs of inflation – relative prices volatility, uncertainty, reduction in reliable information about prices, worsening credit terms – become significant only at relatively high levels of inflation. At lower inflation rates, growth in the inflation level may be affected by various supply and demand shocks without showing an evident interdependence. In addition, Bruno and Easterly showed an increase in economic growth due to the decrease in inflation if its level exceeds 40%; in other cases, there is no definite correlation between the increase in economic growth rates and inflation.

Other authors[86] agree with the thesis mentioned above, noting that it is difficult to draw definite conclusions about the positive or negative impact of relatively low and stable inflation rates on economic growth. Sachs[87] notes that while there is agreement that no economy can function efficiently in case of hyperinflation, there is no consensus on the benefits of lower inflation. There is no evidence that a continuous decrease in inflation has benefits matching the costs, and some economists even believe that pushing inflation too low has negative consequences. Bullard and Keating[88] argue that an increase in the money growth rate in an economy with inherently low inflation leads to an increase in long-run real growth. But a persistent increase in the money growth rate in an economy with inherently high inflation has negative implications for long-run real growth.

According to Fischer[89], the negative relationship between inflation and economic growth is reflected in a reduction in investment and a decrease in productivity growth. De Gregorio[90] also mentions the increase in labour cost as a negative factor leading to a reduction in employment and GDP.

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[81] Coats, W. (2000) Inflation Targeting in Transition Economies: The Case of the Czech Republic, ed. by. CNB and IMF.

[82] Барро Р. (1995 г.) «Инфляция и экономический рост», Квартальный бюллетень Банка Англии, май.

[83] M. Fridmen, A.Shwarc. A Monetary History of the United States, 1867-1960. Princeton, N.Y. 1963

[84] Bencivenga, Valerie R., and Bruce D. Smith,1991, "Financial Intermediation and Endogonous Grouth," Review of Economic Studies, Vol.58, pp.195-209.; Allen, Mark, and others "A Balance Sheet Approach to Financial Crisis," IMF Working Paper, 2002. — 02/210 (Washington: International Monetary Fund) P. -34.

[85] Bruno M., Easterly W. "Inflation Crises and Long-Run Growth", Journal of Monetary Economics, Vol. 41, no.1 (February 1998): pp. 3-26.

[86] Stiglitz, J.E. (2003). Globalization and its discontents. W.W.Norton & Company, New York, London, 288 pp.

[87] Sachs, J. (1996) "Economic Transition and American Economic Review, 86, pp.147–152.

[88] Bullard, James, and John Keating, 1995,"The Long-Run Relationship Between Inflation and Output in Postwar Economies," Journal of Monetary Economics, Vol.36,pp.477-96.

[89] Fischer S., "The role of macroeconomic factors in growth". Journal of Monetary Economics 32, 1993, pp. 485512.

[90] De Gregorio J., "Inflation, taxation, and long-run growth". Journal of Monetary Economics 31, 1993, pp. 271-298.

In general, the above arguments lie at the basis of the commitment of modern central banks to contractionary monetary policy for at least the past 30 years. The dynamics of the number of countries pursuing inflation targeting policy (Figure 1.3.1) and the position of the IMF in this matter prove the popularity of the policy of maintaining prices stability.

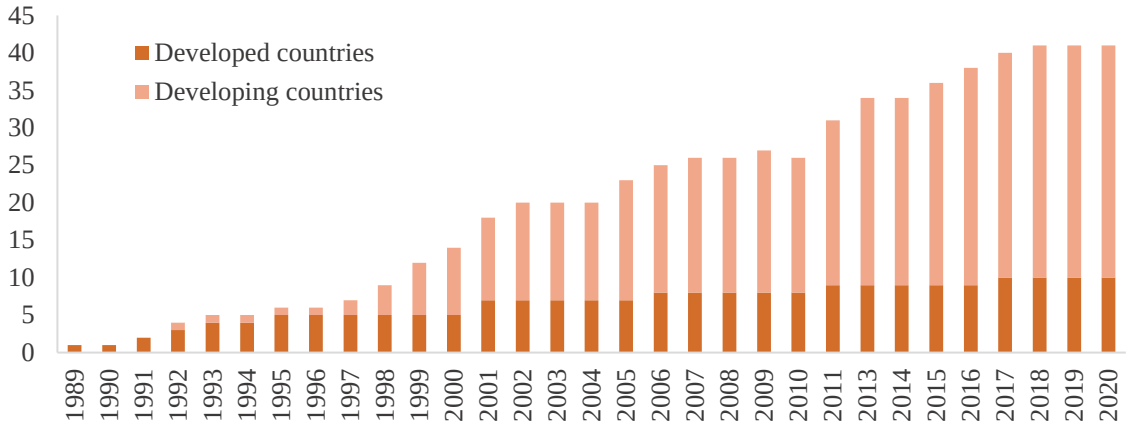

Figure 1.3.1. Inflation targeting countries by development level.

Source: Compiled by the authors based on IMF classification: International Monetary Fund, Annual Report on Exchange Arrangements and Exchange Restriction. – www.imf.org

On the other hand, there are also significant arguments on the thesis that price containment can have a negative impact on economic growth in the long run. Cecchetti and Ehrmann[91] studied the impact of the inflation targeting policy on economic growth in the country. They concluded that in case of supply shocks, monetary policy could keep either inflation or economic growth rates within long-term target levels.

The results of various studies give a general conclusion that the inflation targeting policy contributed to a decrease in the volatility of economic growth rates smoothing the fluctuations. However, none of the studies revealed a noticeable influence of monetary policy on the GDP growth rates[92].

The analysis also showed that the impact of the inflation targeting policy on the rates and volatility of economic growth is ambiguous. Depending on the research method, the selected period and the country sample, the conclusions regarding the role of monetary policy in economic development differ. However, we can argue that maintaining prices stability to the detriment of other macroeconomic policy goals (for example, reducing unemployment) in a developing economy leads to a recession in the long run.

Foreign exchange policy

In the framework of the policy of maintaining macroeconomic stability, all the macroeconomic regulation goals are subordinate to the primary purpose of maintaining prices stability. Hence, the monetary policy should be implemented considering the latter. Regarding the foreign exchange regulation, in the context of maintaining macroeconomic stability, the

[91] Cecchetti S., Ehrmann M. Does Inflation Targeting Increase Output Volatility? An International Comparison of Policymakers' Preferences and Outcomes. Central Bank of Chile. 2002. p. 266.

[92] Svensson L. Inflation Targeting // National bureau of economic research, Working Paper 16654. 2010. pp. 11-12.

priority is to ensure the stability of the national currency. A contractionary foreign exchange policy helps to reduce uncertainty about the exchange rate and the interest rates in the country. Thus, according to Goldstein, the devaluation of the national currency in nominal terms can only lead to an increase in the general price level instead of an increase in real GDP[93].

Gylfason[94] argues that the pegged foreign exchange policy ensures macroeconomic stability and contributes to the growth of foreign trade turnover. Moreover, a stable foreign exchange rate curbs inflation in the country, which, according to the author, is also a positive factor for long-term economic growth.

De Grauwe and Schnabl[95] highlight that the economic growth due to applying the pegged foreign exchange policy pegging policy has two reasons. First, the decrease in uncertainty about the exchange rate stimulates foreign trade. Secondly, the growth of confidence in the country's national currency will reduce the amount of the risk premium of interest rates. Low interest rates, in turn, contribute to the growth of investment in the country and stimulate domestic consumption.

This position determines the monetary authorities' approach to implementing strict foreign exchange regulation for maintaining macroeconomic stability. Thus the CB solves two tasks: ensuring prices stability and maintaining a state of certainty, therefore economic stability for key macroeconomic indicators.

According to another point of view[96], the impact of the foreign exchange regime on economic growth depends, first of all, on the effectiveness of the monetary policy. Thus, any foreign exchange regulation regime can positively impact the economy only if a monetary anchor is used (monetary aggregates or inflation). Without a monetary anchor, any foreign exchange policy, except for the policy of pegged exchange rated, will lead to a decrease in the economic growth rate.

However, in our opinion, such a foreign exchange policy does not allow the economy to be flexible enough to adapt to changes in external conditions, ultimately leading to distortion of price signals and inefficient allocation of resources in the country.

In this context, McKinnon and Schnabl[97] bring the example of the Asian crisis of 1997-1998. They note that before this crisis, most East Asian countries applied the pegged foreign exchange policy against the US dollar, which, according to the monetary authorities of these countries, was supposed to ensure macroeconomic stability in the region. In the early years, such a foreign exchange policy led to a rapid increase in the attractiveness of these countries, increasing the inflow of foreign investments.

However, pegging the exchange rates of national currencies to the US dollar in the face of significantly higher interest rates in these countries compared to the interest rates in the US and Japan led to an increase in the money market speculation spurring the growth of risks for the regional banking system. A relatively less developed securities market and the short-sighted banking policy of using short-term funds for long-term investment also contributed to the growth of instability.

[93] Goldstein, M. Managed Floating Plus. Washington DC: Institute for International Economics, Policy Analyses in International Economics. 2002

[94] Gylfason, T. Fix or Flex? Alternative Exchange Rate Regimes in an Era of Global Capital Mobility, North American Journal of Economics and Finance, 11(2), 2000 p. 173-189.

[95] De Grauwe, P. and Schnabl, G. Exchange Rates Regimes and Macroeconomic Stability in Central and Eastern Europe. CESifo Working Paper, 1182, 2004. p.1-34.

[96] Bailliu, J., Lafrance, R. and Perrault, J.F. Does Exchange Rate Policy Matter for Growth? International Finance, 6(3), 2003. p.381-414.

[97] R. McKinnon, G.Schnabl. The East Asian Dollar Standard, Fear of Floating, and Original Sin Review of Development Economics, 8(3), 331–360, 2004

Garofalo[98], Ghosh[99], and Collins[100] emphasize that the pegged foreign exchange regime stimulates the inflow of investments into the country but hinders faster labour productivity growth. Kappler et al.[101] studied the impact of currency appreciation on changes in the trade balance and real output, concluding that a significant appreciation of the national currency leads to a decrease in net exports due to a reduction in savings and a decline in exports. This effect is especially evident in developing countries. Moreover, the impact on the GDP is insignificant since the increase in domestic demand compensates for the decrease in net exports.

Kappler et al.[102] and Bussiere et al.[103] note that *ceteris paribus*, the strengthening of the national currency reduces the economic growth rate only in developing countries. In their study of the impact of a tight monetary policy on economic growth, McLeod and Mileva[104] found that the lower a country's per capita income, the more significant the impact of currency depreciation on productivity. We should also highlight another study[105] where the authors concluded that implementing a contractionary foreign exchange policy in conditions of active interaction with external markets ensures prices stability while making the economy vulnerable to external shocks.

Thus, the approach to macroeconomic regulation under maintaining stability raises quite a few questions regarding ensuring sustainable economic growth rates.

Contractionary fiscal policy

Since macroeconomic stability policy focuses on price stability, fiscal policy becomes a crucial tool to ensure this goal. Following the example of monetary and foreign exchange policy, fiscal policy should also aim to reduce the money supply to avoid excessive inflationary pressures. Thus, the task of fiscal regulation is to reduce government spending while increasing the tax burden, which in the medium and long term leads to a reduction in the money supply and prices stability. In many cases, such a policy, combined with contractionary monetary policy, causes prices stability and deflationary processes, which always negatively impact economic growth.

Some authors[106] point out that the fiscal policy's timely reaction to economic volatility can be successful from the point of view of ensuring macroeconomic stability. According to Spilimbergo[107], many countries focus on fiscal regulation for achieving macroeconomic stability due to the impossibility of using monetary instruments (currency unions, dollarization, rigid exchange rates, etc.) or the unsustainability of monetary instruments (underdeveloped financial markets, negative

[98] Garofalo, P. Exchange Rate Regimes and Economic Performance: The Italian Experience. Banca D'Italia Quaderni dell'Úfficio Ricerche Storiche, 10, 2005, p.1-50.
[99] Ghosh, A.R., Ostry, J.D., Gulde, A.M. and Wolf, H.C. Does the Exchange Rate Regime Matter for Inflation and Growth? IMF Economic Issues, 2, 1997. p.1-19.
[100] Collins, M.S. On Becoming More Flexible: Exchange rate Regime in Latin America and the Caribbean, Journal of Development Economics, 51, 1996, p.117-138.
[101] Kappler, M., H. Reisen, M. Schularick, and E. Turkisch, E., "The Macroeconomic Effects of Large Exchange Rate Appreciations", Open Economies Review. 2012
[102] Same source.
[103] M. Bussière, C. Lopez, C. Tille. Do Real Exchange Rate Appreciations Matter for Growth? Graduate Institute of International and Development Studies Working Paper No: 06. 2014. 41 pp.
[104] Mcleod D., Mileva E. Real Exchange Rates and Productivity Growth // Fordham University Department of Economics Discussion Paper No: 2011-04.
[105] Husain, A. M., Mody, A., & Rogoff, K. S. (2005). Exchange rate regime durability and performance in developing versus advanced economies. Journal of monetary economics, 52(1), 35-64.
[106] Kumhof, Michael, and Douglas Laxton (2009), "Chile's structural surplus rule: a model-based evaluation," IMF Working Paper No 09/88.
[107] Spilimbergo, Antonio, Steven Symansky, Olivier Blanchard, and Carlo Cottarelli (2008), "Fiscal policy for the crisis," IMF Staff Position Note No 08/01.

inflation expectations). According to Blanchard and Summers[108], the low interest rate level is one of the factors determining fiscal policy's positive influence on macroeconomic stability.

Fiscal regulation can provide macroeconomic stability through three main channels:

1. Built-in stabilizers of the tax system. Depending on the economy's cyclical nature, the change in tax revenues automatically affects the balance of gross national savings, leading to macroeconomic stability[109]. It is worth noting that most studies on the impact of built-in stabilizers on macroeconomic stability have focused on industrialized economies. Many of these studies are based on Gali's[110] fundamental ideas and focus on the negative relationship between output volatility and the degree of government intervention in the economy as an indicator of the cyclical sensitivity of the fiscal balance.

2. State expenditures. The expenditure component of the budget may increase or decrease to smooth out cyclicality and ensure macroeconomic stability. Baxter and King[111] note that in neoclassical macroeconomic equilibrium models, a short-term increase in government spending financed by an increase in public debt causes an increase in aggregate output but may lead to a reduction in household investment and consumption. In the case of a long-term increase in government spending, there will be an increase in investment but a decrease in household consumption.

3. Public debt regulation. The impact of public debt on economic growth and macroeconomic stability is somewhat controversial. On the one hand, if foreign exchange inflow through external borrowing contributes to capital accumulation, then these borrowings will lead to economic growth. On the other hand, the external public debt restrains the economic growth, as it reduces income growth in the economy[112]. When the state budget deficit growth is greater than the GDP growth, the increase in public debt, in the long run, translates into a reduction in investment and savings and leads to a reduction in economic growth rates.

However, some authors[113] question fiscal regulation's effectiveness in achieving macroeconomic stability. For instance, Kumhof and Douglas[114] note that when shocks are related to supply-side factors, excessive fiscal policy activity can, on the contrary, lead to destabilization in the macroeconomic environment.

[108] Blanchard O. J., Summers L. H. Rethinking Stabilization Policy: Evolution or Revolution? National Bureau of Economic Research, NBER Working Paper, 2018, no. w24179. DOI: 10.3386/w24179.

[109] See Blinder, Alan, and Robert Solow (1974), "Analytical Foundations of Fiscal Policy," in The Economics of Public Finance, (Washington, D.C: The Brookings Institution).

[110] Galì, Jordi (1994), "Government size and macroeconomic stability," European Economic Review 38, 117–132.

[111] Baxter M., King R. G. Fiscal Policy in General Equilibrium. The American Economic Review, 1993, vol. 83, no. 3, pp. 315–334.

[112] Krugman P., Financing vs. Forgiving a Debt Overhand, Journal of Development Economics 29, 1988, pp. 253-268.

[113] Van der Ploeg, Rick (2005), "Back to Keynes?," *CESifo Economic Studies* 51/4, 777-822.

[114] Kumhof, Michael, and Douglas Laxton (2009), "Chile's structural surplus rule: a model-based evaluation," IMF Working Paper No 09/88.

1.4. Procyclical policy

The approach of macroeconomic regulation based on procyclical policy is somewhat similar to the policy of maintaining macroeconomic stability. This approach implies an expansionary policy in growth conditions and a contractionary policy in an economic crisis. The theory of cycles and macroeconomic regulation is based on the approach of using the so-called automatic stabilizers, which play a restraining role during growth and stimulate the economy during the recession.

However, in practice, many countries use the existing built-in stabilizers with the reverse logic: expansionary policy during growth and contractionary policy during economic decline. It is especially characteristic of fiscal instruments when the Government prefers to increase state budget expenditures during economic growth. On the other hand, in times of crisis, budget expenditures are reduced to a minimum since, as a rule, countries face the problem of budget deficits.

Many studies[115] prove that this practice is most common in economically developed countries. At the same time, we can argue that excessive economic stimulation during growth led to a strong overheating of the economy and resulted in the global financial crisis in 2007-2008. The public spending growth and the tax burden reduction in the context of economic growth led to a noticeable increase in domestic and external debt, which led to the overheating of the economy. The onset of the crisis, in turn, reduced tax revenues to the budget, forcing governments to reduce public spending and pursue a containment policy.

Many scientific papers[116] have considered the procyclicality of the macroeconomic policy of developed countries in recent years. These studies mainly focus on the government spending growth to GDP growth ratio in developed countries. Moreover, the crucial role in such an increase in public spending is assigned to automatic stabilizers, which, as studies show, in the context of an increase in the output gap by one point, defined as the percentage deviation of actual output from potential, increased public spending by 0.5%.

Scientific studies present several explanations of the "puzzle" of procyclicality, mostly related to the idea of weak political institutions. Lane and Tornell[117], for instance, note the effect of "greed", which is inherent in economies with weak legal and political institutions. During economic growth and the corresponding increase in tax revenues, interested groups struggle to distribute the budget surplus is increasing. It, in turn, leads to a disproportionate distribution of budget revenues and, as a rule, is fraught with risks of a sharp reduction in spending in these sectors in case of a crisis.

Talvi and Vegh[118] also note the political dimension to procyclical policies in a growing economy, emphasizing institutional weaknesses

[115] See Philip Lane, (2003), The cyclical behaviour of fiscal policy: evidence from the OECD, Journal of Public Economics, 87, (12), 2661-2675; Zvi Hercowitz & Michel Strawczynski, 2004. "Cyclical Ratcheting in Government Spending: Evidence from the OECD," The Review of Economics and Statistics, MIT Press, vol. 86(1), pages 353-361, February; Darby, J. and Melitz, J. (2008) Social expenditure and automatic stabilisers in the OECD. Economic Policy, 23 (56). pp. 715-756. ISSN 0266-903X

[116] See Van den Noord, Paul, 2000, "The Size and Role of Automatic Fiscal Stabilizers in the 1990s and Beyond," Economics Department Working Paper No. 230 (Paris: Organization for Economic Cooperation and Development); Bouthevillain, Carine, Philippine Cour-Thimann, Gerrit van den Dool, Pablo Hernández de Cos, Geert Langenus, Matthia Mohr, Sandro Momigliano, and Mika Tujula, 2001, «Cyclically-Adjusted Budget Balances: An Alternative Approach», ECB Working Paper No. 77 (Frankfurt: European Central Bank).

[117] Lane, Philip, and Aaron Tornell, 1999, "The Voracity Effect," The American Economic Review, Vol. 89, No.1, pp. 22–46.

[118] Talvi, Ernesto, and Carlos Vegh, 2005, "Tax Base Variability and Procyclicality of Fiscal Policy," Journal of Development Economics, forthcoming.

and political pressures. Alesina and Tabellini[119] also emphasize the role of corruption. Guerson[120] views procyclical state policies as socially optimal, emphasizing the combination of "institutions" and "rules/restrictions".

Even though most of the studies examining the procyclicality of macroeconomic policy focus only on fiscal policy, we should note that monetary regulation during growth can also be procyclical. Procyclical regulation, in this case, means that the central bank or other financial supervisory authority develops regulatory standards without considering the economy's cyclical nature. Moreover, supervision over the financial system tends to weaken during economic growth, leading to a crisis.

The fundamental mechanisms of procyclical policy are presented in Table 1.4.1.

In the conditions of economic growth, the fiscal policy increases government spending and reduces the tax burden on the economy by lowering tax rates or establishing preferential taxation for specific sectors. As a result, economic activity is further enhanced in these sectors, and the negative effect of such a policy may be the overheating of the economy. At the same time, if monetary policy is also procyclical, then an expansionary monetary policy can lead to an excessive expansion of the money supply and increase in prices, which in the short term can lead to an even more significant increase in economic activity.

On the other hand, in the conditions of an economic recession, implementing a contractionary fiscal policy due to a reduction in state budget revenues leads to a corresponding decrease in government spending. The result of such a policy is an increase in poverty, a reduction in the level of well-being of the population and, finally, a deepening of the crisis. At the same time, during a crisis, the procyclical monetary policy seeks to condition macroeconomic stability and prevent high prices, resulting in lower prices and worsening recessions.

So, countries often resort to the policy of money supply expansion through fiscal or monetary mechanisms during economic growth, which ultimately leads to overheating of the economy

Table 1.4.1. The main mechanisms of procyclical policy

Tools	*Mechanism*	*Result*
During economic growth		
Expansionary fiscal policy	Expansion of state budget expenditures	Overheating of the economy
Expansionary monetary policy	Decrease in the refinancing rate, expanding the money supply	Increase in the price level
During economic recession		
Contractionary fiscal policy	Reduction of state budget expenditures	Deepening of crisis
Contractionary monetary policy	Increase in the refinancing rate, decrease in the money supply	Decrease in the price level

[119] Alesina, A., Campante, F. R., & Tabellini, G. (2008). Why is fiscal policy often procyclical?. Journal of the european economic association, 6(5), 1006-1036.

[120] Guerson, A. (2003). On the optimality of procyclical fiscal policy when governments are not credible. Washington, DC, United States: George Washington University. Doctoral dissertation.

Source: Compiled by the authors

Fiscal policy

The procyclical fiscal policy is expansionary during economic growth and contractionary during a recession. As a rule, such an approach to macroeconomic regulation has a negative impact on the population's standard of living and well-being, increases the economic volatility, reduces the volume of investment in the economy and human capital, and contributes to an increase in the level of poverty.

Serven[121] argues that when expansionary fiscal policy during growth does not compensate for budget losses during a crisis, then excessive external borrowing due to budget deficits can lead to severe problems with public debt, up to default. Many empirical studies show that discretionary fiscal policy tends to be procyclical across countries and over time, especially in developing countries. We should note that procyclical fiscal policy contradicts both the neoclassical notion that fiscal policy should smooth out tax imbalances and the budget expenditures should respond to changes in the business cycle, and Keynesian theory, according to which taxes and spending should mitigate rather than exacerbate the business cycle fluctuations.

Among the key reasons explaining the procyclicality of fiscal policy are the following:

Limited access to internal and external borrowing[122]. Arguments in favour of procyclical fiscal policy during a crisis, especially in developing countries, are based on the thesis that, in practice, there is a sharp reduction in capital flows during a crisis, which reduces the ability of the state budget to stimulate the economy through spending forcing governments to cut public spending. At the same time, as a rule, such countries have an underdeveloped financial market, which further limits the possibility of replenishing the budget through domestic debt. Thus, developing countries resort to procyclical policies, at least during a crisis.

Failure of institutional and political conjuncture[123]. This group of arguments focuses on the institutional environment as a factor in the effectiveness of fiscal regulation. When such an environment is not sufficiently developed, the interests of informal groups come to the fore, which seek significant tax benefits and various kinds of budget injections for specific sectors of the economy during economic growth. Weak political structures and institutional failures result in procyclical fiscal policy during economic growth.

Income polarization and social inequality[124]. According to this model, the heterogeneity of the preferences of various social groups leads to fiscal policy becoming more procyclical. In this context, income

[121] Serven, Luis, 1998, "Macroeconomic Uncertainty and Private Investment in LDCs: an Empirical Investigation," Working Paper No. 2035 (Washington: World Bank).

[122] See Gavin, M. and R. Perotti, 1997, "Fiscal Policy in Latin America," NBER Macroeconomic Annual, (Cambridge, Massachusetts: National Bureau of Economic Research); Caballero, R. and Krishnamurthy, A. (2004). "Fiscal Policy and Financial Depth". NBER Working Paper 10532, May; Calderón, César and Klaus Scmidt-Hebbel (2008). "Business Cycles and Fiscal Policies: The Role of Institutions and Financial Markets". Central Bank of Chile Working Paper No. 481.

[123] See Lane, Philip R. (2003)."Business Cycles and Macroeconomic Policy in Emerging Market Economies". *International Finance,* Vol. 6, No. 1, pp. 89-108; Talvi, Ernesto and Carlos A. Végh (2005). "Tax Base Variability and Procyclical Fiscal Policy in Developing Countries". *Journal of Development Economics*, Vol. 78, pp. 156-190; Alesina, Alesina, A., Campante, F. R., & Tabellini, G. (2008). Why is fiscal policy often procyclical?. Journal of the european economic association, 6(5), 1006-1036.

[124] Woo, Jaejong (2009). "Why Do More Polarized Countries Run More Procyclical Fiscal Policy?" *The Review of*

inequality, measured by the Gini coefficient, is seen as an indicator of preference divergence. The higher the income inequality, the greater the pressure from the wealthier population segment to stimulate economic activity during growth.

On the other hand, in the economic growth conditions, the government often increases budget spending in favour of the poorer population segments, which theory defines as "populism". Many studies[125] indicate that the growth of populist movements is observed in countries with a large immigration inflow of the population, which, as a rule, is characterized by low incomes.

Nevertheless, the question of how procyclical fiscal policy negatively or positively affects economic growth in the medium and long term is essential. As is known, in endogenous models of economic growth, fiscal policy occupies one of the critical positions. At the same time, during economic growth, expansionary fiscal policy can lead to an increase in the population's well-being in the long term. Engen and Skinner[126] note that the relationship between fiscal policy and economic growth is significant. According to their study, a 2.5% reduction in tax rates leads to an increase in economic growth by 0.2-0.3%. Although the response of economic growth is disproportionate to the decline in taxes, the authors argue that in the long term, the corresponding change positively affects the standard of living in the country.

Miles comes to an opposite conclusion[127], looking at a group of developed countries. He found that economic growth remained relatively stable despite the increase in tax revenues, which led him to the conclusion that expansionary tax policy in a growth environment has little effect on economic growth.

Anyway, procyclical fiscal policy is used in many countries, especially in countries with developing or emerging markets[128]. Gavin and Perotti, studying the experience of Latin America, found that during periods of economic growth, the procyclical policy led to an increase in government budget surpluses of 0.25% for every 1% increase in GDP. At the same time, during periods of recession, this approach deepened the crisis, as a 1% decrease in GDP caused an increase in the budget deficit by almost 1%. In the long run, the procyclicality of fiscal regulation negatively affected economic growth. Ilzetzky and Vegh analyzed the impact of fiscal policy on the business cycle in Ireland, proving the negative impact of procyclical fiscal policy on economic growth in the long term. In earlier studies, Lane also came to the same conclusions. The literature review proves that procyclical fiscal policy can hinder long-term economic growth, especially in countries with low development of financial intermediation

Economics and Statistics, Vol. 91, No. 4, pp. 850-870; Thornton, John (2008). "Explaining Procyclical Fiscal Policy in African Countries". *Journal of African Economies*, Vol. (17), No. 3, pp. 451-464.

[125] See Kriesi, Hanspeter, Edgar Grande, Romain Lachat, Martin Dolezal, Simon Bornschier and Thimotheos Frey (2006): 'Globalization and the transformation of the national political space: Six European countries compared', European Journal of Political Research 45: 921-956.; Inglehart, Ronald F. and Pippa Norris (2016): 'Trump, Brexit, and the Rise of Populism: Economic Have-Nots and Cultural Backlash', HKS Faculty Research Working Paper Series, RWP16-026.

[126] Engen, M.E. and Skinner, J., 1996. Taxation and economic growth. National Tax Journal, 49(4), pp.617-642.

[127] Myles, G.D., 2000. Taxation and Economic Growth. Fiscal Studies. The Journal of Applied Public Economics, 21(1), pp.141-168

[128] Gavin, M. and Perotti, R., 1997. Fiscal Policy in Latin America. In: B. Bernanke, & J. Rotemberg, eds. NBER Macroeconomics Annual, pp.11-72. Cambridge: The MIT Press. Ilzetzki, E. and Vegh, C.A., 2008. Procyclical Fiscal Policy in Developing Countries: Truth or Fiction? NBER Working Paper 14191, National Bureau of Economic Research.
Lane, P.R., 1998. On the Cyclicality of Irish Fiscal Policy. The Economic and Social Review, 29(1), pp.1-16. Aghion, P. and Marinescu, I., 2007. Cyclical Budgetary Policy and Economic Growth: What Do We Learn from OECD Panel Data? NBER Macroeconomics Annual, 22, pp. 251-278; Aghion, P. Hemous, D. and Kharroubi, E., 2009. Credit Constraints, Cyclical Fiscal Policy and Industry Growth. National Bureau of Economic Research. Stoian, A. Obreja Brașoveanu, L. Brașoveanu, I.V. and Dumitrescu, B., 2018. A Framework to Assess Fiscal Vulnerability: Empirical Evidence for European Union Countries. Sustainability 2018, 10(7), 2482, pp. 1-20.

institutions. Moreover, the procyclical fiscal policy has a negative impact in terms of a greater vulnerability of the state budget during a crisis. Thus, we can say that significant long-term economic growth risks accompany a procyclical fiscal policy.

Monetary policy

Unlike fiscal policy, there are fewer studies on the procyclical monetary policy. Most of the research considers the cyclical nature of monetary policy in the context of cyclical fiscal policy. In addition, the emphasis is placed more on emerging markets since the cyclicality of monetary policy in developed countries is practically not observed.

A monetary policy that stabilises business cycle fluctuations is considered optimal[129]. However, unlike developed countries, emerging market economies are characterized by either procyclical or, at best, countercyclical monetary policy, which tends to be accompanied by higher output volatility.

Many studies[130] argue that central banks in developing countries tend to raise (lower) interest rates during recessions (growth). High macroeconomic volatility is more common in emerging market economies. Some studies[131] attribute this volatility to procyclical monetary policy contributing to the more significant economic fluctuations in emerging economies.

Research supports the idea that monetary policy is primarily procyclical in developing countries. For instance, Kaminsky et al.[132] evaluated the correlation between the short-term policy rate and the business cycle for a sample of 104 countries from 1960 to 2003. The authors conclude that monetary policy in emerging market economies is procyclical (namely, central bank rates fall during recessions and rise during growth) in contrast to developed countries. In addition, the authors also evaluated the Taylor rule, which confirmed the previous conclusion. Calder[133] and Yakhin[134] later confirmed these results. Thus, most studies conclude that procyclical monetary policy has a negative impact on economic growth.

[129] Woodford, M., 2001. The Taylor rule and optimal monetary policy. American Economic Review,Papers and Proceedings. 91(2), 232-237.

[130] Lane, P., 2003. Business Cycles and Macroeconomic Policy in Emerging Market Economies. International Finance. 6(1), 89-108.

[131] Mendoza, E., 1991. Real Business Cycles in a Small Open Economy. American Economic Review.81(4), 797-818.

[132] Kaminsky, G., Reinhart, C., V´egh, C., 2004. When It Rains, It Pours: Procyclical Capital Flows and Macroeconomic Policies, in: Gertler, M., Rogoff, K (Eds.), NBER Macroeconomics Annual, Cambridge,MA, MIT Press.

[133] Calder´on, C., Duncan, R., Schmidt-Hebbel, K., 2004a. The role of credibility in the cyclical properties of macroeconomic policies in emerging economies. Review of World Economics. 140(4), 613-633; Calder´on, C., Duncan, R., Schmidt-Hebbel, K., 2004b. Institutions and Cyclical Properties of Macroeconomic Policies. Central Bank of Chile, working paper series 285.

[134] Yakhin, Y., 2008. Financial Integration and Cyclicality of Monetary Policy in Small Open Economies. Mimeo, Rice University.

1.5. Countercyclical policy

The modern idea of countercyclical policy comes from the experience of macroeconomic regulation during the Great Depression. The countercyclical policy is based on the thesis about the need to smooth out economic cycles assuming a contractionary macroeconomic policy during economic growth and an expansionary policy during a crisis. In contrast to procyclical policy, we should note that most studies in the field of countercyclical regulation focus on monetary regulation. In particular, it is more evident during a crisis when the economy needs short-term and flexible instruments. In this sense, monetary policy is more effective in economic regulation.

According to Yakhin[135], the theoretical basis of the countercyclical approach in macroeconomic regulation is the new Keynesian model of a small open economy, suggesting that in the case of a high degree of integration of the country into the global economy, the countercyclical policy is the optimal approach to government regulation. In the case of a relatively closed economy, a procyclical approach would be optimal. Another theoretical basis[136] for countercyclical policy is the Taylor and growth rules. In this case, the critical macroeconomic policy instruments are monetary regulation based on inflation targeting and, more importantly, stabilizing the inflationary processes, which in the long run ensures the correction of deviations in growth rates from potential values.

On the other hand, the experience of anticrisis regulation during the global financial crisis of 2007-2008 showed that the instruments of monetary regulation were not effective enough, and most countries resorted to fiscal tools during the economic recession. Moreover, given the results of 2020, we can argue that the fiscal policy measures were the most widespread among the mechanisms of countercyclical regulation.

The key instruments of the countercyclical policy include fiscal regulation, monetary and foreign exchange regulation, public debt management policy, and financial regulation, especially banking supervision. All these instruments can be applied both during an economic growth (policy to contain growth) and during an economic recession (policy to stimulate growth). Table 1.5.1 summarizes the main mechanisms of countercyclical policy.

[135] Yakhin, Y., 2008, "Financial Integration and Cyclicality of Monetary Policy in Small Open Economies," Monaster Center for Economic Research Discussion Paper No. 08-11.

[136] Bili, M. R., 2011. “Output Gaps and Monetary Policy at Low Interest Rates” *Federal Reserve Bank of Kansas City - Economic Review, First Quarter 2011,63-87*

Table 1.5.1. The main mechanisms of countercyclical policy

Tools	*Mechanism*	*Result*
	During economic growth	
Contractionary fiscal policy	Reducing state budget expenditures and increasing the tax burden. Minimizing government borrowing.	Smoothing economic cycles. Reduction in the public debt
Contractionary monetary policy	Increase in the refinancing rate and reserve requirement. Floating exchange rate.	Restraining the growth of the money supply. Prices stability.
Financial markets regulation policy	Strengthening regulatory and supervisory mechanisms	Risk reduction in the financial system
	During economic recession	
Expansionary fiscal policy	Expansion of state budget expenditures, reduction of the tax burden on the economy. Increase in government borrowing.	Expansion of the money supply, stimulation of economic activity, and increase in the share of the public sector in GDP. Increase in the public debt.
Expansionary monetary policy	Decrease in the refinancing rate and reserve requirement. Floating exchange rate.	Expansion of the money supply.
Financial markets regulation policy	Easing the regulatory and supervisory mechanisms. Covering losses in the financial system through government injections.	Expansion of the credit supply.

Source: Compiled by the authors

Fiscal policy

The critical controversy about the possibilities of applying cyclical fiscal policy is the degree of flexibility of fiscal instruments and the time lag of impact. Many authors[137] argue that increasing government spending can almost completely compensate for the reduction in consumer demand during a recession. Blanchard[138], on the contrary, argues that an increase in government spending amplifies economic shocks. Blinder[139] highlights that the reason for the non-linearity of the impact of fiscal mechanisms on economic cycles is that the crowding out effect of public spending on the share of private consumption usually applies in

[137] See Baxter, M. and R. King (1993): "Fiscal Policy in General Equilibrium", American Economic Review 83(3), pp. 315-334; Christiano, L. , Aiyagari, S. R. and M. Eichenbaum (1992): "The output, employment, and interest rate effects of government consumption", Journal of Monetary Economics 30(1), pp. 73-86; Fat´as, A. and L. Mihov (2001): "Fiscal Policy and Business Cycles: An Empirical Investigation", Moneda y Credito 212, pp. 167-210.

[138] Blanchard, O. and R. Perotti (2002): "An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output", Quarterly Journal of Economics 117(4), pp. 1329-1368.

[139] Blinder, A. S. (1987): "Credit Rationing and Effective Supply Failures", The Economic Journal 97(386), pp. 327-352.

conditions of a positive output gap. In contrast, when GDP is below potential, budget deficits are common.

Fatas and Mihov[140], using the Cholesky order to detect fiscal shocks, found that increases in public spending are usually excessive, but it highly compensates for the decline in private consumption. Blanchard and Perotti[141], using the information on the elasticity of fiscal variables to determine the response of automatic fiscal stabilizers, argue that expansionary fiscal shocks increase output, have a positive effect on private consumption, and a negative effect on private investment. Perotti[142], examining the impact of fiscal policy on economic growth in Australia, Canada, Germany and the UK, also proved a relatively high positive impact on private consumption, but at the same time, neutrality private investment to budgetary measures.

A large body of empirical literature[143] is devoted to whether fiscal shocks, in particular debt-driven increases in government spending or debt-driven tax cuts, can positively impact output in the short term. However, all these studies are rather general and consider the impact of fiscal measures on the business cycle as a whole, making it difficult to determine the effectiveness of specific tools in a particular case regarding economic growth.

De Castro and de Cos[144], studying the case of Spain, showed that although there is a positive relationship between government spending and output in the short run, in the medium and long run, spending shocks only lead to higher inflation and significantly reduce productivity. Heppke-Falk et al.[145], studying the case of Germany, concluded that there was a slight increase in output and private consumption due to a positive public spending shock. On the other hand, Giordano et al.[146], based on the experience of Italy, proved that the growth of public spending has a permanent positive effect on output and private consumption.

Thus, the literature doesn't give a clear answer to the problem of the economic effects of fiscal measures in the case of a countercyclical policy. However, each of the authors considered the experience of a particular economy in a specific period. In this sense, it becomes evident that there are no universal recipes for using fiscal instruments in the context of a countercyclical policy. Each case requires an individual approach.

Monetary policy

Implementing monetary policy in an open economy is somewhat challenging in the framework of a countercyclical policy. Many economists are wondering if the monetary policy should be countercyclical? The answer lies in the problem of what is the price of the question? What are the economic benefits of policies to stabilize aggregate demand in the face of external shocks?

[140] Fatas, A.; Mihov, I. (2001), "The effects of fiscal policy on consumption and employment: theory and evidence", CEPR Discussion Paper # 2760.

[141] Blanchard, O.; Perotti, R. (2002), "An empirical characterization of the dynamic effects of changes in government spending and taxes on output", Quarterly Journal of Economics, 117(4), 1329-1368.

[142] Perotti, R. (2004), "Estimating the effects of fiscal policy in OECD countries", University of Bocconi, Working Paper.

[143] Romer C. D. and D. Romer (2010): "The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks", American Economic Review, 100(3), pp. 763-801.; Mertens and Ravn (2012)

[144] De Castro Fernandez, F.; Hernandez De Cos, P. (2006), "The economic effects of exogenous fiscal shocks in Spain: a SVAR approach", ECB Working Paper #647.

[145] Heppke-Falk, K.H.; Tenhofen, J.; Wolff, G. B. (2006), "The macroeconomic effects of exogenous fiscal policy shocks in Germany: a disaggregated SVAR analysis", Deutsche Bundesbank, Discussion Paper #41.

[146] Giordano, R.; Momigliano, S.; NeriI, S.; Perotti, R. (2007), "The effects of fiscal policy in Italy: Evidence from a VAR model", European Journal of Political `Economy, 23, 707-733.

Among the first authors to address this issue are Fischer[147] and Phelps & Taylor[148]. They concluded that the monetary policy aims to stabilize aggregate output through changes in the money supply to counteract the effects of external and internal shocks. For instance, due to the high dependence on world prices for resources, countries resort to a contractionary monetary policy during a recession to maintain macroeconomic stability in the domestic market, which conflicts with the countercyclical policy[149].

Despite the extensive literature on optimal monetary policy in an open economy, it is difficult to draw causal relationships from macroeconomic data because demand shocks and policy responses are often endogenous to underlying economic conditions. In this regard, most research mainly focuses on theoretical models and gauge equations[150].

During the 2007-2009 global financial crisis, many central banks pursued an expansionary monetary policy to alleviate financial market issues, increase output, and stabilize inflation. Monetary policy has mainly been successful in minimizing financial market problems, but many advanced economies recorded low indicators of output growth and inflation, slowing economic growth recovery[151].

These observations lead to a broad debate about whether monetary policy transmission channels can be considered successful in a crisis, particularly in a financial crisis, and how successful overall monetary policy is in an environment of financial globalization and a high degree of volatility in the world economy[152]. The latter raises the following question: How is the countercyclical monetary policy possible, and whether policymakers should prioritise an expansionary fiscal policy in a crisis. In addition, it is essential to consider the undesirable side effects of countercyclical monetary policy, such as the emergence of excessive risks and inflated prices for financial assets, which may result from a long-term expansionary policy[153].

Research on the cyclicality of monetary policy[154] suggests that monetary policy is generally countercyclical in developed countries and procyclical in developing countries.

[147] Fischer, Stanley. "Long-Term Contracts, Rational Expectations, and the Optimal Money Supply Rule." J.P.E. 85 (February 1977): 191-205.

[148] Phelps, Edmund S., and Taylor, John B. "Stabilizing Powers of Monetary Policy under Rational Expectations." J.P.E. 85 (February 1977): 163-90. Rotemberg, Julio J. "The New Keynesian Microfoundations." In NBER Macroeconomics Annual 1987, edited by Stanley Fischer. Cambridge, Mass.: MIT Press, 1987.

[149] Frankel, Jeffrey. "Monetary policy in emerging markets." Handbook of Monetary Economics. Vol. 3. Elsevier, 2010. 1439-1520.

[150] See Corsetti, Giancarlo, Luca Dedola, and Sylvain Leduc. "Optimal monetary policy in open economies." Handbook of Monetary Economics. Vol. 3. Elsevier, 2010. 861-933.

[151] Pain, N., C. Lewis, T.-T. Dang, Y. Jin, and P. Richardson (2014). OECD forecasts during and after the financial crisis: A post mortem. OECD Economics Department Working Paper No.1107.

[152] Bouis, R., L. Rawdanowicz, J.-P. Renne, S. Watanabe, and A. K. Christensen (2013). The effectiveness of monetary policy since the onset of the financial crisis. OECD Economics Department Working Paper No. 1081.

[153] See Rajan, R. G. (2005). Has financial development made the world riskier? *Proceedings – Economic Policy Symposium - Jackson Hole, Federal Reserve Bank of Kansas City Aug*, 313–369.; Altunbasa, Y., L. Gambacorta, and D. Marques-Ibanez (2014). Does monetary policy affect bank risk? *International Journal of Central Banking March*, 95–135; Jim´enez, G., S. Ongena, J.-L. Peydr´o, and J. Saurina (2014). Hazardous times for monetary policy: What do twenty-three million bank loans say about the effects of monetary policy on credit risk-taking? *Econometrica 82*(2), 463–505.

[154] Frankel, J.A., 2011. Monetary policy in emerging markets, in: Freidman B., Woodford, M. (Eds.), Handbook of Monetary Economics, Vol. 3B. North Holland, Amsterdam, pp. 1439-1520.; McGettingham, D., Moriyama, K., Ntsama, J.N.N., Painchard, F., Qu, H., Steinberg, C., 2013. Monetary policy in emerging markets: taming the cycle. IMF Working Paper 13/96.; Vegh, C.A., Vuletin, G., 2013. Overcoming the fear of free falling: monetary policy graduation in emerging markets. NBER Working Paper 18175.

Financial markets regulation policy

Modern research in financial system regulation from the point of view of the countercyclical policy pays attention to informal factors that underlie the rigidity or softness of financial regulation in the modern economy. Many studies[155] consider financial regulation and its nature as a result of bargaining for the interests of specific financial intermediation institutions. While the nature of macroeconomic policy, informal institutions for pressure, and private interests are subject to constant change, Calomiris and Haber[156] argue that private benefit underlies many banking regulations in different countries, regardless of the period. Many studies on the causes of deregulation or easing the financial supervision policy confirm the thesis about the dominance of private interests. Thus, we can argue that financial regulation, as a rule, is cyclical due to these biased reasons.

It is worth noting the study of Reinhart & Rogoff[157], who, in his work on the latest global financial crisis, puts forward the thesis about the danger of strict regulation, leading to worse economic consequences than deregulation. Blinder[158], in turn, presents the opposite view, according to which only tight regulation can be optimal in a crisis. So, according to Blinder, the financial system regulation policy should mostly be procyclical. We can find an interesting point of view regarding the cyclicity of the financial market regulation policy in the paper of Aizenman & Glick[159]. They argue that the financial system and the mechanisms for its regulation underlie the economy's cyclical nature. Therefore an optimal policy for financial markets regulation can smooth out the economic cycles.

However, we can argue that the financial markets regulation policy is mostly not cyclical, both in theory and practice.

[155] See Stigler, G., 1971. The Theory of Economic Regulation. The Bell Journal of Economics and Management Science, 2(1), 3-21.

[156] Calomiris, C. W., & Haber, S. H. (2015). Fragile by design: The political origins of banking crises and scarce credit. Princeton University Press.

[157] Reinhart, C.M., Rogoff. This time is different: eight centuries of financial folly. princeton university press, 2009.

[158] Blinder, A.S. (2015) Financial Entropy and the Optimality of Over-regulation. The New International Financial System: Analyzing the Cumulative Impact of Regulatory Reform 48,3.

[159] Joshua Aizenman and Reuven Glick, Sterilization, Monetary Policy, and Global Financial Integrationroie. Review of International Economics, 17(4), 777–801, 2009.

1.6. Economic policy models and changes from 1960 to 2020

After the financial crisis of 2008-2009, the literature review of modern economic growth shows an agreement among researchers about the thesis that economic crises are an integral part of the modern market economy and it is practically impossible to avoid them[160]; therefore, periods of economic growth are inevitably combined with periods of decline. That point of view replaced the opinion that prevailed for many years that the right economic policy allows for avoiding economic crises and ensures long-term continuous economic growth in developed and developing countries.

From 1980 to 2000, monetary policy based on supply regulation (mainly expansionary) was considered the right economic policy, the primary tool of which was the progressive expansion of the money supply (including credit resources), combined with the deregulation of the economy and fiscal reforms. The so-called "Reaganomics" was ideologically based on the supremacy of the market's self-regulation capacity over state regulation and the assumption that it would be more effective.

On the other hand, the money supply and credit expansion was limited due to the need to curb inflation. The latter accelerated sharply in the last decade of the previous economic cycle from 1971 to 1980, combined with a significant decline in economic growth rates[161].

Neo-Keynesian approaches were the basis of the prevailing economic policy from 1945 to 1980, according to which governments could achieve and maintain full employment by applying appropriate monetary and tax policies to manage the supply[162].

However, such a transition initially took place in the United States and later spread to Great Britain and other developed and developing countries and had objective reasons. The main reason was the sharply increased inflation in the 1970s and the high level of public spending and tax burden, which led to a decrease in the economic growth rate. It was due to the sharp increase in the prices of raw materials[163], while the inflation was due to the consequences of the final abandonment of the gold standard in 1971[164].

As shown in Table 1.6.1, the transition to a supply-side economic model made it possible to regulate the price growth from 1980 to 2000. During this period, the macroeconomic stabilization policies described above spread worldwide, including developing countries and, since 1991, transition countries. The main points of the policies of maintaining macroeconomic stability and cyclical policies were found in the famous ten recommendations of the Washington Consensus[165]. The latter represented the main points of "Reaganomics" adapted for developing and transition countries and was widely used by the IMF, the World Bank, the US and the EU as a precondition for the economic support of governments. However, the regional crises of the 1990s (1994: Mexico, 1997: Latin America and Southeast Asia, 1998: Russia, 2002: Argentina) questioned the effectiveness of that policy[166].

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[160] See Алан Гринспейн Карта и территория, Москва, Альпина 2015

[161] The so-called stagflation, high inflation combined with a decline in the economic growth rate and high unemployment

[162] See Джозеф Стиглиц Люди, власть и прибыль: Прогрессивный капитализм в эпоху массового недовольства, Москва, Альпина 2020

[163] 1970-1981, when the monetary deficit in the US was 134.3%, the prices of non-energy raw materials increased 2.38 times, and the prices of energy resources - 21.7 times (See В. Иноземцев Экономика без догм. Как США создают новый экономический порядок. Москва, Альпина 2021).

[164] In August 1971, US President Nixon stopped the exchange of dollars for gold, which signaled the transition to a new financial system, where the issuance of the money supply was already limited only by the wishes of the US government.

[165] John Williamson What Washington Means by Policy Reform, Chapter 2 from *Latin American Adjustment: How Much Has Happened?* Edited by John Williamson. 1990. Peterson Institute for International Economics

[166] See The Washington Consensus Reconsidered, Edited by Marcus Sera & Jozeph Stiglitz. 2020. Oxford University Press

Table 1.6.2 shows that this transition failed to restore the economic growth of the 1970s, except in the United States, where the average annual level of economic activity exceeded the indicator of the 1970s for 20 years.

Despite the decline in the growth rate of the world economy from 1980 to 2000, it was possible to maintain and somewhat strengthen the dominant positions of developed countries in the world economy (Table 1.6.3).

However, during 1980-2000 the trends that deepened in the 2000s and led to the further decline of the growth rates of developed countries, the growing role of countries with high average income, and especially the unprecedented rise of China, began to be expressed.

These trends included the deindustrialization of developed countries and the transition to a service economy; in particular, the share of the manufacturing industry in the United States decreased from 14.6% in 1970 to 12.6% in 1980, 11.7% in 1990 and 2000, and reached 10.9% in 2017[167]. The share of construction also decreased sharply, from 11% in 1970 to 3.45% in 2017[168].

Although the transition to a policy of macroeconomic stability was supposed to limit the government's role through tax and spending cuts, balancing budgets, and keeping public debt within manageable limits, this essentially did not happen.

Table 1.6.4 shows the example of the USA, the United Kingdom and Germany, where in the conditions of economic growth and a decrease in the real sector of the economy, the redistributive role of the government did not decrease. On the contrary, state expenditures increased in the case of relatively stable state revenues. As a result, the budget deficits increased and were financed by the progressive growth of the public debt[169]. The progressive growth of debt obligations in developed countries did not reflect inflation (Table 1.6.1), which was characteristic of the 1970s.

In our opinion, this was due to several newly emerging factors influencing the economy up to the present. The first was the volatility of raw materials prices (particularly energy) [170], caused by fluctuations in supply and demand and speculative developments caused by political and financial policies. Thus, the increase in oil prices in the 1970s had a significant inflationary effect on developed and importing countries and a significant deflationary impact from 1980 to 2000, mitigating inflationary pressures on developed and importing countries.

The second factor was globalization and trade liberalization, which began to develop intensively in the 1990s, gaining new impetus after the collapse of the USSR. On the one hand, these factors contributed to the transfer of material production to countries with cheaper labour leading to a stabilizing in the prices of industrial products and allowing a rapid development of lower and upper middle-income countries, which explains China's unprecedented growth. On the other hand, the USA became the largest exporter of goods and services from 1990 to 2019, and China became the world's largest exporter in 2013.

Table 1.6.5 shows that the US had a permanent trade balance deficit from 1970 to

[167] Calculated based on UN Statistics\SNA.

[168] We will show the trends mostly on the US example, although they are also characteristic for the EU and other developed countries.

[169] Those countries that have the opportunity to accumulate debt in their national currency (the currency should be fully convertible and be used in international trade) have a much lower probability of debt default than those countries that have to borrow in the convertible currency of other countries and take into account exchange rate risks, because the former can carry out inflationary financing of the economy simply by money emmission. See Рей Далио. Большие долговые кризисы. Принципы преодоления. Москва, 2021

[170] Compared to the 1970s, when there was an unprecedented increase in oil prices, the average annual oil price in 1988 at comparable prices was 28.2%, 17.5% in 1998, and 110.6% in 2011 against 1980 (the historical maximum of prices). See BP Statistical Review of World Energy. www.bp.com

2019, including trade with China[171]. However, unlike countries with a trade deficit and no convertible currency, the US financed its deficit through money emission, which is an expansionary monetary policy. China, in its turn, having a constant and growing trade balance surplus and not having a convertible currency, used the US trade balance deficit to ensure its exports-based economic growth, accumulating US dollar reserves and being the largest creditor of the US[172].

Since the 1990s, a new two-level financial system has started developing globally. The first level includes the countries issuing currency used in international trade (the US, Eurozone countries, Great Britain). These countries can afford extensive debt financing of the economy with their national currency without the risk of default, and how the experience of the last 30 years shows without increasing inflation. The second level consists of all the countries without a currency used in international trade. These countries borrow in convertible currency, having much more limited possibilities of debt financing of the economy. In case of a trade balance surplus, these countries (for example, China) have to form extensive international reserves to ensure stable inflation and economic growth or to protect the economy against shocks.

The third factor is limited inflation. The causes of the latter are the same factors for these two country groups, but with different intensities of influence. Those factors are the prices of assets owned by the population and businesses, and real estate[173]. Both have all the characteristics of a bubble: they grow significantly faster than GDP during economic growth and fall rapidly in the case of an economic crisis (Table 1.6.4).

The fourth factor is the financialization of the economy[174]. The latter was growing at progressive rates worldwide from 1970 to 2007, declined in 2008 and recovered in 2019[175].

The fifth factor was the money price policy[176]. It was implemented after 2000 and acquired a countercyclical character for the countries presented in Table 1.6.4.

Summarizing the presented goals of the economic policy models and the experience of their application from 1980 to 2008, we should emphasize that the macroeconomic stability model based on supply incentives somewhat worked only in reducing inflation in developed countries due to the factors mentioned above. However, in 1990, it was replaced by the cyclical policy of stimulating economic growth based on cheap money, public debt and financialization of the economy leading to the 2008-2009 financial crisis. The policy became countercyclical from 2008 to 2009, combining neo-Keynesian supply-side stimulus models with demand-side stimulus monetarist models amid rising debt obligations based on cheap money and money emission of the first country group mentioned above. The same approach, but on a much larger scale, was applied in 2020 to mitigate the effects of the Covid-19 crisis.

[171] As of 2019, the US trade deficit with China was 365.8 billion USD. (https://wits.worldbank.org/CountryProfile/en/Country/USA/Year/LTST/TradeFlow/EXPIMP/Partner/by-country)

[172] China's foreign exchange reserves increased from 48.1 billion USD in 1991 to 3.9 trillion USD in 2014, then decreased to 3.069 trillion USD in 2016 and reached 3.357 trillion USD in 2020. In comparison, US international reserves amounted to only 144 billion USD in 2020. (https://knoema.ru/atlas/Китай/Международные-резервы)

[173] In Table 1.6.4, they are approximated by the market capitalization index of the companies

[174] In Table 1.6.4, it is approximated with indicators of the lending by the financial sector and the lending by the private sector.

[175] According to World bank WDI dataset (1960-2019) the volume of private sector lending in 1970 was 69.7% of GDP, in 1981 - 73.9%, in 1989 - 116.9%, in 2000 - 135.9%, decreased to 120.6% in 2008 and recovered to 132.4% in 2019.

[176] In Table 1.6.4, it is approximated with the indicator of the real interest rate of the public debt.

Table 1.6.1. GDP deflator, 1960-2020, average annual growth, %

	1960-1970	*1971-1980*	*1981-1990*	*1991-2000*	*2001-2008*	*2009-2019*	*2020*
World	2,26	10,06	4,01	1,23	4,91	0,42	0,88
High Income	2,61	10,24	4,53	1,14	4,36	0,08	1,01
Low Income			0,21*	0,06	6,31	0,09	
Lower Middle Income	1,80	8,92	0,66	0,34	6,75	0,83	
Upper Middle Income	0,25	9,38	1,46	2,37	7,79	1,31	
USA	2,54	6,91	4,18	2,06	2,39	1,62	1,02
EU		12,58	4,48	-1,07	8,41	-1,34	1,02
China	0,55	1,26	-2,49	2,22	6,73	2,81	1,02

**for 1982-1990*
Source: Author's calculations based on the World Bank, WDI dataset (1960-2019), IMF World economic outlook April 2021, Dataset (2020)

Table 1.6.2. GDP, 1960-2020, average annual growth, %

	1960-1970	*1971-1980*	*1981-1990*	*1991-2000*	*2001-2008*	*2009-2019*	*2020*
World	4,89	3,81	3,12	2,78	3,24	2,53	-3,30
High Income	4,88	3,54	3,13	2,68	2,23	1,50	-4,70
Low Income			1,45*	2,01	5,94	4,03	
Lower Middle Income	3,99	4,13	3,41	3,07	5,93	5,35	
Upper Middle Income	5,32	5,54	3,08	3,15	6,27	4,55	
USA	3,75	3,16	3,32	3,44	2,18	1,83	-3,50
EU		3,35	2,41	2,21	2,00	1,01	-6,60
China	3,50	6,18	9,29	10,43	10,69	7,83	2,30

**for 1982-1990*
Source: Author's calculations based on the World Bank, WDI dataset (1960-2019), IMF World economic outlook April 2021, Dataset (2020)

Table 1.6.3. Share in world GDP, 1960-2020, %

	1960	*1970*	*1980*	*1990*	*2000*	*2009*	*2019*	*2020*
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
High Income	77.61	80.48	79.71	83.82	82.24	72.87	62.85	
Low Income		0.88	0.79	0.48	0.40	0.54	0.62	
Lower Middle Income	6.47	5.60	5.20	3.85	3.63	5.12	7.22	
Upper Middle Income	16.34	13.73	15.22	11.83	13.72	21.47	29.34	
USA	39.67	36.25	25.45	26.35	30.49	23.10	24.43	24.76
EU		24.52	29.43	28.73	21.59	25.49	17.81	17.94
China	4.36	3.13	1.70	1.59	3.60	7.21	16.28	17.42

Source: Author's calculations based on the World Bank, WDI dataset (1960-2019), IMF World economic outlook April 2021, Dataset (2020)

Table 1.6.4. State finances, public debt and financial system, 1970-2009, % of GDP

	1970	*1980*	*1990*	*2000*	*2008*	*2009*
USA						
State revenues	30.2	31.6	32.9	35.4	32.7	31.1
State expenditures	32.3	34.3	37.2	33.9	39.1	42.7
Gross public debt	46.4	41.9	63.1	54.5	71.8	85.8
Public debt service activities	1.43	1.77	3.39	2.46	2.73	2.5
Real interest rate of public debt, %	1.71	-1.56	3.15	2.66	2.35	2.34
Lending by the financial sector	112.7	116.4	145.6	191.6	214.6	222.5
Market capitalization of companies	41.8	47.6	51.9	147.4	78.8	104.3
Great Britain						
State revenues	44.6	42.0	39.3	40.4	42.9	40.1
State expenditures	42.0	47.6	41.1	36.8	47.8	51.5
Gross public debt	73.2	46.2	38.4	41.0	52.0	68.3
Public debt service activities	4.04	4.89	3.67	2.72	2.27	1.88
Real interest rate of public debt, %	2.30	2.01	1.63	4.17	0.94	1.45
Lending by the financial sector	19.8	26.2	104.8	115.2	191.6	192.6
Market capitalization of companies	35.5	6.4	77.7	155.4	63.9	115.9
Germany						
State revenues	40.0	45.2	42.8	46.2	44.0	44.9
State expenditures	39.5	48.2	44.7	45.1	44.0	48.1
Gross public debt	18.3	31.3	42.2	60.2	66.7	74.4
Public debt service activities	0.95	2.11	2.69	3.20	2.76	2.69
Real interest rate of public debt, %	4.42	3.16	6.25	3.88	1.32	2.90
Lending by the financial sector				112.4	97.0	98.8
Market capitalization of companies	10.5	7.5	20.1	65.4	29.8	38.0

Source: Author's calculations based on the World Bank, WDI dataset (1960-2019), IMF World economic outlook April 2021, Dataset (2020)

Table 1.6.5. Participation of the US and China in international trade, 1970-2019, billion USD at comparable 2010 prices*

	1971-1980	1981-1990	1991-2000	2001-2008	2009-2019
USA					
Export	2935.7	4477.7	9634.1	11454.2	23351.8
Import	3618.2	5714.6	11577.5	17043.1	30069.8
Trade balance	-682.5	-1236.9	-1943.4	-5588.9	-6718.0
% to GDP					
Export	4.7	5.8	9.1	10.2	13.0
Import	5.8	7.4	10.9	15.2	16.7
Trade balance	-1.1	-1.6	-1.8	-5.0	-3.7
China					
Export		510.1	1800.5	6685.9	21968.0
Import		416.6	1342.1	5183.7	19696.0
Trade balance		93.6	458.5	1502.2	2272.0
% to GDP					
Export		8.6	11.6	23.6	23.7
Import		7.0	8.6	18.3	21.3
Trade balance		1.6	3.0	5.3	2.5
GDP of the US	62197.8	77464.7	106017.2	111990.1	179854.2
GDP of China		5935.9	15515.3	28352.4	92545.6

** Cumulative by periods*
Source: Author's calculations based on the World Bank, WDI dataset (1960-2019)

1.7. Economic Review of the Republic of Armenia

1.7.1. Main sectors and factors of economic growth and crises in Armenia

We can distinguish the following periods in the history of the Armenian economy: 1990-1993 are the crisis years, 1994-1997 is the first stage of economic growth recovery, 1998-2003 is the second stage of recovery growth, 2004-2009 is the period of high economic growth after the recovery, including the crisis of 2009, 2010-2014 is the recovery period after the crisis of 2009, 2015-2017 and 2018-2019 are the periods of economic growth after the recovery, which differ from each other by the main factors of economic dynamics. 2020 was the global crisis conditioned by Covid-19. However, despite these differences, common factors were relevant throughout the whole period, constituting the country's main economic features.

For clarification, (1) the economic growth will be considered as the period during which there is a growth in real value-added, (2) the duration of the economic crisis will be considered as the period (measured in months or years) during which there is a reduction in the volume of output, (3) the post-crisis recovery period will be considered the period during which the pre-crisis volume of output will be restored.

According to the degree of spread or impact, crises can be classified as local or sectoral, national, regional and global. When the economic crisis is combined with other crises, particularly public administration, and natural and artificial disasters, it is a systemic crisis.

The economic crisis of 1991-1993

The leading cause of the 1991-1993 economic crisis was the collapse of the USSR, which tore economic ties between the former Soviet republics, all of which experienced a deep economic crisis of various degrees (except China and Vietnam).

In all these countries, the crisis had a systemic nature due to the change of economic model that presumed a transition to a market economy. In addition to the latter, the war for the liberation of Artsakh started in Armenia, accompanied by the transport blockade and energy crisis. At the same time, the global economic growth continued at an average annual rate of about 2.5%. Thus, this crisis had a systemic-regional nature. In general, the crisis in the Europe and Central Asia countries began in 1992 and lasted two years, from 1992 to 1993. It took another two years to recover the GDP level of 1991.

The crisis in Armenia was shorter, but the economic consequences were heavier than in Russia. It lasted three years with a total economic decline of 53.1% in 1993 compared to 1990. The economic growth resumed in 1994, continued for 14 years until the crisis of 2009[177]. The pre-crisis GDP level of 1990 was restored only in 2004. The economic crisis affected all economic sectors, completely changing the economic structure. The economic structure was not restored, leaving the country's economic development behind for about 15 years, turning it from industrial to agricultural. The industry was one of the most affected sectors. During the three years, the decline accounted for 57.3%. In general, the pre-crisis volumes of manufacturing output were restored only in 2012, and the volumes of the mining industry in 2001. The pre-crisis level of the industry share in GDP has not yet recovered.

[177] The average annual economic growth accounted to about 9% in 1994-2008, including 5.35% in 1994-1997, 10.6% in 1998-2003, 11.6% in 2004-2008.

Agricultural sector ensured the economy's survival during the deep crisis, rescuing it from imminent famine by deindustrializing the country and drastically reducing labour productivity. This stabilizing role of agriculture became possible due to the agrarian reform implemented in 1990-1991. As a result, the share of agriculture in GDP increased sharply from 15.8% in 1990 to 48.6% in 1993. Moreover, agriculture was the only sector of the Armenian economy where the economic decline was minimal - 10.9% in 1993, and the 1990 volumes were restored in 1998. One of the main characteristics of this economic crisis is the sharp decrease in the volume of state financial resources and the need for no less sharp increase in expenditures. In 1990-1994, in the conditions of limited external financing sources, an expansionary fiscal policy was applied in the form of inflationary deficit financed by the Central Bank. As a result, the budget of 1992 had a deficit of 0.25%, the 1993 budget - 50.5%, the 1994 budget - 38.4%. Since the expansion of preferential foreign financing by international organizations, the policy of macroeconomic stability based on the Washington Consensus has been implemented, as a result of which the 1992-1993 hyperinflation was eliminated, the budget deficit began to decrease.

In 1990-1993, the country, being in the zone of the Russian ruble, was using the general inflationary monetary policy. Since the introduction of the national currency Dram in November 1993 Armenia started pursuing an independent monetary policy. In 1995, the Central Bank started conducting a restraining monetary policy.

Another key feature of the economic crisis is the disruption of the country's foreign economic relations: exports in 1994 amounted to 65.5% of the 1990 level, while the role of imports increased due to the need to ensure minimum domestic consumption. The volume of imports in 1994 amounted to 91.9% of 1990 level, so the trade account and balance of payments also deteriorated. The main external conditions for the Armenian economy to start economic recovery and growth were as follows: ensuring a long-term ceasefire in the first Artsakh War (1994), easing the transport blockade (since 1994), ending the energy crisis (reopening the NPP 1996). It allowed to significantly reduce the negative economic pressure. The beginning of large-scale financing on external concessional terms (since 1995) allowed to reduce the budget deficit and stop inflationary financing of the economy (which has been legally prohibited since 1997).

The main features of the economy of Armenia

The first feature is the external financing of the economy, which has been the main factor determining the resumption and continuation of economic growth[178]. The Armenian economy remains highly dependent on external funding, although it has decreased recently, with the lowest level recorded in 2020 (Table 1.7.1).

Table 1.7.1. Volumes of external financing in Armenia, 1990-2020, at current prices, million USD

	1990-1993	1994-1997	1998-2003	2004-2008	2009	2010-2014	2015-2017	2018-2019	2020	1990-2020
External financing	*-1092*	*-1838*	*-3219*	*-7497*	*-2366*	*-11206*	*-3430*	*-3531*	*-1180*	*-35359*
GDP	*6799*	*6020*	*12953*	*35730*	*8648*	*52753*	*32627*	*26070*	*12645*	*194245*
% to GDP	*-16.1*	*-30.5*	*-24.8*	*-21.0*	*-27.4*	*-21.2*	*-10.5*	*-15.9*	*-9.3*	*-18.2*

Source: Balance of payment of Armenia, World Development Indicators, World Bank

[178] External financing volumes are calculated as trade balance amounts. It is assumed that if the balance is negative, the country is a recipient of external financing, if it is positive, the country is a provider of external financing.

Another feature of Armenia is the presence of a large Diaspora and permanent emigration. The latter determines the enormous role of private remittances as one of the main factors in ensuring external financing and economic growth (Figure 1.7.1). Moreover, the leading donor countries regarding the inflow of remittances are Russia (45-60% of the total inflow) and the US (about 15% of the total inflow)[179]. There are two crucial factors in the case of Russia: the growing number of Diaspora and the seasonal labour migration. Finally, the second Artsakh war conditioned the unprecedented growth of remittances in 2020.

The next feature is the system of financial intermediation. Despite the existence of necessary institutional infrastructure[180] (stock exchange, regulatory legislation and the regulator – Central Bank), during the last 30 years, the system of the market capitalization of companies – capital market, was not correctly formed[181]. However, after the banking system, the stock market is the second-largest source of financing for the economy in the modern world.

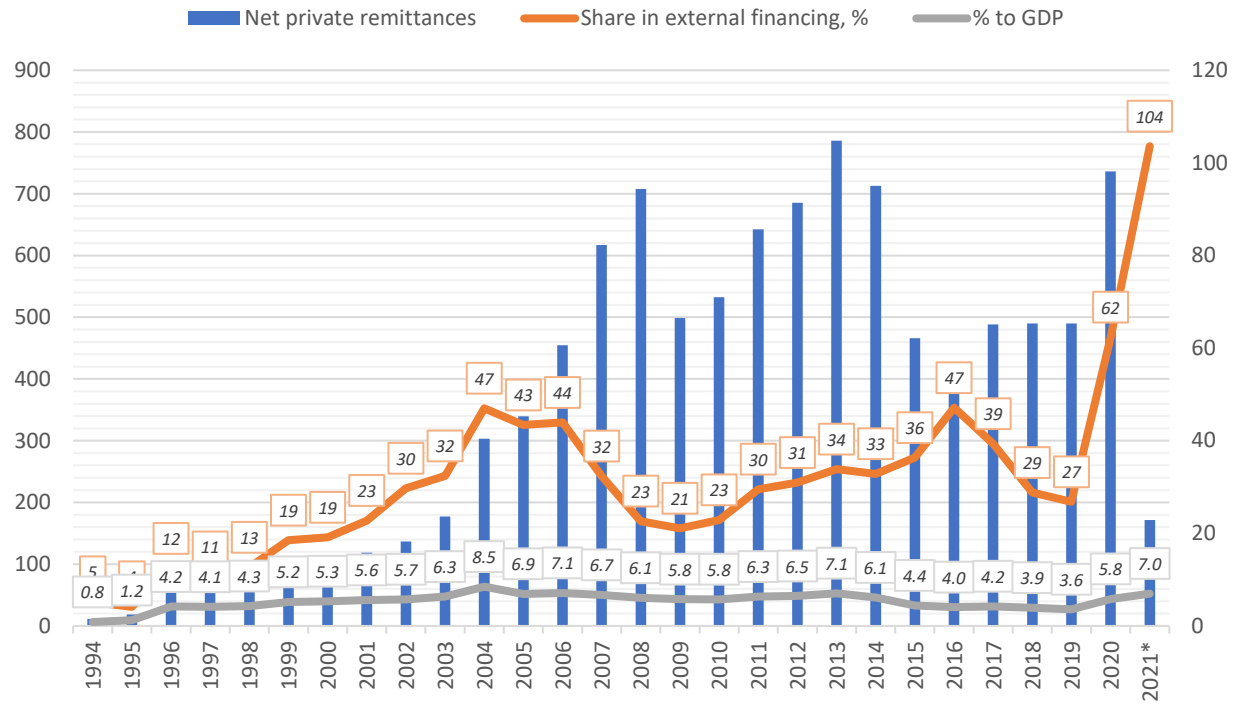

Figure 1.7.1. Private remittances in Armenia 1994-2021, million USD, at current prices

** 2021 1st quarter*

Source: Balance of payments of RA, the World Bank WDI database

In the case of expansionary monetary policy, which has prevailed in developed countries since 2009, the stock market[182], absorbing excess monetary resources, contributes to the formation of anti-inflationary trends, curbing inflation and, at the same time, becoming increasingly speculative, increasing the probability and intensity of economic crises.

There is no "shadow" system of financial intermediation in Armenia[183] – investment

[179] Central Bank of Armenia – www.cba.am (retrieved on 05.10.2021)

[180] The stock exchange regulatory legislation and the governing body - the Central Bank of the Republic of Armenia

[181] The main indicator of the stock market is the market capitalization of companies, which in 2018 was 34.5% of GDP in Russia, 147.9% in the US, 45.5% in China, 44.3% in Germany, 47% in high-middle income countries, and 139% in high-income countries. In Armenia, that indicator is close to 0.

[182] Along with real estate and energy resource markets.

[183] The institutions of financial intermediation, which until 2009 were not regulated by the central banks, because they did not have the right to attract deposits.

banks, hedge funds, mutual funds, etc. Thus, the financial intermediation system in Armenia currently consists of four subsystems: banking institutions, credit organizations, insurance companies, and institutional investors[184], where banks have a dominant role: as of 2019, banks have provided 95.3% of domestic credit.

Figure 1.7.2 shows the financial intermediation system's development and its role in the economy and economic growth from 1994 to 2020. We can divide this period into two parts: 1994-2003, the period of development, when the system development rates were significantly lower from both the economic growth and development of the international financial system; 2004-2020, when the system was developing faster than the economy and the global economic system, hence gradually becoming the primary source of financing in the economy.

Thus, in 2003, the share of the financial intermediation system in GDP was 1.4%, lending to the private sector - 5.6% of GDP. In 2019, the percentage of the financial intermediation system in GDP was 6%, and private sector lending was 57.1% of GDP.

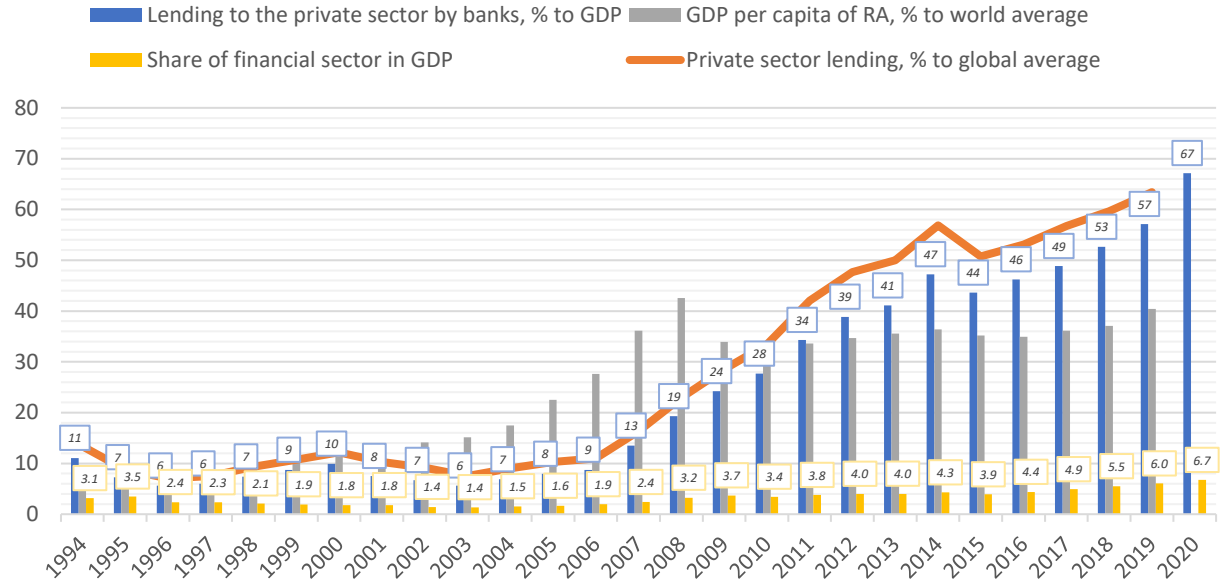

Figure 1.7.2. Armenia's financial system 1994-2020, main indicators

Source: National accounts of Armenia, World Development Indicators, World Bank

In 2004, the volume of sectoral lending to the economy began to grow (Figure 1.7.3): industry (including energy) from 8.3% in 2004 to 52.8% in 2020, agriculture – from 2% to 27.2%, construction – from 1.8% to 62.4%, transport and communication – from 0.9% to 36.8%, trade – from 14.1% to 80.%, service sector[185] – from 1.6% to 11.9%. Until 2004, the system dealt exclusively with supply financing. Since 2004 the financial system started using consumer loans to finance the demand, and since 2005 it has also been using mortgage loans. The nominal volume of consumer loans increased 23.6 times from 2004 to 2020, accounting for 20.1% of final household consumption, mortgage loans – 43.3 times. In 2004, consumer loans made up 2.4% of the final consumption of households; in 2019 – 16.9%, and in 2020 – 20.1%. Mortgage loans accounted for 2.5% of the construction sector value-added in 2005, reaching 86.4% in 2019 and 111.5% in 2020.

[184] There are two institutional investors in Armenia: the Pension Funds and the Insurance Foundation for Servicemen, which according to our information do not invest in the private sector of the economy.

[185] Services sector – all the other sectors not presented on Figure 1.7.3.

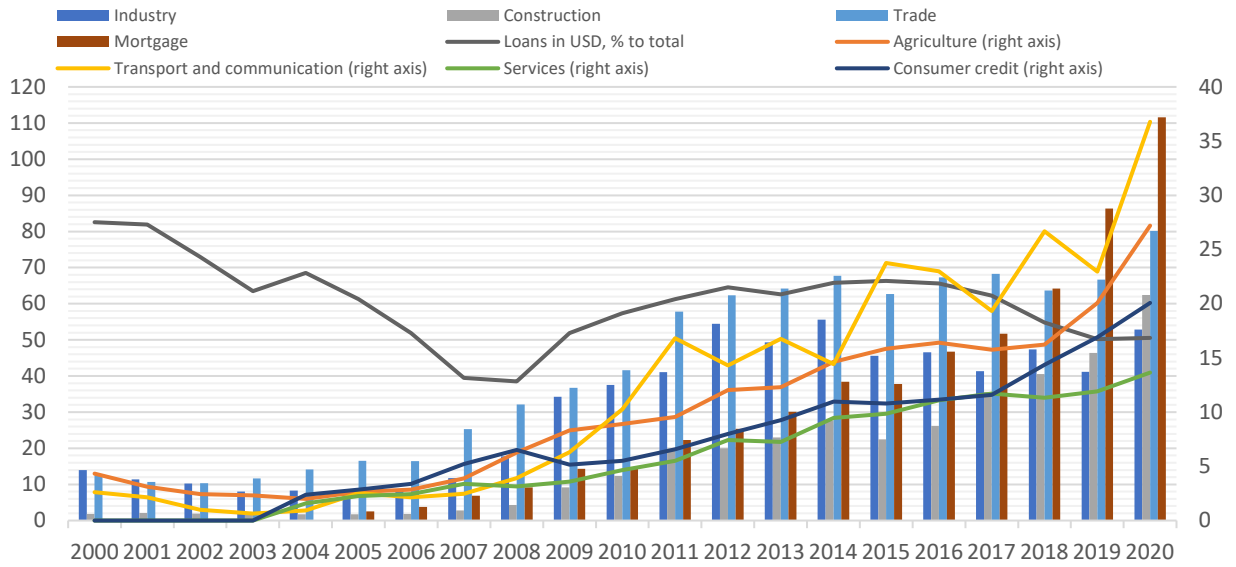

Figure 1.7.3. Loan structure of the Armenian economy, 2000-2020, current prices

Source: National Accounts of RA, Database of the Central Bank of Armenia

The level of dollarization of the financial intermediation system and consequently the dollarization in the economy depends on the depth of internal value chains and the stability of the exchange rate. It was very high in the early 2000s and decreased from 82.6% in 2000 to 38.5% in 2008, then increased to 50% in the crisis year of 2020. Thus, the degree of dollarization of the financial system is lower when the economic development mainly happens at the expense of non-tradable goods and services[186]. It is higher when the economic development of the economy takes place primarily at the expense of tradable goods and services.

The next feature of financial intermediation system is "expensive" loans. The interest rates of loans in Armenia are higher than in Georgia[187] since 2009, significantly higher than in Russia, the United States, and China[188] (Figure 1.7.4). Although lending rates in Armenia have decreased by about 20 percentage points during the last 20 years, the opportunities for economic development through the financial system are more limited, and the debt obligations are higher than in the benchmarking and many other countries.

[186] Non-tradables - construction and services consumed within the country, tradables - products of industry, agriculture and services that can be exported.

[187] Economic characteristics, including inflation, external financing, economic structure, growth rates in Georgia are comparable to Armenia

[188] Russia and China had significant trade balance surpluses in 2000-2019, the US had the largest trade balance deficit in the world, inflation was the highest in Russia compared to the other 4 countries, and the lowest in the US and China.

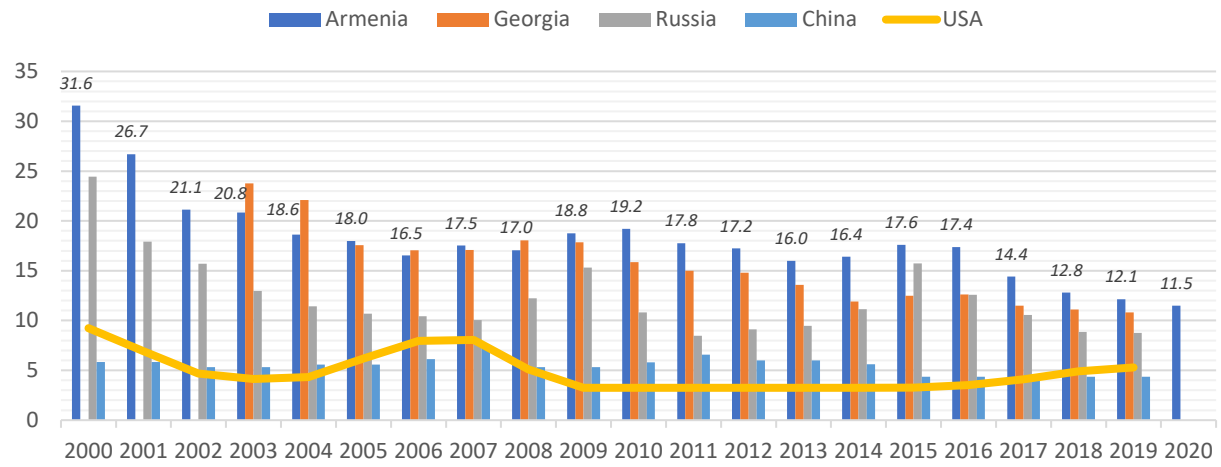

Figure 1.7.4. Nominal interest rates on loans, 2000-2020

Source: World Development Indicators, World Bank Database

Relatively "expensive" loans are mainly explained by the anti-inflationary monetary policy pursued by the Central Bank of Armenia, which was based on maintaining macroeconomic stability and didn't change except for the crisis years of 2009 and 2020. The fiscal policy in 2009 and 2020 was countercyclical, with increased spending amid tax cuts. The differences in these policies since 2009 have led to an increasing expansion of crediting in Armenia through the state encouragement of accelerated financial intermediation, mainly through subsidized interest rates on mortgages and agricultural loans, which can significantly increase lending without lower interest rates.

Such developments in the financial intermediation system, mainly the intensive subsidizing of the real estate market in the last few years, pose the risk of a "bubble" in that market and a further crisis. In 2018-2020, the average market prices of real estate in Yerevan increased by 32.2%[189], and in 2020 by 7.5%, while in 2009, they decreased to 265.8 thousand AMD compared to 296.3 thousand AMD in 2008. According to some research[190], the rise in the prices of assets acquired at the expense of credit indicates the formation of "bubbles" and a possible further crisis in the sector.

The situation in the field of consumer loans is also distressing. The debt burden of households to the financial system was 929 billion AMD (without interests) or 462.7 thousand AMD per citizen of working age in 2020, and in case of interests included - 555.3 thousand AMD or 2.92 monthly average salary. Including mortgage loans, in 2020, the debt burden amounts to 1410.2 billion drams or 30.5 per cent of final household consumption, 22.8 per cent of GDP, and in case of interests included - 35.5 per cent, or 26.6 per cent of GDP. What is worrying here is not the debt volumes but the growth rates and the high service cost.

The economic growth of 1994-2008 and 2010-2019 and its determinants

In 1994-2008, Armenia had a continuous economic growth of about 9% on average. The latter was significantly higher than the average global economic growth of about 3.3%[191]. Such

[189] For comparison, nominal GDP growth was 11.1 percent

[190] See Алан Гринспейн, Карта и территория, Москва, 2015, Рей Далио, Большие долговые кризисы. Принципы преодоления, Москва 2021

[191] Armenia developed faster than the world economy in all mentioned periods: 1994-1997: 5.35% compared to the world's 3.27%, 1998-2003: 10.6% compared to 2.87% and 2004-2008: 11.6% compared to 3.77%.

economic growth enabled the recovery of the GDP level of 1990 in 2004. However, in 2009 the global economic crisis had a significant negative impact on the Armenian economy: the GDP decreased by 14.1%[192], about 55% of which was due to the reduction of construction by 41.6%. Other reduced sectors due to the crisis were industry - about 6%, trade - 3.6%, and services - 21.8%.

Almost the entire reduction in services was mainly due to the decrease in the transport and real estate sectors. The former was due to a reduction of foreign trade and the general decline in economic activity. Secondly, it is specific to any economic crisis when people begin to save as financial resources dwindle. Hence, household spending priorities change in favour of food and essential services and to the detriment of long-term consumer and investment goods, including real estate.

It is noteworthy that even though in the US and some other countries the crisis began in the real estate financing market[193] and then spread to the financial intermediation system and later to the real sector of the economy, there was no financial crisis in Armenia for the simple reason that there was no mass mortgage lending[194]. Mortgage lending in 2008 covered 9.2% of the value-added of construction, in 2019 - 86.4%, in 2020 - 111.5%.

During the 2009 crisis, there was no financial crisis in Armenia, and hence there was no risk of bankruptcy of system-building businesses. So, the government did not use quantitative easing or bail out policies[195]. Instead, it used actions to increase the budget deficit due to the inevitable decrease in government revenues and the need for increased expenditures and targeted measures to support individual affected economic sectors.

Economic growth in Armenia, as in the rest of the world, was restored in 2010[196], and it took 4 years to reach the pre-crisis level of 2008. In 2009, the fastest growing sectors suffered from the economic crisis. Overcoming the crisis lead to a new economic structure with new drivers of economic development.

The recovery growth in 1994-1997 (Table 1.7.2) was mainly due to the return to normal living conditions. However, it was not primarily related to the increase in investment. It was based on restarting existing capacities, and investments were mainly directed to renewing the production infrastructure (e.g., reopening the ANPP in 1996). On the other hand, the high share of net taxes in economic growth was due to the imposition of VAT on imports since 1997.

In the second phase of the recovery growth (1998-2003), we can already notice the significant growing investment component, as construction begins to become the main driving force of the economic growth, surpassing industry, agriculture and trade, yielding only to the service sector (Table 1.7.3 shows the contribution of each sector to cumulative economic growth).

[192] The world economy shrank by 1.68% in 2009, and in the USA, where the crisis originated, it lasted for 2 years: in 2008, the GDP shrank by 0.13%, and in 2009 by 2.53%.

[193] It is known that the main cause of the crisis was the artificial encouragement of the purchase of real estate in the USA (subprime mortgage crisis), which was caused by the deregulation of investment activities, and the resulting involvement of an increasing number of households in the real estate market, a noticeable and growing part of which were insolvent. The whole process was based on expectations of progressive growth of real estate prices. As the number of insolvent people increased, prices began to fall, which laid the foundations of the financial crisis.

[194] In 2009, the value-added of the financial intermediation system in Armenia was reduced by 1.6%, the volume of lending increased by about 8 billion AMD, and the interest rates on lending increased from 17% in 2008 to 18.8%.

[195] Quantitative easing: when the Central Bank acquires the securities of private financial organizations without considering their real interest rates, providing them with appropriate financial resources. Bail out: acquiring a share of relevant financial or non-financial organizations, with the allocation of financing in return, on the condition of its subsequent repurchase by the organization .

[196] In Armenia - 2.2%, in the world economy - 4.3%.

Table 1.7.2. Sectoral sources of economic growth in Armenia in 1994-2019, at comparable prices of 2019, million USD

	1994-1997	1998-2003	2004-2008	2009	2010-2013	2014-2017	2018-2019	1994-2019
Cumulative economic growth	*674.6*	*2360.1*	*4342.5*	*-1449.1*	*1632.6*	*1586.3*	*1589.7*	*10736.6*
including								
Industry	*109.4*	*382.8*	*135.3*	*-87.0*	*462.1*	*447.5*	*363.7*	*1813.7*
Extractive	*3.6*	*56.6*	*22.1*	*6.75*	*81.25*	*186.0*	*15.5*	*371.9*
Manufacturing	*56.6*	*300.1*	*60.0*	*-39.6*	*314.9*	*260.5*	*324.2*	*1276.8*
Energy	*49.2*	*26.0*	*53.2*	*-54.2*	*65.9*	*0.95*	*24.1*	*165.2*
Agriculture	*29.8*	*257.7*	*436.0*	*82.2*	*189.3*	*137.9*	*-219.3*	*913.6*
Construction	*49.4*	*500.7*	*1200.8*	*-798*	*-134.2*	*-180.3*	*40.6*	*679.0*
Trade	*203.6*	*306.0*	*386.6*	*-52.3*	*144.8*	*216.7*	*255.0*	*1460.5*
Services	*114.9*	*626.2*	*1541.9*	*-327.9*	*636.5*	*930.7*	*948.1*	*4470.3*
Value-added, total	*507.1*	*2073.4*	*3700.5*	*-1182.9*	*1298.4*	*1552.5*	*1388.3*	*9337.3*
Net taxes, total	*167.5*	*286.7*	*642.0*	*-266.2*	*334.2*	*33.8*	*201.4*	*1399.3*

Source: National Accounts of Armenia
Note: the table doesn't include data on "Financial Intermediate Services Indirectly Measured".

Table 1.7.3. Sectoral sources of economic growth in Armenia in 1994-2019, in %

	1994-1997	1998-2003	2004-2008	2009	2010-2013	2014-2017	2018-2019	1994-2019
Cumulative economic growth	*100.0*	*100.0*	*100.0*	*-100.0*	*100.0*	*100.0*	*100.0*	*100.0*
including								
Industry	*16.2*	*16.2*	*3.1*	*-6.0*	*28.3*	*28.2*	*22.9*	*16.9*
Extractive	*0.5*	*2.4*	*0.5*	*0.5*	*5.0*	*11.7*	*1.0*	*3.5*
Manufacturing	*8.4*	*12.7*	*1.4*	*-2.7*	*19.3*	*16.4*	*20.4*	*11.9*
Energy	*7.3*	*1.1*	*1.2*	*-3.7*	*4.0*	*0.2*	*1.5*	*1.5*
Agriculture	*4.4*	*10.9*	*10.0*	*5.7*	*11.6*	*8.7*	*-13.8*	*8.5*
Construction	*7.3*	*21.2*	*27.7*	*-55.1*	*-8.2*	*-11.4*	*2.6*	*6.3*
Trade	*30.2*	*13.0*	*8.9*	*-3.6*	*8.9*	*13.7*	*16.0*	*13.6*
Services	*17.0*	*26.5*	*35.5*	*-22.6*	*39.0*	*58.7*	*59.6*	*41.6*
Value-added	*75.2*	*87.9*	*85.2*	*-81.6*	*79.5*	*97.9*	*87.3*	*87.0*
Net taxes	*24.8*	*12.1*	*14.8*	*-18.4*	*20.5*	*2.1*	*12.7*	*13.0*

Source: National Accounts of Armenia
Note: the table doesn't include data on "Financial Intermediate Services Indirectly Measured".

In 2004-2008, the structure of the economy and the primary sources of economic growth changed dramatically: construction and services together provided 63.2% of total economic growth, compared to 47.7% in the previous period, and the total contribution of industry and agriculture was only 13.1% compared to 27.1% in the previous period.

This model of economic development, where the non-tradeable sectors dominated over the sectors with the potential for import substitution or export, based on positive expectations of rising real estate prices, fell victim to the 2008-2009 financial crisis, during which, as is usually the case during the global crises, investment in emerging markets,

including Armenia, declines sharply due to increased risk (capital flight).

Such a development led to an increase in the volume of investments due to the positive expectations and contributed to the development of the primary developing sector (in this case, construction) and the sectors serving it, such as construction materials, woodworking, metal production, and the growth of related imports. However, when the expectations change, it starts working in the opposite direction, which was the reason for the sectoral reductions in 2009, mainly due to the unprecedented decline in construction. And the stronger the connection of those areas with the leading developing sector, the higher was the reduction.

2010-2013 was the period of economic recovery from the crisis, during which growth rates have slowed down due to capital flight, and a new economic structure was formed, where services remained the main development driver, along with it the industry and agriculture started becoming the other driving forces, increasing the export potential of the economy. Thus, the economy got some export direction, and construction continued to decline.

In 2014-2017, the role of services as the primary source of economic growth increased, and its contribution became more significant than the cumulative contribution of other sectors. The role of services as the main driving force of economic growth deepened in 2018-2019, while the decline of agriculture continued since 2016 and was due to the constant reduction of the relative profitability of agriculture and the lack of an effective system to support it.

Table 1.7.4 and Table 1.7.5 present the sources of economic growth/recession and the financial connections of the economy with the world during the growth/recession. Since 1994, Armenia has been deeply dependent on foreign financing. On average, half of the economic growth was financed by the capital inflow. Dependence on external financing was the highest in 2018-2019 when external financing growth exceeded GDP growth by 11.7%. In 2004-2008, it was the lowest, as external financing provided about 20% of economic growth. In 2014-2017, 26.6% of economic growth was ensured due to external financing.

Exports were a significant source of economic growth in 1998-2003. In 2014-2017, almost all the economic growth was ensured at the expense of exports. During 2004-2008 the gross capital formation had the highest contribution to economic growth, providing double-digit growth rates.

Table 1.7.4. Sources of economic growth in Armenia in 1990-2019, at comparable prices of 2019 - million USD

	1991-1993	1994-1997	1998-2003	2004-2008	2009	2010-2013	2014-2017	2018-2019	1994-2019
Change in GDP	*-3288*	*674,5*	*2360*	*4342,5*	*-1449*	*1633*	*1586*	*1590*	*10737*
Total domestic consumption	*-1817*	*791*	*1622*	*2765,1*	*-359*	*1295*	*313*	*2202*	*8630*
Final Consumption, Households	*62*	*6,5*	*183*	*479,9*	*-14,2*	*195*	*12,6*	*112*	*1118*
Final Consumption, Government	*-42*	*388*	*665,5*	*2240*	*-1109*	*-322*	*21*	*441*	*2288*
Gross capital formation	*-1797*	*1186*	*2470*	*5484*	*-1482*	*1169*	*347*	*2755*	*12035*
Export of goods and services	*-1129*	*-324*	*1400*	*-242*	*-195*	*1187*	*1655*	*610*	*4092*
External financing	*-362*	*-187,5*	*-1510*	*-900*	*228*	*-723*	*-416*	*-1775*	*-5391*

Source: National Accounts of Armenia
Note: Table includes only the essential sources of economic growth

Table 1.7.5. Sources of economic growth in Armenia in 1990-2019, in %

	1991-1993	1994-1997	1998-2003	2004-2008	2009	2010-2013	2014-2017	2018-2019	1994-2019
Change in GDP	*- 100.0*	*100.0*	*100.0*	*100.0*	*-100.0*	*100.0*	*100.0*	*100.0*	*100.0*
Total domestic consumption	*- 55.3*	*117.3*	*68.7*	*63.7*	*-24.8*	*79.3*	*19.8*	*138.5*	*80.4*
Final Consumption, Households	*1.9*	*1.0*	*7.7*	*11.1*	*-1.0*	*12.0*	*0.8*	*7.1*	*10.4*
Final Consumption, Government	*- 1.3*	*57.6*	*28.2*	*51.6*	*-76.6*	*-19.7*	*1.3*	*27.7*	*21.3*
Gross capital formation	*-54.7*	*175.8*	*104.7*	*126.3*	*-102.3*	*71.6*	*21.9*	*173.3*	*112.1*
Export of goods and services	*-34.3*	*-48.0*	*59.3*	*-5.6*	*-13.4*	*72.7*	*104.3*	*38.4*	*38.1*
External financing	*- 11.0*	*-27.8*	*-64.0*	*-20.7*	*15.7*	*-44.3*	*-26.2*	*-111.7*	*-50.2*

Source: National Accounts of Armenia
Note: Table includes only the essential sources of economic growth

The economic crisis of 2020 and structural changes in the economy

The global economic crisis of 2020 was of an artificial origin. It was mainly due to lockdowns, particularly in the service sectors involving trade operations and human contacts, such as transportation, hospitality, and restaurants. In the second half of 2020, when these restrictions were eased, the depth of the crisis diminished. In 2021, after their elimination, the economy around the world and Armenia began to recover.

The depth of the 2020 crisis was significantly lower than in 2009 (Table 1.7.6), as, in 2020, there was no primary driver of the economic growth as construction that provided 27.7% of the economic growth and was responsible for 55.1% of economic decline in 2009. On the other hand, the changes in the future structural and economic growth drivers of the economy due to the 2020 crisis will also be less pronounced than they were in 2010-2019.

Table 1.7.6. Economic recession and characteristics of 2009 and 2020 crises: sectoral structure

	2009	2020	2021*		2009	2020	2021*
GDP	*-14.1*	*-7.4*	*5.0***	**Accommodation and food service activities**	*23.5*	*-43.3*	*62.5****
Agriculture	*5.9*	*-4.1*	*6.8****	**Arts, entertainment and recreation**	*3.4*	*-21.3*	*-36.1****
Industry	*-6.4*	*-1.7*	*2.1****	**Education**	*2.2*	*1.3*	*6.9(1)*
Extractive	*6.3*	*8.4*	*7.2****	**Healthcare**	*-5.4*	*6.9*	*42.6(1)*
Manufacturing	*-5*	*-3.6*	*-1.1****	**Real estate activities**	*-20.7*	*-14.5*	*18.9(1)*
Energy	*-12*	*-1.2*		**Information and Communication**	*10.9*	*8.4*	*12.7****
Construction	*-41.6*	*-6.7*	*10.8****	**Transport**	*-28.3*	*-34.4*	*7.3****
Trade	*-5.3*	*-13.2*	*8.0*****	**Financial and insurance activities**	*-1.6*	*5.4*	*3.1****

** 2021 January-June, **Economic activity indicator ***Gross output, ***** Turnover (1) Paid services*
Source: Statistical Committee of RA

There were 4 economic sectors with the fastest growth before the crisis of 2020: mining industry (average annual growth in 2010-2019 - 14.5%, share in GDP in 2010 - 1.69%, in 2019 - 3.25%), financial intermediation (average annual growth in 2010-2019 - 13.9 %, share in GDP in 2010 - 2.75%, in 2019 - 6%), Accommodation and food service activities (average annual growth in 2010-2019 - 15.4%, share in GDP in 2010 - 0.8%, in 2019 - 1.89%), and Arts, entertainment and recreation (average annual growth 2010-2019 - 27%, share in GDP in 2010 - 0.92%, in 2019 - 5.55%). The total contribution of these sectors to the 2010-2019 economic growth was 37.6%.

Two of these sectors suffered the most: Accommodation and food service activities, Arts, entertainment and recreation. The decline in these two sectors accounted for the 26.2% of the GDP decrease in 2020. According to the results of the first half of 2021, the first one has the potential for recovery depending on the growth of gross household consumption (food services) and on the increase in outbound and inbound tourism (accommodation services). Also, the results of the first half of 2021 show that the second sector will most likely cease being a driving force of the economy.

Based on the results of the first half of 2020 and 2021, the information and communication, healthcare and manufacturing sectors can be added to the above-mentioned growing sectors. As for agriculture, its further development requires further enlargement of farms and a sharp increase in their productivity, which should mainly occur through a significant modernization and expansion of the current system of state subsidies.

Our further research, which will focus on relatively high productivity and, consequently, sectors that create a higher value-added, will provide more accurate identification of potential areas for future growth and the development of an economic policy toolkit to encourage the development of those sectors.

A comparison of GDP consumption trends during the 2009 and 2020 crises shows that gross consumption in 2020 decreased by about 2.5 times more than in 2009, despite the reduction in GDP being almost twice less. Moreover, the drop was due to the decrease in household consumption by -13.8% or -789.8 billion AMD at current prices, while the total GDP decline amounted to only 361.6 billion drams. It indicates that the policy of stimulating household demand was ineffective in 2020 compared to 2009 when household consumption fell by only 4.3% compared to a 14.1% drop in GDP.

The state policy for stimulating demand in 2020 had three components: (1) a 5.3 per cent increase in state-funded wages to meet the additional household demand of about 200,000 workers at 21.6 billion drams, and (2) an 8.9 per cent increase in pensions, which was to meet the additional household demand of about 464,000 pensioners at 19.4 billion drams and (3) the partial compensation of those who lost their job due to the lockdown.

Given the disproportionate decline in household consumption in 2020 and the increase in the income of state-paid employees and retirees, it becomes clear that private sector incentive programs were insufficient in terms of both coverage and volume.

As for the growth of consumption of state institutions, it was mainly conditioned by two particular circumstances in 2020: the Covid-19 pandemic, the cost of which can be estimated at least 57.3 billion drams, and the second Artsakh war, the value of which we estimate at least 111.8 billion drams without destroyed military equipment and the value of the accumulated ammunition until 2020.

The reduction in gross capital formation was higher than the reduction in GDP (in %) in 2020 but about three times less than in 2009 due to an unprecedented decline in construction, which did not occur in 2020. It reflects the reduction in capital formation during the crisis

due to future uncertainty and negative expectations.

Exports of goods and services in 2020 fell by almost three times more than in 2009, mainly due to an unprecedented 62.1% (1 321 million USD) decline in exports of services, 94% of which was due to the reduction in the volume of travel. The volume of exports of goods decreased by only 3.9%. Imports of goods fell by 17.7% in 2020, and imports of services by 61.5% (1 490 million USD), 79% of which was due to reduced travel. The recovery of their pre-crisis levels of export and import largely depends on outbound and inbound tourism dynamics.

Table 1.7.7. Characteristics of GDP in 2009 and 2020 crises

	2009	2020		2009	2020
GDP	*-14.1*	*-7.4*	Gross capital formation	*-25.4*	*-8.6*
Gross consumption, including	*-4.0*	*-10.1*	**Export of goods and services, including**	*-10.4*	*-32.4*
Households	*-4.3*	*-13.8*	Export of goods	*-34*	*-3.9*
Government, including	*-1.2*	*15.2*	Export of services	*33.5*	*-62.1*
Satisfying individual needs	*-2.7*	*8.7*	**Import of goods and services, including**	*-19.2*	*-31.7*
Satisfying collective needs	*2.6*	*25.6*	Import of goods	*11.7*	*-17.7*
NGO services to households	*27.7*	*-24.6*	Import of services	*-43.2*	*-61.5*
Gross formation, nրhg	*-30.9*	*-9.6*			

Source: National Accounts and Balance of Payments Statistics of Armenia

1.7.2. Analysis of socio-economic policy of Armenia in 2020

The strength of the economic crisis in different countries was determined, first of all, by the strength of lockdowns and the scope of their application. Secondly, it was impacted by the economic structure[197] of the countries, and thirdly, by the nature of the conducted economic policy, which in almost all countries was countercyclical and differed in the extent of supply and demand incentives and the applies tools[198].

In Armenia, as in many other countries with limited convertibility of national currency[199], the primary tool of the anti-crisis and countercyclical policy is the expansionary fiscal policy, used during the 2009 and 2020 crises (Figure 1.7.5). It assumes a sharp increase in budget expenditures amid declining revenues, significantly increasing the budget deficit, which in turn is financed by increasing the external and domestic public debt. Additional revenues are typically used in three ways: (1) to offset the loss of revenue due to the crisis, which allows not to cut already announced state expenditures and incur additional expenses to stimulate the economic activity by (2) increasing the demand and (3) supply.

[197] Ceteris paribus, a greater economic decline was recorded in those areas where the share of these services in GDP was higher.

[198] Here, the countries with their national convertible currency and the ability to accumulate debt obligations with that currency without inflationary risks are the USA, the Eurozone countries, used both policies together. Those countries that did not have that opportunity either used their accumulated foreign exchange reserves or increased their liabilities in convertible currency and domestic currency, including Armenia.

[199] Here, under limited convertibility we understand the currency that is not used in international trade of goods and services, while the currency that appears in international trade as a means of payment used by everyone is considered convertible.

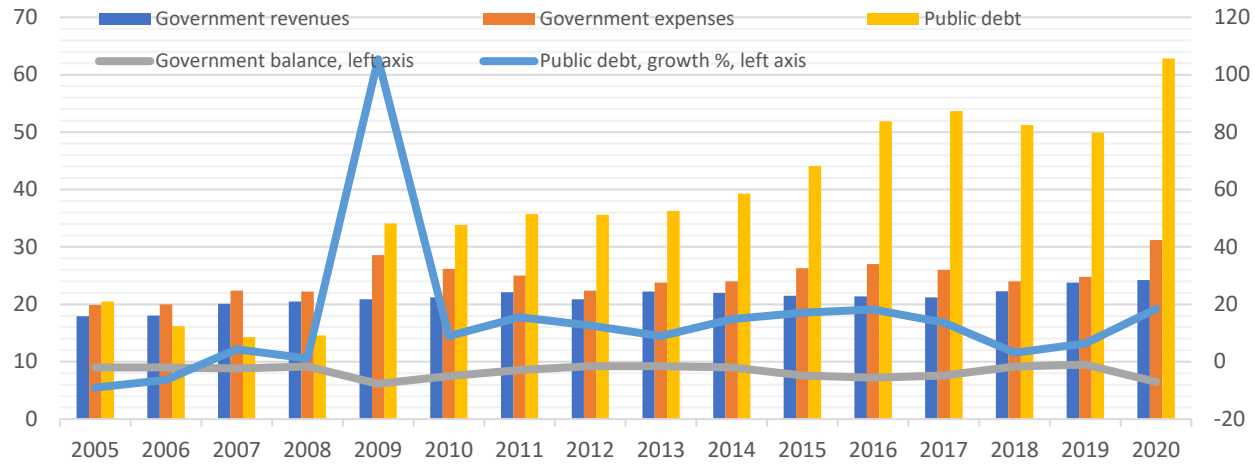

Figure 1.7.5. The budgeting system of Armenia and the main indicators of the public debt in 2000-2020, % to GDP

Note: Percentage of government debt and government balance - left axis
Source: IMF World Economic Outlook, April 2021

During the crisis of 2009, state revenues decreased by 75.1 billion AMD or 2.39% of GDP, and expenditures increased by 103.6 billion AMD or 3.3% of GDP. Considering the decrease in revenues, the absolute growth of expenses amounted to 178.8 billion AMD or 5.7% of GDP. During the 2020 crisis, state revenues decreased by 68.8 billion AMD or 1.1% of GDP, and expenditures increased by 187.4 billion AMD or 3% of GDP. Considering the decrease in revenues, the absolute growth of expenses amounted to 256.2 billion AMD or 4.14% of GDP.

Figure 1.7.5 also shows that fiscal policy in the pre- and post-crisis periods was contractionary and aimed at reducing the budget deficit, even more intensively during 2005-2008, 2010-2014 and 2017-2019. The increase in the budget deficit in 2015-2016 was mainly due to developments in Russia, as a result of which the rate of economic growth in Armenia slowed down significantly in those years[200].

The peculiarity of the countercyclical fiscal policy is that regardless of the post-crisis dynamics of revenues, for various, mainly political reasons, it is impossible to reduce the absolute amount of public spending. The latter leads to a steady increase in public debt in countries with chronic budget deficits. Since 2009, the nominal public debt of Armenia has increased by an average of 11.8% per year, compared to the average economic growth of 7.7% from 2010 to 2019.

The monetary policy aims to ensure prices stability in Armenia by applying the inflation targeting tools, and is usually neutral to economic growth. However, during economic crises, it also acquires the features of an expansionary countercyclical policy and has the edges of agreement with the fiscal policy.

During the 2009 and 2020 crises, the money supply grew at an accelerated rate (Figure 1.7.6), including China, where during both 2009 and 2020 global crises, the country recorded economic growth of 9.4% and 2.3%, respectively. The growth of the money supply in Armenia was 15.1% in 2009 and 8.9% in 2020. Thus, the money supply behaviour in the reviewed countries were countercyclical and expansionary during the crises.

[200] 2015 – 3.2%, 2016 – 0.2%

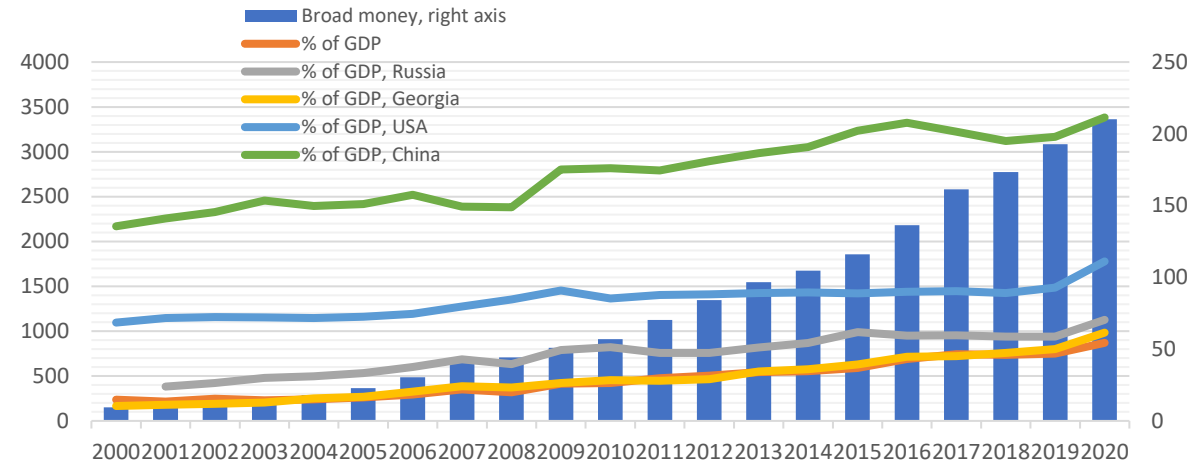

Figure 1.7.6. Broad money dynamics in absolute terms (billion AMD) and % to GDP, 2000-2020

Source: Databases of the Central Bank of Armenia, Central Banks of Russia, Georgia, USA and China

As for the pre-crisis period, according to the experts of the US Federal Reserve System, "The Federal Reserve System … have long monitored the growth of the money supply because of the effects that money supply growth is believed to have on real economic activity and the price level. Over time, the Fed has tried to achieve its macroeconomic goals of price stability, sustainable economic growth, and high employment in part by influencing the size of the money supply. In the past few decades, however, the relationship between growth in the money supply and the performance of the US economy has become much weaker, and emphasis on the money supply as a guide to monetary policy has waned."[201] Figure 1.7.6 proves this thesis quite clearly.

As for the central banks' interest rate policy, which, along with mandatory reserves and capital adequacy ratios, is the primary tool for regulating the credit market, has also been countercyclical. During crises, the central banks reduce interest rates and consequently increase lending and reduce their service cost in 2009 (except Russia) and 2020 (except Georgia) (Figure 1.7.7).

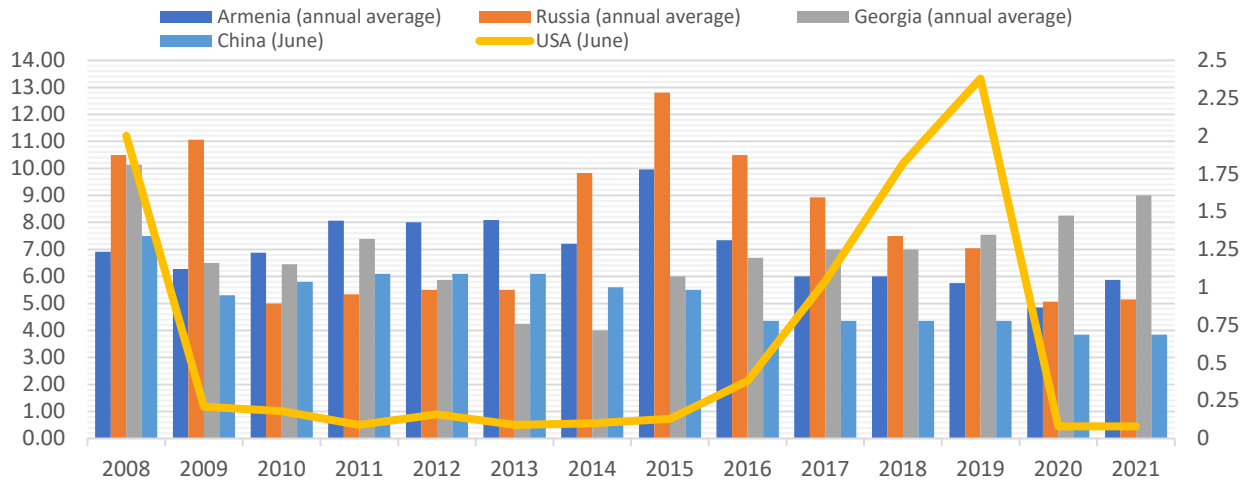

Figure 1.7.7. Central Bank interest rates, 2008-2020

Source: Databases of the Central Bank of Armenia, Central Banks of Russia, Georgia, USA and China

[201] The Money Supply, Federal Reserve Bank of New York. https://www.newyorkfed.org/aboutthefed/fedpoint/fed49.html (Retrieved on 17.10.2021)

Notably, no inflationary pressures were registered because of the countercyclical fiscal and monetary policy of 2009 and 2020[202]. We should highlight that the US Fed expansionary monetary policy with interest rates close to zero in 2009-2015 continued for five years after the end of the crisis, and the situation is the same in 2021. Moreover, as of March 2020, the reserve requirement became zero. The Central Bank of China did not increase the interest rate after 2020.

Thus, developments in countries which have recently maintained near-zero or negative interest rates[203], show that the inflationary financing of their economies does not generate inflation either in their countries or countries with highly positive central bank interest rates[204]. In addition, the capabilities of traditional monetary policy tools, including money supply and central bank interest rates, have been exhausted, and new tools are emerging, such as quantitative easing, acquisition of troubled assets by central banks. It is unclear how these changes will affect other countries' monetary policy tools. However, there are specific signals, including in the case of Armenia, that the expansionary monetary policy does not lead to an increase in inflationary pressure.

Armenia implemented additional targeted budget-assisted assistance programs in 2020, the total amount of which, as of September 10, 2020, amounted to 163.4 billion AMD (340 million USD, or 2.5% of GDP). The number of approved programs was 25[205]. It was impossible to determine the actual funding volumes for these programs by the end of 2020. According to a statement made by the Prime Minister of Armenia at the August 12 sitting of the Armenian government, the state has spent 64 billion AMD within the framework of those programs, of which 26.6 billion AMD was spent on social programs, 17.5 billion on economic programs and 19.9 billion on subsidy programs of bank interests.

Many former USSR countries have adopted similar programs to stimulate supply and demand. According to IMF[206], the package of these programs in Azerbaijan amounted to 4.8% of GDP in 2020, in Georgia - 3.8%, in Russia - 3.5%, in Kazakhstan - about 9%, in Kyrgyzstan - about 7%, in Uzbekistan - about 2%. Thus, the volumes of these programs in Armenia were lower than in most of the mentioned countries. As for the developed countries, due to their wider opportunities to pursue an expansionary fiscal policy, the volumes of these packages were larger and more diverse in coverage[207]. We should also note that the directions for spending these packages were almost the same in all countries, including Armenia, differing in the number of sectors involved and the volume of assistance.

We can distinguish the following directions for supply expansion: (1) loan interest subsidy, (2) temporary loan interest holidays[208], (3) direct assistance, either one time or for a specified period of time[209] to businesses that have experienced a reduction in business volume due to Covid-19 to maintain employment and pay wages; (4) temporary tax holidays or reductions (including social security contributions) for

[202] The GDP deflator in 2009 was 2.38% in the world, in 2020 – 1.68%, in Armenia – 2.5% and 1.9%, in Russia – 1.97% and 0.897%, in Georgia – 2.136% and 6.9% , in the USA –- 0.762% and 1.21%, in China – -0.21% and 0.672%.

[203] EU central bank, zero interest rate since 2015, Japan central bank – -0.1% since 2016, Great Britain – 0.1% in 2020, Australia – 0.1% in 2020, Canada – 0.25% in 2020 and others

[204] In 2019, the GDP deflator in Japan was 0.6%, in 2020 the GDP deflator in Great Britain was 5.67%, in the Eurozone – 1.197%, in Australia – 1.968%, in Canada – 0.832%

[205] COVID-19 crisis response in Eastern Partner countries. OECD, October 2020. https://www.oecd.org/coronavirus/policy-responses/covid-19-crisis-response-in-eu-eastern-partner-countries-7759afa3/ (retrieved on 20.10.2021)

[206] IMF, Policy responses to Covid-19 as of July 21, 2020 (https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19) (retrieved on 20.10.2021)

[207] According IMF, Policy responses to Covid-19 as of July 21 in Germany it accounted for 8.6% of GDP, in France - about 8%, in Italy - about 7%, in Spain – 7.4%

[208] The latter (credit holidays) was implemented in Armenia at the expense of the financial intermediation system

[209] Mostly one-time in Armenia

businesses affected by Covid-19 restrictions[210]; (5) subsidies to strategic sectors affected by Covid-19 restrictions[211], (6) grants for start-up businesses, especially in the areas of digitization, green energy and high technology; (7) large-scale state credit guarantees from 50 to 100 percent, particularly for exporting enterprises[212].

As for the demand expansion, we have mentioned above that the results of this direction cannot be considered sufficient in Armenia based on the 13.8% drop in household consumption. It is due to the small volume of implementation of the programs that encourage the demand[213], the rigorous conditions for selecting the beneficiaries of these programs, and their large number[214].

Considering the resumption of economic growth in 2021 and the probability of recurrence of further lockdowns, it is urgent to develop new socio-economic policy approaches to ensure sustainable economic growth in the future and to emerge quickly from future economic growth crises without restricting or halting economic activity.

[210] Not applied in Armenia
[211] Not applied in Armenia
[212] Not applied in Armenia

[213]As of August 12, 2020, the amount of money spent on these programs was only 26.6 billion drams.
[214] 13 of the 25 programs had a social nature and were aimed at stimulating demand in rather narrow areas

2. Identifying the drivers of economic growth. theoretical framework

The key task of economic policy is to create general and sectoral favourable conditions for economic development in the short and medium term. Economic development can be characterized as an increase in the degree of economic complexity[215]. The latter is the increase in the number of economic functions performed in the country. On the other hand, economic development and economic complexity occur as a combination of four interrelated and parallel operations.

- an increase in the internal economic efficiency – the production factors productivity growth[216];
- in the conditions of globalization of the economy, when product markets take on a global character, an increase in the overall or external efficiency of the country[217];
- increase in the number, volumes and efficiency of value chains (internal integration) of the goods and services produced in the country;
- increase in the number and volume of value chains (external integration) for imported and domestically produced goods and services.

It is necessary to discuss the economic policy in the context of the degree of economic complexity and the changes in internal and external efficiency that occurred in the country. It will allow analyzing the efficiency of the economic policy and propose appropriate changes. So the study should answer the following questions: (a) whether there was an increase in the degree of economic complexity during the specified period and for what reasons, (b) whether there was an increase in the economic efficiency during the specified period and for what reasons, and (c) whether the country's external efficiency has changed and for what reasons.

It is necessary to analyze the country's economic structure, the number and volumes of sectors, and the connections between them to answer the first question. To answer the second question, we should analyze some indicators of internal efficiency, productivity, capital intensity, capital-to-labour ratio, material and energy intensity, unit labour cost, etc.

To answer the third question, we should analyze some indicators of the external economic efficiency, including the external commodity circulation, the volume and structure of export and import of goods and services and capital. It is also necessary to analyze the length and intensity of the value chains of the country's internal and external integration, particularly critical import, technology import, inter-sector connections and their intensity.

Based on these goals, the current research analyses Armenia's economy and the main economic activity sectors. There are two general theoretical approaches to evaluating the economic development policy and developing relevant proposals: theories of comparative advantages[218] and competitive advantages[219].

[215] The complexity of the economy can be described as the number and intensity of the types of activities, professions and occupations in the economy and the various types of connections (material, monetary, informational) operating between them. Thus, a simple economy, for example an agrarian one, is such an economy where, on the one hand, the types of activities and their connections with each other and the outside world are limited and characterized by low intensity, and on the other hand, the main goal of production is to satisfy country's demand.

[216] In literature it is called TFP (Total Factor Productivity):

[217] It is characterized by improving the place and role of the country in the labour division and specialization. Place and role respectively characterize a country's specialization in the labour division and the change in that specialization.

[218] See Джастин Линн "Демистификация китайской экономики", М. Мысль 2013, глава 6

[219] See Майкл Портер "Международная конкуренция. Конкурентные преимущества стран",М.Альпина 2017,часть 3

The former studies the tools for increasing internal and external economic efficiency (in terms of location). The latter is related to another issue related to economic development: what are the tools of effective and rapid economic complexity, and how do they affect external efficiency (in terms of deepening and increasing the role).

2.1. Comparative advantages of the country

According to this theory, countries are historically divided into two types: primary (pioneer) or developed and of catch-up growth[220] or developing countries.

Primary development assumes reaching a higher degree of economic complexity through creating new production technologies, new products, or new economic sectors to increase the share of productive capital and reduce its relative price by increasing the relative labour cost[221]. At the same time, old production technologies, older products or those sectors of the economy that produce outdated goods disappear[222]. The main factor determining these operations is the scientific and technical progress, which in primary development countries is mainly endogenous[223] and depends on the accumulation of knowledge, abilities and capital in the country. From a financial point of view, the expenditures aimed at science and research[224], the development of professional education, and the power of the financial intermediation system that ensures capital acquisition, including innovative capital, determine the operations mentioned above.

Thus, to ensure primary development, it is necessary to have some accumulated capital, which increases during development. So the price of primary development is constantly growing.

In the countries of primary development, along with these processes, a development encouraging institutional system forms and changes during the development, which provides:

1. Protection of property rights in terms of production capital, intellectual property[225], and labour force[226];
2. Efficient and predictable resolution of economic disputes;
3. Efficient financing of economic development (through a developed and accessible system of financial intermediation);
4. Competition protection and regulation of monopolies;
5. The division of functions contributing to economic development between the state and the market economy.

The countries that could not ensure the capital accumulation necessary for primary development cannot do it due to the constant increase in the cost of primary development. Hence, the only possible way of development becomes the catch-up growth that all the current primary development countries have passed. As for the catch-up growth (developing) countries, in the case of correctly implemented policies, development[227] is based on the effective use of

[220] The composition of these groups changes over time. Historically, at the beginning of the industrial revolution, Great Britain was the pioneer country of development, and the developing countries were the United States, France, Germany, which moved to the first group as a result of the catch-up growth.

[221] The relative price of labour increases mainly because of increased labour demand, which increases the time and resources needed for educational and professional training.

[222] It is a special form of market economy development, which is called creative destruction.

[223] In other words, it is based mainly on the technologies developed and/or introduced for the first time in the given country, new products and new sectors of the economy.

[224] Research and development (R&D)

[225] For example, the patent system.

[226] The latter is the economic basis of human rights protection.

[227] In the framework of this research, economic development implies the rapid transition from the status of a developing

backwardness advantage[228]. The essence of the backwardness advantage is that the financing necessary for growth is lower compared to the countries of primary development by applying the technologies and institutional structures that have already been developed and successfully tested in those countries[229]. It is necessary to consider the relative prices of production factors in the country during the development. In developing countries, in general, labour is significantly cheaper than capital. As Justin Lynn[230] highlights, the use of leading technologies and experience of developed countries, considering the labour to capital prices ratio, allows developing countries to provide accelerated economic growth rates in a relatively shorter time and with fewer costs and become a developed country[231].

Thus, the main reason and driving force behind the "economic miracle" in the countries of Western Europe after World War II and East Asian countries after 1960 is the use of the "technological gap" in these countries and leading developed countries. These countries adopted the leading technologies, a stimulus for developing their own technologies and modernizing their economies.

Figure 2.1.1 shows the general scheme of using the backwardness advantage. Based on the relative cost of capital, labour-intensive economic sectors are subject to primary modernization through the adoption of leading technologies, the main goal of which is the progressive growth of output volumes in these sectors, which will ensure an increase in labour productivity and the number of jobs. At that stage, technological progress is mainly imported. The countries should direct the domestic expenses to train appropriate personnel and adapt these technologies to local conditions to provide such development. At this stage, it is critical to have an accessible financial system to ensure the introduction of technologies. To ensure the progressive development of these sectors, the countries should promote internal consumption and the export of products of these sectors, expanding the consumption markets and accumulating foreign currency resources[232].

Such introduction of technologies should ensure an increase in economic efficiency and accelerated development through an expansion of value-added in those sectors. New technologies are drivers for structural economic changes, which are carried out through labour movement to modernised sectors accelerating economic growth.

At the same time, related industries are being created and developed, including those that provide endogenous technical development, which start serving the modernized industries by developing new product types based on existing technologies and changing these technologies through the accumulated production experience and obtained knowledge.

Such development, where the introduction and/or technology change aims to increase employment and productivity, inevitably increases relative labour costs[233].

country to the status of a developed country and staying in that status in the long run.

[228] Alexander Gershenkron "Economic Backwardness in Historical Perspective", Harvard University Press, 1962.

[229] Those forms can be the acquisition of relevant patents, the involvement of foreign capital to organize production in the country, "reverse engineering" or the development of technologies by duplicating foreign products.

[230] Джастин Линн "Демистификация китайской экономики", М. Мысль 2013

[231] The advantage of catch-up growth countries in terms of development rates can be characterized by the time necessary for doubling the GDP. In Great Britain, which historically was the first country of primary development, it took 58 years (1780–1838) to double the GDP, in the United States – 47 (1839–1886), in Japan – 34 (1885–1919), in Brazil – 18 (1961-1979), in South Korea – 11 (1966-1977), in China – 10 (1977-1987). It took Armenia 28 years (1990-2018) to double its GDP, including 14 years to recover the GDP levels of 1990.

[232] As a rule, adaptation to local conditions takes place based on the fact that, if necessary, the level of capital intensity of the technologies is lowered.

[233] The increase in labour costs also depends on the demographic situation. If the country provides an expanded reproduction of the population ensuring the increase in the labour resources, the relative increase in the Labour cost is somewhat restrained. If there is no expanded reproduction of the population, as is the case in Armenia, the volume of labour resources has a tendency to decrease accelerating the relative in the labour cost.

At some point, the comparative advantage of relatively cheap labour disappears. Hence, the main direction of economic development should be labour saving and replacing labour with capital. Under these conditions, the country should transition to mainly endogenous economic progress and independently create new technologies. Otherwise, in case of losing the advantage of cheap labour and not being able to ensure endogenous technological development, the country falls into the so-called "middle-income trap"[234].

To avoid the "middle-income trap", it is necessary to develop and implement policies encouraging endogenous technological development during the phase of the comparative advantage of cheap labour. The country should transition from a catch-up growth based on cheap labour and imported technologies to a primary development based on domestically generated products and technologies. The development driver should, first of all, be the expanding domestic market and diversified exports. It requires significant investment in infrastructure, education[235] and research.

Figure 2.1.1. The scheme for using the backwardness advantage to ensure accelerated economic development.

[234] Middle Income Trap. According to the World Bank, the "Middle Income Trap" is the situation when the country is unable to transition from the middle income group (up to 12,000 GDP per capita in USD 2010) to the high income group (higher than 12,000 GDP per capita in USD 2010). Moreover, in 1960-2010, out of 110 countries of that group, only 5 countries were able to avoid the "middle income trap". All are from Southeast Asia: Japan, South Korea, Taiwan, Hong Kong and Singapore. See Shek, Colin (23 May 2019). "Aiming for the Top: Can China Escape the Middle Income Trap?". Cheung Kong Graduate School of Business (CKGSB).

[235] Asia 2050. Realizing the Asian Century. ADB, 2011

2.2. Competitive advantages of the country

Besides increasing economic efficiency, importing technologies can increase the degree of economic complexity in the country if these technologies open up new areas of economic activity. If they replace existing technologies, the economic efficiency increases, but the economic complexity does not increase. Based on the theory of international advantages and the successful experience of developing countries, the expansion and extension of value chains are the primary tools for increasing the complexity of the country's economy[236]. They are implemented through two parallel processes. The first is the extension (internal integration) of value chains up to the production of final consumption products based on the current production structure of the country and the produced intermediate consumption products[237]. Internal integration assumes an extension of value chains and an increase in the economic complexity based on service sectors[238] created for the imported or otherwise adopted technologies.

Regarding external integration, which is currently the primary tool of economic complexity, it characterizes the country's ability to integrate into international value chains and create high-value-added products and services using imported raw materials[239] or producing components or providing services to factories and services located in other countries. For the catch-up growth countries, this investment in the international labour division initially is related to the relative advantage of cheap labour. Along with the development, the country's specialization can change and spread to capital-intensive sectors, focusing on more complex products and services. At the primary or innovative development stage, the government can focus on higher segments of the international division of value-added creation: production of complex components, medium and high-tech end-use products and services, and development of new products.

So, during successful catch-up growth, the country's role in the international labour division must change – from raw materials to final products, from labour-intensive products to participating in the production of medium and high-tech products and services, and the creation of new products and technologies.

2.3. State policy considering the country's comparative advantages and economic complexity

The functions of the government and the degree of participation in the processes of using the country's comparative advantages and economic complexity differ significantly based on the country's development level and period. In particular, considering the 1960-2020 development experience in catch-up growth countries, the latter is considerably higher than in developed countries. The main reasons for this are the lack of financial resources[240] necessary

[236] Mainly South Eastern countries and China
[237] For example: agricultural products – prepare food, copper concentrate - finished copper, etc
[238] For example, maintenance and upgrading of technologies, development and design of new products, etc
[239] For example, tea production in the UK or coffee production in Italy along with related service industries: coffee machines, specialty restaurants, tableware, etc.
[240] It can be expressed both by the lack of own accumulated resources and by the high cost of borrowed money, which

for development, the limited size of the domestic market, and the weakness of the institutional structure essential for catch-up growth.

Based on the experience of Southeast Asia[241], the country's policy should be based on comparative advantages and increasing labour and capital productivity. Hence, technology import-based production will not require additional subsidies because, by definition, it should be more efficient than existing production. It follows that the main directions of economic policy should be:

- Ensuring the outstrip growth of gross formation to guarantee the growth of the country's internal investment resources compared to consumption. So, consumption volumes (including wages) should not grow faster than productivity.
- Creating a special financing system that operates on the principle of providing loans at lower than market interest rates ensures the acquisition of technologies[242].
- Providing opportunities for domestic consumption and export of goods and services produced based on imported or otherwise adopted technologies, which also implies applying the policy of relative increase in import prices and a relative decrease in export prices[243];
- Regarding the direct production subsidy, the government should apply it if the country has lost or is losing the advantage of its cheap labour and production becomes uncompetitive but continues maintaining that production for various reasons. For example, agriculture, in the conditions of the current development of Armenia.
- The country's tax and credit policy should encourage the introduction of technologies and/or their adaptation to the country's comparative advantages, particularly by eliminating the profit tax[244] and directing profits to the acquisition of technologies and/or their adaptation.
- The outstripping growth of the financing directed to professional education and research and the corresponding institutional changes, which should increase the education and research quality, and connect them with the introduction, adaptation and modernization of technologies, are also crucial for improving the country's economic efficiency[245].
- In the process of increasing the economic complexity of the country, which should be mainly implemented through the extension of value chains, the financing system mentioned above can also work, considering that financed vertical and horizontal integration, increasing the volumes of value-added, also increases the production efficiency.

expresses the higher riskiness of investments in these countries compared to developed countries.

[241] Джастин Линн "Демистификация китайской экономики", М. Мысль 2013, Amsden, A. H. (1992). Asia's next giant: South Korea and late industrialization. Oxford University Press on Demand.

[242] The experience of South-East Asian countries (especially Korea and Taiwan) shows that such a subsidy system is only temporary until the price of borrowed resources decreases during the country's development.

[243] Currently, considering Armenia's membership to WTO, out of the three main tools of that policy (customs policy, foreign exchange policy, direct export subsidy) the use of the third tool is not possible, it is prohibited by WTO rules, and the possibilities of the first one are also very limited based on WTO rules. Thus, only available tool is the foreign exchange policy, the targeted devaluation of the Armenian dram against the US dollar. The policy of differentiated exchange rates, which was successfully applied during the rapis economic development of many countries in South-East Asia, is quite problematic for Armenia, based on the weaker level of management efficiency than in the countries of South-East Asia.

[244] Based on the experience of Estonia and Georgia. Only the dividends will be subject to taxation.

[245] It can be implemented through training of personnel commissioned by technology importers and research aimed at adaptation or modernization of technologies carried out through state or joint funding.

3. General analysis of the economy of Armenia

We have already presented the developments in the Armenian economy from 1990 to 2020 based on the stages of economic growth and crises, drivers and their effects. The current chapter presents a general analysis of the economy covering the pre-independence year 1990 (the base year of the research) and the period of independence from 1991 to 2021. The study aims to answer the questions about the economic efficiency and complexity economy and the factors that determine them, as presented in the previous chapter.

Figure 3.1 shows the GDP dynamics over the last thirty years. The first stage, 1991-1993, was the systemic economic crisis caused by the collapse of the USSR[246].

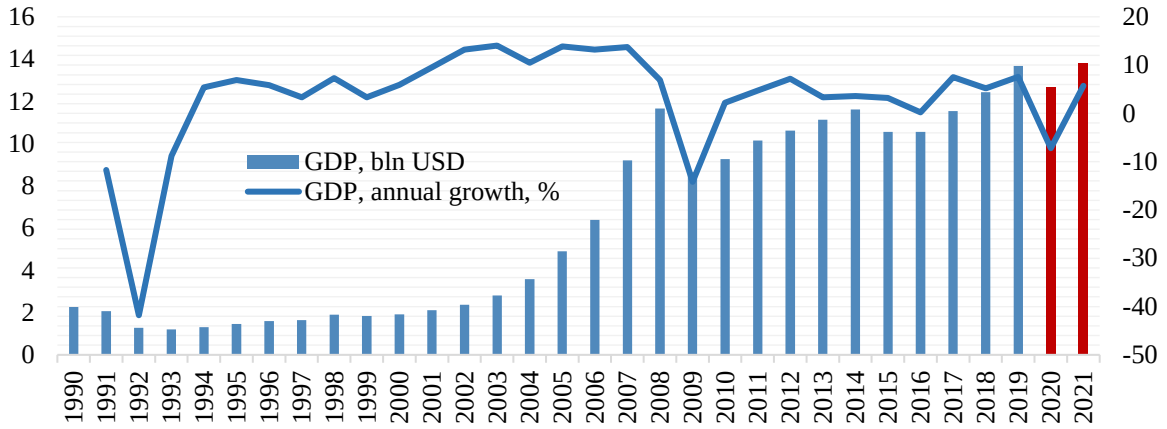

Figure 3.1. GDP, GDP growth rates, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The second stage was from 1994 to 2008, when the Armenian economy was in the recovery (1994-2003) and post-recovery (2004-2008) phases with relatively high economic growth rates[247].

The third stage is the period of relative stagnation, which begins with the 2009 crisis year and continues for the next ten years[248]. And finally, the fourth phase is from 2020 to 2021, characterized by the pandemic and global uncertainty in terms of economic growth and structure, the Second Artsakh War and its consequences on the Armenian economy.

If we examine the entire period of independence from 1991 to 2021, the average annual growth rate is 2.4%. For comparison, from 1991 to 2021, according to the World Bank database, the average annual world economic growth was 2.6%. So, the situation of Armenia in the world in 2021 compared to 1990 has worsened.

The reasons for this deterioration are related to the strong fluctuations in growth rates – periods of rapid growth are combined with crises, followed by periods of much slower recovery growth. At the same time, the crises are much deeper than the world average. For example, due to the 2009 crisis, the economic decline in Armenia was 14.1%, while the world average was 1.67%, in 2020 – 7.4% and 3.4%, respectively. Even taking into account the small size of the Armenian economy and the high degree of openness, the above figures testify to the high economic instability: the economic

[246] Average annul rates of GDO decline were 17.3%.

[247] In 1994-2008 the averagde economic growth rate was 8.2%, in 1994-2003 - 6.7%, in 2004-2008 - 9.5%, as a result the GDP accounted to 166% in 2008 compared to 1990.

[248] In 2009-2019 the average annual GDP growth rate was 2.4%, which is relatively low.

structure and the main drivers of economic growth are changing rapidly – agriculture and industry from 1994 to 2000, construction and services from 2001 to 2008, industry and services from 2010 to 2019, domestic consumption from 2000 to 2008 and export from 2010 to 2019. It also proves that the country:

- fails to fully use its relative advantage of cheap and relatively qualified labour[249];
- does not sufficiently import technologies and therefore does not strengthen its comparative advantage of cheap labour
- does not conduct policies contributing to the increase in value chains to the necessary extent, for example, in the further processing of agricultural products, which, in our opinion, is one of the main reasons for the crisis in agriculture going on for six years[250].

As a result, the degree of economic complexity also fluctuates, as shows the unstable nature of the country's structural changes.

The structure of Armenia's GDP has a relatively low degree of diversification (Figure 3.2), which is one of the main reasons for the structure's instability. The other reason is that as a result of the ongoing crises, the sectors that were the main development drivers before the crisis suffered the most. If in 1998-2008, the driver of economic growth was the construction sector[251], then in the following 12 years, the production, agriculture (until 2016), trade and services sectors dominated the economic structure, whereas the last three[252] were characterized by lower efficiency than construction.

Observing the GDP structure according to economic activity sectors over the last twenty years, we can notice the following trends in the development of the economy (Figure 3.3). In particular, the share of the vital economic sector – the manufacturing industry, is low, although increasing, and agriculture is very high, although decreasing[253]. In 1990, the share of agriculture in the GDP in Armenia was 10.9%, which reached 31.5% in 1995, 14.5% in 2010, and 11.5% in 2020. The situation for industry[254] is as follows: in 1990 – 37.8%, in 1995 – 20.5%, in 2010: – 15%, in 2020 – 19.9%. The share in GDP for the manufacturing industry was 31% in 1990, 11.3% in 1995, 9% in 2010, and 11.9% in 2020.

For comparison, the share of agriculture in the world's GDP was 7.6% in 1995, 3.7% in 2010, and 3.3% in 2018. The share of the manufacturing industry in the world's GDP was 16% in 1995, 15.9% in 2010, and 15.4% in 2018. In the high middle income group, to which Armenia currently belongs, the average share of agriculture in GDP was 13% in 1995, 7.2% in 2010, and 6.3% in 2018. The share of manufacturing industry in the GDP of the high middle income group was 10.2% in 1995, 21.4% in 2010, and 19.3% in 2018[255].

[249] A good example of this is the diamond and jewelry sectors, which were the largest export units of the country in the late 90s and early 2000s, the loss of relative advantage was mainly due to the foeign exchange policy and insufficient technology import.

[250] Except for wine and other spirits.

[251] The rapid growth of construction made it possible to quickly develop the non-metal extracting, building materials and varnish industry, design works, that is, the construction cluster was formed through horizontal and vertical integration.

[252] Except for financial intermediation, as well as accomodation and food services sectors, whose efficiency is higher.

[253] The share of agriculture is one of the main indicators of the economic complexity. Along with economic development, the share of agriculture should decrease.

[254] Extractive, manufacturing industry, energy and water supply.

[255] The World Bank

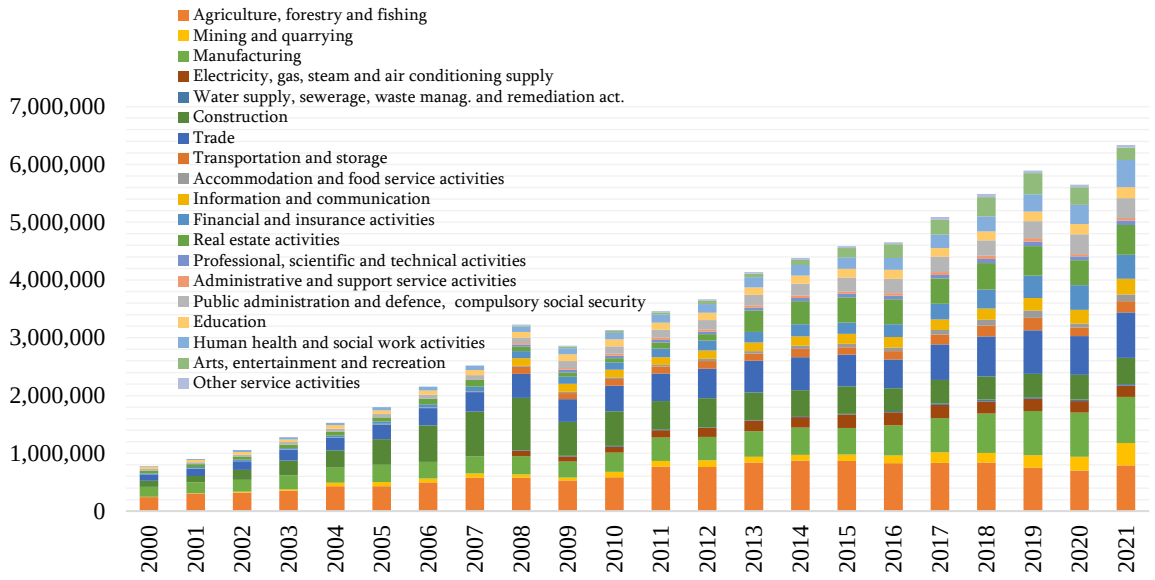

Figure 3.2. GDP structure, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Thus, based on the above comparisons, in the medium term, Armenia will still have the comparative advantage of cheap labour, the main path of which should be the outflow of the labour force from agriculture and its inflow into the manufacturing and other industries that have higher efficiency agriculture. Importing or otherwise adoption of technologies should ensure that shift.

In 2020, labour productivity in agriculture accounted for 52% of total productivity and 44% of manufacturing productivity. The situation was approximately the same in 2019 and previous years. Considering such disruptions in productivity, the intensive introduction of agricultural technologies will ensure the rapid growth of labour productivity leading to labour movement from agriculture. Currently, this shift is happening very slowly. From 1997 to 2020, agricultural employment decreased from 564.2 thousand persons to 229.6 thousand or 3.8% annually.

The construction sector, the primary driver of the economic growth from 2003 to 2008, had an average of 25% share of the GDP during this period. Still, its share has decreased after the global financial crisis and reached 7% as of 2020. This reduction occurred despite a relatively significant capital investment in the construction sector and a rapid expansion of mortgages. Thus, the cluster development created by the construction industry disappeared in the long run.

Another feature of the GDP structure is the small share of sectors related to infrastructures and the institutional environment of the economy. According to the experience of developed countries, We can say that these sectors, as a rule, determine the development of such large sectors of economic activity as mining and manufacturing, which in turn stimulates economic growth and general economic development.

Thus, the low participation of infrastructure and institutional environment sectors in the economy determines its vulnerability to external shocks and slow economic growth in the long run. We should emphasize that the healthcare, education and science sectors also have a low share in GDP, negatively affecting the potential for output expansion.

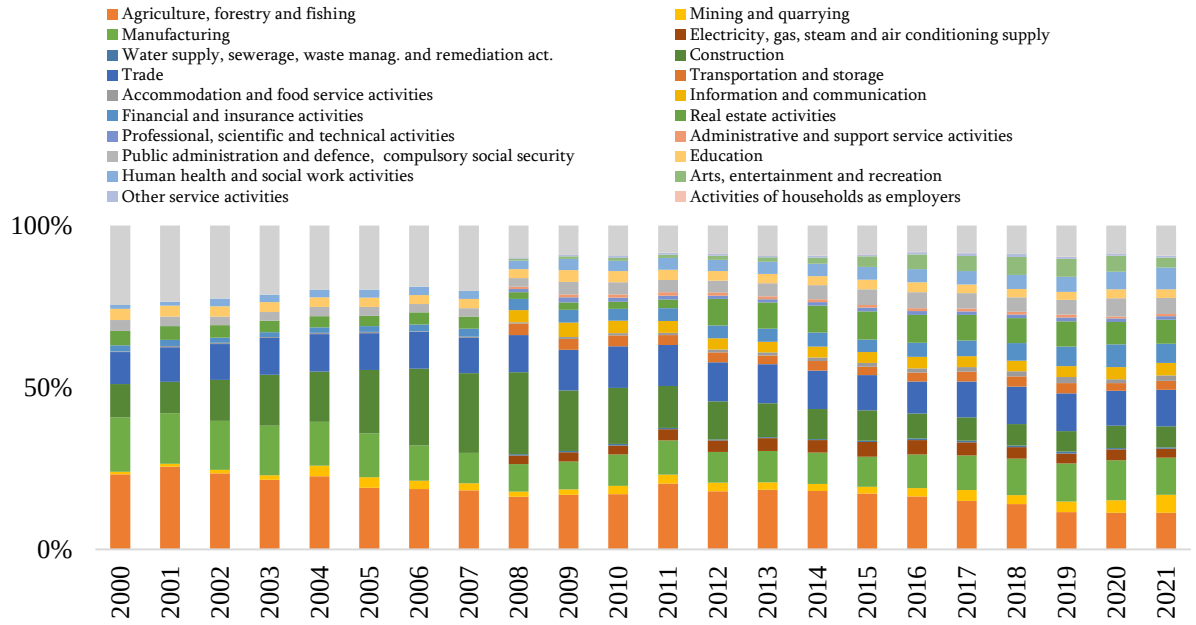

Figure 3.3. GDP structure, %.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The next indicator is intermediate consumption (Figure 3.4). Intermediate consumption includes goods and services consumed in the production process during the reporting period[256]. We should highlight that the absolute leader in the structure of intermediate consumption is the manufacturing industry, which accounts for 20% of the total intermediate consumption in 2020. At the same time, the growth of intermediate consumption is noticeable both in the manufacturing industry and in all other sectors. However, considering the material intensity indicator, it is evident that during the last 10-12 years, there have not been significant changes indicating the economy's low efficiency.

Capital structure by sector, both in the book and residual value, shows a relatively moderate growth at the economy level and in most individual sectors (Figure 3.5 and Figure 3.6). The most considerable capital growth occurred in the energy, industry, real estate and education sectors.

Indicators of efficient use of capital in the economy are also important. In this regard, we have considered the capital-to-labour ratio, labour productivity and capital intensity indicators. The capital-to-labour ratio indicator is the ratio of capital and labour used in the production process, enterprise or industry. Capital deepening (an increase in the capital-to-labour ratio) is when the amount of capital per worker increases in an economy.

[256] «National accounts 2008», Eurocommission, IMF, Organization for Economic Cooperation and Development, United Nations and World Bank. New York, 2012.

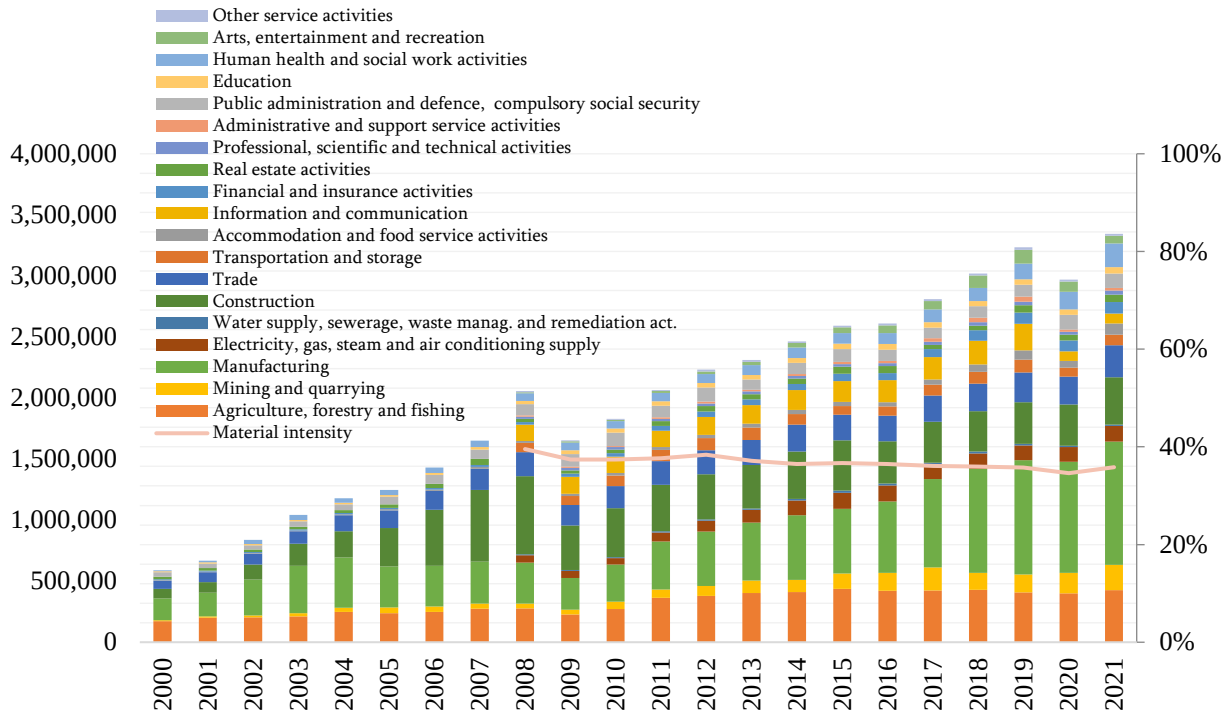

Figure 3.4. Intermediate consumption structure, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

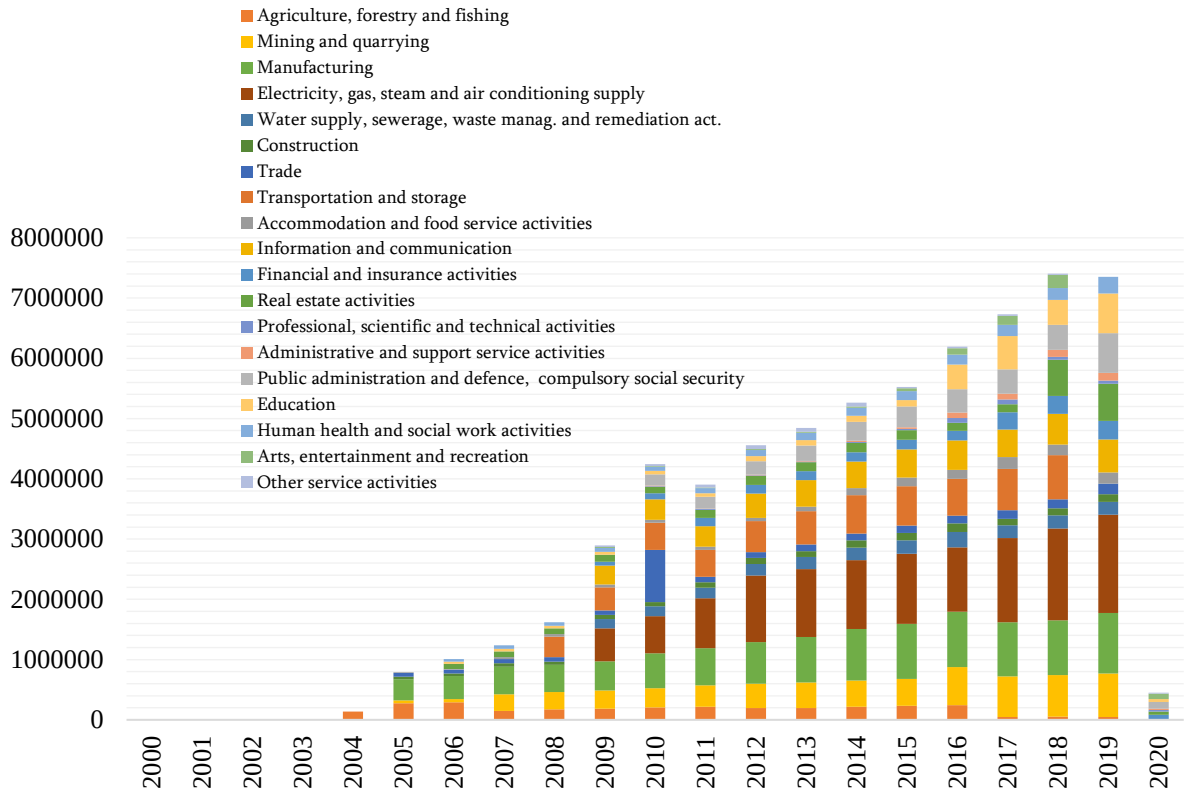

Figure 3.5. Fixed assets structure at book values, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

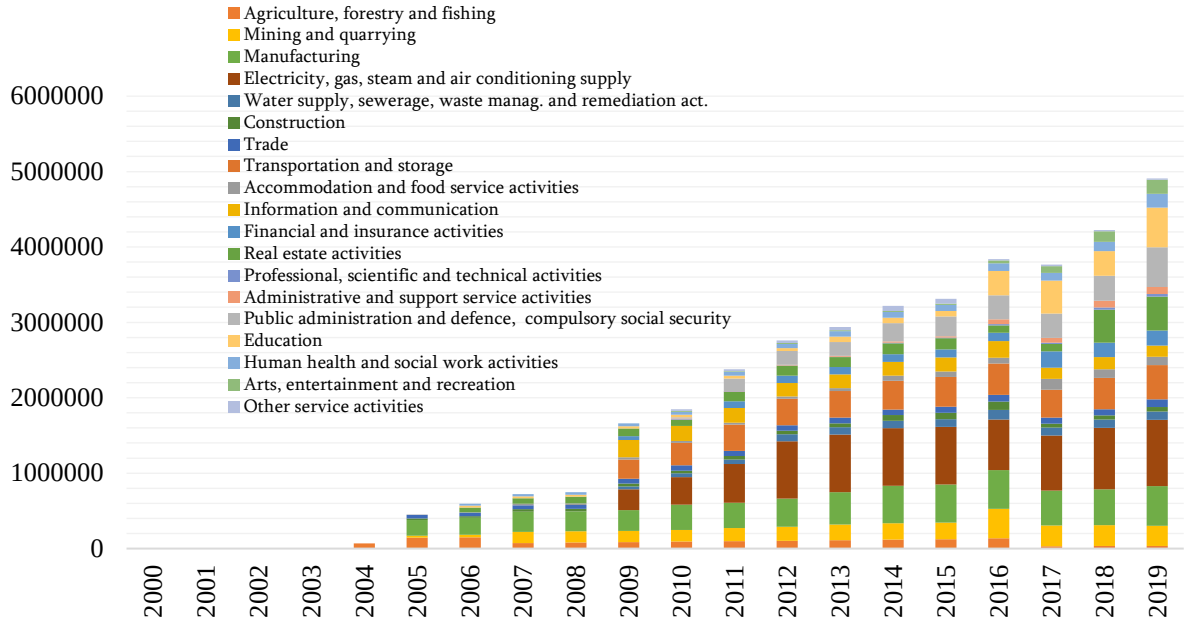

Figure 3.6. Fixed assets structure at residual values, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The capital-to-labour ratio has shown significant growth over the last ten years in Armenia (Figure 2.3.7). A sharp change in the indicator occurred in 2009 when the capital-to-labour ratio doubled within one year. Labour productivity is growing at a more moderate pace. Over the past ten years, the labour productivity indicator has almost doubled. Finally, in 2009, the capitalization intensity indicator recorded a sharp increase, followed by a stagnation phase.

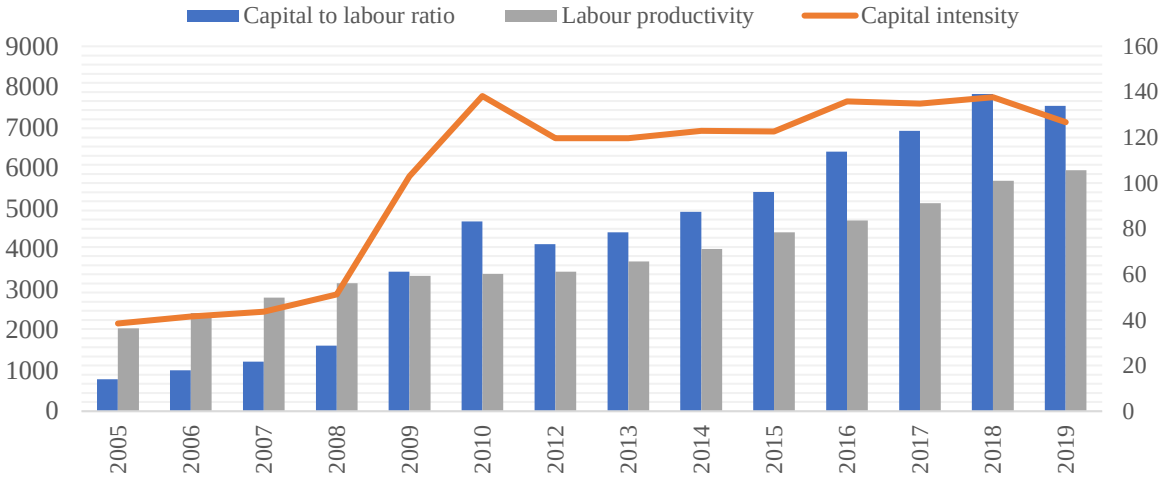

Figure 3.7. Capital intensity, capital-to-labour ratio and labour productivity.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Figure 3.8 presents the dynamics of the mean monthly wages and labour costs in the economy. As of 2020, the mean wage was 189,716 AMD, and the labour cost was 217,040 AMD.

However, in terms of growth rates, a significant slowdown can be recorded during the last 8-9 years. The sharp increase in nominal wages in 2012 is due to the change in the income tax methodology under the tax reform in 2013,

which combined the income tax and social security payments, introducing the idea of a general tax on income. As a result of this reform, there was a sharp increase in nominal wages, while real wages remained almost unchanged.

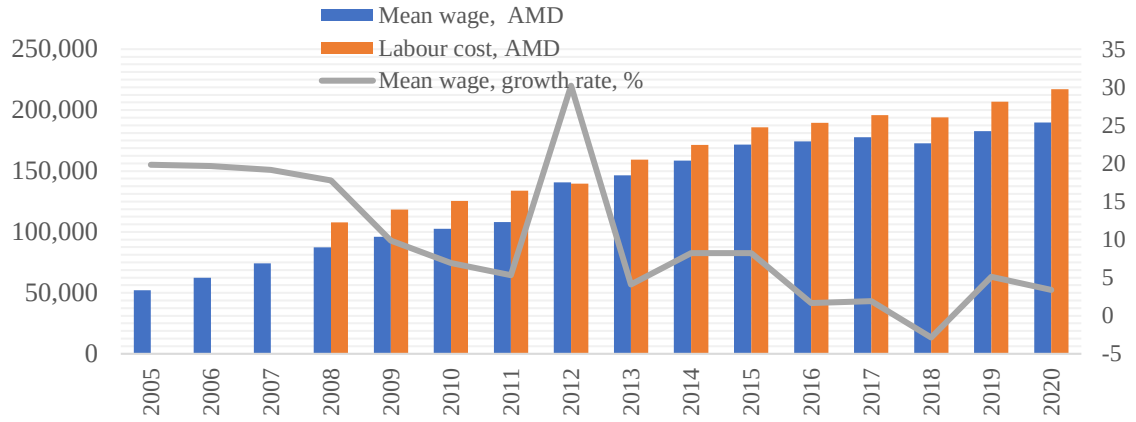

Figure 3.8. Mean wage and labour cost in the economy.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am
Note: To ensure the comparability of the 2012-2013 salary indicators, the relevant indicators for 2012 were recalculated according to the current methodology of the RA Law on Income Tax, in force since 01.01.2013

Mean wages vary significantly by sector in terms of absolute values and growth rate. The highest earnings are observed in the financial sector, except for the last 2-3 years, when the average wage level in the information and communication sector exceeded it. The Agriculture, accommodation, and food services sectors record the lowest wage levels.

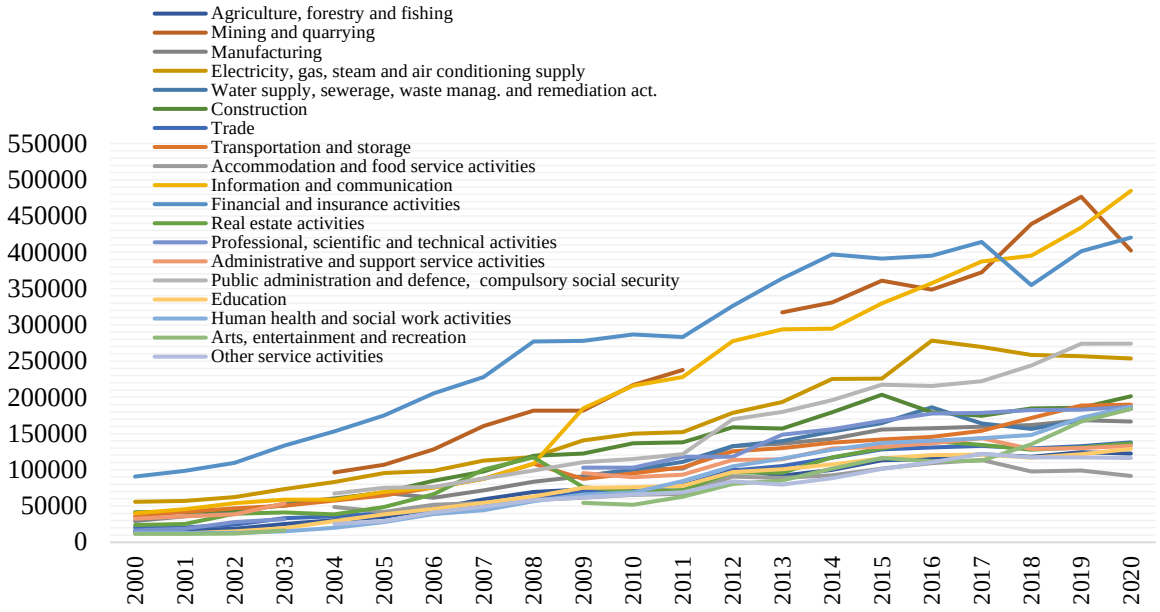

Figure 3.9. Mean wages by the sectors of economic activity, AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

From the economic growth and development perspective, it is also important to consider employment by the sectors of economic activity. Employment dynamics recorded a slight decline over the past twenty years. The largest share of the employed people is in the

agricultural industry but compared to 2000, the percentage of the employed in agriculture has decreased almost three times.

The proportion and the absolute number of people employed in the public sector have increased noticeably. If in 2004 the share of those employed in the public sector was about 3% of the total employment, and the absolute number was 29.1 thousand people, then in 2019, the weight was about 8-10% or 89.5 thousand people.

At the same time, if180 thousand people were involved in the production sector in 2000, then in 2020, the number of people employed in production reached 113.5 thousand people. The number of people employed in the trade sector and other service-providing industries has increased by about 30%. As in most developed and developing countries, the largest share of employed people falls in the service sector in Armenia.

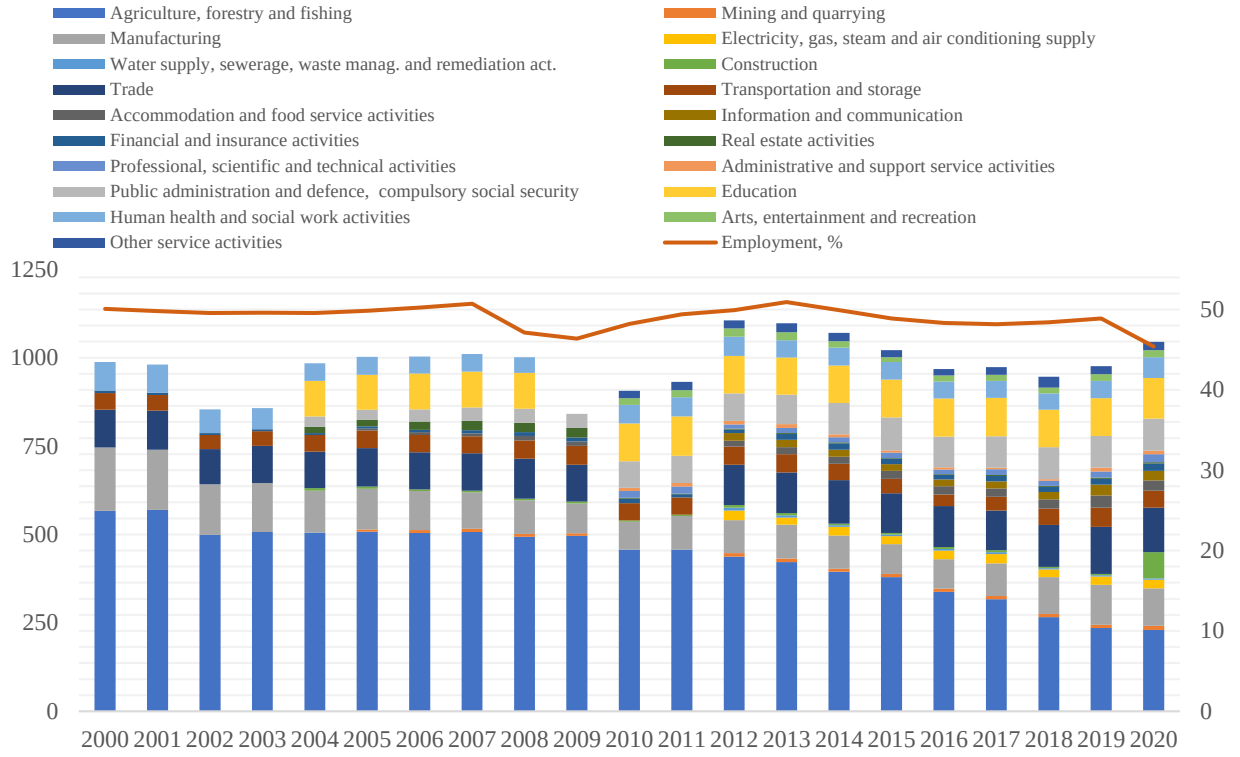

Figure 3.10. Employment by the sectors of economic activity.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Figure 3.11 shows the dynamics of price indices in different economic sectors. Most indices have relatively high volatility. Moreover, the most significant instability is observed in the agricultural industry due to sector characteristics. In 2008, prices in the construction sector increased, conditioned by the consequences of the global financial crisis and the reduction of the construction sector in Armenia during this period. Finally, we should note that there is no harmonization in the dynamics of most of the indices presented in Figure 3.11.

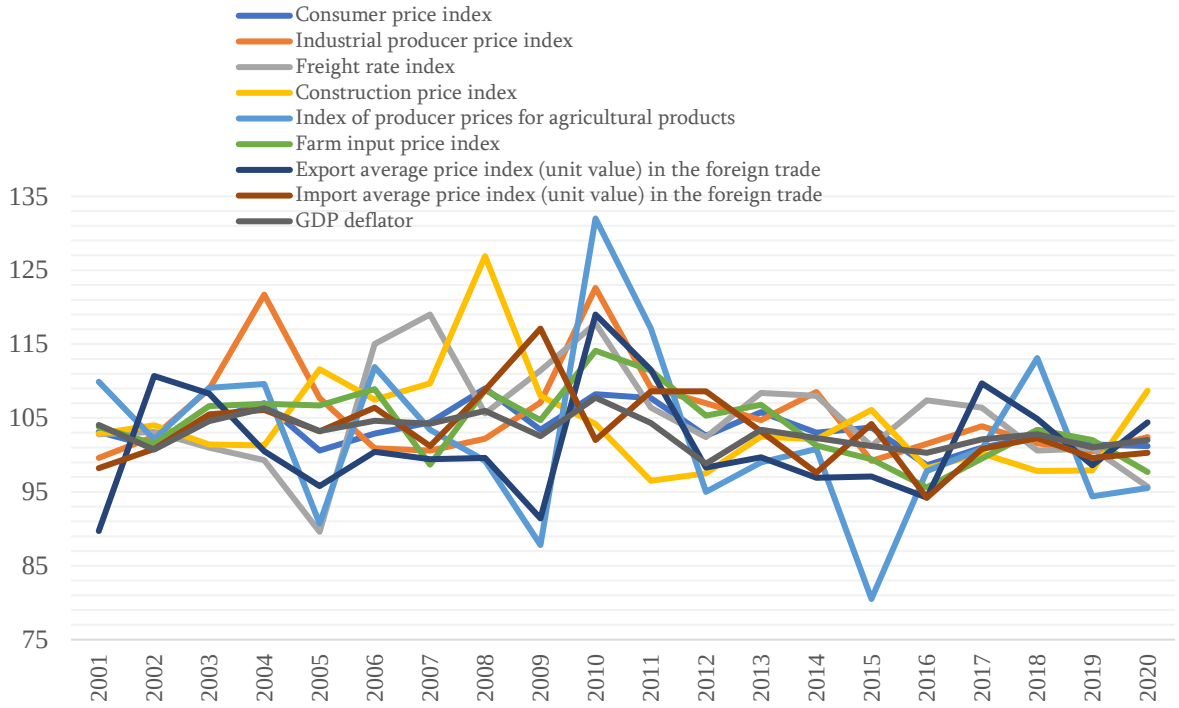

Figure 3.11. Price indices by economic sectors, %, annually.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The export of Armenian goods to EAEU countries recorded a noticeable increase in 2015-2018, after which the export volumes remained almost at the same level for the next three years. Manufacturing products have a predominant share in exports (about 70%). In second place are the products of agriculture, forestry and fishing industry. The remaining sectors occupy insignificant positions in the structure.

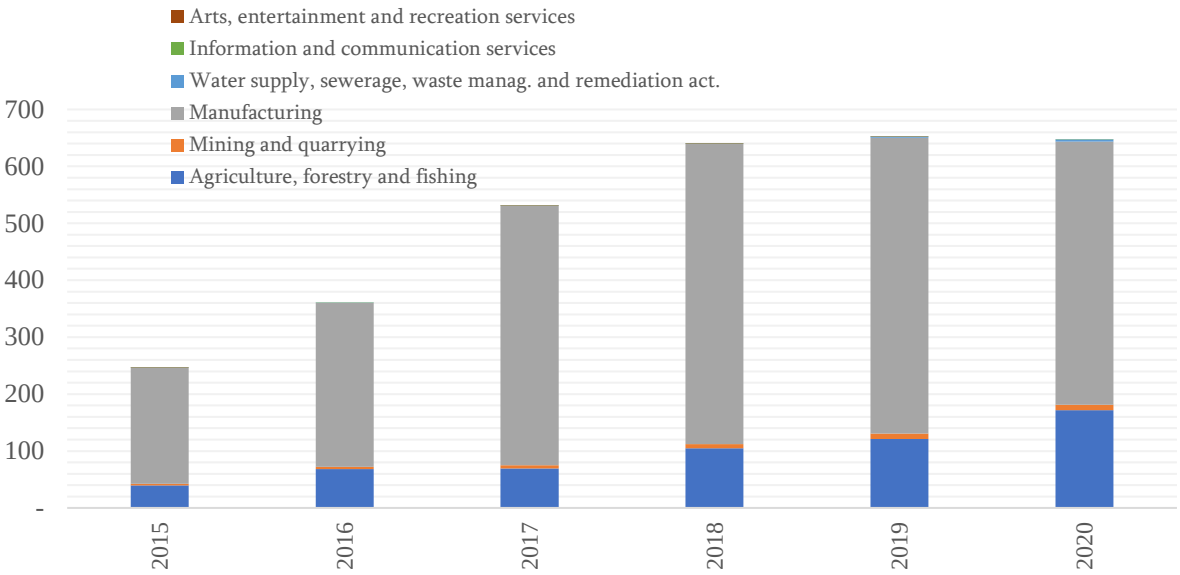

Figure 3.12. Exports to EAEU countries, million USD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

At the same time, the structure of exports to other countries includes two significant sectors: manufacturing and mining products. The export volumes grew until 2017 but hardly changed in the next three years.

Figure 3.13. Exports to other countries, million USD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As for imports, there is low diversification in this case either. The manufacturing products have a dominant share in the import structure, while agriculture, forestry and fishing occupy a small share. From 2015 to 2019, there was an increase in import volumes. However, there was a sharp decline in 2020 due to the consequences of the COVID-19 pandemic and the second Artsakh war.

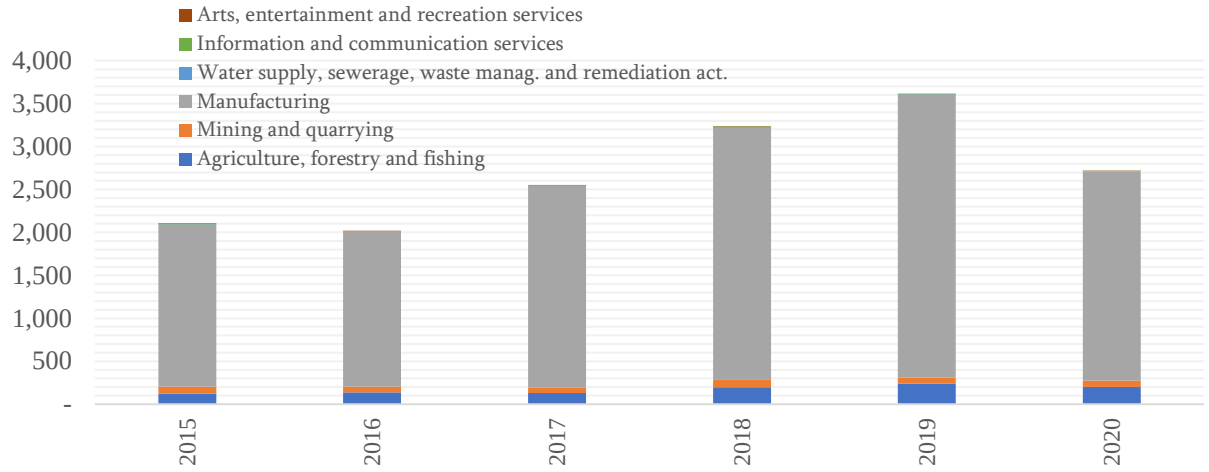

Figure 3.14. Imports from other countries, million USD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Finally, since the financial sector is the key source of financing for the economy, the current study explores the structure of loans granted by commercial banks and credit organisations (Figure 3.15). As we can see, the largest share of total loans falls on the sectors of construction, trade, manufacturing industry, accommodation and food services. The share of these sectors increases yearly. We should note that in 2020, a significant increase of 17% in general lending was recorded.

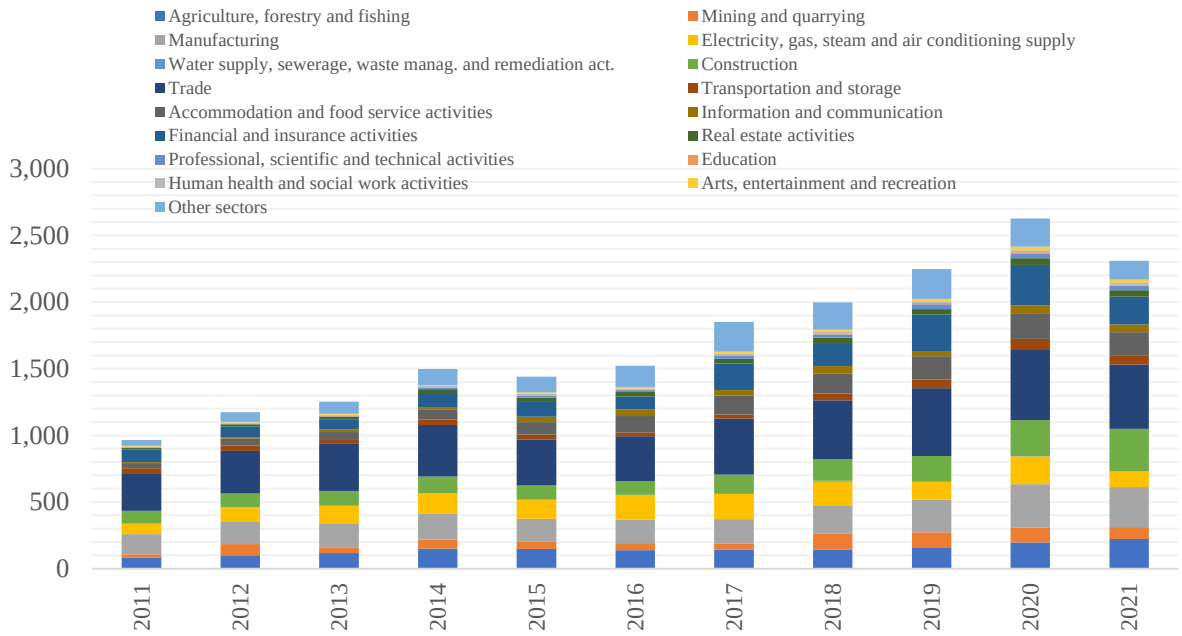

Figure 3.15. Loans granted by commercial banks, bln AMD.

Source: Database of the Central Bank of RA – www.cba.am

At the same time, the structure of lending by credit organizations is significantly different from the banking system (Figure 3.16). The sphere of financial and insurance activities has a dominant share while registering significant growth rates. Considerable growth is also observed in the agricultural industry. However, most of the loans, in one way or another, remain in the financial sector, which means that most of the financing does not reach the real sector and does not contribute to economic growth.

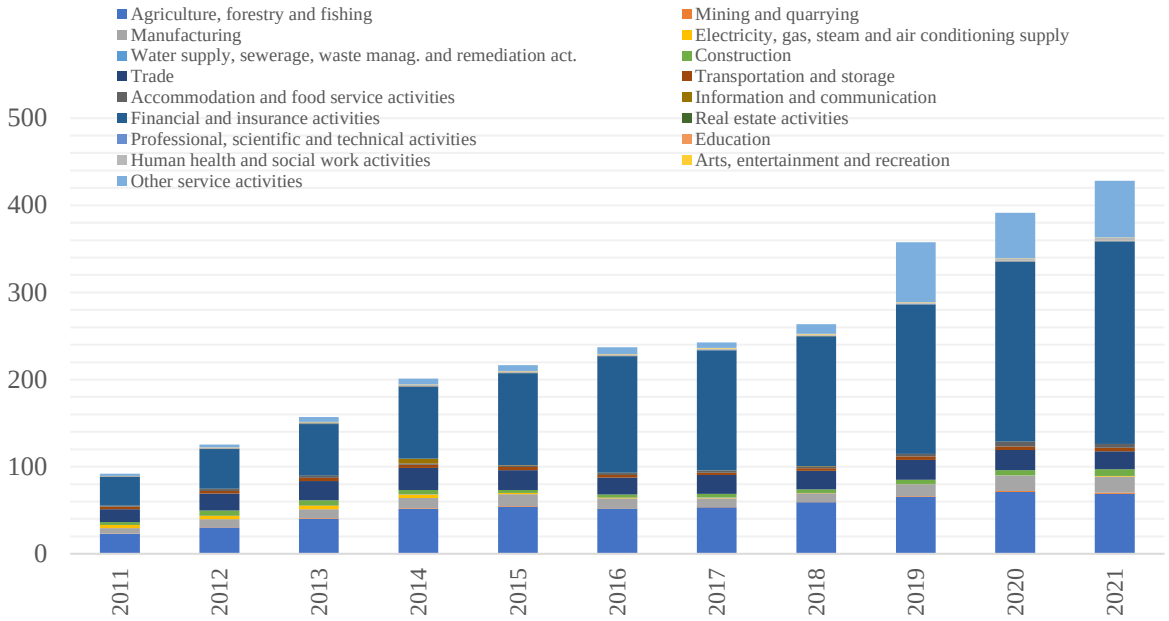

Figure 3.16. Loans granted by credit organisations, bln AMD.

Source: Database of the Central Bank of RA – www.cba.am

3.1. Agriculture, forestry and fishing

Agriculture is quite crucial for the country's GDP. The importance is determined by the share in the GDP and employment, which was 11% and 21.8% in 2020, respectively. Currently, the sector has the second highest share in GDP after the manufacturing industry and the first in employment.

Based on the international experience of economic development, agriculture's role in development is constantly decreasing along with the decrease in its importance. On the other hand, agriculture is a labour supplier for other economic sectors during development.

In the case of Armenia, the role of agriculture is also decreasing, but at a much slower pace than the world, particularly the high middle-income group average, to which Armenia currently belongs. Over the last twenty years, the share of agriculture in GDP has decreased from 23% to 11% (Figure 3.1.1). We should note that agricultural output has declined in the last five years. Thus, the decline of the share of agriculture in the GDP in Armenia, along with the general world patterns, is also due to the decline of the sector.

Comparing the share of agriculture in GDP in Armenia with the global average, as well as the average figures for the high middle-income group, we should note that the agricultural industry has a twice as large share of the GDP of Armenia as the corresponding averages. This situation also testifies to the lower speed of labour force movement from agriculture to other sectors than in the world and high middle-income countries.

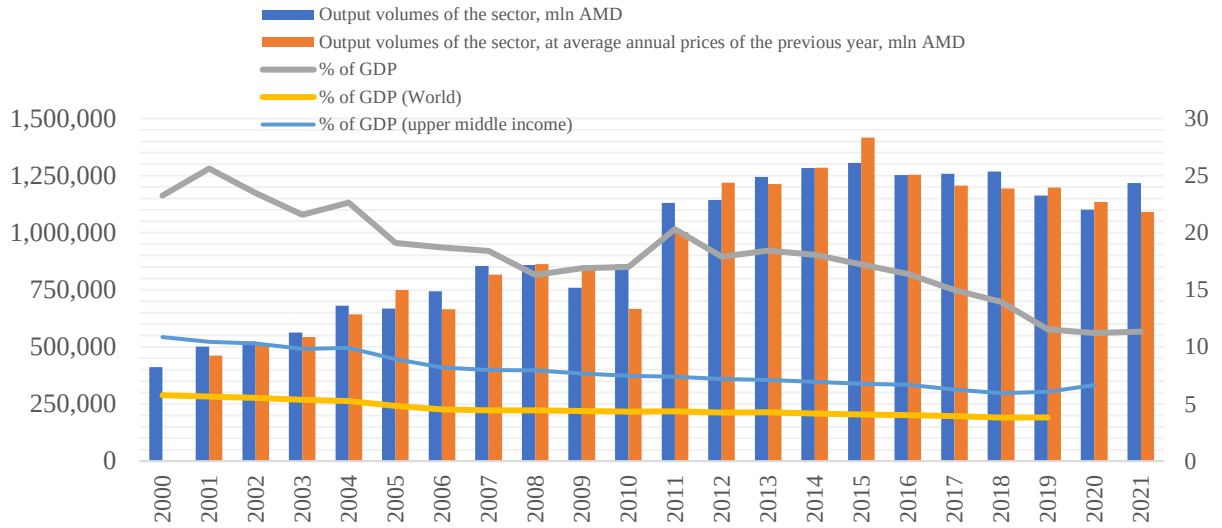

Figure 3.1.1. The volumes of sector A (in mln AMD), share in GDP, %.

Source: Database of the National Statistical Committee of Armenia and the World Bank – www.armstat.am

Figure 3.1.2 presents the agriculture industry structure. The main sectors of the agricultural industry are crop production and animal production, which as of 2021, occupy 48% and 47% of the industry, respectively. The fishing sector is developing much faster than crop and animal production and its share has increased from 1% in 2008 to about 4.4% in 2021.

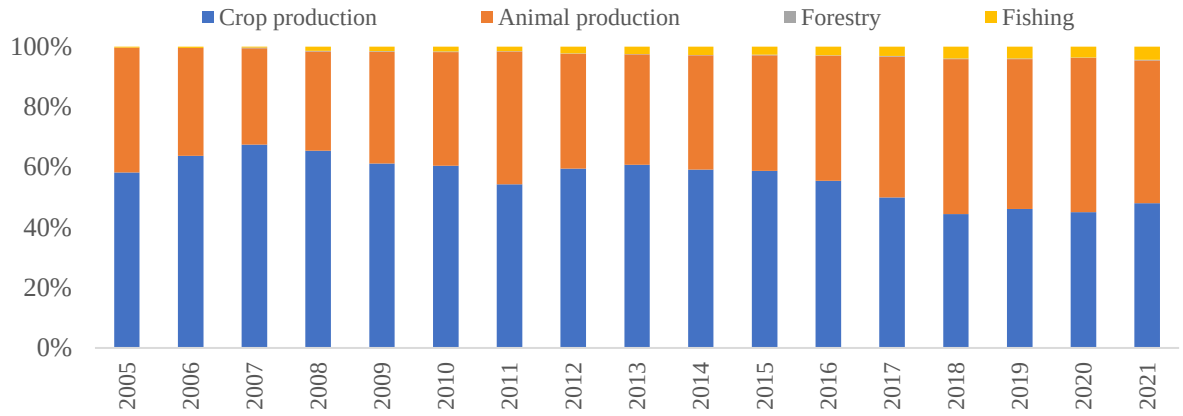

Figure 3.1.2. The structure of the agriculture sector, %.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The increase in the share of animal production is also noteworthy compared to crop production, indicating an increase in the relative efficiency of animal production and a decrease in the case of crop production.

The dynamics of the value-added are similar to the dynamics of the output volumes of the sector. The relatively fast growth was replaced by stagnation in 2012-2013 and started to decrease in 2016 (Figure 3.1.3).

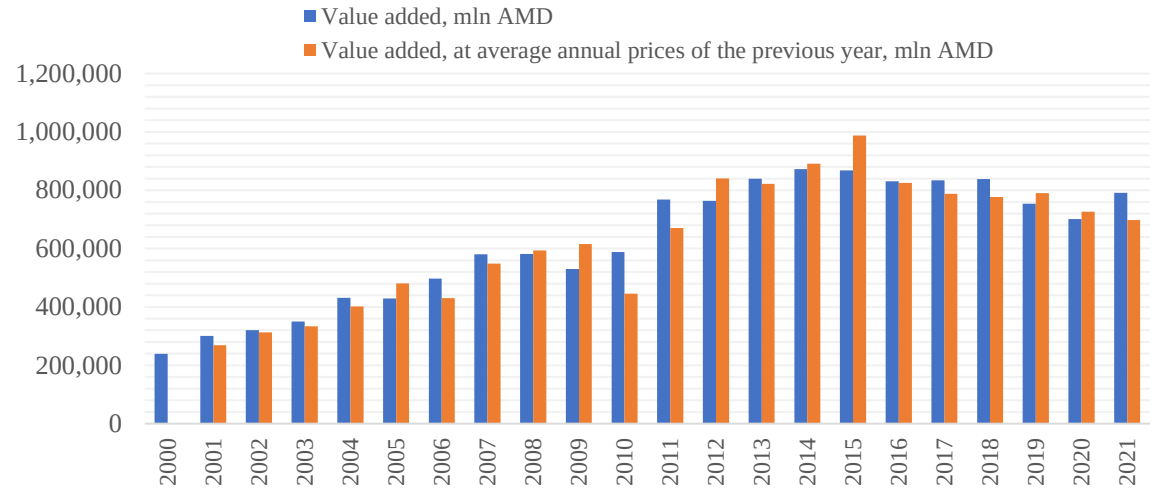

Figure 3.1.3. Value-added in sector A, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Until 2011, the intermediate consumption of the agriculture industry was recording a significant growth rate. In 2011 the indicator volumes sharply increased, followed by a period of stagnation afterwards. However, a certain decline in intermediate consumption characterizes the last two years.

At the same time, until 2009, the material intensity indicator in the sector had a downward trend, indicating the efficiency improvement in the industry. However, after 2009, we can observe only a slight increase in the material intensity indicator, which allows us to judge about a certain loss of efficiency in the sector during the last 11-12 years.

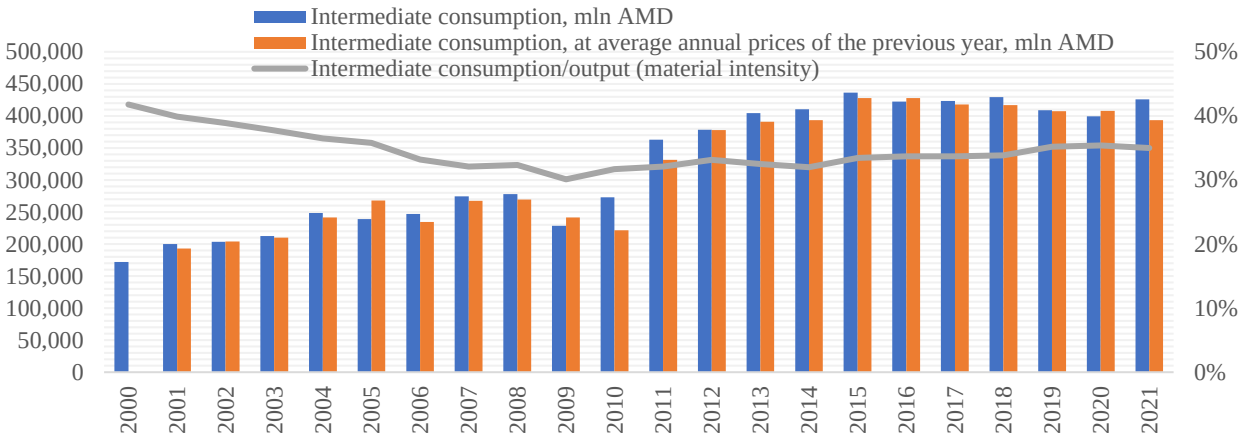

Figure 3.1.4. Intermediate consumption in sector A, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The next indicator characterizing the development of agriculture is the volume of capital used in the sector (Figure 3.1.5). According to the book and residual values, the dynamics of capital volumes invested in the field have high volatility and cyclical nature. The sharp decline of the indicators after 2016 is due to methodological changes. A certain increase in indicators occurred in 2019.

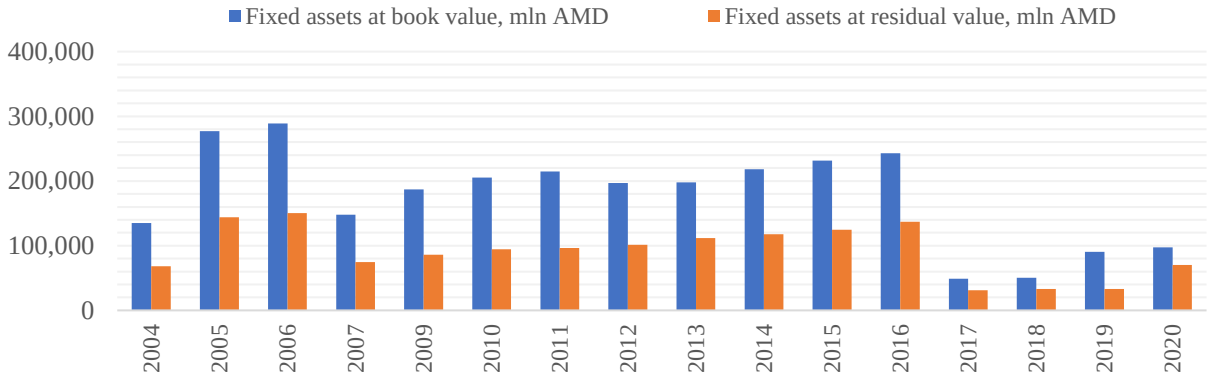

Figure 3.1.5. Fixed assets at the book and residual values in sector A, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Until 2016, the capital-to-labour ratio was increasing, sharply declining in the following years (Figure 3.1.6). After 2017, the capital-to-labour ratio decreased by about six times. At the same time, the capitalisation index is also falling yearly, while labour productivity tends to increase. We should also note that 2018-2019 is not characterized by positive dynamics of labour productivity.

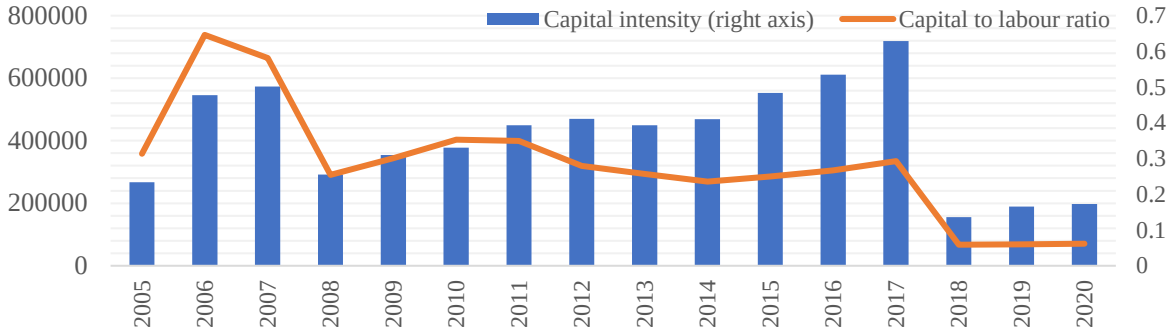

Figure 3.1.6. Capital intensity and capital-to-labour ratio in sector A.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As for the mean monthly nominal wages in the agricultural sector and the labour cost, compared to the general average of the economy, we can observe a significant difference (Figure 3.1.7). In 2020, the mean wages in the agricultural sector were 122,482 AMD, while the economy average was 189,716 AMD. Thus, the salary in the industry is 25-30% lower than the economic average. Moreover, the wage dynamics show a trend of increasing the gap between the mean wage levels in the economy and the sector.

The labour cost has the same trend as the mean wages. At the same time, labour cost is growing faster at the economy level than in the agricultural sector.

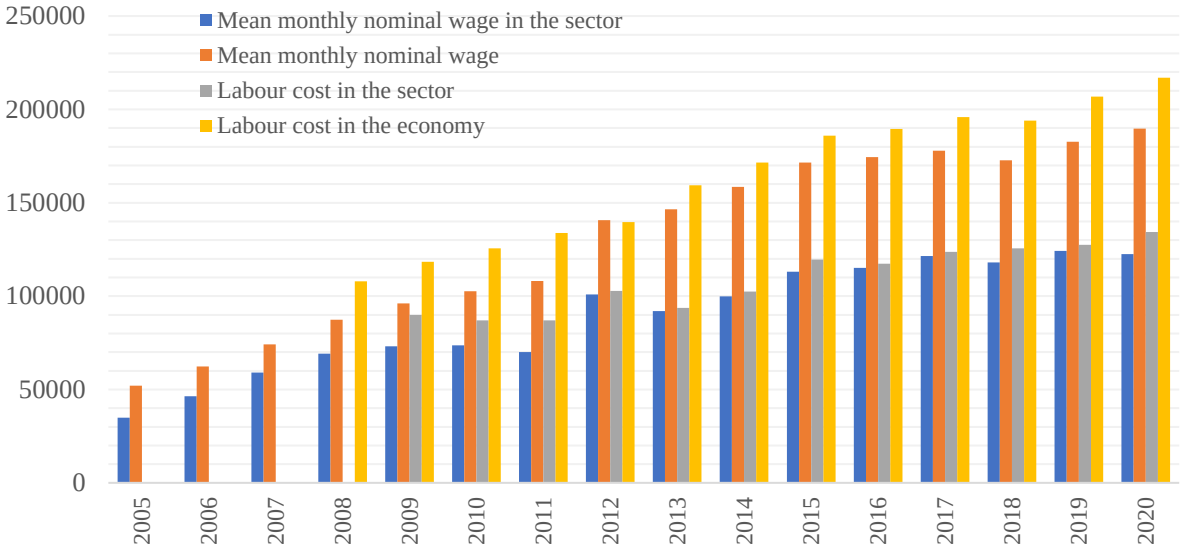

Figure 3.1.7. Wages and labour cost in sector A.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Figure 3.1.8 shows that over the past 18 years, the number of people employed in the sector has more than doubled. At the same time, the share of employment in the agricultural industry to the total employment has also decreased, being 22% in 2019, compared to 45% in 2002. This trend is due to the increase in the industry productivity.

Figure 3.1.8. Employment and labour productivity in sector A.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The figure also indicates a faster productivity growth in agriculture than in the general economy[257], which allowed to reduce the agricultural productivity gap with respect to the economy's average from 37% in 2002 to 52.8% in 2020.

Thus, even though the degree of internal competitiveness of agriculture has increased in the period under consideration due to an increase in productivity, the income gap between agriculture and other economic sectors remains relatively high, which is the main reason for the continued internal uncompetitiveness of the industry. As for the external competitiveness of agriculture, productivity comparisons with the upper-middle-income group are given in Figure 3.1.9.

The figure shows that the best years for the Armenian economy were 2007 and 2008, after which there was a decline in relative productivity, and the 2008 level did not yet recover in 2018. In agriculture, the situation is different: since 2003, productivity in Armenia has exceeded the average productivity of the group, and as of 2018, it was 138% of the group's average.

[257] Labour productivity in the general economy increased by an average of 5% per year from 2002 to 2020 compared to 6.4% growth in agriculture.

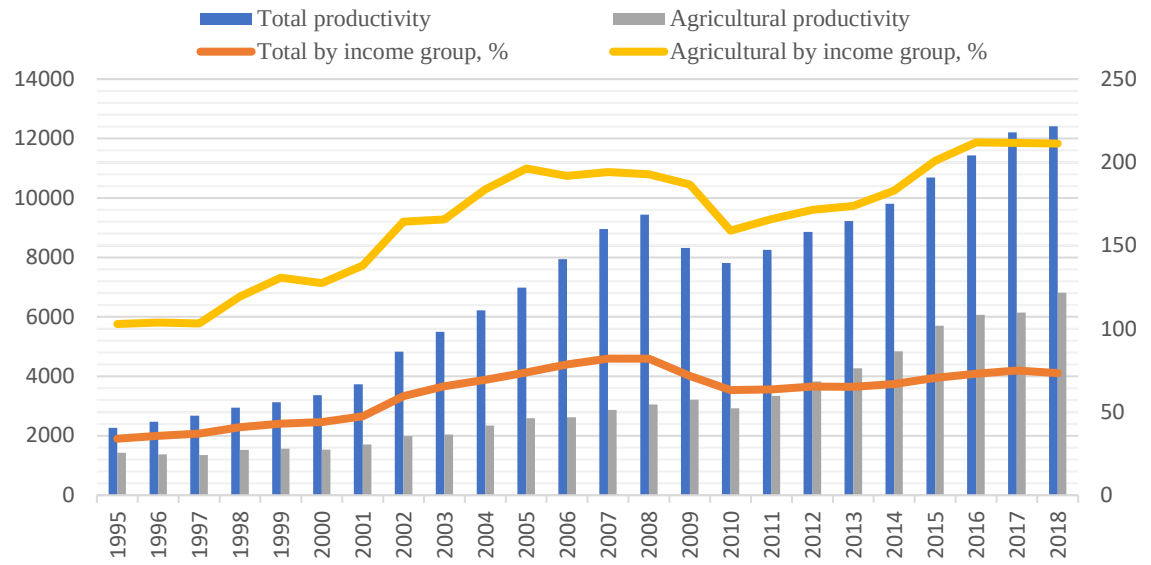

Figure 3.1.9. Labour productivity in the economy and agricultural sector, 2010 comparable USD, and comparison with indicators of the upper-middle-income group, %

Source: compiled based on the National Statistical Committee of Armenia and the World Bank database – www.armstat.am, www.worldbank.org

Figure 3.1.10 shows that from 1995 to 2020 domestic conditions of agricultural production worsened, as agricultural prices increased by 154.7% while average prices (GDP deflator) increased by 2.8 times. Industrial, construction, transport and communication prices also rose more significantly than agricultural products[258], which is the main reason for maintaining the income gap mentioned above and the ongoing agricultural crisis despite the relatively stable productivity growth.

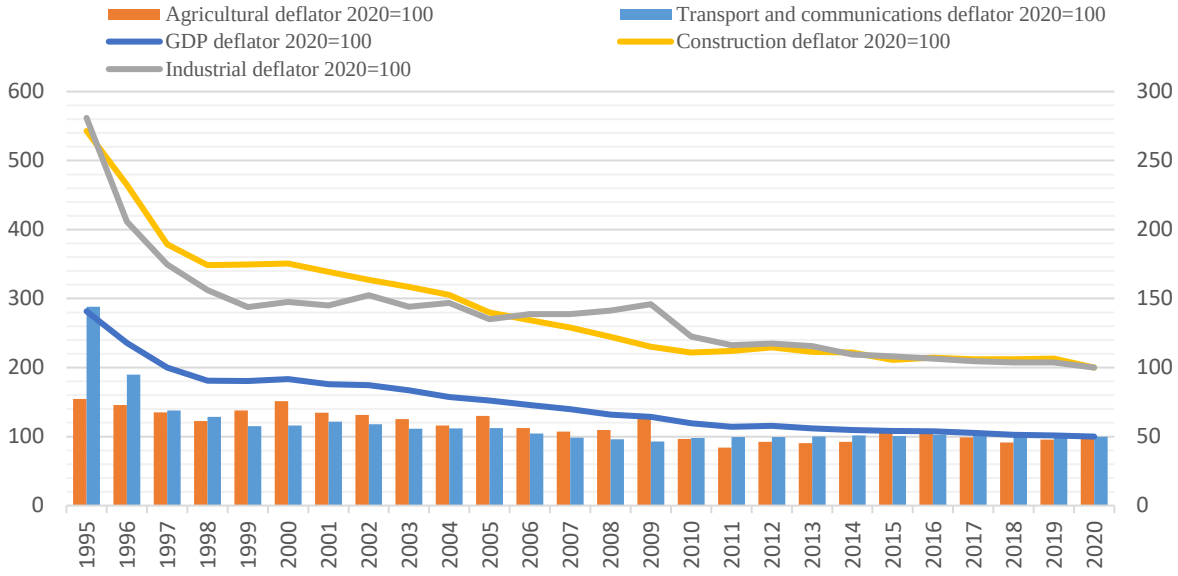

Figure 3.1.10. Comparative dynamics of prices in the main sectors of the economy according to the 1995-2020 cumulative deflator,%.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

[258] This means that the unit purchasing power of agricultural products decreased by 1.8 times in 2020 compared to 1995.

Studying Armenia's export of agricultural products to EAEU countries (Figure 3.1.11) and other countries (Figure 3.1.12), we can notice a significant increase in volumes. Moreover, we can observe higher growth rates in the case of exports to EAEU countries. Agricultural, hunting products and related services occupy the most considerable weight in both export groups.

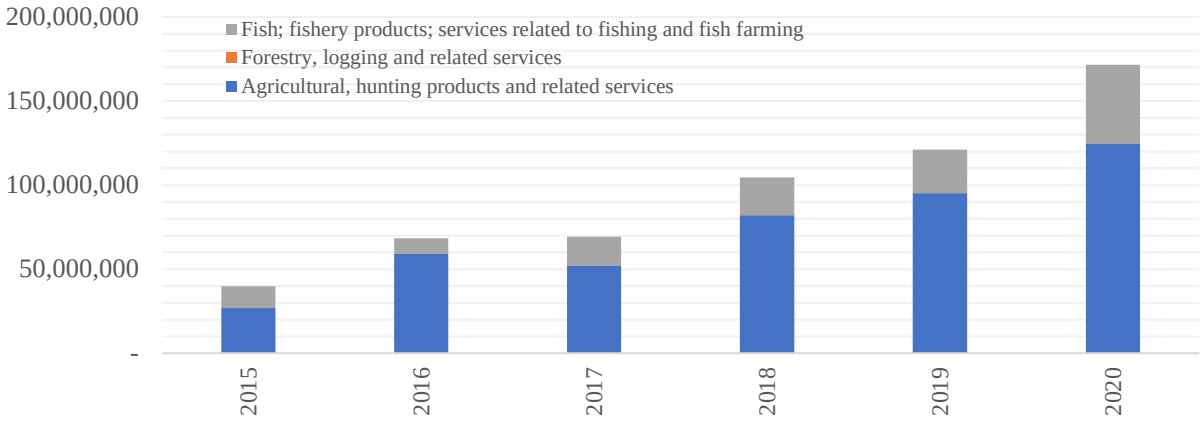

Figure 3.1.11. Agricultural exports from Armenia to EAEU countries, USD

Source: Database of the Euroasian Economic Commission – www.eurasiancommission.org/

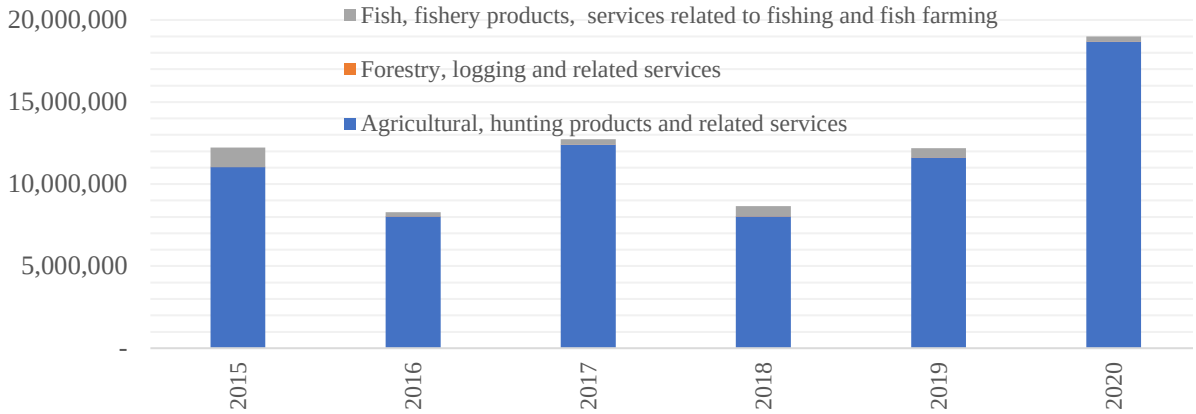

Figure 3.1.12. Agricultural exports from Armenia to other countries, USD.

Source: Database of the Euroasian Economic Commission – www.eurasiancommission.org/

As for energy consumption in the agricultural sector, we should note that oil products have the largest share in energy consumption, followed by electricity consumption (Figure 3.1.13). Regarding energy intensity, we can observe that in 2014 there was a sharp increase due to the rise in oil consumption, followed by a fairly stable period characterized by a moderate decrease.

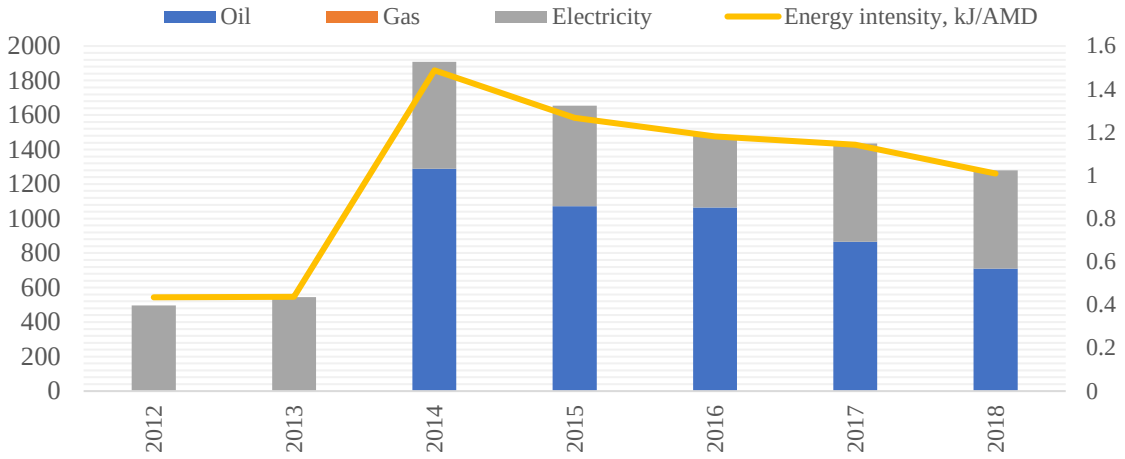

Figure 3.1.13. Energy balance in agriculture.

Source: Annual "Energy balance" reports of the UN – https://unstats.un.org/unsd/energystats/pubs/balance/

Since the financial intermediation organizations include only banks and credit organisations in Armenia, they have become the sector's critical source of private financing. Within the current research framework, we have considered the structure of lending to the industry by both banks and credit organizations, including regarding the currency structure of loans.

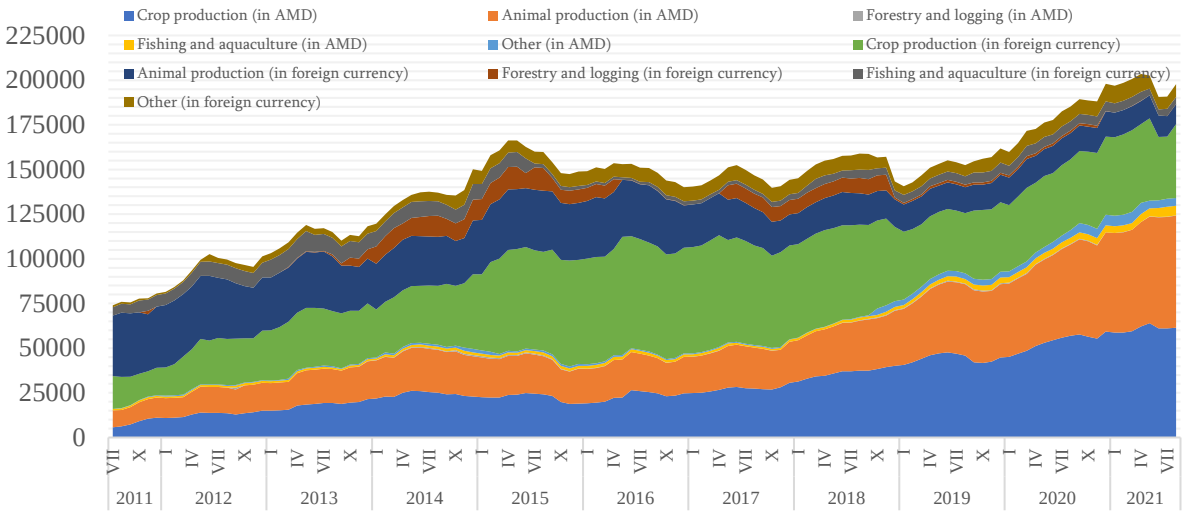

Figure 3.1.14. Loans issued by commercial banks in sector A, mln AMD

Source: Database of the Central Bank of Armenia – www.cba.am

The banking sector provides about 70% of the loans granted to the agricultural industry. As we can see in Figure 3.14, the most loaned sector in the industry is crop production, both in terms of national and foreign currency loans. Generally, crop production accounts for approximately 50% of the banking sector's loans. Animal production is in second place. At the same time, we should note that the animal production sector's loans are mainly in national currency. The other sectors occupy a minor position in attracting additional funds through the banking sector.

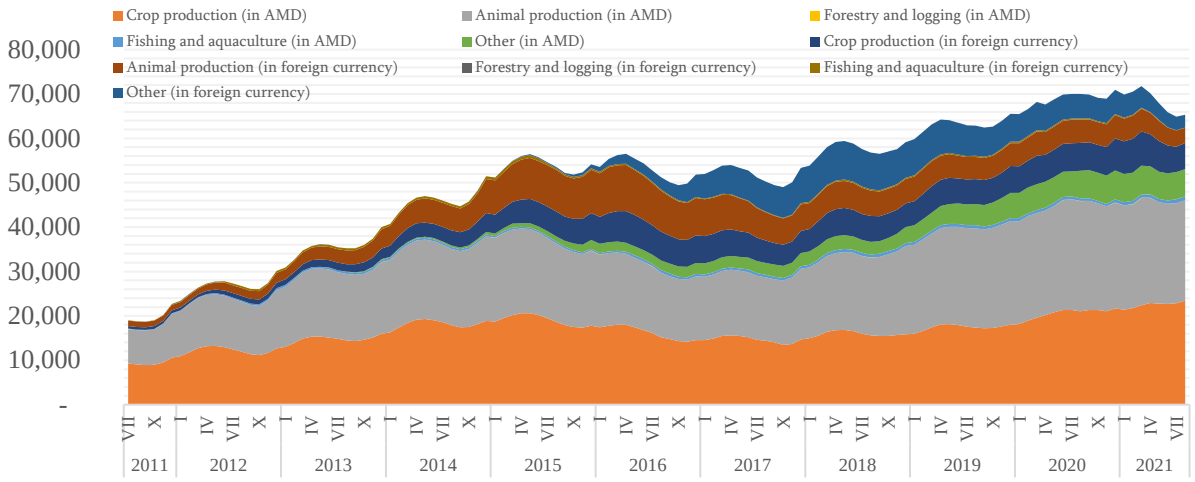

Figure 3.1.15. Loans issued by credit organizations in sector A, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

The agricultural lending structure in the case of credit organizations has a more even distribution of loans between crop and animal production, which equally share 80% of all received loans (Figure 3.1.15). We should also indicate that we can observe a rather dynamic increase in the volume of lending to the agricultural sector by banks and credit organizations.

In summary, we want to highlight that despite certain progress in agriculture, mainly expressed by the increase in labour productivity, increase in export, and loans, the income gap between agriculture and other economic sectors does not decrease, which is the main reason for the current crisis. On the other hand, despite an inevitable outflow of the labour force from agriculture, the labour movement volumes remain insufficient. The latter is due to high and persistent unemployment in other economic sectors, which also limits the outflow of labour from agriculture.

So, ensuring the progressive growth of incomes is a crucial issue in agriculture development, which must be implemented in several directions:

- ❖ Providing the increase in the commercialization of agricultural products[259].
- ❖ Expansion and deepening of value chains based on the processing of agricultural production[260].
- ❖ Providing growth of exports considering the mentioned above relatively high external efficiency.
- ❖ Targeted subsidies for producers with a high degree of commercialization.
- ❖ Reducing the cost of borrowed funds.

3.2. Mining and quarrying

Developing the manufacturing industry and related sectors based on imported or otherwise appropriated technologies is crucial for catch-up growth. In this regard, the mining industry is essential in several ways, particularly in expanding the country's financial resources through exports, expanding and extending minerals-based internal value chains through domestic consumption. On the other hand, due to the sector's high capital and low labour intensity, it does not significantly impact job creation.

[259] Currently, the degree of commercialization is between 50 and 60 percent.

[260] Based on the characteristics of Armenia, it is mainly the food industry.

Currently, more than 480 mineral mines have been discovered in Armenia: iron, copper, molybdenum, plumbum, zinc, gold, silver, aluminium and nepheline syenite. Currently, seven copper-molybdenum, three copper, thirteen gold and gold multi-metallic, two multi-metallic, and two iron mines are operating in Armenia.

The industry output is progressively growing in current and previous year prices (Figure 3.2.1). We should also note that over the past 20 years, the sector's share in the GDP has increased significantly, from 0.77% to 5.54% as of 2021.

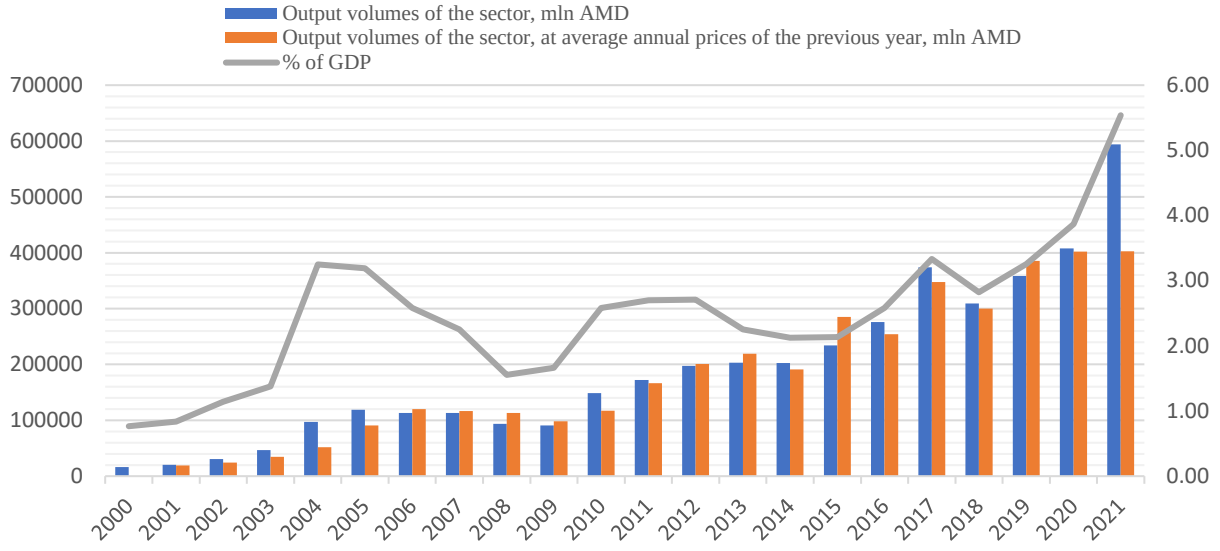

Figure 3.2.1. Output volumes of sector B (in mln AMD), share in GDP, %.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

From 2001 to 2020, the sector's contribution to total economic growth was 5.55%, which means that the industry was one of the main drivers of economic growth.

Metal ores have an essential place in the industry structure (Figure 3.2.2), with about 95% of the sector's output. Considering the steady growth of global demand for metals, especially copper, over the last 10-15 years, we can assume that the sector will continue to be one of the driving forces of economic development in Armenia.

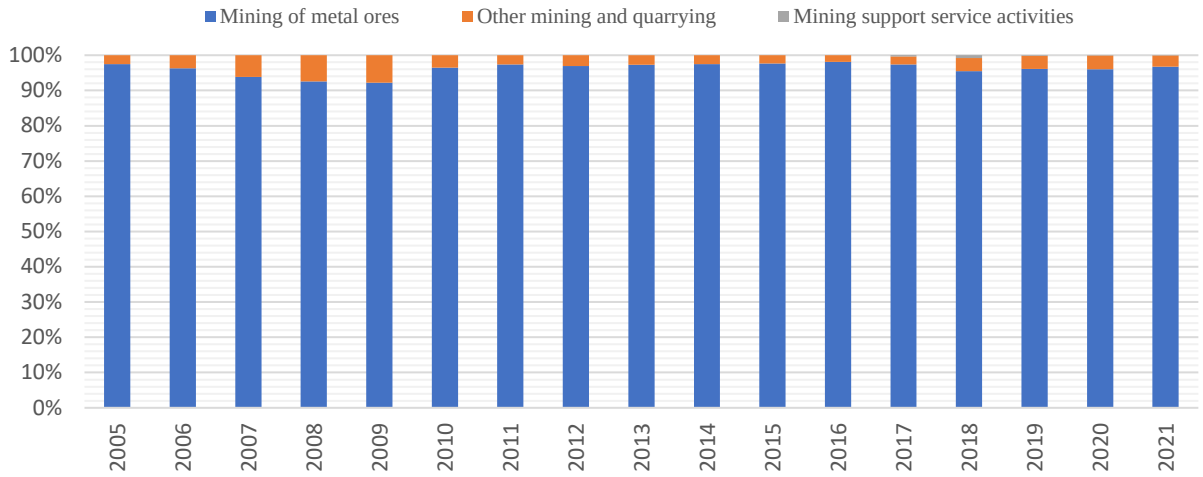

Figure 3.2.2. The structure of the sector B, mln AMD

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Given that the extractive industry is a reasonably fast-growing sector, the value-added is also increasing steadily, especially in the last few years (Figure 3.2.3).

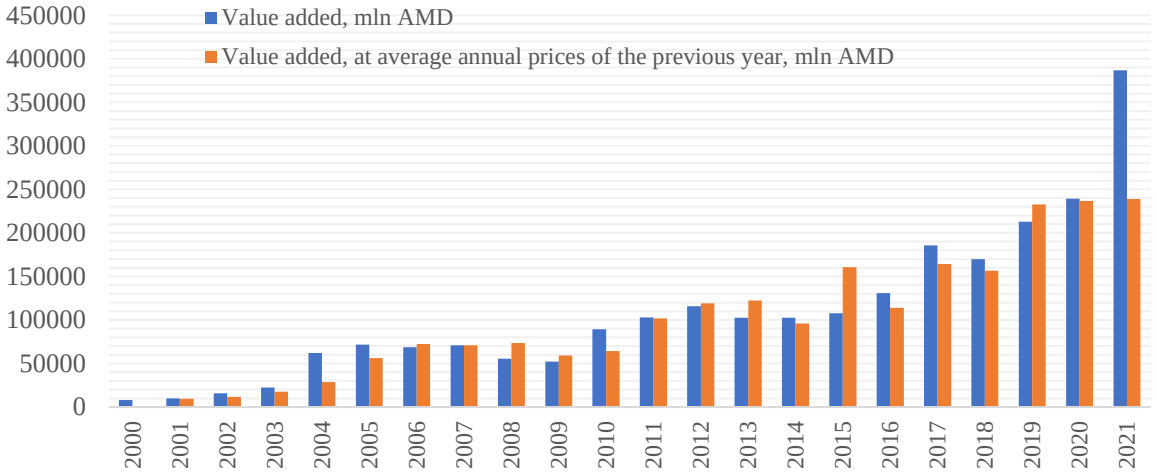

Figure 3.2.3. Value-added in the sector B, mln AMD

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The intermediate consumption has similar dynamics (Figure 3.2.4). At the same time, the material intensity, having a growth trend from 2009 to 2015, indicates the decline of the sector's efficiency. This indicator showed positive trends in 2005-2008 and 2016-2019.

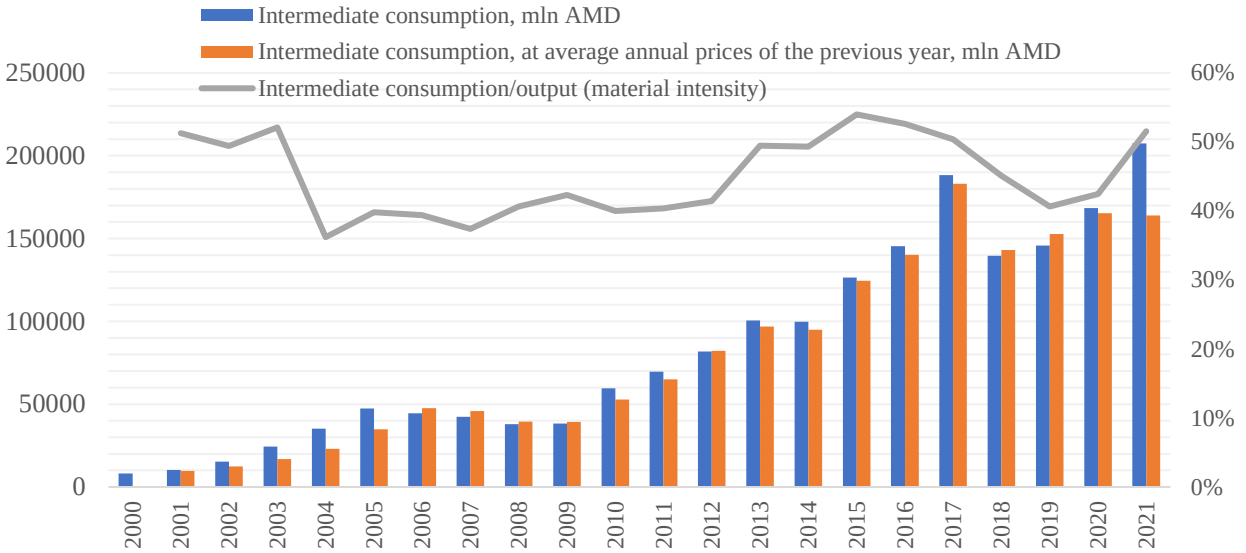

Figure 3.2.4. Intermediate consumption in the sector B, mln AMD

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The volumes of fixed assets at book value in the mining industry have increased significantly, especially in the last few years (Figure 3.2.5). However, in the case of the residual value, the volume change over the previous 13 years was 50%.

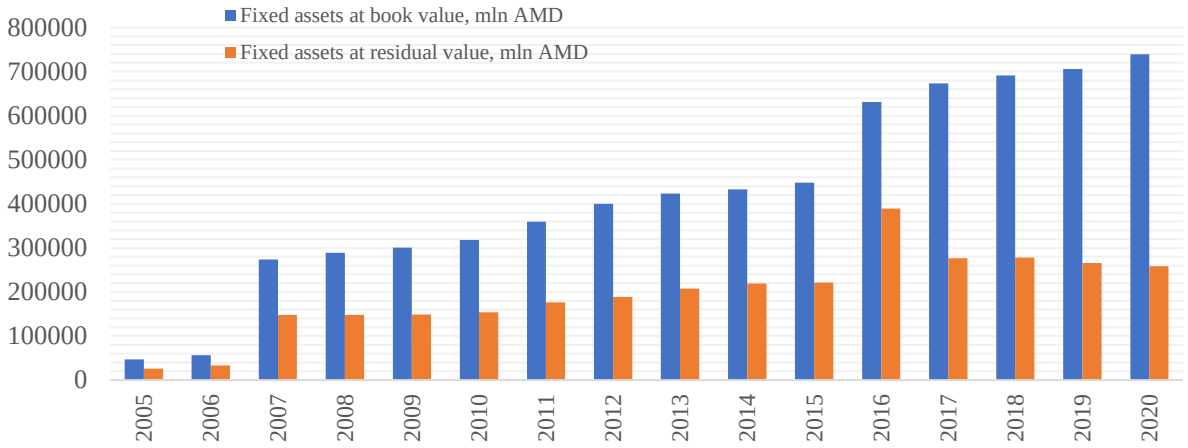

Figure 3.2.5. Fixed assets at the book and residual values in the sector B, mln AMD

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

There was a decline in capital intensity in the mining industry. If capital intensity was 5.75 in 2009, it reached 3.17 in 2020 (Figure 3.2.6). The capital-to-labour ratio has increased significantly over the past 15 years, indicating a positive technological change in the sector, particularly from 2007 to 2009. However, there was a slight decrease in this indicator in 2020. Labour productivity has also increased significantly in recent years, mainly due to the increased capital-to-labour ratio.

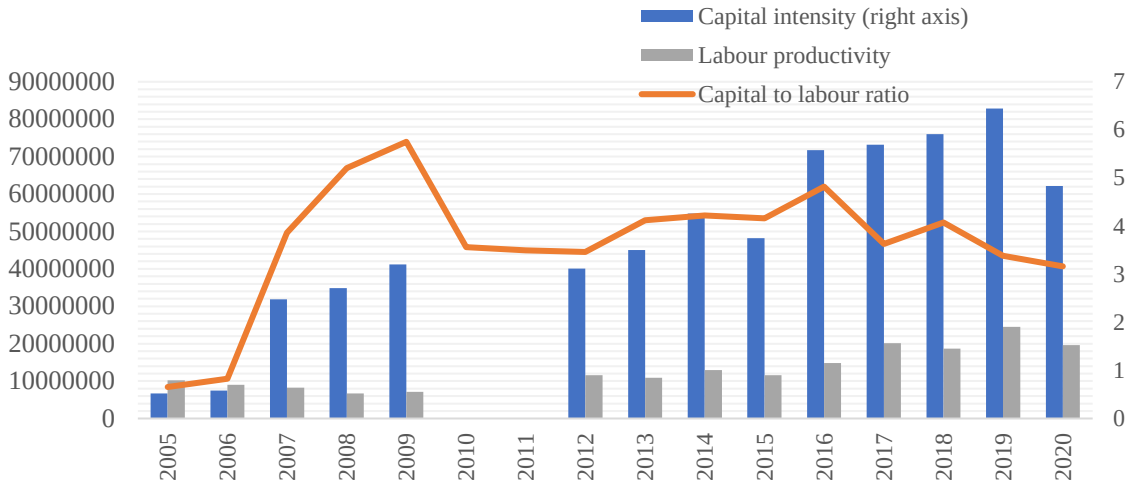

Figure 3.2.6. Capital intensity and capital-to-labour ratio in sector B.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Due to the increase in productivity, the salary level in the sector has also increased significantly (Figure 3.2.7), twice exceeding the mean wages in the economy. We can say the same about the labour cost, which is about three times higher than the same indicator at the economy level.:

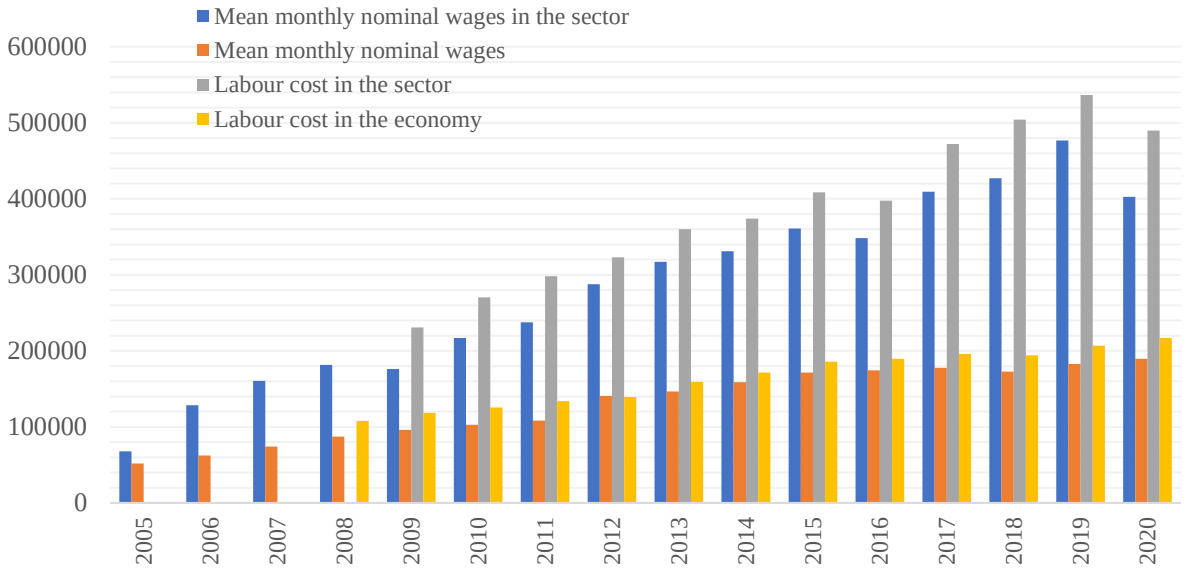

Figure 3.2.7. Wages and labour cost in sector B.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As we have already noted, the mining industry is capital-intensive and, therefore, has a lower labour intensity. The share of sector employment to total employment is, on average less than one percent (Figure 3.2.8), fluctuating from 7 to 11 thousand people.

Figure 3.2.8. Employment in the sector B.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

We should note that mining prices in Armenia depend highly on world prices. In general, price dynamics show a downward trend (Figure 3.2.9). However, in different periods, we can observe sharp increases. The latter is related to the strong growth in the sector during the last twenty years. The highest price increase jump occurred in 2003-2004.

Comparing the dynamics of prices in the sector with the GDP deflator, we should highlight that the price fluctuations in the sector smoothen only after 2016.

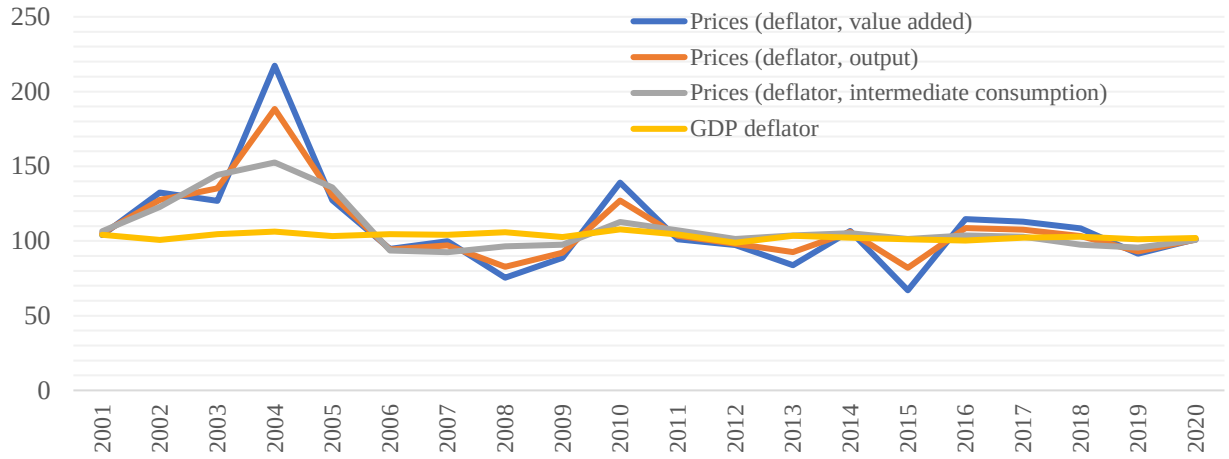

Figure 3.2.9. Changes in prices level according to deflator, sector B, %, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

One of the essential indicators of the sector is the geography of sales, where again, the metal ores sector dominates (Figure 3.2.10). If in 2004-2005, this sector supplied goods both to the CIS and other countries; during the last 14 years, almost 100% of the mining products were sold outside the CIS. However, there was also a significant increase in total sales. Besides, as the estimations show, the level of commercialization in the sector as of 2019 is 93.4%. On average, this indicator is around 90% during the period under consideration.

The dynamics of sales in Armenia are also noteworthy. The latter has significantly decreased over the last 15 years, from 69% in 2005 to 5% in 2019. On the one hand, it means an increase in exports in line with sales growth. On the other hand, it means a reduction of internal value chains based on the mining industry.

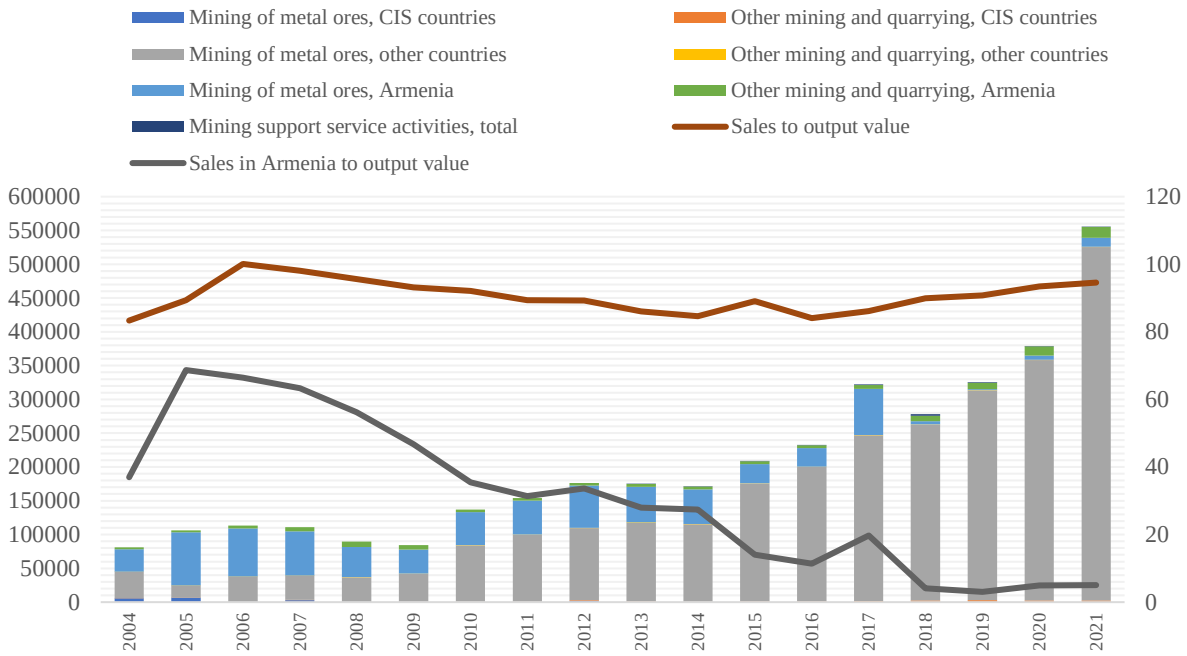

Figure 3.2.10. Sales of final products in sector B, mln AMD

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As for exports, we should highlight that the largest share of exports to EAEU countries is occupied by other mining products (Figure 3.2.11). The export of metal ore, which increased significantly in 2020, is in second place.

Figure 3.2.11. Export volumes of sector B to EAEU countries, USD

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Exports to other countries have a completely different structure (Figure 3.2.12). The metal ores have a dominant share in the exports and have doubled over the past five years, ensuring an increase in the total volume of exports to other countries.

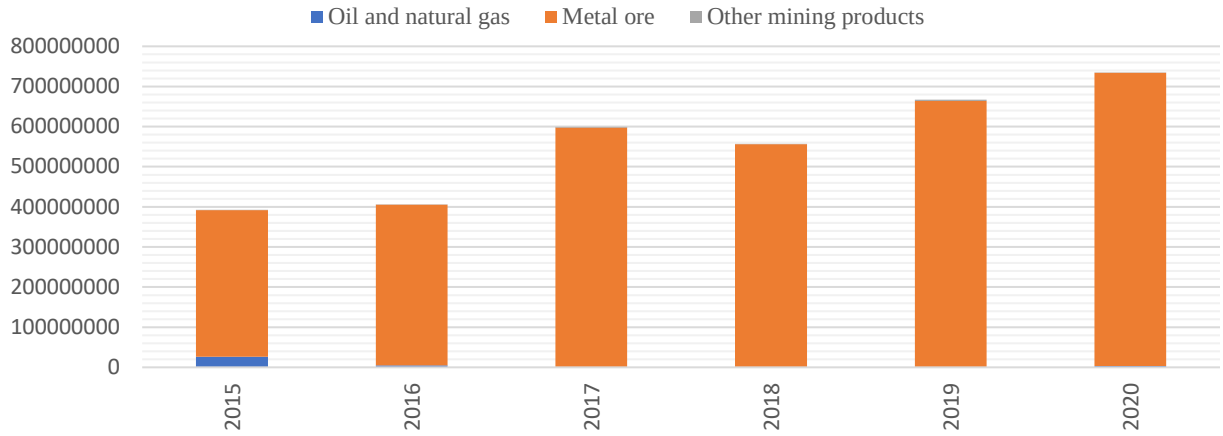

Figure 3.2.12. Export volumes of sector B to other countries, USD

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

In the case of imports, we observe a lower growth rate than exports (Figure 3.2.13). The main import products are oil and natural gas, critical imports for Armenia. The import of other mining products occupies second place. The largest import volumes were recorded in 2018. However, except for 2018, imports were not characterized by high volatility over the past five years.

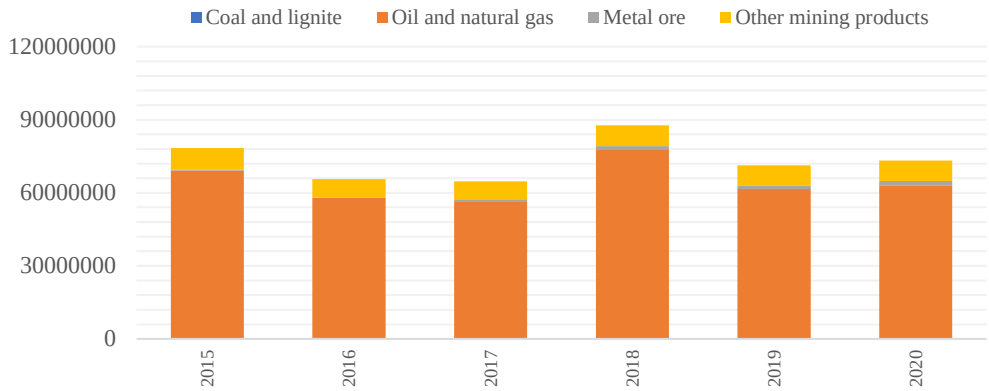

Figure 3.2.13. Import volumes of sector B from other countries, USD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Regarding sector financing, the highest volumes of loans from the banking system and credit organizations are directed to the mining of metal ores (Figure 3.2.14 and Figure 3.2.15). Moreover, foreign currency loans dominate the financing.

At the same time, the dynamics of loans given by the banking system and credit organizations are significantly different. Since 2018, there has been a significant increase in loans granted for the mining of metal ores. In the same period, we can observe an increase in financing for the mining of building materials.

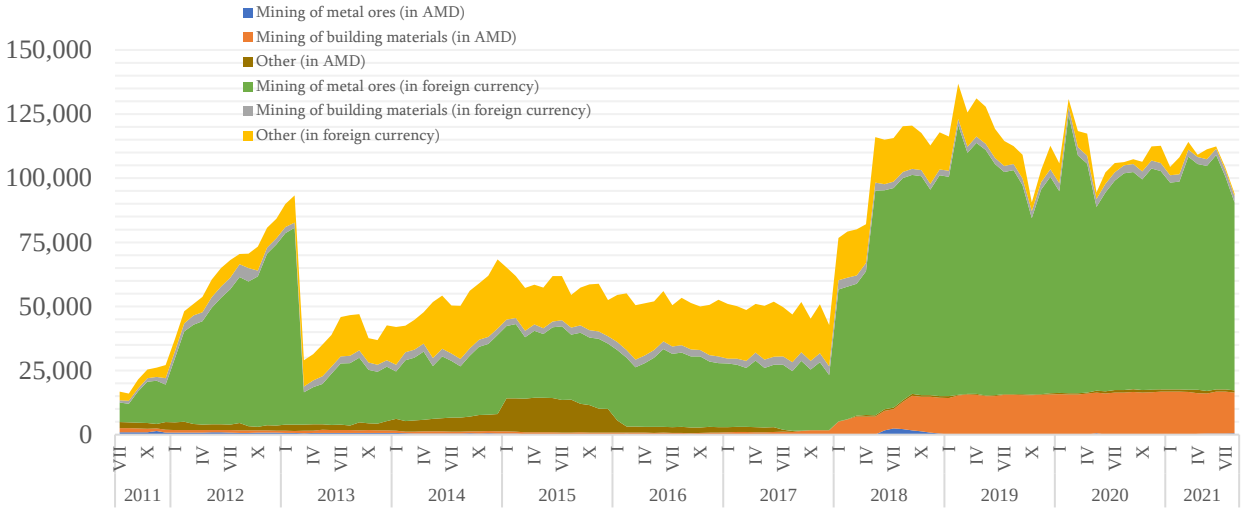

Figure 3.2.14. Loans granted by commercial banks in sector B, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

As for loans granted by credit organizations to the mining industry, we can note that the only significant transaction was carried out in 2013 in the mining of metal ores. Later we can observe some activity only after 2020. Moreover, during the last two years, credit organizations have provided loans only in the sectors of mining of building material and metal ores. It is also necessary to mention that the financing was in national currency in both cases. In 2020, the total share of loans to the mining industry to the sector output was about 20%.

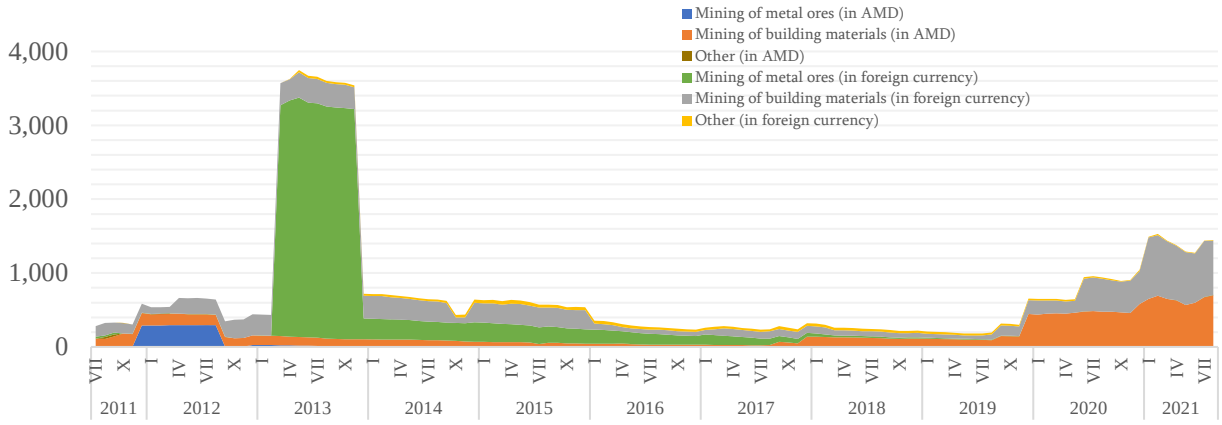

Figure 3.2.15. Loans granted by credit organisations in sector B, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

Summarizing, we should highlight that the mining industry's contribution to economic growth has been relatively high in recent years. The expected increase in demand for non-ferrous metals in the long term is likely to maintain the mining industry's role as one of the drivers of economic growth. Therefore, the expansion of the sector for development and further use of new reserves and the modernization of existing technologies through the introduction of modern technologies is and will continue to be one of the country's priorities.

The issues of the mining industry development are the raw nature of the export and the reduction of the depth and length of the value chains during the last years. Considering the high capital intensity of the industry, the transition from the export of raw materials to the export of finished products and consequently the sharp increase in the value-added of the sector will require significant investments. The state should play a decisive role in implementing the latter by providing financial guarantees and reducing the cost of financing.

The expansion and extension of the internal value chains formed based on mining depend on the one hand on the productivity growth rates of the sectors that consume the mining products, particularly construction and development, and on the other hand, on the increase in the efficiency of the mining industry requires quite intensive investments.

3.3. Manufacturing

The primary source of rapid catch-up growth is the manufacturing industry. Moreover, as we have already mentioned in the theoretical part, the priority sectors of the manufacturing industry, where the government should encourage the introduction and adaptation of technologies, are selected based on two indicators: the availability of relatively cheap and trained labour and the deepening and extension of the existing value chains, as well as creation of new value chains.

Moreover, at the catch-up growth stage, when the main tools for ensuring growth are the introduction of technologies and the increase and deepening of the value chains, the country should ensure the progressive development of the manufacturing industry and the noticeable increase in its weight in GDP. However, we should highlight that the importance of this sector in Armenia is not increasing. As of 2021, the share of the manufacturing industry in GDP is 11.4% against 16% in 2000 (Figure 3.3.1). Thus, during the period under consideration, the

demand for progressive growth in the manufacturing industry was not met. Moreover, from the point of view of the share of the manufacturing industry in the GDP, Armenia is significantly behind the average indicators of the world, as well as upper-middle-income countries.

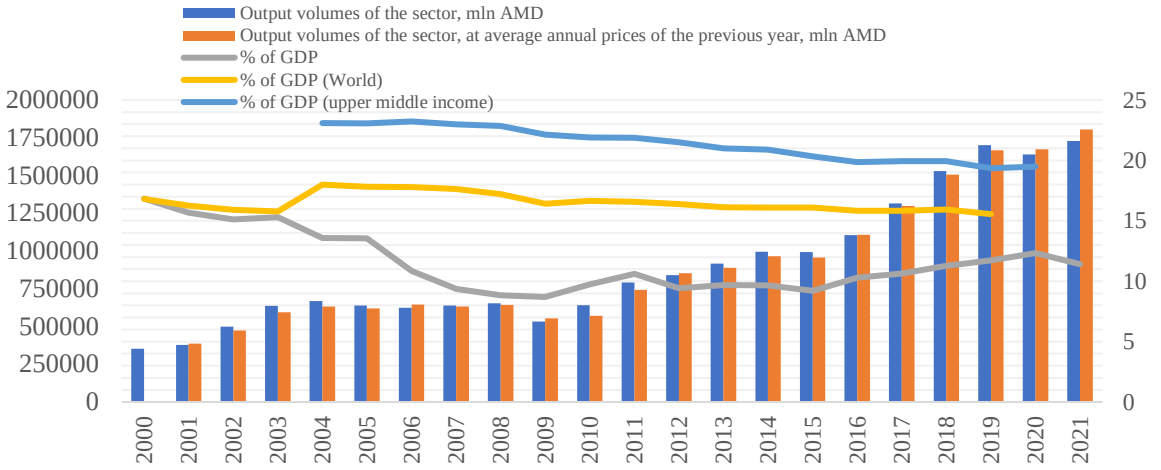

Figure 3.3.1. Volumes of sector C (in mln AMD), share in GDP, %.

Source: Database of the National Statistical Committee of Armenia and the World Bank – www.armstat.am

The manufacture of food products and beverages occupies more than 50% of the gross output in the industry (Figure 3.3.2). The manufacture of basic metals is in second place, followed by the manufacture of tobacco products. The mentioned branches also show the best dynamics of development. The mentioned branches also record the best growth dynamics.

As of 2000, tobacco production accounted for 1-2% of the industry, while in 2021, it already occupies more than 9%. The production of food products and beverages is also actively developing. We should also highlight that during the last five years, we can observe a high activity in the growth of all branches.

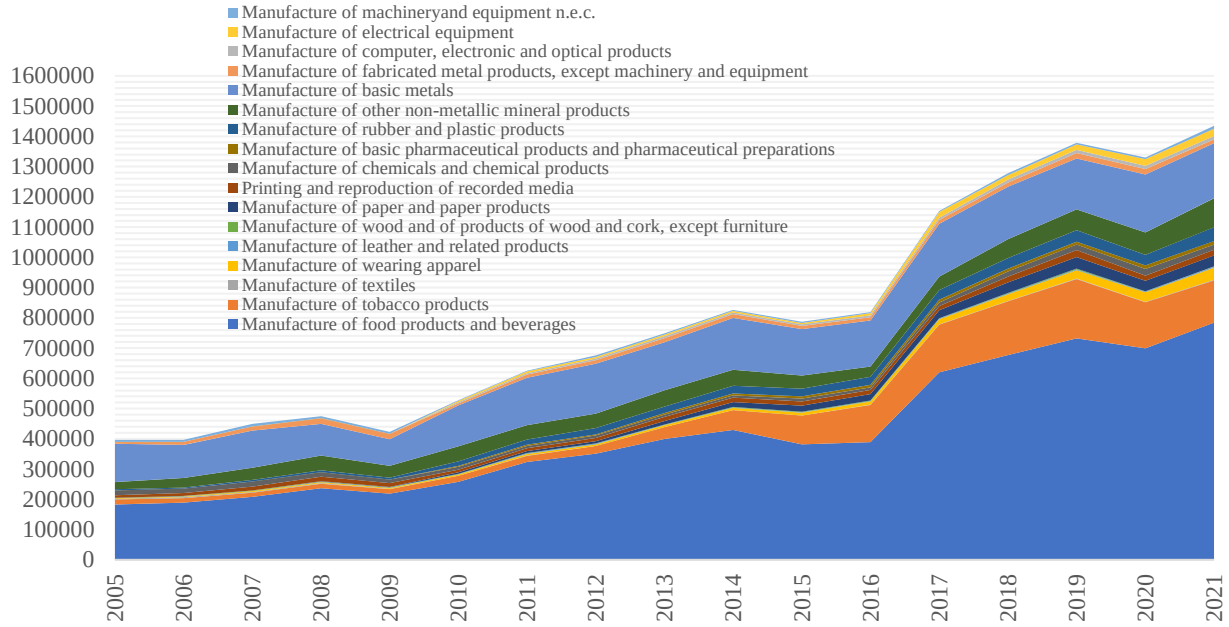

Figure 3.3.2. Structure of the sector C, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Analyzing the manufacturing industry structure from the point of view of achieving development, it turns out that Armenia does not use its main comparative advantage - cheap labour. According to the results for 2021, the share of labour-intensive sectors[261] of the manufacturing industry was only 5.9% of the manufacturing industry output. On the other hand, the processing industry is dominated by sectors based on local raw material processing value chains[262], 71% of the manufacturing industry output. The share of other branches of the manufacturing industry in 2021 was 23.1%, with tobacco products accounting for about 40% of the latter.

The absence of basic and high-tech branches of the manufacturing industry is also noteworthy[263]. It practically excludes the possibility of developing own technologies at the current stage of development.

We can divide the growth of value-added in manufacturing into two main stages. The first stage took place from 2000 to 2014. During that period, value-added volumes increased at a moderate rate (Figure 3.3.3). The second stage is from 2015 to 2019, when we can observe significant growth in the industry. However, it stopped in 2020, mainly due to the consequences of the Covid-19 pandemic. In 2021 the sector has already recovered.

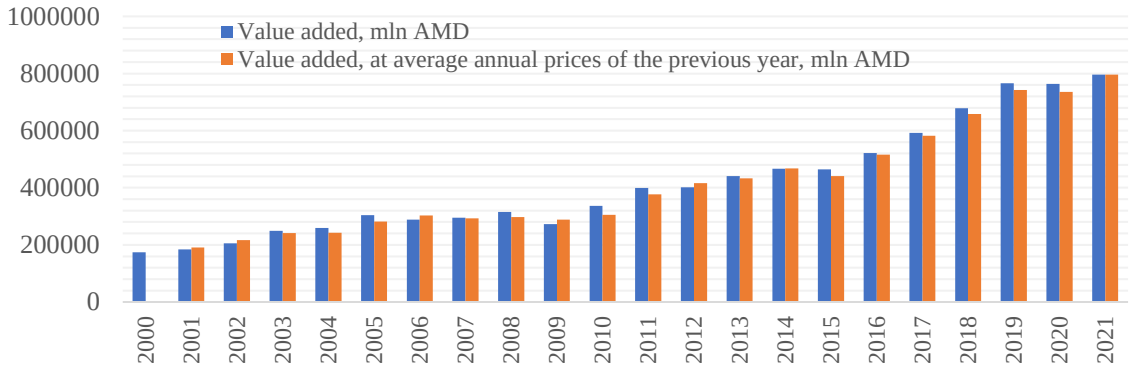

Figure 3.3.3. Value-added in sector C, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Similar to the value-added dynamics, the changes in the intermediate consumption during the period under consideration can also be diWe can observe a significant growth only in the last few years. In general, the manufacturing industry's intermediate consumption has increased about four times during the previous 20 years (Figure 3.3.4). Considering that the intermediate consumption volumes are quite close in terms of the current and previous year's prices, a relatively low inflation rate can be recorded in this sector.

As for the materials consumption, we should note that from 2003 to 2008, the indicator of material intensity had a downward trend, indicating an increase in the sector's productivity during the period under consideration. However, since 2009, we can observe a specific rise in material intensity, allowing us to record a certain decrease in the sector's efficiency until 2020.

[261] According to the international experience of catch-up growth, these sectors include manufacture of wearing apparel, computer, electronic and optical products, electronic equipment, machinery and equipment, and jewelry.

[262] These sectors include the manufature of food products and beverages, the production of other non-metallic mineral products and basic metals.

[263]It concerns the ferrous metallurgy, petrochemical production and various types of machine building, including machine tool construction.

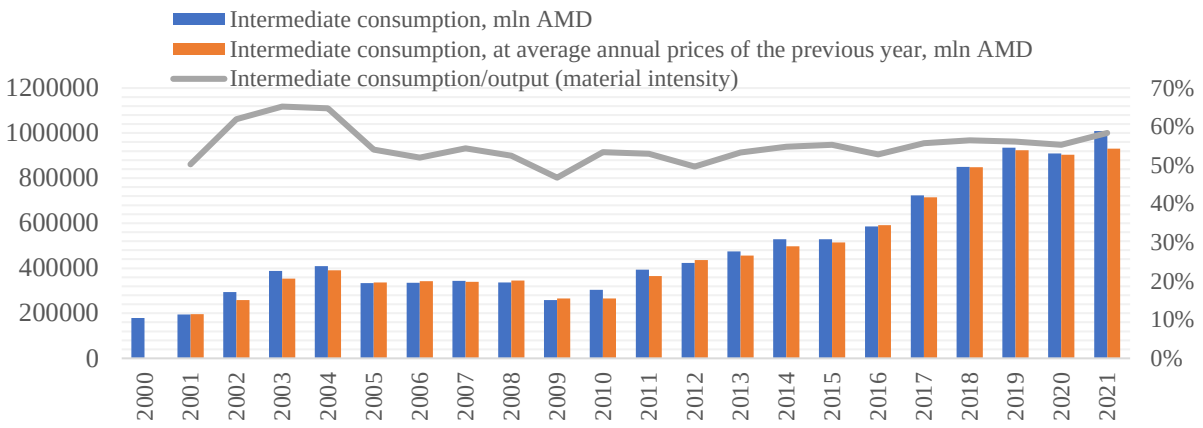

Figure 3.3.4. Intermediate consumption in the sector C, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

In the manufacturing industry, fixed assets at the book and residual values also show a significant growth trend (Figure 3.3.5). After 2005, the fixed assets of the manufacturing industry increased by 2.5-3 times at the book and residual values.

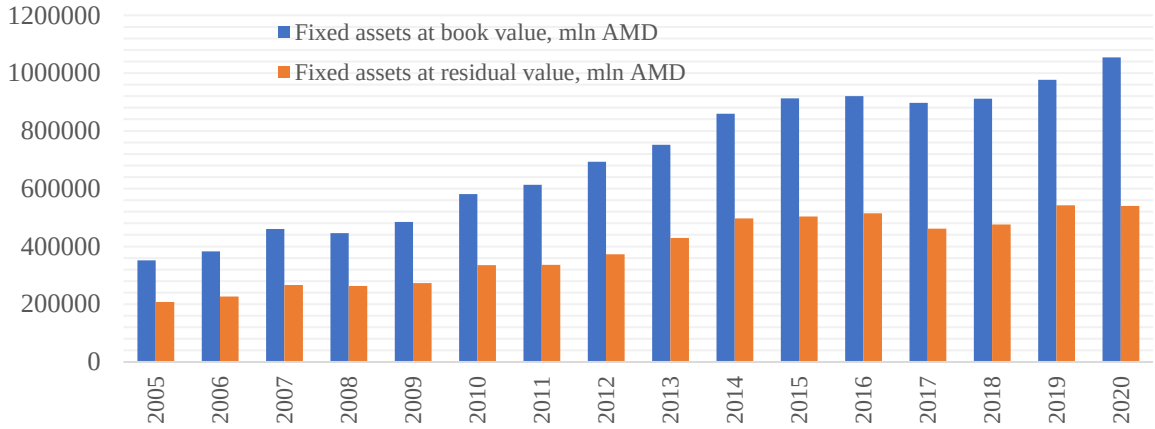

Figure 3.3.5. Fixed assets at the book and residual values in sector C, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The capital intensity of the sector shows unstable growth dynamics with a general downward trend over the last few years (Figure 3.3.6), accounting for 1.32 in 2020. The indicator reached its maximum in 2015, equaling 1.96. As for the capital-to-labour ratio, we can observe a moderate growth trend, accompanied by a similar moderate growth of wages in the manufacturing industry (Figure 3.3.6). At the same time, there is an increase in labour productivity in the sector, which has almost tripled over the last 15 years.

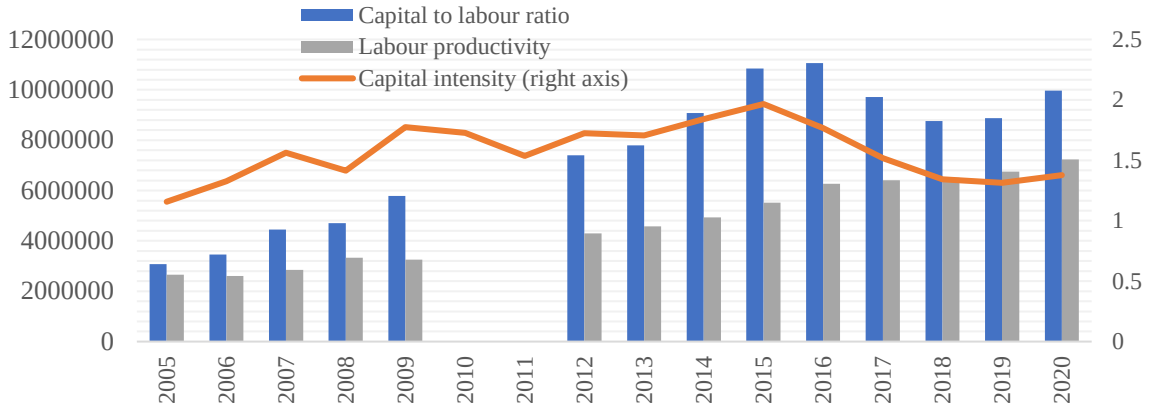

Figure 3.3.6. Capital intensity, capital-to-labour ratio and labour productivity in sector C.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

At the same time, after 2012, the mean monthly nominal wages in the sector are lower than the mean wage indicators in the economy (Figure 3.3.7). We should also note that the labour cost in the industry is quite close to the average index of the general economy, which can be considered a positive trend.

Figure 3.3.7. Wages and labour cost in sector C, AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

During the last 17 years, the manufacturing industry recorded a moderate annual growth of about 4.4%[264]. The increase in employment (about 2.6% average per year) ensured 58.7% of the latter, and the increase in labour productivity accounted for 42.3% (about 1.8%average per year) (Figure 3.3.8).

Regarding the real wages, there was an average of 4% annual growth from 2010 to 2021, compared to the 1.9% increase in productivity during the same period, which indicates a certain reduction in the comparative advantage of the country's cheap labour force. It is also evidenced by the increase in unit labour cost[265] from 8.7% in 2010 to 10.9% in 2021. Although the employment growth in the manufacturing industry is undoubtedly a positive phenomenon, it has somewhat limited volumes and cannot significantly impact employment in the country, mainly due to the reduction in the number of people engaged in agriculture. In 2020, manufacturing employment accounted for 12% of formal employment[266].

[264] For comparison, in 2004-2021, the economy grew at an average annual rate of 4.3%.

[265] Unit labor cost is calculated as the ratio of annual wage to labour productivity

[266] Employees registered by tax authorities

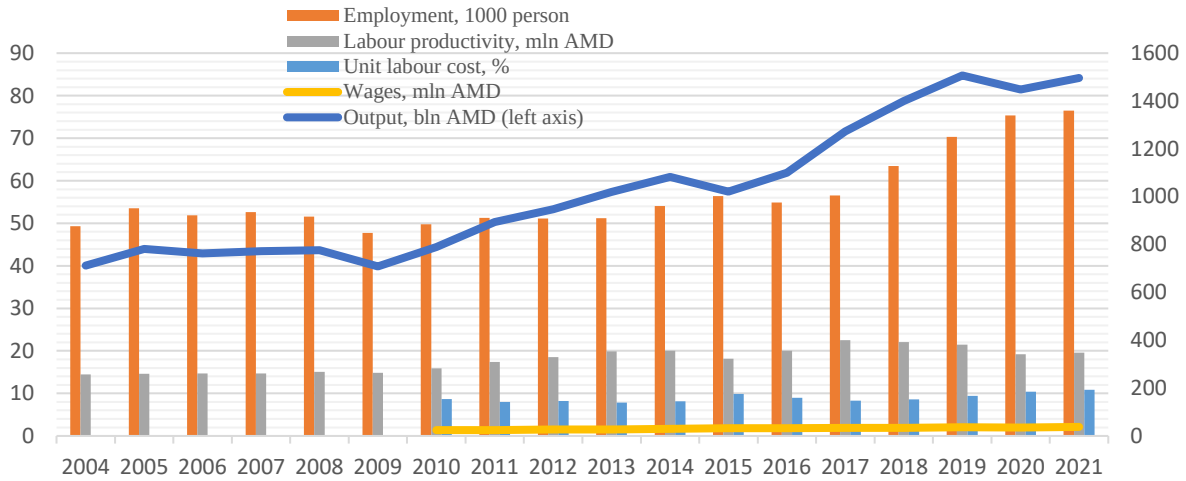

Figure 3.3.8. Manufacturing output, employment, labour productivity, wages and unit labour costs.
Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The dynamics of prices calculated based on the deflator show relatively high volatility from 2001 to 2012, with a significantly different pattern compared to the GDP deflator (see Figure 3.3.9). In the following years, prices stabilize in the industry, and from 2016 it almost equals the dynamics of the GDP deflator.

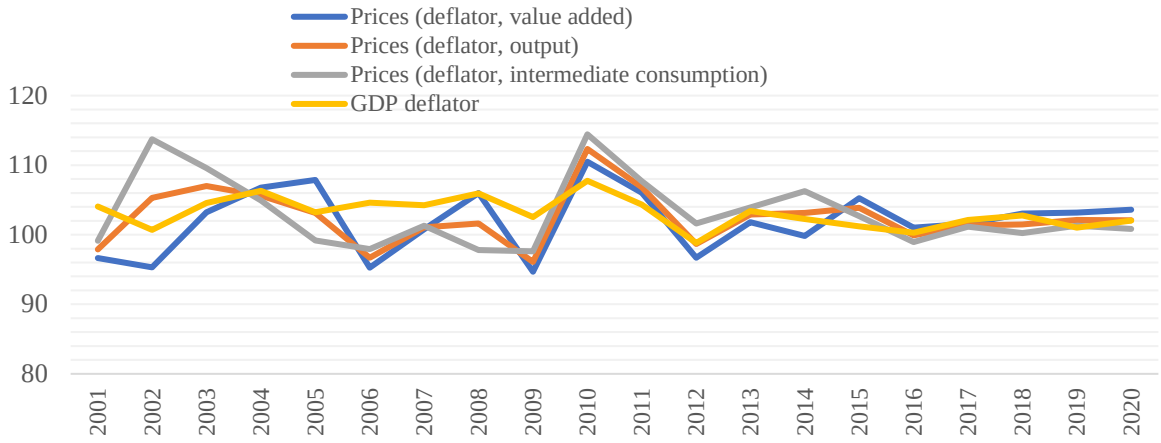

Figure 3.3.9. Changes in prices level according to deflator, sector C, %, annual.
Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The manufacturing industry's sales structure is crucial (Figure 3.3.10). As we can see, food products and beverages have a dominant position accounting for 40-45% of industry sales. Basic metals occupy second place, but this sector's share in the industry's sales has decreased significantly. If at the beginning of 2005 the sector of production of basic metals occupied about 30% of the total sales, then by the end of 2021 it accounted for 14%.

At the same time, it is necessary to emphasize the high growth rate of sales in the sector. We can observe a slowdown in growth rates only in 2020, which is explainable by the Covid-19 pandemic. However, looking at the sector's sales to the total output volume ratio, we notice that until 2008 there was a significant increase in the commercialization index followed by a slow decline. As of 2021, the sales to total output ratio in the manufacturing industry was 89%.

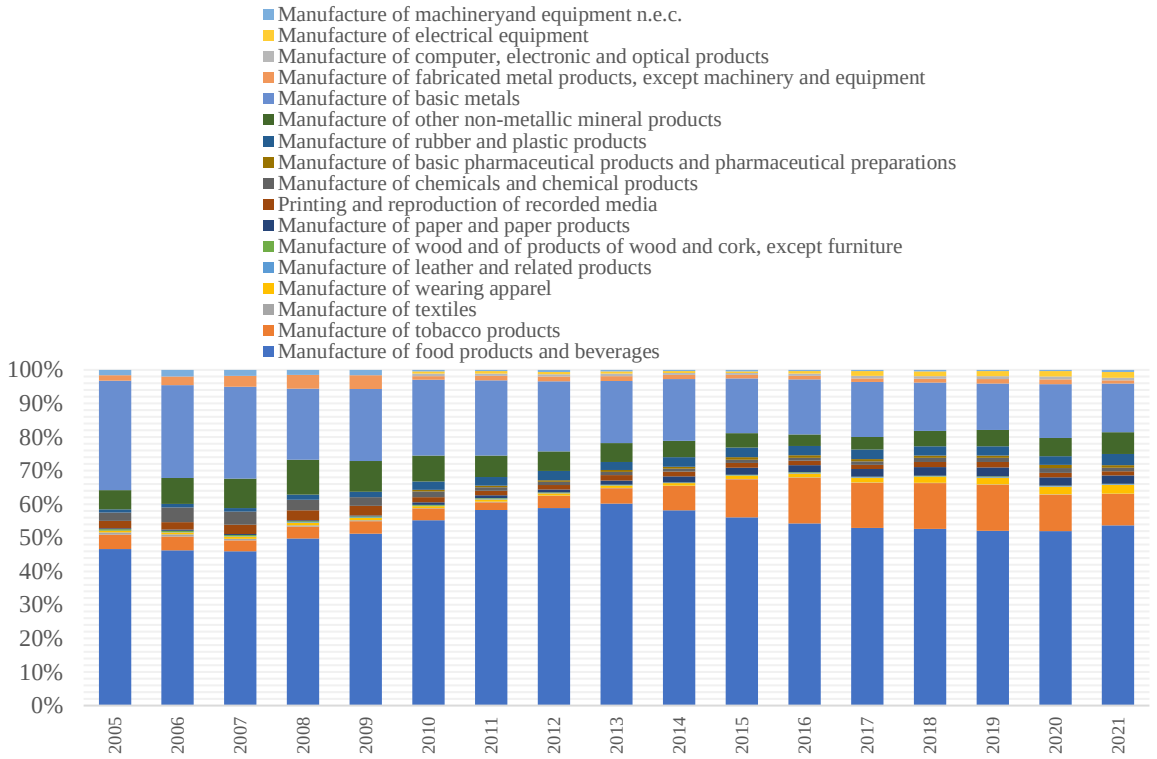

Figure 3.3.10. Sales of final products in sector C, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The sector's structure mainly determines the structure of exporting manufacturing products to EAEU countries. The main export products are food, beverages and wearing apparel (Figure 3.3.11). The rest of the products occupy insignificant positions in the export structure. At the same time, we should note that until 2018, there was a significant increase in exports to EAEU countries, followed by a decline in the last two years.

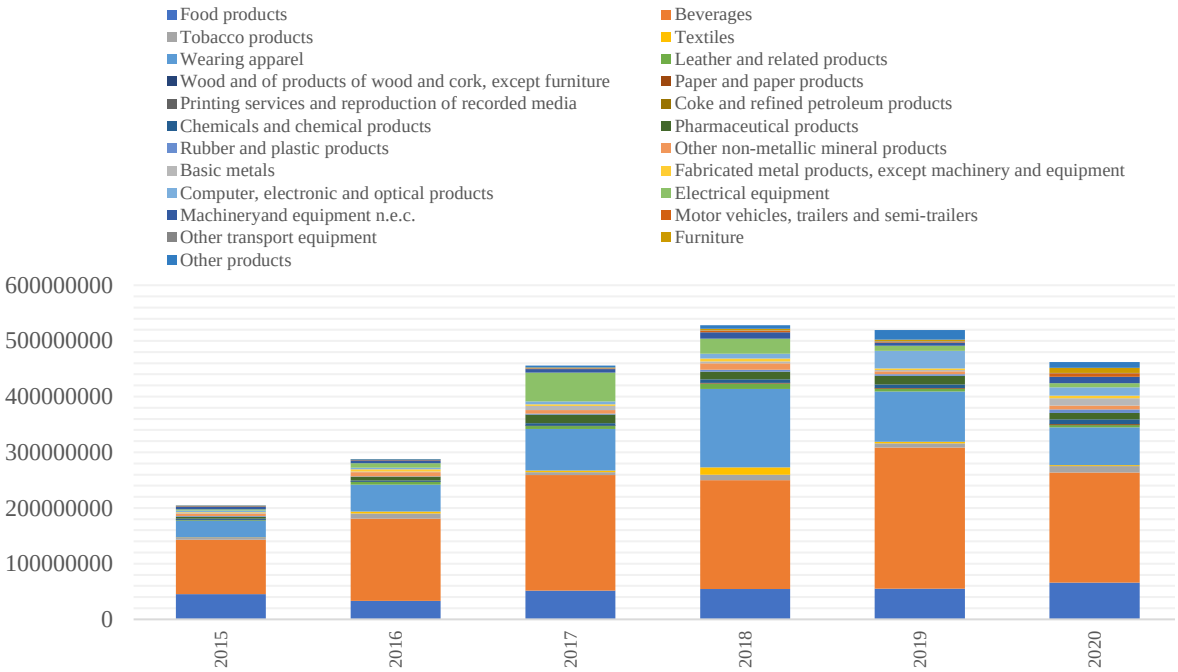

Figure 3.3.11. Export volumes of sector C to EAEU countries, USD

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Regarding exports to other countries, its structure is significantly different from exports to EAEU countries. As shown in Figure 3.3.12, the main products exported to other countries are tobacco products and basic metals.

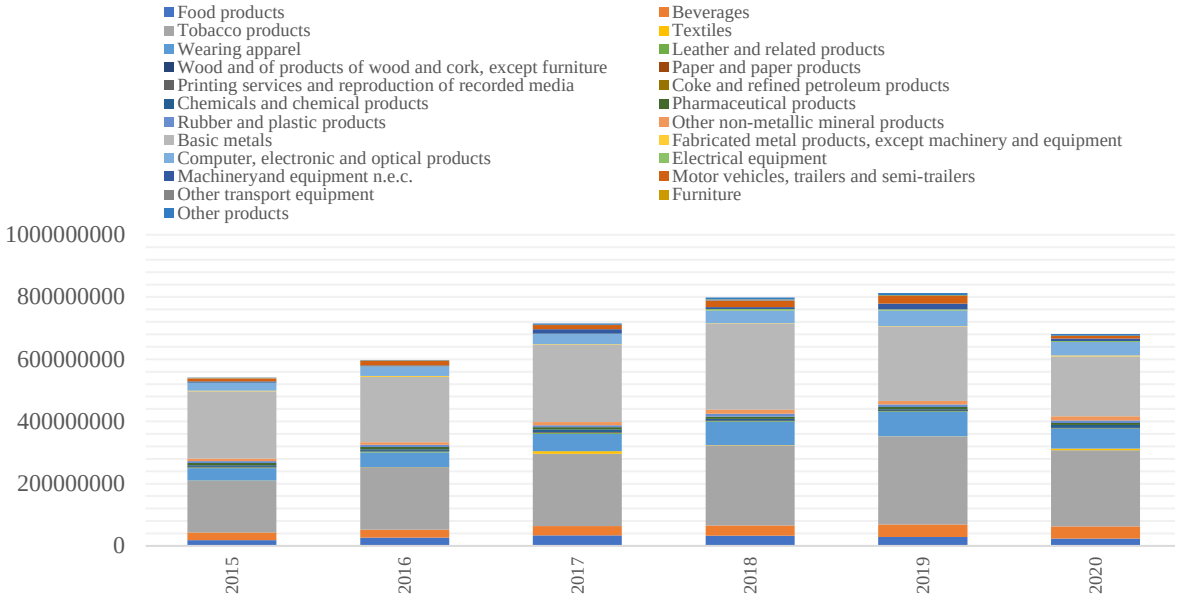

Figure 3.3.12. Export volumes of sector C to other countries, USD

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

At the same time, the volume of exports to other countries has a moderate growth trend, with a significant decrease in 2020 due to the consequences of the Covid-19 pandemic.

Referring to the import of the manufacturing industry, we should note that, unlike export, it is more differentiated and includes a large variety of imported products (Figure 3.3.13). One of the most noticeable growing branches in import of goods is the motor vehicles sector, which registered double-digit growth in 2017-2020 and has increased 5-6 times in three years. In 2020, there was a significant reduction in imports due to the crisis.

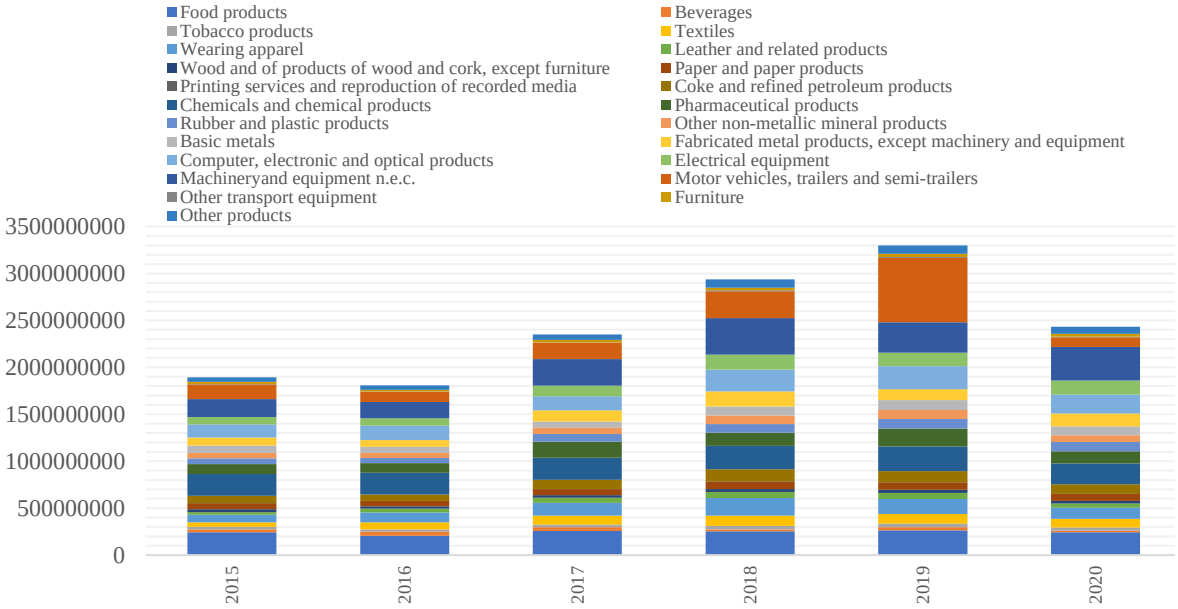

Figure 3.3.13. Import volumes of sector C to from countries, USD

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Energy consumption in the sector has relatively stable growth dynamics (Figure 3.3.14). In the last few years, there has been a decrease in the consumption of energy sources in the manufacturing industry. From the point of view of the emission energy index, in general, a downward trend is observed, which may indicate a certain improvement in energy efficiency in the sector.

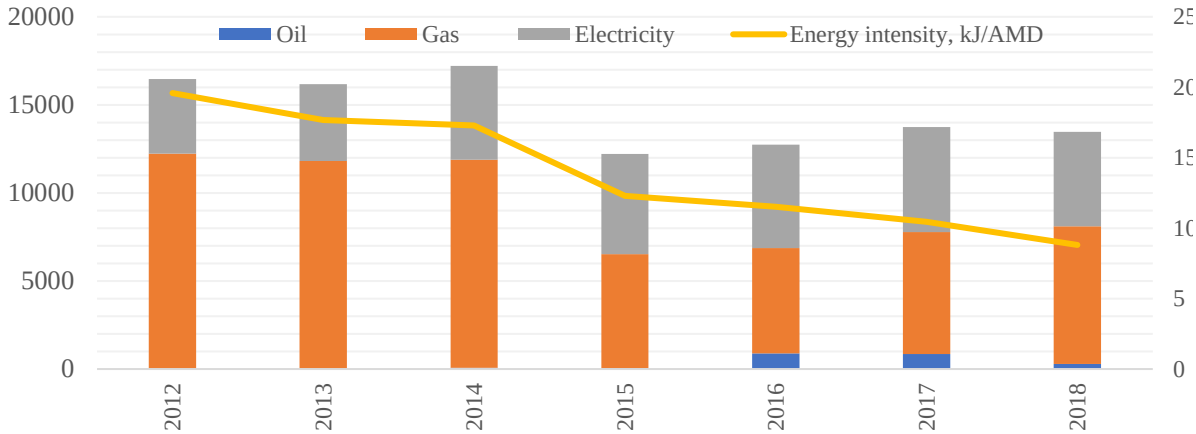

Figure 3.3.14. Energy balance in sector C, TJ

Source: Annual "Energy balance" reports of the UN – https://unstats.un.org/unsd/energystats/pubs/balance/

Considering the growth of the manufacturing industry over the last few years, the dynamics of the sector's lending growth by the banking sector (Figure 3.3.15 and Figure 3.3.16) and credit organizations (Figure 3.3.17 and Figure 3.3.18) during the period under consideration is apparent. The sector's financing priorities coincide with the dynamics of active growth in some manufacturing industry sectors.

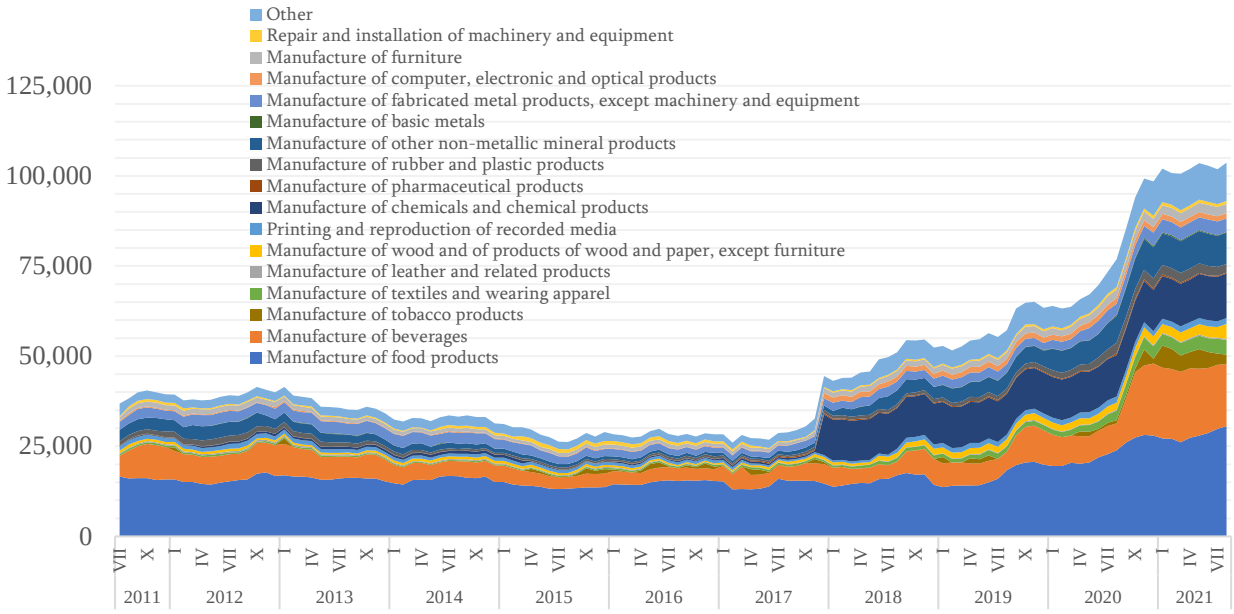

Figure 3.3.15. National currency loans granted by commercial banks in sector C, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

We should note that the volumes of loans in national currency granted by the banking sector show a significant growth trend. At the same time, loans issued by banks in foreign currency do not have been relatively stable. Moreover, the food and beverage sector is the dominant sector in terms of attracting loans from both banks and credit organizations.

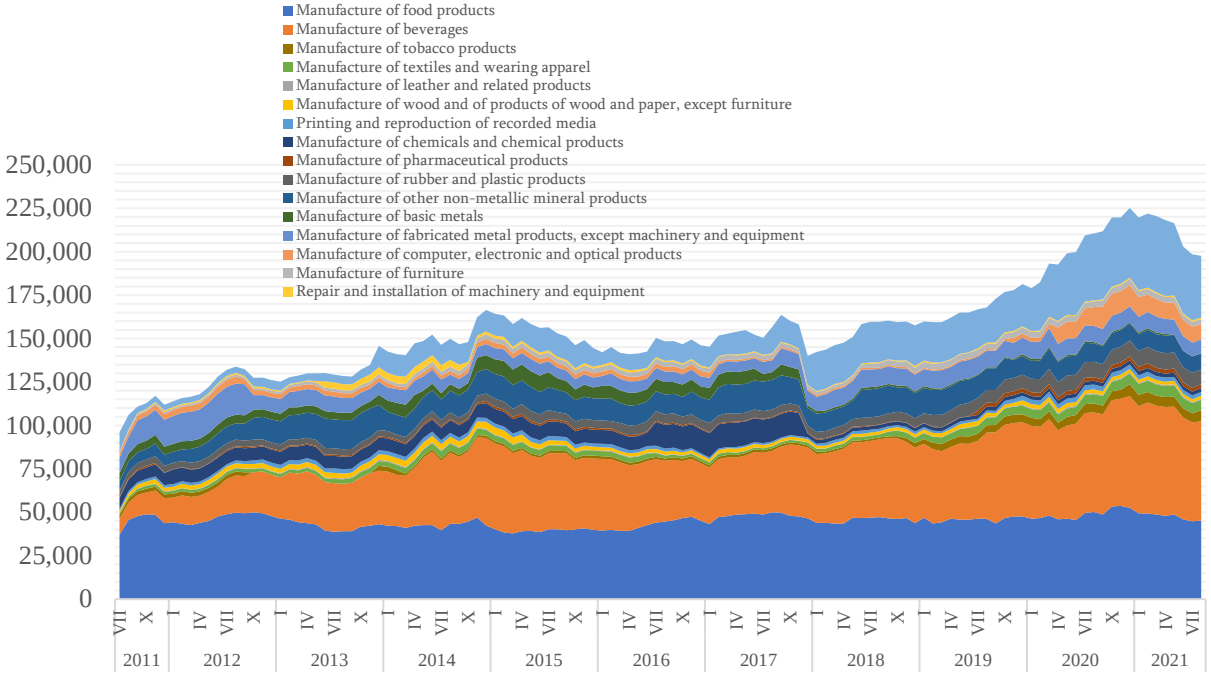

Figure 3.3.16. Foreign currency loans granted by commercial banks in sector C, mln AMD.
Source: Database of the Central Bank of Armenia – www.cba.am

More significant fluctuations characterize loans issued by credit organizations in national currency in the dynamics of the total volume and individual branches. However, the latter recorded considerable growth in 2016, as was the case for all indicators characterizing the manufacturing industry.

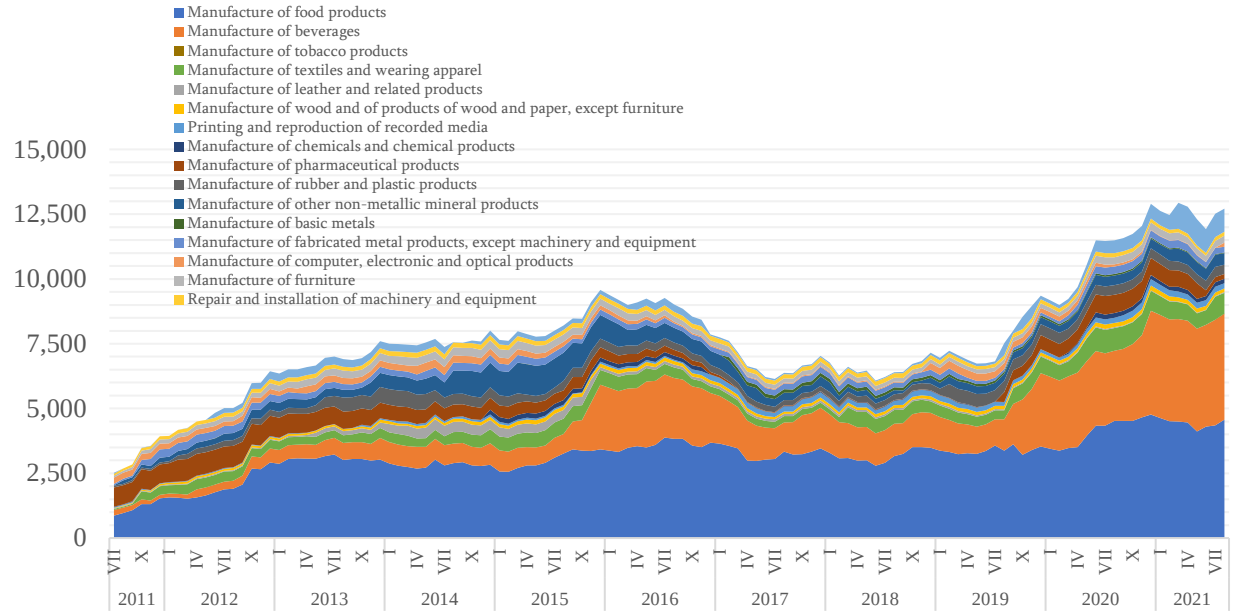

Figure 3.3.17. National currency loans granted by credit organisations in sector C, mln AMD.
Source: Database of the Central Bank of Armenia – www.cba.am

If the volume of lending in the national currency has increased nearly ten times over the last ten years, the volume of foreign currency loans has only doubled (Figure 3.3.18).

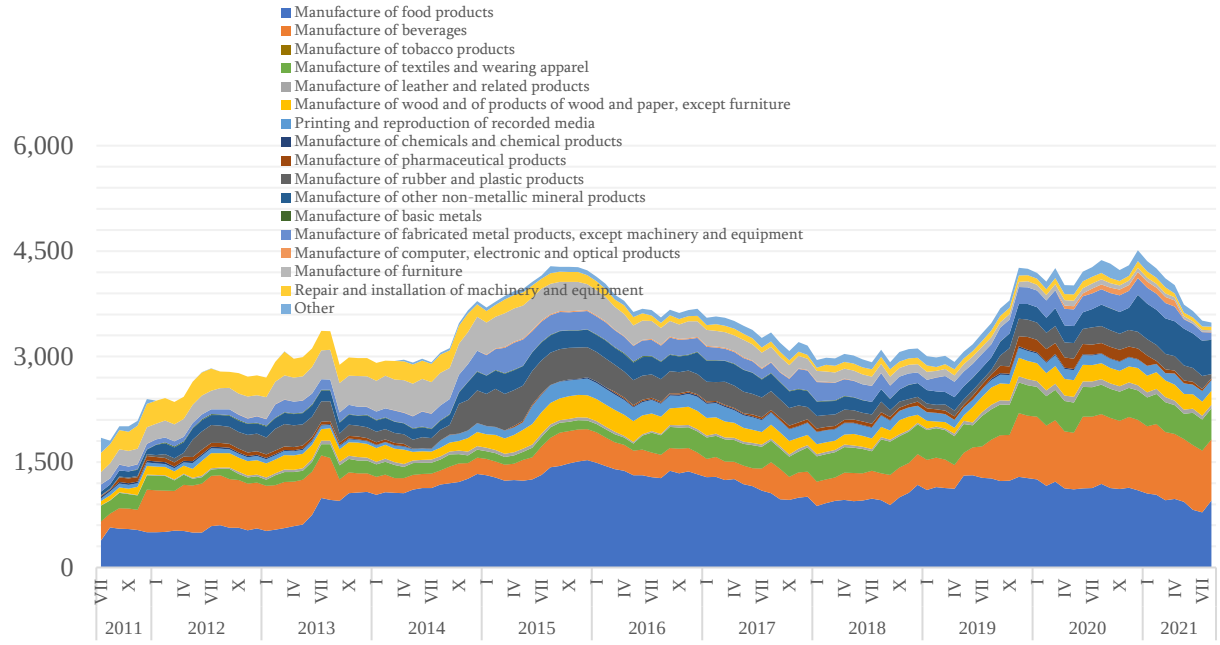

Figure 3.3.18. Foreign currency loans granted by credit organisations in sector C, mln AMD.
Source: Database of the Central Bank of Armenia – www.cba.am

Summarizing the above analyses, we can argue that:

1. Despite the decisive role of the manufacturing industry in the catch-up growth, this role in Armenia is much lower than the averages of the upper-middle-income countries, both in terms of share in GDP and employment, growth rates, and share in exports[267].
2. As evidenced by the structure of the manufacturing industry and exports of goods and their dynamics, it mainly developed based on the creation and deepening of local raw material processing chains, which is evidenced by the dominance of the food industry in both the production and export structures. In 2019, the export of food products in Armenia was 31.7% of the total export of goods, compared to 9.8% registered in the group of countries with upper-middle-income, and the export of manufacturing products (food export excluded) was 19.4%, compared to 67.4% of countries of the upper-middle-income group[268].
3. Armenia has insufficiently used the comparative advantage of its still existing cheap labour force, which is also evidenced by the already mentioned small share of light industry in the exports of goods, as well as the absence of labour-intensive assembly industry both in the production and export structure.
4. Basic and high-tech branches of the manufacturing industry, including the manufacture of machinery, equipment and robotics, are practically absent in Armenia, which currently makes it almost impossible to develop own technologies and significantly complicates the on-site maintenance and adaptation of imported technologies to local conditions.

[267] As of 2019, the share of the manufacturing industry in the GDP in that group of countries was 19.3% compared to 11.7% in Armenia. As for the growth rate of the manufacturing industry, it was about 10% on average in that group of countries in 2000-2019 compared to 5.7% in Armenia.
[268] The World Bank database.

5. The import of technologies is the primary driver of the country's development, particularly in the manufacturing industry. It is mainly carried out at the expense of funds provided by the financial intermediation system. However, the above analysis of bank lending indicates that the expansion of borrowed funds refers more to the financing of current expenses (national currency loans, which have increased tenfold in the last ten years) than to the introduction of technologies which require foreign currency loans, and the volume of which has only doubled in the same period, and which, despite the decrease in the interest rate, remain relatively expensive compared to the global average interest rates.

To address these issues, the government should develop a corresponding industrial policy, which is currently lacking, and the primary user of it should be the manufacturing industry. That policy should ensure:

1. Sustainable growth rates of the manufacturing industry in the medium term, around 9-10% per year.
2. Additional growth (in the range of 4-5%) should be mainly provided by the progressive growth of the light assembly industry based on cheap labour, which in turn should be realized due to the introduction of appropriate technologies in various forms through foreign investment support, the creation of appropriate targeted financial structures for lowering the price of importing technologies for local manufacturers and lowering the prices of foreign currency loans.

The government should prepare grounds for the internal maintenance of relevant technologies and their adaptation to internal local conditions, which implies the training of personnel and the introduction of pertinent servicing technologies to service basic technologies, as well as the creation of foundations for the domestic manufacture of machinery and equipment.

3.4. Electricity, gas, steam and air conditioning supply. Water supply, sewerage, waste management and remediation activities.

The electricity, gas, steam, air conditioning supply, and water supply, sewerage, waste management and remediation activities sectors are essential infrastructure, thanks to which the efficient operation of other economic sectors becomes possible. Industrial activity consumes a significant amount of energy, and supply disruptions can disrupt the sector's efficiency. In general, as of 2018, 15.8 kJ of energy is consumed to produce a unit of value-added in Armenia. Electricity consumption has a significant weight in the energy balance, which in 2018 accounted for 21% of the total. During the period under consideration, the share of these sectors in the EU GDP varied between 2.9-3.1% (Figure 3.4.1).

From 2011 to 2016, we can observe a stable growth rate in the gross output volumes of the electricity, gas, steam, air conditioning supply, water supply, sewage, waste management and remediation activities in Armenia. CAGR calculation shows that the average growth rate during these six years was 18%. The period from 2017 to 2020 is characterized by a reduction in the gross output of the sectors, on average by an annual 2.8%. As of 2020, the gross output is about 377 billion AMD.

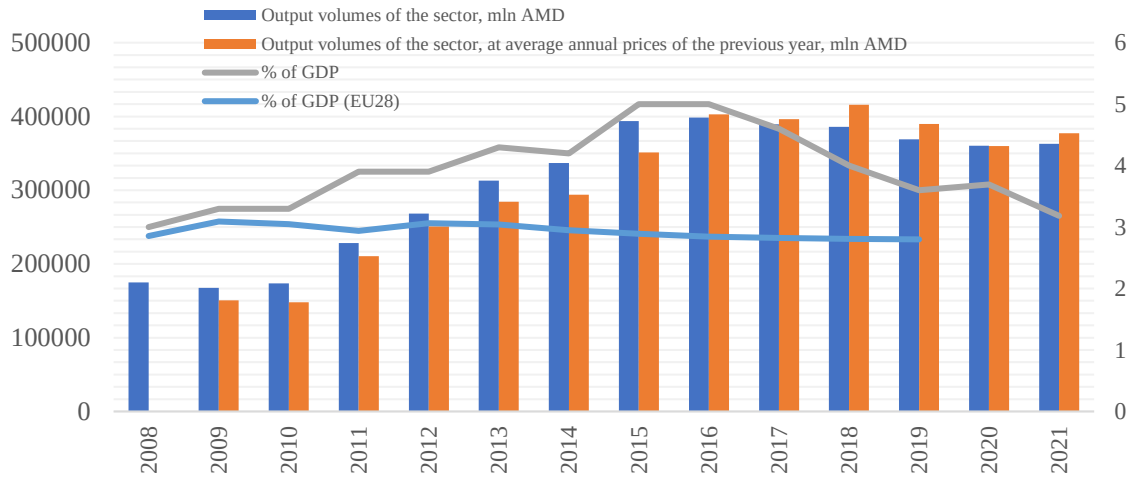

Figure 3.4.1. Output volumes of sectors D and E (mln AMD), share in GDP, %.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

At the same time, the electricity, gas, steam and air conditioning supply sector has a dominant weight in the total output volumes. As of 2020, the sector's weight is 91% (Figure 3.4.2). During the period under consideration, the share of the latter fluctuated in the range of 86-92%.

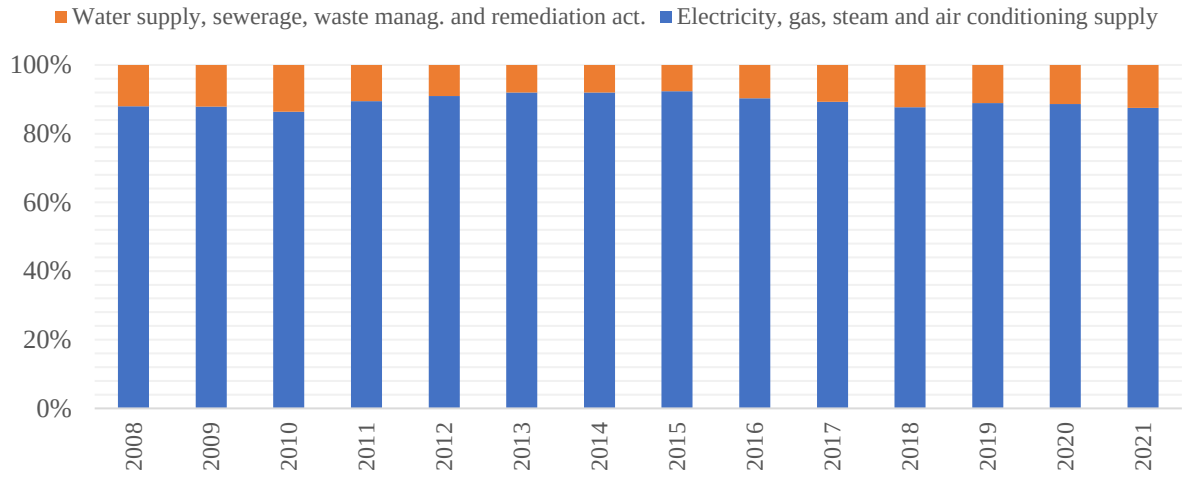

Figure 3.4.2. Output structure of sectors D and E, %.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Observing the intermediate consumption volumes in the electricity, gas, steam, good air conditioning supply, water supply, sewerage, waste management and remediation activities sectors, we can notice a stable growth rate from 2011 to 2016 by an average of 18.4% per year (Figure 3.4.3), which somewhat exceeds the growth rate of gross output over the same period.

Given the growth outpacing the gross output growth rate, there has been a significant increase in the material intensity of the sector over the same period, rising from 35% in 2010 to 40% in 2014. The latter indicates a decline in the efficiency of the industry. However, in the following years, particularly from 2015 to 2017, the sectoral efficiency recovered, and the material intensity indicator reached 35% in 2017. From 2016 to 2020, the intermediate consumption volumes have hardly changed.

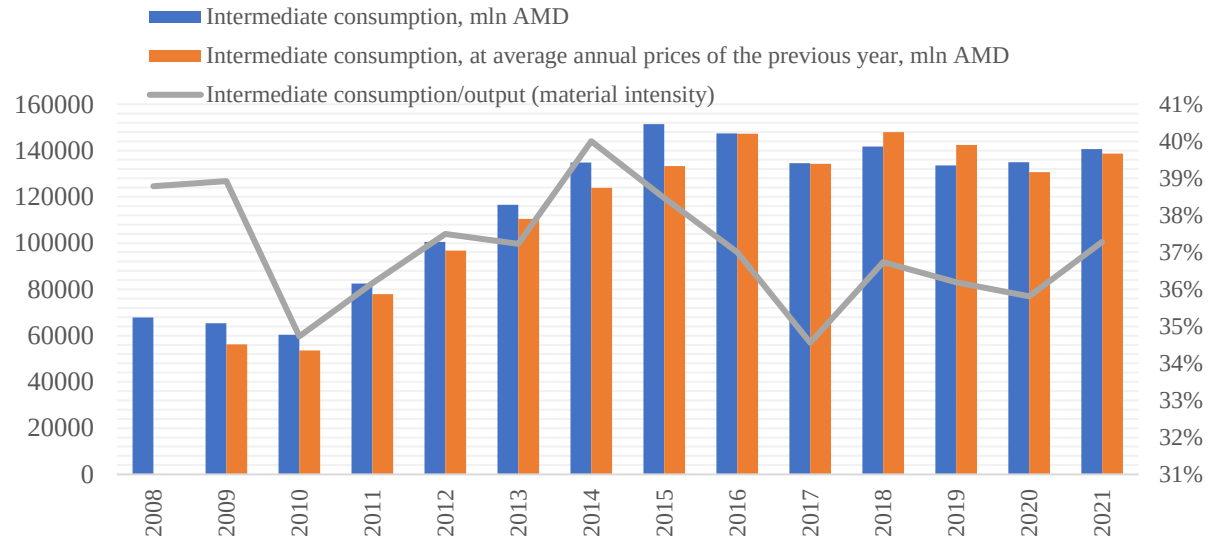

Figure 3.4.3. Intermediate consumption in sectors D and E, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The value-added volumes in the electricity, gas, steam, air conditioning supply, water supply, sewerage, waste management and remediation activities sectors also increased dynamically from 2011 to 2016. According to the CAGR calculation, the average annual growth rate was 18% (Figure 3.4.4), which is lower than the growth of intermediate consumption and gross output volumes during the same period. From 2017 to 2020, we can observe a decrease in the value-added volume by an average of -2.8% per year. As of 2020, the value-added in the sector is about 242 billion AMD.

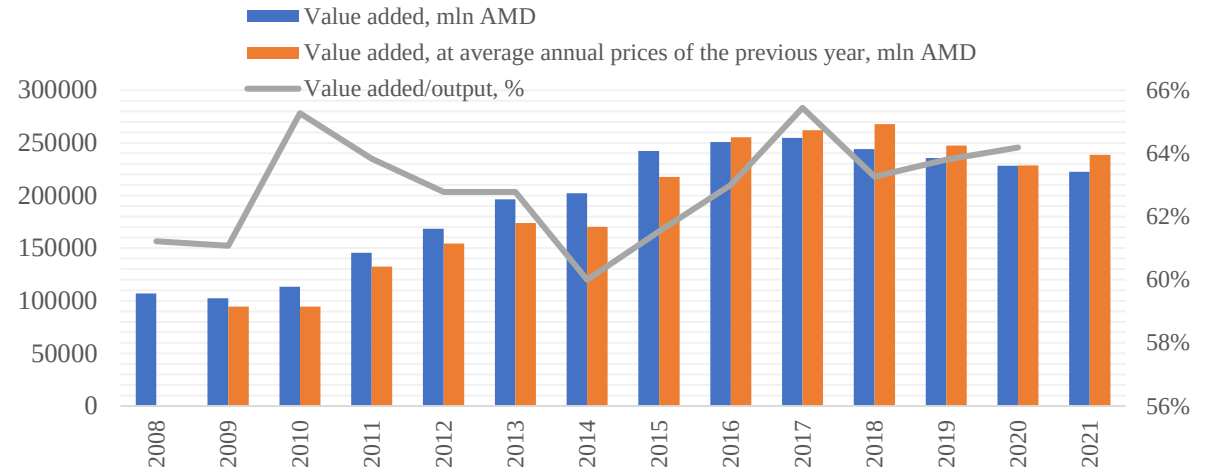

Figure 3.4.4. Value-added in sectors D and E, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

From 2012 to 2016, the volume of fixed assets in the sector almost did not change. From 2017 to 2019, we observe a significant capital increase of an average of 9.2%. As of 2020, the fixed assets at book value are 1841 billion AMD.

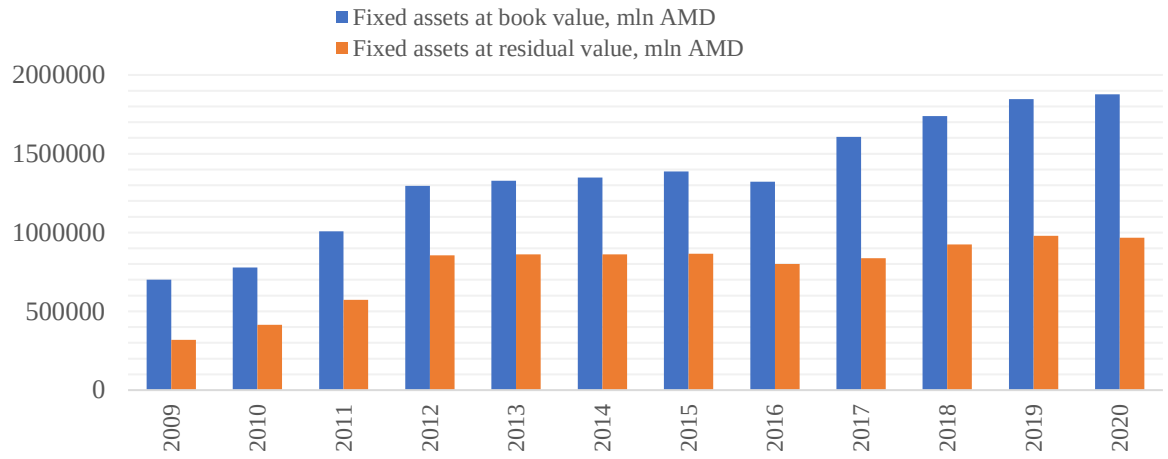

Figure 3.4.5. Fixed assets at the book and residual values in sectors D and E, mln AMD.
Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Considering the sector's gross output and capital dynamics during the period under consideration, the capital intensity indicator decreased from 2013 to 2016. However, it increased significantly during the last three years, restoring the level of 2012 (Figure 3.4.6).

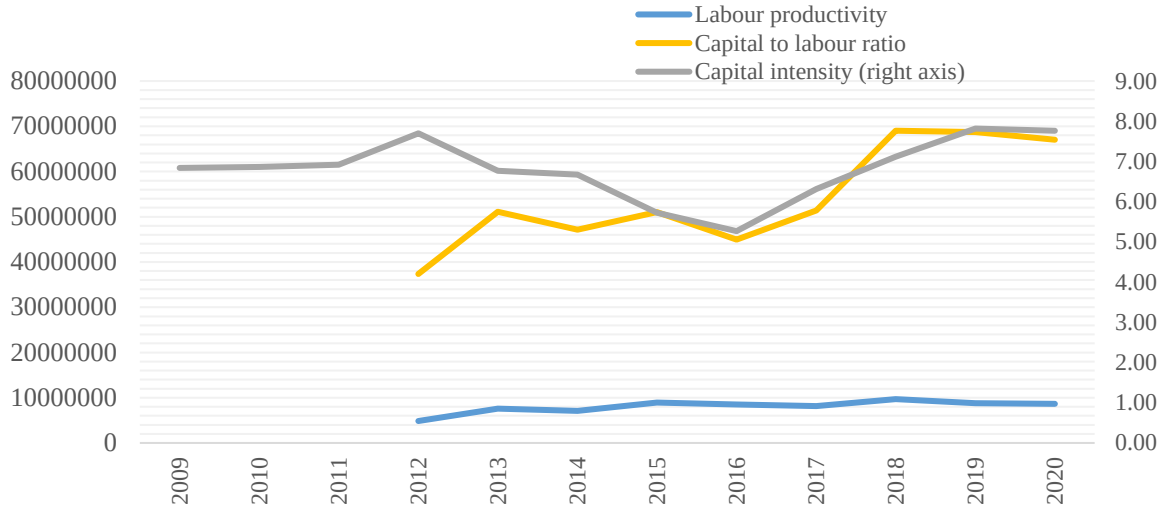

Figure 3.4.6. Capital intensity, capital-to-labour ratio and labour productivity in sectors D and E.
Source: Database of the National Statistical Committee of Armenia – www.armstat.am

On the other hand, in 2013, employment was reduced by 25.7%, reaching 25 thousand employed people in the sector (Figure 3.4.7). From 2014 to 2017, we can observe a low growth rate of employment in the industry, by an average annual 4.7%, reaching 31.2 thousand. In 2018, employment decreased again to 25.2 thousand. As of 2020, the sector's employment share in total employment is about 2%.

Given the capital and employment dynamics in the period under consideration, we can observe an increase in the capital-to-labour ratio from 2015 to 2019. On the other hand, labour productivity increased significantly from 2012 to 2020, reaching 8.7 million drams per employee in 2020. The average annual growth was 16%.

The labour cost of the water supply, sewerage, waste management and remediation activities sector almost matched the average labour cost in the economy, amounting to around 134 thousand AMD in 2012. However, in the

coming years, its growth was lower than the average indicator of the economy, and in 2016 the indicators equalled again. In 2017, there was a wage drop, after which no significant change occurred. As for the labour cost in the electricity, gas, steam, and air conditioning supply, it significantly exceeds the overall average indicator of the economy in the period under consideration reaching 260 thousand AMD in 2020.

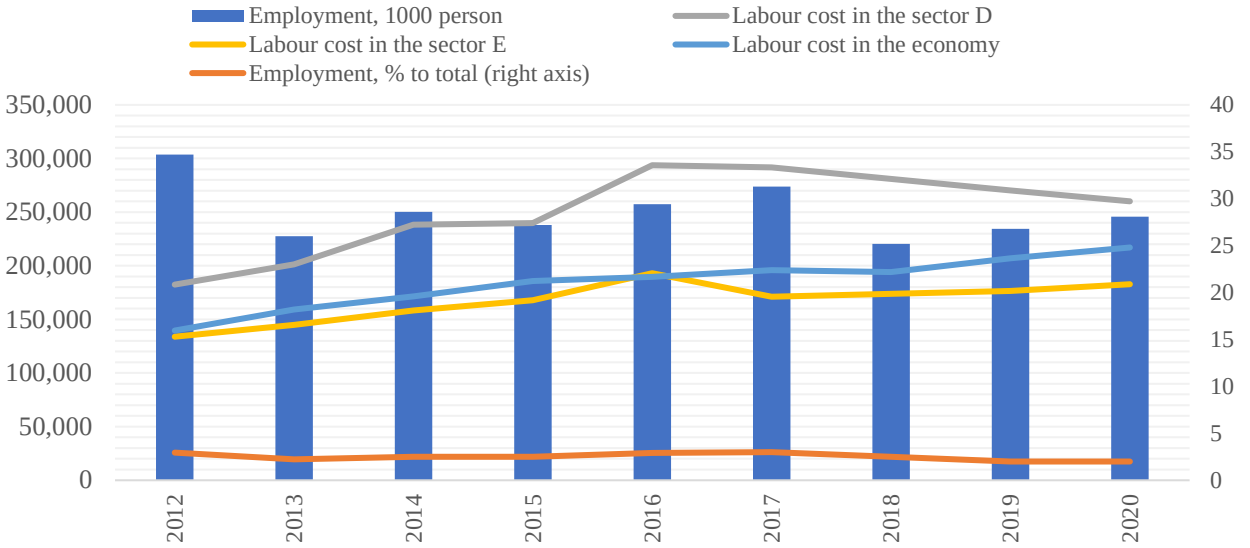

Figure 3.4.7. Employment and labour cost in sectors D and E.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

From 2009 to 2015, the price dynamics in the sector had an upward trend, exceeding the GDP deflator (Figure 3.4.8). However, after 2016, there was a downward trend in the industry, reaching its minimum in 2018. In addition, it is necessary to note that before 2016, the changes in the sector's value-added, gross output and intermediate consumption price changes were different. There was significant inflation in terms of value-added. In the last five years, the price fluctuations according to the three indicators have equalled reaching the level of the GDP deflator in 2020.

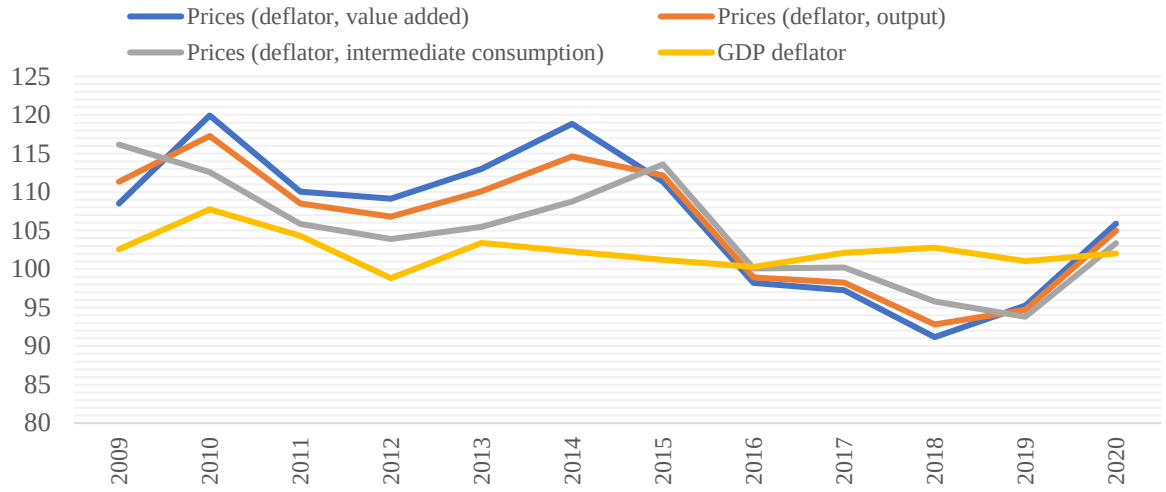

Figure 3.4.8. Changes in prices level according to deflator, sectors D and E, %, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Exports to EAEU countries include only the water supply, sewage, waste management and remediation activities sector. Moreover, until 2018, the export volumes of the industry were insignificant. In 2019, there was a sharp growth in export volumes, reaching 1.9 million US dollars (Figure 3.4.9). In 2020, export volumes increased further, reaching 4 million US dollars.

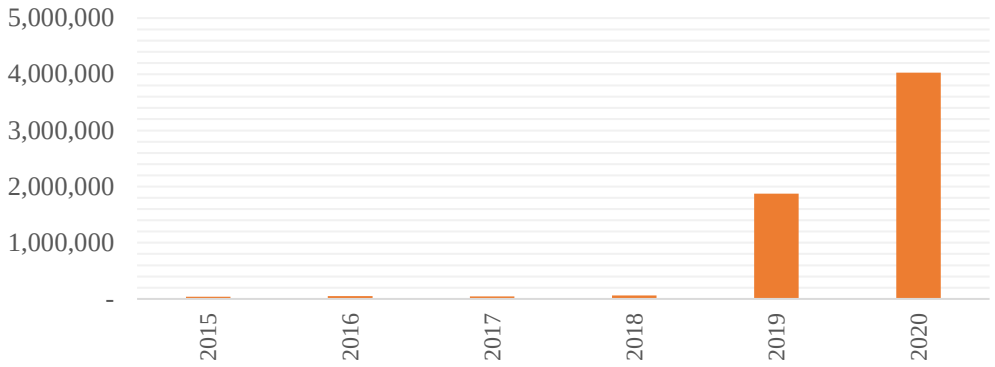

Figure 3.4.9. Export volumes of sector E to EAEU countries, USD.

Source: Database of the Euroasian Economic Commission – www.eurasiancommission.org/

In general, the export of the sector to other countries has much larger volumes, with the Electricity, gas, steam, and air conditioning supply sector dominating. The export of the water supply, sewage, waste management and remediation activities sector amounted to 7 million US dollars in 2015. A decline in 2016 was followed by a steady annual growth rate of 29% on average, reaching 14.5 million USD in 2020.

Exports of electricity, gas, steam and air conditioning supply have much larger volumes of exports. In 2015, the export volumes of the sector amounted to more than 81 million US dollars. In 2016, there was a 25% drop in exports. The following two consecutive years of growth and the recovery of 2015 volumes were followed by a decline in exports in 2019. In 2020, export volumes remained almost at the same level, amounting to about 69 million USD.

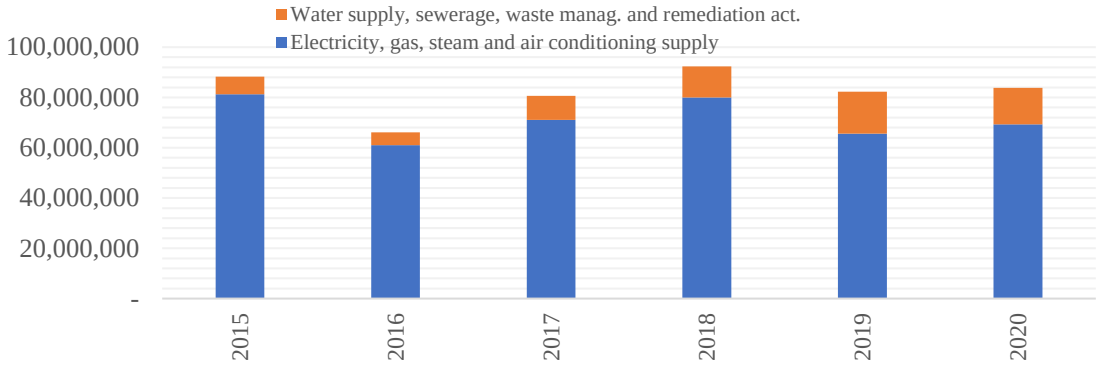

Figure 3.4.10. Export volumes of sectors D and E to other countries, USD.

Source: Database of the Euroasian Economic Commission – www.eurasiancommission.org/

The credit burden in the sector fluctuated in the range of 37-56% during the period under consideration, showing a stable average growth rate. Both commercial banks (Figure 3.4.11) and credit organizations (Figure 3.4.12) finance the sector. The banking system provided 96-99.8% of the total lending during the period under consideration. At the same time, 96.3-99.8% of the total loans belong to the electricity, gas, steam and air conditioning supply sector. At the same time, 70-88% of the loans provided by the banking system to the industry were in foreign

currency. The volume of foreign currency loans increased sharply in the first quarter of 2017, returning to its previous level two years later, in the fourth quarter of 2018. A similar increase was also recorded from June 2020 to March 2021 to neutralise the crisis's consequences.

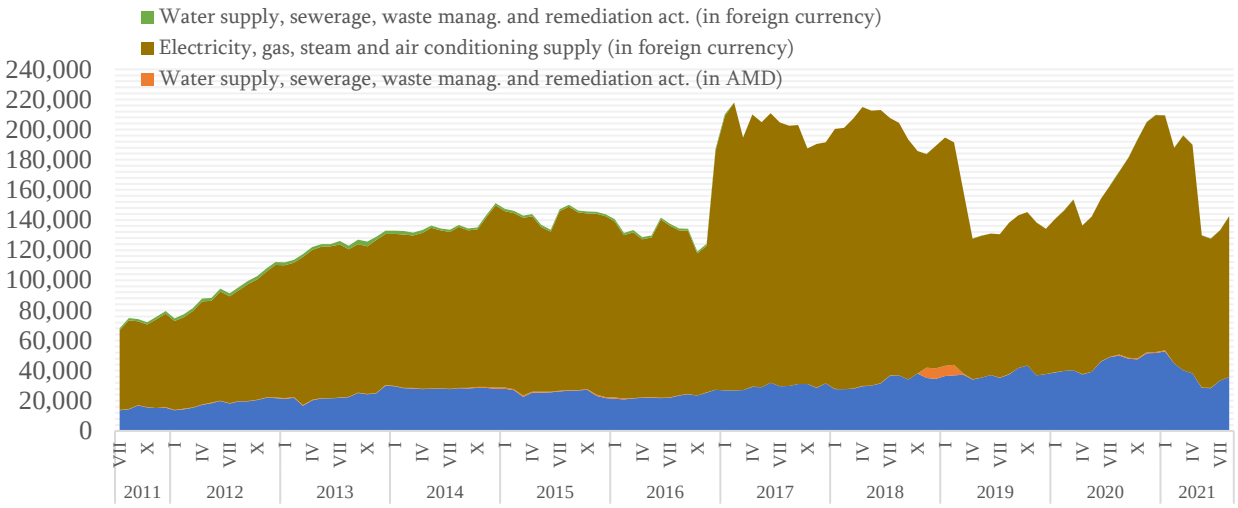

Figure 3.4.11. Loans granted by commercial banks in sectors D and E, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

From December 2011 to December 2014, there was a sharp increase in foreign currency loans provided by credit organizations to the electricity, gas, steam and air conditioning supply sector. In 2015, the total loans in the industry decreased sharply. In the following years, the downward trend continued, reaching 240 thousand AMD at the end of 2019. Due to the crisis, an inevitable increase in the volume of loans was observed in 2020-2021, reaching almost 1 million AMD.

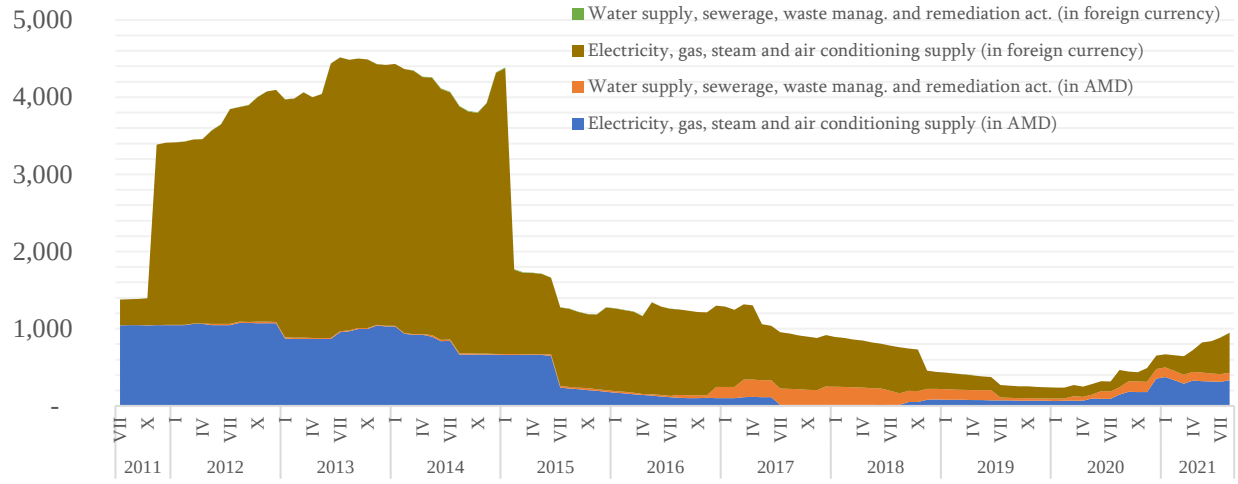

Figure 3.4.12. Loans granted by credit organisations in sectors D and E, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

During 2000-2020, there has been a significant increase in the efficiency of the sector, which is mainly expressed in the field of electricity production in two main directions: through the reduction of losses in the networks of general use and the degree of GDP electricity intensity (Figure 3.4.13).

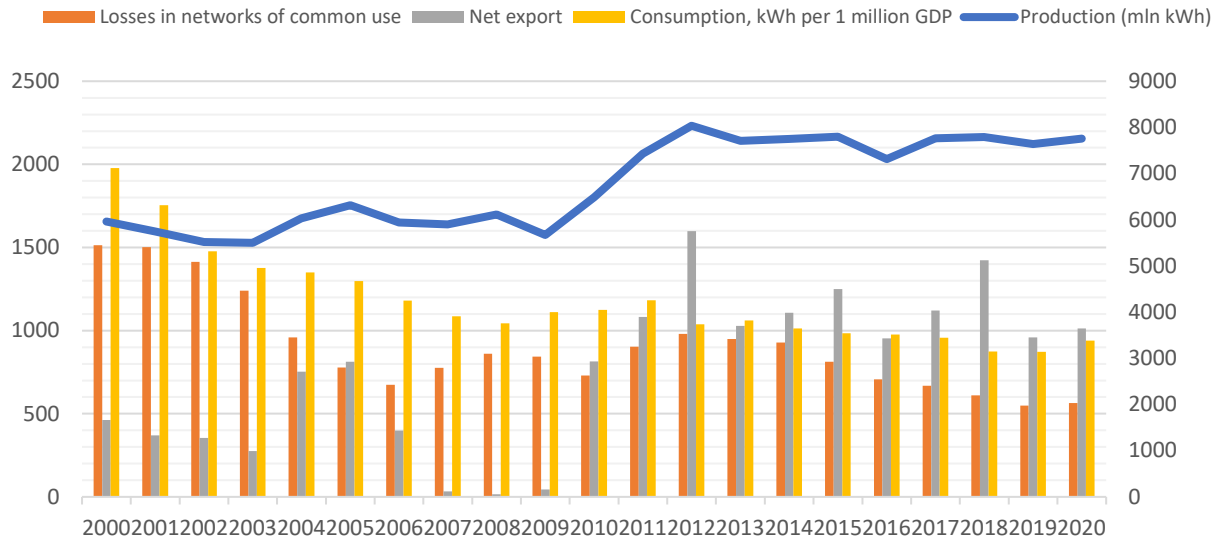

Figure 3.4.13. Indicators characterizing the electricity efficiency in Armenia, 2000-2020.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

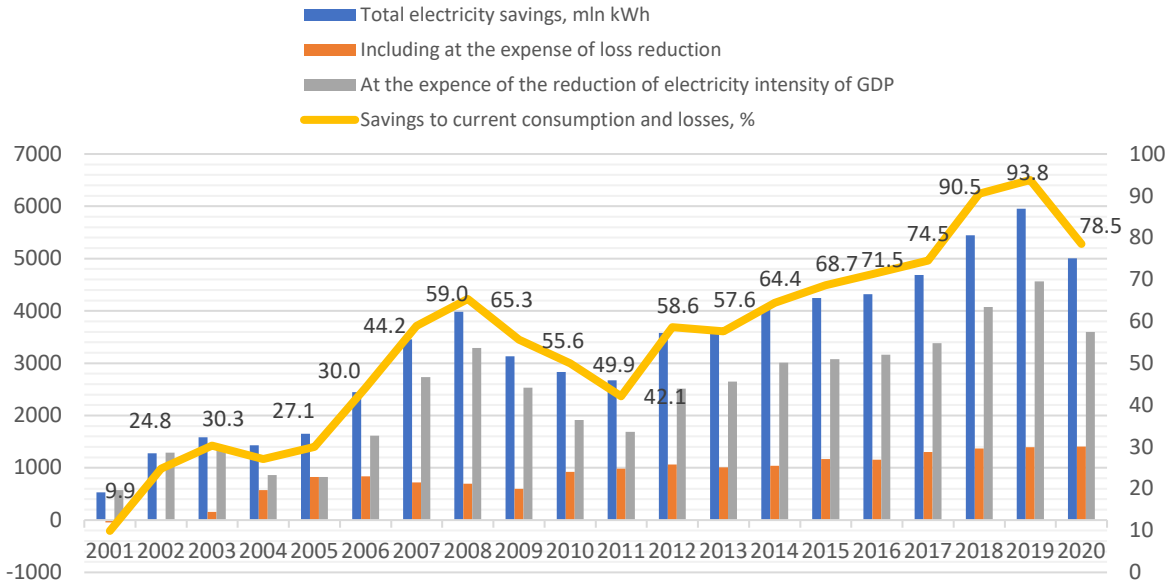

Figure 3.4.14. Electricity savings in Armenia, 2000-2020.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

We can observe the maximum amount of electricity savings in 2019 compared to 2020. So, in 2019 the latter was 93.8% of the total annual consumption. It means that there was an increase in the economy's energy efficiency almost two times compared to 2000, 74% of which was due to a decrease in GDP energy intensity and 26% to the reduction in losses in common use networks. Considering the electricity production structure[269] in 2019, we can observe that the relative dependence of electricity on imported electricity in 2000 has been reduced by about 50%.

[269] About 1/3 of electricity production is carried out at the expense of domestic sources.

Table 3.4.1. Import and consumption of natural gas in Armenia, 2000-2021

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Import, million cubic meters Including	*2069*	*2455*	*2361*	*2450*	*2371*	*2236*	*2378*	*2463*	*2545*	*2595*	*2793*
from Russia	*1609*	*1967*	*1956*	*2061*	*2000*	*1864*	*1996*	*1939*	*2166*	*2208*	*2449*
Iran	*460*	*488*	*405,*	*389*	*371*	*372*	*383*	*524*	*379*	*387*	*345*
Sales volume	*1535*	*1608*	*1822*	*2009*	*1820*	*1844*	*1941*	*2156*	*2202*	*2262*	*2300*
Sales volume, bln AMD	*165,6*	*180,5*	*203,3*	*228,9*	*234,1*	*229,9*	*213,1*	*219,3*	*243,5*	*254,9*	*301*
To GDP, %	*3,6*	*3,7*	*4,0*	*4,3*	*4,3*	*4,2*	*3,6*	*3,5*	*3,7*	*4,1*	*4,6*
Population	*551*	*542*	*539*	*515*	*527*	*581*	*622*	*554*	*669*	*725*	*766*
Energy	*185*	*232*	*252*	*594*	*428*	*420*	*422*	*630*	*501*	*583*	*504*
Industry	*252*	*260*	*275*	*252*	*205*	*186*	*210*	*226*	*209*	*239*	*254*
Transport	*362*	*418*	*455*	*481*	*485*	*467*	*478*	*553*	*577*	*473*	*505*
Budget institutions	*51*	*48*	*50*	*49*	*49*	*54*	*56*	*44*	*52*	*50,9*	*56,7*
Other consumers	*134*	*109*	*251*	*116*	*127*	*136*	*154*	*149*	*195*	*192*	*215*

Source: Database of Public Services Regulatory Commission of the RA – www.psrc.am

Table 3.4.1 shows that from 2011 to 2021, natural gas consumption volumes increased by 4.1% per year compared to a 3.5% GDP growth rate. There was also a 21.3% price increase during the period under consideration. Considering the current tense situation in the gas market, we can assume that the rise in prices will continue in the medium term, possibly at a higher rate. In that case, the issues of the efficiency of natural gas consumption become even more critical.

Figure 3.4.15 shows that the efficiency of natural gas consumption in Armenia did not increase from 2011 to 2021, except for the industry sector[270], where it doubled as of 2019, decreasing in 2020 and 2021.

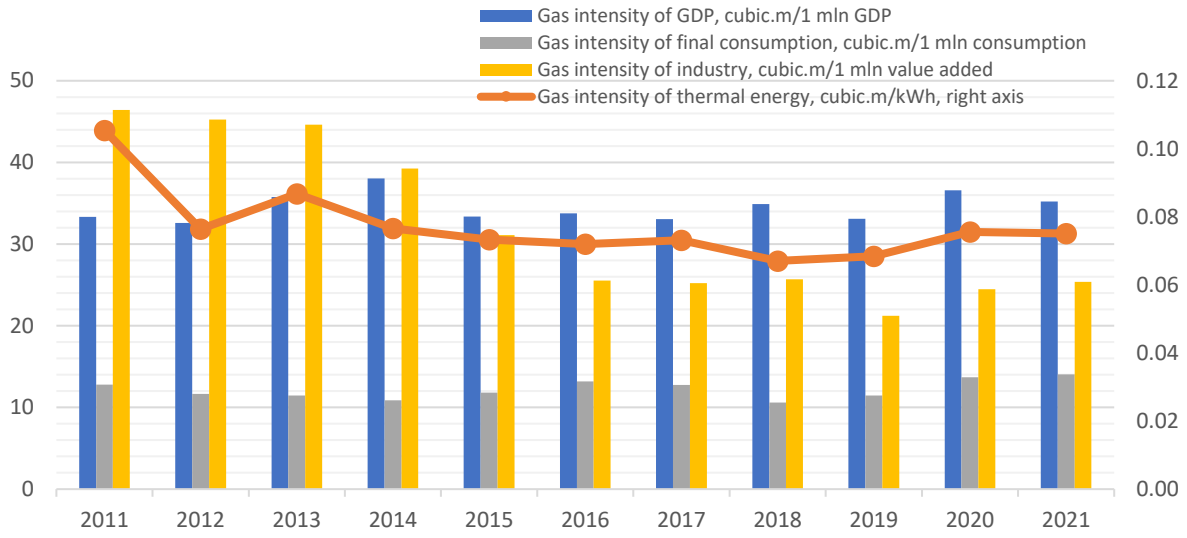

Figure 3.4.15. The efficiency of natural gas consumption in Armenia, 2000-2020

Source: Database of Public Services Regulatory Commission of the RA – www.psrc.am

[270] Cumulative for the mining and processing industry

Considering the above analysis, we can argue that energy saving should continue to be the basis and foremost priority of the country's energy policy. The goal of that policy should be the reduction of the country's relative and absolute dependence on the import of critical raw materials (in this case, natural gas and oil products), particularly the limitation of the natural gas consumption growth at the rate of GDP growth.

In particular, in the field of electricity, the capacities of thermal plants should be put into operation instead of the old ones and ensure the reduction of the gas intensity of the energy field. The nuclear power plant should operate as long as possible, and the capacity increase should be provided by hydropower plants and "green" energy. State gas saving programs are needed in final consumption, motor transport and services.

Another critical issue is the diversification of gas supply sources, including abandoning barter schemes for importing Iranian gas. It is also necessary to encourage the creation of separate energy engineering sectors in Armenia[271], reducing the critical import of energy machines and equipment.

[271] Except for the solar panel assembly industry, which has been developing for the past few years but is exclusively based on imported components.

3.5. Construction

In Armenia, the construction sector is vital, providing 26.8% of total economic growth during the period of high economic growth in 2000-2008, compared to 6.3% of manufacturing and 9.8% of agriculture. In general, construction as a driver of economic development contributes to developing the related branches of the mining and manufacturing industries. However, this was not the case in Armenia mainly due to the anti-inflationary policy of national currency appreciation at that time, which was favourable for the construction and services (non-tradables) and unfavourable for producing goods (tradables). On the other hand, the economic structure with high dependence on one sector of economic activity brings significant risks, especially in crisis periods. These risks were expressed in Armenia during the 2009 crisis with an unprecedented 41.6% decline in construction.

Figure 3.5.1 shows the construction sector dynamics over the last twenty years. As we can see, the sector boomed from 2003 to 2008, growing almost five times. Then, after the beginning of the global financial crisis, there was a sharp decline in the sector, followed by a moderate decrease during the next 12 years. Moreover, the construction sector's weight in the country's GDP and the specific weight in the GDP growth is decreasing.

At the same time, comparing the share of the construction sector in the GDP of Armenia with the same indicator of EU28 countries, we can notice significantly higher indicators (until 2018), as well as high volatility of the indicator in Armenia and much more stable dynamics in EU countries.

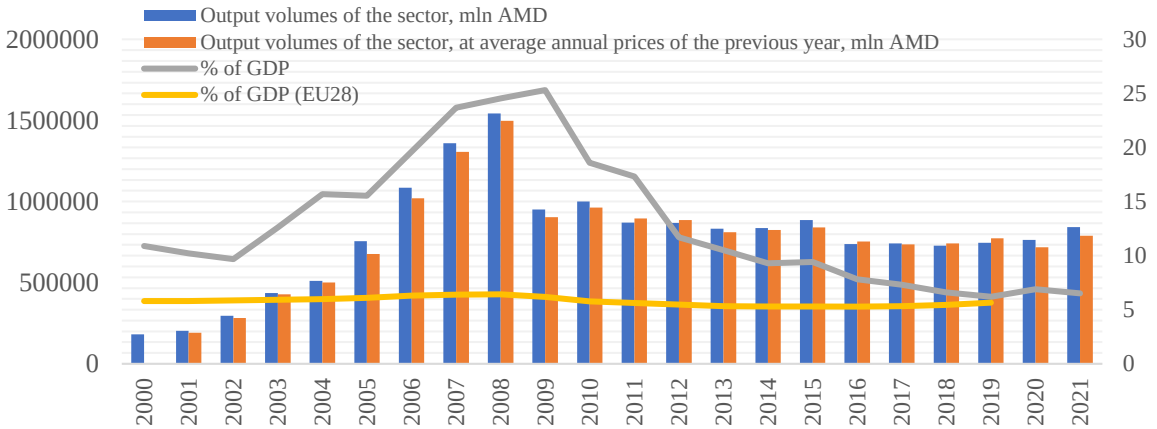

Figure 3.5.1. Output volumes of sector F (in mln AMD), share in GDP, %.
Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Considering that the construction sector was dominant in the structure of GDP from 2003 to 2008, it led to high economic growth rates in Armenia during the period under consideration. However, the negative consequences of the dependence of economic growth on one sector have been more significant than the positive impact in the short term. The sector's sharp decline due to the global financial crisis was primarily due to its high dependence on external factors, as both supply and demand included a large share of foreign investment and aid.

Considering the value-added in the construction sector, it is worth noting that until 2008 there was an active increase in the indicator, followed by a sharp and noticeable decrease in 2009 (Figure 3.5.2). At the same time, in the following years, the value-added of the sector remained stable.

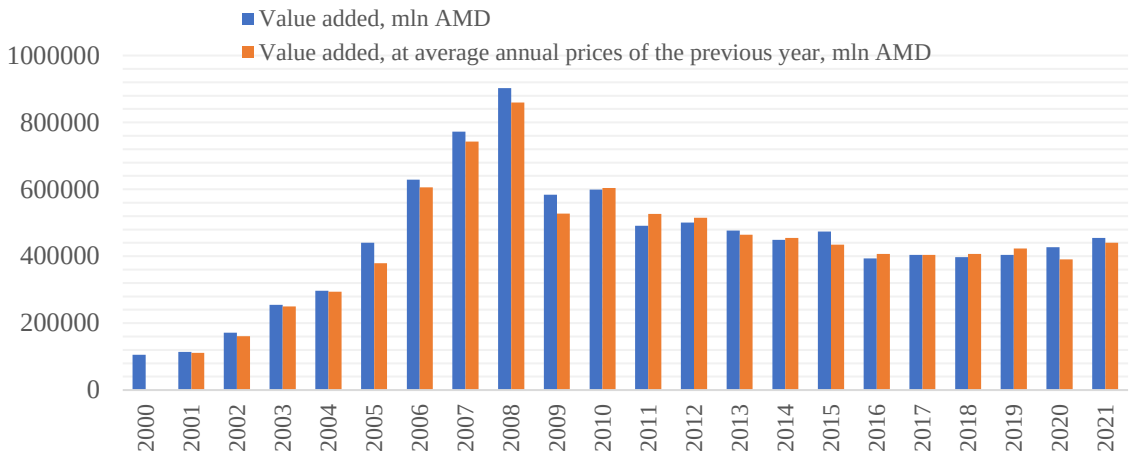

Figure 3.5.2. Value-added in sector F, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Figure 3.5.3 shows the intermediate consumption in the construction sector. The volume of intermediate consumption, similar to the dynamics of gross output and value-added, also increased significantly before the global financial crisis. Notably, the indicator of the material intensity of the sector, which has increased somewhat during the growth boom, indicates a decrease in sectoral efficiency. On the other hand, after the sharp drop in the sector's output in 2009, the material intensity showed a downward trend, which means an increase in the sector's efficiency. However, we should highlight that the indicator's fluctuation is relatively insignificant, which does not allow us to make more valid assumptions about the efficiency of this sector in the period under consideration.

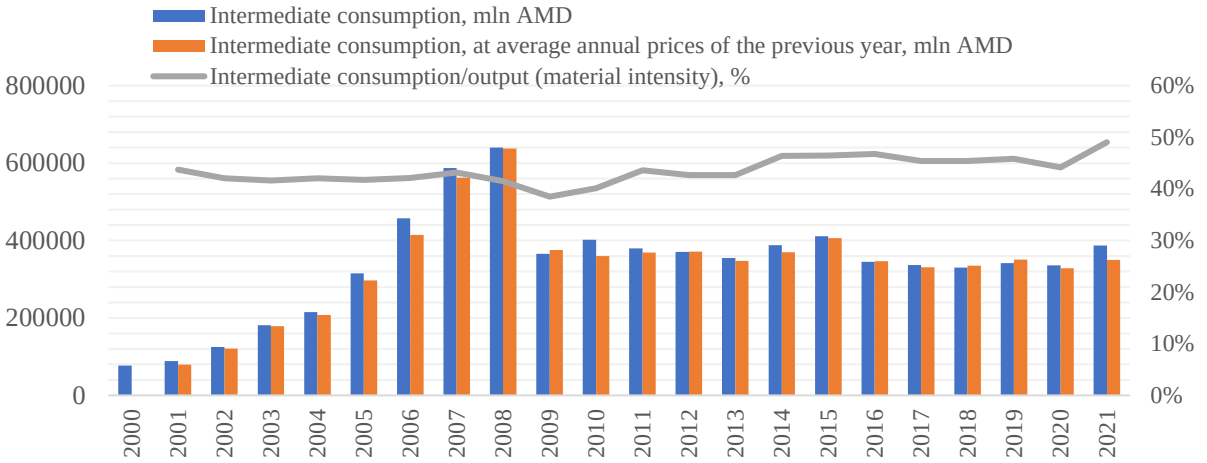

Figure 3.5.3. Intermediate consumption in sector F, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Indicators of the capital show a stable and significant growth until 2016 (Figure 3.5.4). Since 2017, we can observe a decline in the volume of fixed assets, especially in the case of fixed assets at the residual value. Thus, the fixed assets at the residual value have halved and remained relatively stable with a slight growth trend during the last three years.

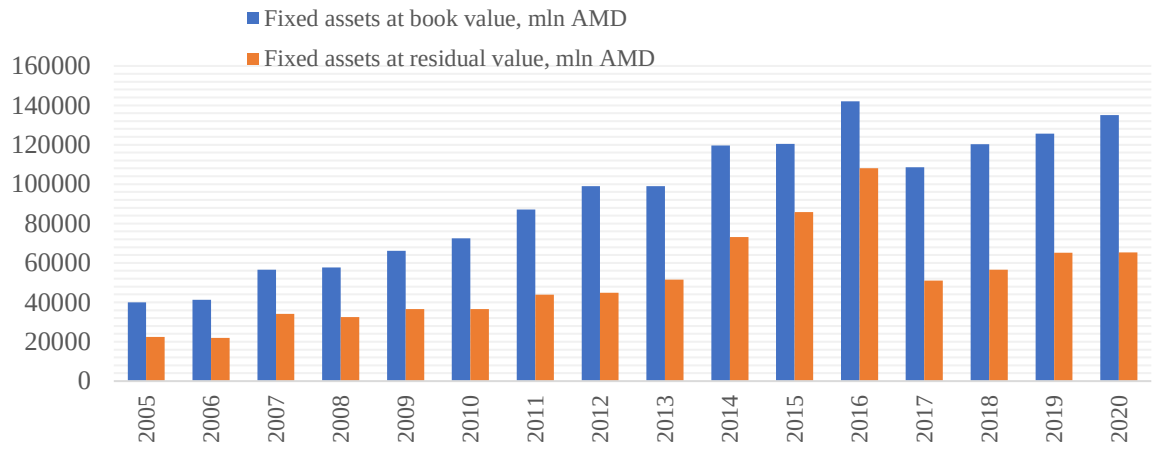

Figure 3.5.4. Fixed assets at the book and residual values in sector F, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The capital intensity had a steady growth trend during the period under consideration reaching from 9% in 2005 to 31% in 2020. Looking at the capital-to-labour ratio dynamics, we should note that there is no clear trend (Figure 3.5.5). We can observe a noticeable increase in the capital-labour ratio only from 2014 to 2016.

The labour productivity indicator demonstrated a growth trend until 2007, after which it is characterized by either a decline or a slight fluctuation, indicating the sector's low efficiency.

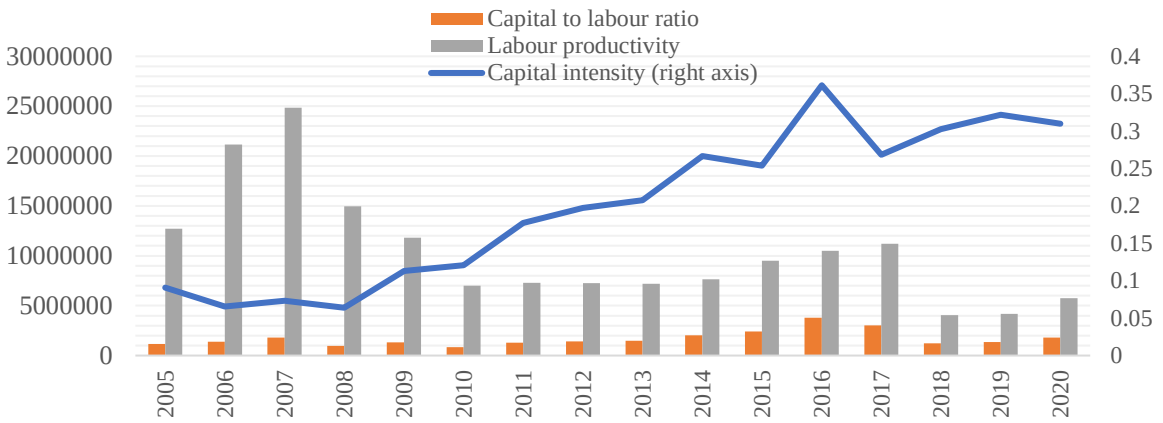

Figure 3.5.5. Capital intensity, capital-to-labour ratio and labour productivity in sector F.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

At the same time, wages in the sector demonstrate a significant growth trend during the period under consideration. Compared with the mean wages in the economy, we can say that salaries in the industry slightly exceed the latter (Figure 3.5.6). We can observe the same tendency in the case of labour cost. In 2019 the mean wages and labour cost indicators were almost equal to the same indicators at the economy level. In 2020, the salaries in the sector were considerably higher, which speaks of the sector's sufficient competitiveness level.

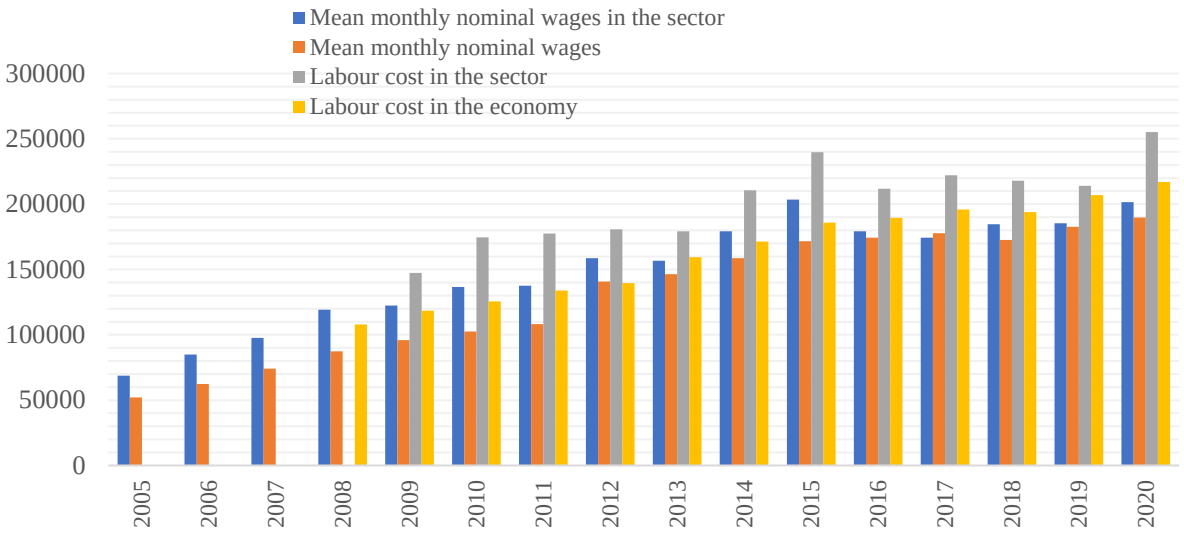

Figure 3.5.6. Wages and labour cost in sector F, AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

In terms of employment, the construction sector is relatively volatile. It is evident that the share and number of people employed in the sector largely depend on the development of the industry and the intensity of construction growth in the country. Moreover, the seasonality of work and demand for a specific profession is unique to the construction industry.

Figure 3.5.7 presents the employment dynamics in the construction sector. The fluctuations of the employment in the industry, in some cases, reach more than 50%. In the last two years, there has been a significant increase in the number of people employed in the construction sector. Thus, as of 2019, the employment in the industry amounted to 96.6 thousand persons or about 9% of the total employment, which is almost 10 thousand persons more than the previous peak, recorded in 2010. In our opinion, the key reason for such a sharp increase in the number of people employed in the sector in 2019 is the strategy of the Armenian government to register a significant part of the unregistered workers in the industry.

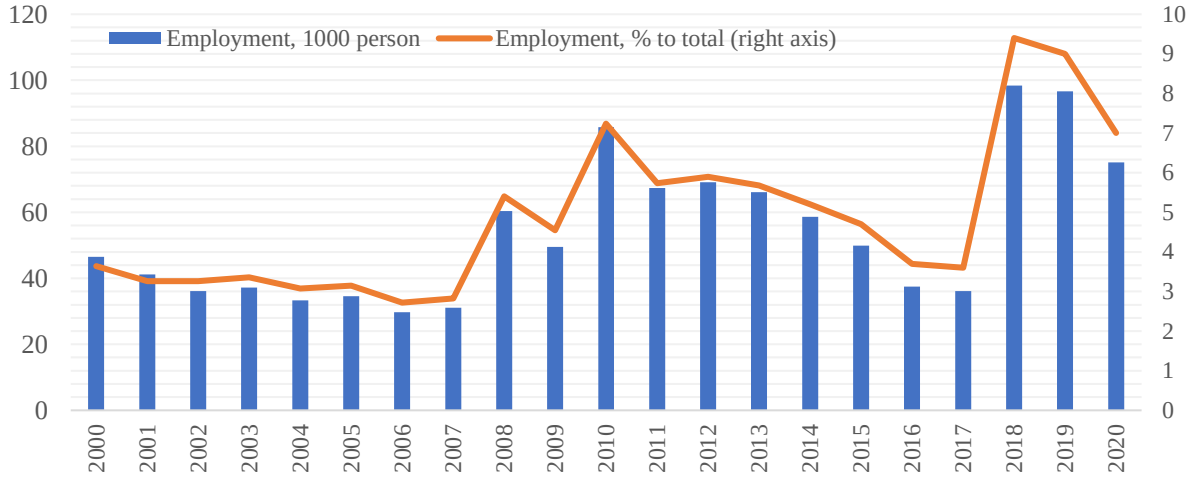

Figure 3.5.7. Employment in sector F.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The volatility of prices in the sector is relatively high. Figure 3.5.8 presents the price dynamics in the industry based on the deflator. The latter does not entirely coincide with the dynamics of the GDP deflator. In general, this study observes such a trend in almost all sectors. In addition, the industry is characterized by a high level of price volatility.

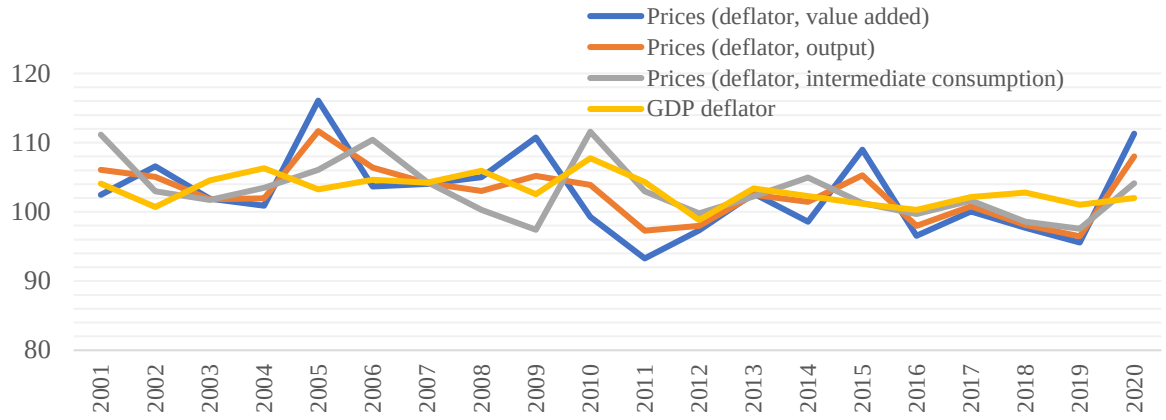

Figure 3.5.8. Changes in prices level according to deflator, sector F, %, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Regarding financing, we should note that banks and credit institutions (Figure 3.5.9 and Figure 3.5.10) actively finance the industry. At the same time, the logic of lending in the banking sector is significantly different from the structure and dynamics of financing by credit organizations.

Thus, in terms of loans given by the banking sector, foreign currency loans given to the construction of residential and non-residential buildings have the highest share. Moreover, we can observe a significant increase in the volume of loans in the last two years, while the latter was relatively stable in previous years. At the same time, since 2018, a significant increase in national currency loans has also occurred, which is most likely due to the policy of the Central Bank of RA regarding the interest rates of loans in national currency and foreign currency. These measures are mainly related to the fight against dollarization and, at the same time to the regulation of the money supply in the country.

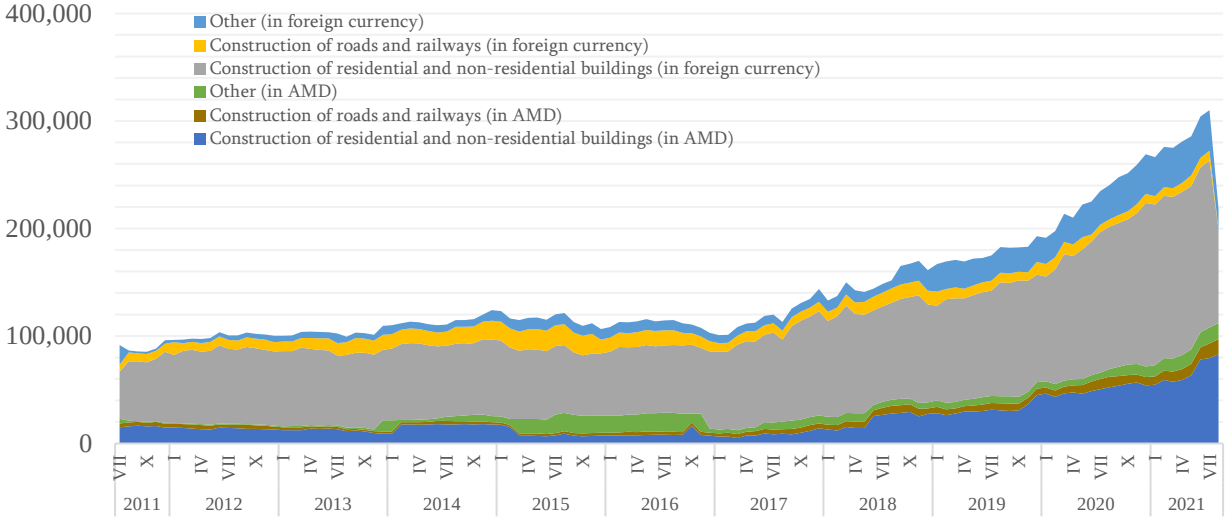

Figure 3.5.9. Loans granted by commercial banks in sector F, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

As for loans granted by credit organizations, we can observe the highest values from 2011 to 2014, with foreign currency loans dominating again (Figure 3.5.10). Taking into account the increase in lending volumes of the banking sector in 2016-2017, we can assume that the offer from banks has replaced the offer from credit organizations in the credit market.

We should note that the sector's credit burden is relatively low; in 2011, it was 11.4% of the gross output. However, in the following years, an increase in this indicator is observed until 2019, reaching 26.4%. Due to the Covid-19 pandemic and short-term bans on construction activities, a sharp increase in the indicator occurred in 2020, reaching 35.63%.

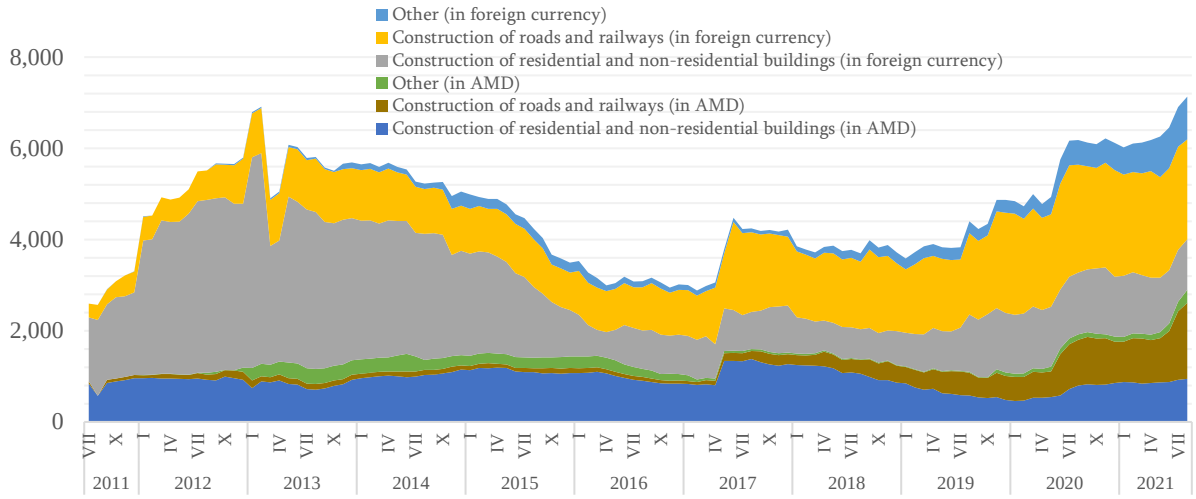

Figure 3.5.10. Loans granted by credit organisations in sector F, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

As shown in Table 3.5.1, during the period of accelerated development of construction (2007 and 2008 are presented), the latter was financed mainly from the population's funds[272] and was primarily aimed at real estate construction (see Figure 3.5.11), which in 2008 made up 61.7% of the entire construction output, being reduced by 2.75 times in 2010 and not recovering until 2021[273].

Table 3.5.1. Sources of construction financing in Armenia 2007-2021

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Output, bln AMD	*639,8*	*842,4*	*575,7*	*579,8*	*480,8*	*469,7*	*442,3*	*433,2*	*457,2*	*397,8*	*415,9*	*422,3*	*434,6*	*413,8*	*470,1*
Budget funds	*60,6*	*67,9*	*184,3*	*142,5*	*117,8*	*111,8*	*101,7*	*97,3*	*110,0*	*98,2*	*112,6*	*120,0*	*128,5*	*141,1*	*142,0*
Community funds	*0,6*	*0,7*	*1,3*	*5,4*	*29,6*	*21,8*	*12,0*	*19,9*	*9,1*	*8,6*	*6,5*	*11,0*	*9,2*	*14,0*	*22,4*
Funds of organizations	*165,4*	*152,3*	*194,2*	*273,8*	*221,9*	*231,2*	*188,4*	*200,0*	*208,8*	*186,0*	*186,4*	*183,3*	*182,9*	*178,5*	*203,9*
Population funds	*396,7*	*599,1*	*184,8*	*118,5*	*77,2*	*96,7*	*131,0*	*108,8*	*116,2*	*100,0*	*102,2*	*104,8*	*109,4*	*78,7*	*96,0*
Other funds	*16,5*	*22,4*	*11,2*	*39,6*	*34,3*	*8,2*	*9,2*	*7,2*	*13,1*	*5,1*	*8,2*	*3,3*	*4,6*	*1,6*	*5,8*
Local financing, %	*96,6*	*96,8*	*79,8*	*82,5*	*86,5*	*88,9*	*90,5*	*83,8*	*81,4*	*81,3*	*70,3*	*74,4*	*76,2*	*72,8*	*81,3*
Foreign financing,%	*3,4*	*3,2*	*20,2*	*17,5*	*13,5*	*11,1*	*9,5*	*16,2*	*18,6*	*18,7*	*29,7*	*25,6*	*23,8*	*27,2*	*18,7*

[272] Armenia's statistics do not separate private direct foreign investments in the volume of construction financing at the expense of the population funds, therefore it is not possible to separate the volume of local and foreign financing, however, the 3-fold decrease in the volume of financing by the population in 2009 indirectly indicates that the decrease in the volume of construction in 2009 was mainly due to foreign investment. with an unprecedented reduction in investment

[273] In 2008, the real estate construction volume was about 520 billion AMD at current prices, and in 2021 - 143.4 billion AMD.

Government funding,%	9,6	8,1	32,2	25,5	30,7	28,4	25,7	27,1	26,1	26,8	28,6	31,0	31,7	37,5	35,0
Non-government funding,%	90,4	91,9	67,8	74,5	69,3	71,6	74,3	72,9	73,9	73,2	71,4	69,0	68,3	62,5	65,0

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As for other economic sectors, except for trade and services, construction volumes have increased significantly since 2009. In our opinion, the construction structure is noticeably more stable after the global financial crisis than in the pre-crisis years, as evidenced by Figure 3.5.11. At the same time, as we have already mentioned in the first part of this research, the progressive growth of mortgage lending from 83.6 billion AMD in 2008 to 481.2 billion AMD in 2020, as well as the mortgage co-financing program at the expense of income tax creating artificial demand in the real estate market, can be the corresponding basis for the bubble.

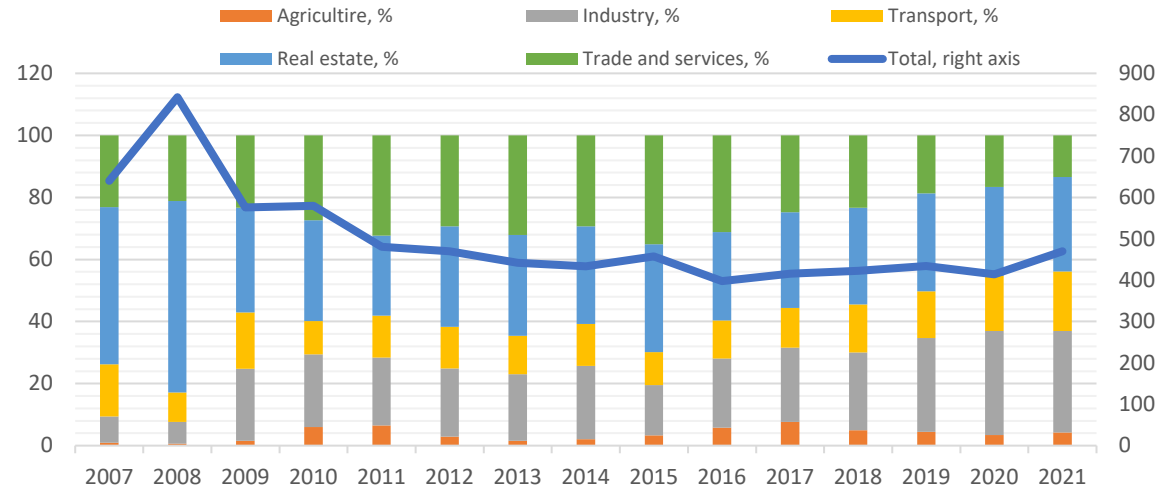

Figure 3.5.11. Sectoral structure of construction, 2007-2021.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

To summarize, we should note that the main goals of the construction policy should aim to ensure achieving the primary objectives of the catch-up growth. In that regard, it is necessary to ensure the further redirection of construction investments to the issues of modernizing the manufacturing and social infrastructure. It should mainly be carried out at the expense of state funds and industrial construction, limiting the artificial demand in the real estate market, particularly by reducing mortgage co-financing programs step by step.

Another primary economic policy issue affecting the construction volume is the "expensive" loans. The latter limits the supply of the construction sector and should be subject to review within the framework of the general credit policy of the country, in which the anti-inflationary goals need to be combined with a credit policy contributing to the country's economic development.

Regarding job creation, according to the construction employment data of the last years, construction is a labour-intensive sector[274]. Therefore, a unit increase in volumes will lead to an employment increase of about 0.2 units.

[274] According to 2019 data, 9% of the total employment occupied the construction sector, while the share of construction in the GDP in 2019 was 6.2%, therefore the labour productivity in construction was about 2/3 of the total productivity. Since construction is not a commodity sector and as a rule is not subject to export or import, the relatively low productivity does not affect the competitiveness of the sector.

3.6. Wholesale and retail trade and repair of motor vehicles and motorcycles.

Figure 3.6.1 shows the trade sector volumes in Armenia, in millions of AMD and share in GDP. As we can see, the sector volumes significantly grew until 2012. Afterwards, we observe a period of stagnation, followed by low activity in 2018-2019, and a sharp decline in 2020due to the crisis and the decrease in the population's purchasing power. Considering that the trade sector in Armenia is closely related to consumption and consequently to the standard of living and the level of income, it is evident that the decrease in consumption has led to a reduction in trade volume.

At the same time, we should note that the share of the trade sector in the GDP in Armenia is relatively low compared to the world and in upper-middle-income countries. If the weight of the trade sector in Armenia is about 10.7% of the GDP and has a decreasing trend, then this indicator is 56.5% in the world and 47.7% in upper-middle-income countries. Thus, the commodity turnover in Armenia is 4-5 times less than the average indicators recorded in the world and middle-income countries.

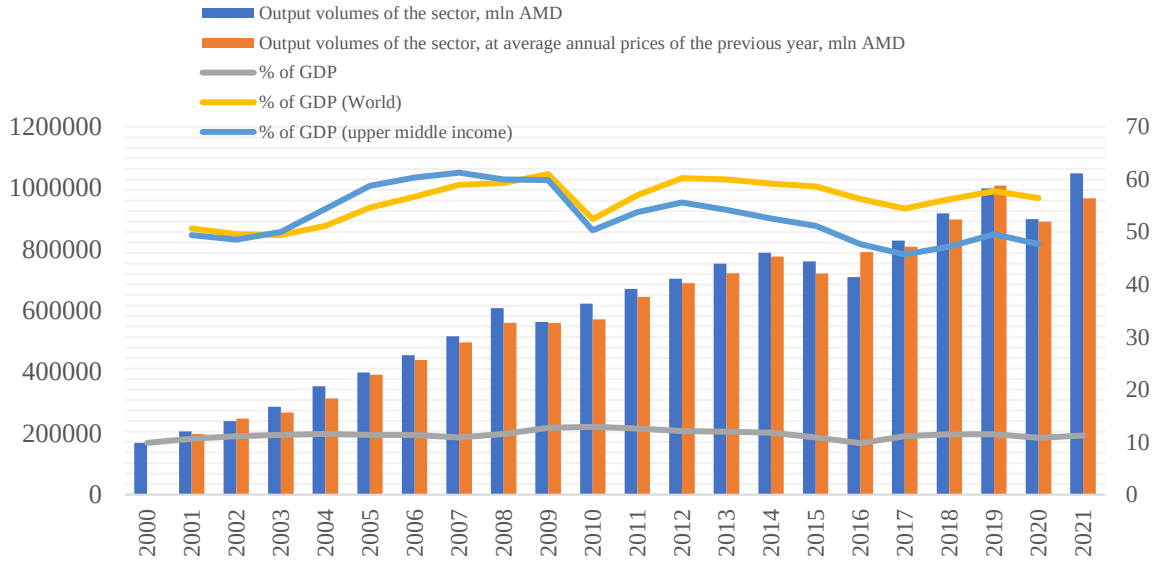

Figure 3.6.1. Output volumes of sector G (in mln AMD), share in GDP, %.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The value-added at current and previous year's prices have increased by about 7.5 times over the last twenty years. We can observe a decline in 2015-2016 and 2020, which amounted to around 10% (Figure 3.6.2) and was due to the decline in the population's purchasing power in crisis conditions.

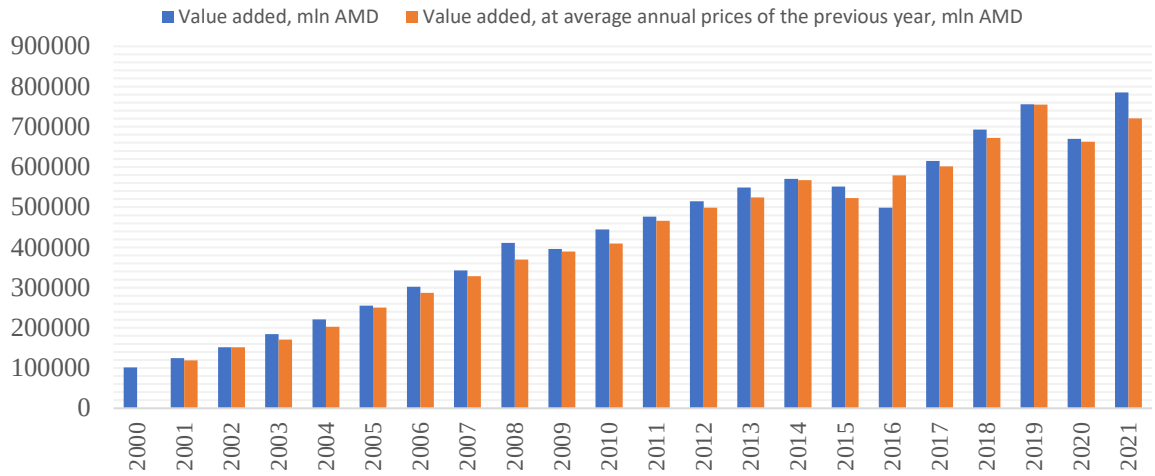

Figure 3.6.2. Value-added in sector G, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As for the sector's efficiency, we can observe a significant increase in the volume of intermediate consumption until 2008, followed by a long period of stagnation (Figure 3.6.3). However, from the point of view of the sector's material intensity, we can notice a significant increase in the sector's efficiency since 2004, from 38% to 25% as of 2020.

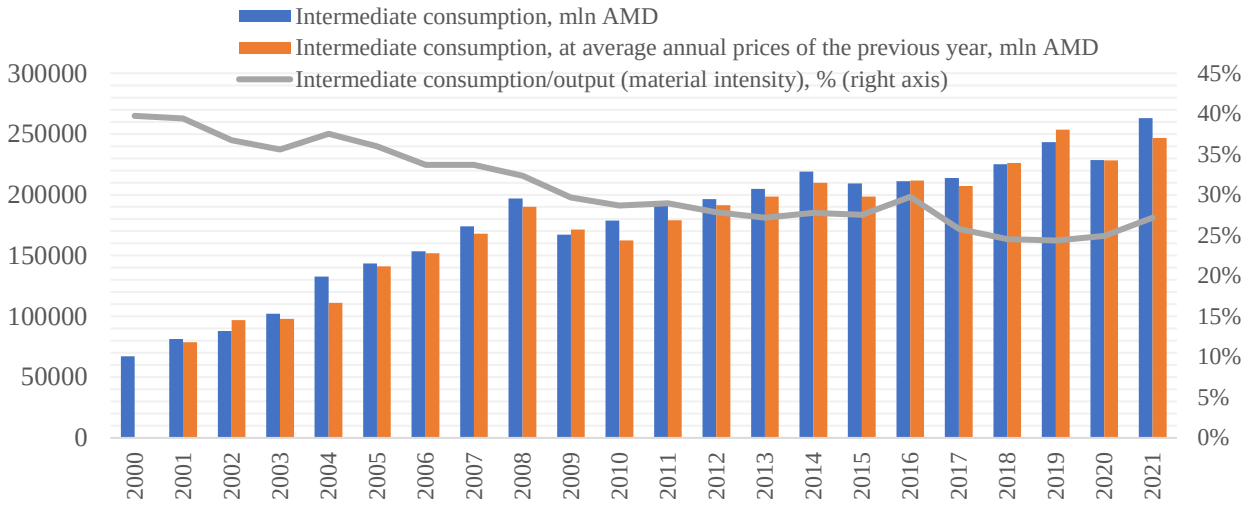

Figure 3.6.3. Intermediate consumption in sector G, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The volume of fixed assets in the sector shows moderate growth at book value, while there is practically no growth at residual value (Figure 3.6.4). Moreover, over time, a growing gap is observed between the book and the residual values of fixed assets.

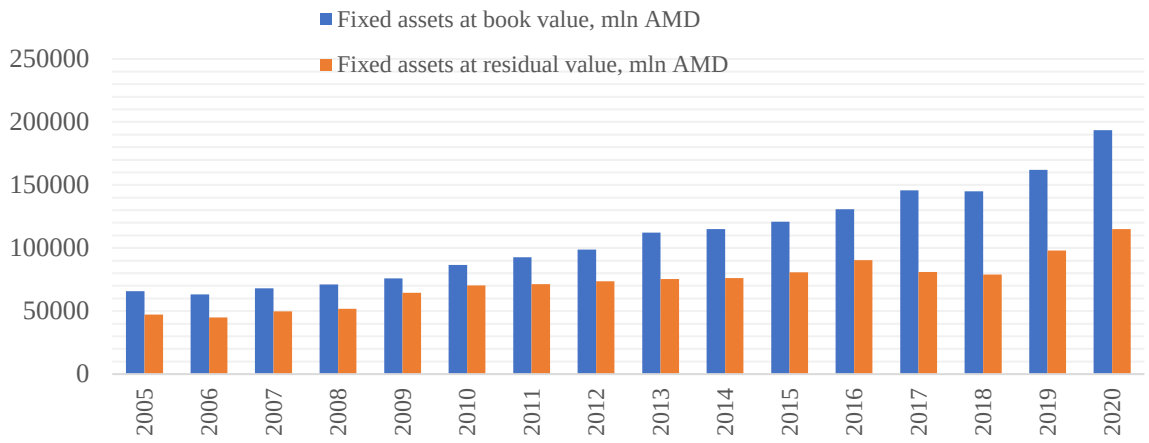

Figure 3.6.4. Fixed assets at the book and residual values in sector G, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Figure 3.6.5 shows the dynamics of capital-to-labour ratio, capital intensity, and labour productivity in the trade sector. As we can see, from the point of view of the capital-to-labour ratio, there are no noticeable growth rates, and during the last 15 years, the indicator has increased only 2.5 times. The income per capita also did not increase significantly in the period under consideration.

As for labour productivity, it is worth noting the positive dynamics in the indicator's growth, indicating an increase in the efficiency of the sector.

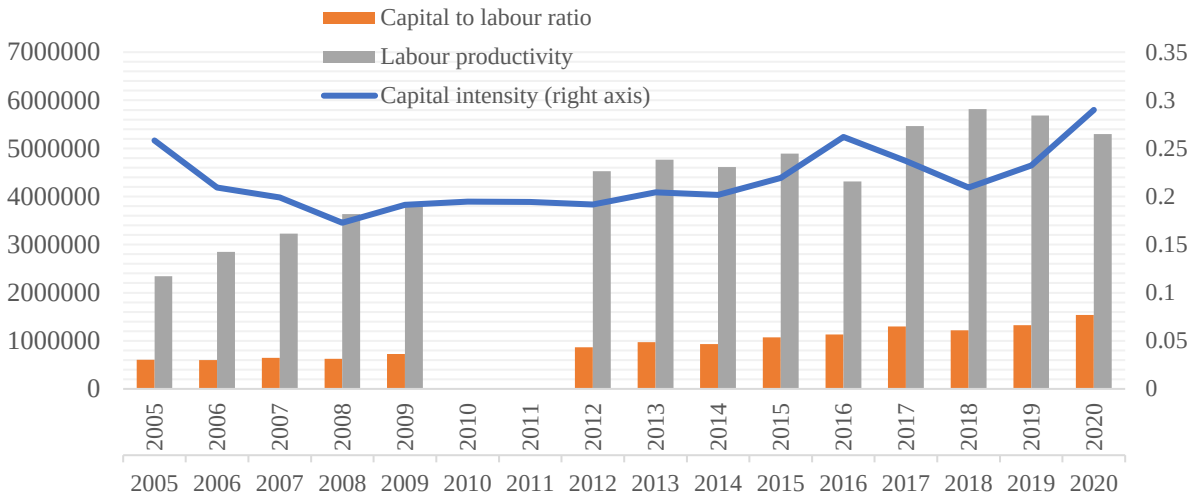

Figure 3.6.5. Capital intensity, capital-to-labour ratio and labour productivity in sector G.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

We can observe a significant increase in the labour cost in the sector. As we can see, the mean monthly wages and the labour cost in the sector are relatively lower than the economy's average. The latter indicates the low competitiveness of the sector in the labour market. We should also note the noticeable lack of income growth in recent years.

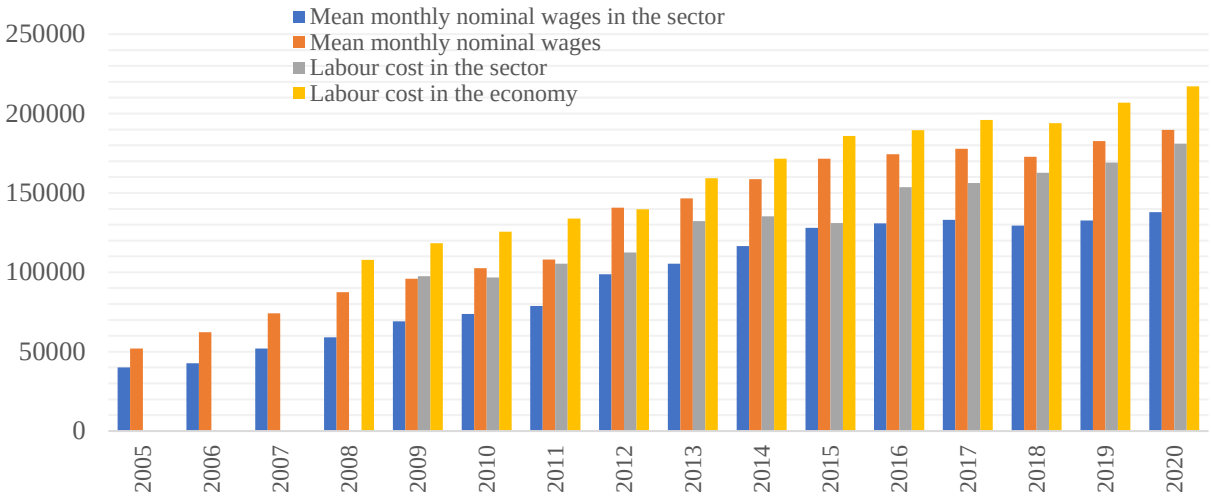

Figure 3.6.6. Wages and labour cost in sector G, AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The price dynamics in the trade sector are closely related to the prices of goods produced within the economy and the import prices. We should highlight here that considering the significant share of imports in the Armenian economy, the second factor has a more substantial impact on the price dynamics in the trade sector. In addition, there is a high concentration of the economy, which also negatively reflects on the general dynamics of prices in the country, including in the trade sector. At the same time, it also negatively impacts volatility and the price level.

At the same time, considering the price dynamics in the trade sector, a downward trend is generally observed (Figure 3.6.7). During the period under consideration, the latter was characteristic of the general trend in the prices of the consumer market in the world, and in the case of trade, we deal mainly with the consumer goods prices. In addition, price fluctuations in the trade sector mostly coincide with the dynamics of the GDP deflator, except for 2002, 2004 and 2016, when we notice a sharp price fluctuation in the sector.

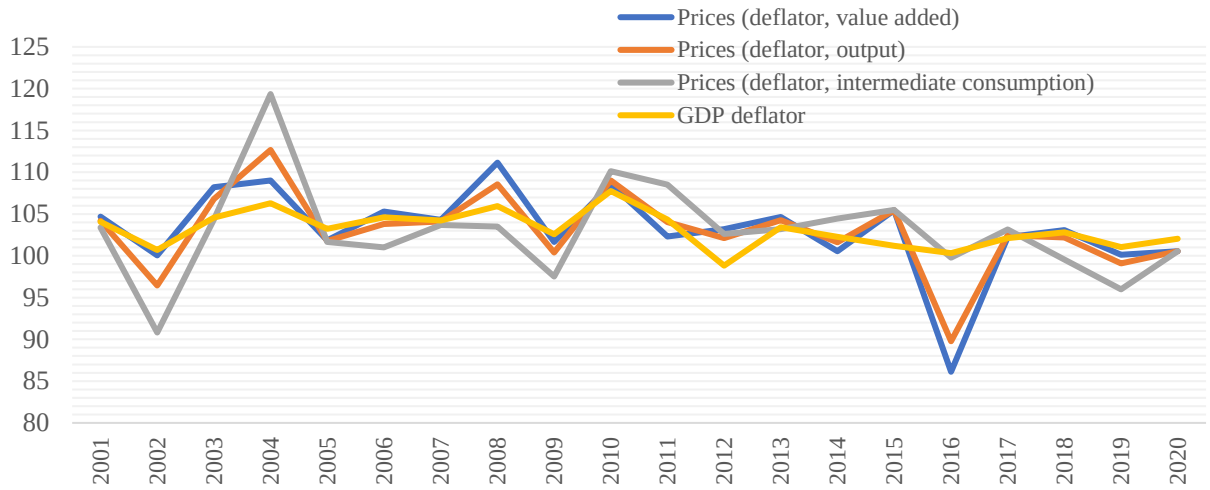

Figure 3.6.7. Changes in prices level according to deflator, sector G, %, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The number of people employed in the sector shows stable dynamics. During the period under consideration, there was a slight increase, especially regarding the share of those employed in the trade sector in the total employment (Figure 3.6.8). In general, as of 2019, the number of people employed in the sector is about 133 thousand or 12.3% of the total employment.

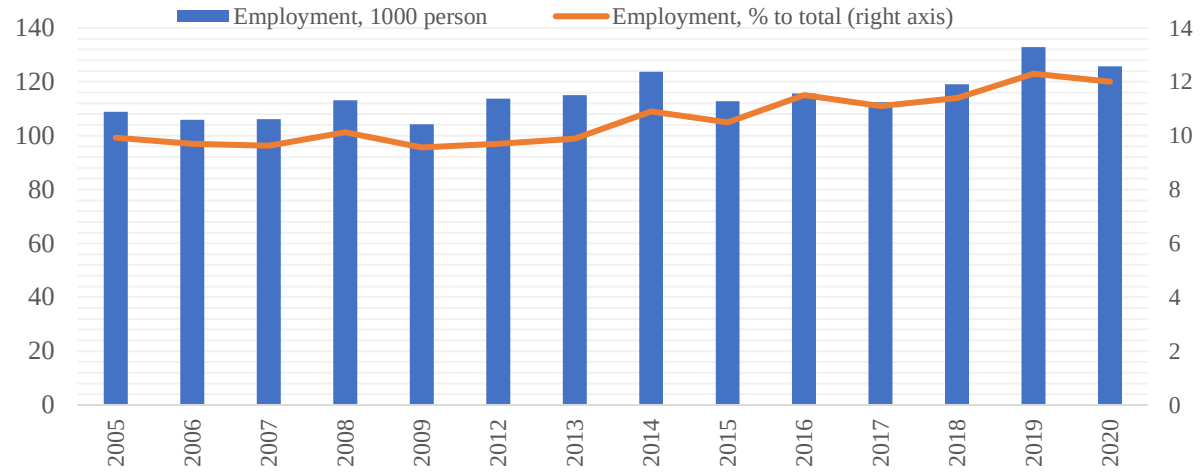

Figure 3.6.8. Employment in sector G.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Regarding financing, we should note that trade is one of the key sectors of the Armenian economy, attracting additional funds from the banking sector and credit organizations.

Thus, the volume of loans from the banking sector is growing steadily and has more than doubled over the last ten years (Figure 3.6.9). The dominant position in the loan structure belongs to the foreign currency loans given to wholesale and retail trade, which indicates that most of the enterprises in this sector work with suppliers of imported goods.

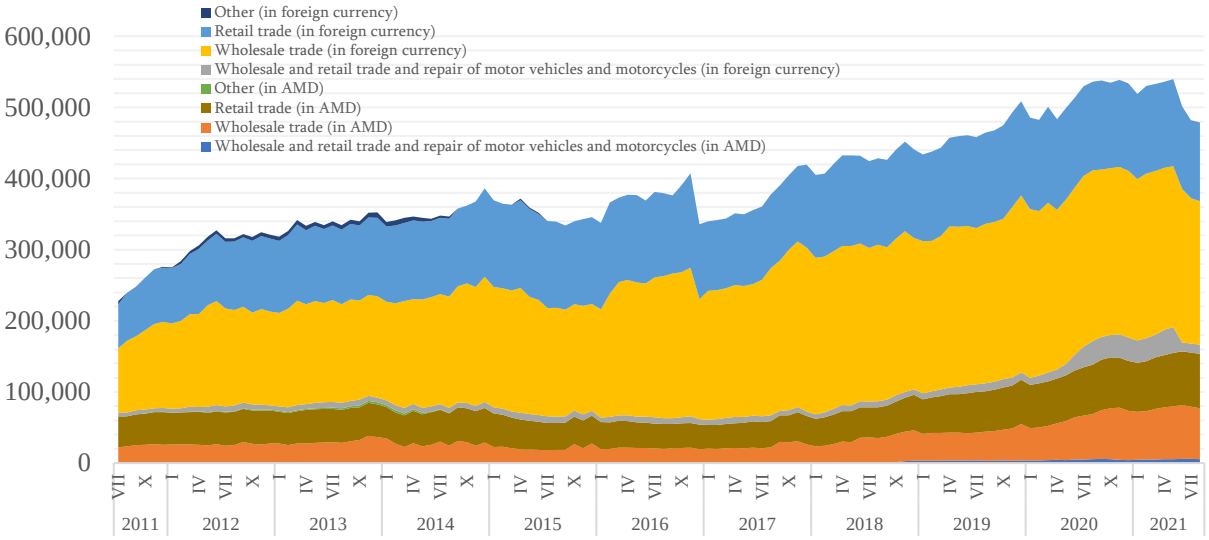

Figure 3.6.9. Loans granted by commercial banks in sector G, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

As for loans granted by credit organizations, we should highlight that lending volumes are relatively unstable, with a general trend of a moderate increase during the period under consideration (Figure 3.6.10). The loans of the

retail segment have a dominant position and are expressed in foreign and national currency.

An average level of credit burden characterizes the sector. In 2011, the credit burden in the sector was around 43%. We observe a steady indicator growth during the next ten years, reaching 53% in 2019. In 2020, due to the crisis, temporary restrictions on the activity of the sector and the decrease in the output volume, the indicator increased sharply, reaching almost 63%.

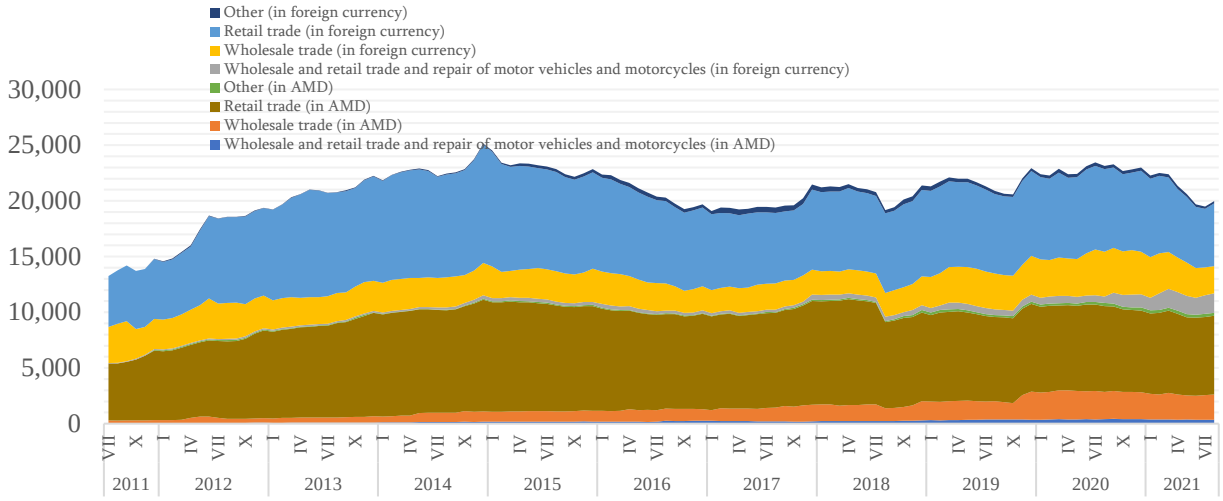

Figure 3.6.10. Loans granted by credit organisations in sector G, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

The main development feature of the trade sector from 2000 to 2021 is the constant growth of the share of organized trade. So, if as of 2000, stores conducted 38.8% of retail trade turnover, then in 2021, it reached 91.3%. As for consumer goods markets (fairs), in 2000 they provided 32.1% of turnover, and in 2021 only 5.5%, agricultural goods markets - 5.6% and 1.3%, kiosks - 22.7% and 1.8%, respectively. Mainly, these processes explain the above-mentioned progressive growth of productivity (Figure 2.6.5) and mean wages (Figure 2.6.6) and a much lower growth rate of employment (Figure 2.6.8).

In recent years, there has also been an increase in the average size of stores and the increasing dominance of domestic and foreign trade chains over non-chain stores. This process is most pronounced in the food products trade. Still, it takes place intensively in non-food trade as well, positively affecting productivity and wage growth rates in the sector, ensuring lower price levels compared to non-chain stores while simultaneously reducing employment in the sector.

An important issue is the undiminished concentration of retail trade in Yerevan. In 2000 the latter was 79.2% of commodity turnover, and in 2021 - 71%, which on the one hand expresses the economic realities[275]. On the other hand, the degree of concentration is significantly higher than the role of Yerevan in the country's economy.

Thus, the economic policy of trade development should consider the need to increase the number of additional jobs, especially outside Yerevan. Moreover, based on the same goal, the policy should ensure the increase in the competitiveness of non-chain stores with appropriate tax and credit policies for non-chain stores outside Yerevan, especially in the food products trade sector, which accounted for 52% of retail trade in 2020.

[275] Having about 40% of Armenia's population in recent years, Yerevan produces 55-60% of the country's GDP.

3.7. Transportation and storage.

The transportation and storage sector is essential in the modern economy and society and significantly impacts economic growth and employment. This sector includes land transport and transport via pipelines, water and air transport, warehousing and transport support activities, and postal and courier activities.

Transport infrastructure as a part of the general infrastructure is one of the prerequisites for sustainable economic growth. Investments in the transportation and storage sector impact economic development through increased productivity, inclusive economic activity, and increased consumption due to shorter transit times and additional transportation capacity, efficiency and better reliability, and improved quality of service. Moreover, the quality of transportation services dramatically impacts people's quality of life. The sector is highly dependent on electricity, gas and fuel resources and represents a significant source of CO^2 emissions.

Accelerated development of transport infrastructure and improvement of transport and logistics systems can significantly impact economic growth and, ultimately, the population's well-being. The logistics sector is one of the fastest growing sectors in Europe and has a significant weight in the GDP. From 2008 to 2019, the share of the transport and storage industry in the total GDP of the EU was relatively stable and fluctuated between 4.8-4.9% (Figure 3.7.1). Moreover, the weight of the sector in the developing countries of the EU is even higher; as of 2019, it is 6.7% of the GDP.

The weight of the transportation and storage industry in Armenia fluctuated between 2.2% and 3.3% in the period under consideration (Figure 3.7.1). Until 2016, the sector was in a phase of stagnation. In 2017-2019, we observed a dynamic increase in the output volume by an annual average of 10.3%, reaching around 320 billion AMD. In 2020, due to the restrictions of the Covid-19 pandemic, the sector's growth was disrupted, and there was a drop of about 35%, mainly due to the decline in passenger traffic. However, the industry almost recovered with the cancellation of restrictions in 2021, showing a 27% increase.

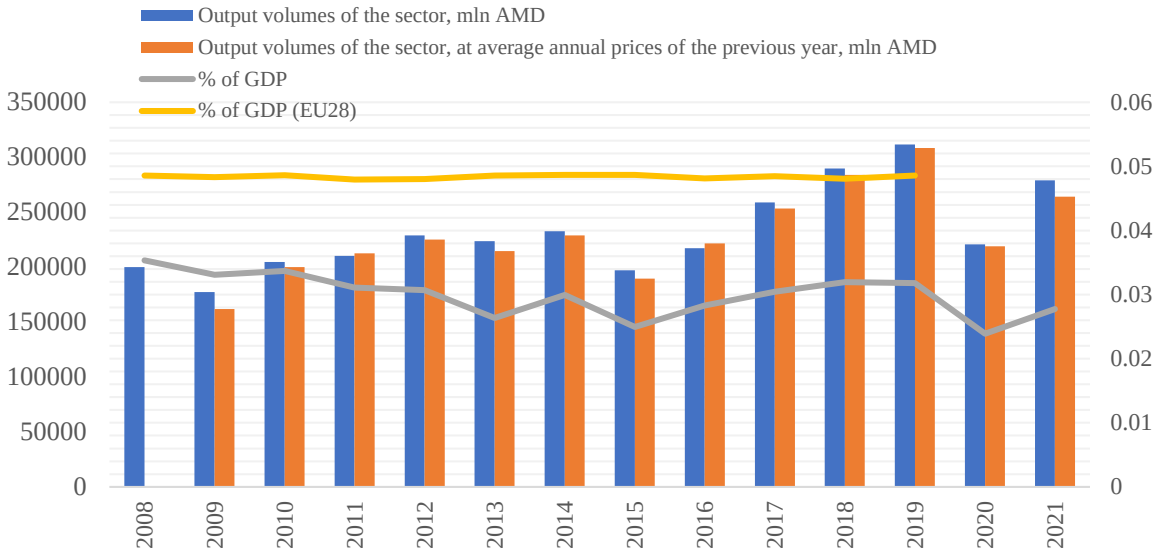

Figure 3.7.1. Output volumes of sector H (in mln AMD), share in GDP, %.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

From 2013 to 2015, we can observe a significant reduction in the intermediate consumption volume in the sector (Figure 3.7.2). As a result, the share of intermediate consumption in the gross output was also reduced from 46% to 36%, indicating the reduction of material intensity in the sector and, consequently, the increase in efficiency. In subsequent years, the level of material intensity remained stable, varying in the range of 32-35%.

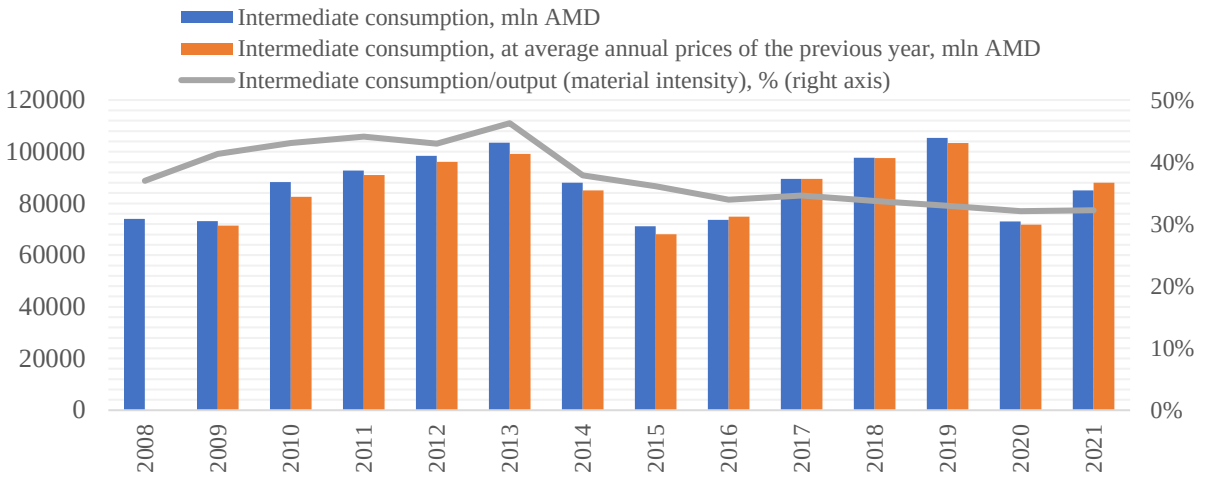

Figure 3.7.2. Intermediate consumption in sector H, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The reduction in the material intensity in the transport and storage sector since 2013 has contributed to the higher value-added growth rate compared to the growth of gross output. Thus, in 2017-2019, the annual average growth of the value-added was 11.8%, which significantly exceeds the overall economic growth rate recorded in the same period. As of 2019, the value-added in the sector was 214 billion AMD, followed by a 33.4% decline. As we have already mentioned, in 2021, along with cancelling restrictions, the industry recovered rapidly, showing a 27% growth.

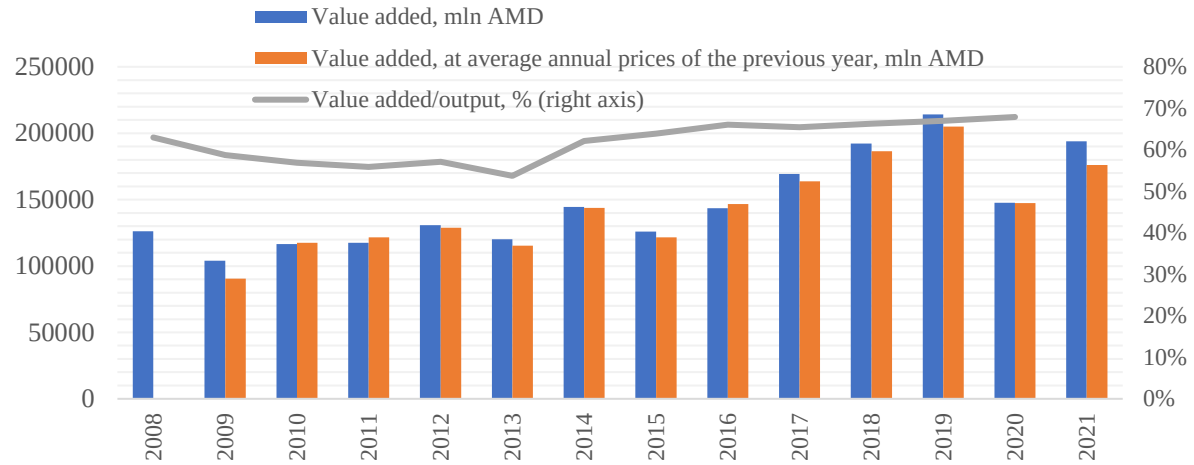

Figure 3.7.3. Value-added in sector H, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

We can observe an increase in the volume of fixed assets in the sector from 2013 to 2016 and 2018 to 2019. The latter we can characterize as a recovery after the reduction in 2017 (Figure 3.7.4). From 2013 to 2016, the average growth rate of fixed assets was 8.4%. As of 2020, the volume of fixed assets at book value is about 675 billion AMD, and at residual value - 427 billion.

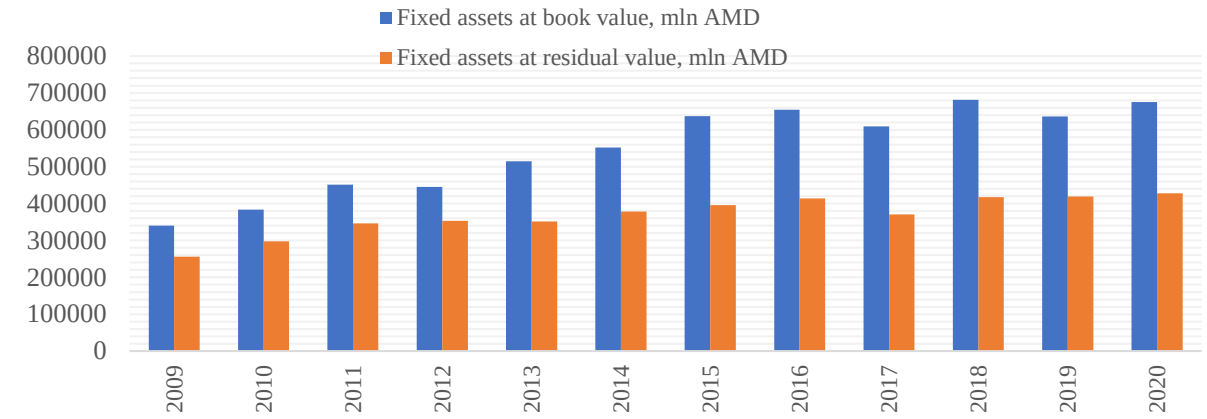

Figure 3.7.4. Fixed assets at the book and residual values in sector H, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Considering the dynamics of capital and output volumes in the sector in the period under consideration, we can observe a significant decline in capital intensity starting from 2016 (Figure 3.7.5). At the same time, as of 2019, labour productivity has increased by about 50% compared to 2012. As for the capital-to-labour ratio, we should note that from 2012 to 2016, the amount of capital per employee increased significantly, decreasing by about 32% in the following three years.

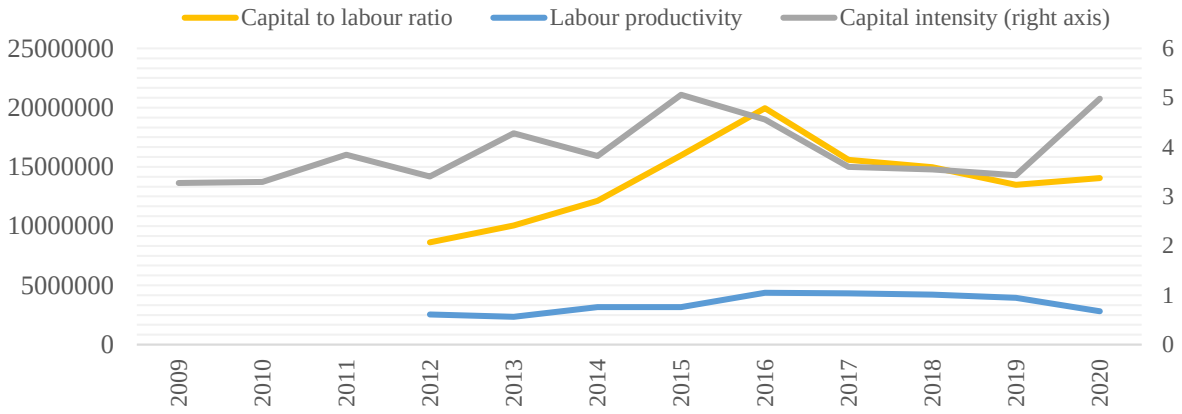

Figure 3.7.5. Capital intensity, capital-to-labour ratio and labour productivity in sector H.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

At the same time, looking at the employment level in the sector, we can notice that during the stagnation period of the transportation and storage sector, there was a reduction in employment until 2016 (Figure 3.7.6). Moreover, despite the almost equal levels of labour cost in the industry and the economy as of 2012 (138 677 and 139 603), respectively, as of 2015, there was already a gap between them in the amount of 15.6%. Starting in 2017, both wage and employment levels in the sector began to increase, along with the increase in gross output volumes. In 2019, the sector's competitiveness in the labour market was

restored, and the number of people employed in the industry was 54.4 thousand, 5% of the total employment. At the same time, the labour cost in the sector is about 205 thousand AMD, almost equal to the economy average.

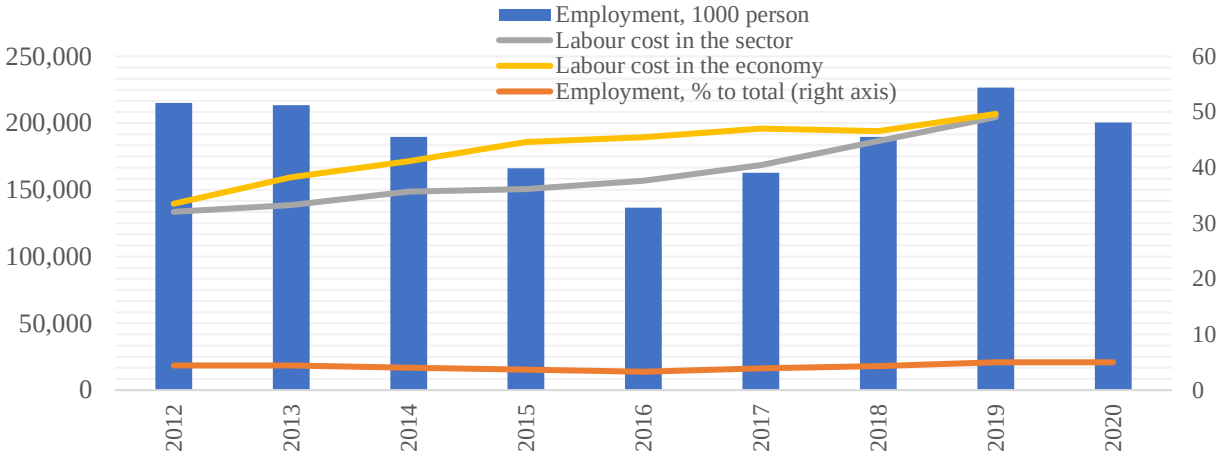

Figure 3.7.6. Employment and labour cost in sector H.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As mentioned, the transport and storage sector highly depends on energy consumption. As the energy balance of the sector shows, the primary energy sources of consumption are oil products and gas (Figure 3.7.7). Moreover, gas consumption in 2012-2013 was 72% of the total. Starting from 2014, the consumption of oil products increased in the sector, while in the following years, the weight of natural gas consumption varied between 59-63%. In the transportation and storage economy field, the energy consumption per unit of output ranged from 99 to 104 kJ from 2012 to 2018. At the same time, until 2015, there was an increase in energy intensity in the sector, followed by a decrease. The latter testifies to the restoration of the sector's efficiency since 2016.

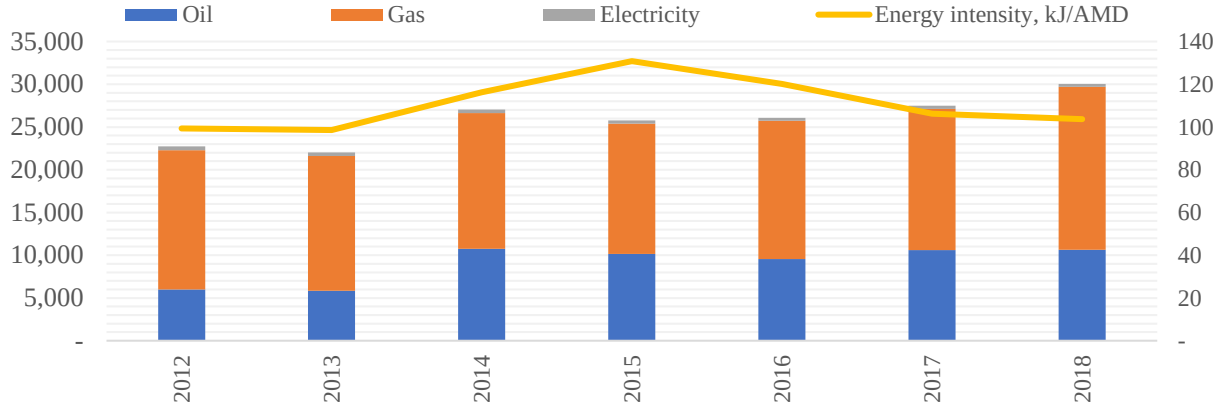

Figure 3.7.7. Energy balance in the transportation sector, TJ.

Source: Annual "Energy balance" reports of the UN – https://unstats.un.org/unsd/energystats/pubs/balance/

Starting from 2012, except for 2016 and 2020, the price dynamics in the sector, calculated with the deflator based on value-added, intermediate consumption and gross output, showed an upward trend. In 2016 and 2020, the deflator level was somewhat below 100, indicating deflation in the sector. In general, price indices in the industry coincide with the dynamics of the GDP deflator, with insignificant deviations.

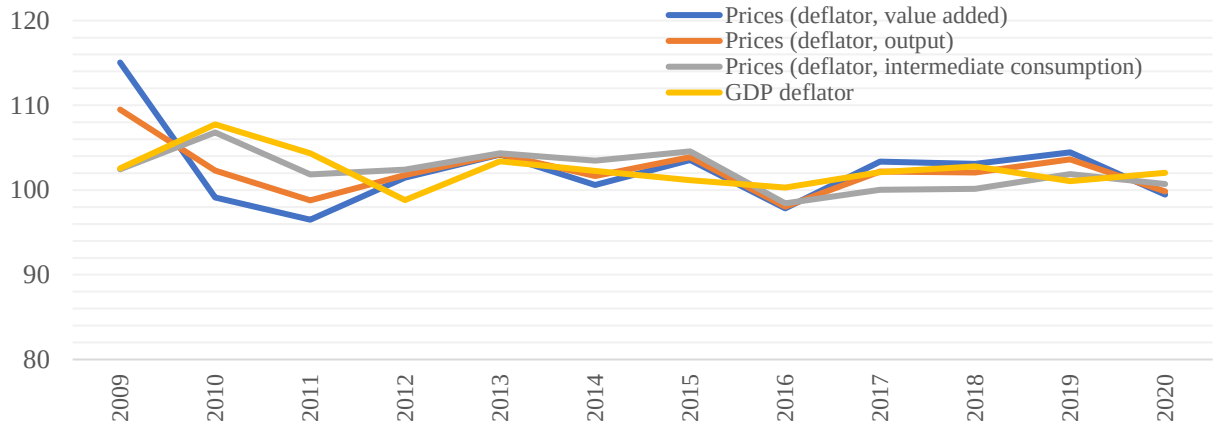

Figure 3.7.8. Changes in prices level according to deflator, sector H, %, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The primary credit sources for the transportation and storage industry are the loans given by commercial banks (Figure 3.7.9) and credit organizations (Figure 3.7.10). In general, the credit burden of the sector was low in the period under consideration, ranging between 13% and 22% of output. However, in 2020, due to the Covid-19 epidemic, there was a sharp increase in the credit burden, reaching 41%.

We should note that the banking system provides 91-95% of loans in the sector. In addition, 75-87% of total loans are in foreign currency. As we can see, since the last quarter of 2018, there was a significant increase in the loan volume in the sector, and within a year, it more than doubled. The main drivers of such considerable growth were the areas of freight transport by road and removal services, as well as air transport. As of 2021, these branched make up around 90% of total foreign currency loans.

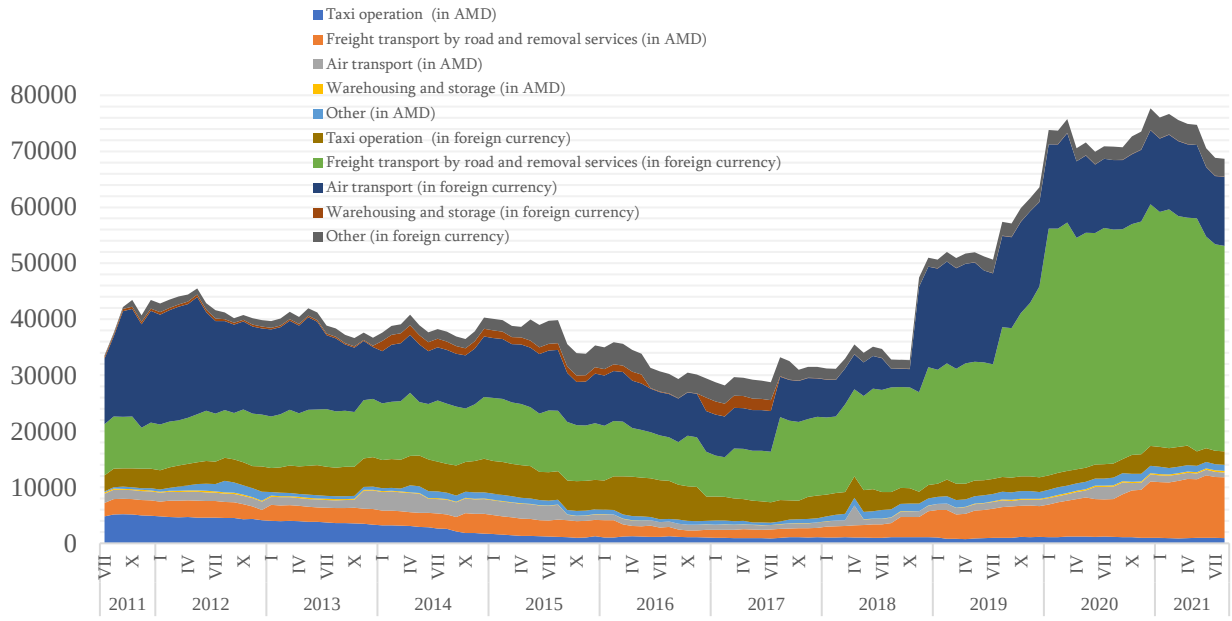

Figure 3.7.9. Loans granted by commercial banks in sector H, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

As for credit organizations, as already mentioned, the loan volume does not exceed 9% of total loans in the period under consideration. Compared to the banking system, in 2011-2016, national currency loans prevailed in the currency composition of loans provided by credit organizations, varying in the range of 51-65%. However, after 2017, foreign currency loans exceeded national currency loans, ranging from 51% to 67%.

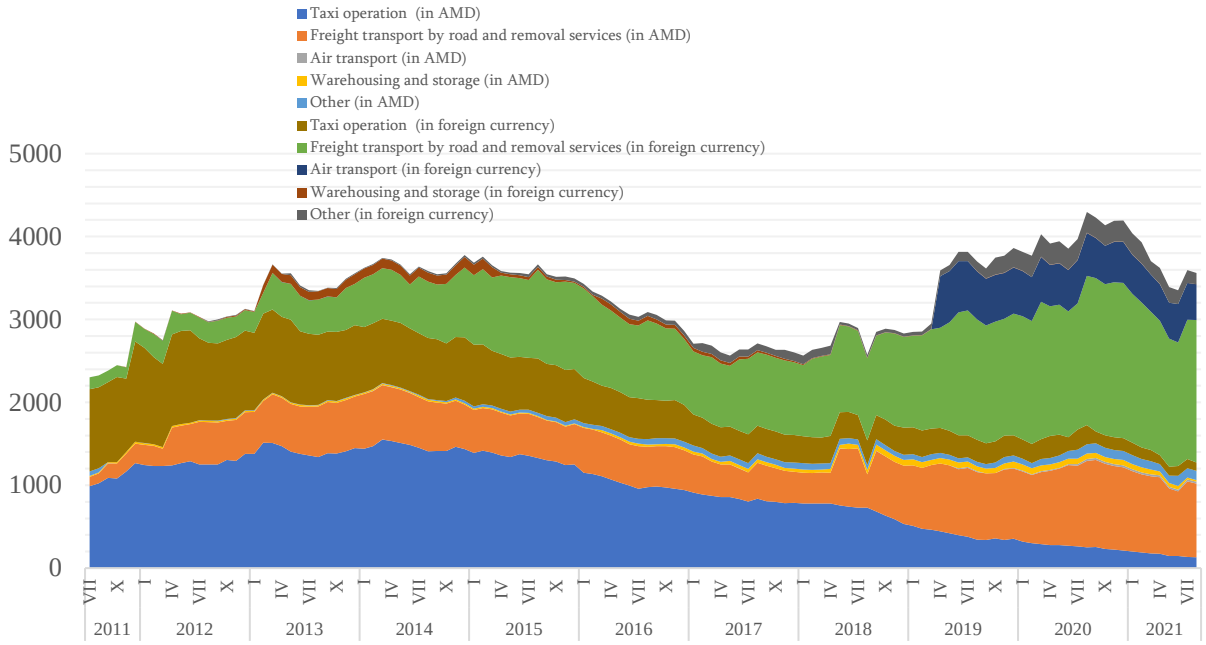

Figure 3.7.10. Loans granted by credit organisations in sector H, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

Figure 3.7.11 shows that the freight transportation intensity of GDP had a wide fluctuation range from 1.9 tons/million AMD in 2008 to 4.9 tons/million AMD in 2017 and 2018. It is due to the relatively high volatility of domestic transportation from 2016 to 2018. The latter is due to the sharp increase in the volume of intra-republic road transportation during that period. On the other hand, the internal and external railway transportation to GDP is generally determined by the GDP structure and has a relatively stable character.

The main cargo transported by rail since 2011 is non-ferrous metal ore, which accounted for 55.2% of the total freight in 2011, rising to 83.4% in 2019 and 64.5% in 2021. The second group is oil and oil products, which has high volatility: 0.1% in 2007, there were no shipments from 2010 to 2016, recovering in 2017 and reaching 12.3% in 2021. The third cargo group is construction materials, which are much more volatile: 37.6% in 2007 to 7.6% in 2021. Thus, those 3 product groups provided 84.3% of railway transportation in 2021 and more than 90% in 2018-2020.

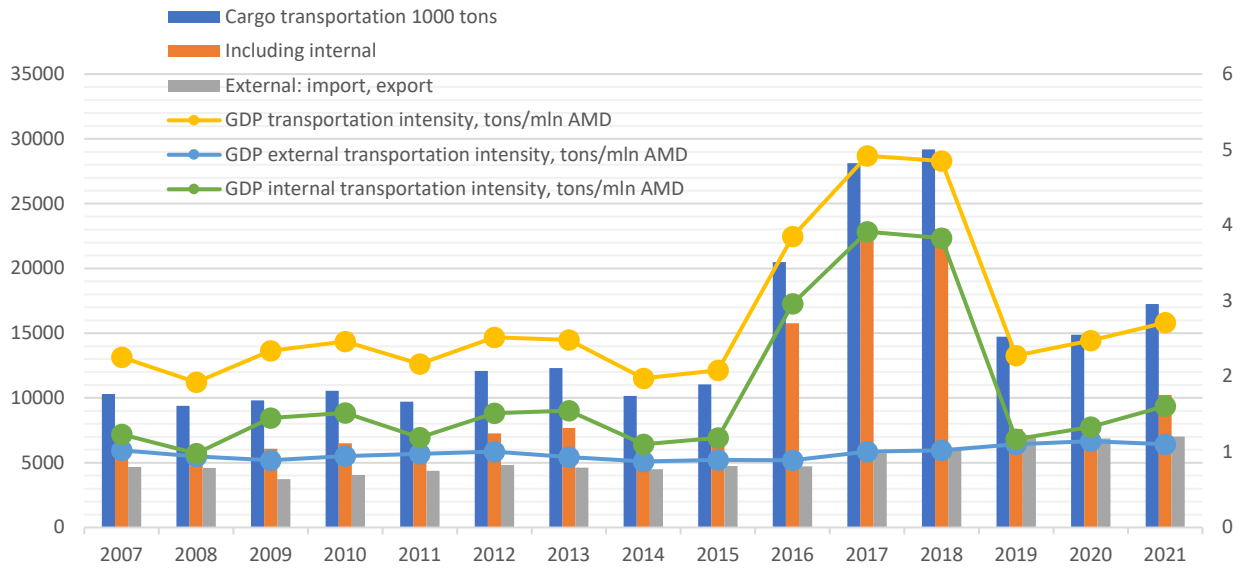

Figure 3.7.11.Transportation intensity of GDP in 2007-2021

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Regarding volume and list of goods, railway transportation is very limited. Thus, road transport is dominant[276] due to several factors: the internal structure of the railway, external restrictions for exit and the foreign trade geography. Weakening the impact of those factors should be the main direction of the country's transport and trade policy aimed at the internal and regional integration of the country's railway system to dramatically increase the volume and products of internal and external cargo transportation, thereby increasing the range of exported products and significantly reducing the cost of imports. The internal integration can be ensured by connecting the two railways of Armenia in the Dilijan-Vanadzor section and the restart of the Yerevan-Ijevan-Azerbaijani border railway, which will significantly increase the number and list of goods transported by railway.

After the second Artsakh war, external integration theoretically becomes possible in the medium term. All currently non-functioning communications should be opened, ensuring the railway connection with Russia, Iran and Turkey.

As for passenger transportation, road transportation dominates here as well, accounting for 75-80% of the total in 2018-2021. Internal and external rail transportation is insignificant, and air transportation dominates external transport along with road transportation. In this case, again, the policy should aim to make transportation cheaper. On the other hand, domestic transportation should seek to develop the Yerevan metro, increasing the share of electric transportation. The other direction is to ensure a progressive increase in the volume of railway passenger transportation following the railway integration. As for foreign passenger transportation, the share of rail transportation should also be increased.

To address the mentioned issues, it is necessary to make significant investments in the integration and restart of the railway infrastructure and in the metro expansion, which implies a considerable increase in public and private investments in the transport infrastructure in the medium term.

[276] In 2007, the volume of cargo transportation by road was almost 2 times higher than the volume of cargo transportation by railway and has a growth trend, reaching 8.5 times in 2018, then decreasing to 3 times in 2019 and reaching 3.86 in 2021.

3.8. Accommodation and food service activities.

The field of accommodation and food service activities is closely related to the development of domestic and foreign tourism on the one hand and the dynamics of the population's income on the other[277]. It has a significant contribution to economic and employment growth. The accommodation industry mainly includes providing short-term accommodations to travellers and other visitors through hotels, motels, guesthouses, vacation homes, bed and breakfasts, etc. The field of food services includes providing food and beverages intended for final consumption, whether in bars, restaurants, cafes, or other places of public catering.

In developed countries, such as the EU15 countries, the accommodation and food services sector has a more significant share of the GDP than in other EU member states. In 2019, the weight of this industry in the GDP was 3% in EU15 countries and 2.1% in other countries.

We should note that until 2009 in Armenia, the sector was in the stage of stagnation and without significant changes in the direction of development (Figure 3.8.1). The period from 2010 to 2016 can be characterized by steady output growth. The growth rates accelerated from 2017 to 2019. In just two years, the gross output increased by 70%, reaching more than 201 billion AMD in 2019 (1.9% of GDP). Due to Covid-19, the sector experienced a significant decline in 2020 by 43.3%, partially recovering in 2021.

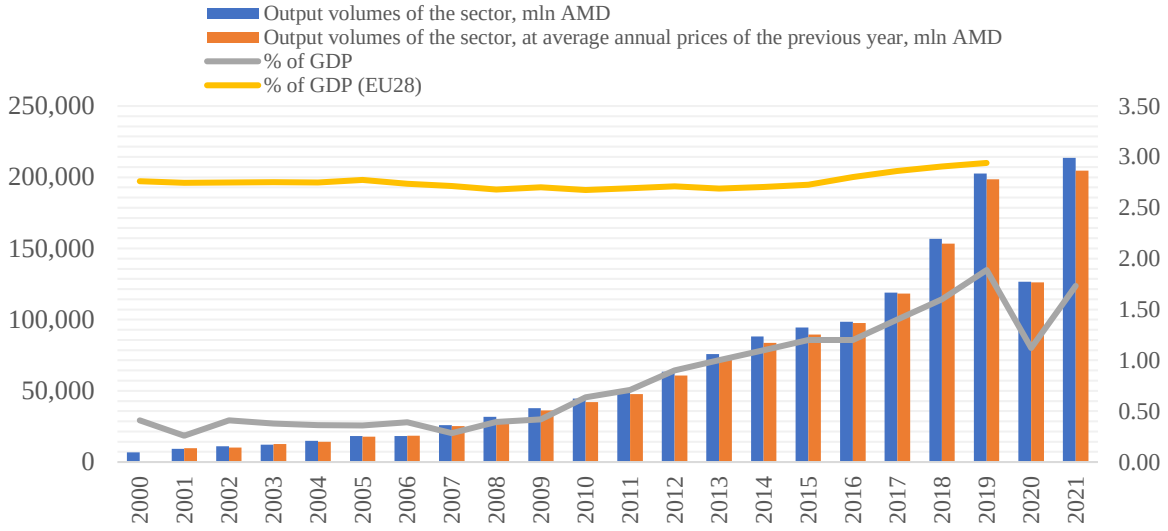

Figure 3.8.1. Output volumes of the sector I (in mln AMD), share in GDP, %.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Despite the dynamic development of the sector and the significant growth rate of the gross output, until 2017, there was no significant growth in intermediate consumption. As a result, starting from 2009, the material intensity of the output has decreased at a steady pace, which indicates an increase in productivity. Thus, as of 2017, this indicator was 34% compared to 53% registered in 2008 (Figure 3.8.2). In 2018, we can notice some increase in the material intensity indicator up to 38%, which remained stable until 2020, increasing to 45% in 2021.

[277] According to Armenia's balance of payments, income from inbound tourism in 2000 was 37.8 million USD, increasing with inbound tourism and reaching 645.7 million USD in 2010, 1528 million USD in 2019 (about 11% of GDP), sharply decreasing to 292.8 million USD in 2020 due to Covid-19 and partially recovering to 720.4 million USD in 2021 (about 5% of GDP)

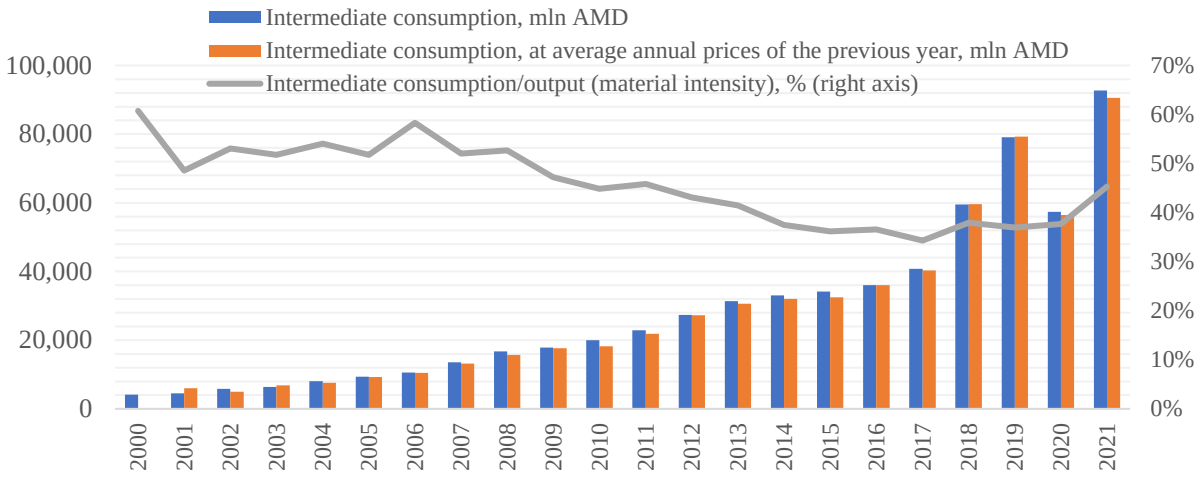

Figure 3.8.2. Intermediate consumption in sector I, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Since 2009, the growth rates of value-added were similar to output growth due to the increase in productivity in the accommodation and food services sector (Figure 3.8.3). Thus, the value-added increased over six times over ten years, reaching 127 billion AMD in 2019. As of 2009, the sector's share in the GDP was only 0.42%. However, due to the significant increase in the value-added, the industry reached 1.9% of GDP in 2019. It is necessary to note that with this indicator, Armenia is close to the average figure of countries not belonging to the EU15 group - 2.1%.

The accommodation and food services sector was the most affected industry worldwide in 2002 due to the Covid-19 pandemic. The travel restrictions and strict lockdown measures almost completely paralyzed business activities in the sector for a certain period. In particular, in Armenia, starting from March 2020, the government has prohibited food service activities for a certain period. As a result, an unprecedented decline took place in the sector. The decline in the real value-added was more than 41%, while the overall economic decline in the country was 7.4%.

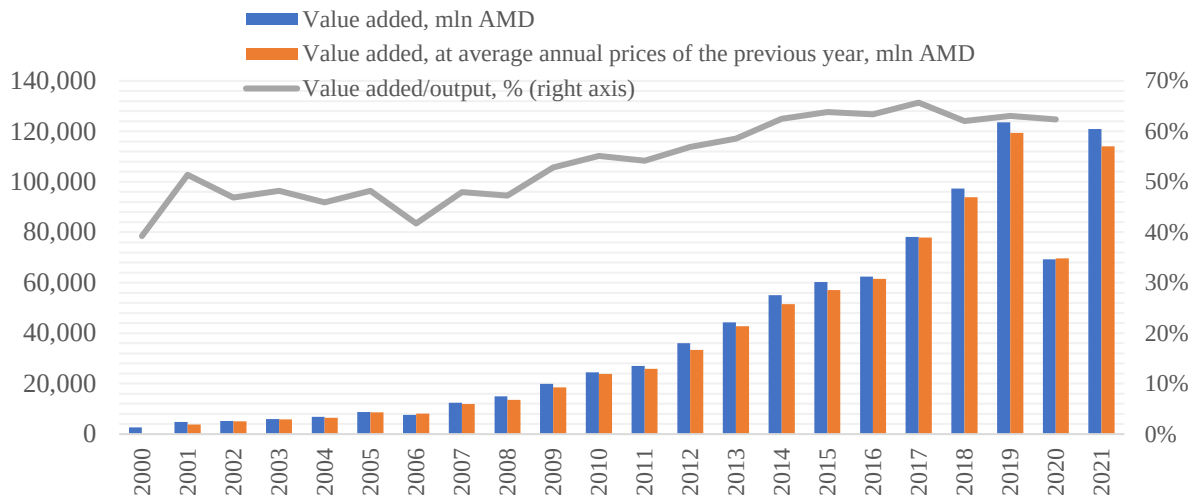

Figure 3.8.3. Value-added in sector I, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Figure 3.8.4 presents the dynamics of fixed assets in the accommodation and food service activities sector. As we can see, the industry's steady growth in gross output since 2009 has been preceded by a slow increase in fixed assets before 2007. After 2013, the fixed asset growth rate significantly accelerated, further accelerating aggregate output growth. And finally, in 2017, we can notice a 34% increase in fixed assets at the book value compared to the previous year, which corresponds to a 70% increase in the output issue during these two years.

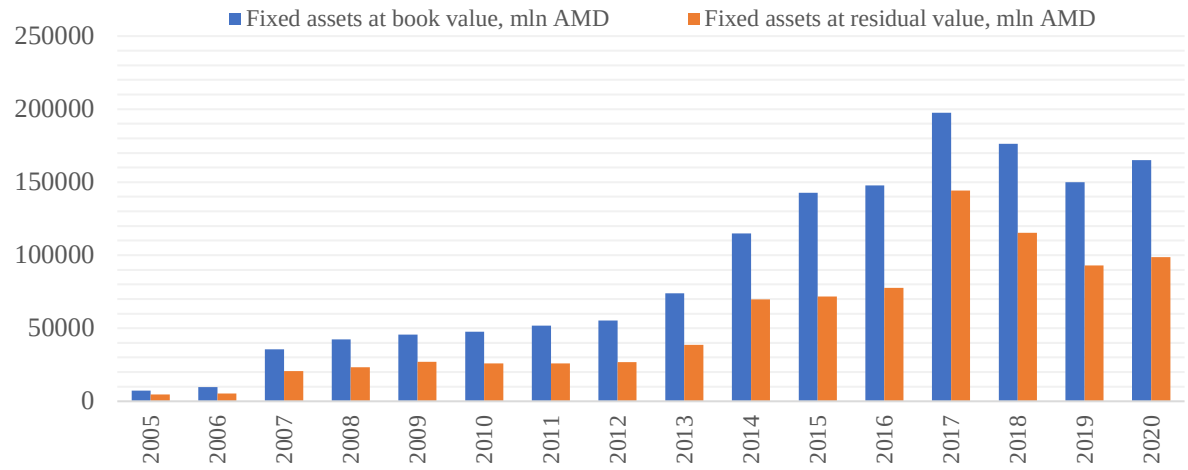

Figure 3.8.4. Fixed assets at the book and residual values in sector I, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

During 2012-2017, we notice an increase in the sector's capital-to-labour ratio, capital intensity and labour productivity indicators. However, starting from 2018, due to the decrease in fixed assets and the significant increase in the output volume, there was a substantial reduction in capital intensity. On the other hand, in 2018-2019, due to the rise in employment in the sector, there was also a significant decrease in the capital-to-labour ratio.

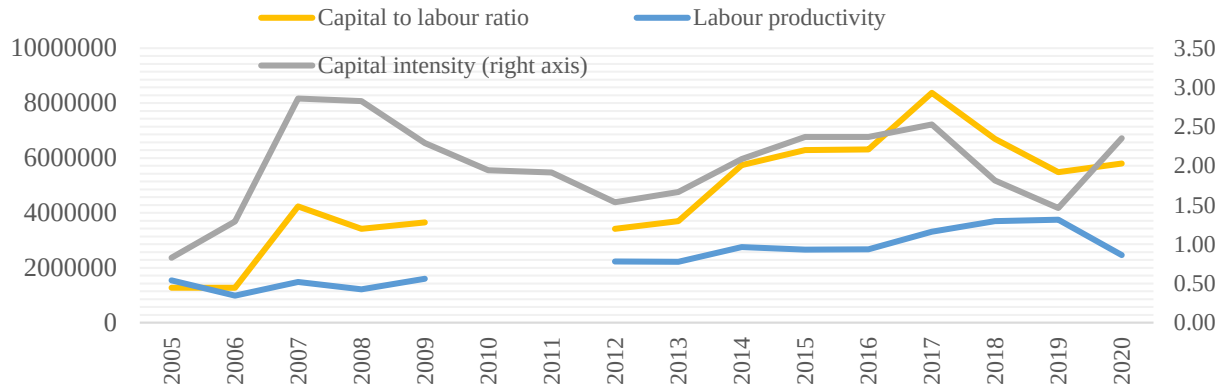

Figure 3.8.5. Capital intensity, capital-to-labour ratio and labour productivity in sector I.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Due to the relatively slower rate of employment growth compared to the value-added growth in the sector, there has been a significant increase in labour productivity over the seven years under review, starting from 2012 (Figure 3.8.6). As of 2019, labour productivity

had increased by 68%. It is necessary to note that there is no significant increase in the accommodation and food services industry's labour cost during the period under consideration. Moreover, labour cost in the sector is significantly lower than the overall average indicator of the economy, and the gap between them has increased over the last ten years. Thus, as of 2019, the labour cost is about 118 thousand AMD, which is 43% lower than the economy average.

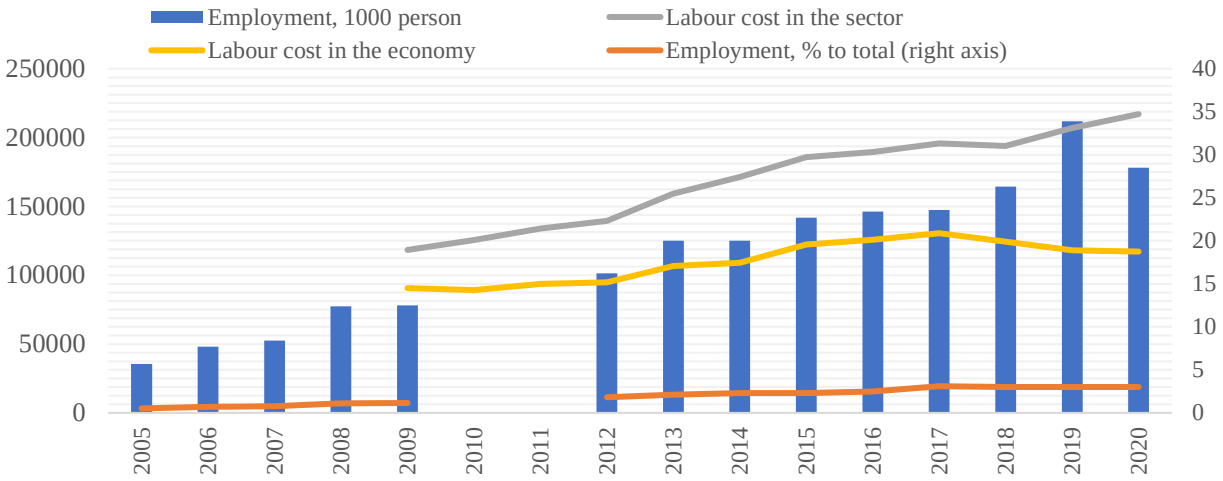

Figure 3.8.6. Employment and labour cost in the sector I.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As for the price dynamics in the sector (Figure 3.8.7), we can notice a relatively high fluctuation in all three deflator indices: value-added, gross output, and intermediate consumption. Moreover, the price dynamics in the sector, except for the years 2003, 2006, 2015 and 2019, mostly coincides with the GDP deflator. It is noteworthy that in 2019 there was a significant reduction in intermediate consumer prices (the deflator was 94). At the same time, we observe a considerable increase in the value-added deflator index (106.5). As a result, gross output prices remained almost unchanged.

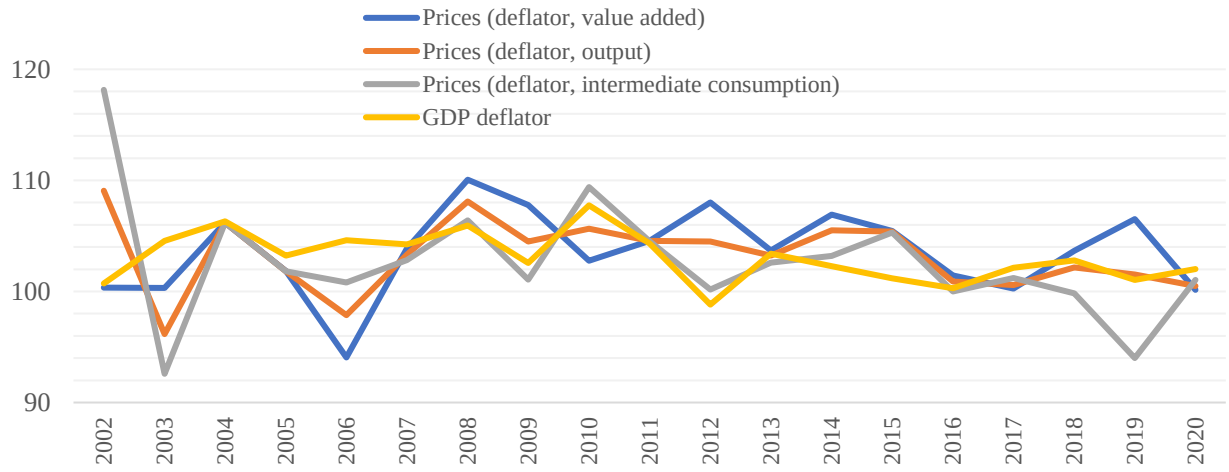

Figure 3.8.7. Changes in prices level according to deflator, sector I, %, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

In the accommodation and food services industry, we can notice a steady increase in financing by commercial banks (Figure 3.8.8) and credit organizations (Figure 3.8.9) over the last ten years. The volume of loans provided by commercial banks increased by 17.3% annually. It is noteworthy that the majority of food and accommodation services loans are in foreign currency. Thus, in December 2019, before the crisis, the weight of foreign currency loans provided by commercial banks was 77%. The indicator decreased somewhat due to the 2020 crisis, making 75% in December of the same year and 74% as of August 2021.

From 2011 to 2015, the credit burden of food and beverage services was relatively high in the total volume of loans provided by commercial banks accounting for 61% in 2011 and 52% in 2015. Starting from 2016, the volume of loans provided to hotel services increased sharply, accounting for 63% of total loans and remaining relatively stable.

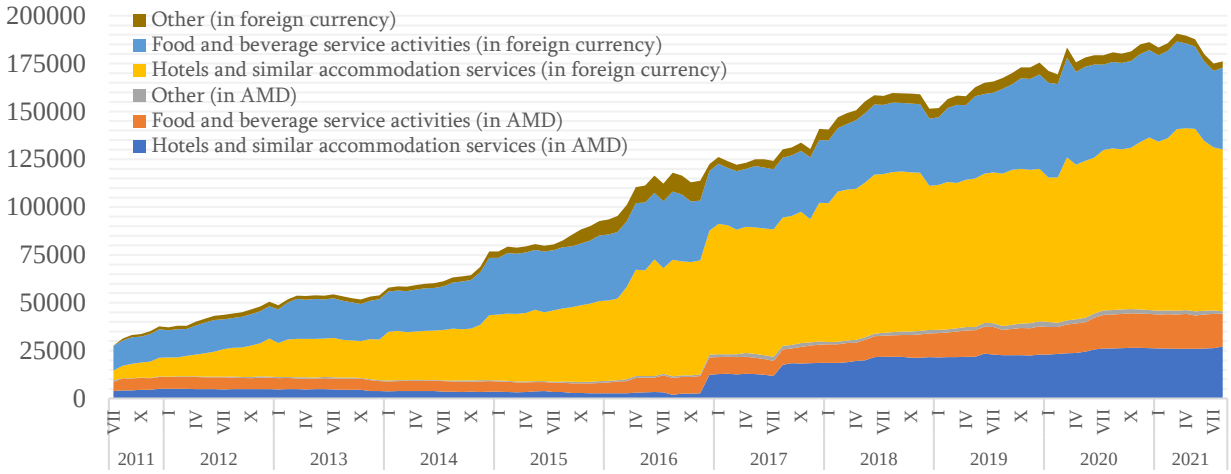

Figure 3.8.8. Loans granted by commercial banks in sector I, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

Loans provided by credit organizations have a small share in total lending. In pre-crisis 2019, they accounted for only 1.6% of the market. At the same time, it is necessary to note that the latter primarily provides national currency loans. Due to the 2020 crisis, there has been a double increase in national and foreign currency loans offered by credit organizations. However, as of 2021, commercial banks account for 97.6% of total lending.

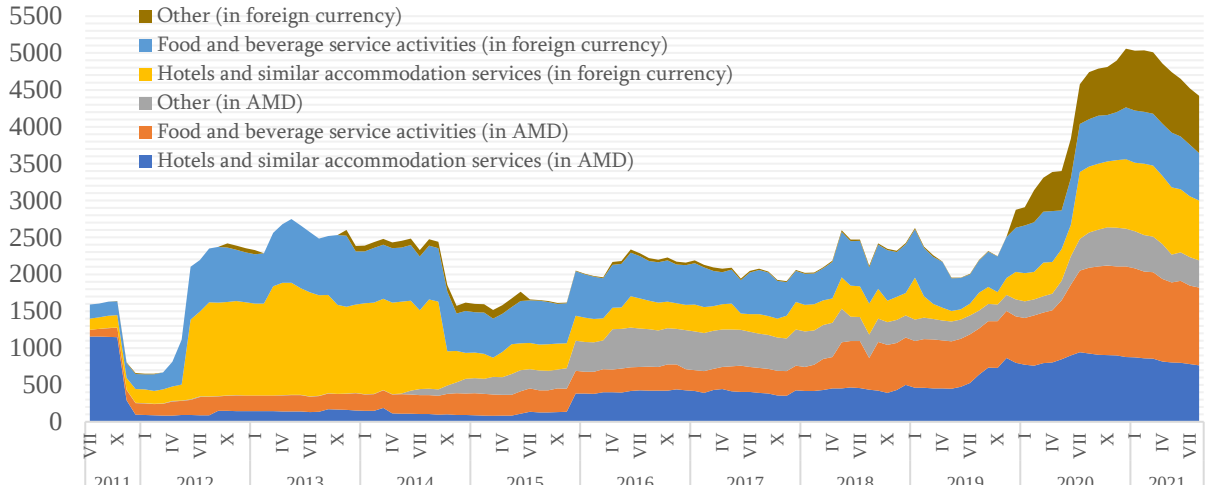

Figure 3.8.9. Loans granted by credit organisations in sector I, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

Generally, the credit burden on gross output is relatively high in the sector and has had a growing trend in the last ten years. In 2016, it was 124% compared to 75% in 2011, decreasing in the following three years to 87% in 2019. However, due to the 2020 crisis, there has been a sharp increase in the credit burden to 165% due to a dramatic decrease in gross output.

Table 3.8.1 shows that the food services sub-sector is developing more dynamically than accommodation. The average annual growth rate food services sub-sector was 19.7% from 2009 to 2019, compared to 16.6% in the accommodation sector[278]. As already mentioned, the industry experienced an unprecedented decline in 2020 mainly due to a decrease in gross consumption of households (food services) and a reduction in tourism (accommodation), with the latter's decline being much more significant. In 2021, the first sector recovered substantially, while the second reached the 2018 level, restoring the 2019 domestic tourism volumes. Most likely, the inbound tourism sector will fully recover in 2023-2024.

The sector, particularly the food services sub-sector, will continue to be one of the drivers of the economic development in Armenia. It is mainly because from 2009 to 2021 (except for the 2020 coronavirus crisis), the share of food services in the final consumption of households increased from 1% in 2009 to 3% in 2021. The growth of the accommodation sub-sector is due to the increase in the proportion of tourists using hotels, along with the growth of domestic and inbound tourism. Thus, if in 2009 only 11.4% of inbound tourists used hotels, then in 2021, that number reached 32%[279].

Table 3.8.1. The main indicators of the accommodation and food service activities in Armenia 2009-2021, billion drams at current prices

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Final consumption of households	*2647*	*2974*	*3306*	*3700*	*3951*	*4110*	*3916*	*3893*	*4415*	*4883*	*5417*	*4627*	*4988*
Accommodation output	*9*	*11.3*	*12.9*	*15.5*	*17.9*	*18.9*	*22.1*	*23*	*28.4*	*34.5*	*41.8*	*16.5*	*32*
Food services output	*25.2*	*32.2*	*35.9*	*45.6*	*55.4*	*64.8*	*68.7*	*71.4*	*83.6*	*116.4*	*152.5*	*97.8*	*148.7*
Food services, % to final consumption	*1.0*	*1.1*	*1.1*	*1.2*	*1.4*	*1.6*	*1.8*	*1.8*	*1.9*	*2.4*	*2.8*	*2.1*	*3.0*
Inbound tourists, 1000	*575*	*687*	*758*	*843*	*1082*	*1204*	*1192*	*1259,7*	*1495*	*1652*	*1894*	*360*	*870*
Domestic tourists, 1000	*436*	*456*	*489*	*515*	*670*	*860*	*872*	*980*	*1087*	*1092*	*1545*	*1046*	*1596*
Total tourists, 1000	*1011*	*1143*	*1247*	*1358*	*1751*	*2064*	*2064*	*2239,7*	*2582*	*2744*	*3439*	*1406*	*2466*
Revenue of hotels per 1 tourist, AMD	*8903*	*9883*	*10342*	*11413*	*10220*	*9160*	*10707*	*10269,2*	*11001*	*12572*	*12155*	*11735*	*12976*

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The sector regulation policy is relatively liberal and wholly based on non-governmental domestic and foreign investments. In our opinion, no additional regulations, tax changes and strictures are required in the medium-term future, especially in the food services sector. As for the state policy for tourism development, it should aim to develop infrastructures, the correct zoning of settlements and improve individual parts of the country, for example, Lake Sevan, to increase tourist attraction.

[278] At current prices including inflation

[279] Similar information is not published for the fast-growing domestic tourism, but it is clear that the number of tourists using hotels is increasing in that sector as well.

3.9. Information and communication.

The information and communication sector is critical to economic development and can contribute to faster economic growth and increased productivity, primarily through increased Internet access and speed. The industry includes telecommunications, Programming and broadcasting, Motion picture, video and television programme production, Computer programming, consultancy and related activities, and publishing. Introducing modern information and communication technologies can significantly contribute to economic development and achieving high and sustainable economic growth rates. From 2008 to 2019, the share of the information and communication sector in the GDP of the EU15 member states varied between 4.9-5.4%.

At the same time, in other EU member states, the same indicator in 2008 was 4.2%. However, these countries managed to ensure stable growth rates due to attracting investments and economic development after joining the EU. In 2019, they almost reached the level of EU15 countries, accounting for 5.2%.

As for Armenia, there was an increase in the gross output in the information and communication sector in 2012-2013: 7.3% and 10.8%, respectively (Figure 3.9.1). After that, the industry stagnated for three years. We can observe a steady increase in the volume of the gross output of the information and communication sector since 2016. As a result, in 2021, the sector's gross output volume amounted to 348 billion AMD, exceeding the 2016 indicator by 44%.

Considering the GDP growth rates in the country during the period under consideration, the sector's share of the GDP has hardly changed from 2012 to 2019, fluctuating in the range of 3.3-3.5%. In 2020, the sector's weight in GDP increased significantly, reaching 3.8%, since, unlike the economy in general, the information and communication sector registered growth during the pandemic.

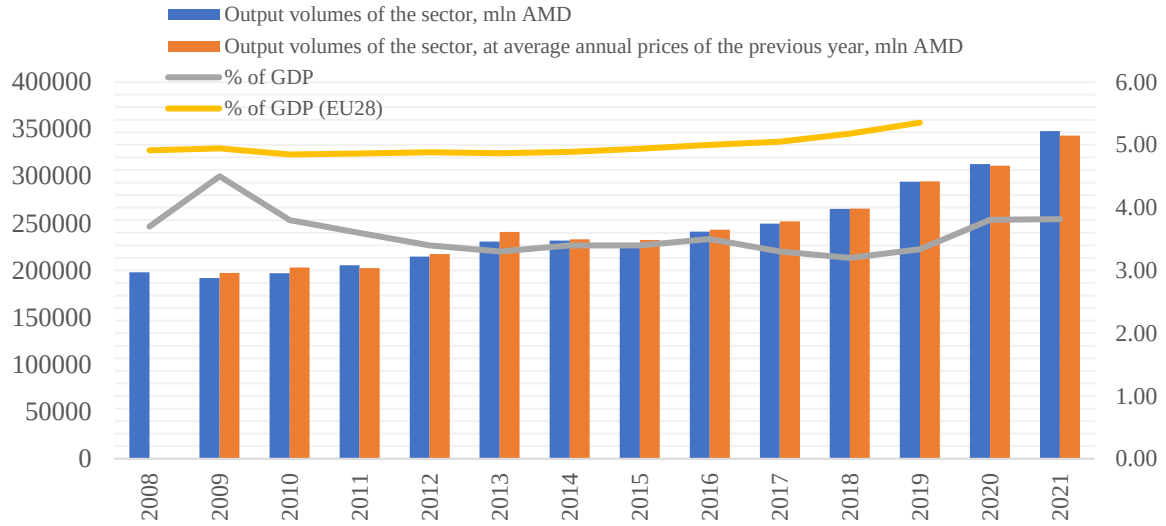

Figure 3.9.1. Output volumes of sector J (in mln AMD), share in GDP, %:

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The dynamics of intermediate consumption from 2008 to 2015 differ from the gross output dynamics (Figure 3.9.2). Thus, from 2009 to 2013, the intermediate consumption volumes increased significantly, reaching 79.8 billion AMD, while there was a period of stagnation in gross output. As a result, the material intensity of the information and communication industry has also increased from 27% in 2009 to 35% in 2013.

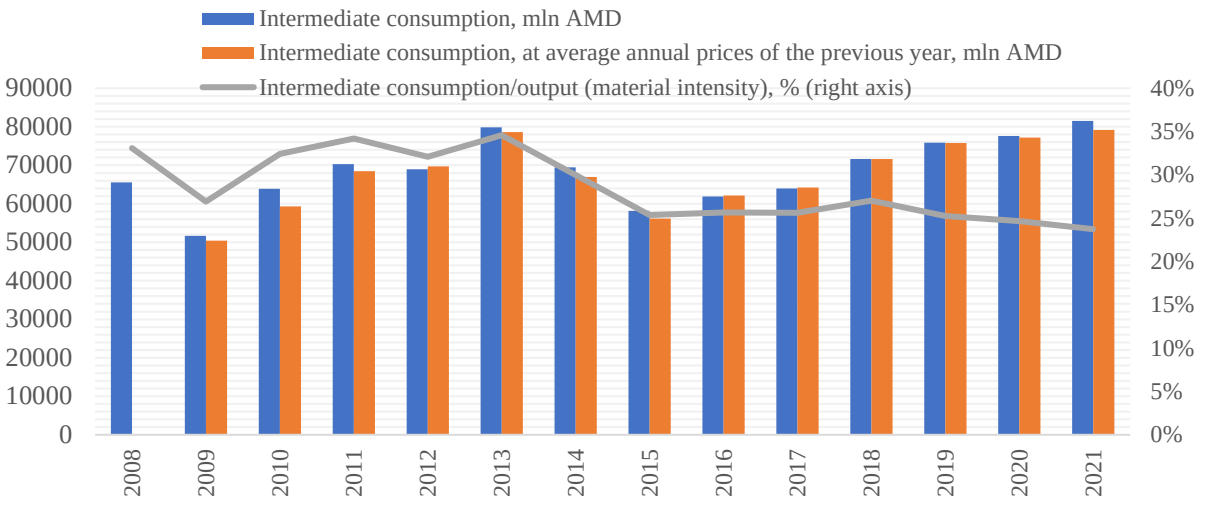

Figure 3.9.2. Intermediate consumption in sector J, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

At the same time, the value-added of the sector also decreased during the period under consideration (Figure 3.9.3). After 2013, the dynamics changed completely. In 2014-2015, there was a sharp reduction in the volume of intermediate consumption, reaching 58.1 billion AMD, resulting in an increase in productivity and a decrease of the material intensity indicator by 25%. At the same time, from 2013 to the present, we can observe a stable growth rate of value-added, including the crisis years of 2014-2015 and 2020.

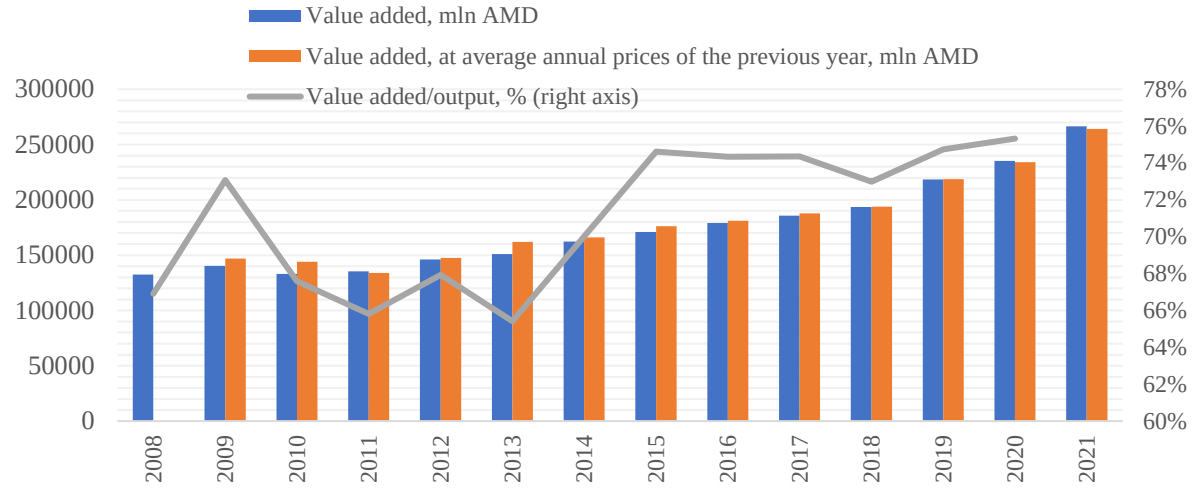

Figure 3.9.3. Value-added in sector J, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

We can distinguish two periods of growth of fixed assets at the book value in the information and communication industry: 2012-2016 and 2018-2020 (Figure 3.9.4). In the first period, there was an average annual growth of 5%, reaching 488.5 billion AMD, followed by a 6.6% drop in 2017. In the second growth period, the volume of the fixed assets reached 542 billion AMD in 2020.

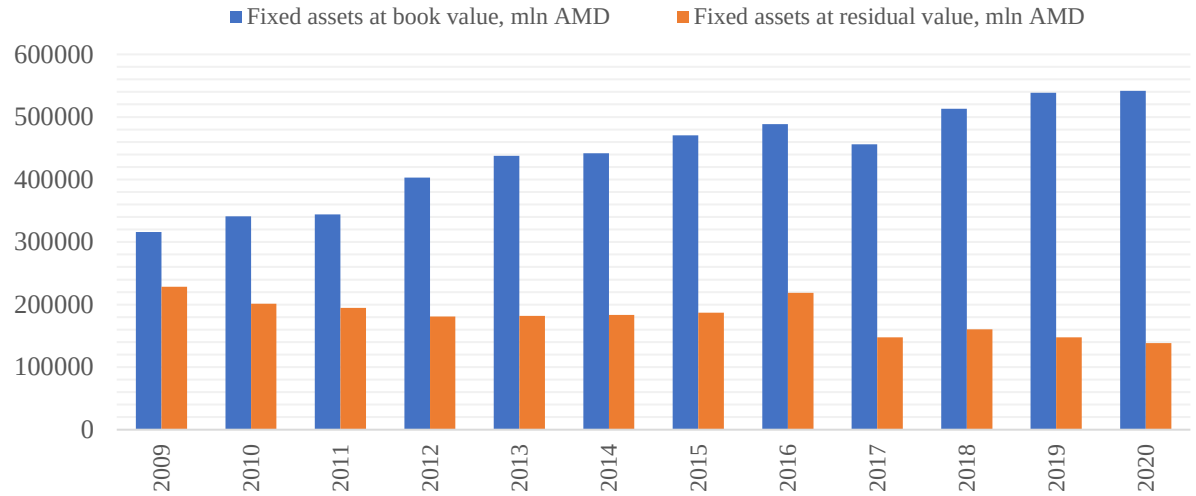

Figure 3.9.4. Fixed assets at the book and residual values in sector J, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The capital intensity also did not show significant fluctuations considering the relative stability of value-added and fixed assets volumes in the information and communication sector (Figure 3.9.5).

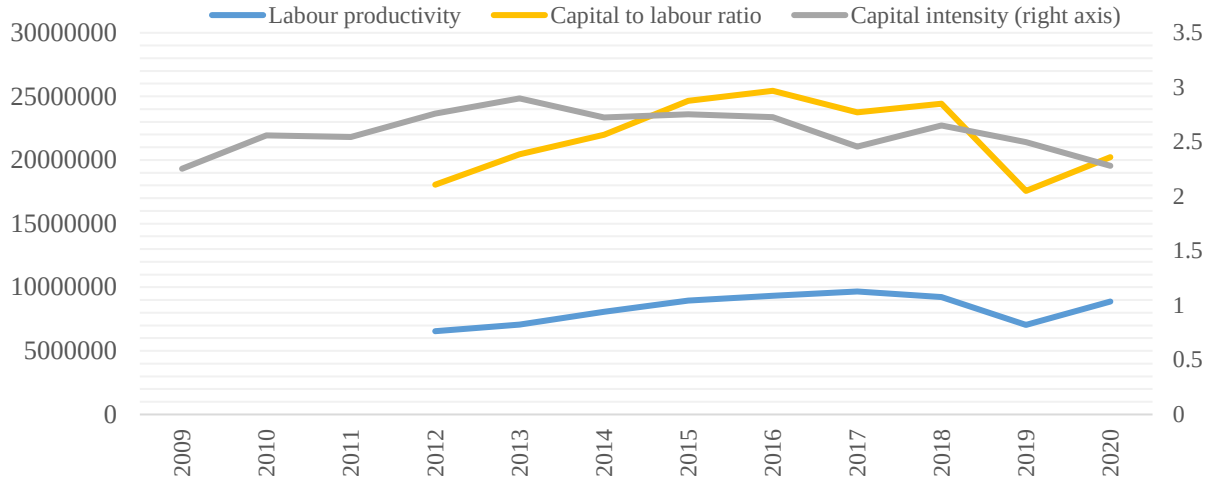

Figure 3.9.5. Capital intensity, capital-to-labour ratio and labour productivity in sector J.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The employment in the sector showed a downward trend from 2012 to 2015, from 22 300 employed to 19 100. Afterwards, there was no significant change for three years, and we can observe a slight increase only in 2018. In 2019, there was a 47% increase in the number of people employed in the sector, reaching 31 000, followed by a decline in 2020. There was an increase in labour productivity from 2015 to 2018, considering the dynamics of value-added and employment in the industry.

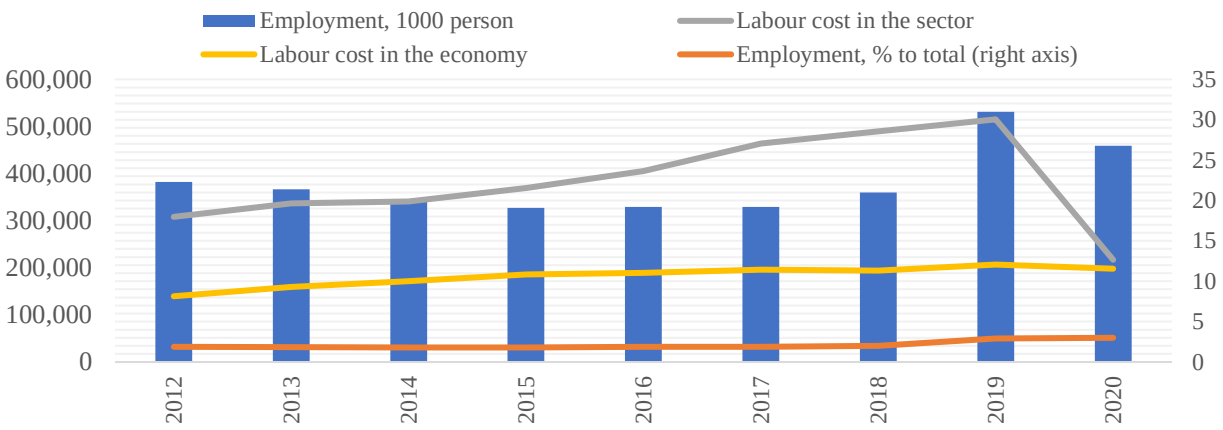

Figure 3.9.6. Employment in sector J.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Observing the sector's price dynamics, we notice a relatively high level of fluctuation (Figure 3.9.7). Moreover, in the dynamics of the value-added deflator, we can observe an inflation trend, and in the dynamics of intermediate consumption, there is inflation until 2015, followed by deflation. As a result, taking into account the low level of productivity in the sector, we observe a level of the output deflator below 100 throughout the period under consideration, except for the years 2011 and 2020, when it was 102.7 and 100.9, respectively. It is necessary to note that the GDP deflator, except for 2012, had a level above 100. Despite the general inflation in the economy, the information and communication sector has been characterized by deflation over the last 12 years. The latter is mainly due to the drop in tariffs for the two largest sub-sectors of the industry – mobile communication and internet provision, which happened in parallel with the increase in service coverage.

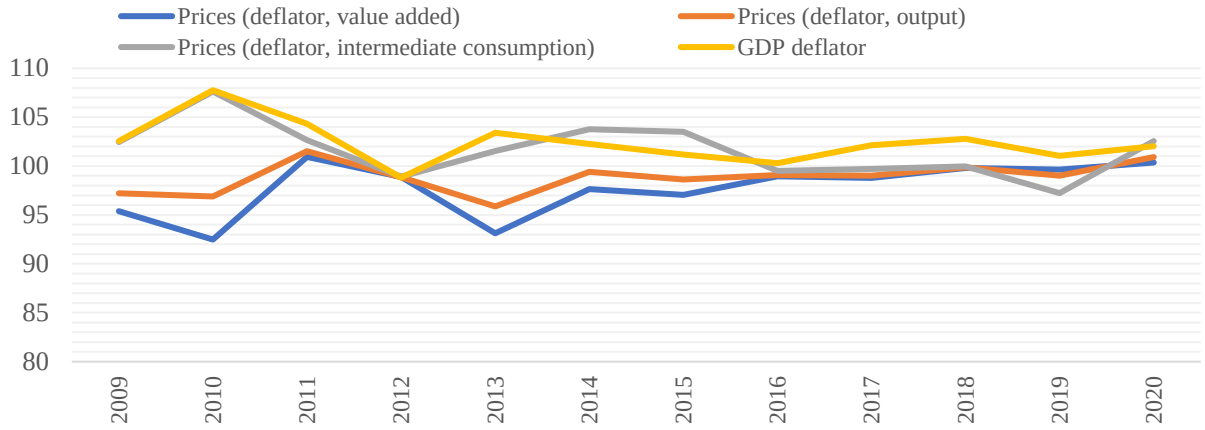

Figure 3.9.7. Changes in prices level according to deflator, sector J, %, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Observing the export of the sector from Armenia to the Eurasian Economic Union (Figure 3.9.8) and other countries (Figure 3.9.9), we can notice that the primary export sub-sector is publishing. At the same time, the export volume is the largest to EAEU countries. Despite the primarily stable volumes in recent years, in 2016, we can notice a sharp increase up to 910 thousand USD. Export volumes to other countries increased significantly in 2020, amounting to 178 thousand USD.

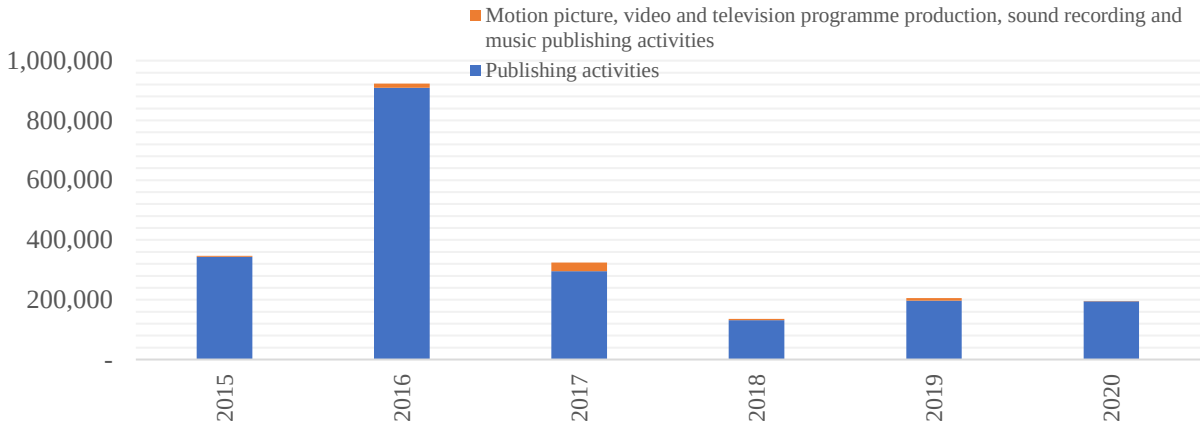

Figure 3.9.8. Export volumes of sector J to EAEU countries, USD.

Source: Database of the Euroasian Economic Commission – www.eurasiancommission.org/

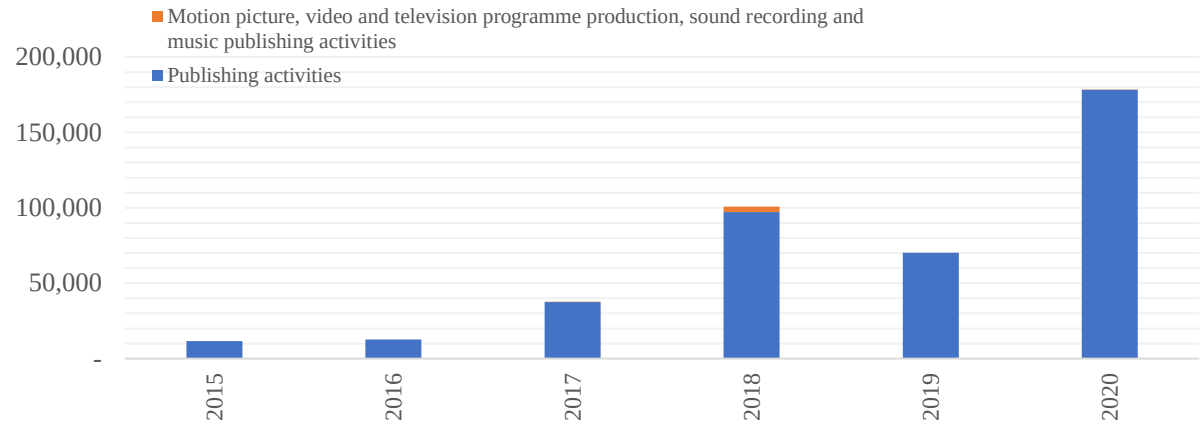

Figure 3.9.9. Export volumes of sector J to other countries, USD.

Source: Database of the Euroasian Economic Commission – www.eurasiancommission.org/

The total volume of loans in the information and communication sector, provided by commercial banks (Figure 3.9.10) and credit organizations (Figure 3.9.11), is relatively small compared to the industry's gross output. During the period under review, the ratio of loans to gross output varied between 4-21%. There was a sharp increase in the credit burden from 7.5% to 18.4% in 2015. Moreover, we can observe a significant increase in foreign currency loans provided by commercial banks to the sub-sectors of telecommunications and publishing in the third quarter of 2015.

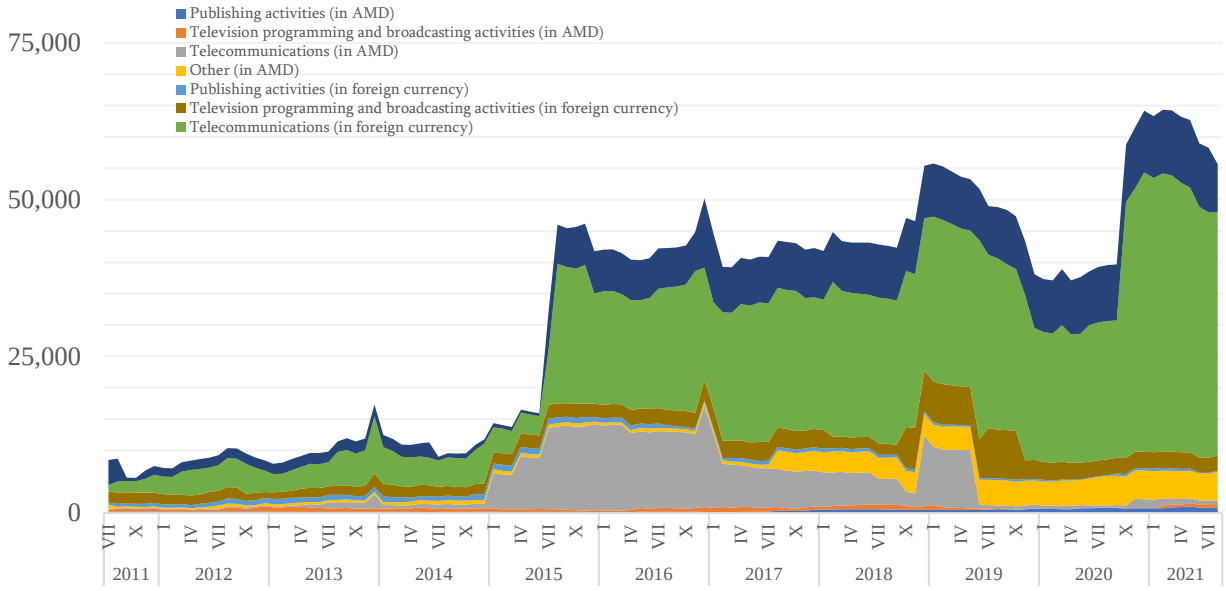

Figure 3.9.10. Loans granted by commercial banks in sector J, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

The loans provided by credit organizations in the period under consideration generally do not exceed 450 thousand AMD, except for the one-time increase to around 5.5 million AMD for 18 months in 2014-2015.

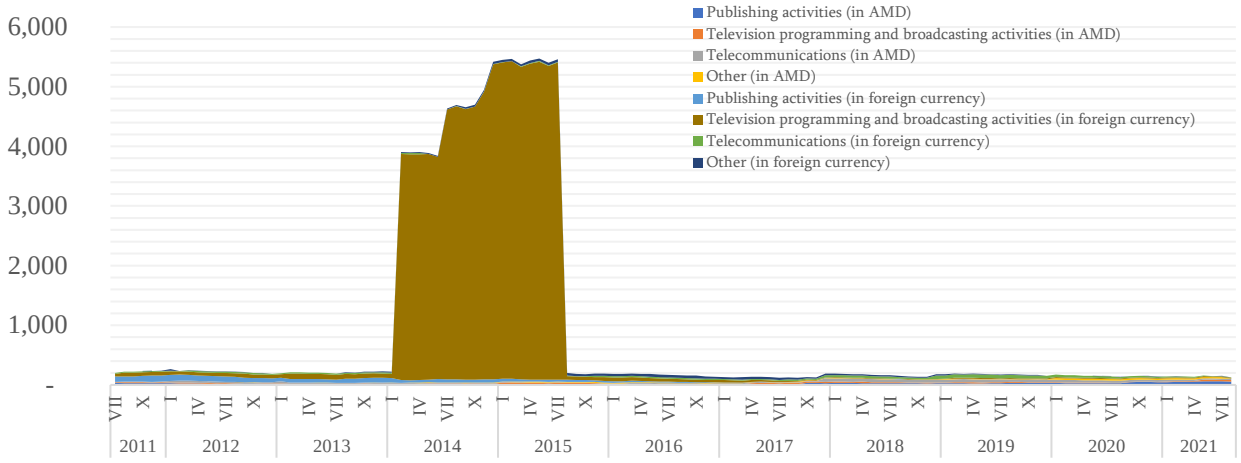

Figure 3.9.11. Loans granted by credit organisations in sector J, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

As shown in Figure 3.9.12, the three primary means of telecommunication have been widely spread in Armenia during the last 11 years. Mobile communication's penetration rate began to exceed 100% of the population starting from 2011, later varying between 110-120%, corresponding to the global and upper-middle-income average[280]. Internet penetration rate began to exceed 100% of the population in 2019, which is higher than the global average and corresponds to the level of the upper-middle-income countries. At the same time, the number of cable TV users increased 14.5 times from 2010 to 2020.

[280] 109.4% as of 2019, 122% for the upper middle income group

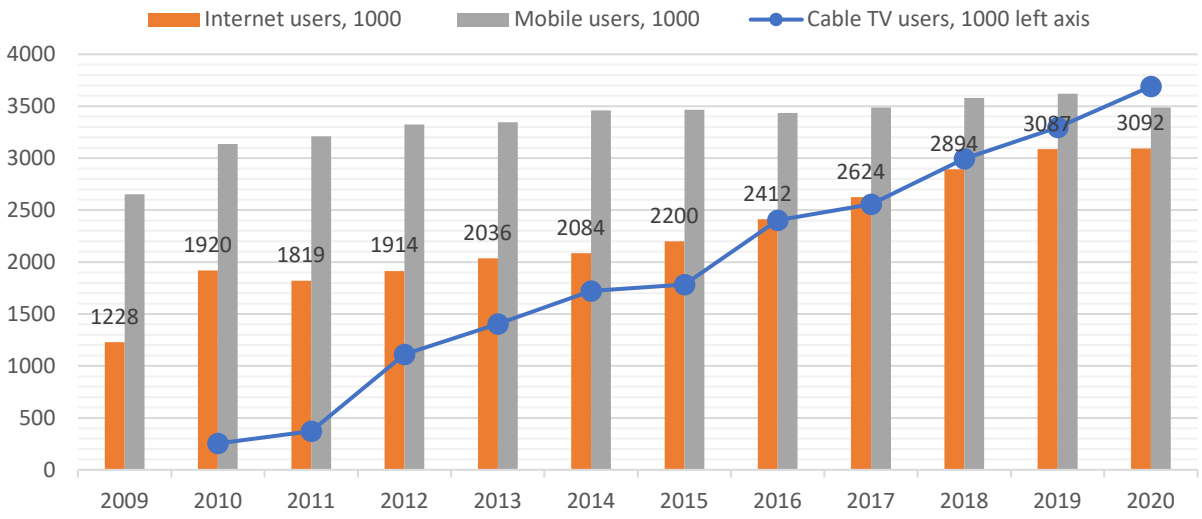

Figure 3.9.12. Mobile, Internet and Cable TV users, 2009-2020.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As evidenced by Figure 3.9.13, telecommunications output at current prices decreased from 163 billion AMD in 2009 to 126.5 billion in 2020. In the case of an average 7.1% annual growth of the sector during that period, the latter indicates a significant decrease in the tariffs of the provided services. It is mainly due to the more than three times drop in mobile communication tariffs. On the other hand, internet tariffs have remained practically unchanged, with insignificant fluctuations in the conditions of a significant increase in speed. Cable TV tariffs were also reduced from 52.3 thousand AMD in 2010 to 36.9 thousand AMD in 2020.

Thus, telecommunications is the only sector of the Armenian economy where there has been an absolute reduction in tariffs.

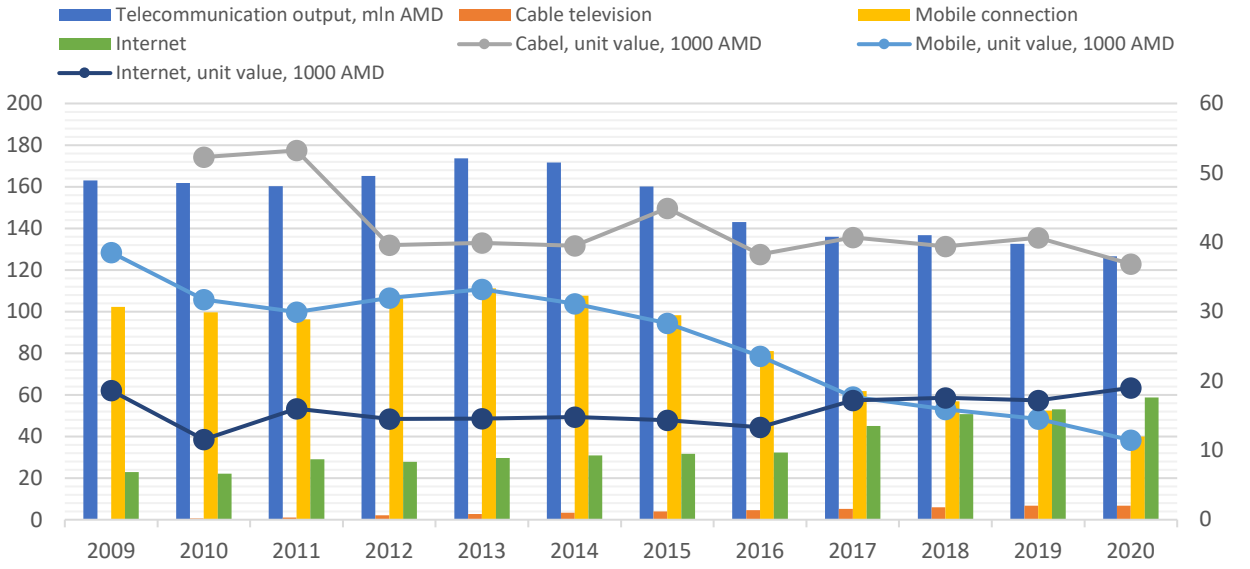

Figure 3.9.13. Output volumes of mobile, internet and cable TV (bln AMD) and unit annual cost, 2009-2020, current prices.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Summing up, we should emphasize that the telecommunications system created in Armenia and its main components generally meet modern requirements regarding coverage and accessibility. The central issue remains to ensure the growth of the Internet speed and maintain the accessibility of the mentioned services. The sector has developed exclusively at the expense of non-governmental investments. In our opinion, there is no need for significant changes in industrial policy in the medium term.

3.10. Financial and insurance activities, Real estate activities.

Financial and insurance activities are the main generators of financing resources in the economy. The more developed the country's financing system, the more sources of economic growth stimulation there are. At the same time, the real estate sector, which is mainly represented by the mortgage market in terms of demand financing, is closely related to the financial intermediation system. In this sense, within the framework of this study, these two areas are considered in one subsection.

The volumes of financial and insurance activities sector output in Armenia have double-digit and stable growth. As we can see in Figure 3.10.1, both the sector's volume and weight in GDP tend to increase even during periods of economic crisis or stagnation. We can observe the period of the most active growth after 2015. As of 2021, the share of financial and insurance activities is 6% of GDP, while in 2000, it was 1.87%. In the last three years, Armenia has surpassed the average indicator of EU countries in terms of the share of financial and insurance activities in the GDP.

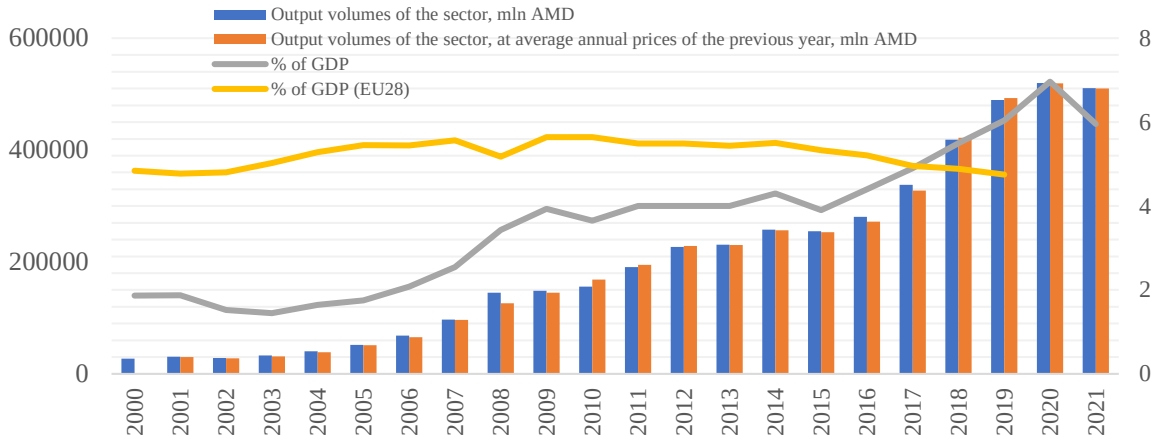

Figure 3.10.1. Output volumes of Financial and insurance sector (K) (in mln AMD), share in GDP, %.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The volumes of the real estate sector demonstrated moderate growth rates until 2012, followed by a sharp jump (Figure 3.10.2). We can explain the sharp increase by introducing two government programs to stimulate the mortgage industry from the demand side. Stable growth dynamics also characterize the share of the real estate sector in GDP in two periods: 2000-2012 and 2012-2021, and a sharp increase in the index in 2012. In the first stage of development, the real estate sector accounted for on average 3% of GDP, while in the second stage, real estate activities already accounted for about 8% of GDP. As of 2021, the sector's weight in GDP is 7.4%, which is 3-4% less than the same indicator of EU countries.

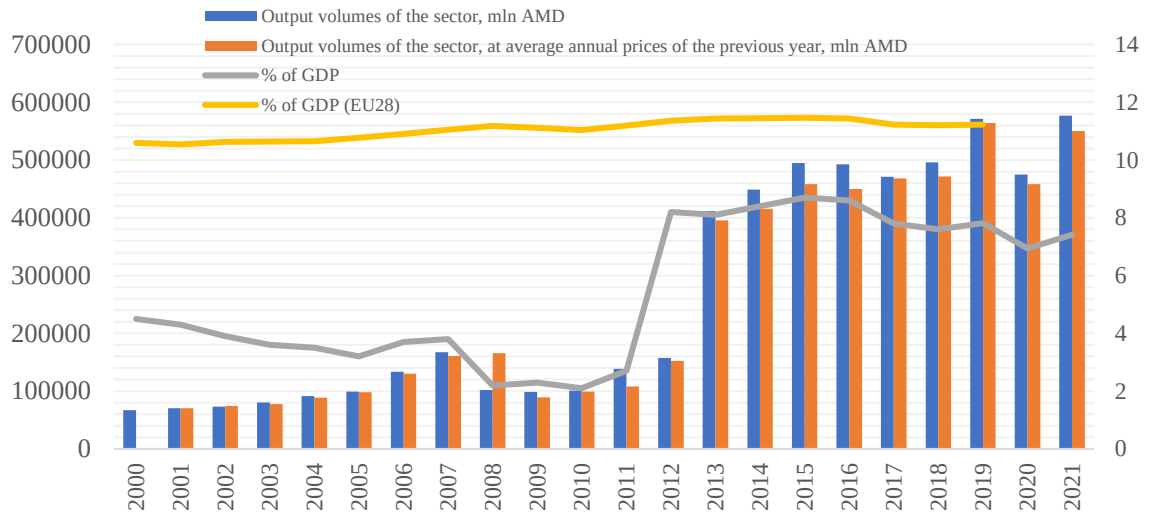

Figure 3.10.2. Output volumes in the real estate sector (L) (in mln AMD), share in GDP, %:

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The value-added of the financial and insurance sector is characterized by stable growth during the period under consideration (Figure 3.10.3). We observe the highest growth rates after 2016. Thus, from 2016 to 2021, the value-added in the financial and insurance sector has almost doubled. As for the value-added in the real estate sector, we can observe a similar dynamic to the output volumes: a sharp increase in 2012, followed by moderate but steady growth in the following years (Figure 3.10.3).

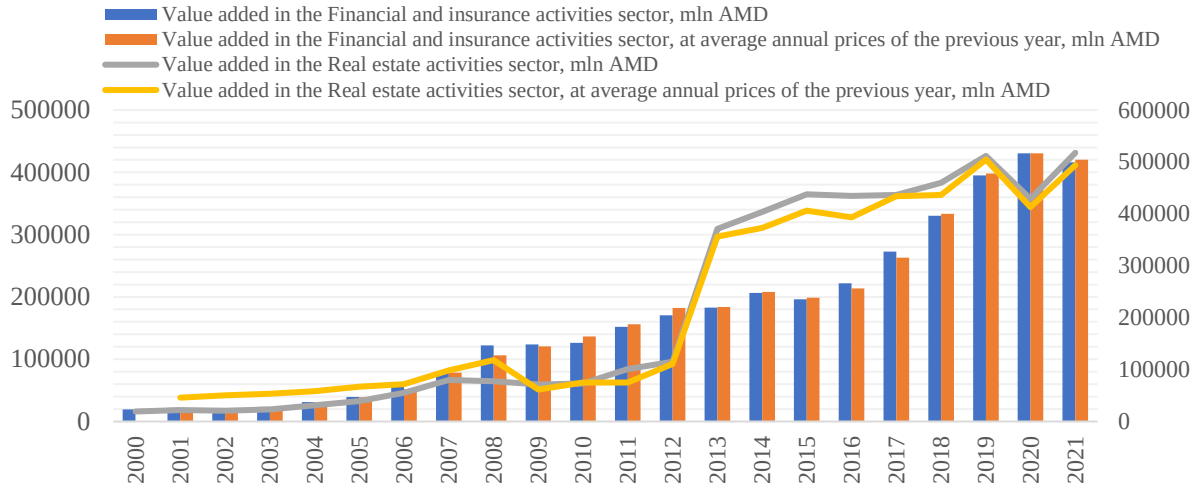

Figure 3.10.3. Value-added in sectors K and L, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Intermediate consumption in the financial and insurance activities sector significantly exceeded the same indicator in the real estate industry during the last few years (Figure 3.10.4). However, looking at the ratio of intermediate consumption in both sectors in 2000-2008, we notice the opposite picture, when the volume of intermediate consumption in the real estate sector exceeded the same indicator in the financial industry.

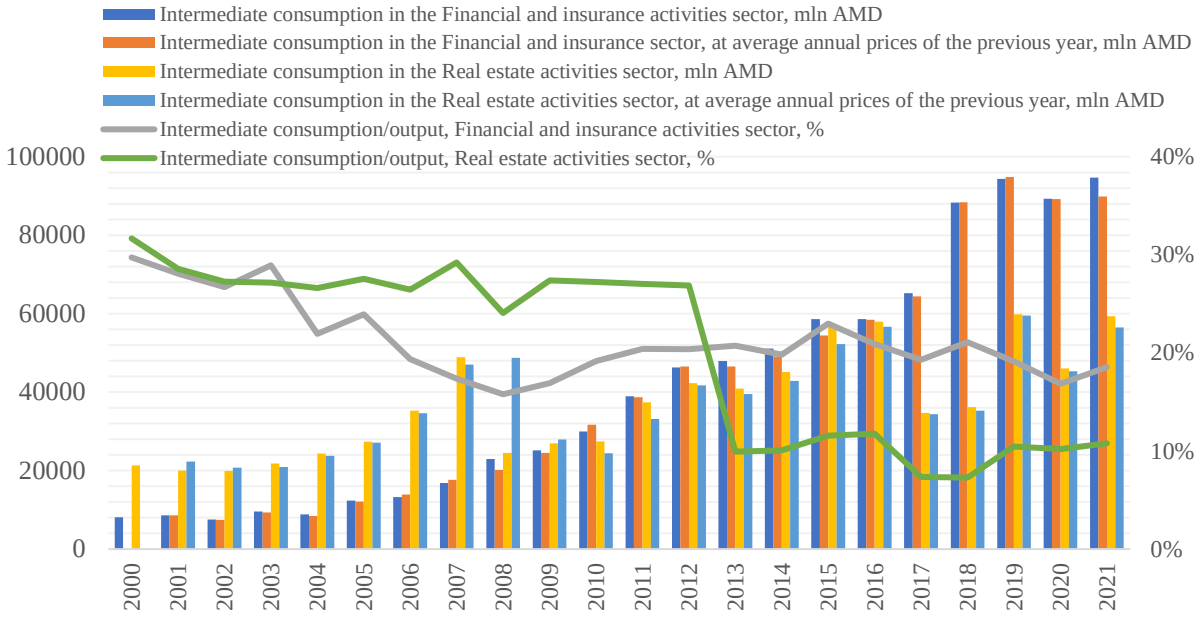

Figure 3.10.4. Intermediate consumption in sectors K and L, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

In both sectors, we can notice a decreasing trend in the material intensity, indicating an increase in the efficiency of both sectors. However, the reduction in material intensity indicator is much faster in the real estate sector than in the financial and insurance sector.

The fixed assets at book prices are almost equal in the real estate, financial, and insurance sectors. In contrast, the fixed assets at residual value are higher in the real estate sector (Figure 3.10.5). Starting from 2018, the volumes of fixed assets at the book and residual values in the real estate sector have registered a more than three-fold increase and significantly exceeded the same indicators in the financial and insurance sector[281].

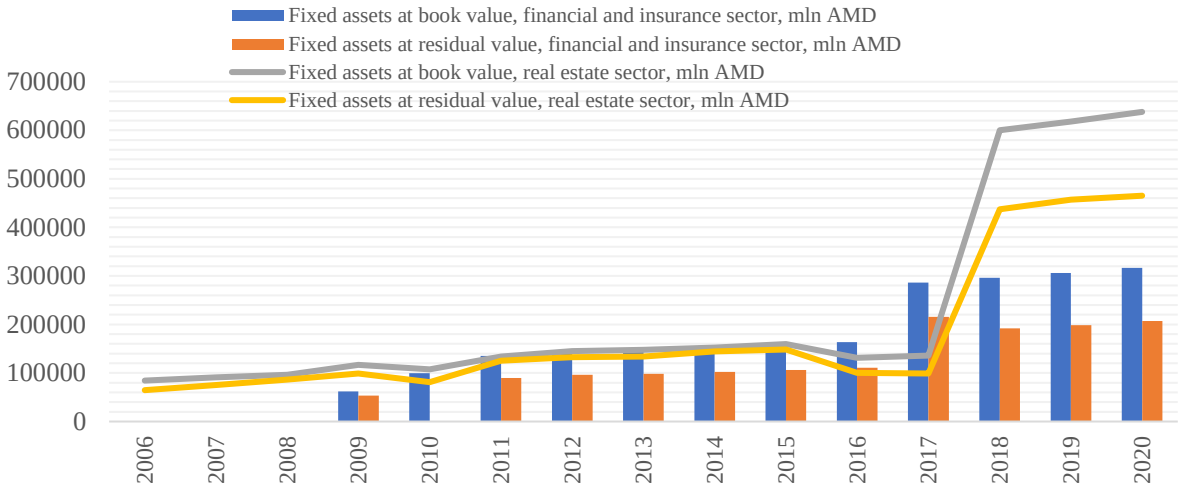

Figure 3.10.5. Fixed assets at the book and residual values in the sectors K and L, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

[281] It is also related to the change in the calculation methodology mentioned above

The capital intensity of the financial sector and the capital-to-labour ratio did not undergo noticeable changes in the period under consideration (Figure 3.10.6). Although we can observe a slight growth, it is difficult to make assumptions about a positive trend. As for labour productivity in the financial sector, this indicator increased six times from 2012 to 2016. However, the latter decreased twice during the next two years, which does not positively characterize the sector either.

The capital-to-labour ratio in the real estate sector was relatively stable until 2017, and we can observe a significant increase in 2018. The capital intensity in the real estate sector is quite unstable during the period under consideration, and labour productivity registers relatively low indicators.

Interestingly, the labour productivity in the financial and insurance sector is 10-15 times higher than the same indicator in the real estate industry.

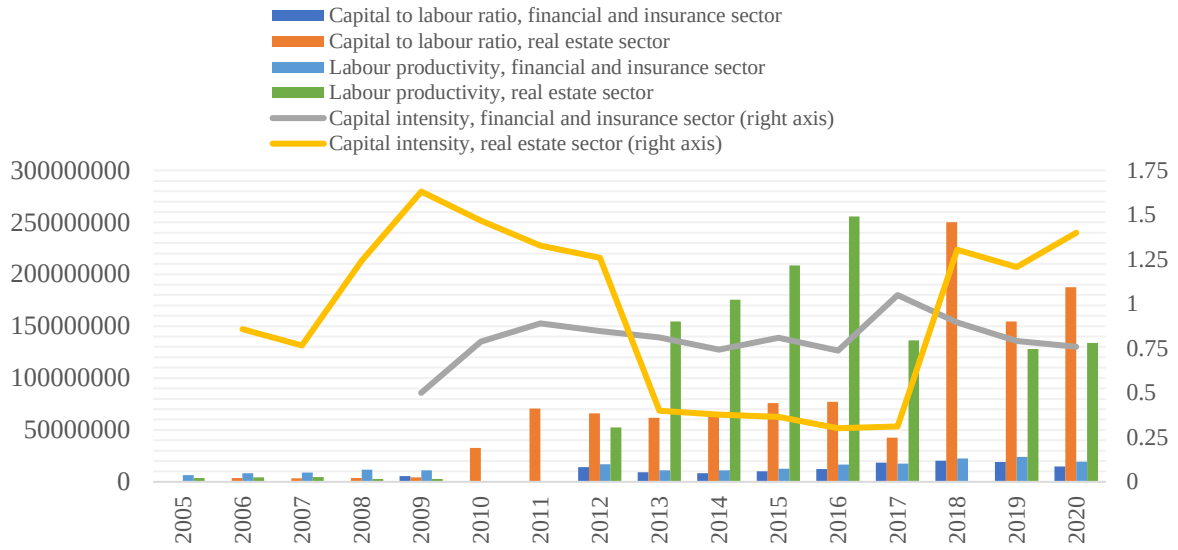

Figure 3.10.6. Capital intensity, capital-to-labour ratio and labour productivity in sectors K and L.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Mean monthly wages in both sectors have not increased significantly over the past 15 years. Thus, the average wage growth in both industries from 2006 to 2020 was only 2.5 times reaching 420 thousand AMD in the financial sector and 135 thousand AMD in the real estate sector in 2020 (Figure 3.10.7). We should also note that the mean monthly wages in the financial and insurance sector are twice as high as the same indicator in the real estate sector.

Comparing the mean monthly wages of the two sectors with the average monthly indicator of the economy, we can note that if the wages in the financial industry are more than twice the mean monthly wages in the economy, then the indicator of the real estate sector is lower than the latter by 20-25%. Labour costs in both sectors show the same trend.

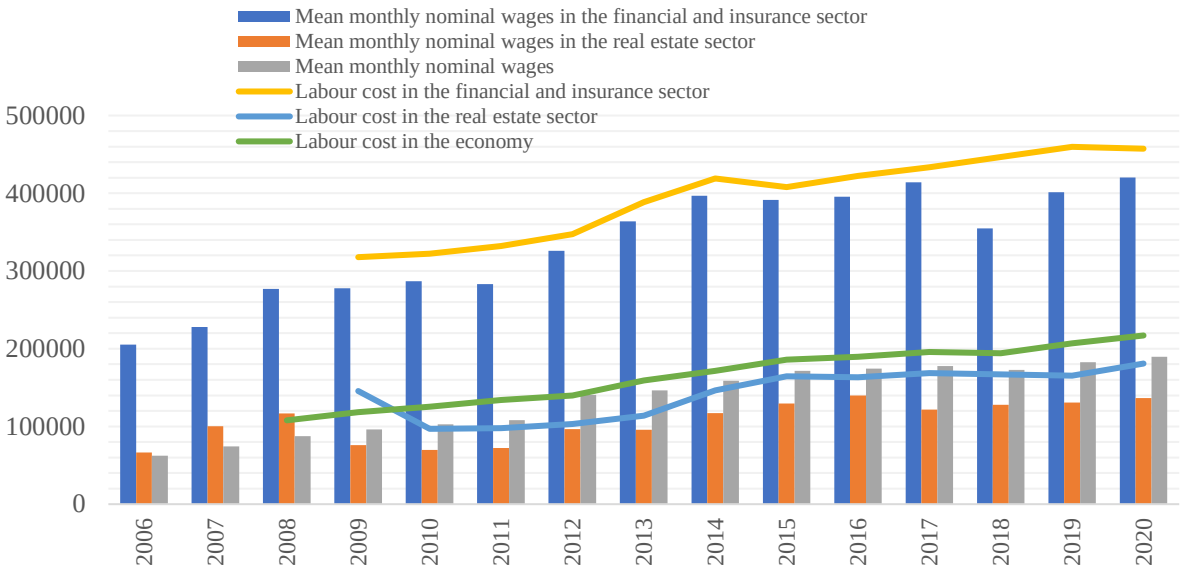

Figure 3.10.7. Wages and labour cost in sectors K and L, AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Until 2014, employment in the financial sector has a growing trend. We can observe a decrease in the number of people employed in this sector In the following years. As of 2020, 21.4 thousand people are employed in the financial and insurance sector. Along with a certain reduction in the number of people employed in the sector, the share of the sector in the total employment in the economy has more than doubled over the last 15 years, reaching 2% in 2020.

As for the level of employment in the real estate sector, we should note that there was an increase in this indicator before 2009. However, in 2010, there was a sharp decline in the number of people employed in the sector, from 26.6 thousand in 2009 to 3 thousand in 2010, which we associate with the change in the methodology. As of 2018, the number of people employed in the real estate sector was 2.4 thousand people or 0.2% of the total employment.

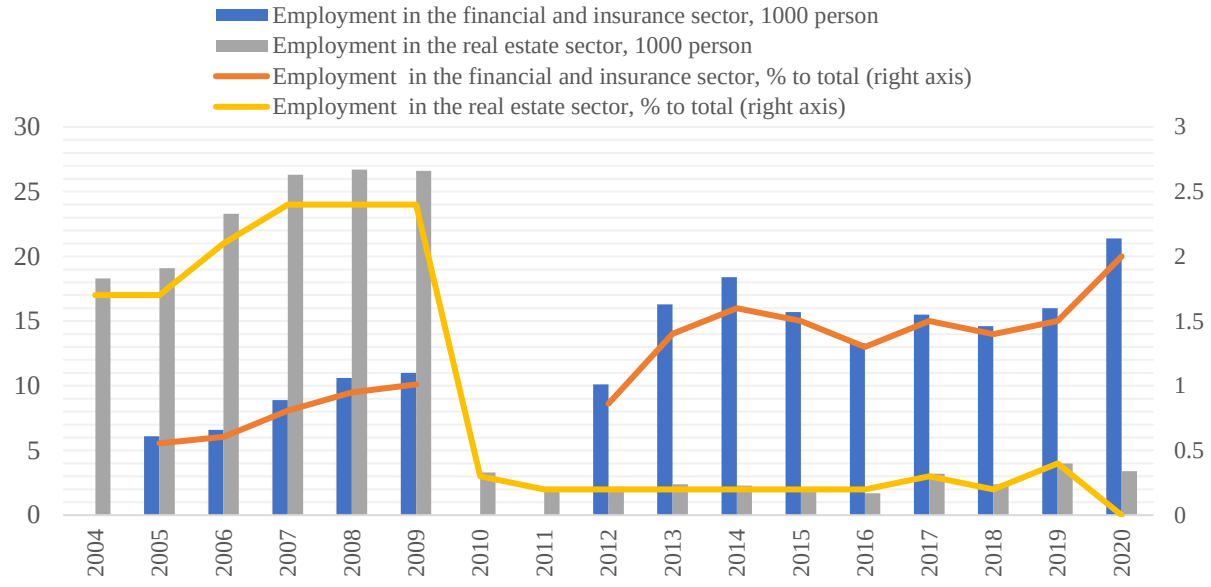

Figure 3.10.8. Employment in sectors K and L.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The price dynamics in the financial and insurance sector are relatively stable, except for a sharp jump in 2008, which was most likely caused by the global financial crisis (Figure 3.10.9).

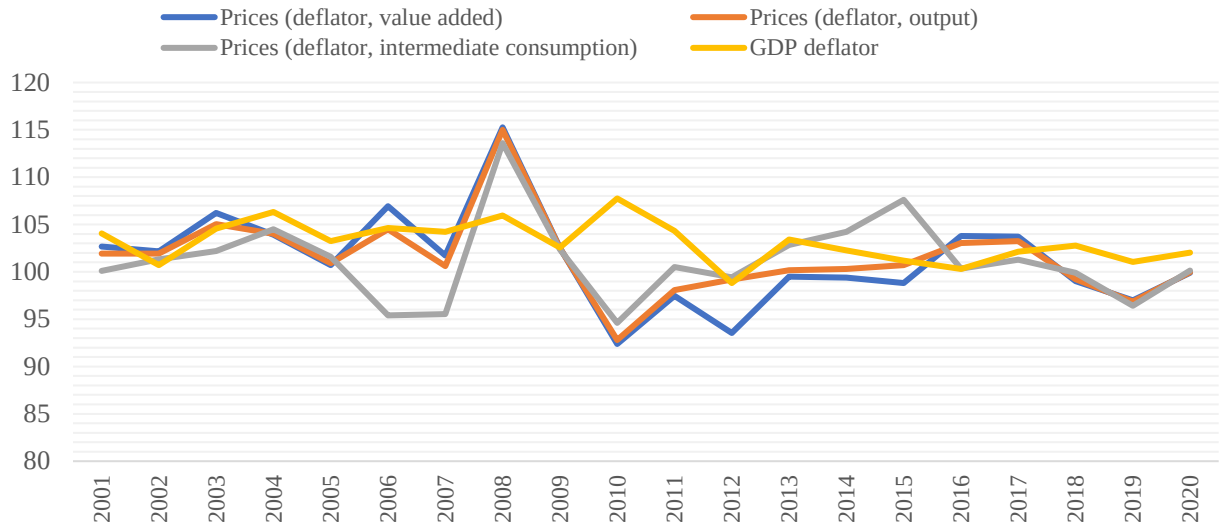

Figure 3.10.9. Changes in prices level according to deflator, sector K, %, annual.
Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Note that a sharp drop in prices was recorded in the real estate sector during the same period. On the other hand, we can observe stability in price dynamics over the last six years, which practically coincides with the dynamics of the GDP deflator (Figure 3.10.10).

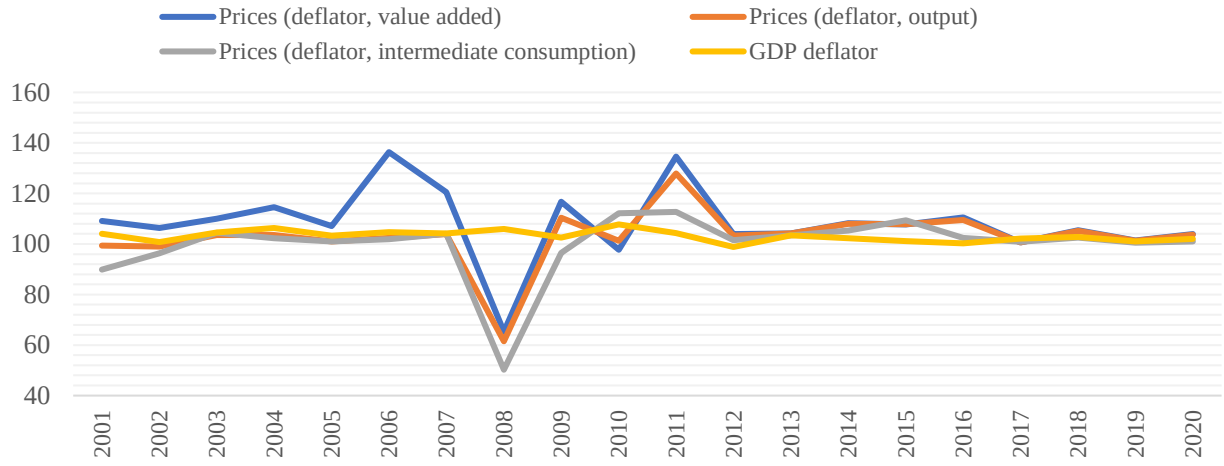

Figure 3.10.10. Changes in prices level according to deflator, sector L, %, annual.
Source: Database of the National Statistical Committee of Armenia – www.armstat.am

In the case of the loans in the financial and insurance sectors, we can observe steady growth in the last five years. In the currency structure of loans in the financial industry, the weights of national and foreign currency loans are almost equal. As of 2020, commercial banks and investment companies can be considered leaders in attracting loans.

In general, we should also highlight the high volatility of the dynamics of loans given by commercial banks in the financial sector, both in terms of the general dynamics and the

distribution of loans among individual sub-sectors. It is due to the high elasticity of specific segments to the supply and demand of financial assets in the market, both at the national and global levels.

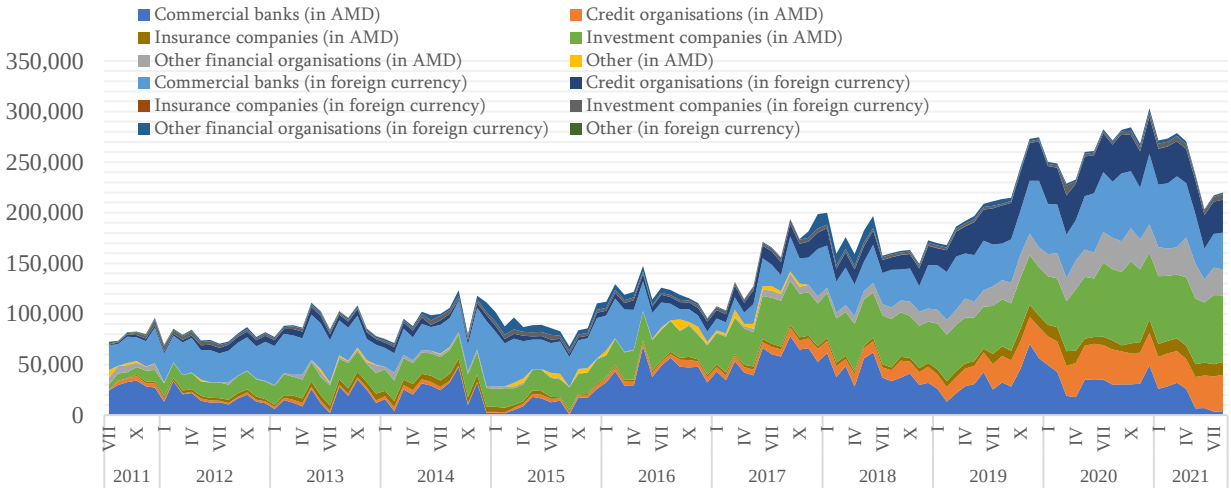

Figure 3.10.11. Loans granted by commercial banks in sector K, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

Loans provided by credit organizations to the financial and insurance sector also have significant growth rates (Figure 3.10.12). However, the structure of loans differs from the banking system. In particular, commercial banks dominate in attracting loans in national currency from credit organizations. Most foreign currency loans are provided to various sectors outside the core segments of the financial system.

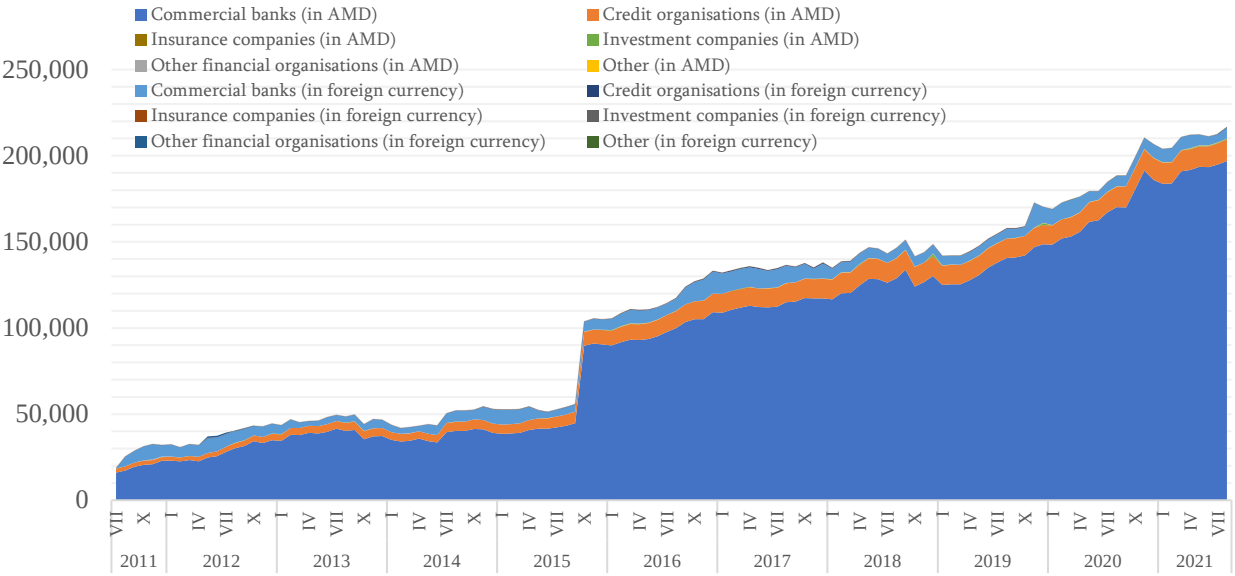

Figure 3.10.12. Loans granted by credit organisations in sector K, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

The dynamics of loans provided by the banking system to the real estate sector show a steady growth trend (Figure 3.10.13). Most of the loans given to the real estate sector are in foreign currency.

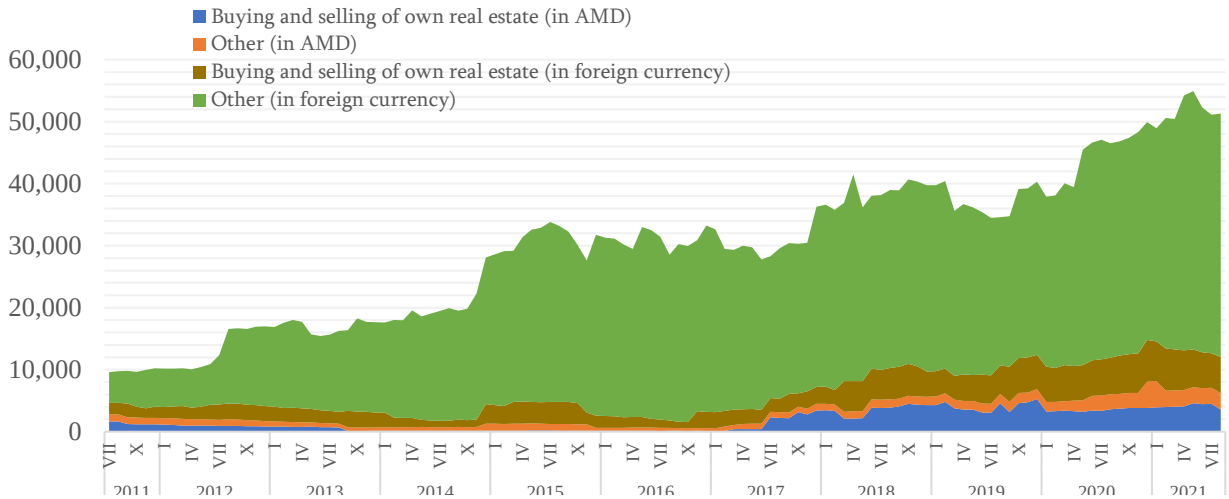

Figure 3.10.13. Loans granted by commercial banks in sector L, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

As for loans provided by credit organizations, the dynamics are quite ambiguous. Thus, until 2013, we notice an increase in lending in foreign currency, which prevails in the structure of loans given to the real estate sector from credit organizations. Since the beginning of 2014, the loans from credit organizations to the real estate sector have sharply reduced and, during the next two years, have remained close to zero. Only after 2016 did we observe a certain activity in the foreign currency loans to the "Other" sub-sector of the real estate industry. However, to date, the lending volume has reached only a quarter of the level of 2011-2013.

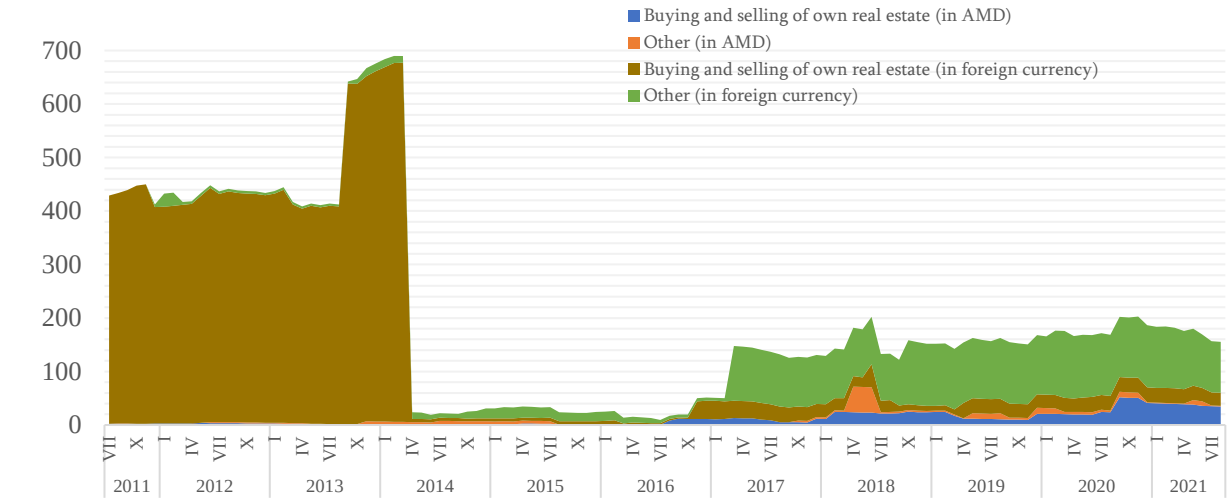

Figure 3.10.14. Loans granted by credit organisations in sector L, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

The financial intermediation system, where the share of banks is about 95%, in the absence of the stock market, is essentially the only source of internal financing for the real sector of the economy. Figure 3.10.15 shows that until 2004, the only credit function of the banking sector was supply financing [282]. Since 2004, demand financing began to develop in the form of

[282] Financing of production, trade and services

consumer and mortgage loans, which increased progressively until 2020.

In our opinion, the 0.8% decline in 2021 was due to the mitigation of increased risks in the conditions of rapid growth of demand financing loans and will contribute to the stability of the system. The principal reductions in lending were due to a sharp decrease in the volume of consumer loans, from 14.5% of GDP in 2020 to 6.5% in 2021. At the same time, the volume of mortgage loans continues to grow in absolute terms and to GDP, accounting for 511% of the total volume of housing construction in 2021 compared to 225% in 2018[283]. Although the risks associated with consumer loans decreased in 2021, the chances of a bubble and subsequent crisis in the mortgage lending and real estate market have increased.

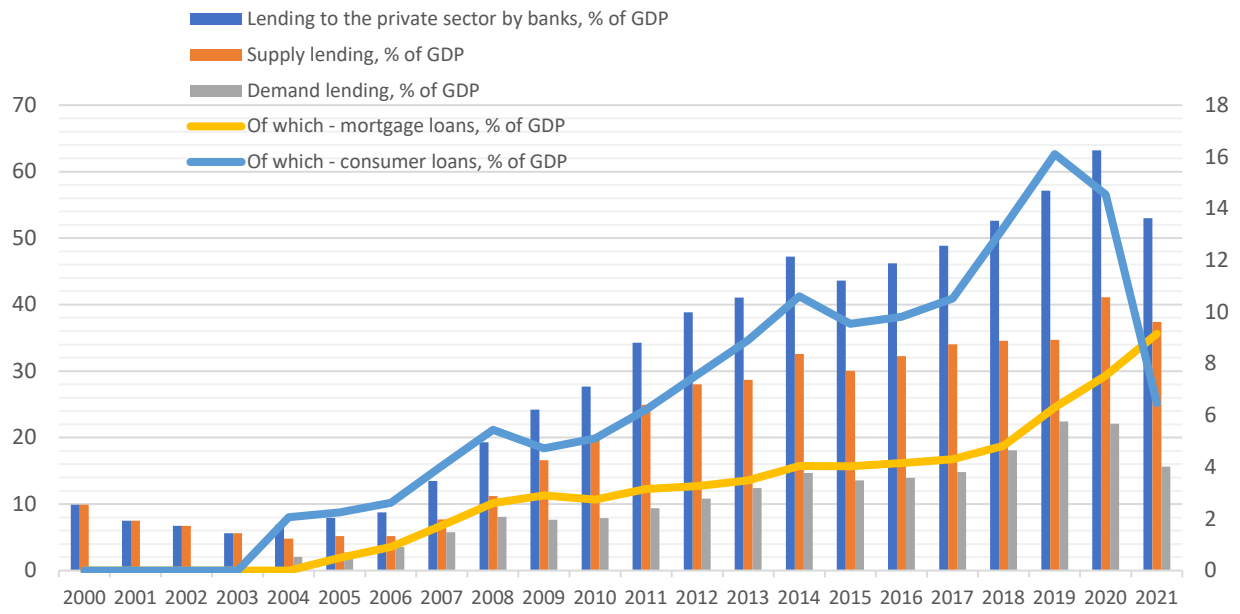

Figure 3.10.15. Structure of loans granted by commercial banks, 2000-2021, % of GDP.
Source: Database of the Central Bank of Armenia – www.cba.am

Despite the size of the banking system in the financial intermediation, at the current stage of economic development, it is sufficient for the issues of financing the economy. At the same time, in terms of demand, they are risky. There is still the issue of "expensive" credit[284], which is especially relevant for mortgage and consumer loans. Thus, the average interest rate of mortgages in national currency was 10.4%, foreign currency mortgages - 9.5% in 2020, compared to 10.7% and 9.5% in 2021, which forces the state to implement interest rate co-financing programs for these loans from the state budget[285].

The financial intermediation system is represented by a small and slowly developing insurance sector, whose assets in 2021 were less than 1% of GDP. For comparison, as of 2019, according to the data of 90 countries, the global average was 25.4% (the highest was Taiwan at

[283] The statistical committee does not publish the total monetary volumes of the real estate market, which does not give an opportunity to compare the volumes of mortgage loans with the market volumes. Indirect data on the number of registered transactions indicate that the volume of mortgage lending is growing faster than the number of real estate transactions. Thus, in 2021 compared to 2020, the growth of mortgage loans amounted to 173.4 billion AMD or 36%, and the number of transactions increased by 21%. Considering that real estate prices did not increase (as in Yerevan), it can be assumed that the share of mortgages in the real estate market in 2021 compared to 2020 increased by about 15%.

[284] As of December 2021, the average interest rate of loans for legal entities up to 1 year was 11.2%, the spread was 3.1%, the foreign currency loan was 7.5%, the spread was 5.3%. In 2020, those figures were respectively 10.3%, the spread - 3.5%, the dollar - 7.8%, the spread - 6.6%.

[285] From income tax

157.7%, and the lowest was Uganda at 1.3%). As Figure 3.10.16 shows, about half of the insurance sector, with certain variations, is the compulsory motor third-party liability insurance, introduced in 2011, the life insurance sector is absent, and agricultural insurance is also not represented. Medical insurance is very small, and no mandatory medical insurance system exists.

Ensuring the accelerated development of the insurance system is essential, in particular, the step-by-step introduction of certain mandatory elements of agricultural and medical insurance with state participation, for example, for the public service, budget-financed sectors where the state sets the salary levels, and for the formal corporate sectors of the economy.

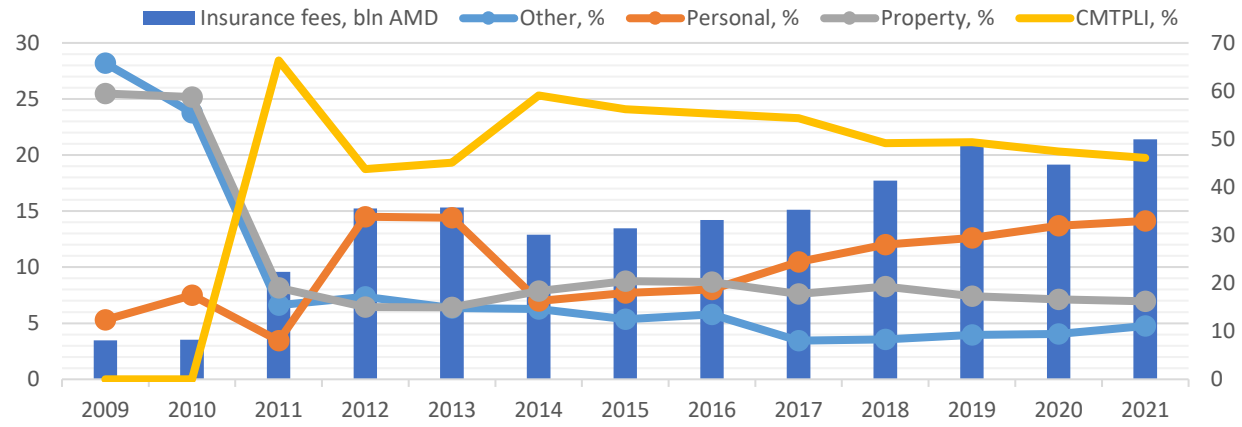

Figure 3.10.16. Main indicators and structure of insurance sector, 2009-2021.
Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As evidenced by Table 3.10.1, due to the implementation of the compulsory cumulative pension system with state co-financing[286] during the last eight years, a rapidly growing institutional portfolio investor was formed in Armenia, which is still lower than the world average in terms of GDP[287].

Table 3.10.1. Key performance indicators of cumulative pension funds 2014-2021

	2021	2020	2019	2018	2017	2016	2015	2014
Value of net assets, billion AMD	*482,5*	*369,4*	*251,2*	*157,2*	*105,7*	*63,3*	*31,8*	*12,1*
Value of net assets, % to GDP	*7,4*	*6,0*	*3,8*	*2,6*	*1,9*	*1,3*	*0,6*	*0,3*
Cash and deposits	*141,6*	*103,2*	*83,3*	*5,6*				
RA government bonds	*158,7*	*107,2*	*66,2*	*47,0*				
Other bonds	*37,0*	*37,5*	*23,4*	*15,6*				
Equity securities	*142,9*	*117,5*	*75,4*	*39,5*				
Other assets	*2,9*	*4,4*	*3,2*	*2,2*				
Liabilities	*0,6*	*0,4*	*0,2*	*1,8*				

[286] According to the approved 2021 budget, the volumes of state co-financing amounted to about 70 billion AMD

[287] According to https://www.theglobaleconomy.com/rankings/pension_funds_assets/ As of 2019, according to the data of 83 countries, the average ratio of pension funds' net assets to GDP ratio was 29.7%, the highest in the Netherlands at 192%, the lowest in Ukraine at 0.08%.

As for the sectoral policy implemented, the banking sector regulation, based on the central bank's primary goal, is subject to inflation targeting, which mainly determines the policy of "expensive" loans and floating exchange rates. On the other hand, in the case of catch-up growth, "cheap" loans for acquiring technologies and specialized financial structures that provide them are necessary, as well as an exchange rate, encouraging local production and export. In our opinion, specialised facilities should be created along with the universal banking system, which will take the main burden of development financing, leaving the financing of existing and established structures to the universal banking system.

As for pension funds as institutional investors, their role will grow over time. While maintaining a low-risk and conservative investment strategy, it is necessary to diversify the investment portfolio by reducing the share of government securities and increasing the share of reliable equity securities.

3.11. Education, professional, scientific and technical activities

Science and education are engines of progress and economic growth and development. Both the development of human potential and the potential and opportunities for economic growth in terms of the assimilation and use of technologies, depend on the development level of the education and science system in the country.

Since the field of education and science, as a rule, has a positive effect on the economy, we have combined them within the framework of the current study. Figure 3.11.1 presents the volumes of the education sector.

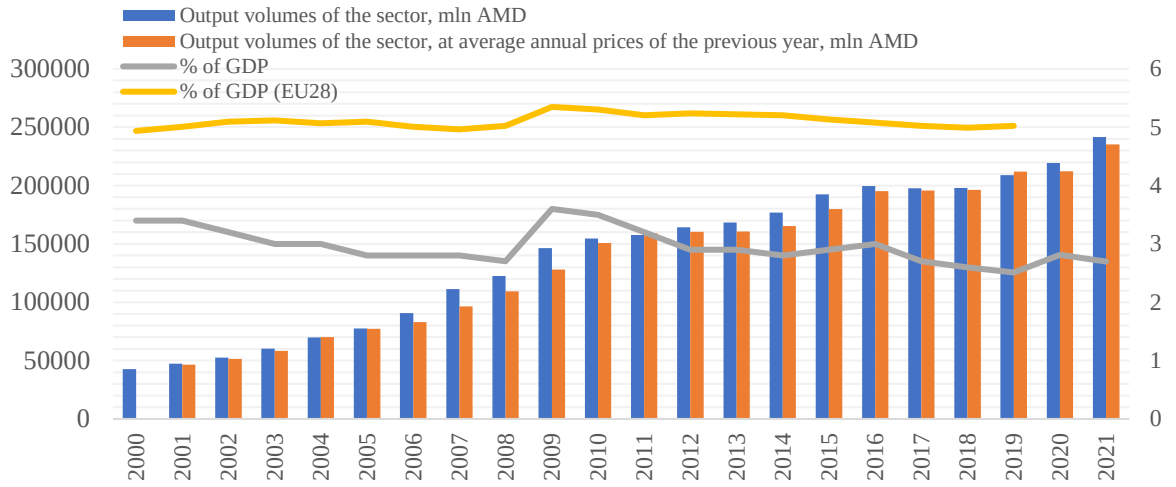

Figure 3.11.1. Output volumes of the education sector (P) (in mln AMD), share in GDP, %:
Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Figure 3.11.1 shows that over the period under consideration, the sector grew more slowly than the economy as a whole, as evidenced by the decline in the share of the industry from 3.4% of GDP in 2000 to 2.8% in 2020, while the same figure for EU countries is 5% and has not changed much during the mentioned period. To some extent, this is related to reducing the relevant age group due to population ageing and migration. However, similar, more intense ageing processes also took place in the EU countries, where this specific weight did not decrease.

As for the volume of professional, scientific and technical activities, the situation does not look perfect. Over the past 12 years, the sector has only doubled, accounting for about one percent of GDP in 2021 (Figure 3.11.2). At the same time, during the entire period under consideration, the professional, scientific and technical activities sector not only does not show positive dynamics but also steadily maintains shallow indicators.

For comparison, the share of the scientific activities sector in the EU countries has been about 7% over the last ten years.

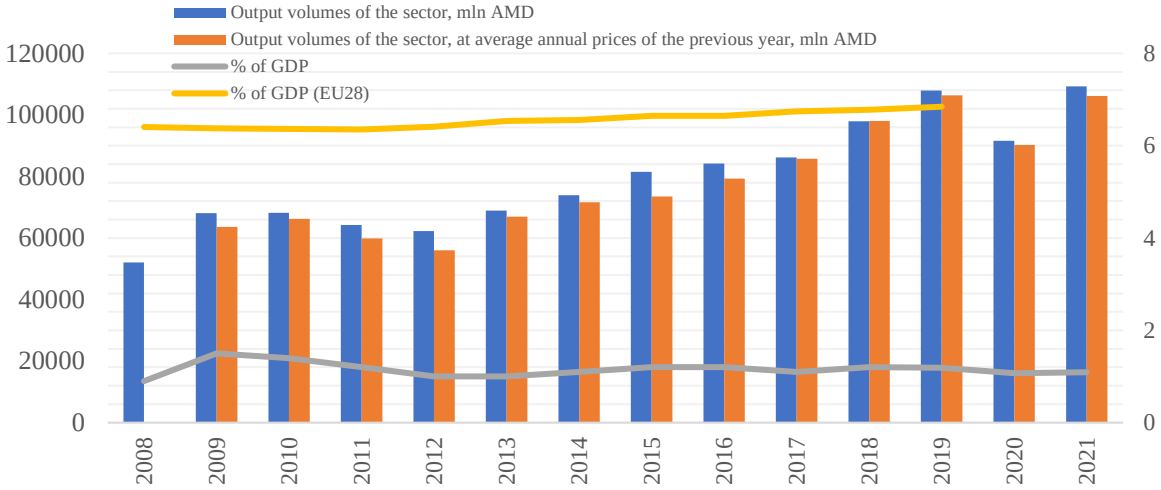

Figure 3.11.2. Output volumes of the professional, scientific and technical activities sector (M) (in mln AMD), share in GDP, %:

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As for the value-added, we should note a growing trend in the education and science sector. However, as we can see in Figure 3.11.3, the value-added of the education sector not only exceeds the absolute indicators of the science sector but also significantly exceeds the growth rates. Thus, the field of education in Armenia is developing at a much faster rate than science. Moreover, professional, scientific and technical activities have grown by only 20% over the last 12 years, while the value-added in the educational sector has increased 5-6 times.

We can assume that the interconnection of sectors is not very effective. In general, scientific activity in the country is not a priority and is not promoted in any way in terms of development.

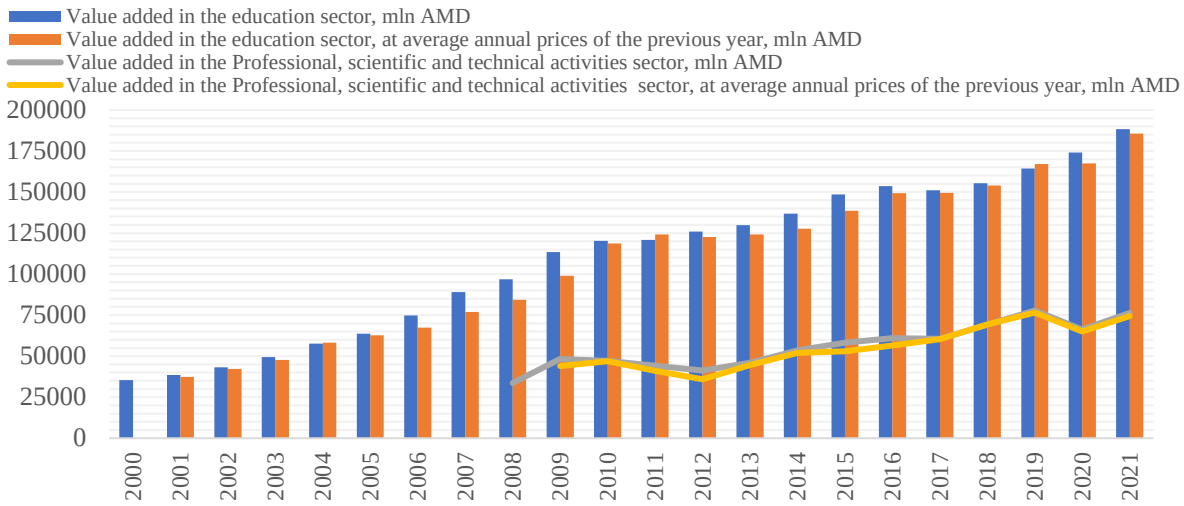

Figure 3.11.3. Value-added in sectors M and P, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

We can observe a significant growth rate in the volumes of intermediate consumption in the education sector until 2016 (Figure 3.11.4). However, along with the increase in intermediate consumption, there is also an increase in material intensity, indicating a decrease in the sector's efficiency. The most significant increase in the dynamics of material intensity occurred from 2005 to 2010.

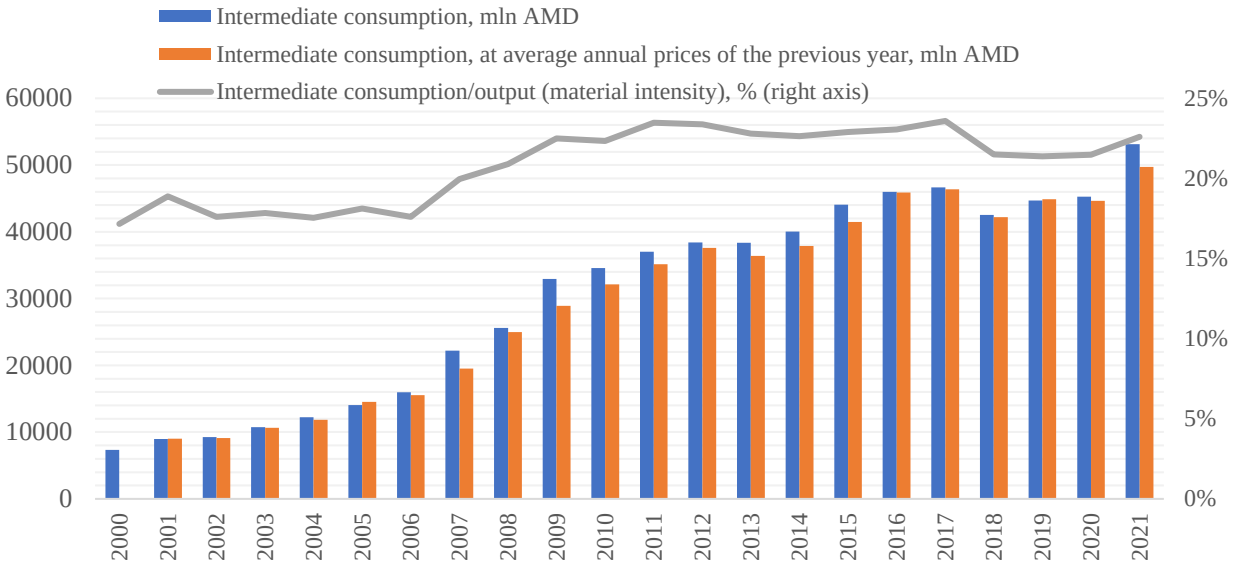

Figure 3.11.4. Intermediate consumption in education P, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Intermediate consumption in the professional, scientific and technical activities sector has grown slowly over the last 12 years (Figure 3.11.5). The dynamics of the consumption of materials are stable, but the indicator generally shows a downward trend, which indicates a positive efficiency trend in the sector.

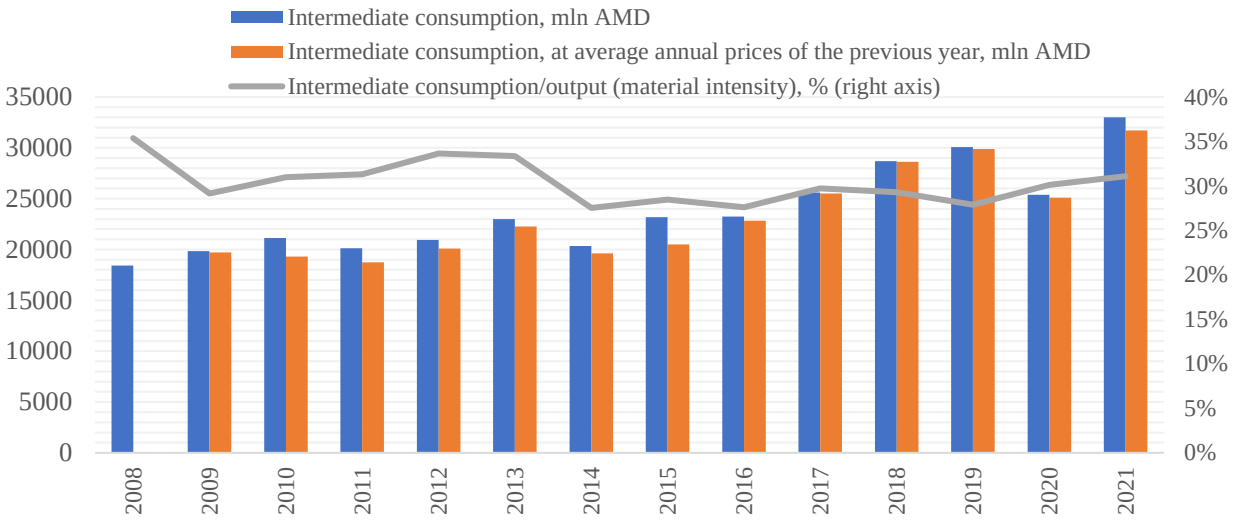

Figure 3.11.5. Intermediate consumption in sector M, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The volumes of fixed assets in the education and science sectors increased steadily until 2016. However, after this period, we can observe a sharp and very significant increase in the volume of capital investments in education and science. The most considerable growth can occurred in the education sector due to the noticeable rise in lending from the banking sector to the industry.

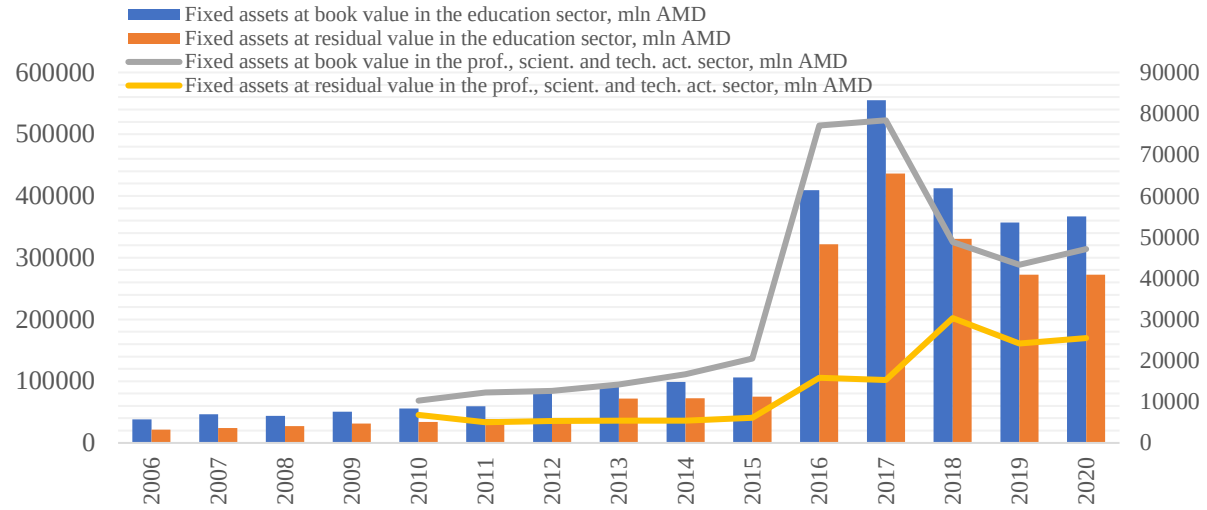

Figure 3.11.6. Fixed assets at the book and residual values in the sectors M and P, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Stable dynamics characterize the indicators of capital-to-labour ratio in the education and science sectors until 2005, with a sharp increase in 2016 (Figure 3.11.7). The same dynamic is characteristic of the indicator of capital intensity in both industries. Thus, capital intensity in the education sector increased 5-6 times, from 72% in 2015 to 367% in 2017, after which it began to decrease. In the science sector, there is also an increase in capital intensity, but at a much lower rate.

Labour productivity in the education sector has slightly increased over the past 15 years, while labour productivity growth in the professional, scientific and technical sector average growth rate accounted for about 20%.

At the same time, we should note that the labour productivity in the professional, scientific and technical activities sector exceeds this indicator in the field of education by about three times.

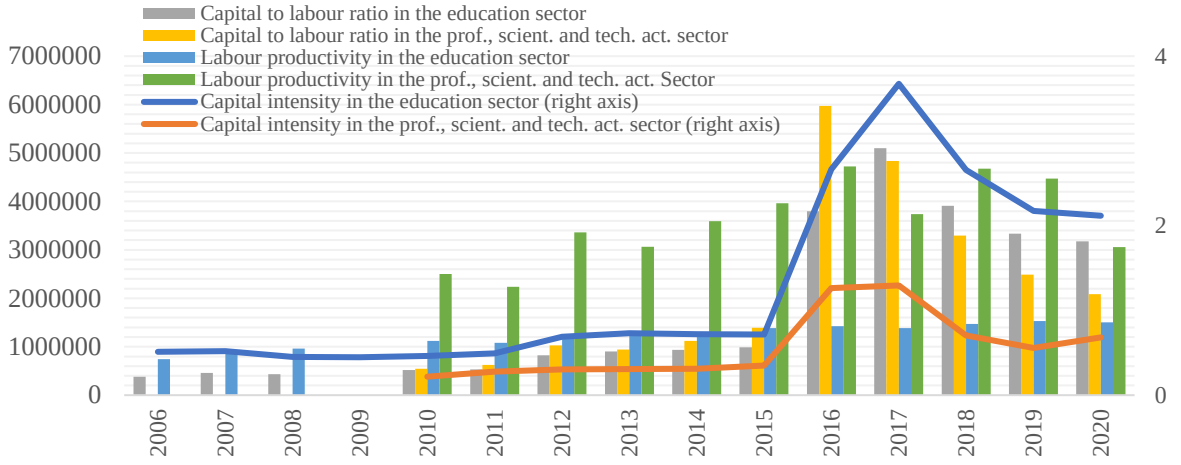

Figure 3.11.7. Capital intensity, capital-to-labour ratio and labour productivity in sectors M and P.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The mean monthly wages in the education sector are significantly lower than the average in the professional, scientific and technical activities sector. The mean wages in the education sector are 121 thousand AMD. In contrast, in the professional, scientific and technical activities sector, this indicator is 186 thousand AMD in 2020, almost equal to the average wages of the economy.

We observe the same trend in the labour cost in both sectors. Thus, the labour cost in the education sector is noticeably lower than the average in the economy.

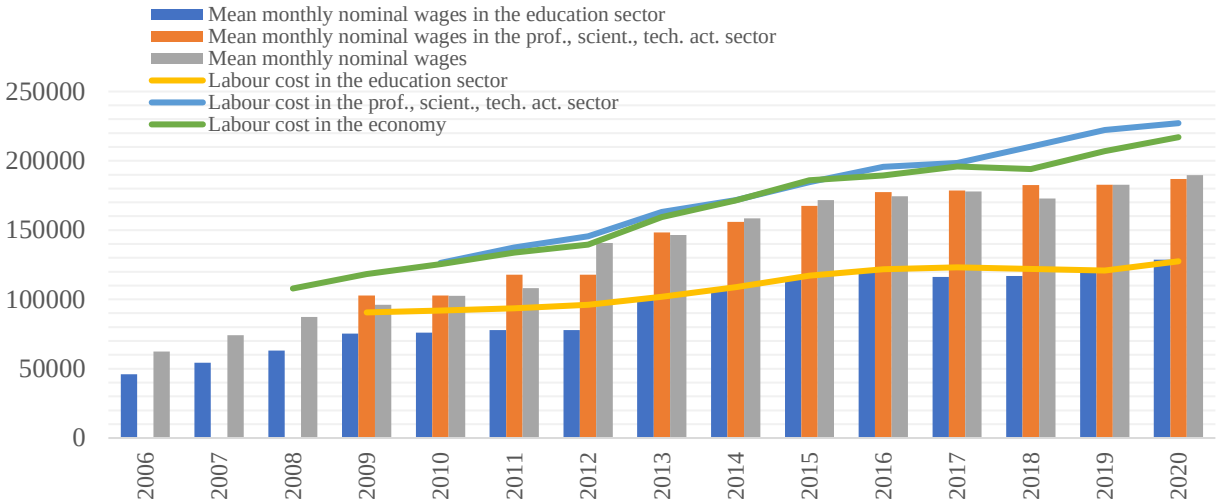

Figure 3.11.8. Wages and labour cost in sectors M and P, AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

In terms of price dynamics, we can observe a high level of volatility in the education, professional, scientific and technical sectors. We should highlight that price dynamics in both industries are generally higher than the GDP deflator. The most significant price jump in the education sector happened in 2007-2009.

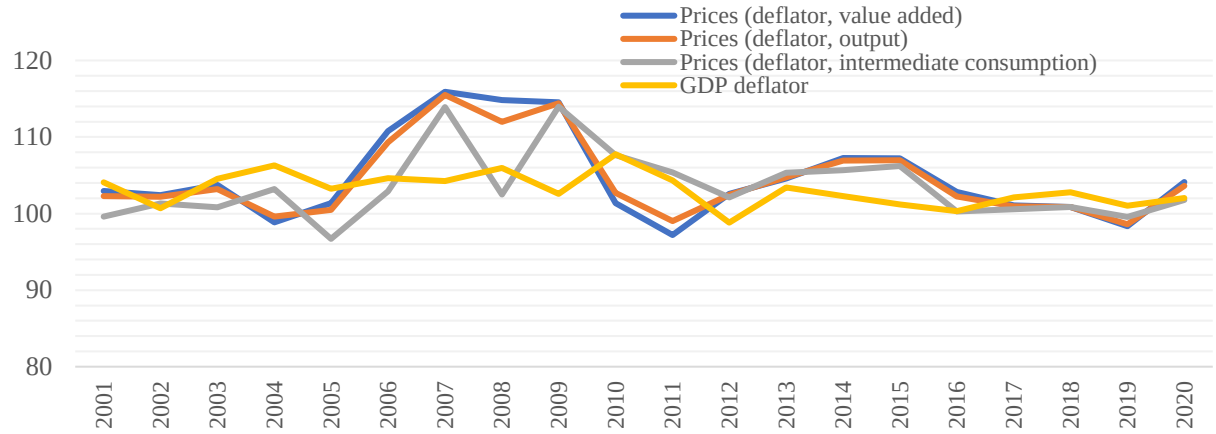

Figure 3.11.9. Changes in prices level according to deflator, sector P, %, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The price dynamics in the professional, scientific and technical activities sector also exceeds the GDP deflator. At the same time, we observed price jumps in 2012 and 2015, which is probably related to the increase in the price of educational services in universities. During the last two years, price dynamics in both sectors coincided with the GDP deflator.

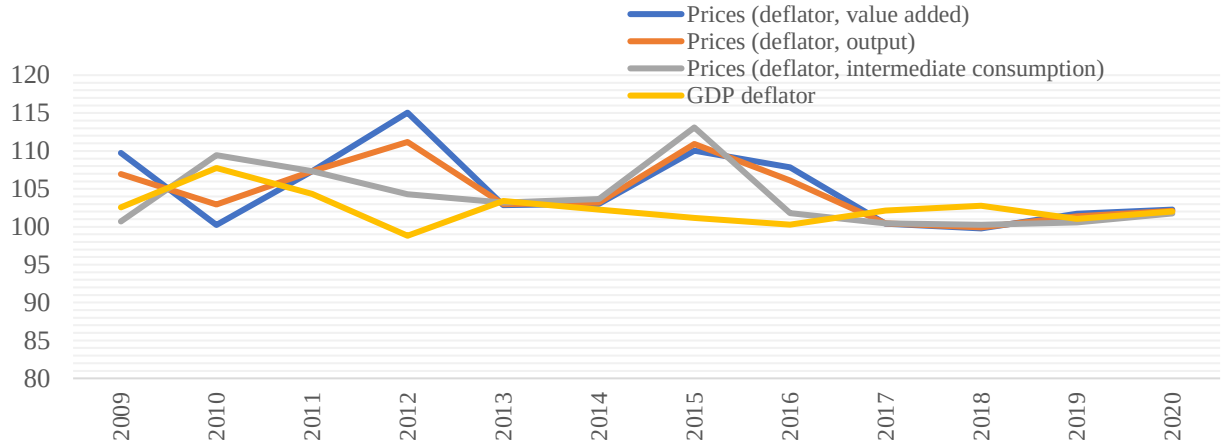

Figure 3.11.10. Changes in prices level according to deflator, sector M, %, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As for the employment in the education and science sectors, we can observe a stable level of employment. As of 2020, there are 115.4 thousand people employed in the education sector and 22.6 thousand in the professional, scientific and technical sector. Thus, in 2020 and throughout the observed period, the number of people employed in the field of science is about six times less than the number of people employed in education. In general, such a gap cannot be considered a positive trend. Even assuming that employees in the education system include all levels of education, about half of them work in the higher education system, of which only one-third are engaged in scientific activities.

The share of people employed in the education sector in the total employment is about 10%, a relatively high indicator that has been preserved for at least the last 15 years. The share of those engaged in professional, scientific and technical activities is 1.6% of the total population.

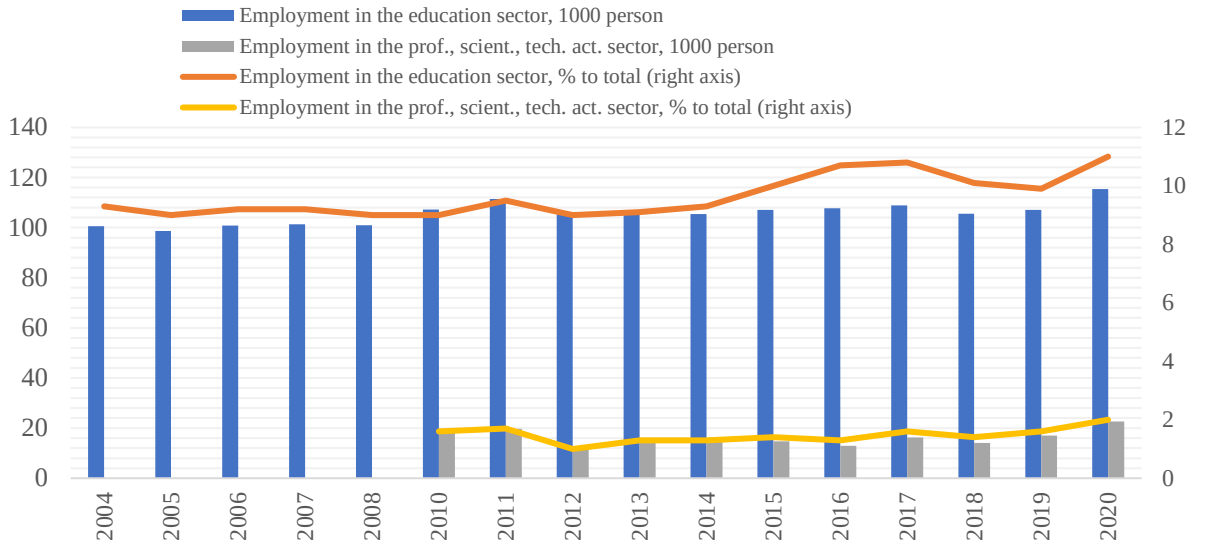

Figure 3.11.11. Employment in sector M and P.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The import dynamics in the professional, scientific and technical activities sector is unclear. In 2016, we observed a sharp jump in imports in the sub-sectors of architecture and engineering activities, technical testing and analysis. In 2015-2016, other professional, scientific and technical activities had a significant weight in imports. The rest of the period is characterized by relatively low indicators of imports of this sector.

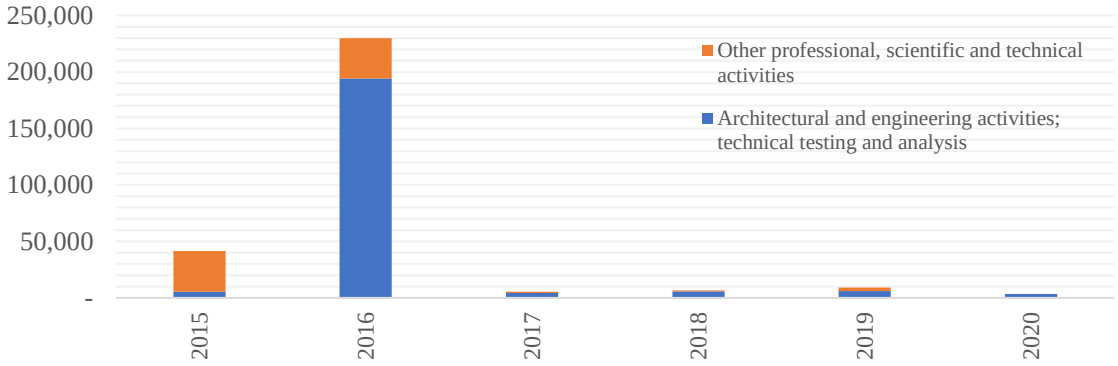

Figure 3.11.12. Import volumes of M and P sectors, USD.

Source: Database of the Euroasian Economic Commission – www.eurasiancommission.org/

And finally, concerning the financing of education, as well as professional, scientific and technical activities, it is necessary to mention that the banking sector and credit organizations carry large amounts of lending.

Loans issued by the banking sector in education are mainly represented by foreign currency loans aimed at higher education. At the same time, after 2018, there was a sharp increase in loans to higher education, both in foreign and national currency, which may be related to the somewhat active development of so-called "student loans" during this period (Figure 3.11.13).

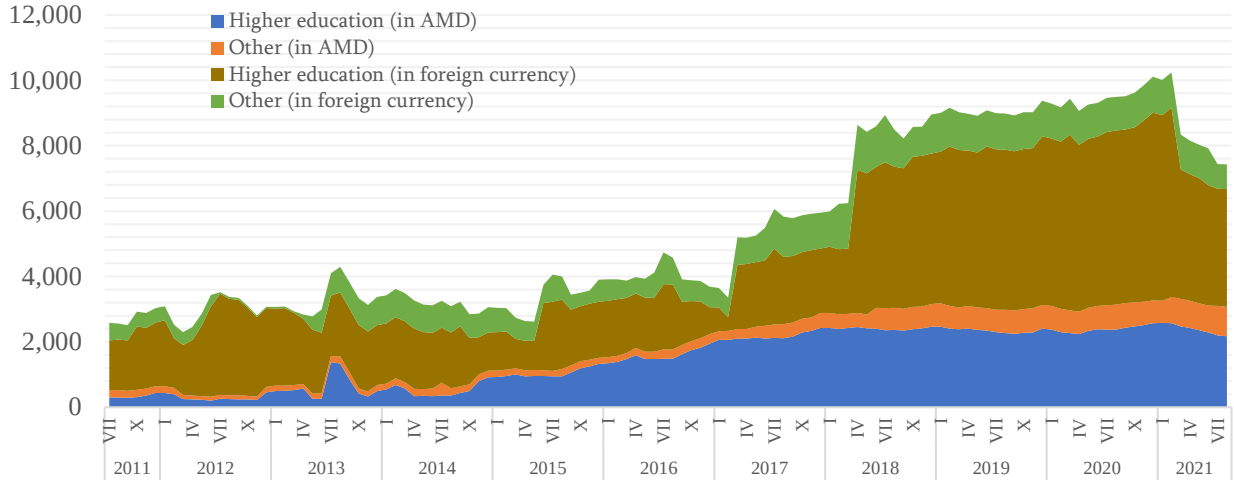

Figure 3.11.13. Loans granted by commercial banks in sector P, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

Loans given by credit organizations to the education system are also mainly aimed at higher education (Figure 3.11.14). However, in this case, most loans were provided in national currency. An interesting trend is observed in 2014-2019 when the amount of foreign currency loans provided to education decreased while national currency loans noticeably increased. It is worth noting one more feature that, unlike the banking system, credit organizations finance the sector not related to higher education in a larger volume.

However, in general, crediting by credit organizations decreases until the middle of 2020, after which a sharp increase begins, primarily due to the RA government's plan to mitigate the consequences of the COVID-19 pandemic.

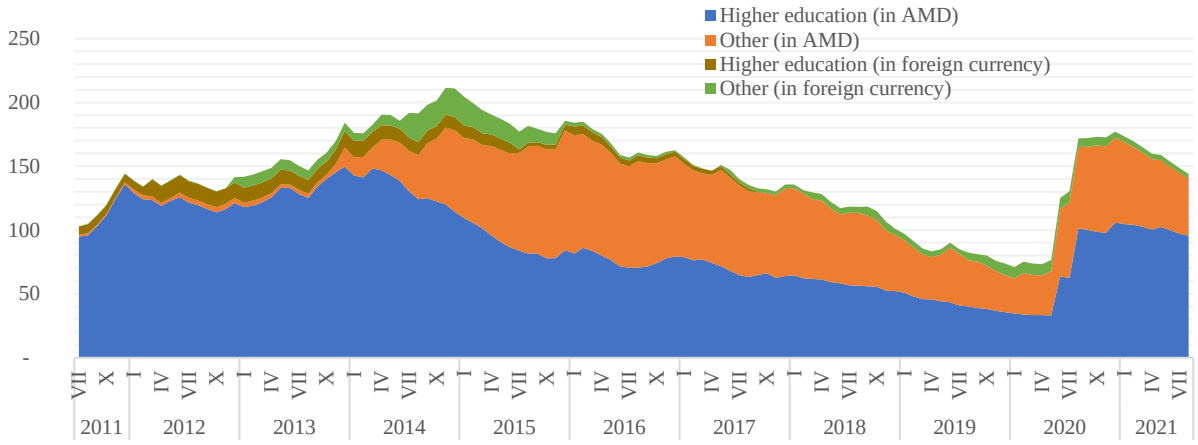

Figure 3.11.14. Loans granted by credit organisations in sector P, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

Loans given by commercial banks in the professional, scientific and technical activities sector are characterized by steady growth. The general dynamics of credit growth in the industry can be divided into two phases: 2014-2018 and 2018-2020, characterized by a sharp increase at the beginning of the phase and maintenance of stable growth rates over the next few years.

At the same time, starting from 2015, the legal and accounting activity sub-sector dominates in attracting additional financing in national and foreign currency. The banking sector in foreign currency heavily finances research and development, but this applies to almost all sectors.

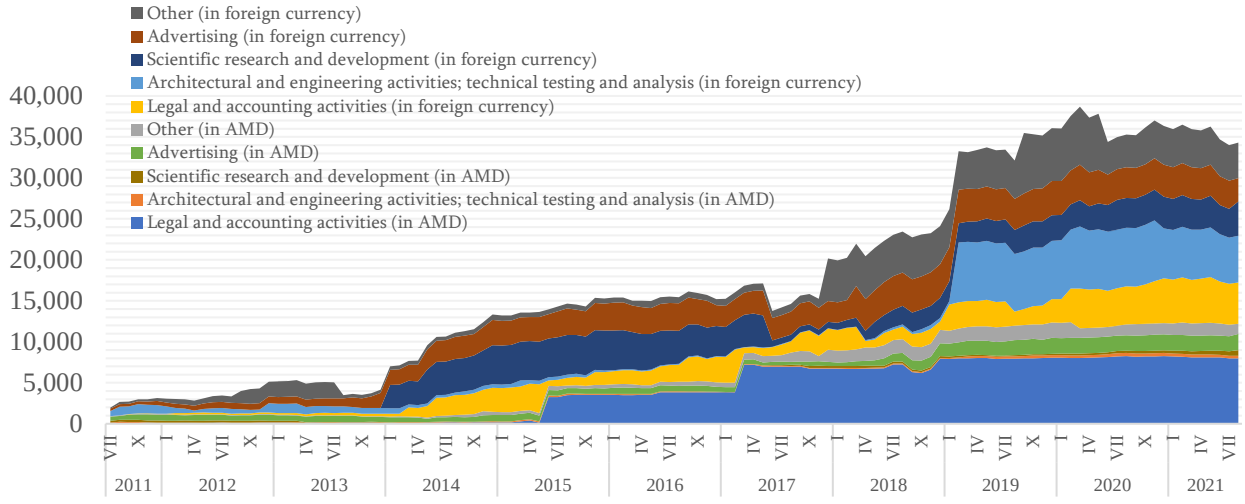

Figure 3.11.15. Loans granted by commercial banks in sector M, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

As for lending by credit organizations, we should note that there is a high degree of volatility and, generally, an increase in financing volumes (Figure 3.11.16). Credit organizations mainly finance the architectural and accounting sectors; most loans are provided in national currency.

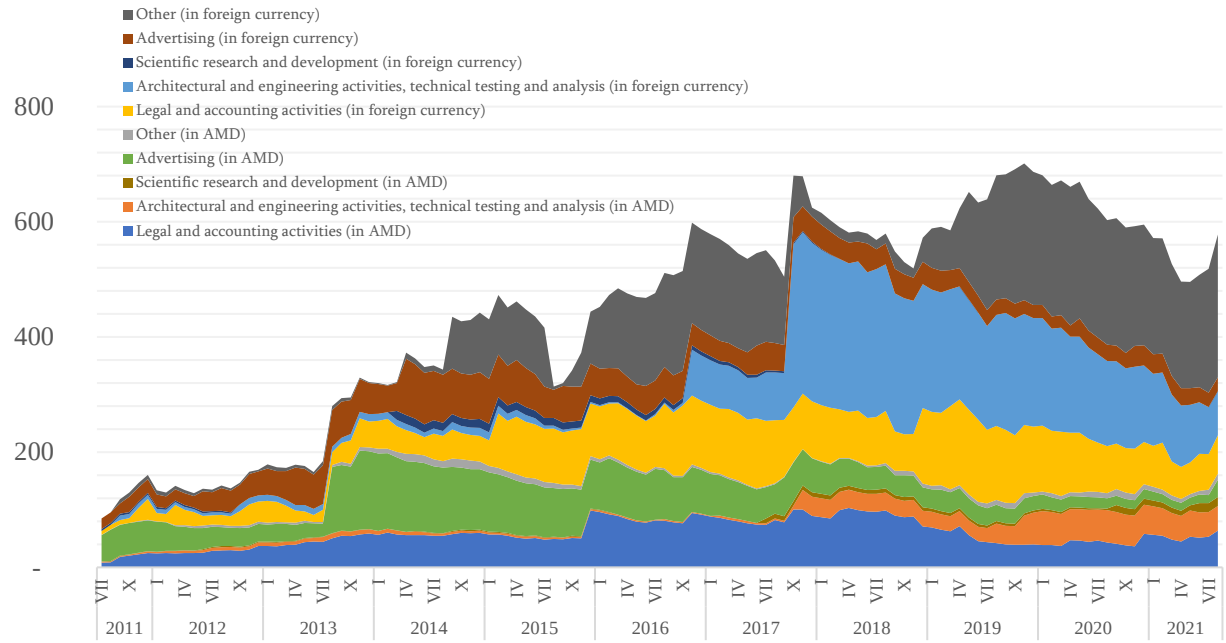

Figure 3.11.16. Loans granted by credit organisations in sector M, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

Figure 3.11.17 shows that education output at current prices increased by an average of 5% annually from 2008 to 2020, of which 2.8% was financed by the state and 12.3% by non-state financing. If state financing provided 84.5% of the sector's output in 2008, then in 2019 - 61.9%, and 2020 - 65.2%. It mainly happened by reducing the volume of state funding for professional education, especially higher education, and replacing them with non-state funding. Such a mixed financing model of professional education, common in the former USSR countries, was a forced step and aimed to preserve the existing potential as much as possible in the conditions of reducing financial resources and the impossibility of maintaining free professional education.

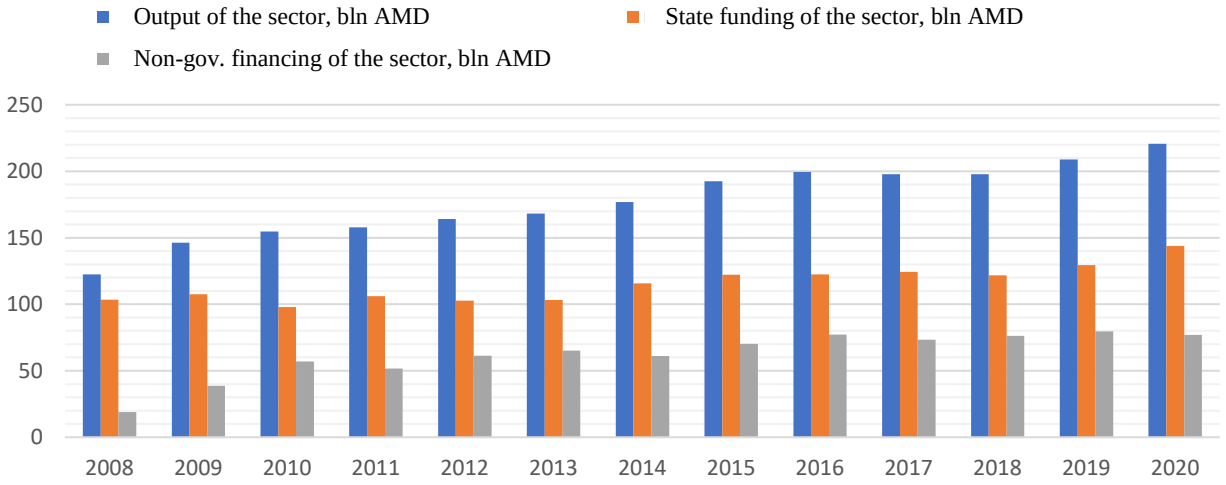

Figure 3.11.17. Structure of education financing, 2008-2020

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

In our opinion, it is time to switch to the principle of co-financing, which operates in many countries, and to differentiate the amounts of state co-financing for various professions from the personnel requirements of the upcoming development, increasing them to the maximum for modern engineering and applied mathematical professions, and to a minimum for some humanitarian professions, with which the demand for learning is more than the current and future market demand.

The educational system has many unsolved issues that require quick solutions and should be the subject of serious separate research. In general, in the conditions of continued population ageing, the main issues of the sector are the optimization of educational institutions and employment, the correction of professional education to meet the current and future requirements of personnel development, the sharp increase in the education quality, the rise in wages to exceed the GDP per capita by about 1.5 times in general educational system and by 3 times in professional education system in the medium term, and in the professional education system, to attract and retain qualified personnel. Along with these changes, it is necessary to increase the funding of the education sector, bringing it to the EU average of 5% in the medium term.

In the professional, scientific and technical activities sector, state and non-state funding are also combined. The non-state financing of scientific research is mainly carried out at the expense of foreign grants. In contrast, domestic financing by the real sector is significantly less than state funding.

Figure 3.11.18 shows that the share of science and research activities financed by domestic sources in the output of the sector during 2008-2020 varied from a maximum of 15.6% in 2012 to a minimum of 10.75% in 2018, and in the GDP, around 0.2%, which is unacceptably low[288] and corresponds to the level of low-income countries. Under those conditions, the country will not only be unable to create innovative technologies and products but will have severe problems in using imported technologies and institutional structures and in adapting them to the conditions of the country, which form the basis of the catch-up growth.

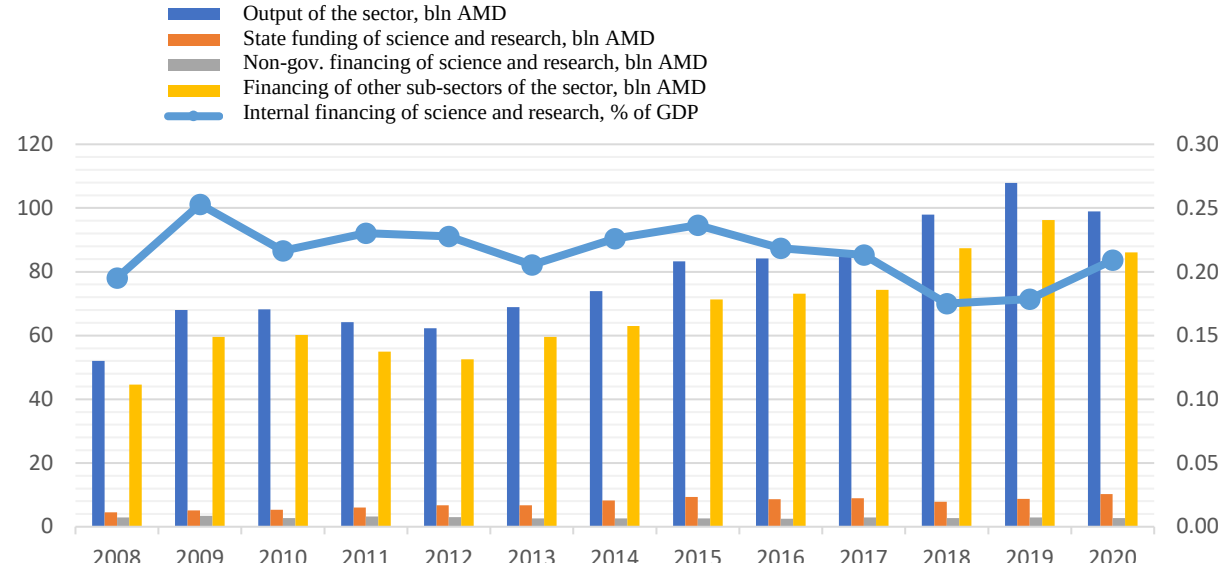

Figure 3.11.18. Structure of professional, scientific and technical activities financing, 2008-2020

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

[288] According to the World Bank in 2018, the average share of science and research in the world was 2.2%, in Israel - 4.94%, in South Korea - 4.53%, in the group of high-income countries - 2.59%, in the upper middle-income group - 1.64%

Deep reforms are also needed here, which should be the subject of serious separate research. The range of issues should find their solutions in parallel with the sharp increase in state funding of science and research to reach about 1.6% of GDP in the medium term, the current level of the upper-middle-income group. The range of these issues is quite broad, ranging from an increase in average wages to about 3 GDP per capita, including a reduction in the current thematic scientific funding shares with a corresponding increase in the share of base funding[289], targeting the achievement of specific results that should have the potential to be used by the private sector, and optimizing the scope of completed research.

3.12. Administrative and support service activities.

The administrative and support activities sector includes services to businesses, including administrative services, building maintenance, travel and tourism services, and security services[290]. From the point of view of economic development, administrative and support services play an essential role in general staffing and in supporting the normal functioning of the labour market, especially during periods of high employment growth. In developed countries, this sector occupies a larger place in the GDP than in developing countries. In particular, before the 2004 enlargement, in 2008, this sector occupied 4.2% of the GDP of EU15 member states, and already in 2019, 5%. Meanwhile, in the countries that joined the EU expansion programs in 2004 and 2007, this indicator was 2% and 2.9% of GDP, respectively. We can observe a growth trend in the indicator dynamics along with the economic development.

The volumes of administrative and support activities in Armenia show a growth trend starting from 2017 (Figure 3.12.1). Before that, the sector stagnated.

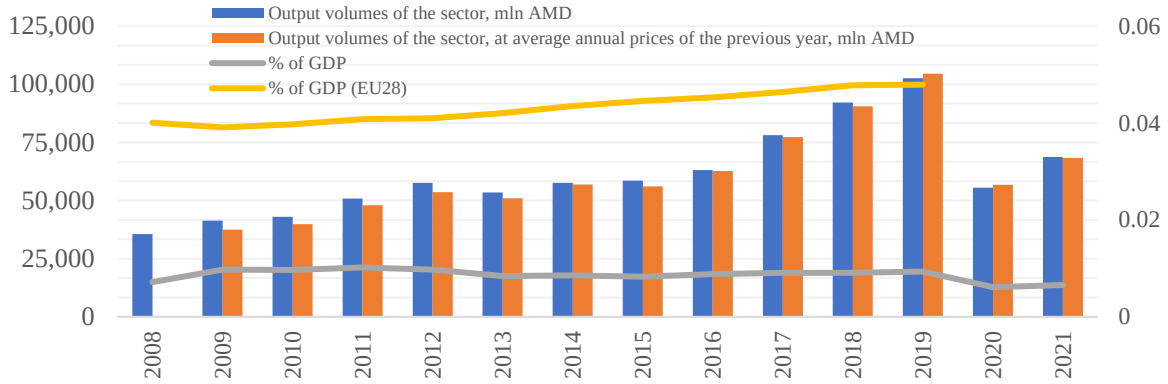

Figure 3.12.1. Output volumes of sector N (mln AMD), share in GDP, %.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Despite the growth of the sector's total output volumes, its share in the GDP almost did not change during the observed period, varying in the range of 0.7-1%. Two factors can explain

[289] Thematic scientific funding is due to the concentration of scientific research in universities, which does not happen in Armenia for various reasons. In addition, the main part of research in developed countries is financed by the non-governmental sector, which does not happen in Armenia either, so thematic financing is advisable to be used only at the university level and mainly to be carried out by government order, connecting it to country's issues of interest.

[290] As of 2021, the total volume of the sector's output was 63.8 billion AMD, increased by 20.1% compared to 2020 and had the following structure: rental and leasing - 10%, tourism-related activities - 14.9%, building maintenance and improvement - 10.4%, business activities - 34.3 %, other activities: 24.6%

the latter. First, from 2017, a sharp increase is observed in the intermediate consumption in the sector (Figure 3.12.2). The growth of intermediate consumption took place in proportion to the output growth =, at rates exceeding the value-added growth. We should note that the material intensity in the sector had a growth trend in 2010-2012, reaching 28%. After that, the period of stagnation began from 2013 to 2016, followed by two years of sharp growth. As a result of the latter, the material intensity reached 41% in 2018. In 2020, it was 37%, and in 2021 - 34%.

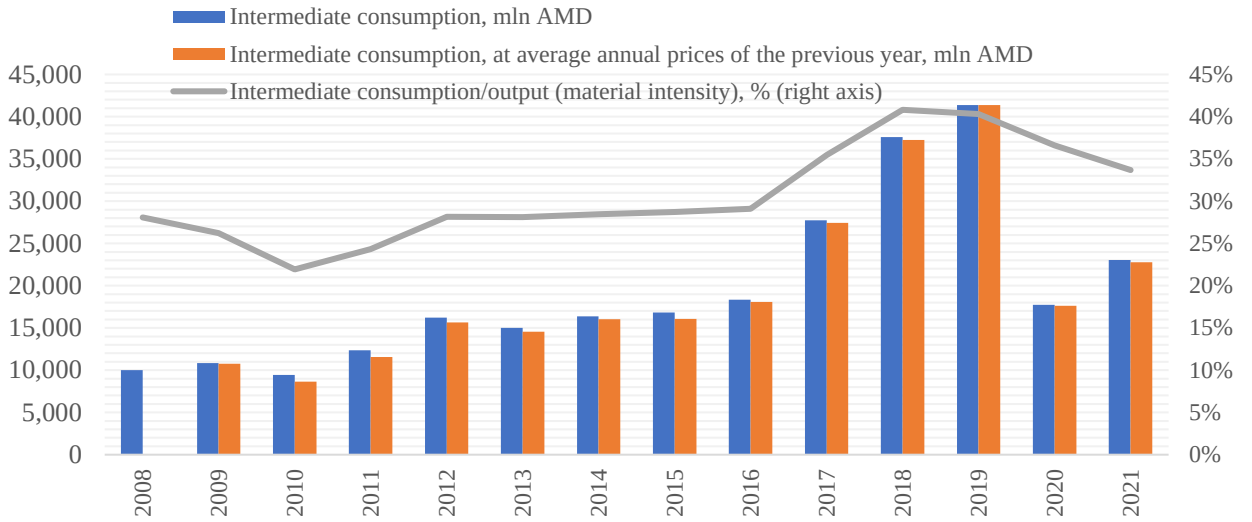

Figure 3.12.2. Intermediate consumption in sector N, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As a result, the growth rate of the value-added in administrative and support activities was much slower (Figure 3.12.3). On the other hand, an increase in value-added in the sector occurred along with slow economic growth in the country. As a result, its weight in the GDP structure remained almost unchanged (Figure 3.12.1).

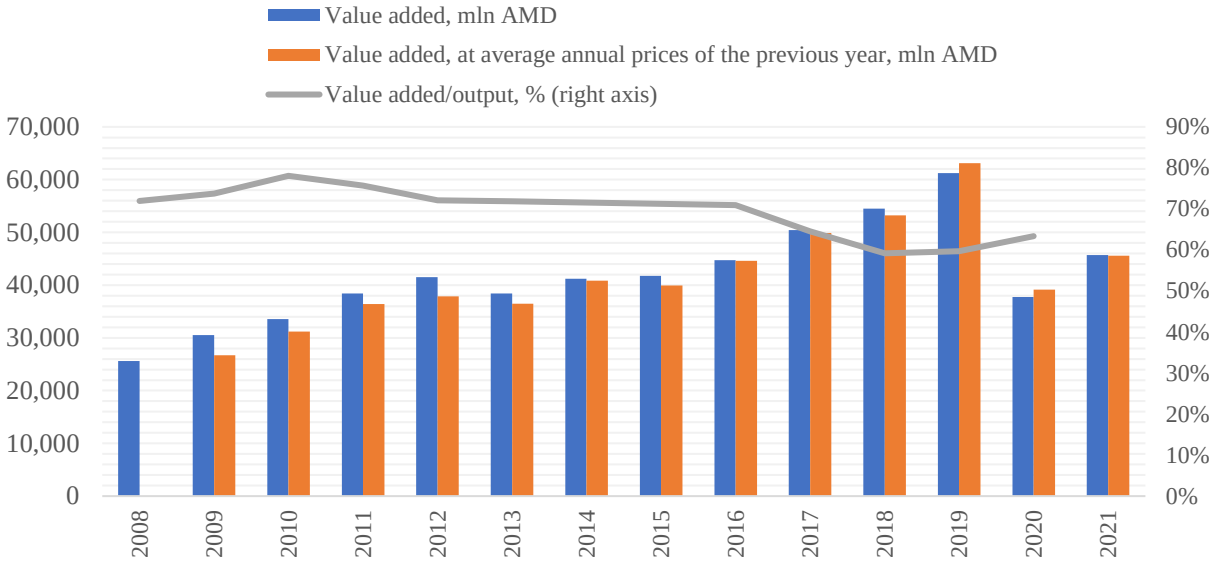

Figure 3.12.3. Value-added in sector N, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The change in the development rate of the sector and the end of the stagnation phase was mainly due to the tourist services market expansion in the country. Moreover, in 2016, there was a sharp increase in fixed assets in the sector by 3.5 times (Figure 3.12.4). As a result, capital intensity also increased, from 61% in 2015 to 192% in 2016.

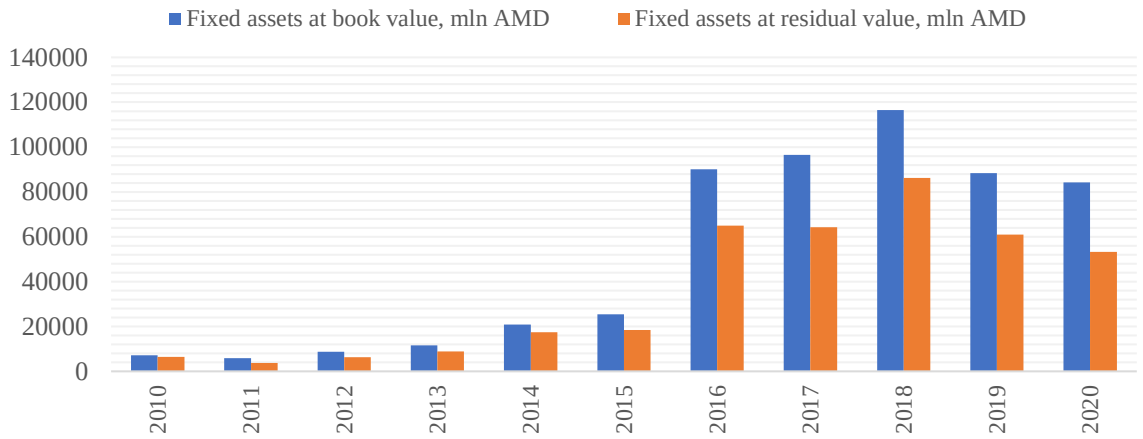

Figure 3.12.4. Fixed assets at the book and residual values in the sector N, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

At the same time, the capital-to-labour ratio registered an even sharper increase (Figure 3.12.5), from 3.8 million in 2015 to more than 24 million capital per worker in 2017. During this period, labour productivity also significantly increased.

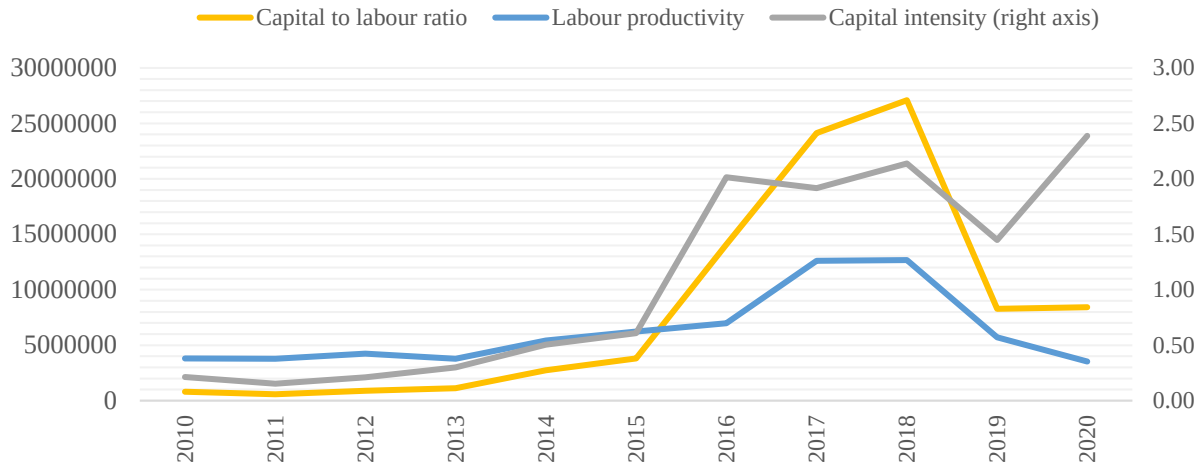

Figure 3.12.5. Capital intensity, capital-to-labour ratio and labour productivity in sector N.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Along with the abovementioned changes, in 2014 and 2017, employment in the sector significantly reduced. In 2013, the number of people employed in the industry was 10 200, which was 0.9% of the total employment. In 2014, along with the growth of capital in the sector, the number of employees reduced to 7600. And in 2017, an even sharper reduction took place, and the number of people employed in the industry reached 4000, and the employment share was 0.4%. All this contributed to an even more significant increase in the capital-to-labour ratio.

As for the level of remuneration in the sector, the labour cost (monthly) in the administration and support services sector is

more than 30% lower than the average labour cost in the economy (Figure 3.12.6). On the other hand, along with the increase in labour cost, there was a capital growth trend until 2018. However, in 2019, there was an increase in employment in the sector, reaching 1% of total employment and 10,700 people. The latter was probably due to the unprecedented growth of the tourism sector in Armenia in 2019, as well as the reduction of informal employment due to increasing state control.

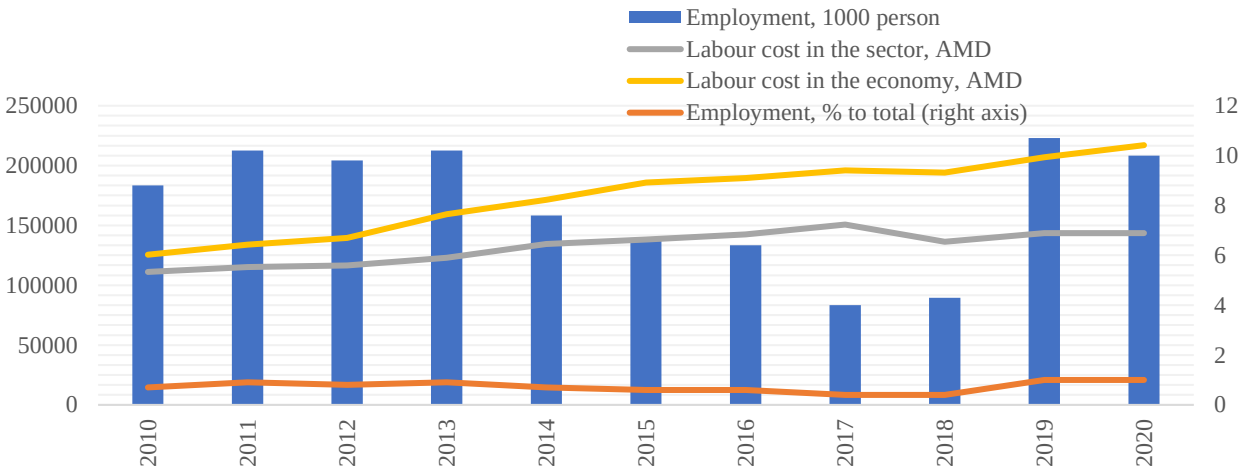

Figure 3.12.6. Employment and labour cost in sector N.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

We considered three indicators based on the deflator to analyse the price dynamics (Figure 3.12.7). The dynamics of all three indicators are almost the same in the period under consideration and generally have a downward trend. Starting from 2014, the price level in the sector fluctuated around 1%, and in 2019 there was deflation.

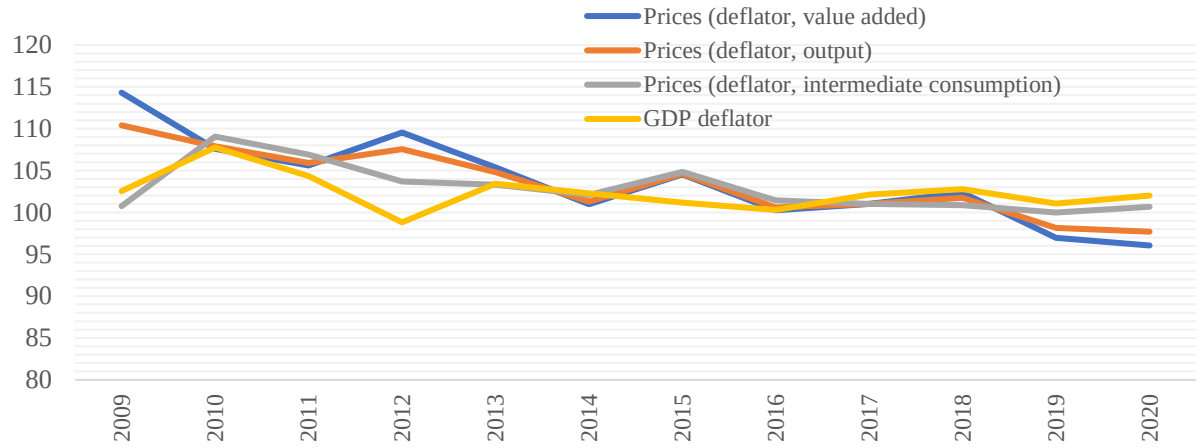

Figure 3.12.7. Changes in prices level according to deflator, sector N, %, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Generally, price fluctuations in the sector coincide with the GDP deflator, except for 2012, 2019, and 2020. In 2012, the industry experienced a significant increase in value-added prices (9.5%), while intermediate consumption prices increased by only 3.7%. At the same time, there has been a deflation of the GDP deflator. And in 2019, there was a

significant reduction in the prices of the sector's value-added, while the GDP deflator reached 102.

As a result of the lockdown caused by the coronavirus pandemic in 2020, the current sector was among the most affected industries. The decrease in value-added accounted for more than 42% (Figure 3.12.3).

In summarizing, the sector and its main components mainly serve other industries and the developments of the latter condition the dynamics of the administrative and support activities sector. In particular, the volumes of renting and leasing are determined on the one hand by the possibilities of the financial intermediation system and the service prices, and on the other hand by the investment activity in the economy. Their progressive growth should reduce investment costs and facilitate investment activities, reducing the market entry price. Tourism-related activities are directly related to domestic, inbound and outbound tourism, and general tourism policies condition policies in that area.

The main part of the sector is non-governmental and, in our opinion, does not require a particular sectoral policy, except for the maintenance and improvement of buildings, where stricter regulations are needed, especially in the elevator maintenance sector.

3.13. Public administration and defence, compulsory social security. Human health and social work activities.

The regular operation and efficiency of the public administration, defence, healthcare and social security sectors are essential for the functioning and development of the economy. In the EU15 countries, the share of these sectors in the total GDP is on average 14%, and in the rest of the EU countries - 10%. Meanwhile, the mentioned economic activity in Armenia occupies a much smaller place in the GDP structure (Figure 3.13.1). It is noteworthy that after the global financial crisis in 2008-2009, both EU countries and Armenia saw an increase in the share of the sector in the GDP, which didn't change significantly in the following years.

In 2000, the public administration, defence, healthcare, and social security sectors accounted for 5% of the GDP of Armenia. In the last 20 years, we observed a general steady growth trend in the gross output volumes of the sector.

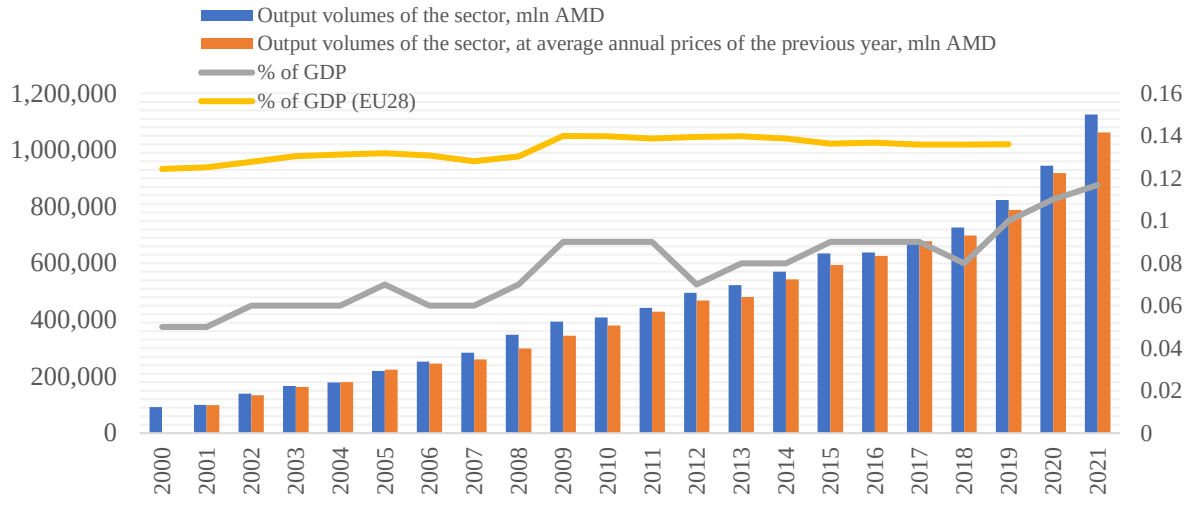

Figure 3.13.1. Output volumes of sectors O and Q (mln AMD), share in GDP, %.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

On the other hand, looking at the volumes of intermediate consumption, we can notice that it had steady growth from 2000 to 2012 and during the last three years (Figure 3.13.2). There are no significant fluctuations from 2014 to 2018, following a reduction in 2013. As for the material intensity, it is necessary to note that during the period under consideration, we observe a steady decline until 2013. As a result, this indicator was already 31% in 2013 compared to 52% in 2003. In 2021, the material intensity of the sector was 29%. Such a decline in this indicator speaks of the increase in efficiency over the last 20 years.

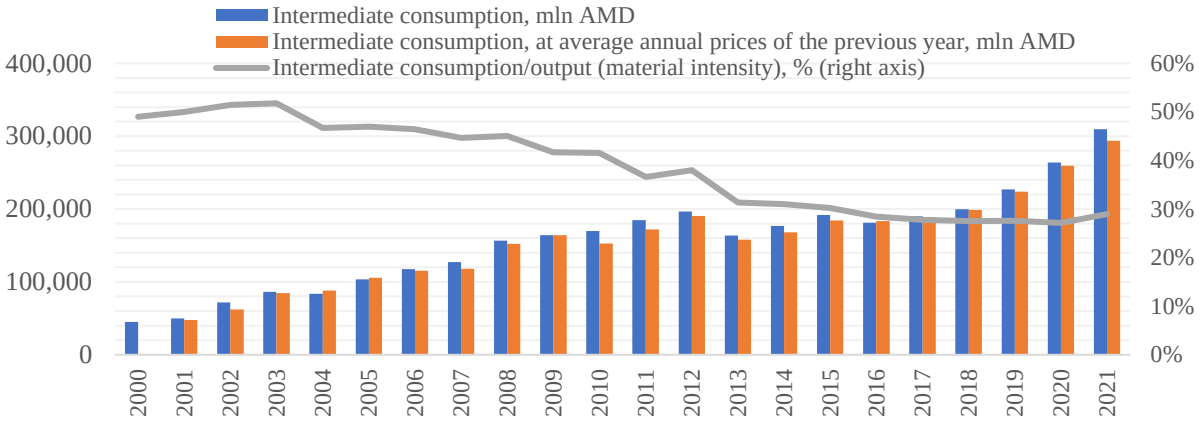

Figure 3.13.2. Intermediate consumption in sectors O and Q, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Taking into account the stable growth of the gross output in the sector and, at the same time, the slower growth rate of intermediate consumption, there was a stable and significant increase in the value-added during the period under consideration (Figure 3.13.3). As a result, it became possible to reach 9% of the GDP in 2009, followed by proportional growth rates to the economic growth from 2010 to 2018. As a result, the sector's weight in the GDP almost did not change, fluctuating around 8-9%. In 2019-2020, there was a breakthrough in the growth rate of value-added. As a result, its specific share in GDP accounted for 11% in 2020, reaching the indicator of some EU member states.

In Armenia, the growth in public administration and defence sector is due to two factors: a significant increase in wages in the field of public administration and the second Artsakh war. In 2021, the end of the war led to a reduction in defence spending, resulting in a 9.9% reduction in public administration and defence sector value-added. In the health sector, mainly related to the continuation and deepening of the Covid-19 pandemic, there was an unprecedented 31.8% increase in value-added. As a result, the health sector's share of GDP was 6.7%, and that of public administration and defence was 4.8%.

So, the current healthcare expenditure to GDP ratio in Armenia has begun to correspond to the indicators of individual OECD countries[291]. For comparison, the share of healthcare in the GDP was 2.7% in 2008, 3.7% in 2011, 4.3% in 2018, 4.6% in 2019, and 5.5% in 2020. Even though such an increase in expenses in 2020-2021 was mainly due to Covid-19, it was undoubtedly a positive phenomenon, and maintaining the level of expenditures after the end of the pandemic will increase the quality and coverage of services. As for public administration and defence expenses, they currently have a relatively high share in the GDP for apparent reasons[292].

[291] As of 2019, the maximum ratio was 16.8% in the USA and 11.7% in Germany. Armenia's 2021 indicator corresponds to the indicators of Ireland, Estonia, Latvia and Poland.

[292] As of 2020, according to the World Bank, the defence costs were on average 2.36% of GDP.

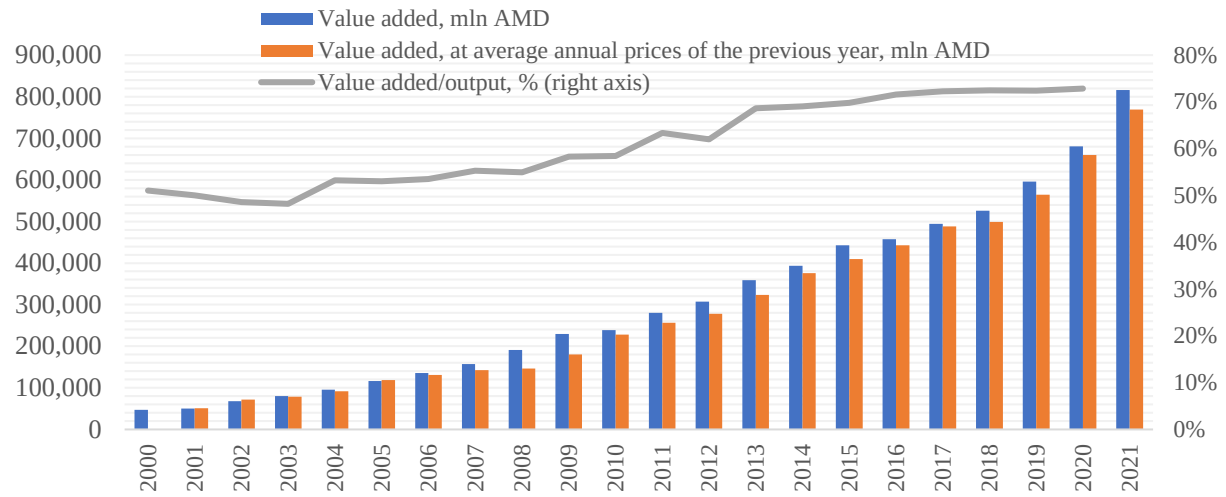

Figure 3.13.3. Value-added in sectors O and Q, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

We have considered the deflators according to value-added, gross output, and intermediate consumption to study the dynamics of sectoral prices. Except for the global financial and economic crisis of 2008-2009, the three indicators have almost the same dynamics during the period under consideration. In the pre-crisis period, prices had an irregular trend, registering inflation in some years and deflation in others. In 2009, intermediate consumption prices remained unchanged during the crisis, while the value-added deflator rose significantly to 30%. In the post-crisis years, prices in the sector stabilized, and the three indicators began to show a similar trend, registering a steady low growth of prices in the range of 3-8%. Except for the global financial crisis, the price dynamics in the sector generally coincide with the price level fluctuations in the economy.

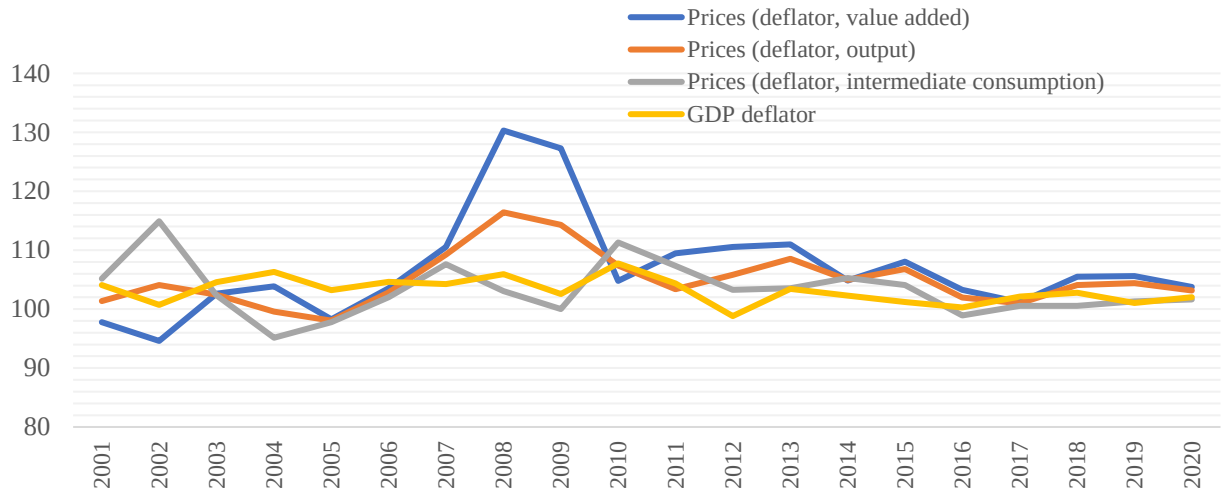

Figure 3.13.4. Changes in prices level according to deflator, sectors O and Q, %, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As for the dynamics of fixed assets, we observed a stable low growth rate from 2010 to 2018, while in 2019, there was a significant increase in capital by more than 52% (Figure 3.13.5).

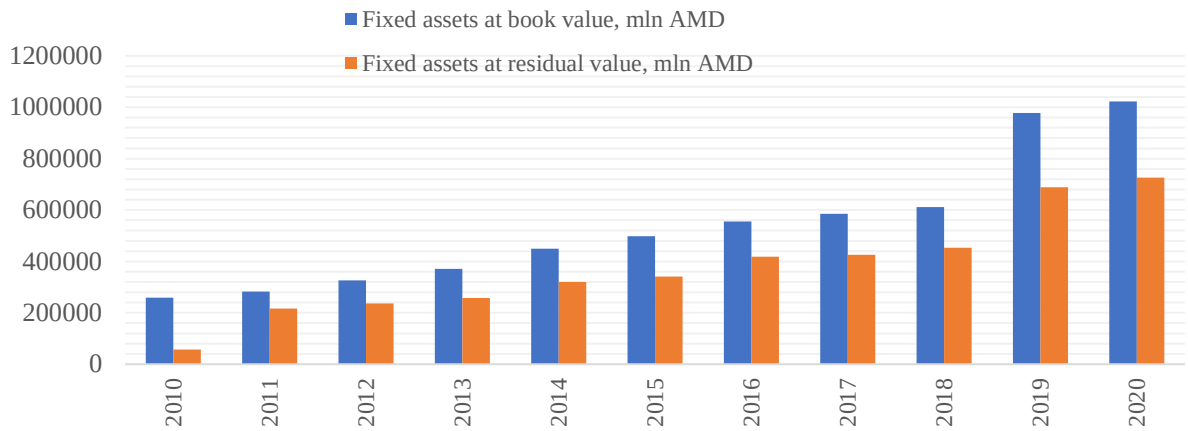

Figure 3.13.5. Fixed assets at the book and residual values in sectors O and Q, mln AMD.
Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Similar dynamics were recorded in capital intensity, labour productivity, and capital-to-labour ratio indices in 2010-2018, considering the stable rates of capital and labour in the sector (Figure 3.13.6). In 2019, as a result of the sharp capital increase, the mentioned indicators also registered an increase.

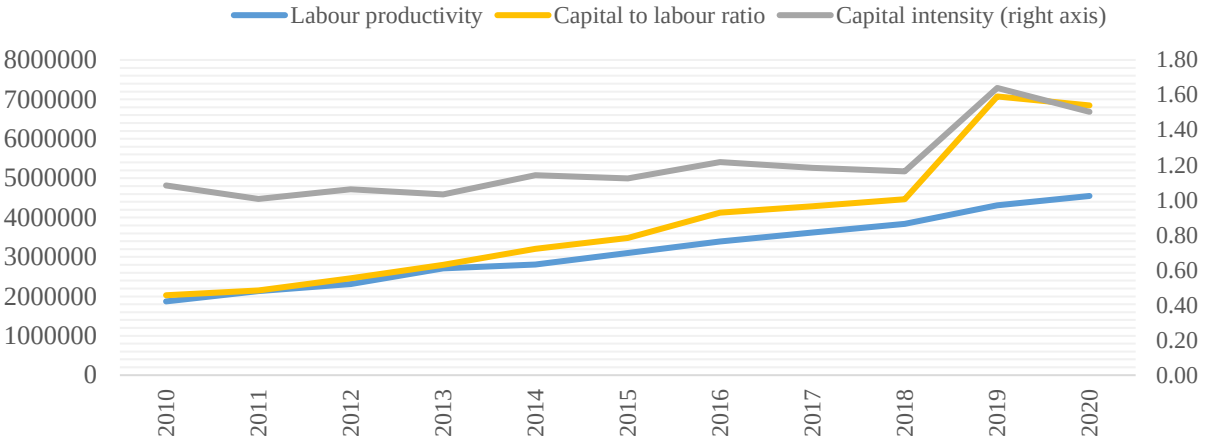

Figure 3.13.6. Capital intensity, capital-to-labour ratio and labour productivity in sectors O and Q.
Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As for employment in the sector, in 2004-2009, the number of employed people was 80-85 thousand, with an almost equal distribution between the healthcare and government sectors (Figure 3.13.7). In 2010, there was a sharp increase in employment in the public sector, reaching 75 200 people. In the following ten years, this indicator had no significant fluctuations. As of 2019, the share of people employed in the sector in total employment is 12.8%, compared to 7.3% in 2004. For comparison, the same indicator in the EU28 countries is 16-17% of the total employment.

Up to 2012, the monthly average labour cost in the public sector was almost equal to the labour cost in the economy. However, starting from 2013, this sector saw significant annual growth in mean wages. Already in 2019, the sector's labour cost exceeded the economy's average by almost 100 thousand AMD, amounting to 301 725 (Figure 3.13.7).

As for the healthcare sector, it is necessary to note that the labour cost there is significantly

lower than the economy's average. Moreover, the annual growth rate of wages in the sector coincides with the overall growth rate. As a result, in 2018, the labour cost in the healthcare sector was 148 328 AMD, which was lower than the economy's average by about 46 thousand AMD. In 2019, there was a significant increase, and the indicator reached 177 712 AMD.

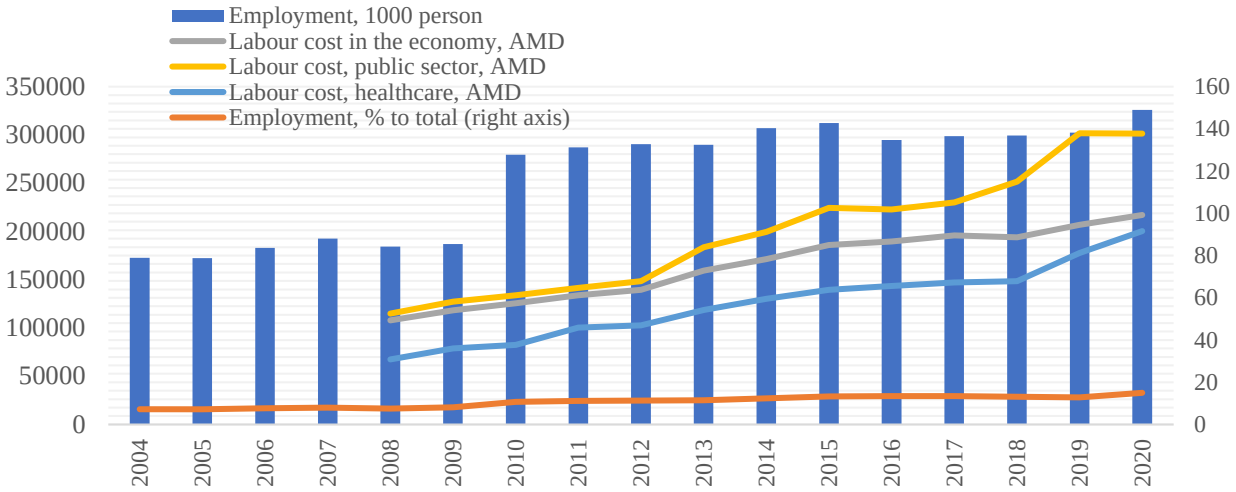

Figure 3.13.7. Employment and labour cost in sectors O and Q.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

There was no financing by financial organizations in the field of public administration, defence and social security during the period under consideration. However, the healthcare sector receives significant financing from commercial banks and credit organizations.

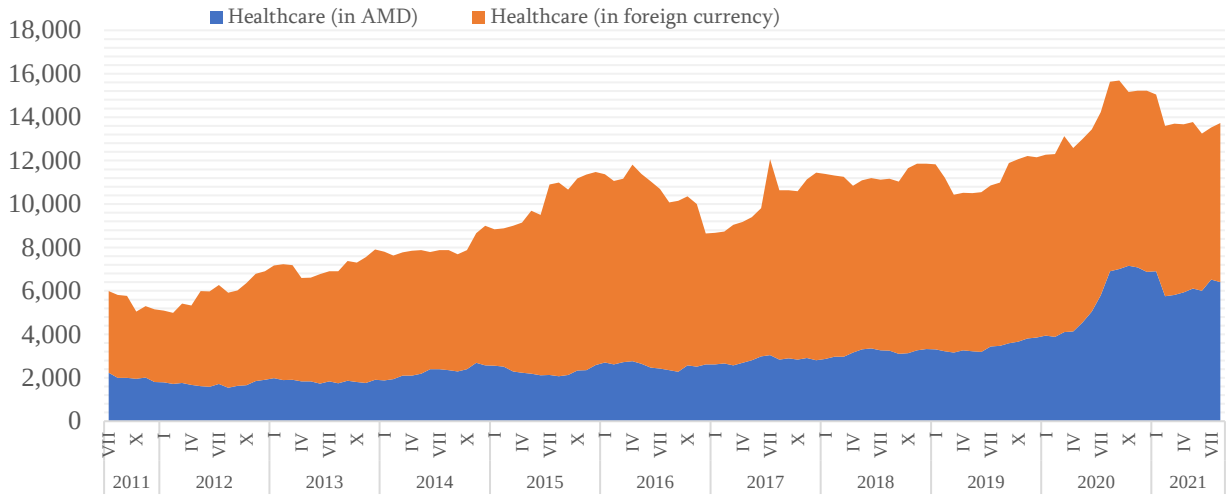

Figure 3.13.8. Loans granted by commercial banks in sectors O and Q, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

Thus, over the past ten years, the volume of financing by commercial banks has almost doubled. In August 2021, the latter amounted to around 14 billion AMD, of which 53.3% is in foreign currency. It is necessary to emphasize that in September 2020, there was a short-term (about six months) sharp increase in terms of national currency loans provided to the sector (about 1 billion AMD). The latter was probably due to the pressure on the healthcare system caused by the war and the new wave of the Covid-19 pandemic.

The financing provided by credit organizations is much lower. In 2019, the total volume of loans was about 1.5 billion AMD. Moreover, it is noteworthy that only 23% were foreign currency loans. It is necessary to emphasize that in March 2020, the volumes of foreign currency loans provided to the sector began to increase significantly and, as of August 2021, accounted for 1.1 billion AMD. The total volume of national currency loans is 1.6 billion AMD. Probably, such a sharp increase in funding in 2020 was due to the pandemic.

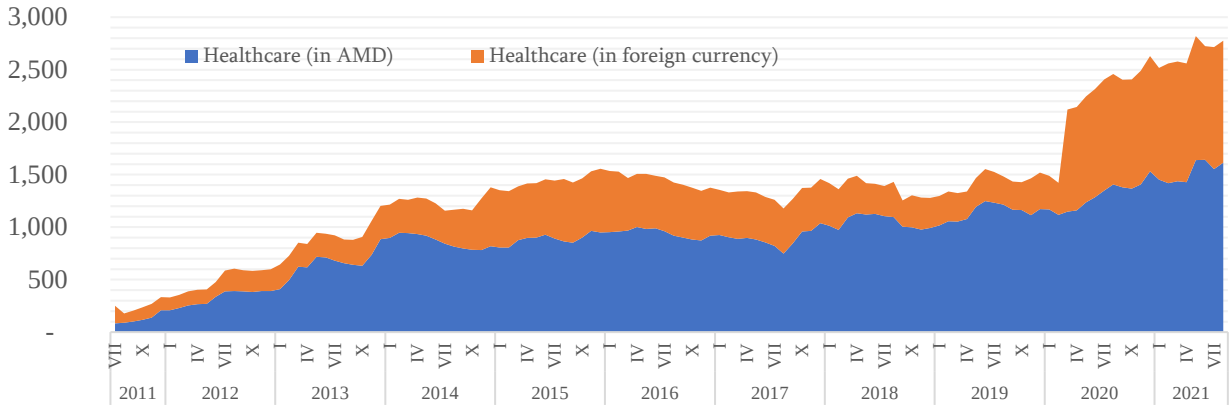

Figure 3.13.9. Loans granted by credit organisations in sectors O and Q, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

The total loan to gross output ratio in the healthcare sector fluctuates around 1% during the period under consideration. The latter indicates a weak dependence on the financial system.

During the independence of Armenia, the healthcare sector has undergone significant structural changes. The latter, as in the field of education, was mainly due to the preservation of the sector's potential in the face of a sharp reduction in funding. As a result, there was a transition from a system financed entirely by state funds to a system based on mixed public and private funding. The structure of the hybrid financing for 2008-2019 is presented in Figure 3.13.10. According to statistics, the main burden of financing falls on the population's funds (out-of-pocket financing). Its share was not less than 75% during the period under consideration. In 2019, together with private medical insurance, it made up 86.9% of all costs.

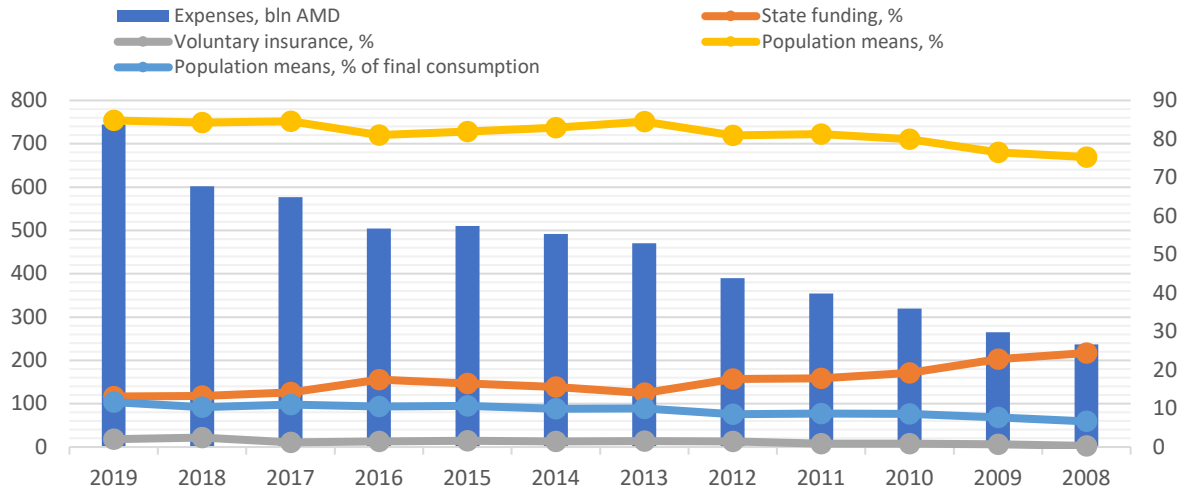

Figure 3.13.10. Structure of healthcare financing, 2008-2019.

Source: World Health Organisation database www.who.org

Figure 3.13.11 shows that among the global health care financing sources, Armenia lacks the compulsory medical insurance system[293] currently prevailing in the world, the private (voluntary) insurance system, which forms the private financing system together with the population's funds. The latter had a small share of 2.1%[294] in 2019. Armenia's public healthcare financing system is minimal by all international standards, placing a significant burden on the population. The latter spent 11.7% of final consumption on medical services in 2019, compared to 6.7% in 2008. So, the proportion of medical expenses of the population has almost doubled, which has led to a significant reduction in the access to many services, especially for the poor and middle-income classes, for which the increase in public expenditures has not fully compensated.

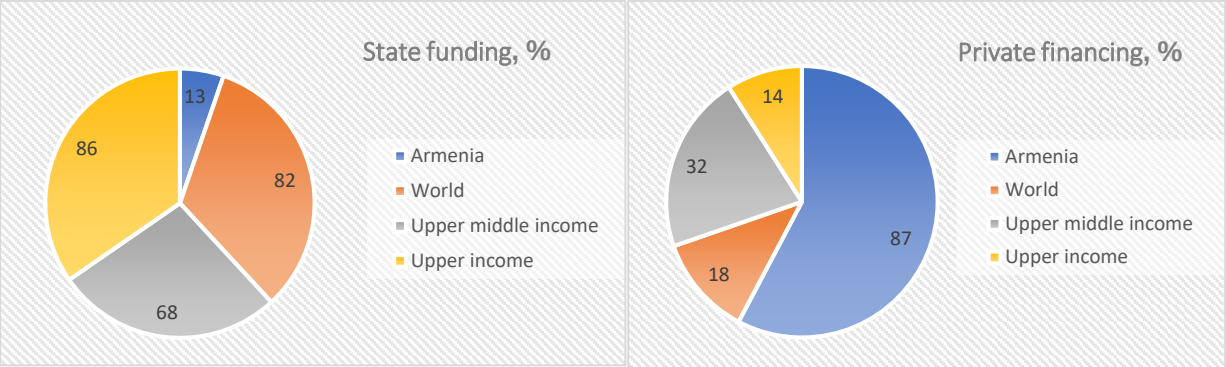

Figure 3.13.11. Comparative structure of healthcare financing, 2019.
Source: The World Bank Database - www.worldbank.org

It outlines the main direction of health system reforms: to change the financing system step by step in the medium term, to reach the current average index of upper-middle-income countries, i.e. step by step reducing the share of the population's funds, accordingly increasing the volumes of state funding, gradually introducing the compulsory medical insurance mechanisms, starting from the state-financed sectors – public service, defence, security, education, culture, including on the principle of co-financing, and later expanding the scope of users and services. It is also necessary to encourage the growth of the non-governmental medical insurance system for the formal non-governmental workforce, particularly by applying for certain tax benefits. In the long term, the country should achieve universal coverage of an expanded list of basic services by expanding the scope and coverage of compulsory and voluntary insurance[295]. Currently, the introduction of universal coverage for any reasonable list of essential services will greatly increase the tax burden. It will affect the existing comparative advantages of the country, significantly increasing the labour cost.

The mentioned reforms should be supplemented with many others: revision of the

[293] Direct state financing differs from compulsory medical insurance by the object of financing: in the first case, medical institutions are financed either by the scope of their activities or within the limits of the state order, and in the case of insurance, this or that range of individuals using medical services is financed, who independently chooses the medical institution that has the right to provide the relevant service.

[294] In OECD and a number of other upper-middle-income countries, the share of voluntary medical insurance in 2019-2020 varied from 31.1% in Brazil to 0.1% in Norway depending on the characteristics of the country. The average values were in the range of 6-7%. Accordingly, the financing carried out at the expense of the population is also quite fluctuating, ranging from 36.6% in Russia to 9.3% in France.

[295] Universal coverage means access to medical services for everyone regardless of income, including children and the elderly population.

list of free and paid services, expansion of population groups entitled to use services on free and preferential terms, development of service standards and regular revision.

As for the defence sector, its further development and financing conditions are mainly determined by external factors, regional geopolitical conditions, their development and changes and are not subject to any forecast. However, increasing the degree of protection of the country from internal threats is one of the country's main priorities regarding also the economic policy. It means that the economy should be able to ensure the increase in defence costs while maintaining and increasing the rate of economic development.

It is impossible to directly evaluate the efficiency of the public administration sector, the productivity growth, and the necessary dynamics of fixed assets because public administration is a public good and should be evaluated through the increase in the efficiency of the entire economy and the development of society. However, we can assess the comparative quality of public administration using the World Bank's World Governance Indicators database along the lines of 6 indicators. Three indicators – government efficiency, regulatory quality and the rule of law, refer more to the economy and characterize the efficiency of economic management. The remaining three refer more to the efficiency of the organization of public life.

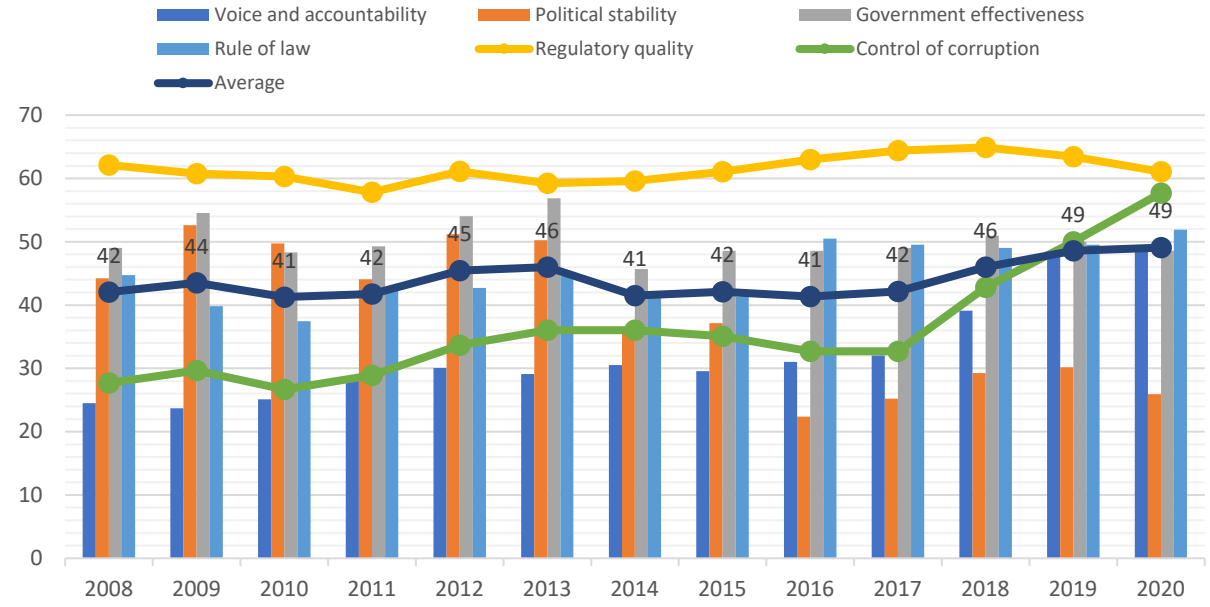

Figure 3.13.12. World governance indicators for Armenia, 2008-2020

Source: The World Bank Database - www.worldbank.org

The average indicator characterizes the average value of all six indicators and allows getting the general assessment of public administration[296]. Figure 3.13.12 shows that from 2008 to 2020, there was a general increase in management quality, evidenced by the dynamics of the average indicator. The latter fluctuated around 42-46 from 2008 to 2017 and increased to 49.1 in 2018-2020, approaching the global average[297]. At the same time, we should note that the two leading indicators characterizing economic management – government effectiveness and regulatory quality, have not changed much, varying around 50 and 60, correspondingly. The increase in the

[296] The evaluations of the country's position on a scale of 1 to 100, where one is the lowest and 100 is the highest possible evaluation, are selected.

[297] Based on the features of the calculation, the global average for all 6 indicators is 50

rule of law indicator ensured a slight increase in the efficiency of economic management.

Thus, the main directions of increasing the efficiency of state administration are related to the progressive increase of those three indicators and the corruption control index. Those directions are quite interconnected and affect different indicators. In particular, increasing government effectiveness has a significant connection with the digitization of governance and the expansion of interlinked databases, which increases the reliability and availability of data, the degree of decision validity and the speed of their adoption. On the other hand, digitalization reduces the transaction costs associated with implementing regulations and, consequently, the burden of regulation.

Digitalization in the judicial system reduces the time and cost of discussing economic and corruption cases, which is the main priority of that system regarding economic development. Increasing the regulatory quality along with digitalization should aim to reduce the regulatory burden, which according to various estimates, is 4-4.5% of GDP in Armenia. And on the other hand, it should be aimed at evidence-based decision-making, which is currently not being applied. As for the capital intensity of the state administration, it should be connected with the processes related to digitalization, providing the opportunities to develop and use the databases for the state employees.

There has been a progressive increase in wages in the public administration sector in recent years. The latter, being a positive phenomenon in general, should be related to the dynamics of the indicators mentioned above on the one hand and, on the other hand, allow for investment in medical insurance schemes.

3.14. Arts, entertainment and recreation.

The arts, entertainment and recreation sector includes a wide range of institutions that provide services to meet various cultural, entertainment and recreational needs. The arts, entertainment and recreation sector provides direct economic benefits to states and communities. It creates jobs, attracts investment, generates tax revenue and promotes community development through tourism. In addition, because arts, entertainment, and recreational activities enhance the quality of life, arts and culture are critical to balanced economic development through investment in the community and attracting young professionals. In EU28 countries, the arts, entertainment and recreation industry occupies about 1.4% of the GDP (Figure 3.14.1).

Until 2013, Armenia's arts, entertainment and recreation sector were relatively small with low growth rates, accounting for 1.3% of GDP in 2013. However, starting from 2014, it is possible to notice the revitalization of the sector and a significant increase in the output growth, reaching an average of 30.6% per year[298]. As a result, in 2019, it accounted for 476 billion AMD, compared to 124 billion AMD in 2014. In 2020, due to the crisis caused by the Covid-19 pandemic, there was a sharp drop in the sector's output.

[298] This growth was mostly ensured at the expense of the gaming sector, which led to the growth of the share of the sector in the GDP up to 5.6% in 2018 and 2019. In 2020-2021, that sector began to shrink to 4.9% and 3.1%, respectively, due to a sharp reduction in winning games.

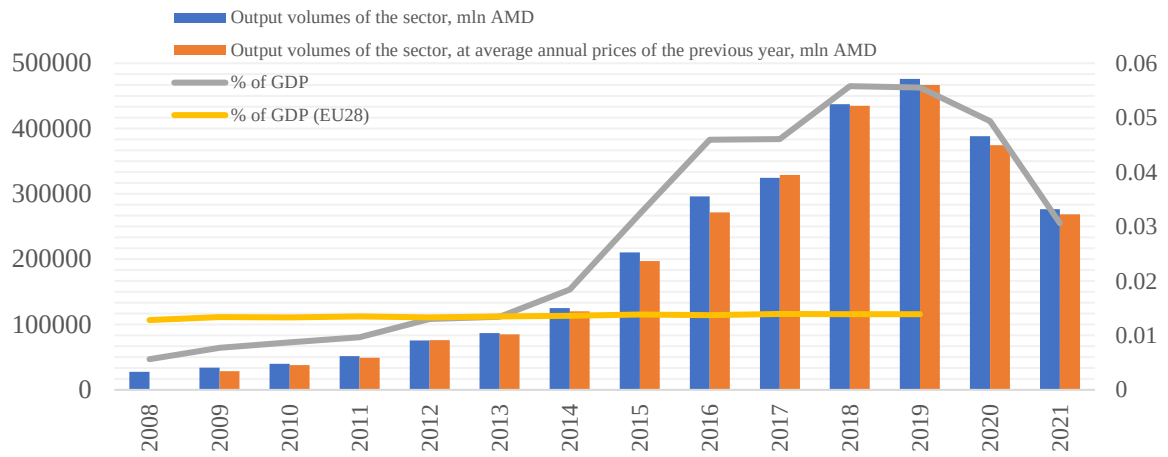

Figure 3.14.1. Output volumes of sector R (in mln AMD), share in GDP, %.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

When looking at the dynamics of the sector's intermediate consumption, we notice that it almost coincides with the dynamics of the gross output, which started to increase significantly in 2014 (Figure 3.14.2). However, the CAGR shows that the average annual growth rate of intermediate consumption in 2014-2019 was 25.6%, 5% lower than the growth rate of gross output. As a result, the material intensity decreased from 29% in 2014 to 24% in 2019. The latter indicates a particular increase in efficiency in the industry.

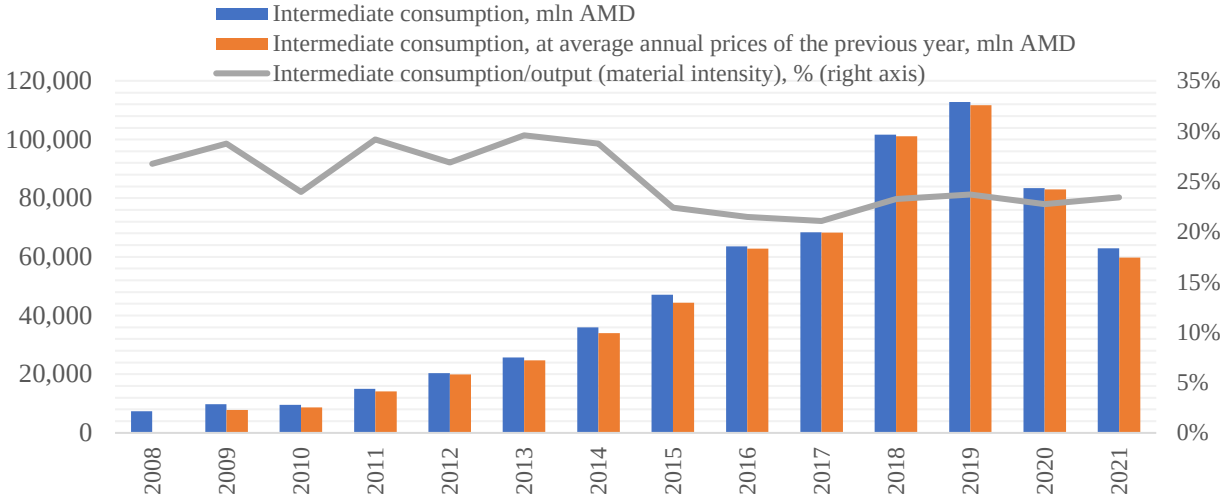

Figure 3.14.2. Intermediate consumption in sector R, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

As for the volumes of value-added in the arts, entertainment and recreation sector, we should highlight that the dynamics of the industry coincide with the dynamics of gross output and intermediate consumption. Thus, we can again notice the sector's stagnation until 2013 and stable growth rates starting from 2014. CAGR shows that the average annual value-added growth rate in 2014-2019 exceeded gross output growth, amounting to 32.5%. As of 2019, the value-added was 302 billion AMD, compared to 89 billion AMD in 2014.

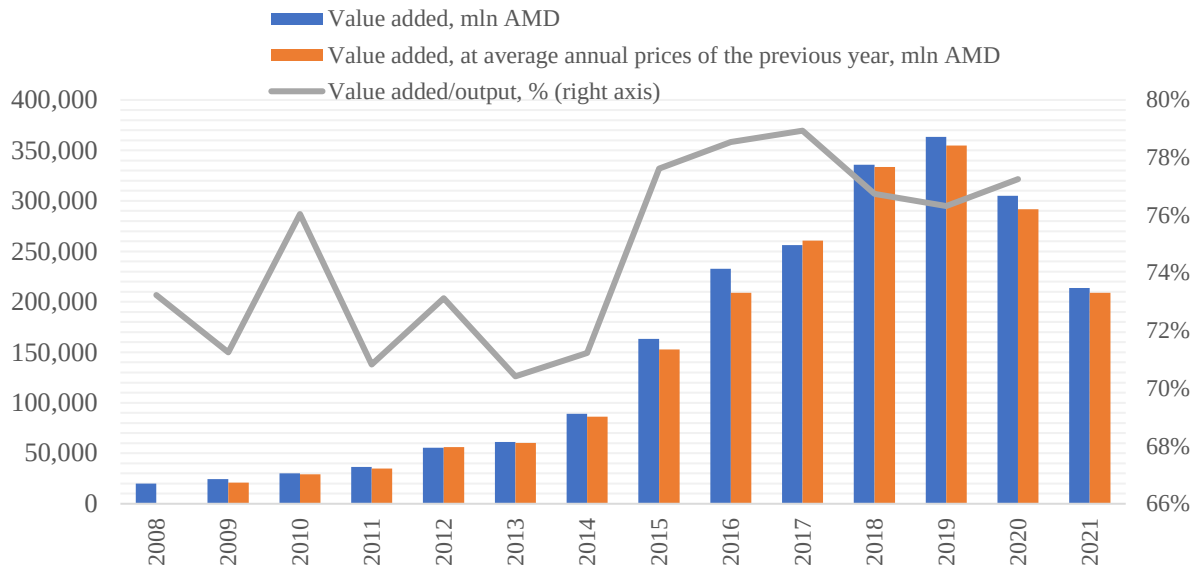

Figure 3.14.3. Value-added in sector R, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

The arts, entertainment and recreation sector is one of the most affected sectors worldwide due to the Covid-19 pandemic. As a result of travel restrictions and strict lockdowns, business activities in the industry were almost completely paralyzed for a certain period. In particular, in Armenia, starting from March 2020, enterprises' activities in the entertainment and recreation industry were temporarily prohibited. As a result, there was a significant decline in the sector in 2020 and 2021. The decline in the real value-added was more than 18.4%, while the overall economic decline in the country was 7.4%.

From 2010 to 2015, the volume of fixed assets at the book value did not change, varying between 13.5 and 15 billion AMD (Figure 3.14.4). In 2015, when the sector registered a steady and significant increase in value-added for the second consecutive year, the capital intensity indicator accounted for 13% (Figure 3.14.5).

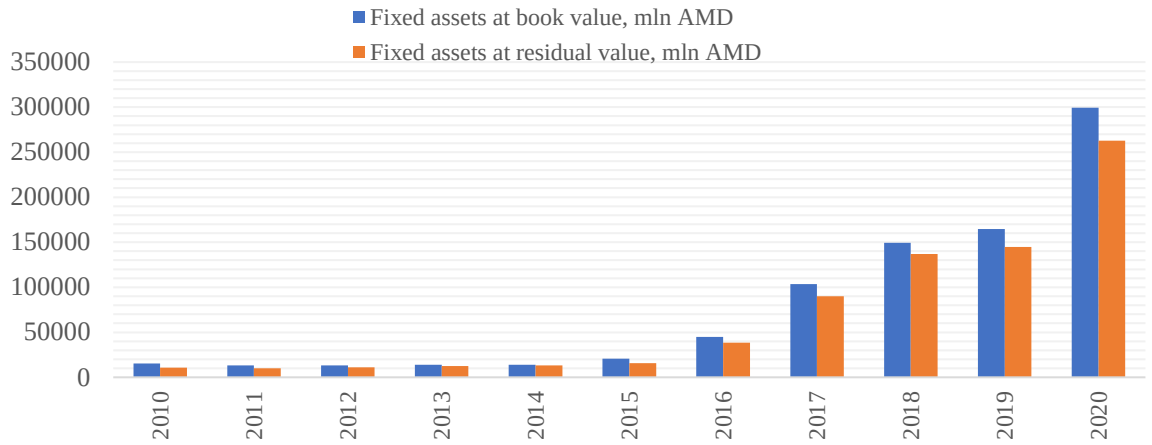

Figure 3.14.4. Fixed assets at book and residual values in the sector R, mln AMD.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Since 2016, there has been a steady, significant increase in the sector's fixed assets volume. As of 2019, the volume of fixed assets at the book value was 219 billion AMD, which exceeds the indicator of 2016 by almost 11 times. As a result of such changes, the capital intensity increased significantly, reaching 60% in 2019.

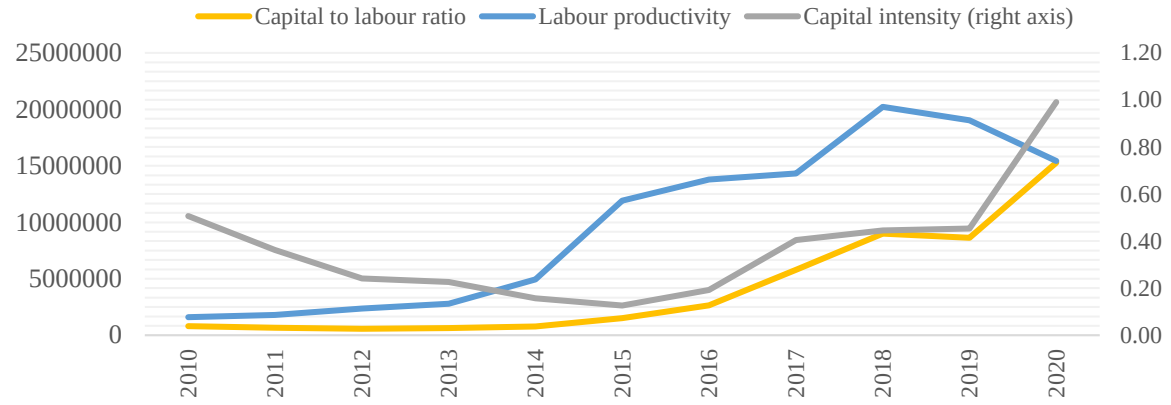

Figure 3.14.5. Capital intensity, capital-to-labour ratio and labour productivity in sector R.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

It is noteworthy that from 2012 to 2015, the employment in the sector was significantly reduced, reaching 13 700 in 2015, lower than the level registered in 2012 by 41.7% (Figure 3.14.6). In 2016, employment in the arts, entertainment and recreation increased by 23.3% compared to the previous year. There were no significant fluctuations in the following years.

Taking into account the 32.5% average annual growth rate of the sector's value-added from 2014 to 2019 and at the same time the reduction in employment, followed by the phase of stability, we can assume that there has been an increase in labour productivity. It is also evidenced by the labour productivity index, which has registered a sharp increase since 2015.

As for the remuneration in the arts, entertainment and recreation industry and the total labour costs, it is necessary to note that the labour cost in the sector was significantly lower than the economy average during the period under consideration. In particular, from 2010 to 2017, the gap varied between 37-43%. In 2018 and 2019, there was a sharp increase in labour costs; as a result, the remuneration in the sector was lower than the economy average by 28% and 20%, respectively (Figure 3.14.6).

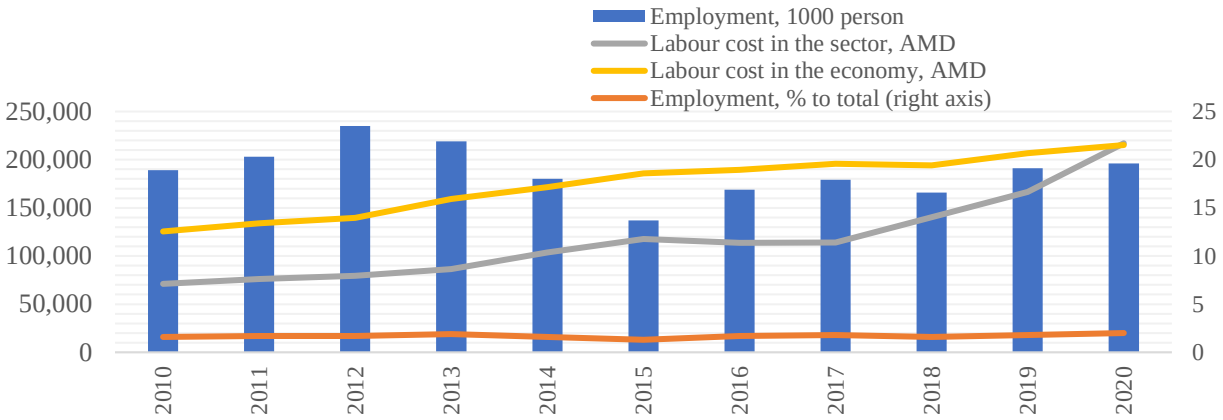

Figure 3.14.6. Employment and labour cost in sector R.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

There were almost no exports from the arts, entertainment and recreation sector to EAEU countries during the period under consideration (Figure 3.14.7).

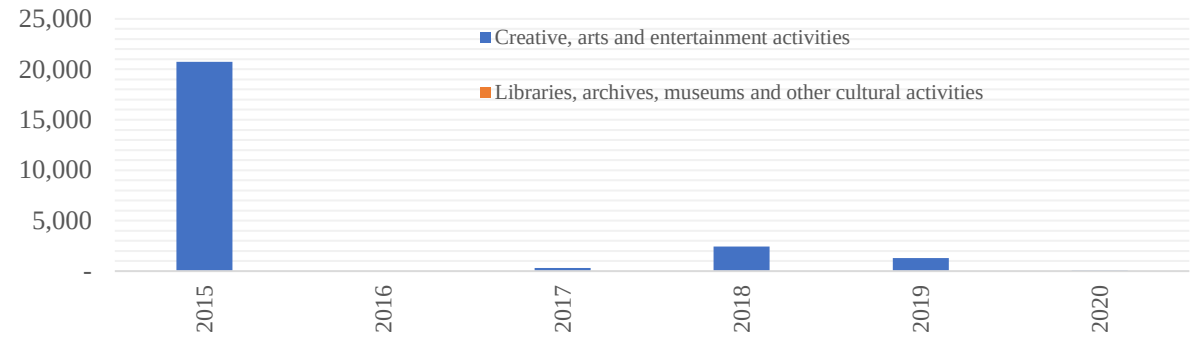

Figure 3.14.7. Export volumes of sector R to EAEU countries, USD.

Source: Database of the Euroasian Economic Commission – www.eurasiancommission.org/

Observing the volumes of exports to other countries, we can notice that the main export field are the creative, arts and entertainment activities (Figure 3.14.8). In 2016, the export of arts, entertainment and recreation activities increased by 88% compared to 2015, amounting to 1.2 million USD. In the following years, the export of services in the field of libraries, archives, museums and other cultural activities remained stable, varying between 115-182 thousand USS. In contrast, the export of services in the field of creative, arts and entertainment activities began to decrease steadily, reaching 312 thousand USD in 2019. In 2020, the latter recorded a 17% increase.

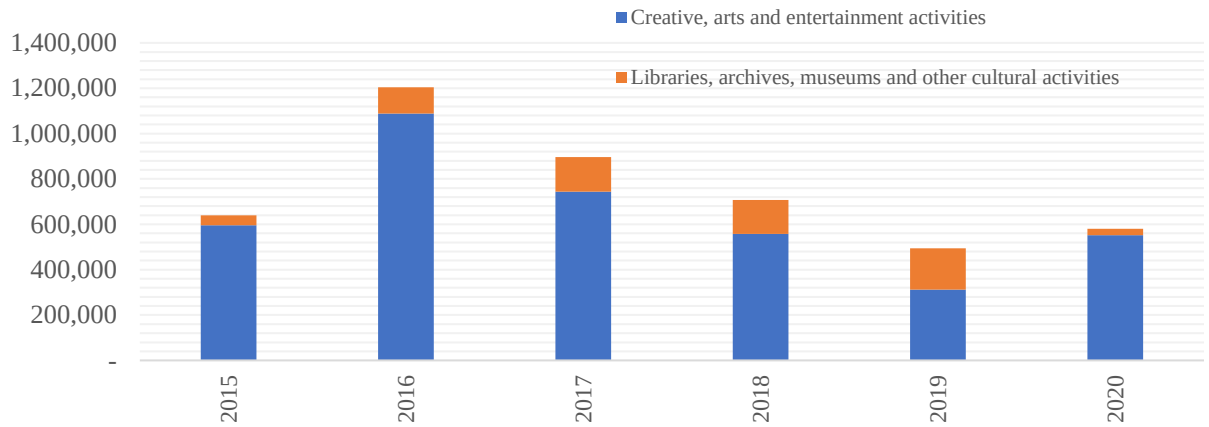

Figure 3.14.8. Export volumes of sector R to other countries, USD.

Source: Database of the Euroasian Economic Commission – www.eurasiancommission.org/

The price dynamics, except for the crisis and post-crisis years of 2009, 2015 and 2016, coincides with the dynamics of the GDP deflator (Figure 3.14.9). In 2009, 2015-2016, higher inflation occurred in the sector than in the economy as a whole.

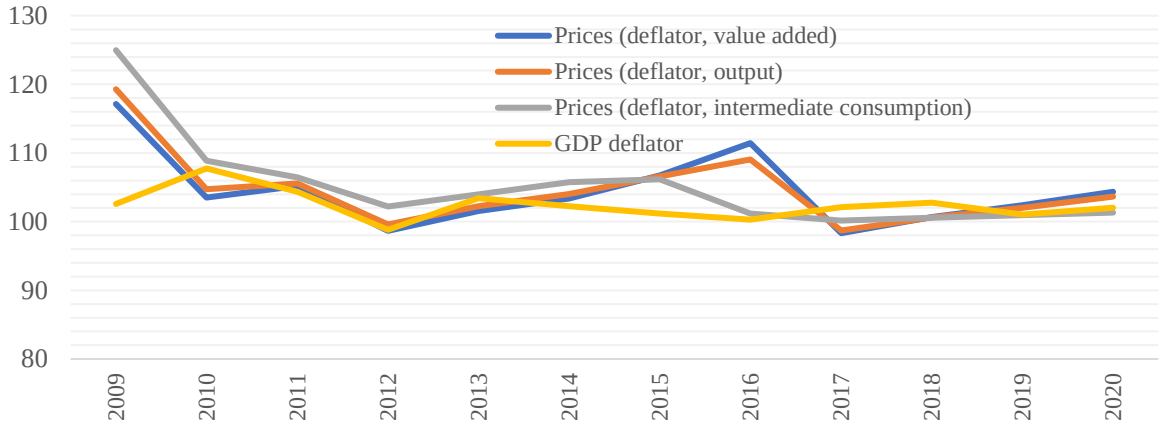

Figure 3.14.9. Changes in prices level according to deflator, sector R, %, annual.

Source: Database of the National Statistical Committee of Armenia – www.armstat.am

Commercial banks (Figure 3.14.10) and credit organizations (Figure 3.14.11) finance the arts, entertainment and recreation sector. Moreover, financing by commercial banks has the majority of the total financing, making 98.7% as of August 2021.

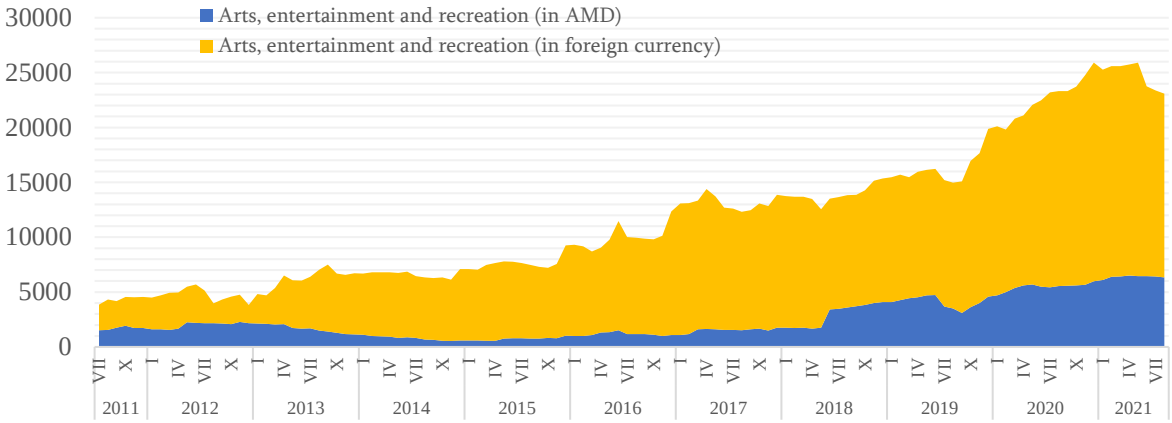

Figure 3.14.10. Loans granted by commercial banks in sector R, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

The volume of loans provided by commercial banks increased steadily from 2011 to 2019. In 2020, we observed a sharp increase in foreign currency loans due to overcoming the consequences of the crisis. It is noteworthy that the loans provided by credit organizations have sharply decreased since 2019. The downward trend of the latter continues to present. During the period under review, the volume of loans in the sector varies in the range of 4-9% in relation to the gross output and 5-14% in relation to the value-added.

Notably, 71-93% of the loans provided by commercial banks from 2015 to 2021 were foreign currency loans, amounting to 6.3 billion AMD in 2021. On the other hand, credit organizations provide mostly national currency loans, especially since 2018.

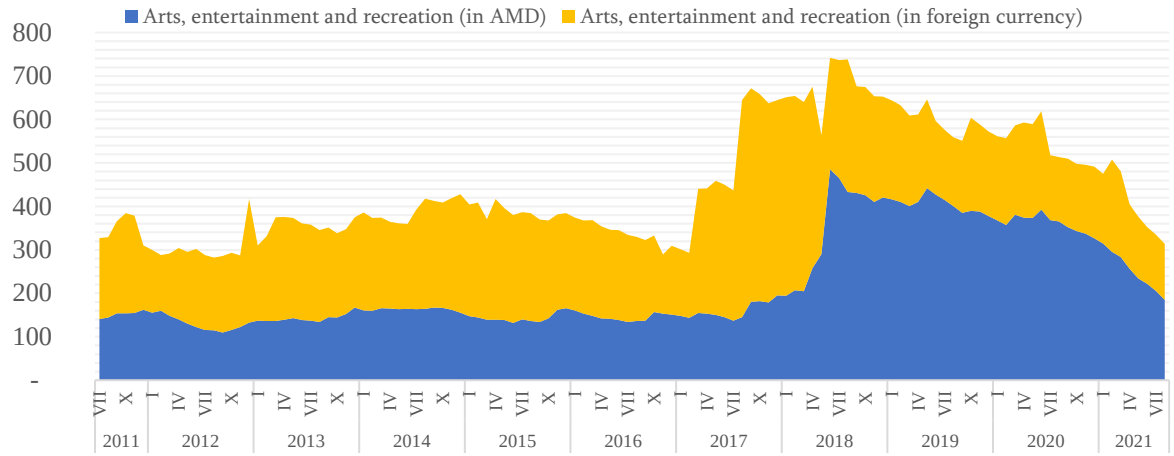

Figure 3.14.11. Loans granted by credit organisations in sector B, mln AMD.

Source: Database of the Central Bank of Armenia – www.cba.am

As for the policy in the field, it is different for art, culture and entertainment based on the nature of the sub-sector. The latter, being completely market-based, acted as the fastest growing sub-sector in 2013-2019, experiencing a sharp decline in 2020-2021 and will most likely cease to be a significant driver of economic development. In our opinion, the current policy in this sub-sector is sufficient and does not need substantial changes. We should also note that the program component has a significant role in the sub-sector, which is essential for the economy. Therefore there is no need for discriminatory measures.

Many other industrial components mostly need state support, although there are also market sectors. The areas of arts that are predominantly dependent on state support, particularly culture houses, public libraries, and most museums, should continue receiving this support[299], and its proportion should not decrease. The most expensive institution in the field of art is the national cinema. For its maintenance and development, it is necessary to significantly increase the volumes of state funding, changing the distribution mechanisms of funds and ensuring their access to the population. The financing of theatrical art should also be maintained and proportionally increased according to the growth rate of the budget expenditures. For the development of mass and professional sports, it is also necessary to increase the proportional growth of state funding along with the increase in budget expenses. Since culture, art and sports have a multi-sector nature, applying the public-private partnership model where appropriate is also necessary.

[299] The networks of culture houses and public libraries should be optimized and provided with modern free internet, and the libraries with digitized literature and its periodic addition.

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